

Curriculum in Context

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Curriculum Change: Reflections on What and How We Teach

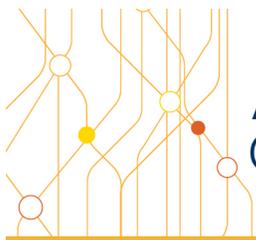
This curriculum report considers [curriculum change data](#) from three Liaison Committee on Medical Education (LCME) Annual Medical School Questionnaires: 2012-2013, 2016-2017, and 2017-2018. These data suggest that curriculum change is a continuing phenomenon among U.S. medical schools. One limitation of these survey data is differences in the specific questions included at each time period, limiting observations related to change over time.

Number of Medical Schools That Provided Their Current Status Related to Curriculum Change

At least two-thirds of U.S. medical schools reported current or planned curricular change at each survey period: 66% in 2012-2013, 69% in 2016-2017, and 75% in 2017-2018. Have more than two-thirds of U.S. medical schools been in some state of curriculum reform over the past 6 academic years? Have we reached a steady state, where nearly all schools are moving into the active phase of curricular change, with very little diastole? More than likely, curriculum change is a multiyear process in which planning and implementation time spans more than these data points, as the time line to accomplish these goals can be variable and often lengthy. While continuous quality improvement (Element 1.1 LCME white paper¹), for some, may not be considered classic curriculum reform, these small cycles of change can result in measurable, data-driven modifications to improve overall educational program quality for students. However, it does seem more likely that additional pressures for updated pedagogical approaches, student and faculty satisfaction, and evolving curricular content are prompting more frequent reconsideration of what and how we are teaching in undergraduate medical education.

Number of Medical Schools That Indicated the Portions of the Curriculum That Are or Will Be Included

Restructuring is typically necessary for two reasons. The first is the continuing movement away from the post-Flexnerian model of 2 years of basic sciences followed by 2 years in clinical settings; many have commented on the problems with this approach.^{2,3} The pre-clerkship curriculum was considered to be the target area for curricular reform in an increasing majority of schools (2012-2013: 48%, 2016-2017: 90%, 2017-2018: 77%). From a historical perspective, medical education has witnessed a progression of curriculum models, with the pre-clerkship years being most fluid.⁴ Current medical school curricula can trace their lineages to any number of predecessors: apprenticeship-based (1765-present), discipline-based (1871-present), organ system-based (1951-present), problem-based learning (1971-present), and clinical presentation-based (1991-present). Discipline-based organization decreased from 55% of schools in 2015-2016 to 48% in 2017-2018, with a concomitant increase in other approaches such as organ system-based instruction (2015-2016: 85%, 2017-2018: 88%) and symptom-based approaches (2015-2016: 13%, 2017-2018: 6%). Further details are included in the related curriculum report "[Curriculum Structure During Pre-Clerkship Years: Organization.](#)"



The data are silent about the motivation for choosing an organizational approach, yet it is clear that duration of the pre-clerkship curriculum is also a factor in curriculum reform. The LCME Annual Medical School Questionnaire data indicate that over half of medical schools have shortened the duration of their pre-clerkship phase (2016-2017: 55%, 2017-2018: 62%). Earlier entry into the clerkships may be an effect resulting from newer, condensed approaches to the preclinical foundational sciences or may be the cause that is precipitating condensing and shortening of the preclinical coursework. Early entry into the clinical curriculum may allow for a longer post-clerkship time line for career exploration, scholarly activity, elective rotations, and the time needed for residency interviews. This longer post-clerkship time line also allows for the placement of United States Medical Licensing Examination (USMLE) Step 1 after the clerkship year.⁵ More information about USMLE timing requirements is available [here](#).

Most striking is the increased percentage of schools endorsing curricular change during the required clerkships and the fourth year (2012-2013: 36% clerkships, 27% fourth year; 2016-2017: 77% clerkships, 74% fourth year). Perhaps it is not curricular content but assessment methods in the clinical years that are changing? The issue of consistency and fairness of grading in the clinical clerkships is not new,⁶ although more recently, issues of implicit, racial, and gender bias are.⁷ In addition, increased utilization of workplace-based assessments, direct observation, and graduate medical education–focused methods may be the source of this change. As the pressure for specialty matching and the significance of clinical grades increase, efforts must be made to ensure fair, transparent, constructive clinical performance feedback for medical students. Longitudinal clerkships are another curricular change showing varied adoption among the three time points sampled: 55% in 2012-2013, 34% in 2016-2017, and 40% in 2017-2018. More information can be found in the curriculum report “[Longitudinal Integrated Clerkships at U.S. Medical Schools](#).”

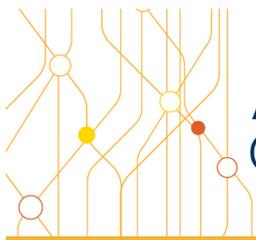
Number of Medical Schools That Indicated the Types of Changes to the Curriculum

The types of curricular change queried in the LCME Annual Medical School Questionnaire reflect a focus on content and learning experiences. Two recent conference panel discussions invited medical schools currently implementing new curricula to discuss the reasons underlying curriculum-wide change.^{8,9} Collectively, eight schools provided multiple reasons for reform, but three reasons—reflecting content and learning experiences—were endorsed by most of the schools:

- Updated approach to pedagogy.
- Modernization of curricular content.
- Need to reorganize or realign the curriculum.

Everyone participating on these panels considered pedagogical changes to be an important impetus for curriculum change. The LCME Annual Medical School Questionnaire data reveal widespread adoption of self-directed learning formats (2016-2017: 70%, 2017-2018: 70%), online and computer-based instruction (2017-2018: 62%), and team-based learning (2017-2018: 51%). Simulation also has been widely adopted (2012-2013: 74%, 2016-2017: 66%, 2017-2018: 67%); see these curriculum reports for additional information: “[Simulation Center Use at Medical Schools: 2013-2014](#)” and “[Number of Medical Schools Requiring Final SP/OSCE Examination: 2011-2012 Through 2015-2016](#).”

Similarly, all schools recognized the importance of curricular content that is current, reflecting changes in biomedical sciences, practice environments, public health needs, and societal values. Only one LCME



Annual Medical School Questionnaire item directly focused on content: Over 70% of medical schools (2012-2013: 73%, 2016-2017: 80%, 2017-2018: 79%) reported interprofessional education specifically as part of their renewal effort. Likely, this interest is in part fueled by accreditation requirements around interprofessional collaborative skills; more information is available in the curriculum report “[Required Interprofessional Education: Schools Requiring the Program.](#)”

During the curriculum change panels, the participants used a variety of terms to describe restructuring of the curriculum, including *reorganize*, *realign*, *rebalance*, and *simplify*. Participants described the need to start over and simplify what had become, with years of tweaks and changes, incredibly complex curricula. Alignment, a key aspect of any curricular change,¹⁰ was discussed in terms of mapping objectives to content to cases, as well as better integration of basic science and clinical medicine content. Schools with [multi-campus systems](#) emphasized the need to assure comparability.

According to panelists, the second impetus for curriculum restructuring is a move towards more integrated and competency-based education. Most curriculum change efforts included the adoption of clinical correlations (2012-2013: 80%, 2016-2017: 81%); half of U.S. medical schools undergoing curriculum change have introduced or expanded competency-based education (2016-2017: 55%, 2017-2018: 62%). The survey explicitly queried basic science integration through organ system-based or case-based curricula, and as already reported, it was endorsed by most schools. Panelists suggested that these changes resulted in curricula that are more patient centered.

Curriculum change is a tricky business. As Sklar explains,¹⁰ curriculum change often leads to struggles between reformers and advocates for the status quo. Specific decisions about the nature of the changes to instruction and content are influenced by the lobbying and advocacy of groups of faculty and official decision-making committees, as well as by institutional values, history, leadership, and climate.¹⁰ Many medical schools have documented their curriculum change experiences.^{3,11-15} All have reported lessons learned, and most have reported missteps in translating ideas into action in the new curriculum. Such reports represent road maps and cautionary tales for a journey many of us will take.

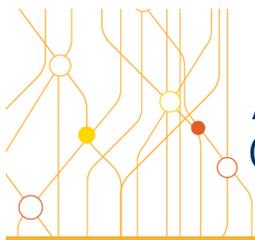
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