

# Development of a Longitudinal Integrated Clerkship at The Warren Alpert Medical School of Brown University

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## ABSTRACT

The Warren Alpert Medical School of Brown University is introducing a longitudinal integrated clerkship for third year students in the Primary Care-Population Medicine Program as an alternative to more traditional clerkship models. In developing the longitudinal integrated clerkship, program faculty incorporated a historical perspective of medical education, modern knowledge about students' development of clinical skills, and educational science as it relates to faculty development and learner evaluation. The longitudinal integrated clerkship is being tailored to fit the Brown University system; as such, it will be unique in its attention to population medicine, including its exposure of students to several distinct health care systems within a single geographic region, and integration of clinical training with completion of a Master's in Population Medicine.

**KEYWORDS:** Undergraduate Medical Education, Longitudinal Integrated Clerkship

## INTRODUCTION

The Warren Alpert Medical School of Brown University is introducing a longitudinal integrated clerkship (LIC) in the 2015-2016 academic year. An LIC is a method of clinical medical education in which traditional specialty-specific block rotations lasting several weeks and occurring sequentially are replaced by longitudinal experiences for all core specialties occurring concurrently over many months and largely in the outpatient setting. Though currently a pilot program for a small group of selected students, the LIC will become a standard element of the third year for all students enrolled in the Primary Care – Population Medicine (PC-PM) Program, a four-year dual-degree program in which students earn both an MD degree and a Master's in Population Medicine (see the lead article in this issue, George, et. al., for further details).

## A HISTORY OF LONGITUDINAL INTEGRATED CLERKSHIPS

The LIC model for core clinical education in medical schools was first introduced in the 1970s. The LIC model is similar

to the historical medical apprenticeship, such as those that occurred in the United States in the 1700–1900s in which the doctor in training gained medical knowledge by participating in clinical care delivery alongside one or more experienced physicians and other clinicians. Innovators in medical education re-popularized this form of clinical training beginning in the late 1990s when LICs were implemented by medical schools in Australia, Canada, South Africa, and the United States in both rural and urban areas and more recently at academic centers.<sup>1,2</sup> LICs are based on the organizing principle of continuity of the learning environment which fosters patient-centeredness and learner-centeredness.<sup>3</sup> The International Consortium of Longitudinal Integrated Clerkships defines the LIC as an educational experience in which medical students participate in the comprehensive care of patients over time, participate in the continuing learning relationships with these patients' clinicians, and meet the majority of the year's core clinical competencies across multiple disciplines simultaneously.<sup>4</sup> This model provides students with an understanding of the continuum of health and disease, and transitions in care, by participating in the care of patients wherever it is delivered – from the outpatient setting to the hospital, rehabilitation, and care in the home. Studies show that students trained in LICs achieve academic results equivalent or better as compared to students in traditional models, while maintaining empathy and patient-centered values at a rate surpassing their colleagues.<sup>5,6,7</sup>

## THE WARREN ALPERT MEDICAL SCHOOL'S LONGITUDINAL INTEGRATED CLERKSHIP

The goals of the AMS LIC are to: 1) gain longitudinal experience in each of the six core clerkships (including internal medicine, surgery, family medicine, pediatrics, obstetrics and gynecology, and integrated neurology and psychiatry); 2) promote continuity with patients and their care environments; 3) integrate population health with clinical medicine; 4) longitudinally follow and participate in treatments of patients over time and across specialties; and, 5) complete a quality improvement and/or patient safety project focused on population medicine.

Students in the LIC will seek to longitudinally follow at least 3–5 patients per specialty area (up to a maximum of 30 patients) for up to one year, including pregnant women, newborns, pre- and post-surgical patients, geriatric patients, and

persons near the end of life. It will require effort from both students and faculty to collaboratively develop a diverse panel of patients that includes common chronic conditions plus a variety of important case material that students will apply to their study of clinical medicine. For most of the year, the student's schedules include one-half day per week in each of the six core clerkships; the remaining half days are devoted to seminars, other study, and participating in medical visits of the patients in the student's panel. Didactics will include both morning reports twice weekly and a half-day of clinically relevant seminar experiences; this educational curriculum includes coursework in population health and health care systems as described by White et al in this issue of the *Rhode Island Medical Journal*. PC-PM students will apply this coursework towards completion of the Master's in Population Medicine. Throughout the year, the students are expected to serve as advocates and navigators for their longitudinal patients, attending visits with physicians, other clinicians, clinical tests and procedures or surgeries.

The primary curriculum focus for medical students in the LIC emanates from its emphasis on comprehensive, integrated patient care over time, largely in the outpatient setting. Continuity of both mentors and patients is prioritized. This longitudinal education in the outpatient setting is described by in depth elsewhere (see White et al in this issue for further details). To supplement the outpatient experiences, students participate in shortened, highly-structured versions of traditional inpatient rotations; these 1–3 week “immersion” experiences occur in core areas including internal medicine, surgery, pediatrics, psychiatry, neurology and obstetrics. Students also complete recurrent “pulse” experiences such as in the emergency departments. In addition, there are many “one-time” experiences expected of students, such as home hospice care and the newborn nursery. There are skills workshops in physical examination, radiology, electrocardiogram interpretation, and others as would occur in standard third-year curriculums. Finally, attention is given to students' professional development as they establish doctor-patient relationships as the clinical provider.<sup>8</sup>

### SELECTING MEDICAL STUDENTS FOR THE LIC DEVELOPMENTAL PILOTS

The initial AMS LIC pilot, which began in May 2015, involves eight students. Students at AMS were queried about their interest in the LIC during the summer of 2014. More than 20 second-year students demonstrated interest in the program and subsequently applied to be part of the initial cohort. From there, through an application process that encompassed academic markers such as grades, mentor evaluations and interviews with PC-PM faculty, eight students were selected. Special attention was paid to the specific characteristics of students, examining the potential for them to thrive in the LIC. The student characteristics that PC-PM faculty sought included: self-directedness, comfort

with uncertainty, the ability to be a caregiver and the ability to function as part of a team. Faculty also focused on students who would advocate for patients. These characteristics were vetted in previous studies as important for success in LICs.<sup>9</sup>

Once the students were selected, we sought to match them with their ideal site. Program faculty met with the students and described the three possible practice settings which would serve as the students home base for the entirety of the LIC: Memorial Hospital of Rhode Island, the Veterans Administration Medical Center and Rhode Island Hospital. Students ranked their preferences and seven of the eight were placed at their top choice site.

### RECRUITING FACULTY MEMBERS TO TEACH AND SUPERVISE LIC STUDENTS

The process of recruiting faculty members to teach and supervise LIC students has been an ongoing intensive process that began even before sites were chosen. Whenever possible, the medical school and LIC leadership attempted to recruit faculty who were not already involved in the traditional AMS clerkships, so as not to draw away resources from current clerkship rotations. Preference was given to clinical practice opportunities at those sites where students could participate fully in patient-centered experiences. Optimally in LICs, clerkship sites engage and integrate the student into the structure of the practice in which the student has the opportunity to learn from medical assistants, nurse case managers, pharmacists, social workers, other clinicians and technicians, and the patients and families. It is expected that preceptors will foster mentoring relationships with students, and work in an environment that facilitates integrated, longitudinal learning experiences.

When recruiting faculty for the LIC, a number of obstacles were anticipated. Any medical school clerkship expansion requires increased faculty participation and an LIC expansion demands both more faculty and a different approach to medical student clinical training. Willingness to learn new educational approaches must come from both veteran faculty who are familiar with the traditional “6-week” block rotations, plus new community physicians who have not yet chosen to affiliate with an academic center and who may have little teaching experience. Thus, the recruitment of faculty to this new process must be successful in convincing seasoned preceptors to change aspects of their teaching style, and the faculty recruitment must also provide incentive for new community physicians to join. Both groups will also require significant faculty development.

AMS addressed these potential barriers in several ways. There was a process of directly reaching out to group practices by holding informational seminars on-site plus invited “retreats” at the medical school including national experts in the LIC model. Program leaders engaged early in the planning process to personally and directly speak with clinical

sites and practitioners throughout Rhode Island. Incentives included a Brown University clinical appointment plus access to general faculty development programs, live lectures/conferences, and skills-based workshops. In addition, there will be regularly scheduled faculty development, targeted to LIC faculty, with a focus on topics such as integrating learners into clinical settings and providing feedback.

Recruitment into any new program takes time, patience, due diligence and hard work, and this LIC is no exception. We expect that once new faculty preceptors see firsthand the rewards of meaningful year-long teaching relationships, and witness the students becoming active contributors to their health teams, expansion to additional clinical sites will naturally occur. In fact, for selected specialties in 2015, there was over-enrollment from interested faculty, who will now wait to accept students for the 2016 class. Ultimately, we believe that as preceptors experience their longitudinal student(s) facilitating patient-centered care and building meaningful multifaceted relationships, even seasoned skeptical clinical educators will find new vigor for their teaching.<sup>10</sup>

**THE VISION FOR FACULTY TEACHING AND SUPERVISION IN THE LIC**

As described above, the principle feature of the LIC is that students have longitudinal experiences with faculty preceptors in each of the core clerkship disciplines (Figure 1). Whenever possible, these specialists all work within one healthcare network, allowing for maximal coordination between disciplines and for students to follow patients between healthcare settings (e.g., a student may see a patient referred to a surgeon from a family physician’s office and then see the same patient at the surgeon’s office and in the operating room). From a preceptor’s perspective, this allows for the development of a robust and increasingly trusting relationship with the student, as the two work together weekly for nine months. Experience from other schools indicates that LIC preceptors feel able to develop authentic and meaningful relationships with their students, which allows for robust mentoring and coaching and an expansion of the roles preceptors feel comfortable assigning to their students.<sup>11,12</sup> Students in LICs report that the feedback they receive from their preceptors is authentic and enhanced by the continuity relationship.<sup>13</sup> At AMS, LIC preceptors

receive initial orientation through a kick-off event and meet in groups periodically to review the progress of their students. This process affords preceptors the opportunity to iteratively assess the abilities of their students and foster students’ development into competent professionals.<sup>14</sup>

**ASSESSMENT AND EVALUATION OF STUDENTS IN THE LIC**

The Longitudinal Integrated Clerkship offers the opportunity to repeatedly assess students’ skills, provide feedback and monitor progress. In addition, it creates the possibility of implementing new methods of student assessment. Like AMS students in traditional clerkships, LIC students will take the National Board of Medical Examiners subject examinations (“shelf exams”). These exams will be spread out over the course of the LIC starting after the first 3 months, beginning with the broadest specialties of family medicine and internal medicine and progressing to the more focused specialties of surgery, pediatrics, obstetrics and gynecology, psychiatry and neurology. The LIC students will also take four integrated Objective Structured Clinical Examinations (OSCEs), specifically designed for the LIC, over the course of the year, and each OSCE will have stations containing content from multiple specialties. To make the OSCE program successful in the LIC model, clerkship directors identified OSCE cases best suited for delivery to students early in the year as well as complex cases requiring an integration of skills at the year’s end.

At each clinical site, students will complete a monthly clinical encounter (mini Clinical Evaluation eXercise or “mini-CEX”) observed by their preceptors, and these will be used to provide formative feedback. Each clinical preceptor will also complete a quarterly clinical evaluation for the student, using a new clinical evaluation form developed on the Association of American Medical College’s Entrustable Professional Activities (EPAs) for entering residency.<sup>15</sup> Some domains of this tool are familiar: “Evaluate patients with new or undiagnosed symptoms,” and some reflect new areas felt to be important: “Give or receive a patient handover to transition care responsibility to another health provider or team.” Evaluations from patients and clinical site staff will be used to provide “360 degree” evaluation<sup>16</sup> of the students from multiple perspectives, which has high reliability and

Figure 1. Sample weekly schedule for LIC student

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
MORNING (8am–Noon)	Internal Medicine	White Space (Patient panel visits, specialty experiences)	Neurology & Psychiatry	Pediatrics	Family Medicine
AFTERNOON (1–5pm)	White Space (Patient panel visits, specialty experiences)	OB/GYN	White Space (Patient panel visits, specialty experiences)	Surgery	Core Education Sessions @ Alpert Medical School

validity in assessing physician competency. Each student will receive a LIC grade for each specialty, weighted approximately (with differences across specialties) 25% for the shelf exam, 25% for the OSCE, and 50% for clinical evaluations.

### ASSESSMENT AND EVALUATION OF THE LIC CURRICULUM AND FACULTY

For the 2015–2016 academic year, the LIC is a pilot; however, for the 8 selected students participating in this LIC, it is the required core clinical education for medical training. From these students reports, and the program's assessments of itself and the students' performance, the 2016–2017 LIC schedule and core experiences will be adjusted to better aid student learning and overall functioning of the LIC program within the affiliated healthcare systems. Over time, the LIC will be tailored to best support the Primary Care – Population Medicine students integrated degree program. In addition, the Alpert Medical School may consider offering the LIC as an optional alternative for third-year students in the traditional MD training program.

### INNOVATIONS OF THE WARREN ALPERT MEDICAL SCHOOL'S LIC

Several innovations will enhance AMS students' experiences, making the LIC at Brown University unlike other programs. First, the AMS LIC is part of the four-year dual degree Primary Care – Population Medicine program. Students completing this program will 'experience' population medicine by functioning as clinical service providers while concurrently completing coursework in clinical medicine alongside didactic classes and preparation of a thesis in population medicine. Whereas most LIC students learn only about the care of individual patients, students in the AMS LIC will be exposed to the intricacies of panel and population management. Second, students will have opportunity to compare and contrast healthcare system successes. All LIC students will participate together in weekly experiences, however, each individual student will complete all clinical experiences within only one of three clinical systems (two private, non-profit and one Veterans' Affairs). This intermingling of experiences will allow AMS students and educators to comparatively view separated healthcare system responses to similar population health problems. Finally, new medical school courses specific to the PC-PM program will empower students with a) the language of population medicine science and b) practical skills in quality improvement and patient safety.

### CONCLUSIONS

The LIC at AMS, and the PC-PM program are innovative models designed to train physician leaders in the core skills of medicine plus necessary contemporary skills in clinical

service delivery and practice change. By exposing students to the longitudinal complexities of health care system functioning, and training them how to overcome barriers to high-quality care during the important developmental time of the third year, AMS and other LICs expect to produce physicians equipped with tools to treat individuals and populations at the highest level, improving healthcare delivery in the United States. Assessments of the students, the faculty, and the LIC program will provide valuable insights and help advance and refine this innovative medical education model.

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## Disclosures

Drs. Epstein-Lubow, Anthony and George receive funding from the American Medical Association Accelerating Change in Medical Education Grant Initiative in support of this work; Drs. Anthony, Fagan and George received funding from the Rhode Island Foundation in support of this work.

The Primary Care-Population Medicine program is supported, in part, by a grant from the American Medical Association's "Accelerating Change in Medical Education" program.

The Longitudinal Integrated Clerkship pilot is supported, in part, by a grant from the Rhode Island Foundation.

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