# Redesigning the Clinical Curriculum at the Warren Alpert Medical School of Brown University

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**The Warren Alpert Medical School is in** the midst of a curriculum redesign. This process started in 2007 with the implementation of a redesigned pre-clerkship curriculum for Years 1 and 2.[1] The purpose of this report is to articulate the principles, process and overall design aspects of the next phase of the redesign: a new curriculum to replace the traditional content of Years 3 and 4.

Since the Flexner Report (1910),[2] the final two years of medical school have focused on clinical work in teaching hospitals. Students are expected to finely tune assessment skills such as history taking and physical examination, to integrate medical knowledge into patient care, and to master sound clinical decision-making. In addition, other tasks have been added through the decades: students must become competent in areas ranging from medical ethics to the application of technology. A professional, patient-centered approach to patient care, including attitudes that relate to potential conflicts of interest and cultural diversity, must be instilled.

US medical school curricula continually undergo redesign.[3-4] Proposals to reform US medical education over most of the last 100 years have articulated a particularly social vision of medicine, in which medical schools are seen as serving society.[5] The redesign process at the Warren Alpert Medical School is no different. It takes place during a period of turmoil in our healthcare system. Both the inpatient and outpatient settings are changing in ways that challenge their suitability as training sites. Examples range from the marked decrease in many routine pediatric and surgical inpatient admissions to the shift of diagnosis and initiation of treatment from the wards to the emergency department and the ambulatory settings. Such alterations pose threats to the longstanding status quo, challenge assumptions regarding the clinical training of medical students, and suggest the need for searches for alternative approaches and methods.

At the start of the process, the **Medical Curriculum Committee** (MDCC), under the direction of the Dean of Medicine and Biological Sciences and the leadership of the Associate Dean of Medicine for Medical Education, entered into an intense discussion of the goals, nature and implementation of a new clinical curriculum. The subsequent White Paper on curriculum redesign, a work in progress, is the chief source of the information in this report.

## Why Undertake a Redesign of the Clinical Curriculum at AMS?

The decision to redesign the clinical curriculum is based on multiple factors, including:

### Changes in the Effectiveness of the Clinical Learning Environment

The changing face of medical care has brought to the fore areas of emphasis that have not been stressed in traditional clinical curricula; i.e., chronic disease management, health promotion and preventative medicine, geriatrics, palliative care and health policy. The traditional clinical curriculum has been inpatient-centric, disease-oriented, and procedure-oriented. While focusing on evidence-based medicine, traditional clerkships often ignore the delivery of primary care and the substantial proportion of specialty medicine taking place in the outpatient setting.

The existing Brown clinical curriculum in Years 3 and 4 is built around a clerkship model that depends on the inpatient setting as a learning venue and the "apprenticeship model" in which learning requires direct student involvement with patients.

Threats to this educational model have emerged; e.g.,

- Lower inpatient censuses from shortened length of hospital stays
- Shifts from inpatient to outpatient settings for many conditions and procedures
- Extensive emergency department diagnostic evaluations that may limit the ability of clerkship students to participate in the diagnostic evaluation of and decision-making for acutely ill patients
- Restrictions on the inpatient and outpatient faculty due to the increased pressure for greater productivity and tighter financial bottom lines.
- Limited longitudinal experiences in both the inpatient and outpatient settings
- Electronic modalities (medical record, ordering systems) that can disenfranchise the student if not designed with educational needs in mind.

### Creating a more Seamless Four Year Curriculum will Facilitate Greater Coordination, Longitudinal Programs and Planning, and Reduce both Gaps and Redundancies

Though the reform of Years 1 and 2 and the implementation of a redesigned pre-clerkship curriculum have already had desirable results, the existing curriculum in Years 3 and 4 is also built around a traditional division between preclinical and clinical experiences that inhibits coordination and longitudinal planning. The divide between preclinical and clinical training dates back to the Flexner Report.[2] This approach was adopted by Brown when the Medical School was established in the 1960s. Such divisions have impeded curricular integration and coordination.

This redesign will allow consideration of educational goals and programs with greater continuity between the "pre-clinical" and "clinical" curricula. Longitudinal planning and programs will allow teaching to match more closely the educational and developmental needs of students. The redesign process is also intended to address gaps and reduce redundancies in the curriculum. Areas of medical science that are

presently underrepresented in the existing clinical curriculum include nutrition science, genetics and contemporary clinical pharmacology.

### Promoting a Patient-Centered Approach

A redesign can foster in medical students a number of "patient-centered" attributes; e.g., a holistic view of patients and patient care; a deliberate, thoughtful approach to the application of technology and therapies that takes cost into consideration; the ability to incorporate knowledge and the extraordinary access to this knowledge into the care of the individual patient; the ability to place the care of the patient into a population-based and societal context.

### Meeting the needs of a Changing Medical School

The new curriculum will be launched prior to the opening of a new medical education facility (projected for August 2011).[6] Its design will allow for an increase from the present 96 students per year to an eventual class size of 120 students. The new building and advising systems will incorporate a "learning communities" model, another change that will inform curriculum decisions.

### Changes in the National Context of Medical Education and Oversight

As is the case for all curriculum decisions, the MDCC must consider the evolving standards of our accrediting body, the **Liaison Committee on Medical Education (LCME),**[7] as well as the anticipated modifications in the configuration of the Steps 1 and 2 **United States Medical Licensing Examination** (USMLE).[8] Although the timing and nature of these changes are uncertain, it is very likely that a new Gateway 1 examination, a comprehensive basic science/clinical science examination, will be introduced in the next decade. .

Finally, there has been a growing discontent around the US with the generally loosely structured fourth year of medical school training.[9] with "pre-residency syndrome," characterized by students' excessive preoccupation with gaining their "first choice" graduate medical education position.[10]

## Goals of the Redesigned Curriculum

At the Warren Alpert Medical School, the overarching goal for the redesigned curriculum is to prepare students to meet the needs of their patients, families, and communities and stand out as physician leaders during the training and careers that follow. We also believe that the new curriculum should build on the Brown tradition of liberal education, self-directed learning, and excellence in medical education. The aim is to provide the experiences, knowledge and skills that are deemed so important that every Brown medical student should have them prior to graduation, irrespective of their individual trajectory. But the curriculum should also be sufficiently flexible to enable students to self-direct their post-residency learning and career goals.

The MDCC articulated qualities that we aspire to imbue in our graduates; specifically,

- The ability to function as self-directed life-long learners, contributing to advances in medical knowledge, therapeutics and technology, and able to adapt advances in healthcare to the interests of their patients and communities
- The capacity to be fully informed participants in assuring high quality health care in their practices, institutions and communities
- The commitment to be ethical, socially responsible physicians and leaders in all aspect of their work

## Principles to be Incorporated into the New Curriculum

Although the redesign is in its early stages, the MDCC articulated several guiding principles.

- We should meet the needs of students with a variety of career goals.
- We should ensure coordination, integration, and continuity between educational experiences throughout the four years, providing ***the right experience at the correct time in the best setting***. Clinical teaching and assessment should form a continuum from Year 1 through Year 4. This will require greater coordination of all elements of the curriculum and can be accomplished in several areas.
- The curriculum should be structured in evolutionary developmental ladders in which each step should prepare students for ones that follow. Just as knowledge of basic histology, biochemistry, and cell biology allows students to access the complexities of pathophysiology, Doctoring in the pre-clerkship years[11] prepares students for clerkships; clerkships prepare students for sub-internships and electives; subinternship responsibilities and a planned "capstone" experience" will prepare students for internship and residency.
- We should promote high-quality learning environments in the clinical setting. This will involve promoting the relevance and active participation of students on clinical services and attention to setting, preparation, and faculty development.
- Students should have the opportunity to explore and master emerging technologies for information management, including the electronic medical record, computer simulation and web-based resources.
- The redesign process should be sufficiently flexible and inclusive to take advantage of innovations that are not apparent at the start of the process.

## Preliminary Design: Aspects of the New Curriculum

### An Overarching Curricular Theme

Given the context of healthcare reform, a focus for the redesign has been proposed: Healthcare Delivery. This focus will incorporate several areas that are germane to the education of our students, such as:

- Application of fundamental clinical skills
- The judicious application of tech-

nology and therapeutic innovations

- The financing of healthcare and access to healthcare
- Medical informatics
- Quality improvement, patient safety and teamwork

### Year 3, Core Competencies, the Clinical Knowledge Base and the Core Clerkships

At present, the required core clerkships represent 50 weeks of instruction that students complete during the entirety of Year 3 plus the first half of Year 4. The MDCC has committed to a reconfiguration of core requirements in which the core clerkships in the LCME-required disciplines (medicine, surgery, pediatrics, ob/gyn, psychiatry and family medicine) will be completed during Year 3. To accomplish this, the MDCC expects to reduce the number of required weeks. Changes in the clinical setting (such as the initial assessment of most inpatients in the emergency room) will also be taken into account in designing the core clerkship experiences. Such modifications will also need to take into account the planned growth of the student body.

### Year 4, Focused Competencies and Formulation of a Fourth Year Educational Plan

The process of choosing a career path integrates a multiplicity of aptitudes, interests, and experiences. The new curriculum will facilitate this process, first by exposing students to the core rotations during their third year, then by providing individual counseling prior to the start of Year 4. Improvements in career mentoring in the fourth year have been shown to be effective and increase overall student satisfaction [9] At Brown, such counseling will occur in the context of the planned learning communities.

This proposal for students to formulate an educational plan presumes that we will strive for greater rigor in Year 4, something that has been sought by only a select few medical schools.[9, 11-12] Such an approach also presumes that a student's career focus will help determine the Year 4 requirements and will vary from student to student. For example, students interested in primary care might include more extended clinical experience in orthopedics and dermatology, while students considering surgery or orthopedics path might consider further anatomy or pathology. Career paths will be defined as areas of cross-disciplinary emphasis, with structured guidance and expectations, as well as room for clinical research.

### Expansion of Doctoring into Years 3 and 4

The Doctoring course has been largely responsible for the ability of the preclinical curriculum to be comprehensive in its approach to preparing students for their clinical years. The MDCC considers that an adequately designed Doctoring program in the clinical years could allow for the in-depth presentation of cross-disciplinary and integrative topics. These may include such topics as the use of technology in clinical medicine; advanced communication and physical examination skills; death and dying/palliative care; nutrition; genetics; working with teams; and sexuality. In addition, the Doctoring program will include ample time for "intensives" to prepare students for clerkships, and later for internships. Although at this time, many specifics of the 4-year Doctoring curriculum are uncertain, the MDCC considers such a comprehensive and coordinated approach as the most effective way to assure inclusion of cross-disciplinary areas essential to any medical school graduate.

## Summary

The proposed clinical curriculum in Years 3 and 4 provides the opportunity to complete the process begun with the reform of the pre-clerkship curriculum in 2007. The redesign should produce an educational process which not only more adequately prepares students for the future, but helps produce leaders in multiple fields of medicine and re-establishes Brown as an innovator in medical education.


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### Disclosure of Financial Interests

The authors have no financial interests to disclose.



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