THE FOUNDATIONS CURRICULUM:
A NEW APPROACH TO THE
PRECLERKSHIP PROGRAM

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EXECUTIVE SUMMARY

We are proposing a significant revision to the University of Toronto Faculty of Medicine’s Undergraduate Medical Education preclerkship program, with the goal of making the program more effective by aligning it with important modern trends in medical education. The major overarching goals that we seek to develop are:

1. A curriculum model that promotes integration and individualized learning.
2. A curriculum with increased clinical relevance, based on early contact with patients and integration of basic and clinical sciences.
3. A curriculum delivery model that values contact with faculty members to support clinically relevant learning, but reduces passive, lecture-based learning.
5. Explicit teaching of competencies pertinent to developing cognitive capacities such as cognitive science, affective regulation, self-care.
6. Opportunities for students to pursue combined degree programs such as the MD/PhD combined degree programs.

We propose to achieve this via four courses: first, the Toronto Online Patient-Centred Integrated Curriculum includes a weekly case on an electronic platform, discussed in small groups with a faculty facilitator. There is a small number of lectures and an expert-led case-based seminar contribute to the learning each week. Second, the Integrated Clinical Experience (ICE) provides instruction in clinical skills similar to the existing Art and Science of Clinical Medicine, more fully integrated with the concurrent content of TOPIC. ICE also includes early patient contact via learning in various clinical contexts including family practice clinics, home care visits, and chronic care facilities. Third, a portfolio course provides a venue for students to work with a small group of classmates and a faculty facilitator, to develop reflective capacity, to work on their professional identity formation, and to assemble an assessment dossier comprised of multiple, frequently administered formative assessments. Fourth, the Health Science Research course provides instruction on how to take part in the conduct of research and how to apply the results of research to patient care.

These four courses are layered on top of four sequential units. Unit 1 (11 weeks in first year) is an introduction to biomedical and social sciences, at all levels of organization from the gene to the individual to society. Unit 2 (25 weeks in year 1 and 16 weeks in year 2) addresses health and disease as it affects all the body’s systems. Unit 3 (nine weeks in year 2) addresses health issues that affect people at each stage of life. Unit 4 rounds out the preclerkship through a consideration of complex and chronic illness. Longitudinal themes, including CanMEDs roles, priority diversity groups (indigenous health, LGBTQ, geriatric, global health) and special content areas (e.g. medical imaging, pharmacology) are woven throughout the two years. A new faculty development office will provide support for teachers. The whole program will be carefully evaluated and subjected to iterative revision.
BACKGROUND AND RATIONALE

Numerous reports in the recent medical education literature persuasively support substantial changes in how medical education should be delivered, including the 2010 Carnegie Report\(^1\), the Lancet Commission\(^2\), and the Future of Medical Education in Canada Project\(^3\), among others. Multiple medical schools, in Canada and around the world, are pursuing substantial curricular revisions in keeping with these recommendations. The preclerkship program in the University of Toronto MD program was last fully revised in 1992. While several significant improvements have been made in the intervening years, and while the program has been well-regarded (including during the 2012 CACMS-LCME accreditation survey site visit), the medical school leadership has identified a need for a more comprehensive renewal in line with the directions advocated by the reports cited above. The overarching rationale for the planned modification to the curriculum is to create a program better suited to educating physicians for the 21st century. Our specific goals are to better address the following priorities in modern medical school planning:

**Related to curriculum planning**
- A competency-based approach to organizing the program with enhanced, centralized coordination
- Flexibility in learning pathways (including options for combined degrees)
- Integration of basic and clinical sciences, with early clinical immersion

**Related to curriculum delivery**
- A more active learning model, with less reliance on passive lectures
- Effective use of technology in education
- Community-based learning
- Interprofessional education (IPE)

**Related to curriculum content**
- Explicit teaching of cognitive sciences
- Teaching to support professional identity formation and reflective capacity
- Teaching about prevention and public health
- Teaching about the health care system, patient safety, and quality improvement

**Related to assessment**
- An assessment program with multiple types and points of assessment including longitudinal formative and cumulative assessment procedures that support student learning and permit better early identification of gaps in learning, allowing for more timely intervention

**Related to faculty development**
- A comprehensive faculty development program to support these new initiatives

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DESCRIPTION OF PROPOSED MAJOR MODIFICATION

Principles Guiding the Planning of the Foundations Curriculum

The major overarching principles for the preclerkship program as a whole that we seek to follow are:

1. A curriculum model that promotes integration and individualized learning
   a. Horizontal and vertical integration of activities via a centrally-managed curricular structure
   b. Increased student-directed time throughout the two-year Foundations Curriculum during which students may pursue areas of interest including career exploration activities
   c. Abundant use of carefully designed and curated online materials

2. A curriculum with increased clinical relevance, based on:
   a. Earlier introduction of exposure to patients
   b. Greater exposure to the multidisciplinary health care team
   c. Greater emphasis on learning biomedical science in a context that makes it clinically relevant

3. A curriculum delivery model that maximizes the value of contact with faculty members to support clinically relevant learning, but reduces the reliance on passive, lecture-based learning

4. An assessment model that supports guided self-assessment and more support for learning via
   a. Assessment that focuses on frequent exercises with feedback rather than infrequent, high-stakes summative tests
   b. Portfolio-based evaluation strategies

5. Explicit teaching of competencies pertinent to developing cognitive capacities such as cognitive science, affective regulation, self-care

6. Opportunities for students to pursue collaborative programs such as the MD/PhD and MD-MPH
Specific Proposed Elements

There are four major elements in our proposal, although they are all intended to work together harmoniously: ICE, TOPIC, Portfolio and the Health Sciences Research stream, which run concurrently during the 72-week preclerkship. Each element is described below. The diagram below illustrates in a timetable how these four elements will fit together in a typical two-week period.

- **TOPIC** – Toronto Online Patient-centred Integrated Curriculum
- **CBL** – Case-based learning
- **IPE** – Interprofessional Education
- **ICE** – Integrated Clinical Experience
- **ASCM** – Art & Science of Clinical Medicine
- **CPPH** – Community, Population & Public Health
- **HSR** – Health Science Research
The Integrated Clinical Experience (ICE) serves two major purposes:

1. First, it is the setting in which students will learn clinical skills, so ICE constitutes the successor of the Art and Science of Clinical Medicine course.
2. Second, ICE will serve to provide students with a deep understanding of the experience of being a patient receiving care in the health care system.

This experience will be scheduled for one day per week for the entire two-year preclerkship. Students will be assigned to a variety of academy-linked clinical settings in which they will have the opportunity to be attached to a panel of patients, getting to know them, their families and support network, and learning what assistance their patients require to navigate the complexities of our healthcare system. Students will be able to acquire clinical skills in the context of interviewing and examining a panel of patients rather than being limited to examining a different patient every week. Patients and family members will also be asked to provide feedback to the students on the latter’s communication, interviewing, and physical examination skills, using modified clinical encounter cards.

Every attempt will be made to coordinate the clinical skills and health care setting learning in ICE with the curricular content being addressed in the concurrent TOPIC sessions.

Students will also have the opportunity to interact with other members of the health care team, to gain an appreciation of their roles in the care of patients, and also to learn from them in support of learning objectives in the MD program.

In second year students will be offered opportunities for career exploration within a variety of specialties. Previously these opportunities have been offered outside the core curriculum.

Core tutors will provide the majority of instruction in clinical skills, in a manner similar to the existing ASCM-1 program.

More specialized clinical skills learning opportunities will also continue to be provided in a manner similar to that currently used for ASCM-2.
Foundations Curriculum

**Toronto Online Patient-centred Integrated Curriculum (TOPIC)**

1. **Integration as the overarching principle**
   The “TOPIC” program constitutes the core content delivery vehicle for the revised preclerkship. The fundamental organizing principle is to provide an *integrated* exposure to the breadth of issues relevant to a deep understanding of clinical medicine.

2. **A two-year spiral curriculum based on a series of online patient-based modules**
   constituting a “virtual clinic”, which permits four intersecting organizational frameworks:
   a. sequential coverage of body systems;
   b. the person as an interconnected organism traversing gene to global world;
   c. developmental stages of the life cycle; and
   d. longitudinal themes, including but not limited to the CanMEDS roles.

3. **Organization of individual weeks within the course**
   We have heard from our course directors that to properly integrate the program along the lines described above requires a reconsideration of our existing course structure. We propose the following delivery model:
   a. **Online case-based modules**
      Each week will have as its core feature an online case-based module drawn from the ‘virtual clinic’. This module will be carefully designed to provide the opportunity of integrated learning across all relevant domains, from the individual patient to the community, and to fit into a scheme that captures the full spectrum of systems and stages of the life cycle. These modules will support the achievement of the same curricular objectives as we have presently. Each module will include the following elements:
      - A set of specific learning objectives
      - A vivid clinical case with a description of the virtual patient’s demographics, presenting symptoms, physical findings, and relevant diagnostic data. Where appropriate, images and videos of physical findings, recordings of auscultatory findings, and images of radiographs and other data will be provided.
      - Questions to guide student learning about the case and related topics will be provided.
      - Links to appropriate resources
      - Self-test questions will also be provided to ensure students have achieved sufficiently deep learning that they are able to apply the concepts learned with respect to the case in question to other related cases.

b. **Resources to assist students with learning about issues in the modules**
   We will continue to use our many excellent existing teaching methods – lectures, labs, community visits, expert seminars, small group learning – to
support student’s learning of the relevant biomedical science, applied social science, and relevant humanities, *in the context of each week’s case*. The central cognitive scaffolding for student learning in TOPIC will be: *concepts, patients, and communities*, with key concepts from the basic and biomedical sciences, social sciences and humanities, embedded in patient cases that illustrate a diverse group of communities. This scaffolding will allow application (and re-application) of these concepts in different patient and environmental contexts.

c. **Small-group facilitated case-based learning sessions**

Students will spend a 2 ½ hour session each week with their small group, without their tutors, reviewing the preparatory work done on the online virtual patient-based modules with reference to the patient-centred narrative provided, and working together to summarize their learning and to identify knowledge and/or skill gaps that need to be rectified. They will then spend a second 2 ½ hour session later in the week meeting with their faculty tutors. In these sessions, they will identify additional objectives and educational opportunities relevant to understanding the concepts in the patient narrative, and integrating the knowledge they have acquired from different sources into a coherent understanding of the patient and all of the learning objectives for the week.

d. **Expert-led problem-solving seminars**

In addition, using a flipped classroom model, subject experts will provide weekly case-based problem-solving seminars for the relevant disciplines to assure students have the opportunity to practice and demonstrate successful transfer of learning to applied situations.

e. **Lectures**

To start the week, a half-day of lectures will be given to set the stage for the week, by providing an overview of the key content areas.

4. **Teaching of Community, Population, and Public Health**

This will take place via both sessions in ICE and also integrated throughout the TOPIC cases and supplementary learning opportunities.

5. **Student-directed time**

A major goal of the revised preclerkship program is to augment substantially the amount of available student-directed time. At this stage of planning, it is anticipated that students will be occupied for the following amounts of time in scheduled, required settings (with total hours per week in parentheses):

a. ICE sessions – one day per week (7 hours)

b. TOPIC small group sessions – two 2 ½ hour sessions each week (5 hours)

c. Portfolio (see below) – one 2 ½ hour session every two weeks (1.25 hours)

d. HSR – one half-day assigned every two weeks, with at least half of these free for students to work on online modules (described below; 1 hour)
e. Seminar, Lab, Lectures – two half days every week (6 hours)

f. Longitudinal theme sessions (e.g. interprofessional education events; manager/leader teaching; ethics seminars; longitudinal experiences in family medicine and other clinical disciplines) for one-half day every two weeks (1.5 hours).

This adds up to an average of 22 hours per week scheduled time, leaving 14 hours unscheduled each week. In contrast, the current preclerkship program has 24 hours scheduled per week in first year and 23 in second year.

This will therefore leave approximately 40% of the time unscheduled. However, students will need to complete a variety of activities in this relatively unscheduled time, related to their learning around each module. The goal is for students to have flexibility in how they use their time so that they maximize their chances to meet their individualized learning needs. This includes in particular the following opportunities:

a. Career exploration
b. Collaborative program activities for MD/PhD and MD-MPH students
c. Students who require extra work or remediation
Portfolio
The third major element of this proposed new approach to the preclerkship program involves an expansion of the portfolio program. This has been successfully deployed into the clerkship for the last four years, and in 2013-14 has been introduced in a limited manner into the first year program, and for 2014-15 into second year as well. We propose a further substantial expansion of the portfolio course so that in addition to its current role in encouraging reflective practice for our students, the portfolio meetings will also serve as a tool and an educational space for guided self-assessment.

Students will meet in groups of 6 – 8 with two faculty academy scholars approximately once every two weeks for approximately two and a half hours. Students will collect multiple assessment tools (OSCE scores, results of progress tests, of written examinations, of bell ringer assessments, encounter cards, reflective papers etc.). They will review these results with peers, and their Academy scholars in order for students to decide on their ongoing individualized learning needs. The resulting education plans will be designed to meet standardized definitions of competence established by UME, as well as the students’ own career aspirations.

The students’ portfolios and proposed education plans will be reviewed at the end of each unit by a different portfolio Academy Scholar. Portfolios that do not meet the program standards for competence set by the Student Evaluation Committee will be reviewed by a Students in Difficulty sub-committee and a remedial learning plan provided for the student. On completion of the remedial learning plan, the student’s readiness for the next stage of training will be reviewed by the Students in Difficulty Committee. Students who continue to not meet the program standards for competence will be presented to the Board of Examiners where decisions regarding their promotion will be made.

Health Science Research Course
All UME students will be expected to participate in the Health Science Research course, which is being launched as part of the existing curriculum in 2015-16 for the second year class. As part of their experience they will learn about posing a research question, research methods, research ethics, critical appraisal, evidence-based medicine and knowledge translation skills, critical to the role of an informed clinician. The learning is via both online modules (for core topics in the design and implementation of research work as well as its interpretation), and small-group, faculty-led tutorial sessions approximately once per month (for work on student practicum exercises).

Students may also choose to participate in research projects within the humanities, social sciences, basic or applied life sciences as long as they are in good academic standing. Support to identify an appropriate supervisor and research project will be provided to those students by the HSR Course Committee and the CREMS program director.
Principles Guiding the Creation of Content Framework

1. **Respect for existing curricular content.** While it is acknowledged that the curriculum now is in need of revision, the substantial amount of quality biomedical content and organization in the existing curriculum needs to be considered prior to introducing any new changes related to the CanMEDS Medical Expert Role.

2. **Spiral model.** In keeping with a “spiral” model, all broad content areas should be encountered at least twice during the preclerkship.

3. **Flexible and adaptable framework.** The curricular organizational framework must be sufficiently flexible and adaptable that new subject areas can be introduced and obsolete areas discarded with relative ease.

4. **The medical humanities and social sciences provide relevant and important contributions alongside the traditional biomedical sciences.** Students will be introduced in Unit One to basic social science principles and to the educational contributions of the medical humanities, as formal preparation for success in the new curriculum.

5. **Multiple complementary organizing frameworks.** There is no single metaphor or organizing principle that straightforwardly captures all of the content that medical students need to learn in the preclinical phase of their education. Four different organizing frameworks are proposed, with students expected to demonstrate competence in moving between different perspectives as required for thorough understanding. The details of each of these frameworks is found in Appendices 1-4:
   a. **A body systems-based approach** captures the majority of the biomedical content, but by no means all. (Appendix 1)
   b. A perspective that looks at the **level of organization within the person and surrounding the person** is also valuable. The levels progress from the gene and chromosome right up to the family, society and the globalized world. (Appendix 2)
   c. A perspective that looks at the **person during their development** is also useful. This includes the life stages listed in Appendix 3.
   d. A perspective that incorporates a variety of **thematic elements that are applicable to all systems and life cycle stages** is also of value. The major thematic topics to be considered are grouped into the most relevant CanMEDS roles, and are listed in Appendix 4.

6. **Both “basic science” and clinical elements are relevant to the body systems.** The “coverage” of a body system includes both “basic science” and “clinical” elements. These are listed in Appendix 5. Basic science content that is
presented should be chosen because of its explicit clinical relevance, and this relevance should be demonstrated in the course of the presentation.

7. **Specification of prerequisite basic and social science knowledge, and familiarity with the medical humanities among students entering the Foundations Curriculum.** It will be essential to be precise about the extent of basic science knowledge (and other preparatory Unit One knowledge) available to students as they begin the core part of the Foundations Curriculum, whether this has been acquired by students prior to entry into medical school or imparted to them during the “Introduction to Medicine” in Unit One of the program at the start of the first year. This knowledge will allow us to give students greater flexibility to focus on areas of relative deficit in more depth, and to move through areas where they have demonstrated mastery more quickly.

8. **Need to connect with existing competency frameworks.** The connection of the content to several constructs needs to be established, as follows:
   a. To the UME Program Competencies and CanMEDS roles.
   b. To the MCC clinical presentations and other objectives.
Foundations Curriculum

Content Framework

The outline below presents a draft of how the content of the revised preclerkship, i.e. The Foundations Curriculum, is expected to be arranged. This would apply to all elements of the integrated curriculum (i.e., TOPIC, ICE, Portfolio and HSR), but would especially govern the delivery of TOPIC. In order to present a realistic model, an attempt has been made to assign defined numbers of weeks to four sequential units, and to elements within those units. This proposed distribution of weeks is intended to stimulate discussion and debate, and is subject to revision. The four units are referred to as follows:

Unit 1 – Introduction to Medicine
Unit 2 – Concepts, Patients and Communities
Unit 3 – Life Cycle
Unit 4 – Complexity and Chronicity

A diagram of the proposed timetable is as follows:
Unit 1: Introduction to Medicine (11 weeks in Year 1)

Unit 1 is designed to provide instruction in the major biomedical or “basic” sciences, together with an introduction to the most relevant topics in the social and cognitive sciences, in order to prepare students for their subsequent study of the diagnosis and management of illness and disease.

The organizing framework for a substantial fraction of Unit 1 is expected to be the “Context of Health and Disease from Genes to Society” construct. The emphasis at each level of the framework is to develop an understanding of the normal structure and function of that level, and a beginning of an understanding of how these can be affected by disease and social determinants of health.

The elements of the “Genes to Society” framework together with a breakdown in weeks assigned to each element is roughly expected to be as follows:

<table>
<thead>
<tr>
<th>Element of framework</th>
<th>Number of weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genes, chromosomes</td>
<td>2</td>
</tr>
<tr>
<td>Cell and tissue</td>
<td>2</td>
</tr>
<tr>
<td>Whole body homeostasis</td>
<td>1</td>
</tr>
<tr>
<td>Before birth</td>
<td>1</td>
</tr>
<tr>
<td>Neonate and infant</td>
<td>1</td>
</tr>
<tr>
<td>Child and adolescent</td>
<td>1</td>
</tr>
<tr>
<td>Older person</td>
<td>1</td>
</tr>
<tr>
<td>Family and community</td>
<td>1</td>
</tr>
<tr>
<td>Society as a whole</td>
<td>1</td>
</tr>
</tbody>
</table>

Unit 1 includes basic instruction in the following biomedical disciplines:
- Gross anatomy (regional) – a major “stream” running across all 11 weeks
- Histology (mainly in the cell and tissue section)
- Embryology (mainly in the “before birth” section)
- Genetics (mainly in the genes and chromosomes section)
- Cell biology (mainly in the cell and tissue section)
- Biochemistry (mainly in the genes & chromosomes and cell & tissue sections)
- Pharmacology (mainly in the whole body homeostasis section)
- Introduction to pathology (a major stream running across all 11 weeks, and answering the question throughout – “why does this matter to the future physician?”)

Furthermore, Unit 1 also addresses a variety of other disciplines. Students arrive in medical school from a wide variety of backgrounds. They are generally (though not universally) well-prepared for many of the biomedical disciplines, but less well-prepared for many of the other crucial aspects of MD education. Therefore, Unit 1 addresses how:
- cognitive science can assist in the clinical reasoning process
• social psychology and an understanding of group dynamics can assist in improving interactions with patients and other members of the health care team
• epistemology can assist one in learning the breadth of medical knowledge required for effective practice
• affective regulation can assist one to stay emotionally healthy
• a focus on wellness is essential to stay generally healthy
Foundations Curriculum

**Unit 2: Concepts, Patients, and Communities (25 weeks in Year 1)**

The TOPIC system-based program in Unit 2 will address the following aspects of each system:
- Systemic anatomy, both gross and microscopic
- Embryologic development
- Physiology
- Biochemistry
- Diseases affecting that system
- Clinical presentations which suggest that system is affected
- Therapeutic options available for diseases affecting that system

Unit 2 also covers – within each of TOPIC, ICE, and Portfolio – the longitudinal themes listed in Appendix 1.

The draft distribution of weeks below reflects (approximately) the current coverage of the systems in the existing two-year preclerkship, as per Appendix 2.

**Unit 2 in Year 1 (25 weeks)**

<table>
<thead>
<tr>
<th>Section (Number of Weeks)</th>
<th>System</th>
<th>Number of Weeks for System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host Defense (5)</td>
<td>Microbiology &amp; Immunology</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Skin</td>
<td>1</td>
</tr>
<tr>
<td>Oxygen Delivery (9)</td>
<td>Cardiovascular</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Respiratory</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Blood</td>
<td>2</td>
</tr>
<tr>
<td>Metabolism and Homeostasis (11)</td>
<td>Gastrointestinal and Liver</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Endocrine and Metabolic</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Renal and Urinary Tract</td>
<td>3</td>
</tr>
</tbody>
</table>

**Unit 2 in Year 2 (16 weeks)**

<table>
<thead>
<tr>
<th>Section (Number of Weeks)</th>
<th>System</th>
<th>Number of Weeks for System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movement, Sensation and Behaviour (14)</td>
<td>Musculoskeletal</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Neurologic</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Special Senses (Eye and ENT)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Psychiatric</td>
<td>4</td>
</tr>
</tbody>
</table>
Unit 3: Life Cycle (9 weeks)

The draft distribution of weeks below reflects (approximately) the current coverage of the systems and life cycle stages in the existing two-year preclerkship, as per appendix 1.

This phase focuses on deepening students' ability to integrate what they have learned to this point in their medical education into a humanist, empathic, and sophisticated approach, which employs multiple lenses, to patient care at different points in the life cycle. Those lenses include but are not limited to: the impact of development and aging on patients' biological and psychological selves; patients' changing roles and rights in society at different ages and developmental stages; patients' changing healthcare needs; the impact of sociocultural contexts on both patients and healthcare professionals; the epidemiology of healthcare trends, and, the impact of these on healthcare economics and resource allocation.

<table>
<thead>
<tr>
<th>Life cycle stage</th>
<th>Number of weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reproductive and women's health</td>
<td>4</td>
</tr>
<tr>
<td>Life stages (infant, child, adolescent, elderly)</td>
<td>4</td>
</tr>
<tr>
<td>Palliative care</td>
<td>1</td>
</tr>
</tbody>
</table>
Occurring at the conclusion of the two-year Foundations curriculum, the final Unit, Complexity and Chronicity, will have three main foci:

1. Further integration of different knowledge bases and skills in the context of undifferentiated, complex and chronic virtual patient presentations that require students to demonstrate competence in all of the CanMEDS roles.

   Examples might include:
   - Widespread neoplastic disease
   - Obesity, metabolic syndrome, diabetes mellitus
   - Congestive heart failure
   - End-stage renal disease
   - Chronic fatigue syndrome and fibromyalgia
   - Chronic pain (including inter-faculty pain curriculum)
   - Psychosomatic disorders
   - Multisystem disease (e.g., vasculitis, sarcoidosis, pituitary failure)
   - Multi-organ trauma

   Development of prominent themes would include:
   - The patient experience
   - Roles of the physician and of other health-care practitioners
   - Opportunities and skills for advocacy
   - Revisiting of epistemology and cognitive science applied to practice

   These case exercises and related activities will permit a review of disorders with emphasis on their management affecting each of the systems to provide a second “turn” to the spiral curriculum. There will be very careful mapping of systems to the case-based content to ensure that disorders affecting each of the body systems are addressed, while emphasizing that diseases often affect multiple systems.

2. Transferring academic knowledge to workplace experiences. Students will have extended clinical experiences that will take place in generalist settings such as family medicine and internal medicine, and which occur in tandem with their academic curriculum. This will address preparing the senior Foundations student for their role as a clinical clerk.

3. Learning how to function as a team member with increased responsibility.

   An example of a Unit 4 activity would be students working together in their TOPIC groups to identify the evidence base and health care costs associated with a patient they are currently following in their clinical setting, and to present their findings, together with proposed resulting modifications to the patient’s treatment plan to their clinical team.
STUDENT ASSESSMENT

Recent advances in the education sciences and in medical education have pointed to novel ways of utilizing assessment beyond traditional practice. Evidence in psychology and increasingly in application to medical education suggests that assessments can be an opportunity to support learning. For example, the phenomenon of test-enhanced learning suggests that testing can actually teach students concepts directly in comparison to simply studying material or other forms of review\textsuperscript{4,5}. Assessment is also an opportunity to generate feedback and change learner’s self-regulation of their study habits\textsuperscript{6}.

Moreover, lack of alignment between curricular goals and assessment practice is a serious obstacle in achieving the higher level outcomes identified as priorities for UME.

Ultimately, assessment is an opportunity for conversation and reflection between students, their teachers, and the wider curriculum. The aim of the assessment program is to create these conversations by providing multiple, robust, reliable, and comprehensive pieces of information that spur reflection and growth.

As we develop the new preclerkship Foundations curriculum, we have also conceptualized an assessment system that promotes the following principles:

1. Maximizing student engagement and wellness\textsuperscript{7}.
2. Assessments that allow for testing of integration of concepts, knowledge and skills.
3. More individualized formative feedback to students to drive student learning.
6. A systematic and centralized approach.
7. The use of individualized professional judgment by faculty while addressing subjectivity by the use of thorough sampling and procedural bias reduction methods\textsuperscript{8}.
8. Earlier intervention to identify and support students in difficulty.
9. Flexibility within the curriculum to allow students to address personal learning needs.

\textsuperscript{5} Larsen DP, Butler AC, Roediger HL 3rd. Repeated testing improves long-term retention relative to repeated study: a randomized, controlled trial. Medical Education 2009;43:1174-81.
\textsuperscript{7} Slavin, S. et al. "Medical Student Mental Health 3.0: Improving Student Health Through Curricular Changes" Academic Medicine, vol. 89, no 4, April 2014, pp 573-577.
\textsuperscript{8} Cees van der Vleuten, The Hodges Education Scholarship International Symposium, March 2014 – a good reference on this is the Question of Competence.
**MODALITIES**

There will be both ongoing mainly formative assessments and end-of-unit and end-of-year summative assessments.

Students will collect in an assessment dossier multiple forms of frequently administered assessments as part of a personalized progress testing procedure: OSCEs, written multiple-choice question-based examinations, online pre- and post-learning formative tests, clinical application exercises, encounter cards, and reflective papers. These dossiers will be aligned with competencies and program objectives. They will review their results with peers and their faculty facilitators, with whom they will have a longitudinal relationship, to generate independent learning plans. These will be designed to ensure competency milestones are being achieved, and remedial plans established for students not meeting the standards.

Summative assessments, administered at the end of each unit and the end of each year, will include written tests, and at the end of the year students will complete a summative OSCE.


PROGRAM EVALUATION

The full curriculum will be carefully evaluated via appraising the quality of the activities in and outcomes of the revised program. The review procedure will be managed by a collaboration of the Undergraduate Medical Education Curriculum Evaluation Committee, the Preclerkship Committee, and education scientists from the Wilson Centre for Research in Education, and they will report jointly to UMECC.

The activities in the new program will be evaluated by our existing course evaluation procedures (which have extensive student representation). We will also administer additional surveys, and conduct interviews and focus groups with students and with teachers, about the perceived quality of all elements of the program, including online materials, small- and large-group teaching sessions, placements at community sites, and the success of achieving curricular objectives.

Outcome measures will be carefully scrutinized using results of objective assessments (examinations, clinical skills assessments including OSCEs, assessments of integration and application of basic science knowledge to clinical scenarios, and written submissions). Further sources of data are our preparedness-for-clerkship survey administered to students and to clerkship supervisors, for which comparative baseline data are available, as well as relevant information from the Canadian graduation questionnaire. This comprehensive approach to evaluation will permit timely and iterative adjustments to program delivery as needed to ensure the highest quality experience for students and teachers.
RESOURCES

Teachers
The current UME program has a large cadré of dedicated and effective teachers. It is the intent of this newly proposed preclerkship program to engage as many of these teachers as possible in the revamped program. The following are major considerations.

1. ICE program
It is expected that many of the core tutors in the ICE program will be those who have provided teaching during ASCM. This will include specialty tutors, who will continue to be invited to provide instruction on specialized topics including pediatrics, psychiatry, geriatrics and specialized surgical topics.

The venues for ICE will need to be carefully recruited. The associated multidisciplinary team members who are expected to provide teaching will need to be carefully recruited.

2. Teachers who support TOPIC
   a. Small group core sessions
      It is expected that many of these will be led by those who have served as PBL tutors.

   b. Resource people
      A wide variety of individuals will be called upon to provide assistance to students with specific learning needs. It is anticipated that these resource people will include many of the individuals who have served in various functions in the UME program, together with others who have had less or even no exposure.

   c. Expert teachers
      For the teaching of case-based application exercises, a variety of subject experts will be recruited, including those who have formerly taught lectures and seminars in the existing program.

   d. Development of modules
      It is expected that the modules will be developed by committees of individuals consisting of the following:
      • Course directors
      • Subject leaders from within courses including unit heads in first year block courses and week managers from MMMD
      • Lecturers
      • Other interested teachers
3. **Portfolio group leaders**
   It is expected that many of the existing portfolio group leaders will be recruited to take part in the expanded portfolio program.

4. **Faculty Development**
   A newly created Office of Faculty Development will provide the required support for the teachers in the program, who will be taking on teaching roles in case-based learning and portfolio supervision that will be new for many of them.

5. **Number of teachers and teacher hours**
   Modeling of the total teacher hours with the revised preclerkship program suggests that there will be substantially fewer lectures, and some increase in small group hours, numbering approximately 3000 more hours overall, compared to the existing curriculum. The distribution of the required teaching time will be carefully worked out in collaboration with course leaders and Academy Directors.

**Educational space**
A careful space analysis has indicated that no new teaching space is needed to accommodate the didactic sessions in the renewed curriculum.

**Library resources**
The current library resources are more than adequate for the preclerkship program. No new library resources will be needed to support the renewed program.

**Student assessment**
The student assessment approach is described above. The resources for the novel methodologies are available via the Office of Evaluations and the Wilson Centre for Research in Education, supported by the Discovery Commons as needed for online testing materials.

**Information technology**
The Discovery Commons of the Undergraduate Medical Education program is able to provide the required support for the e-modules and other e-learning supports.

**Financial resources**
The major costs associated with this renewal are expenditures for new community-based faculty, new administrative hires, and IT support for hosting of e-modules and other resources. A detailed cost analysis has been completed, and financial resources for these new expenditures have been made available to the UME budget.

**Clinical facilities**
Some new clinical placements will be needed to for students’ ICE placements. An appraisal of available sites has indicated that there are sufficient such placements available, both at sites currently used in our FMLE community health courses, and also at our 33 affiliated teaching sites (24 hospitals, including nine full affiliates, four
associated sites, and 11 community affiliates, as well as nine non-hospital clinical sites).

**Patients (real and standardized)**
The program already makes substantial use of standardized patients and this will not need to increase. Real patients will continue to be used as currently for clinical skills teaching, and additional real patients will be identified via the ICE clinical placements.

**Academic counseling services**
Our office of Health Professions Student Awards is well equipped with an Associate Dean, and also a recently recruited Academic Coach, to provide academic counseling as needed. In addition we have a well-established additional program (“SCORE”) to support students who require additional coaching in clinical skills.

**Career counseling services**
A very substantial program of career counseling for all students, including in particular preclerkship students, is already in place via the Office of Health Professions Student Affairs. This includes one-on-one appointments offered to all students in each year that they are in the program. It is not expected that the proposed curricular change will augment the demand for career counseling.
IMPACT ON STUDENTS

Students enrolled in the medical school currently and students entering in 2015/16 will be able to complete their degree requirements under the current curriculum. Students applying to enter the medical school in 2016/17 will be informed of the revisions to the preclerkship curriculum in all admissions communications, and will enter the new preclerkship curriculum. Any existing students enrolled prior to the introduction of the new curriculum who interrupt or modify their program of studies for any reason and return to the new curriculum, will receive applicable supports and resources to complete their course of study.

Current students enrolled in the UME program have been consulted through monthly meetings with the student leadership, class councils, and question and entire class question answer sessions with the preclerkship leadership. Students have also been active participants in the preclerkship working groups that have developed the various curricular streams. Students also sit on the UME Curriculum Committee where the proposal has been reviewed in depth and approved. Student feedback on the first two phases of implementation will be gathered by the usual program evaluation tools, with the addition of invited participation to provide more in depth feedback in focus groups.
POTENTIAL RISKS REQUIRING ONGOING CONSIDERATION

It is clear that major curriculum change is never easy, and the proposed revisions described above are quite sweeping and therefore inevitably carry with them certain risks. We believe that by identifying up front some of the more likely risks, we can monitor for their occurrence and address them more proactively.

The following are some of the more likely challenges to watch for and attempt to mitigate:

1. Students do not respond to the abstract teaching during Unit One.
2. Students end up deficient in their fundamental biomedical knowledge owing to a lack of the systematic and concentrated exposure to gross anatomy, histology and embryology that is currently delivered at the start of the first year program.
3. We cannot find sufficient locales for the ICE program.
4. The community health teaching is lost in the absence of an identified course.
5. The pharmacology teaching is lost in the absence of an identified course.
6. Other themes may also get lost.
7. The online modules are not sufficiently comprehensive and/or user-friendly to achieve the substantial goals attached to them.
8. Students have difficulty focusing their learning, as they will lack the “boundaries” on their required learning that are currently provided by lectures.
9. The burden of change in the UME program as a whole (MAM, LIC pilot, recent revamping of clerkship with introduction of TTR and portfolio) means the system cannot absorb yet more sweeping change.
10. Students get overwhelmed by the sheer volume of available resources.
11. The frequent smaller assessments fail to identify students in difficulty as effectively as is done by the current system of less frequent high stakes summative assessments.
12. Teachers are unwilling to teach outside of their areas of subject expertise, making it difficult to achieve continuity in the TOPIC core sessions.
IMPLEMENTATION STRATEGY

The goal is to introduce the revised Preclerkship program for the 2016-17 academic year, rolling it out to the first year class in that year. (Therefore, the class taking second year of the MD program in 2016-17 will continue with the current curriculum.)

In preparation for a full curriculum renewal in 2016-17 we will implement key aspects of the Foundations Curriculum in both 2014-15 and 2015-16.

In 2014-15 the cardiorespiratory section of the current first year course Structure and Function will be delivered in a case-based format with integration of clinical skills teaching and community, population, and public health (CPPH) teaching with the cases. Students will also be introduced to the educational theory and research supporting integrated learning as a key skill for medical practice.

Similarly in 2015-16, the first part of the second year course Mechanisms, Manifestations, and Management of Disease, which comprises the majority of basic science and clinical teaching in the second year, will be delivered in a case-based format, again with curricular integration of the relevant clinical skills and CPPH teaching. In addition, the Health Science Research (HSR) course will be introduced with tutorials and online modules developed with the goal of maximal integration with the other curricular streams.

Introducing aspects of the Foundations Curriculum prior to a full implementation fulfills two purposes: 1) to provide current students with increasingly essential learning opportunities for integrated learning that are not provided in our existing curriculum; and, 2) to allow us to learn from these initial curriculum initiatives about potential challenges that will need to be addressed for a successful full curriculum renewal.

CONSULTATION PROCESS

The proposed revision of the preclerkship has undergone a lengthy and extensive process of consultation and iterative feedback, and will continue to do so as we evaluate its initial implementation phases in 2014/15 and 2015/16.

Please see Appendix 7-8 for a full description of the working groups, meetings, consultations, committee meetings and presentations, and required approvals related to the proposal that have occurred.
## GOVERNANCE PROCESS

<table>
<thead>
<tr>
<th></th>
<th>LEVELS OF APPROVAL REQUIRED</th>
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<tbody>
<tr>
<td>Faculty Council Education Committee</td>
<td>Pending</td>
</tr>
<tr>
<td>Faculty Council</td>
<td>Pending</td>
</tr>
<tr>
<td>CACMS (Committee on Accreditation of Canadian Medical Schools)</td>
<td>Pending</td>
</tr>
</tbody>
</table>
Appendix 1: Body systems framework

- Respiratory
- Cardiovascular
- Blood
- Gastrointestinal
- Renal and urinary
- Endocrine
- Reproductive
- Host defense (immunologic)
- Dermatologic
- Musculoskeletal
- Neurological (including special senses)
- Psychiatric (Behavioural and personality)
Appendix 2: The levels of organization within and surrounding the person

- The gene and chromosome
- The cell and tissue
- The organ
- The body system
- The person as a whole
- The family
- The community
- Canadian society and the globalized world
Appendix 3: The stages of the life cycle

- The embryo and fetus
- The neonate, infant, child, and adolescent
- The parent
- The adult
- The aging person
- The dying person
Appendix 4: Longitudinal themes addressed in TOPIC

- Medical Expert
  - Community, population and public health
  - Preventive care
  - Nutrition
  - Medical Imaging
  - Therapeutics
  - Pharmacological
  - Surgical
  - Radiation-based

- Collaborator
  - Inter-professional team work
  - Healthcare history
  - Social psychology

- Manager/Leader
  - Patient Safety: cognition, communication, and systems
  - Healthcare economics and resource allocation

- Communicator
  - Clinical skills
  - Therapeutic communication
  - Patient safety

- Health Advocate
  - Care of diverse populations (including but not limited to):
    - People of Aboriginal descent
    - People identifying as LGBTQ
    - Immigrants and refugees
    - Disabled people
    - Poor people
    - Homeless people
    - People from other racially, culturally, religiously and/or ethnically minoritized groups
  - Patient Experiences and Medical Culture

- Scholar
  - Critical appraisal of research
  - Evidence-based medicine
  - Epistemology/Philosophy of Science

- Professional
  - Ethics and professionalism
  - Professional identity formation
  - Cognitive psychology
  - Physician resilience
Appendix 5: Issues addressed during considerations of each of the systems and life-cycle stages in TOPIC

- Anatomy, both gross and microscopic
- Embryologic development
- Physiology
- Biochemistry
- Diseases affecting that system
- Clinical presentations which suggest that system is affected
- Therapeutic options available for diseases affecting that system
## Appendix 6: Coverage of systems and life cycle stages—proposed Foundations Curriculum vs. existing preclerkship

<table>
<thead>
<tr>
<th>System / Life-cycle stage – number of weeks in proposed new Foundations Curriculum</th>
<th>Number of “weeks” in existing preclerkship (2013-14 for STF, otherwise for 2014-15). (This scheme does not count time in STF devoted to gross anatomy, histology or embryology as these do not follow a true systems-based approach.)</th>
</tr>
</thead>
</table>
| Cardiovascular – 4 | STF 1.3  
- Week 14 (0.3)  
- Week 15 (1.0)  
MMMD 2.5  
- Week 32 (Cardiology I)  
- Week 33 (Cardiology II)  
- Week 36 (Cardiac/Vascular surgery 0.5) |
| Respiratory – 3 | STF 2  
- Week 12 (1.0)  
- Week 13 & 14 (0.5 each)  
MMMD 1  
- Week 28 (Respirology) |
| Blood – 2 | STF 1 (parts of week 10 & 11)  
MMMD 1 (week 24 - Hematology) |
| Gastrointestinal and liver - 4 | MNU 2  
- Week 7 (GI)  
- Week 8 (Liver)  
MMMD 3  
- Week 18 (GI I)  
- Week 19 (GI II)  
- Week 20 (GI Surgery) |
| Endocrine and metabolism – 4 | MNU 4  
- Week 1 (0.5 - introduction)  
- Week 2 (1.0 - Endocrine)  
- Week 4 (0.3 – Adrenal)  
- Week 5 (0.2 – Metabolism)  
- Week 6 (1.0 – lipids)  
- Week 9 (1.0 – DM)  
MMMD 1  
- Week 16 (Endocrinology) |
| Renal and urinary tract (i.e. nephrologic and urologic issues) - 3 | MNU 1 (Half of week 4 & half of week 5)  
MMMD 2  
- Week 30 (Urology)  
- Week 31 (Nephrology) |
<table>
<thead>
<tr>
<th>System / Life-cycle stage – and number of weeks in proposed new preclerkship</th>
<th>Number of “weeks” in existing preclerkship (2013-14 for STF, otherwise for 2014-15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immunology and Microbiology – 4</td>
<td>MMMD (5) - Weeks 2,3 (Immunology 1 &amp; 2) - Weeks 4,5,6 (Microbiology 1, 2, &amp;3)</td>
</tr>
<tr>
<td>Skin – 1</td>
<td>MMMD (1) Week 35 (Dermatology)</td>
</tr>
<tr>
<td>Musculoskeletal – 3</td>
<td>STF (0.5) – Week 14 (muscle)</td>
</tr>
<tr>
<td></td>
<td>MMMD (2) Week 25 (Orthopedics) Week 21 (rheumatology)</td>
</tr>
<tr>
<td>Neurologic – 6</td>
<td>BRB (6) Weeks 1,2,3,4,5,7</td>
</tr>
<tr>
<td></td>
<td>MMMD (1) Week 23 (Neurology)</td>
</tr>
<tr>
<td>Special senses (eye and ENT) – 3</td>
<td>BRB (1) – Week 6 (Vision) (0.2) – Weeks 3 &amp; 4 (Hearing, vestibular)</td>
</tr>
<tr>
<td></td>
<td>MMMD (2) - Week 22 – Ophthalmology - Week 29 - Otolaryngology</td>
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<tr>
<td></td>
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</tr>
<tr>
<td>Psychiatric – 4</td>
<td>BRB (1) Week 8 (Psychiatry)</td>
</tr>
<tr>
<td></td>
<td>MMMD (1) Week 15 - Psychiatry (0.3) Parts of: weeks 14 &amp; 34</td>
</tr>
<tr>
<td>Reproductive and women's health – 4</td>
<td>MNU 1 (week 3 = Reproduction)</td>
</tr>
<tr>
<td></td>
<td>MMMD 3 (Week 10 – ObGyn I) (Week 11 – ObGyn II) (Week 17 – ObGyn III)</td>
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<tr>
<td>Life-cycle (infant, child, adolescent, elderly) – 4</td>
<td>MMMD Infant (1) (Week 12 – Normal infant)) Child (1) (Week 13 – Young &amp; Older Child) Adolescent – (1) – Week 14 - Adolescent Elderly – (0.3) (part of end of life week)</td>
</tr>
<tr>
<td>Palliative care – 1</td>
<td>MMMD End of life care (0.7) – Week 34</td>
</tr>
</tbody>
</table>
Appendix 7: Preclerkship curriculum renewal consultations and approvals—September 2013 to December 2014

**Faculty of Medicine Committees**

<table>
<thead>
<tr>
<th>Committee</th>
<th>Date/Details</th>
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<tbody>
<tr>
<td>Faculty Council</td>
<td>February 9, 2015 (projected)</td>
</tr>
<tr>
<td>Faculty Council Education Committee</td>
<td>December 4, 2014 (projected)</td>
</tr>
<tr>
<td>Management Committees of the Dean</td>
<td></td>
</tr>
<tr>
<td>Dean’s Executive</td>
<td>November 5, 2014</td>
</tr>
<tr>
<td>Clinical Chairs Committee</td>
<td>May 14, 2014</td>
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**Operational Committees, UME**

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<th>Committee</th>
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<tbody>
<tr>
<td>UME Executive Committee</td>
<td>February 18, 2014; October 21, 2014; November 18, 2014</td>
</tr>
<tr>
<td>Academy Directors Committee</td>
<td>January 30, 2014 and monthly updates</td>
</tr>
<tr>
<td>UME Software Portfolio Committee</td>
<td>Ongoing updates</td>
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**Curriculum Committees, UME**

<table>
<thead>
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<th>Committee</th>
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<tbody>
<tr>
<td>UME Curriculum Committee</td>
<td>October 15, 2013; October 21, 2014; November 18, 2014; monthly updates</td>
</tr>
<tr>
<td>Preclerkship Committee</td>
<td>September 16, 2013; monthly updates</td>
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</tbody>
</table>

**Course Committees:**

- **ASCM 1** January 8, 2014
- **ASCM 2** January 27, 2014
- **BRB (Course Directors only)** February 28, 2014
- **STF** January 8, 2014
- **FMLE** February 5, 2014
- **MNU** January 21, 2014
- **MMMD** January 29, 2014; October 8, 2014

Clerkship Committee March 25, 2014

**Other Committees and meetings**

<table>
<thead>
<tr>
<th>Committee</th>
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<tbody>
<tr>
<td>Vice-Dean PGME – Meeting</td>
<td>November 29, 2013</td>
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<tr>
<td>MAM Preclerkship Committee</td>
<td>November 14, 2013 and monthly updates</td>
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<tr>
<td>MAM Advisory Council</td>
<td>September 24, 2013</td>
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<tr>
<td>ASCM 1 &amp; 2 Site-Coordinators Committee</td>
<td>January 29, 2014</td>
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<tr>
<td>MMMD Retreat</td>
<td>June 18, 2014</td>
</tr>
<tr>
<td>Director of Evaluations - Meetings</td>
<td>Monthly and ongoing consultation</td>
</tr>
<tr>
<td>Research Scientist, Evaluations</td>
<td>Monthly and ongoing consultation</td>
</tr>
<tr>
<td>Meetings with Chair, Department of Anatomy</td>
<td>Monthly since July 2014</td>
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**Office of Admissions and Student Financial Services Committees, UME**

<table>
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<th>Committee</th>
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<td>Admissions Committee Meeting</td>
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**Meetings with Students and Student Groups**
## Foundations Curriculum

### MedSoc President

<table>
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<tr>
<th>Event</th>
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<td>1T6 Class Council</td>
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<tr>
<td>1T7 Class Council</td>
<td>December 16, 2013</td>
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### Preclerkship student representatives

**Monthly since September 2013**

### Preclerkship class presidents

**Monthly since September 2013**

### UofT Preclerkship Think Tank Meeting

<table>
<thead>
<tr>
<th>Meeting #</th>
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<tr>
<td>#1</td>
<td>September 20, 2013</td>
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<tr>
<td>#2</td>
<td>February 3, 2014</td>
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<tr>
<td>#3</td>
<td>September 9, 2014</td>
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### Departmental Meetings

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<tr>
<td>Department of Laboratory Medicine and Pathology</td>
<td>June 17, 2014</td>
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<tr>
<td>Child &amp; Adolescent Psychiatry UME Retreat</td>
<td>April 7, 2014</td>
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<tr>
<td>Department of Medicine</td>
<td>June 17, 2014</td>
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### Extra-departmental Units

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<th>Unit</th>
<th>Notes</th>
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<td>Wilson Centre</td>
<td>Ongoing consultations since September 20, 2013</td>
</tr>
<tr>
<td>Centre for Faculty Development</td>
<td>Ongoing consultations since September 20, 2013</td>
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### Appendix 8: Preclerkship curriculum working groups—List of meetings during the period November 2013 to November 2014

<table>
<thead>
<tr>
<th>Working Group</th>
<th>Date</th>
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<tr>
<td>TOPIC</td>
<td>November 18, 2013</td>
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<td>January 15, 2014</td>
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<td>TOPIC</td>
<td>February 19, 2014</td>
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<tr>
<td>TOPIC</td>
<td>March 19, 2014</td>
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<tr>
<td>TOPIC</td>
<td>May 21, 2014</td>
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<td>TOPIC</td>
<td>August 13, 2014</td>
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<td>TOPIC</td>
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<tr>
<td>Integrated Clinical Experience</td>
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<td>March 24, 2014</td>
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<td>Integrated Clinical Experience</td>
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<td>Integrated Clinical Experience</td>
<td>June 25, 2014</td>
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<td>Integrated Clinical Experience</td>
<td>August 13, 2014</td>
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<td>Integrated Clinical Experience</td>
<td>October 15, 2014</td>
</tr>
<tr>
<td>Integrated Clinical Experience</td>
<td>November 19, 2014</td>
</tr>
<tr>
<td>Portfolio and Assessment</td>
<td>November 11, 2013</td>
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<td>Portfolio and Assessment</td>
<td>January 15, 2014</td>
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<tr>
<td>Portfolio and Assessment</td>
<td>March 3, 2014</td>
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<td>Portfolio and Assessment</td>
<td>May 16, 2014</td>
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<td>Portfolio and Assessment</td>
<td>July 4, 2014</td>
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<tr>
<td>Portfolio and Assessment</td>
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