UGME Curriculum Renewal 2022

Report | Phase II
Society, the Individual and Medicine

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University of Ottawa, Faculty of Medicine
Undergraduate Medical Education

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Part 1: Introduction

The SIM/CSL phase 2 longitudinal working group was tasked with developing an integrated SIM curriculum across all 4 years of the MD Program.
The mandate of this working group was to:

- Design a longitudinal integrated SIM curriculum over the 4 years of the MD Program including a description of the:
  - course content that will be taught in each year of the MD Program;
  - educational design strategies required to effectively teach the course content; and
  - assessment strategies required to assess the curriculum's impact on student achievement of curriculum's objectives.
- Redesign the Community Service-Learning requirements to address the recommendations proposed in the Phase 1 curriculum renewal Social Accountability working group report.
- Propose specific recommendations for how the SIM curriculum can be effectively integrated within the MD Program.

MANDATE

SIM (Society, the Individual and Medicine)

Medical schools are mandated to train doctors who can deliver the best quality care, but also promote the health of all people in a way that is sustainable and socially accountable. Students must therefore gain a broad understanding of health needs in a diverse society, the organization of Canadian health services, effective approaches to prevention, and methods to assess the effectiveness of care. The SIM curriculum is organized into four themes: **1.** Population health, Public Health, and Preventive Medicine; **2.** Health Care system; **3.** Research methods, Epidemiology, and Evidence-based Medicine; **4.** Humanities and psychosocial aspects of health. (Appendix A: SIM Themes and Sub-themes)

SIM runs through the first two (pre-clerkship) years of the curriculum with a two-hour session each week, either a lecture, a panel discussion, or small group workshop. There are four additional sessions during the third-year clerkship rotations. Attendance at the SIM sessions is mandatory.

As SIM is a massive course with four distinct threads, the SIM working group elected to concentrate on three of the threads (1. Population health, public health, and preventive medicine; 2. Health care system and 3. Research methods, Epidemiology, and Evidence-based Medicine). The fourth theme, Humanities and Psychosocial aspects of health, was partially covered by the Ethics Working Group, and will be addressed in greater detail during the next phase of curriculum redesign. Community Service-Learning recommendations from phase 1, which were comprehensive, will also be addressed in greater depth during the next phase of curriculum renewal.

"The vision for a uOttawa medical graduate" guided our work:

"Graduates of the MD Program at the University of Ottawa are empathic, caring, resilient physicians, who partner with patients, families, caregivers and interprofessional team members in providing and advocating for evidence-informed, equitable, and culturally safe health care."

Several aspects of the vision statement align with SIM themes:

1. "empathic, caring, and resilient physicians" – Professionalism subtheme, patient safety subtheme, Humanities, and psychosocial aspects of health theme
2. "partner with patients, families, caregivers" Professionalism subtheme, patient experience of chronic disease subtheme, Humanities, and psychosocial aspects of health theme
3. "provide and advocate for evidence-informed health care" – Research Methods, Epidemiology, and Evidence-based medicine theme, advocacy competency is spread throughout many Sim themes and subthemes. Health Care System theme. Population Health, Public Health and Preventive Medicine (PH, PH, and PM) theme.
4. "Provide and advocate for…equitable health care" PH, PH, and PM theme, Health Care system theme, Humanities, and psychosocial aspects of health theme
5. "Provide and advocate for …culturally safe health care" (PH, PH, and PM theme, Humanities, and psychosocial aspects of health theme)

The working group met monthly from December 2021 to May 2022. Group meetings revolved around a SIM theme or subtheme. The approach to each theme was slightly different, based on the knowledge and areas of interest of the group members. For certain themes (PH, PH and PM) external content experts were invited to present their analysis of the current curriculum. For other themes (Equity in health) external guests were invited to be part of the group discussions. For the Health Care System theme, a separate meeting was convened with experts in this field

from the School of Epidemiology and Public Health. Members of the WG with specific interests were invited to prepare short briefs or presentations for the group, or to provide additional materials. The WG had the opportunity to consider and discuss all these external inputs. We also commissioned a narrative literature review about pedagogical strategies for Public and Population Health, done by a Community Service-Learning student, and held a focus group of pre-clerkship students.

Part 2: Curriculum Purpose and goal

General principles:

"Everything done in SIM should be logically connected to (rest of the) medical curriculum"

"Considering where intersectionality occurs within the SIM curriculum and other areas will be important"

The goal of the SIM course is to prepare physicians to appreciate the underlying social determinants of the illnesses that their patients bring to them. Unless the intersectionality of a patient's circumstances, with their personal health needs and goals, in the context of the current culture of the health system are considered and addressed holistically, establishing a therapeutic relationship may be unsuccessful and medical treatments can be ineffective.

The SIM course aims to develop awareness of the psychological, social, economic, and cultural challenges that many patients face, and aims to equip students to incorporate this awareness into their practice.

The course also covers population health and seeks to make students aware of their responsibility for improving the health of the broader community they serve, as well as protecting the ecosystems on which all of us depend.

Through the SIM course

1. Students will learn to respect and provide culturally humble, safe, equitable care to the diversity of all people.
2. Students will understand the concept of population health and the structure and function of the public health system in Canada.
3. Students will be able to define and use concepts of prevention, health promotion, safety, and risk management in their daily practice.
4. Students will learn to analyze, provide, and advocate for scientifically based and where possible evidence-informed health care; when there are gaps in evidence, students will consider how they can use their position to advocate for inclusion.
5. Students will discover the importance of working in partnership with the diversity of patients, families, communities, and inter-professional team members to deliver health care

6. Students will recognize that medicine is a profession in constant historical evolution and will learn to practise in a way that incorporates legal, economic, and ethical considerations.
7. Students will discuss and analyze the structure and functioning of the Canadian health care system and compare it with other health care systems. They will be able to suggest and advocate for changes to improve individual and population health.
8. Students will recognize the impact of colonialism, systemic racism, heteronormativity and cisnormativity and discrimination on the evolution and interpretation of the history of medicine as well as on the generation of evidence, availability of data, and delivery of health care to diverse populations.

1. Overarching recommendations

1.1. Integration

Integration is considered a key goal of medical education in the 21st century. (Wijnen-Meijer et al., 2020)

There are two main types of integration:

Horizontal Integration:

"Horizontal integration in a curriculum means that what was once taught in parallel, sequential modules or subjects is taught together in a single module or subject" (Hays, 2013)

Vertical Integration:

"An educational approach that fosters a gradual increase of learner participation in the professional community through a stepwise increase of knowledge-based engagement in practice with graduated responsibilities in patient care" (Wijnen-Meijer et al., 2020)

In considering the concept of integration, the SIM Working Group determined that there are three levels of integration to achieve in curricular renewal of SIM: 1. Integration of SIM content across the SIM curriculum (horizontal within SIM); 2. Integration of SIM content with basic and clinical sciences (horizontal throughout the curriculum); 3. Vertical integration of SIM across all four years of medical school.

Recommendations:

1.1.1. Integration of the SIM themes:

SIM was divided into four themes for convenience, not to indicate that the themes stand alone. Many larger ideas unite the SIM themes. For example, the admonition to "do no harm" can lead to discussions of assessing causation or harm from an epidemiological or evidentiary perspective, shared decision-making, interacting with diverse patients, families and communities in ways that are culturally safe, understanding health systems and policies that are affordable and safe (or harmful) for diverse patients and providers, and assessing the potentially negative population health impacts of policies that are based on the average person.

SIM itself requires better integration of its four themes to make these connections evident to students.

We provide suggestions (Curriculum Delivery section below) to improve the integration of SIM themes.

1.1.2. Integration of SIM content with basic and clinical sciences:

Increase the importance of SIM in the eyes of students by integrating SIM content into basic and clinical science sessions and identifying the links between SIM and basic and clinical sciences during SIM sessions.

1.1.3. Vertical integration of SIM content through the four years of medical school.

Increase students' capacity to understand increasingly complex scenarios by extending SIM content across all four years of the curriculum

1.2. Making Curricular Changes

The SIM working group looked at the overall structure and content of the SIM course. We were not able to look at individual learning objectives due to the broad scope of our mandate.

Recommendation:

Once the overarching curriculum content has been determined, make changes to the content of the SIM curriculum in a stepwise manner, using the advice of content experts for each curricular content area. Review existing and develop new learning objectives for individual subthemes with the assistance of the SIM leads to ensure integration across SIM themes.

1.3 Community Service Learning

Recommendation:

Although this working group was intended to address SIM and Community Service Learning (CSL), it had insufficient time to examine the CSL curriculum. The Curriculum Renewal Phase 1 Social Accountability Working Group proposed detailed recommendations to expand and improve the Community Service-Learning program.

1.4 Patient Partnership

Recommendation:

Patient partners are experts in determinants of health through their experiences. Include the patient perspective in all SIM sessions where it is applicable as well as in case-based learning (CBL) sessions and throughout the rest of the curriculum, as proposed by the Curriculum Renewal Phase 1 Patient Partnership Working Group.

1.5 Diversity

Educating physicians to meet the needs of a diverse population can result in improved doctor-patient interactions, health outcomes for diverse groups, and can even reduce disparities between groups (Muntinga et al., 2016). Approaching diversity requires an intersectional approach that acknowledges that diversity issues are legitimate medical knowledge (Muntinga et al., 2016). The SIM Working Group devoted much of their discussion time to this concept.

Recommendations:

1.5.1 Explore and articulate the perspectives of diverse patients, families, relationships, and communities in SIM sessions and throughout the entire curriculum.

1.5.2 Acknowledge the impacts of historical and current systemic racism, colonialism, and discrimination on what and how data is collected, evidence produced, and mistrust engendered in health care delivery to diverse populations.

1.5.3 Incorporate the recommendations of the Curriculum Renewal Phase 2 Working Groups on Antiracism and Indigenous issues into SIM teaching.

1.6 Inter-professional care, Community resources

Co-ordination of health care with community and social services has the potential to improve health equity, given the association of multimorbidity and social deprivation (Kiran et al., 2020). Interprofessional care has been demonstrated to reduce adverse drug reactions, reduce

morbidity and mortality, and optimize medication dosages. It also leads to increased job satisfaction and reduction of extra workload. (Bosch and Mansell, 2020) In order to align medical education with care delivery, Health Systems Sciences topics such as Interprofessional Education and understanding and collaborating with community resources should be included in medical school curricula. (Davis and Gonzalo, 2019)

Recommendation:

Model the role of inter-professional care and working with community resources wherever possible in SIM sessions and throughout the entire curriculum. SIM sessions on smoking cessation, patient safety, quality improvement and substance use are examples of sessions which could use this approach.

1.7 Harm Reduction

Harm reduction refers to interventions aimed at reducing the negative effects of health behaviours without necessarily extinguishing the problematic health behaviours completely or permanently. (Hawk et al., 2017) Harm reduction is often referred to as an approach to treating illicit drug use but can be applied to many other settings and populations. Clinical care outcomes may improve if harm reduction is applied in all health care settings through improvement of the quality of the provider-patient relationship. (Hawk et al., 2017)

Recommendation:

Introduce the concept of harm reduction in most SIM sessions and throughout the entire curriculum

1.8 Planetary Health

The World Health Organization has called air pollution and climate change the greatest threat to human health of the 21st century (WHO, 2019). The consequences of the degradation of our environment on human health is significant and affects every organ system.

Recommendation:

Integrate a longitudinal Planetary Health thread across the entire curriculum. Include applicable concepts in lectures on clinical topics as well as integrating the concepts with population health and public health. A further discussion of how to approach this integration is found in the body of the main report in the Gaps section of subtheme 19 Climate change (Planetary Health)

1.9 Curriculum delivery

Current uOttawa medical students told us that didactic lectures were not always the best approach to deliver SIM content, and the narrative literature review conducted on educational strategies (see Appendix B) reinforced this notion.

Recommendations:

1.9.1 Integrate SIM topics across the entire curriculum, including CBL, *Clinique simulée*, PSD, lectures on clinical topics and clerkship sessions.

1.9.2 Link SIM sessions together longitudinally. Provide a thoughtfully constructed case scenario at the start of each major curricular unit and address the questions raised by this scenario in all SIM sessions throughout the unit. Include Patient partners as teachers in SIM sessions (See Patient Partner Working Group Recommendations Report). The SIM lead could summarize the learnings at the end of the unit. During the clinical years students could be responsible for identifying cases that explore SIM topics in a comparable manner.

1.9.3 Plan formal panel sessions or objectives in clerkship that build on previous work. Increase the complexity from year to year. For example, early on patients would share experiences with a single condition but as years progress patients could describe multiple conditions, multiple parts of the healthcare system, or more complex situations such as using interpreters. Cases could include integration of ethical decision-making as they move from simpler to more advanced. The third- and fourth-year curriculum could include concepts such as how physicians need to be able to adapt their care to support patients through challenges (e.g., financial constraints).

1.9.4 Increase the use of online collaborative synchronous and asynchronous learning methods such as student chat groups facilitated by tutors, self-learning modules, and webinars. Employ small group discussions in a variety of formats in preference to didactic lectures.

1.10. Faculty development

Several curricular areas in the SIM portfolio will be unfamiliar to current faculty, necessitating faculty development (Tun et al., 2020; Sotto-Santiago et al., 2022). The integration of SIM content with content on basic and clinical science makes this process even more important, as does the integration of SIM content across SIM themes.

Recommendation:

With increasing integration of SIM content into other areas, faculty development will be required to ensure knowledge of and comfort with SIM concepts.

Areas in particular need of faculty development will include (but not be limited to): evidence-based medicine, planetary health, public health, quality improvement, 2SLGBTQ+ health.

1.11 Course name

The name "Society, the Individual and Medicine" or SIM is a good portrayal of the content of the course. Unfortunately, in the minds of students, this name has taken on negative connotations. Consider renaming the course to reflect its new integrated approach.

Name proposed by one member of the working group and a recent student: **Intersection (or intersectionality?) of Medicine, Environment, Peoples and Societies (IMEPS)**

Using the plural on peoples and societies is intentional to recognize diversity – for example, Indigenous Peoples is the correct way to refer to FNIM peoples and 2SLGBTQ+ communities. Intentional use of the plural leads to improved understanding of diversity vs. homogeneity.

This name would also be directly translatable to French with the same acronym.

Recommendation:

Consider renaming the SIM course to reflect its broader more integrated scope and to distance it from previous negative connotations.

2. Discussion and recommendations for individual SIM Themes and Subthemes

2.1 Theme 1. Population Health, Public Health, and Preventive Medicine
The Population Health, Public Health, and Preventive Medicine (PH, PH and PM) theme is the largest of the four SIM themes. Its subthemes are described in Box 1.

Box 1: Population Health, Public Health, and Preventive Medicine Subthemes
Patient experiences with chronic conditions
Inequities and health
Indigenous health (covered by Indigenous health WG)
Francophone health

Mental health

Poverty

Violence

Gender and sexuality

Substance use disorders

Disability

Community Service learning

Public Health

Communicable diseases and immunization

Preventive medicine and health promotion

Concepts of prevention, health promotion and screening

Injury prevention

Nutrition and exercise

Smoking cessation

Climate change (planetary health)

Occupational and environmental health

Global health

Life stages

Child development and health

Palliative care

Aging (not in course content – covered in Unit 4)

Maternal health (not in course content)

Population health

Cultural safety/anti-racism (aspects of this are covered by antiracism WG)

The SIM working group examined several aspects of the PH, PH, and PM theme in detail. We did not examine subthemes that are largely covered outside the SIM curriculum (aging, maternal health) or subthemes addressed by other working groups (Antiracism, Indigenous Health, Community Service-Learning). In addition to the overarching recommendations listed above, the Working Group has more specific recommendations for Theme 1 and for many of its subthemes.

Recommendations for Theme 1: Population health, public health, and preventive medicine

2.1.1 Coordinate and integrate Population Health and Public Health with other SIM content, particularly content on equity deserving and priority populations.

2.1.2 Present content on population health before public health since it is descriptive, and covers several topics including planetary health.

2.1.3 Concepts of health and disease are core concepts to all of medicine. Address these concepts early in medical school in a single learning activity.

2.1.4 There are several gaps in the current curricular content – please see section following recommendations.

Gaps:

Population health and Public Health

The following gaps were identified by a review of the learning objectives from years 1-4, with a comparison to the MCC objectives.

- Consider adding the word "structural" (i.e., social and structural determinants of health") or removing the word "Social" when describing determinants of health. Structural determinants are equally if not more important. The Structural determinants of health

are "all social and political mechanisms that generate ... stratification and social class divisions in society and that define individual socioeconomic position within hierarchies of power, prestige, and access to resources. The structural determinants cause and operate through intermediary determinants of health—housing, physical work environment, social support, stress, nutrition, and physical activity—to shape health outcomes." (Solar and Irwin, 2010)

- Link determinants of health (DOH) and health outcomes (MCC 78.1.1)
- Incorporate other models of DOH such as WHO and Indigenous DOH
- Role of public health physicians
- Health impact pyramid
- Individual (high risk) vs. population approach (suggest journal club examining Rose's work)
- Primordial and tertiary prevention, clinical vs. population health prevention (AFMC primer table 4.1)
- Fundamentals of surveillance – how it differs from research and pop health assessments – characteristics of surveillance systems. (Review population health report in journal club format)
- Multiple improvements for Occupational and Environmental health:
    - clearer incorporation of MCC 78.3.2 (agent-host-environment)
    - clearer incorporation of MCC 78.6.1. Current learning objectives start with diseases associated with exposure; suggest starting with common hazardous exposures as they can cause several diseases.
    - reword learning objective 11431 to incorporate the hierarchy of controls as a fundamental framework for understanding occupational and environmental health
    - 'high yield' exam examples be discussed, such as asbestos, radon, noise, lead, etc.
    - separate learning objective 11429 to better reflect MCC 78.6.3 (risk assessment) and 78.6.7 (risk communications)
    - reword 11432 as it does not reflect common understanding of risk communication (risk = hazard + outrage)
- Communicable disease control:
    - describe the role of public health units / physicians in outbreak management.
    - add the levels of epidemic control (containment, control, elimination, eradication).
    - MCC 78.5.4 is not well covered by learning objectives. Cover as part of a larger learning objective on Infection Prevention and Control in hospitals and clinical settings.
- Public health communication:

- Need a learning objective that recognizes culturally appropriate public health communications.
- Preventive medicine:
  - Learning objective 11428 should be reworded. 'Advocating for the promotion of...' suggests that medical students are mostly responsible for advocating to other organizations / bodies.
  - Suggest 'Demonstrated ability to work with patients to increase the uptake of ...'
- Concepts and practice of screening
  - clearer incorporation of lead-time and length-prevalence bias
- Preventive health advice (counselling)
  - Current learning objectives are focused on lifestyle modification (smoking and weight loss)
  - Other important preventive counselling should be incorporated such as injury prevention (from infants to fall prevention in older adults), sexual health, hearing protection, sun protection, etc.
  - (Note: Many of these topics are addressed outside the SIM curriculum in Unit 4)
- Immunization:
  - Consider incorporating the EPIC immunization course (by Canadian Pediatric Society) into the curriculum.
  - Although not suggested by MCC objectives, describe the basics of vaccinology. Students seem to learn the mechanism of action of every drug except vaccines! (Note: There is a course on mechanism of action of vaccines right before the tutorial session. It is dense and it seems that the students do not leave it with a good understanding.) De-emphasize memorizing the vaccine schedule.

Subtheme 1: Patient experiences with chronic conditions
- Encourage physicians to provide information to patients so they can develop their skills for self-management of their own chronic disease.
- We are missing the voice of patients in the substance use sessions and in many other sessions throughout the curriculum.

Subtheme 2: Inequities and health
- Importance of intersectionality as many people identify as members of more than one equity-seeking group. Groups cannot be neatly "parcelled out" (e.g., the health of Francophones from Africa as an example).
- Discuss systemic barriers that result in health inequities rather than solely listing risk factors. Health is impacted by the structure of the healthcare system which imposes inequities in health.

- Physicians need to examine themselves and the impact of their values on the system as well as interactions with patients. Some inequities in health are caused by physicians and physician behaviour.
- It is important to appreciate how factors affect different populations (e.g., individuals living in poverty). This topic is linked to the social and structural determinants of health.
- Terminology should be changed to: "gender identity and sexual minority," making sure that there is mention of the trans community.
- Stigmatizing language around "non-compliance" needs to be removed from the whole curriculum. Cultural and Determinants of Health influences, appropriate discussion of purpose of treatment plans by physicians. Adapting care plan so patients can follow through with management of their health despite having challenges (e.g., financial constraints).
- Culture, racism, antiracism, and Indigenous health – other working groups are covering these subthemes.
- Rural and other geographical determinants – at least partially covered by Community Week and the rural medicine SLM.
- Health and health care for people in the criminal justice system.
- Who is considered an immigrant (i.e., length of time spent in the country) and how this impacts access to healthcare. Consider language barriers.
- Youth transitioning into adult care.
- The role of a patient's family (or lack of family) in health care.
- Minority stress

Subtheme 3: Indigenous health - covered by Indigenous health WG

Subtheme 4: Francophone health - see "Inequities and health"

Subtheme 5: Mental health – see "Inequities and health"

Subtheme 6: Poverty - see "Inequities and health"

Subtheme 7: Violence - There are three sessions covering violence in the SIM curriculum – "Violence against women", "Health care and Human Trafficking" and "Child maltreatment". The working group did not examine these sessions. It is acknowledged that the name "Violence against women" should be updated to modern terminology such as "Intimate Partner Violence" or "Gender-based violence".

Subtheme 8: Gender and sexuality

- Rename to "Gender identity and sexual minorities"
- Recognize systemic discrimination and cisnormative assumptions within the health system in digital health records that erase identities by only making room for male and female and nomenclature, etc. which genders body parts and functions – e.g., referring to 'Female and male reproductive systems'
- The health needs of members of 2SLGBTQ+ communities cannot be 'lumped together' as if they are members of one community with similar needs.
- Avoid heteronormative assumptions that men have sex with women and … some men have sex with men and some women have sex with women… consider the many more and complex layers of sexual activity and romantic attachments.
- Avoid discrimination within medical education by including content on trans and non-binary health as another context/layer in all course components. In 2019 the Census said that 2.7% of the Canadian population is trans or non-binary (underreported). In Ontario in 2019, that translated to almost 400,000 people, and in a primary care practice of 5,000 patients, 135 of them may be trans or non-binary.
- Not providing care is not a neutral option, trans and non-binary people die by suicide because they cannot get care; trans and non-binary people avoid physicians and EDs (Emergency Department) because of past experiences of discrimination and fear of how they will be treated. As a result, there are many unmet health needs.

Subtheme 9: Substance use disorders

Several of the suggestions for PH, PH and PM in general are applicable to the two SIM sessions on substance use disorders, particularly those that deal with involving patient partners

Subtheme 10: Disability

Rework the Disability sessions to increase the voice of patients and ensure that students achieve the following goals:

1. Understand models of disability (e.g., medical vs. social)
2. Improve knowledge of legislation and regulation regarding disability
3. Ensure appropriate language is used/understand the definitions of different terms
4. Improve awareness of conditions people with disabilities face in their daily life
5. Understand allyship and advocacy as healthcare professionals
6. Understand the importance of working as an interprofessional team and how it must include the patient

Subtheme 11: Community service learning

This section of the curriculum was explored by the Social Accountability Working Group in Phase 1 of the curriculum renewal process. Implement the recommendations of the working group.

Subtheme 12: Public health

Gaps for this subtheme are discussed above in the general recommendations for the PH, PH and PM theme

Subtheme 13: Communicable diseases and immunization

Gaps for this subtheme are discussed above in the general recommendations for the PH, PH and PM theme

Subtheme 14: Preventive medicine and health promotion

Gaps for this subtheme are discussed above in the general recommendations for the PH, PH and PM theme

Subtheme 15: Concepts of prevention, health promotion and screening

Gaps for this subtheme are discussed above in the general recommendations for the PH, PH and PM theme

Subtheme 16: Injury prevention

Gaps for this subtheme are discussed above in the general recommendations for the PH, PH and PM theme

Subtheme 17: Nutrition and exercise

Gaps for this subtheme are discussed above in the general recommendations for the PH, PH and PM theme

Subtheme 18: Smoking cessation

Gaps for this subtheme are discussed above in the general recommendations for the PH, PH and PM theme

Subtheme 19: Climate change (planetary health)
General Principles:

Integrate planetary health throughout many lectures

Include the following content:
- Effects of climate change on health

- Global health impacts of climate change
- Climate change impacts across Canada
- Environmental racism and the social impacts of climate change
- Indigenous communities as the leaders in climate solutions
- Sustainable healthcare
- The role of the physician within the climate crisis

Implementation

Form a working group of experts in the field, students, and educators.

Develop learning objectives to be integrated into other lectures for content area outside of SIM. For example:

- Learning objective, CHF lecture: Describe the impact of increasing temperatures and heat waves in Canada on the pathophysiology of congestive heart failure exacerbation
- Learning objective, asthma lecture: Analyze the difference between metered-dose inhalers (MDIs) and dry-powder inhalers (DPIs) in asthma management and discuss the environmental impact of the decision to prescribe MDIs vs. DPIs
- Learning objective, infectious disease lecture: Discuss the role of climate change in the increase of Lyme disease infections in Ontario
- Learning objective, Nutrition lecture: Explain the human and environmental co-benefits of a plant-based diet

Identify a champion (suggestion: Dr. Moloo) who can "sell" the idea of longitudinal curriculum and integration to relevant content experts

Subtheme 20: Occupational and environmental health
Gaps for this subtheme are discussed above in the general recommendations for the PH, PH and PM theme

Subtheme 21: Global health
The Global Health subtheme was explored during the summer of 2021 by medical student Christopher Gupta under the direction of Dr. Manisha Kulkarni (and others) from the School of Epidemiology and Public Health. The full report will be available in the future. The following gaps were identified:

The major gaps that are present in the current UGME global health curriculum pertain to interprofessional collaboration and leadership, working in diverse professional contexts, and teamwork abilities. One reason this may be is that these social skills are often difficult to teach in lecture-based formats.

Implementation:
1)Adding learning objectives to address 'capacity strengthening' and 'professional practice'
2) Reduce redundancy and improve horizontal and vertical integration
3) Developing interprofessional skills through exposure to more professions in the global health field
4) Use simulated cases and experiences in the field that involve active engagement with the content
5) Increase small group interactive learning

Subtheme 22: Life stages
Much of this content is now included in Unit 4 (be sure to avoid cisnormative, heteronormative assumptions).

Subtheme 23: Child development and health (be sure to avoid cisnormative assumptions)
Healthy childhood development is an important determinant of health. Childhood trauma is a particularly important determinant of health. Actual developmental milestones are not SIM material, but these other concepts are.

Subtheme 24: Palliative care
Much of this content is now included in Unit 4.

Subtheme 25: Aging (be sure to avoid cisnormative, heteronormative assumptions)
Much of this content is now included in Unit 4

Subtheme 26: Maternal health – this subtheme name is an example of cisnormative assumption. Trans men also carry pregnancies and deliver babies. This subtheme needs to ensure it is not heteronormative and recognizes the different types of families with different types of parents.

Much of this content is now included in Unit 2.

Subtheme 27: Population health

Most of the recommendations for this subtheme are discussed above in the general recommendations for the PH, PH and PM theme.

Subtheme 28: Cultural safety/anti-racism: Covered by Antiracism WG and Indigenous WG

2.2 Recommendations for Theme 2: Research Methods, Epidemiology, Evidence-Based Medicine

2.2.1 Teach students the basics (online or in-person), then provide more interactive and clinically relevant problem-based learning to solidify their EBM skills. Integrate EBM teaching throughout all four years of the curriculum.

2.2.2 Current EBM sessions are repetitive and omit large and important concepts. Revise the EBM curriculum as a whole following the principles expressed in 2.2.1

2.2.3 All EBM sessions must acknowledge the diversity and variability of individual patients and their circumstances and address how to work with clinical scenarios and populations where there is no data.

Gaps

There are large gaps in the current curriculum, including: appraisal of systematic reviews, appraisal of guidelines, shared decision-making, use of secondary sources of literature, appraisal and utility of qualitative research, dealing with uncertainty (variability of individual patients, populations where there is no data).

The current EBM / Epi curriculum has a lot of redundancy preventing "in depth" exploration of important concepts. For example, the following concepts are covered at the same basic level multiple times: PICO questions, PubMed searches, basic discussions of types of studies (case control, cohorts, RCTs), basic statistics such as RR, OR, ARR, etc.

Content is also delivered exclusively in pre-clerkship and students do not have the opportunity of applying their EBM skills to the clinical environment.

Implementation

Content that should be covered:
According to the literature, in particular the Sicily statement from 2005, the following topics should be covered in the EBM curriculum:

- Reflective practice and translation of uncertainty into an answerable question
- Fallibility of pathophysiological reasoning, variability in medical care, uncertainty in medicine, overdiagnosis and overprescribing
- Patients' experiences, spectrum of values and preferences
- Overview of clinical questions and how they can be answered by observational, experimental and qualitative research
- Search for and retrieval of evidence
- **Information mastery:** PICO and PubMed, Secondary sources
- **Guidelines:** GRADE system, controversies (evidence base, conflicts of interest)
- Critical appraisal of evidence for validity and clinical importance
- **Observational studies:** prevalence, incidence, case-control studies and cohort studies, confounders and other sources of bias, association vs. causation
- **RCTs:** types of RCTs, primary vs. secondary outcomes, protection against selection bias, protections against information bias, RRR, ARR, NNT, confidence intervals, ITT vs. per-protocol analysis, superiority vs. non-inferiority, subgroup analyses
- **Systematic reviews:** searching principles, assessing risk of bias, meta-bias (selection bias, information bias), heterogeneity, fixed vs. random effects
- **Diagnostic tests:** spectrum of disease, reliability, LRs, pre-test probabilities, NPV, PPV
- **Screening:** lead-time bias, length-prevalence bias
- Efficacy vs. effectiveness, statistical vs. clinical relevance, reporting of clinical research
- QALY
- Application of appraised evidence to practise
- Strategies to keep up to date and develop a reflective practice
- **SDM:** how to apply EBM in clinical practice

Current curriculum:
- Lectures: ~3.5 hours
- 3 epidemiology short lectures + small groups to discuss the slides
- 1 EBM lecture
- 2 short library lectures
- 1 lecture in Mandatory Selectives of Clerkship ("Shared Decision Making")

- 1 lecture on secondary sources of literature in transition to clerkship ("Point of Care Tools")
- 4 "EBM" SLM – Harm, Prognosis, Therapeutics, Diagnosis
- 4 "EBM" small groups – Harm, Prognosis, Therapeutics, Diagnosis

Possible curriculum keeping a comparable number of lectures / SLMs (see Appendix B)

Recommendations for Theme 3: Health Care System

Box 2 Health Care System Subthemes

Health Care System subthemes
- Canadian Health Care system
- Health policy
- Health economics
- Legal aspects
- Quality improvement
- Patient safety

2.3.   Recommendations for Theme 3: Health Care System

2.3.1 Teach students about the health care and public health systems at a high level, including division of powers and moving down to the local level. Promote discussion of the comparative advantages and disadvantages of different systems.

2.3.2 Integrate teaching on quality improvement throughout the entire curriculum

2.3.3 Incorporate teaching about how health policy is developed (at a high level) and its impact on outcomes for diverse groups.

2.3.4 Provoke discussions about how policy is influenced by the community, dominant culture, and powerful groups such as the pharmaceutical industry and organized medicine. Illustrate the link between policy and evidence-based medicine. Describe how physicians can advocate for and influence policy development.

Gaps:
- Legal aspects are not specifically covered in SIM, seem to be integrated throughout the rest of the curriculum

- Patient safety can be addressed through many other lenses – e.g., antiracism is a key component of patient safety, patient cultural safety
- Social and structural determinants of health, stigma, and its impact on care
- Bring policy down to the level of the individual patient (ex. Prescriptions and how individuals can pay, pharmacare) – interpret policy through the lens of the individuals it will impact at the end of the day
- Health economics with a focus on equity
- International comparisons of health indicators – e.g., how is Canada doing on the sustainable development goals?
- Interaction of international and domestic pharmaceutical/medical industry with health care, research, physicians

Implementation

Consider both sides of the issues– debate (e.g., "be it resolved that the US health care system is better than the Canadian health care system") Or compare health care policies across provinces – each group represents a province, debate how things are funded pros and cons re: health equity and human rights. Is there a best model?

Instead of essays, create infographics; letter to editor; very narrow systematic review presented as a poster; 2-minute elevator pitch to the health minister (could be to represent a particular group such as trans people); social media campaign

I. **Implementation section**

A. **Assessment Options**

Assessment of many of the themes and subthemes in SIM is difficult, as there is often not one "right" answer.

The working group debated several different assessment strategies, and we received feedback from the student focus group. In SIM many of the assessment strategies can also be considered content delivery strategies – for example, having students create a presentation on a topic and connect the basic, clinical and social medicine concepts can be used to both teach and assess.

The following tables sum up the discussions of the working group and student focus groups

Current assessment strategies and their pros and cons include:

Assessment Strategy	Pros	Cons
Multiple Choice Questions	Well suited to material like epidemiology Good practice for students for future MCC exams	Not well suited for material in humanities, ethics, determinants of health Students voice that they don't know what or how to study
Essays	Well suited to material such as humanities, ethics, determinants of health Writing is a skill the students need to practise Can assess their ability to research and cite Can cover emerging issues of current interest If set up properly, can reinforce the notion that there can be many sides to an issue and have students address the pros and cons of their arguments Can introduce concept of reflection on roles of physicians (Using CANMEDS as framework)	Limited to a very narrow topic (even if 3 or 4 choices offered, students choose only one) Not well suited to assess topics related to epidemiology, evidence-based medicine, practice of public health When essay topic is tied to subjects covered in class, students tend to repeat material in slides, do little additional research Little relevance for the type of writing they will do during their practice. Onerous to mark Not a skill required for writing MCC exams

	Pros	Cons
Group presentations	Well suited to material such as humanities, ethics, DOH Scope for creativity Oral presentation is a skill the students need to practise Can assess their ability to research and cite Can cover emerging issues of current interest If set up properly, can reinforce the notion that there can be many sides to an issue and have students address the pros and cons of their arguments Can introduce concept of reflection on role of physicians If presented to the class, opportunity for class learning as well	Unequal division of labour by students in group – unfair to some Limited to a very narrow topic (even if 3 or 4 choices offered, students choose only one) Not a skill required for MCC exams

Other options for assessment include:

Assessment strategy	Pros	Cons
Short answer questions	Can address a wide range of topics Well suited to humanities, ethics, determinants of health Can be used to assess epidemiology, EBM Can be easily marked using standardized rubric Marking can be divided among many people Writing is a skill the students need to practise	Organization and marking can be onerous. Should they be done in class or as an open book exam? Not a skill required for MCC exams

Quizzes	Can be more "formative" avoiding high stakes final exams Well suited to material such as epidemiology and EBM Can be good practice for MCC exams	Need to take class time to do these More complex compilation of marks to derive final mark Students may complain that they don't have sufficient time to study
OSCE stations	Can address a wide range of topics Can be easily marked using standardized rubric Marking can be divided among many people Application of learning - demonstrate SIM skills with patients, higher level of Bloom's taxonomy	Would need creativity to include SIM topics in OSCEs Students will find it difficult to know what to study/ not appreciate that some of the content (such as values, attitudes, and empathy) cannot be studied Would need to be integrated with existing OSCEs
Oral exams	Can address a wide range of topics Application of learning – demonstrate SIM skills, higher level of Bloom's Taxonomy	Labour intensive Students will find it difficult to know what to study/ not appreciate that some of the content (such as values, attitudes, and empathy) cannot be studied
Patient partners as assessors (see Patient Partner Working Group recommendations)	Can address a wide range of topics - Includes assessment of important communication skills Can be marked using standardized rubric Marking can be divided among many people Application of learning	Students will find it difficult to know what to study/ not appreciate that some of the content (such as values, attitudes, and empathy) cannot be studied Organization and execution will be labour intensive

Recommendations (Assessment):

1. Implement a variety of assessment strategies. Which strategies are used will depend on the content being assessed and the formative or summative nature of the assessment.
2. Integrate assessment of some SIM content with assessment for clinical and basic science content (i.e., in same exam or OSCE)

B. Opportunities for integration with other structural components of the curriculum (e.g., other longitudinal curriculum, CBL, national EPAs) where applicable.

The SIM Working Group described many opportunities for integration of SIM content throughout the curriculum. These are:

Curricular component	Opportunities	Challenges	Requirements	Ideas for improvement
CBL	Application of SIM principles to cases helps to emphasize that these are part of clinical care.	If not appropriately structured may be glossed over or discussed superficially Updating and modernizing need to be ongoing processes	Rewriting of CBLs to include one SIM theme or subtheme per week Rewriting of tutor guide to emphasize importance of covering the SIM theme/provide resources Faculty development	Involvement of patient partners to raise issues of importance – either a pre-recorded video or a live "TBL" type Q+A session via zoom

Longitudinal curricula	Antiracism content can be distributed throughout SIM sessions and assessments Indigenous health content can be distributed throughout SIM sessions and assessments Planetary health content can be integrated into SIM sessions and assessments IPE can be integrated into SIM sessions and assessments	Updating and modernizing as an ongoing process Collaborative design required to avoid duplication, overlap	Work with other longitudinal groups to create content that increases in complexity across the four years of the curriculum Faculty development	Some SIM sessions could be combined with learners from other disciplines
National EPAs	Including principles such as ethics, antiracism, determinants of health in how EPAs are assessed will lead to stronger clinical skills	Will be difficult to assess	Add SIM type skills to assessment grids for EPAs	

PSD/DAC	There is already a lot of SIM type content in PSD/DAC sessions, it is just not labelled as such. Identifying and assessing it would lead to greater student recognition of its importance in clinical care		Make SIM contents explicit in learning objectives and assessment processes Faculty development	

Recommendation (Integration)

1.9.1 Integrate SIM topics across the entire curriculum, including CBL, *clinique simulée*, PSD, lectures on clinical topics and clerkship sessions.

1.9.2 Link SIM sessions together longitudinally. Provide a thoughtfully constructed case scenario at the start of each major curricular unit and address the questions raised by this scenario in all SIM sessions throughout the unit. Include patient partners as teachers in SIM sessions (See Patient Partner Working Group Recommendations Report). The SIM lead could summarize the learnings at the end of the unit. During the clinical years students could be responsible for identifying cases that explore SIM topics in a comparable manner.

1.9.3 Plan formal panel sessions or objectives in clerkship that build on previous work. Increase the complexity from year to year. - For example, early on patients would share experiences with a single condition but as years progress patients could describe multiple conditions, multiple parts of the healthcare system, or more complex situations such as using interpreters. Cases could include integration of ethical decision-making as they move from simpler to more advanced. The third- and fourth-year curriculum could include concepts such as how physicians need to be able to adapt their care to support patients through challenges (e.g., financial constraints).

C. Addressing anticipated challenges or barriers to the implementation of working group recommendations (resources, structure required, administrative support).

Challenges to implementation

- Ensuring faculty in basic and clinical sciences accept that SIM content is important and not burdensome. This challenge can be addressed in several ways – faculty development; possible resource bank for teachers (for example with pre-developed content on some of the SIM areas that can then be integrated into sessions); clearly articulated learning objectives and learning outcomes.
- Constant updating of content spread across many curricular delivery areas. This challenge could be addressed by setting up a work plan to revise content on a rotating schedule, which would require considerable input from the SIM leads and content experts.
- Demonstrating to students that they are learning/ have learned SIM content. Students risk not noticing content if it is incorporated into other curricular areas. This challenge can be addressed by highlighting or labelling components of SIM content
- Improving the reputation of SIM as a course. Students seem to have a notion, passed down from upper year students, that SIM is a terrible course and they will hate it. Their evaluations of SIM sessions do not support this notion. Much of their concern seems to centre around assessment strategies and knowing how to prepare for exams. This challenge can be addressed in several ways – clarifying assessment strategies at the outset of each year and unit and clearly identifying materials that will be "testable"; identifying resources that are reasonably concise (such as the AFMC Primer on Population Health) as textbooks for course content.
- Moving away from lectures to small groups sessions can be resource intensive, including arranging rooms, tutors, and administrative support. This challenge could be addressed by using some online resources and "chatroom'-type arrangements. It will be important to maintain face-to-face small group sessions as well.
- Updating and improving curricular changes in such a wide variety of topics will be time intensive. A work plan with a schedule for revisions could help.

Implications for Faculty Development

Several curricular areas in the SIM portfolio will be unfamiliar to current faculty, necessitating faculty development (Sotto-Santiago et al., 2022; Tun et al., 2020). The integration of SIM content with content on basic and clinical science makes this process even more important, as does the integration of SIM content across SIM themes.

Recommendation:

With increasing integration of SIM content in other areas, faculty development will be required to ensure knowledge of and comfort with SIM concepts.

Areas in particular need of faculty development will include (but not be limited to):

Evidence-based medicine, Planetary health, Public health, Quality Improvement, 2SLGBTQIA+ health

Implications for educational technology

Increasing the use of online collaborative synchronous and asynchronous learning methods such as student chat groups facilitated by tutors, self-learning modules, and webinars will require research, design, translation and programming resources. All such resources will need regular updating.

Implications for piloting

Piloting could begin with one of the integrated SIM curricular cases in a particular block (e.g., respirology) to determine its effectiveness before rolling out to the entire curriculum

Conclusion

The SIM curriculum is vast. It currently stands alone in the UGME program as a course that is taught in three of the four years of medical school. There are many strengths of the current SIM curriculum, but there are gaps that must be addressed, and constant updating of content is required. The SIM working group appreciates the opportunity to propose increased integration, enhancement, and diversification of the content. Our recommendations provide a high-level roadmap to improve the SIM course in the future.

Members of the working group

The working group membership was chosen to reflect students, patient and community partners, content experts, and faculty.

The regular members of the group were:

1. Laura Muldoon, Co-Chair (Director Social Medicine)
2. Lina Shoppoff, Co-Chair (Director, UGME Department of Family Medicine)
3. Ian McDowell (Former SIM lead, Emeritus Professor, School of Epidemiology & Public Health)
4. Emelie Braschi (SIM EBM lead, francophone, MD. PhD, Lecturer, University of Ottawa Clinician Advisor)
5. Karen Luyendyk (she/her, Patient (family) partner and RN, Clinical Educator in Trans and Non-binary Health with Rainbow Health Ontario, Equity Diversity Inclusion Committee Co-lead, Ottawa West Four Rivers OHT)
6. Nieve Seguin (medical student)
7. Barry Bruce (Physician at West Carleton Family Health Team)
8. Nick Sahlollbey (BHSc, (YR2) Medical student)
9. Angie Hamson (patient partner)
10. Siffan Rahman (Community member, Director Diabetes Programs, Centretown Community Health Centre)
11. Juliette Thibaudeau (Medical student)
12. Farhan Mahmood (BSc, MD Candidate | Class of 2023 - Faculty of Medicine, University of Ottawa)
13. Trevor Arnason (MSc, MD, CCFP, FRCPC, Associate Medical Officer of Health- Ottawa Public Health, Program Director of the University of Ottawa Public Health and Preventive Medicine Residency Program at Ottawa University)

Due to the broad nature of the mandate, we also employed the advice of other content experts for certain areas of the SIM curriculum:

Population health, Public health, and Preventive Medicine: Dr. Reed Morrison, PHPM resident
Equity in health: Donna Pettey, PhD, Canadian Mental Health Association
Health Care System: from the School of Epidemiology and Public Health Tara Elton-Marshall – Associate Professor; Alison Krentel – Assistant professor; Monique Potvin-Kent – Associate professor, Director of Masters of Public Health program.
Pedagogical Strategies for Public and Population Health: Kathleen Qu (MD student, class of 2025)
Student experience with SIM curriculum – student members of the classes of MD 2024 and 2025

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Appendices

A. **Population Health, Public Health and Preventive Medicine**

1) Patient experiences with chronic conditions
2) Inequities and health
   a) Indigenous health
   b) Francophone health
   c) Mental health
   d) Poverty
   e) Violence
   f) Gender and sexuality
   g) Substance use disorders
   h) Disability
   i) Community Service learning
3) Public Health Communicable diseases and immunization
   a) Preventive medicine and health promotion
   b) Concepts of prevention, health promotion and screening
   c) Injury prevention
   d) Nutrition and exercise
   e) Smoking cessation
   f) Climate change (planetary health)
   g) Occupational and environmental health
4) Global health
5) Life stages
   a) Child development and health
   b) Palliative care
   c) Aging (not in course content, on website)
   d) Maternal health (not in course content, on website
6) Population health
7) Cultural safety/anti-racism – (not in course content, on website)

B. **Research Methods, Epidemiology and Evidence-Based Medicine**

   1) Research methods
   2) Evidence-based medicine

C. **Health Care System**

   1) Canadian health care system
   2) Health policy
   3) Health economics
   4) Legal aspects
   5) Quality improvement
   6) Patient safety

D. **Humanities and Psychosocial Aspects of Health**
   1) Professionalism and ethics
   2) History of medicine
   3) Leadership (has its own course)
   4) CAM and integrative medicine (mostly not in SIM – Unit 4)

Appendix B: Potential new evidence-based medicine curriculum

- Year 1 Foundations Unit
  - o **Self-learning material**: AFMC Primer:
    - Chapter 5 Assessing Evidence and Information
      - Assessing information and evidence
      - Appraising scientific evidence: qualitative versus quantitative research
      - Qualitative research
      - Quantitative research
      - Research designs Experimental (or interventional) studies
      - Observational studies
      - Measures of risk: attributable risk and number needed to treat
      - Sampling and chance error in studies
      - Bias Confounding
      - The hierarchy of evidence
      - The final step: applying the study results to your patients
  - o **Self-learning module 1** – MCQs to help students solidify knowledge covered in the primer *(they may need to look up a few things on their own - just like in clinical practice!)*
    - *Not covered in the primer but important (and will be covered later): Randomization, Allocation conc, ITT / per prot., Follow-up, Blinding, Baseline char., Co-interventions, Internal and external validity, Effectiveness vs. Efficacy*
  - o **Tutorial 1** (short)
    - quiz (worth 25% of final mark)
    - questions regarding SLM1 and quiz are answered
    - (PowerPoint slides could be made to summarize the content of the Primer)
- Year 1 Unit 1
  - o **Self-learning material:** AFMC Primer:
    - Chapter 6 Methods
      - Measuring Health, The scope of health measures
      - Individual measures and population-level indicators
      - Mortality rates
      - Health measurement scales
      - Reliability and validity of health measures

- - - Interpreting tests on individuals
    - Establishing cut-points: what is a normal value?
  - Chapter 9 Screening
    - Goal of screening
    - Issues in deciding whether to screen
    - Some misconceptions about screening
    - Details of policies
    - Ethical issues particular to screening
    - Criteria for introducing a screening test
  - **Self-learning module 2**– questions to help students solidify knowledge covered in the primer *(they may need to look up a few things on their own - just like in clinical practice)*
  - **Tutorial 2** (short)
    - quiz (worth 25% of final mark)
    - questions regarding SLM2 and quiz are answered
    - (PowerPoint slides could be made to summarize the content of the Primer)
- Year 2 Unit 2
  - **Scholarship in action – demonstration 1 (focussed on cohort studies)**
    - **Tutorial 3:**
      - Tutor chooses a clinical question from his / her clinical practice **that would be answered by a cohort study**
      - Discuss
        - ASSESS (identify knowledge gap)
          - How did the tutor become interested in the question?
          - How did they identify their knowledge gap?
        - ASK
          - What was the tutor's PICO question?
          - Which other questions would be reasonable?
        - ACQUIRE (do the searches as a group during the tutorial)
          - Compare searches using primary and secondary sources (Pubmed, guidelines, UptoDate, Dynamed)
          - What could you use at the bedside?
          - What could you use if you had more time and wanted a more complete answer?
          - Tutor identifies a cohort study to critically appraise as a group

- - **Self-learning module 3** – focused on critical appraisal of cohort studies (<mark>** the CFPC may be able to help us make those**</mark>)
    - Students apply the material to appraise the cohort study chosen by the tutor (on their own time)
    - Students write a 1 paragraph summary to answer the PICO question (on their own time)
  - **Tutorial 4**:
    - Quiz – worth 15% of final mark
    - Discuss
      - APPRAISE
        - Appraisal of the cohort study
      - APPLY
        - Discussion re: limitations of the cohort study (correlation vs. causation, external vs. internal validity, etc.)
        - How will the tutor apply the results to their clinical practice?
    - Tutor marks pass / fail the 1 paragraph summary – worth 10% of final mark
- Year 2 Unit 3
  - **Scholarship in action – demonstration 2 (focused on RCTs and systematic reviews of RCTs)**
    - **Tutorial 5:**
      - Tutor chooses a clinical question from their clinical practice **that would be answered by an RCT or systematic review of RCTs**
      - Discuss
        - ASSESS (identify knowledge gap)
        - ASK
        - ACQUIRE (do the searches as a group during the tutorial)
        - Tutor identifies an RCT and systematic review
    - **Self-learning module 4 and 5**– focused on critical appraisal of RCTs and systematic reviews of RCTs <mark>(** the CFPC may be able to help us make those**)</mark>
      - Students apply the material to appraise the RCT and systematic review chosen by the tutor
      - Students write a 1 paragraph summary to answer the PICO question
    - **Tutorial 6:**

- Quiz – worth 15% of final mark
- Discuss
  - APPRAISE
  - APPLY
- Tutor marks pass / fail the 1 paragraph summary – worth 10% of final mark

- Year 2 Unit 4
  - **3 lectures** on higher-level EBM topics, for example:
    - Medical uncertainty: guidelines and shared decision-making
    - Overdiagnosis and the Choosing Wisely campaign
    - EBM in clinical practice: strategies to stay up to date
- Clerkship
  - For each clinical rotation: "**Scholarship in practice"**
    - Students would be asked to identify a clinical scenario and follow the Ask, Acquire, Appraise, Apply framework
    - They would be encouraged to use the self-learning modules from Year 3 to guide the critical appraisal
    - They would have to present it to the rest of the group during their clinical rotation
    - Rotation director would mark as pass / fail

Appendix C

Pedagogical strategies to teach the curriculum
(Prepared by Kathleen Qu, MS1)

To help inform the Society, Individual, and Medicine (SIM) undergraduate medical education curriculum renewal at the University of Ottawa, we performed a literature review of educational strategies to teach public health content with the assistance of the health sciences librarian. Following review of 1105 titles and abstracts we selected 21 publications, 13 of which were studies done in the United States, 2 in the United Kingdom, and 1 in each of Canada, Switzerland, New Zealand, India, Singapore, and Brazil. In general, studies found were not rigorously performed trials. Most assessed students' opinions of educational strategies, a few addressed outputs and very few assessed outcomes, usually with a pre- and post-design without a control group.

A recent survey of American medical schools showed that common practices included use of small group exercises, large group didactics, projects and presentations, self-study assignments and less commonly standardized patients, flipped classroom, and online modules (Morse et al., 2020). However, case studies done at several schools revealed an overall positive response to these lesser utilized strategies among other educational innovations. In the implementation of different strategies, we should also consider making the curriculum mandatory for all medical students in a given year as new self-selected electives that would have been successful may fail to gain early interest.

The flipped classroom format combined with a case or simulated patient was deemed helpful in increasing the confidence of medical students in their patient interviewing skills as they started clerkship (Coleman & Lehman, 2017; Gostelow et al., 2018) and has been recommended for a spiral curriculum framework (Fung & Ying, 2021).

Community-based learning is another increasingly popular method to engage both pre-clerkship and clerkship students in considering public health in the context of their own communities. Giving students the opportunity to work with community leaders and programs to identify public health problems and suggest evidence-based interventions was positively rated for improving their educational experience over traditional lectures though students also found the time restraints of a community project to be a weakness (Girotti et al., 2015; Khazanchi & Marcelin, 2020; Mattig et al., 2017; Prunuske & Remington, 2017; Vyas et al., 2017).

Case and problem-based learning (CBL, PBL) are increasingly being used in pre-clerkship as they can be effective in engaging students to critically think of social determinants and cultural sensitivity (Fung & Ying, 2021). These problems can start with a specific patient case in the local community clinic and broaden to what physicians can do on the city and country level (Hoover et al., 2012). However, we must take into consideration what our facilitators and tutors are comfortable teaching (Mattig et al., 2017). Cases can be virtually delivered and take students through a patient's journey through the healthcare system (Zosel et al., 2021). CBL and PBL can be complemented with interprofessional panels to bring in more perspectives and address misconceptions without necessarily going out into the community and more heavily involving community partners (Onello et al., 2020). The local health department can also help advise longitudinal PBLs for a given course to target a specific subject area, such as nutrition and community resources that address food insecurity (Uhley & Farr, 2016). A mix of CBL, PBL, and team-based learning has also been incorporated into a longitudinal population health and health systems curriculum that spanned the 4 years of medical school (Singh et al., 2021). Furthermore, PBL can be expanded into more hands-on scenario-based learning done in small groups as was successfully done with a 5-hour emergency preparedness training course open to many types of healthcare workers and learners (Scott et al., 2018). On a larger scale planetary health in connection to a patient case may be taught using actor-network theory (Falceto de Barros et al., 2019).

Various methods can be used to aid in knowledge consolidation and retention. Our search yielded strategies such as visual mind and concept mapping, semi-structured reflections, and online blog posts (Choudhari et al., 2021; Koh et al., 2014; Yepes-Rios et al., 2019). Students may also benefit from multi-media material that can be viewed online, including documentaries, podcasts, and Ted Talks (Gallagher et al., 2014; Godfrey et al., 2019).

In summary, the SIM Public Health curriculum should explore learning strategies outside of traditional didactics to encourage all of our future physicians to be competent advocates within the wider context of community health.

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