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**CFMS Wellness
Curriculum Framework**

CFMS Wellness Curriculum Framework

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Executive Summary

Canadian medical students have high levels of burnout (37%) and, after starting school, have a significantly higher prevalence of mental illnesses relative to the general population. The rigorous expectations and systemic factors within the medical training environment exacerbate burnout. Burnout, depression, and impaired wellbeing in physicians and medical learners have been shown to negatively impact academic performance, quality of patient care and safety, and health system sustainability amongst others. Interventions targeted towards medical students have the potential to improve medical student wellness. Consequently, this may positively influence the environment in which they work, altogether leading to an improvement in the quality of health care delivery for patients.

In 2005, physician health was embedded as a core competency of the CanMEDS framework. In response, medical faculties have added wellness content to their programs. The amount of content and its organisation varies between faculties as there are few available guiding frameworks. Our literature review revealed that there were no recommendations currently available for an undergraduate medical student wellness curriculum that further refined the wellness competencies set forth by the Royal College of Physicians and Surgeons of Canada (RCPSC) and the College of Family Physicians of Canada (CFPC). However, forthcoming recommendations from the Royal College and the Association of Faculties of Medicine of Canada (AFMC) may highlight areas of improvement with regards to student wellness.

The Canadian Federation of Medical Students formed the Wellness Curriculum Task Force (WCTF) to review currently existing wellness programming in Canadian medical schools. The WCTF then adapted the six-step approach to medical curriculum development (Thomas et al.) to create a new evidence-based Wellness Curriculum Framework (WCF) for Canadian medical schools.

The WCF consists of 16 evidence-based goals, each with 2-5 associated objectives, and is anchored in the five domains of wellness as laid out by the World Health Organization, that are relevant to medical students. Further, it is aligned with the physician health competencies outlined in the CanMEDS framework by the Royal College. The WCTF also developed a series of facilitators outlining evidence-based best practice approaches for implementing a wellness curriculum using this framework, including guidance on curriculum content, delivery, and evaluation methods.

The goal of producing a national wellness curriculum framework is to support Canadian medical faculties that either wish to develop a wellness curriculum or to reevaluate existing wellness programming in light of student informed and evidence-recommended practices. These practices are based on

the literature and multiple rounds of feedback from CFMS members and national stakeholders involved in medical education. It is important to note that this wellness curriculum framework focuses on wellness at the “medical student level,” also known as “individual level,” as compared with the work of the CFMS Health Promoting Learning Environment Task Force, which focuses on the systemic and environmental factors that influence medical student wellness. Our group strongly purports that the individual and systemic factors are mutually dependent and are complementary to achieving increased wellness for Canadian medical students.

This newly developed WCF is the first national evidence-based framework that specifically addresses wellness education for Canadian undergraduate medical students. The framework and associated recommendations for implementation will be a valuable reference for Canadian medical schools to ensure that incoming physicians are healthy and able to provide the highest quality of care to their patients.

An overview of the Wellness Curriculum Framework and recommendations are shown in **Table 1** and **Table 2**, respectively .

Table 1: Overview of CFMS Wellness Curriculum Framework Goals and Objectives

WCTF proposed allocation of WCF objectives for medical education programming	Royal College CanMEDS Key Competency: Professional		
	Demonstrate a commitment to physician health and well-being to foster optimal patient care		
	Enabling competency: Exhibit self-awareness and manage influences on personal well-being and professional performance	Enabling competency: Manage personal and professional demands for a sustainable practice throughout the physician life cycle	Enabling competency: Promote a culture that recognizes, supports, and responds effectively to colleagues in need*
Throughout medical school	Self management (2.1.1), Dealing with Difficult Relationships (4.4.2)	Career orientation (3.3.3), Personal relationships (4.1.2), Philosophy in Medicine (5.2.2)	Peer mentorship (4.3.2), Core Values in Medicine (5.1.3)
Throughout pre-clerkship	Core Values in Medicine (5.1.1),	Managing conflicting demands (3.1.1), Career orientation (3.3.2)	
By the first half of pre-clerkship	Sleep (1.3.1), Self management (2.1.5), Financial wellbeing (3.2.1), Career orientation (3.3.1), Transition periods (3.4.1), Personal relationships (4.1.1)	Sleep (1.3.2), Self management (2.1.2), Coping strategies (2.2.3), Suicide prevention (2.3.1)	
By the end of pre-clerkship	Nutrition (1.1.1), Exercise (1.2.1), Self management (2.1.4), Coping strategies (2.2.1), Suicide prevention (2.3.2), Sexuality (4.2.1)	Nutrition (1.1.2), Exercise (1.2.2), Coping strategies (2.2.2), Financial wellbeing (3.2.2), Transition periods (3.4.2)	Suicide prevention (2.3.3)
Throughout clerkship	Philosophy in Medicine (5.2.1)	Managing conflicting demands (3.1.2), Dealing with difficult relationships (4.4.1),	Suicide prevention (2.3.4), Transition periods (3.4.5), Peer mentorship (4.3.1)
By the first half of clerkship	Sleep (1.3.3), Transition periods (3.4.3), Core Values in Medicine (5.1.2)	Financial wellbeing (3.2.3),	
By the end of clerkship	Self management (2.1.3), Sexuality (4.2.2)	Exercise (1.2.3), Coping strategies (2.2.4), Financial wellbeing (3.2.4), Transition periods (3.4.4)	

*Note that the Health Promoting Learning Environment Task Force is working conjointly to delineate this enabling competency in more details.
Adapted domains of wellness from the WHO: 1. Physical needs (shown in blue), 2. Emotional needs (green), 3. Professional fulfillment needs (red), 4. Social relationship needs (orange), 5. Spiritual needs (purple). Each domain represents a section of the WCF. Each section contains subsections (as written above). Each subsection has a goal as well as 1-5 objectives (denoted by the numbers in brackets).
Abbreviations: WCTF = Wellness Curriculum Task force; WCF = Wellness Curriculum Framework; WHO = World Health Organisation

Table 2: Overview of CFMS Wellness Curriculum Framework Facilitators

	Implementation Facilitators	Educational Strategies Facilitators	Evaluation Facilitators
<p>WCTF proposed facilitators for Canadian medical faculties</p>	<p>1. Form a task force (or working group) of stakeholders to specifically direct steps 2-7 of the implementation process below, as approved by the local curriculum committee or administrative body: individual wellness assessments. Examples of methods include:</p> <ul style="list-style-type: none"> Consult and actively involve academic and wellness leaders within each faculty; At least one student representative (e.g. wellness, academic, etc.) should be a member of the committee; We encourage involvement from student representatives at different stages of training (i.e. at least one pre-clerkship student and one clerkship student) whenever possible. 	<p>(Content Development)</p> <p>1. Develop specific and measurable sub-objectives, to further delineate the Goals and Objectives included in the Wellness Curriculum Framework (WCF):</p> <ul style="list-style-type: none"> If necessary, create original content or revise existing content to fulfill the stated sub-objective(s). 	<p>1. Individual formative assessments:</p> <ul style="list-style-type: none"> Prioritize a longitudinal evaluation method for student wellbeing using a scale that has demonstrated good content validity for the different domains of wellness included in the Wellness Curriculum Framework (physical, emotional, professional fulfillment, social relationships, and spiritual needs). The following are examples of potential scales: <ul style="list-style-type: none"> Should be pass or fail and depend solely on: <ul style="list-style-type: none"> Five Factor Wellness Evaluation of Lifestyle (5F-WEL) scale Four Factor Wellness Evaluation of Lifestyle (4F-WEL) scale Wellness Evaluation of Lifestyle (WEL) scale Body-Mind-Spirit Wellness Behavior and Characteristic Inventory (BMS-WBCI) scale Psychological Well-Being (PWB) scale Resident Wellness Scale Dedicated curricular time should be provided for students to complete the assessments; Assessments should be available for completion at least once a year with the first completion during the first month of school (ideally during medical school orientation to gauge baseline wellbeing), and at least once per semester (or per 3-4 months) thereafter throughout medical school; Results from the individual formative assessments should be easily available to the student to facilitate self-tracking specific to each wellness domain; The use of these assessments is meant to be flexible, self-directed, and coupled with wellness resources provided by Student Affairs or equivalent; Under no circumstance should the results of individual assessments be shared to preceptors, the undergraduate medical education office, or anyone that could be involved in the subjective evaluation of a student's transcript or Medical Student Performance Record. Employ scheduled "wellness check-ins" facilitated by Student Affairs (or the body responsible for student wellness locally, ideally separate from undergraduate medical education): <ul style="list-style-type: none"> Provide opportunities for students to reflect on their wellness and discuss any concerns in a confidential manner; Offer available resources and non-mandatory personalized follow-up; These sessions should be scheduled regularly (suggested once per semester) and be accessible in timing, and modality for students in clerkship and at distributed sites. No objective or subjective components, other than the mention of "pass" or "fail" for the wellness curriculum, should appear on the student's transcript and Medical Student Performance Record.
	<p>2. Map where the <i>Goals and Objectives</i> of the WCF may fit within the existing curriculum: allow for anonymity, and to deliver and keep track of individual wellness assessments. Examples of methods include:</p> <ul style="list-style-type: none"> Reorganize existing wellness programming to fulfill the Goals and Objectives of the WCF; Identify the gaps between the existing wellness programming and the proposed WCF. 	<p>(Content Development)</p> <p>2. Integrate new wellness content into previously existing programming, whenever possible, as identified by local curriculum mapping.</p>	<p>2. Individual summative assessment:</p> <ul style="list-style-type: none"> Should be pass or fail and depend solely on: <ul style="list-style-type: none"> Attaining the threshold percentage of flexible mandatory participation as defined by the local wellness curriculum committee. (suggested is a threshold of 50% where students would decide to participate in the programming that aligns with their personal wellness needs); Attendance at regular check-in sessions facilitated by local Student Affairs or equivalent. Aggregate results of de-identified individual formative assessments should be shared to Student Affairs (or the body responsible for student wellness locally.) A purpose would be to identify periods of time within medical school that tend to be more challenging for the student population for prompt implementation of alleviating measures.

<p>3. Develop sub-objectives and content that addresses the unique needs of your student population to fill in the gaps identified in recommendation 2 above as well as in the "Educational Strategies Facilitators" section.</p>	<p>(Curriculum Delivery) 1. Utilize a variety of educational methods best tailored to achieving cognitive, affective, and/or psychomotor learning objectives, as well as medical students' preferences, preferably by conducting local assessments</p>	<p>3. Program formative and summative evaluations:</p> <ul style="list-style-type: none"> • A scale should be chosen, repurposed, or created to measure students' perception of the impact of the implementation of the relevant domain(s) of wellness from the WCF on their personal wellness. • Should be pass or fail and depend solely on: <ul style="list-style-type: none"> ▪ Ideally, each new component of the WCF that is introduced would be associated with a pre-implementation and post-implementation data collection measurement. ▪ This scale and measurement, should be different than the individual formative assessment scale. ▪ In the absence of a suitable validated and reliable scale, a mixed approach combining quantitative and qualitative data collection and analysis is suggested. • Should be integrated into the local school's common procedure for curriculum evaluation; • Should seek feedback (quantitative and/or qualitative) from students and staff interacting with the curriculum in regards to the curriculum's effectiveness in addressing the various domains of wellness, and use a different metric than the one used for individual formative assessments.
<p>4. Employ a phase-in approach of the WCF, as opposed to a full implementation, by piloting the most critical portions of the curriculum according to student needs. Based on the WCTF national surveys, literature review, medical student and stakeholder feedback, we suggest: allow for anonymity, and to deliver and keep track of individual wellness assessments. Examples of methods include:</p> <ul style="list-style-type: none"> • First, spread out the objectives throughout the medical undergraduate programming. The WCTF members propose the allocation found in Table 1. • Second, implementing "Section 2: Emotional Needs" and "Section 3: Professional Fulfillment" of the WCF Goals and Objectives; • Third, other sections may be prioritized instead if felt to be significantly underrepresented in the local curriculum, or in order to favour representation of the different domains of the WCF; • Fourth, continue the phase-in approach in an attempt to have all wellness domains implemented until all the Goals and Objectives of the WCF are reached. 	<p>(Curriculum Delivery) 2. Maximize the use of educational technology, especially to facilitate the participation of students in clerkship or at distributed sites, to allow for anonymity, and to deliver and keep track of individual wellness assessments. Examples of methods include:</p> <ul style="list-style-type: none"> • Flipped classroom • Mobile technology • Online education • Social networking • Videoconferencing • Web-enhanced learning 	
<p>5. Evaluate students longitudinally (refer to "Evaluation Facilitators" section)</p>	<p>(Curriculum Delivery) 3. Equip medical students with a handbook for the local wellness curriculum providing useful resources for each of the five domains of wellness included in the Wellness Curriculum Framework.</p>	
<p>6. Collect student feedback through means such as organizing focus groups or town halls in addition to usual program formative evaluation and integrate their responses to help the quality improvement of the wellness curriculum over time</p>		
<p>7. Collect and report data about implementation and medical student aggregate wellness outcomes in response to local wellness curriculum</p>		

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Introduction

Canadian medical students have increased levels of burnout (37%), depression or depressive symptoms (27.2%), suicidal ideation (11.1%) and a significantly higher prevalence of mental illness relative to the general population[1,2]. Recent evidence appears to support established, anecdotal experiences that students are at their peak health and wellness on their first day of medical school, which slowly deteriorates over the years. American and Canadian evidence now demonstrates significant worsening in medical students' wellness at different stages of their education, with a peak in clerkship years[3,4]. The exact statistics vary, but these findings hold across Canada, the United States, and outside of North America[1,2,5]. The cause of psychological distress is multifactorial and not easily identified, but rigorous institutional expectations and systemic factors within the training environment may play a significant role in exacerbating burnout and mental illnesses[5-7]. There is no clear solution to this problem, but progress toward reducing burnout prevalence will likely come from a combination of preventative strategies[1]. It is clear that action is needed to develop a culture where physician wellness is paramount, and ensure medical education does not contribute to the high burnout and mental illness rates that plague healthcare providers[8-10].

In response to the changing perception of the value of physician and learner wellbeing, medical faculties have begun adding wellness-related content to their academic schedules[9,11-13]. Internationally, some medical schools have successfully implemented longitudinal wellness curricula, such as at Vanderbilt University, where workshops were incorporated into the undergraduate program and students were empowered to organize wellness-related activities and programs[11]. Others have primarily worked towards improving students' well-being by focusing on reducing curriculum hours, developing learning communities and longitudinal electives, and providing increased support by reaching out to students who screened positive for depression or anxiety[14]. It is unclear which interventions have had the most significant impacts due to a lack of high-quality longitudinal studies that utilize validated assessment tools[1,7]. While a system-level approach is likely to support core medical student needs and well-being, student-level interventions have also shown positive results globally that may be complementary in achieving optimal outcomes[15,16].

In Canada, physician health has been embedded as a core competency of the CanMEDS framework since 2005 and continues to be a significant focus of the Professional role within the 2015 framework[17]. The College of Family Physicians of Canada (CFPC) also updated their standards of accreditation for residency including two wellness-related standards[18]. Physician advocacy

groups, such as the Canadian Medical Association, have also emphasized the importance and benefits of entrenching physician health as a priority[19]. While Canadian data is limited, McGill University has established a longitudinal wellness curriculum within their undergraduate program that utilizes lectures, small group sessions, and workshops to enhance learner resilience, well-being, and mental health[13]. The Royal College of Physicians and Surgeons of Canada (RCPSC) also released at the 2019 Canadian Conference on Physician Health a preliminary wellness framework spanning from medical school to physician practice[20]. This framework consists of competencies with educational programming recommendations at each level of training. The pending release of this framework is an important step toward ensuring that Canadian medical faculties are provided with the support needed to design their own wellness curricula. To the best of our knowledge, there are no other wellness framework applicable to undergraduate medical education in Canada.

Despite the adoption of mandatory wellness curricula among medical institutions to help learners cope with stress, some have argued this may undermine the intrinsic motivation of learner[21]. Indeed, rather than cultivating intrinsic motivation, mandatory participation in wellness curricula may increase levels of distress and burnout and lower levels of satisfaction[22]. To address these gaps, some have called for the design and implementation of wellness interventions that stimulate the psychological needs of learners - autonomy, competence, and relatedness - to promote wellness and professional development[23,24].

Some evidenced-based principles have been proposed for developing wellness initiatives. First, they should be informed by the learners who experience them[25]. Second, attempts to support medical student wellness should begin by considering their basic psychological needs[24]. Third, a successful shift towards a well physician workforce requires concerted individual- and system-level efforts[7,26]. Fourth, evidence-based wellness interventions and assessments should be used to guide wellness content development. Overall, a wellness curriculum framework would occupy a keystone position guiding the implementation of skills-based wellness curricula across all Canadian schools as they also work towards coordinating system-level changes. This would ensure the best possible alignment between the individual- and system-level, thus helping achieve sustainable and improved wellness outcomes for medical students.

Ultimately, the wellbeing of physicians and learners is not only important for the health of the individual but also for system-level productivity and delivery of optimal patient care[16,19,27]. This is highlighted by competency 4 of the Professional role from the 2015 CanMEDS framework, which states physicians must be able to “*demonstrate a commitment to physician health and well-being to foster optimal patient care*”[17]. In 2015, the Canadian Federation of Medical Students (CFMS) *Medical Student Health and Wellbeing* position paper similarly endorsed health and well-being as prerequisites for

academic achievement, professional development, and optimal patient care[27]. The Association of Faculties of Medicine of Canada (AFMC) has created the Physician Wellness Working Group with an upcoming report to make wellness recommendations to Canada's 17 medical schools[28]. In 2017, the *CMA Policy on Physician Health* emphasized the need for robust and accessible wellness services for physicians and medical learners to benefit themselves, their patients, and health systems. The policy affirmed that training bodies and accreditation bodies should prioritize implementing formal wellness curricula at all levels of training, to assist learners in self-management and peer support. Burnout, depression, and impaired wellbeing in physicians and medical learners have been shown to impact academic performance, quality of patient care and safety, health system sustainability, and more[25,29]. Interventions targeted towards medical students have the potential to impact their health, future patients, and the health system they operate in by improving personal wellbeing, physician career longevity, and patient care.

Methodology

Following an environmental scan of existing wellness curricula by means of a targeted national survey, the Canadian Federation of Medical Students (CFMS) created the Wellness Curriculum Task Force (WCTF) in April 2019 with the aim of determining the need for a national wellness curriculum framework for Canadian medical students. Hence, many steps of the methodology were undertaken prior to the decision to create the Wellness Curriculum Framework (WCF). The CFMS recruited WCTF members from across Canada through an open call for applications with a blinded selection process. None of the members have declared conflicts of interest, and no monetary compensation was provided for participating in this project.

Needs assessment

The WCTF adapted the six-step approach to medical curriculum development to create a new evidence-based WCF for Canadian medical schools[30]. We reorganized the problem identification, general needs assessment and targeted needs assessment into one step: the needs assessment. It was composed of three foundational pillars: 1) a literature review to explore the problem and to form the basis of evidence for the educational strategies, implementation, and evaluation steps 2) an environmental scan of current practices regarding wellness education in

Canadian medical schools, and 3) two national targeted surveys to identify the specific wellness needs of medical students.

The search phrase used for the literature review was: "wellness curricular*" OR "medical student wellness" yielding 47 articles, of which 18 were read in their entirety. An additional 3 articles were identified in the grey literature and read in entirety. The inclusion criteria was any article containing wellness content specific to the medical field. The exclusion criteria were articles talking about the hidden curriculum, or articles in a language other than French or English.

The environmental scan was first conducted by contacting every wellness or student affairs representative of each member school of the CFMS in the Spring 2018 through the CFMS Wellness Roundtable. It was reviewed a second time in April-May 2019 by the new group of wellness representatives and by the Associate Dean of the Office of Advocacy and Wellbeing from the University of Alberta, to ensure accuracy. The response rate was 100% (15/15) for both rounds. Of note, the two Canadian medical schools that are not members of the CFMS were not included in the initial environmental scan; however input was sought from students of these schools at the stakeholder consultations stage.

The specific wellness needs of medical students were identified by means of two separate national surveys conducted in December 2019. The first survey was designed specifically for the wellness representatives of each CFMS member institution (all members of the CFMS Wellness Roundtable (WRT)), with the aim of identifying the wellness needs of their respective medical student bodies. The second survey was designed specifically for the academic (or education) representatives of each CFMS member institution (all members of the CFMS Academic Roundtable (ART)), to identify the best strategies for content delivery and for implementation of the wellness components to their respective medical curricula. The response rates for the two surveys were 87% (13 out of 15 schools) and 93% (14 out of 15 schools), respectively (**Appendix 1**).

Goals and objectives development

The needs analysis supported the WCTF members to develop a list of 16 goals, each containing 2-5 objectives, organized under five dimensions. These five dimensions (physical, emotional, professional fulfillment, social relationships and spiritual) were adapted from the World Health Organization's 2004 definition of wellness[31]. The WCF fulfills the enabling competencies 4.1, 4.2 and 4.3 outlined in the CanMEDS framework (under "Professional"), therefore aligning with the RCPSC wellness competencies. The list of goals and objectives was reviewed by every stakeholder listed in the Stakeholder Consultations section.

Stakeholder consultations

Stakeholders were chosen based on the following criteria: being based in Canada, actively working in the field of physician wellness, and working at the national level. Each stakeholder was provided with the latest set of goals and objectives as well as the evidence-based facilitators for implementation, educational strategies and evaluation, and asked a series of open-ended questions. The stakeholders selected were: Fédération Médicale Étudiante du Québec (representing the two non-CFMS Canadian medical schools), resident wellness expert (Dr. Adam Neufeld), Canadian Medical Association, two Canadian Student Affairs Deans (Dr. Mel Lewis from the University of Alberta, and Dr. Joanne MacDonald from Dalhousie University), and a representative from the AFMC and Royal College Resident Wellness Task Force (Dr. Leslie Flynn). Some of our stakeholders have subsequently taken an active role in partnering with the WCTF moving forward to shape the future of the framework and advise in its dissemination.

Facilitators for implementation, educational strategies, and evaluation

The full implementation, educational strategy development and evaluation of a local wellness curriculum (that follows our proposed Wellness Curriculum Framework) was outside the scope of the WCTF work. That said, the WCTF performed a literature search and developed a series of evidence-based, as well as medical student-informed strategies to facilitate the work of medical schools in implementing a local wellness curriculum. The needs assessment, stakeholder consultation feedback, and teleconference discussion with a pan-Canadian focus group supported the elaboration of these evidence-based facilitators.

Rationale

The CFMS Wellness Curriculum Environmental Scan, which was updated in April 2019 by CFMS Wellness Roundtable Representatives, found that 6 out of 15 CFMS member schools did not have an established wellness curriculum. Among those with an established curriculum, content and delivery methods varied widely, with some schools incorporating wellness content as an adjunct to other curricula. In December 2019, the WCTF surveyed the CFMS Wellness Roundtable, where respondents identified content related to career planning, simulations of stressful situations, suicide prevention, managing transitions, and stigma in medicine as the most valuable components of a wellness

curriculum (**Appendix 1**). The WCTF categorized wellness content identified through the literature review, general needs assessment, and targeted needs assessment according to the World Health Organization's domains of wellness as well as Competency #4 of the Royal College CanMEDS' Professional Role[17,31].

The literature review indicated a need for interventions at both the student and system-level to positively impact medical learner wellbeing. While this report occasionally refers to systems-level strategies, we determined that much of that work falls under the purview of the CFMS Health Promoting Learning Environment Task Force (HPLETF), and thus is beyond the scope of the WCTF[32]. In order to minimize overlap with the work of the HPLETF, the WCTF decided to focus on researching evidence-based methods for teaching individual wellness-related skills. Therefore, the WCTF focused on student-level initiatives within the Wellness Curriculum Framework (WCF), which medical faculties can deliver through the development of their wellness curricula. The WCF would function in complement with the Royal College's preliminary framework, and add further depth to the undergraduate education component, emphasizing needs that are most relevant to medical students. To aid in developing consistent approaches to the implementation of wellness curricula across Canada, we developed a set of facilitating strategies. A strong recommendation made by multiple stakeholders was to collaborate and create partnerships with administrative and wellness representatives both nationally and locally at the undergraduate level to conduct a pilot study of the wellness curriculum framework. See *Implementation Facilitators* for more information.

Through stakeholder consultations, the respondents repeatedly identified effective curriculum delivery as an essential component of the successful implementation of a wellness curriculum. Results have shown that, in the past, wellness programming often utilized delivery methods that respondents perceived to be ineffective in teaching the content and engaging learners (**Appendix 1**). For instance, medical faculties often used didactic lectures to deliver content, but students indicated a strong preference for simulations, experiential learning, and small-group discussion and against didactic lectures. Results also showed differences in the delivery and availability of wellness content as students transitioned from pre-clerkship to clerkship. In recognition of the value respondents placed on both curricular content and delivery methods, we developed a set of recommendations for both. See *Educational Strategies Facilitators* for more information.

The literature review highlighted the importance of follow-up and evaluation of a curriculum during the implementation phase to maximize long-term performance. However, we identified no formal evaluation methods to measure the effectiveness of current wellness content and student wellness at CFMS member schools. Thus, we proposed several evidence-based strategies for the evaluation of implemented wellness curricula. See *Evaluation Facilitators* for more information.

Through the development of the WCF, and subsequent wellness curricula, the WCTF aims to achieve the following:

Mission:

To educate healthier physicians to maximize the productivity and quality of health care provision for Canadians

Vision:

Canadian medical students who are able to appraise their personal state of wellness in each dimension (physical, emotional, professional, social, and spiritual) and have the opportunities to develop relevant individual skills to thrive in the Canadian health system

We hope that the WCF will further our vision and contribute to the betterment of healthcare in Canada over time. Physician and medical learner wellness is a complex issue that we will not solve by implementing a wellness curriculum, but we believe it is an essential component of the solution. To maximize the utility of the WCF for Canadian medical faculties, we focused on ensuring WCTF members and stakeholder consultations were as representative of Canadian medical faculties as possible. The *CFMS Health Promoting Learning Environment Task Force* has developed a position paper, passed at the 2020 CFMS Annual General Meeting, with recommendations related to the accessibility of wellness resources, culture, learner feedback, and more that will be complementary and intertwined with the work of the WCTF[32]. Our group strongly purports that the individual and learning environment aspects are mutually dependent and are complementary to achieving increased wellness for Canadian medical students.

Goals and Objectives

The following objectives apply to what medical students should be able to accomplish in their undergraduate medical studies through a wellness curriculum. Importantly, all objectives are intended for medical students undergoing an undergraduate medical program in Canada. **Appendix 2** shows the recommendation by the WCTF for the allocation of wellness curriculum objectives across medical undergraduate programming.

Overarching Goal

Throughout medical school, students will objectively appraise their personal state of wellness according to the five domains of this wellness curriculum, recognize factors that negatively affect one or more of these domains, and use the skills and resources required to promptly overcome these factors in a timely manner.

Objective Types

Each objective elaborated by the WCTF has been matched to an objective type according to the Thomas et al. textbook *Curriculum Development for Medical Education: A Six-Step Approach*, which is well established as a key resource for developing curricular content across diverse settings in medicine[30]. Each objective is denoted by the following prefixes:

- **C-k** = Cognitive (knowledge)
- **C-ps** = Cognitive (problem solving)
- **P-p** = Psychomotor (performance)
- **P-c** = Psychomotor (competence)
- **A-a** = Affective (attitudinal)

In this classification, objectives in the cognitive domain are subdivided into “knowledge”, referring to pure factual knowledge, as well as “problem solving” which is an overarching term for objectives requiring higher levels of cognitive functioning. Psychomotor objectives pertain to learned skills or behaviours. The competence subtype denotes ability to perform a skill whereas the performance subtype implies also an ability to incorporate the skill into one’s habitual behaviour. Affective objectives refer to “specific attitudes, values, beliefs, biases, emotions, or role expectations that can affect a learner’s learning or performance”. The Wellness Curriculum Framework incorporates a balanced set of objectives across all types for a comprehensive learning experience.

Wellness Curriculum Framework Goals and Objectives

1. Physical Needs

1.1. Nutrition

Goal: To incorporate and sustain the benefits of a balanced diet in everyday life

Objectives:

- 1.1.1. **C-k, P-p** Explain the nutritional principles of Canada’s Food Guide, and incorporate these by developing healthy and sustainable meal preparation plans (including recommendations on fluid intake)

- 1.1.2. **C-k** Identify at least seven main meals (one for each day of the week) by the end of preclerkship and 14 by the end of clerkship that follow Canada's Food Guide, that are each within a reasonable budget as determined by the student, and that can be created in under 30 minutes

1.2. Exercise

Goal: To incorporate and sustain the benefits of physical exercise in everyday life

Objectives:

- 1.2.1. **C-k, P-p** Explain the benefits of following the Canadian Physical Activity Guidelines, and incorporate these into one's lifestyle by developing a sustainable physical activity plan
- 1.2.2. **C-k** Identify two 30-minute exercise routines to integrate in a physical activity plan that aligns with personal goals
- 1.2.3. **C-k** Identify three 15-minute routines to integrate in a physical activity plan that require minimal set-up or equipment and can be utilized while travelling or on-call

1.3. Sleep

Goal: To convey the importance of good sleep hygiene and rest on performance and health

Objectives:

- 1.3.1. **C-k** Explain the effect of sleep hygiene on physical and mental health, performance, and human physiology
- 1.3.2. **P-p** Be aware of personal sleep requirements and be able to apply learned sleep hygiene techniques to maintain an appropriate sleep routine
- 1.3.3. **P-p** Identify and apply strategies to maximize rest while on overnight call

2. Emotional Needs

2.1. Self-Management

Goal: To equip students with the tools and resources to work towards their own emotional wellbeing, to recognize their own emotional state, understand their own basic psychological needs, and to appropriately utilize the tools at their disposal to address their needs

Objectives:

- 2.1.1. **P-p** Use psycho-social interventions to apply when signs of burnout (and/or other individual "red flags") are self-identified in order to increase personal wellness
- 2.1.1. **A-a, C-ps** Recognize when to seek external help and know where to find the resources to meet individual mental health needs

- 2.1.2. **C-k** Identify the major effects of physician burnout on patient care, professionalism, and personal quality of life
- 2.1.3. **C-k** Recall the basic psychological needs of autonomy, competence, and relatedness, and identify personal strategies to fulfill these needs
- 2.1.4. **C-k** Explore and identify personal motivations for engaging with this wellness curriculum as a medical student

2.2. Coping Strategies

Goal: To introduce current, evidence-based coping strategies and their rationale to enable medical students to make use of the most effective strategies according to their needs

Objectives:

- 2.2.1. **C-k** Recognize the prevalence of trauma (psychological and emotional) and substance use disorder in the general population and medical population, as well as the common defense/coping mechanisms used in trying to alleviate these indispositions
- 2.2.2. **P-c** Demonstrate resilience techniques through simulated clinical situations and know how and when to use these for proactive and reactive stress management
- 2.2.3. **A-a** Evaluate the short- and long-term, positive or negative, impacts of one's personal defense/coping mechanisms on their health, performance, and the quality of care provided to patients
- 2.2.4. **P-c** Recognize the importance of debriefing, both individually and in groups, as well as applying reflective practice following acute stressful events

2.3. Suicide Prevention

Goal: To equip students with a basic understanding of how to recognize warning signs and respond to indications of increased suicide risk in themselves and others

Objectives:

- 2.3.1. **C-k** List the resources and support systems available locally and know how to access them to prevent the propensity towards psychological distress and suicidal ideation/attempt, or in the event of suicidal ideation/attempt
- 2.3.2. **C-k** List risk factors and warning signs for psychological distress and suicide
- 2.3.3. **P-c** Demonstrate an approach to supporting a peer experiencing psychological distress or suicidal ideation
- 2.3.4. **P-c** Demonstrate an ability to support and communicate with someone who is experiencing psychological distress or suicidal ideation, including referring them to appropriate resources

3. Professional Fulfillment Needs

3.1. Managing Conflicting Demands

Goal: To guide students in using effective strategies to manage conflicting demands and organising activities throughout medical school

Objectives:

- 3.1.1. **C-ps** Demonstrate the ability to organise activities into a schedule, incorporating both academic and non-academic activities
- 3.1.2. **P-p** Demonstrate an ability to critically analyze one's own schedule and work with supervisors or faculty to prioritize commitments, recognize time constraints, and proactively address conflicts

3.2. Financial Wellbeing

Goal: To equip students with essential financial literacy to fulfill personal financial goals

Objectives:

- 3.2.1. **C-k** Understand the concept of financial abuse, the frameworks for saving and investing, and the common financial services involved in supporting medical practices
- 3.2.2. **A-a** Endorse keeping an updated budget
- 3.2.3. **C-k** Create a repayment plan for any accrued debt and demonstrate awareness of strategies to help navigate unforeseen financial challenges (including, but not limited to, family circumstances and disability/leave of absence)
- 3.2.4. **C-k** Be aware of the different methods of physician payments and their implications for future professional practice

3.3. Career Orientation

Goal: To empower students with the knowledge and skills to engage in a personalized career planning process

Objectives:

- 3.3.1. **C-k** Demonstrate a basic understanding of the CaRMS residency matching process early in medical training
- 3.3.2. **P-p** Utilize informational resources to aid in career planning and informed decision making including the CaRMS website, workforce and physician resource planning data, and discussions with senior students
- 3.3.3. **A-a** Know how to access career advisors available for in-person or online counselling aimed at understanding oneself and one's priorities, exploration of career options, and specialty selection that is congruent with interests and values

3.4. Transition Periods

Goal: To educate, provide support, and empower students to manage transition periods that are known to be particularly difficult in medical school

Objectives:

- 3.4.1. **A-a** By the first half of preclerkship, reflect with a mentor or in small groups on expectations about medical school prior to admission and how that compares to the experience so far
- 3.4.2. **C-k** By the end of preclerkship, be aware of the common challenges faced in the transition to clerkship and identify resources that are available to help achieve success in clerkship
- 3.4.3. **A-a** By the first half of clerkship, reflect with a mentor or in small groups on expectations about clerkship prior to starting and how that compares to the experience so far
- 3.4.4. **A-a** By the end of clerkship, be aware of the common challenges faced in the transition to residency and identify key resources that are available to help achieve success in residency
- 3.4.5. **C-k** Throughout clerkship, be aware of the common stressors faced throughout the CaRMS matching process, identify key resources available to students to help them as they go through the process, and identify supports in place at students' respective schools to help navigate alternative post-graduate career pathways, including managing an unmatched status

4. Social Relationship Needs

4.1. Personal Relationships

Goal: To understand the importance of, and learn skills in maintaining and developing personal relationships throughout medical school

Objectives:

- 4.1.1. **C-k, P-p** Describe the major benefits of maintaining personal relationships, and able to incorporate time-flexible activities to help maintain and grow personal relationships
- 4.1.2. **A-a** After major milestones or transitions in the medical school career (e.g. starting medical school or clerkship, etc.) reflect and have the opportunity to share with a mentor or in small groups on personal relationships, how they have changed, and on new relationships that have formed

4.2. Sexuality

Goal: To enable students to understand the role sexuality plays in the well-being of themselves and others

Objectives:

- 4.2.1. **C-k, P-p** Demonstrate an understanding of inclusive language and terminology and be comfortable discussing sexuality and gender diversity with peers and patients

- 4.2.2. **A-a** Develop a professional, non-judgmental attitude towards a range of values and beliefs with respect to sexuality, regardless of the student's personal values and beliefs

4.3. Peer Mentorship

Goal: To demonstrate the willingness to receive and provide peer mentorship

Objectives:

- 4.3.1. **P-c** Demonstrate the ability to support a peer through a difficult situation and refer them to the appropriate resources if needed
- 4.3.2. **A-a** Have access to a mentorship program that seeks to facilitate the development of a relationship with at least one mentor and at least one mentee (starting with a new student during the transition into medical school), through an ongoing process of providing and receiving feedback

4.4. Dealing with Difficult Relationships

Goal: To encourage students to use their personal coping strategies to recognize and manage difficult interpersonal situations they may encounter during medical training

Objectives:

- 4.4.1. **P-c, C-k** Demonstrate an ability to report inappropriate behaviour and/or mistreatment and access resources that may help students navigate difficult relationships, both during local placements and during electives
- 4.4.2. **C-ps** Identify the strengths and weaknesses of one's personal coping strategies in dealing with difficult interpersonal situations (including, but not limited to, issues of mistreatment or abuse, conflicts with preceptors or peers, and difficult conversations with patients)

5. Spiritual Needs

5.1. Core Values in Medicine

Goal: To enable students to define their core values and beliefs while respecting those of others, and apply them in the context of their developing physician identity and that of the medical profession

Objectives:

- 5.1.1. **A-a** Develop a list of core values that students identify as fundamental for themselves to embody as future physicians
- 5.1.2. **P-c** Demonstrate an ability to reflect on how the care one is providing to patients aligns with one's core values, and how these values may change over time

- 5.1.3. **C-k** Appreciate the role that equity, diversity, inclusion, culture and generational differences play in shaping one’s personal values and interactions with colleagues and patients

5.2. Philosophy in Medicine

Goal: To allow students to be grateful for the privilege they hold to be part of people’s lives, including at their most vulnerable moments

Objectives:

1. **P-c, A-a** Demonstrate an openness to examining one’s own values regarding life, death, spirituality, and suffering
2. **P-p, A-a** Demonstrate gratitude (e.g. through personal or shared reflection) in a way that is sustainable, aimed at acknowledging the privileges integral to the medical profession and in alignment with individual core values

Implementation Facilitators

This section outlines the Wellness Curriculum Task Force’s (WCTF) suggestions for medical schools as they begin to incorporate elements of the Wellness Curriculum Framework (WCF) into their local curricula. The WCTF acknowledges that each school has a unique, established process for curriculum development and that some schools already offer formal wellness programming. Therefore, we outline flexible facilitators describing key elements to successful implementation applicable to schools both with and without existing wellness curricula.

Regardless of the approach undertaken, we suggest using published evidence-based guidelines as a starting point for implementation (WCTF recommends *Thomas et al.* implementation checklist for medical curriculum, **Appendix 3**)[30]. The process should start by creating a “Wellness Curriculum Committee” formed to directly lead the implementation of the wellness curriculum. This task force, or working group, could be led by a Student Affairs dean or designate and include input from curriculum developers, faculty to be involved in curriculum delivery, and importantly student representatives. This group would conduct a thorough curricular mapping of existing wellness programming and identify gaps where the development of new content could fulfill the goals and objectives of the WCF. Students affiliated with the WCTF could serve as consultants to assist in this mapping process as well.

The WCTF believes that having longitudinal input from students on this committee is critical for successful implementation. Ideally, the committee

would include medical students providing representation across different years of medical school/stages of training. The CFMS Academic and Wellness Roundtable surveys' results show that, even in schools with formal wellness programming, students' reception to these initiatives has been mixed. A common sentiment is that while formal wellness initiatives are admirable, their impact may not always be as significant as intended (**Appendix 1**). Students noted that the timing of learning events, evaluation methods used, and content emphasized was not always congruent with their needs and interests. They felt that increasing collaboration between faculty and students could foster more meaningful initiatives and long-term impacts.

While examples of wellness curricula in the literature often mention student consultation as a key component of their needs assessment[13,33,34], fewer papers describe students as continuing to play an integral role in the implementation process. One study described how a Student Wellness Committee was developed to oversee part of Vanderbilt University's wellness strategy, with advisory and financial support from the faculty. The authors noted this committee was vital for fostering student buy-in and leading to high participation and satisfaction rates[11].

Student needs should also be taken into account in determining which portions of the curriculum should be introduced in the most timely manner. A phase-in approach to curricular changes has been shown to be effective for gradually introducing wellness initiatives, as this approach provides an opportunity to elicit real-time feedback and promotes organic student and faculty buy-in[11,12]. The WCTF's Wellness Roundtable survey identified the CaRMS process, career planning, simulations of difficult interpersonal situations, and mental health domains (**Appendix 1**), which align with the Emotional Needs and Professional Fulfillment domains of the WCF, as being the most valuable components of a proposed wellness curriculum. Based on this survey data, as well as published wellness curriculum literature, the WCTF suggests a phase-in approach that targets and implements these domains first, as they correspond to the areas of greatest student need. However, recent data collection eliciting concerns unique to each local student population, should prevail.

The process of collecting feedback about the curriculum and data on desired outcomes should begin simultaneously with the implementation process and continue iteratively thereafter. Ideally, each new component of the WCF that is introduced would be associated with a pre-implementation and post-implementation data collection designed to measure the impact of the relevant domain(s) of wellness targeted by the WCF on students' perception of wellness. This data can be used both for internal quality improvement of the curriculum and can also be shared across schools to help assess the effectiveness of the WCF over the long-term (for more details, refer to the evaluation section).

The following is a summary of the WCTF's recommendations for medical schools in regards to curriculum implementation:

1. Form a task force (or working group) of stakeholders to specifically direct steps 2-7 of the implementation process below, as approved by the local curriculum committee or administrative body:
 - Consult and actively involve academic and wellness leaders within each faculty;
 - At least one student representative (e.g. wellness, academic, etc.) should be a member of the committee;
 - We encourage involvement from student representatives at different stages of training (i.e. at least one pre-clerkship student and one clerkship student) whenever possible.
2. Map where the *Goals and Objectives* of the WCF may fit within the existing curriculum:
 - Reorganize existing wellness programming to fulfill the Goals and Objectives of the WCF;
 - Identify the gaps between the existing wellness programming and the proposed WCF.
3. Develop sub-objectives and content that addresses the unique needs of your student population to fill in the gaps identified in facilitator 2 above as well as in the "Educational Strategies Facilitators" section.
4. Employ a phase-in approach of the WCF, as opposed to a full implementation, by piloting the most critical portions of the curriculum according to student needs. Based on the WCTF national surveys, literature review, medical student and stakeholder feedback, we suggest:
 - First, spread out the objectives throughout the medical undergraduate programming. The WCTF members propose the allocation found in Table 1;
 - Second, implementing "*Section 2: Emotional Needs*" and "*Section 3: Professional Fulfillment*" of the WCF Goals and Objectives;
 - Third, other sections may be prioritized instead if felt to be significantly underrepresented in the local curriculum, or in order to favour representation of the different domains of the WCF;
 - Fourth, continue the phase-in approach in an attempt to have all wellness domains implemented until all the Goals and Objectives of the WCF are reached.
5. Evaluate students longitudinally (refer to "Evaluation Facilitators" section below.)

6. Collect student feedback through means such as organizing focus groups or town halls in addition to usual program formative evaluation, and integrate their responses to help the quality improvement of the wellness curriculum over time.
7. Collect and report data about implementation and medical student aggregate wellness outcomes in response to local wellness curriculum.

Educational Strategies Facilitators

Within this report, the WCTF has outlined goals and objectives that may be used as a framework to guide the development of specific sub-objectives that would correspond directly with learning events within a school's curriculum. Sub-objectives were intentionally left open for each individual school to develop its own wellness programming content. This allows adequate flexibility during implementation and tailoring of content to meet each school's unique needs. Similarly, specific curriculum content was not developed as the WCTF believes that many of the principles emphasized by the WCF can and should be incorporated into existing curricula to minimize over expansion of the medical school curriculum, often termed "curriculumomegaly". Curricular mapping should be undertaken at the local level to identify which elements of the WCF can be integrated with existing learning events, and which elements require the development of new educational materials[35].

The WCF goals and objectives fit primarily into the cognitive (problem-solving), affective (attitudinal), and psychomotor (both) categories with a lesser emphasis on cognitive (knowledge) objectives, as described in detail in Chapter 4 and 5 of *Curriculum Development for Medical Education*[30]. It is widely recognized that educational methods for these objective types benefit less from traditional instruction methods - such as readings, lectures, and online learning resources - and more from methods such as discussion groups, role-plays, standardized patients, and real-life experiences[30,34]. While the literature is limited with regard to wellness curricula, and delivery methods are varied, there seems to be some agreement, particularly from students, that small discussion groups are effective. Agarwal and Lake found 90% of students surveyed agreed or strongly agreed that "small group was an effective learning experience[16]." Drolet and Rodgers similarly found students rated their satisfaction with small group discussions at a mean of 4.32/5[11] and other medical schools such as McGill have effectively instituted what they have termed "ice-cream rounds"[13].

To gather further information that is directly applicable to Canadian medical students, the WCTF surveyed the CFMS Academic and Wellness Roundtables for input into the curriculum delivery methods most preferred by students. The highest valued delivery methods for the WCF were simulations, experiential learning, and small discussion groups. The lowest valued delivery methods for the WCF were lectures, online modules, and personal reflection assignments (**Appendix 1**). Methods highly valued by students, such as small group learning, also correspond well with the educational strategies noted by Thomas et al. to be most effective for the objective types most emphasized in the WCF[30]. These methods can facilitate multiple objectives from all five domains of wellness included in the WCF, meaning their use would also be an efficient use of curricular time and a safeguard against “curriculumegaly”.

While online modules were not highly valued in this survey, it does not mean that educational technologies cannot be leveraged to increase participation and engage students. The WCTF’s student surveys were distributed and completed prior to the onset of the COVID-19 pandemic, which has necessitated major adjustments to curriculum delivery across Canada. With virtual technologies and online learning likely to remain a core component of medical education for the foreseeable future, it is imperative that wellness curricula make use of these learning modalities. There are advantages specific to online and virtual learning that are particularly relevant to wellness education, including the incorporation of a flipped classroom, self-directed and remote learning, increased anonymity, and the ability to track outcomes such as well-being and coping methods over time (described further in the *Evaluation* section).

Based on the information gathered from both published literature and Canadian medical student consultation, the WCTF recommends:

Content Development:

1. Develop specific and measurable sub-objectives, to further delineate the Goals and Objectives included in the Wellness Curriculum Framework (WCF):
 - If necessary, create original content or revise existing content to fulfill the stated sub-objective(s).
2. Integrate new wellness content into previously existing programming, whenever possible, as identified by local curriculum mapping.

Curriculum Delivery:

1. Utilize a variety of educational methods best tailored to achieving cognitive, affective, and/or psychomotor learning objectives, as well as medical students’ preferences, preferably by conducting local assessments.

2. Maximize the use of educational technology, especially to facilitate the participation of students in clerkship or at distributed sites, to allow for anonymity, and to deliver and keep track of individual wellness assessments. Examples of methods include:
 - Flipped classroom;
 - Mobile technology;
 - Online education;
 - Social networking;
 - Videoconferencing;
 - Web-enhanced learning.
3. Equip medical students with a handbook for the local wellness curriculum providing useful resources for each of the five domains of wellness included in the Wellness Curriculum Framework.

Evaluation Facilitators

This section outlines the WCTF's suggestions for the evaluation of each medical school's adaptation of the WCF within its local curriculum. The evaluation process is intended to be carried out first during the implementation phase, described in the previous section, and thereafter to be utilized iteratively to ameliorate the local wellness curriculum as it moves forward. As individual schools employ their own established methods of evaluating new curricular components, the WCTF has crafted these facilitators to allow for flexibility in the evaluation process while making reference to validated methods. This evaluation will provide a means to critically examine the effectiveness of the curriculum at the individual and program levels, and to further assess the impact on the quality of learning outcomes and student development.

Curriculum Development for Medical Education describes the importance of the evaluation and feedback step as closing the loop of curriculum development and emphasizes formal evaluation as a crucial component of curriculum improvement (WCTF recommends *Thomas et al.'s* 10- task approach to medical curriculum evaluation, **Appendix 3**)[30]. In this section, four types of evaluations are defined: individual formative assessment, representing "evaluation of an individual that is used to help the individual improve performance;" individual summative assessment, representing "evaluation of an individual that is used for judgements or decisions about the individual;" program formative assessments, representing "evaluation of a program that is used to improve program performance;" and program

summative assessment, representing “evaluation of an program that is used or judgements or decisions about the program or program developers.” The difficulty in evaluating a wellness curriculum lies in how to define and measure “wellness.” There are many tools described in the literature to measure the effects of such curricular interventions, including focus groups, student surveys, performance on professional exams, and the use of validated self-reported scales of wellness and/or burnout. Stansfield, Giang, and Markova even created a novel scale to measure resident wellness in their study exploring longitudinal tracking of resident wellbeing[33].

The WCTF undertook consultations with a focus group of CFMS general members and a resident wellness expert to further clarify suggestions and concerns regarding longitudinal student wellness evaluation. These stakeholders emphasized the importance of maintaining this element as a purely formative and confidential appraisal that is geared for the student’s own self-development and is not evaluative in the traditional sense. Furthermore, the suggestion was made to supplement the provision of these wellness assessments with regularly offered “wellness check-ins” for those students who are interested in discussing the results or any other concern in regard to their personal wellness. Students also noted their preference for flexible attendance and participation in wellness curriculum programming in concordance with their individual wellness goals, in line with the Autonomy principle of Self-Determination Theory.

Distinct from the evaluation of student wellness outcomes longitudinally, evaluation of individual curricular components should also be carried out iteratively, as described in more detail in the Implementation section above. The CFMS Academic and Wellness Roundtable survey results have identified factors that may affect student participation in curricular evaluation. Students noted that using a concise method of evaluation/feedback, linking the evaluation to curriculum objectives, and performing evaluation in a timely manner (i.e. immediately after sessions) may positively impact students’ engagement with, and participation in, the feedback process (**Appendix 1**).

Based on the information gathered from the literature and student feedback described above, the WCF recommendations for evaluation are as follows:

1. Individual formative assessments:

- Prioritize a longitudinal evaluation method for student wellbeing using a scale that has demonstrated good content validity for the different domains of wellness included in the Wellness Curriculum Framework (physical, emotional, professional fulfillment, social relationships, and spiritual needs). The following are examples of potential scales:
 - Five Factor Wellness Evaluation of Lifestyle (5F-WEL) scale[36];
 - Four Factor Wellness Evaluation of Lifestyle (4F-WEL) scale[37];

- Wellness Evaluation of Lifestyle (WEL) scale (<http://apjcn.nhri.org.tw/server/your-health/programs/wellness/WELinstrument2.pdf>);
 - Body-Mind-Spirit Wellness Behavior and Characteristic Inventory (BMS-WBCI) scale[38];
 - Psychological Well-Being (PWB) scale[39];
 - Resident Wellness Scale[33].
- Dedicated curricular time should be provided for students to complete the assessments.
 - Assessments should be available for completion at least once a year with the first completion during the first month of school (ideally during medical school orientation to gauge baseline wellbeing), and at least once per semester (or per 3-4 months) thereafter throughout medical school.
 - Results from the individual formative assessments should be easily available to the student to facilitate self-tracking specific to each wellness domain.
 - The use of these assessments is meant to be flexible, self-directed, and coupled with wellness resources provided by Student Affairs or equivalent.
 - Under no circumstance should the results of individual assessments be shared to preceptors, the undergraduate medical education office, or anyone that could be involved in the subjective evaluation of a student's transcript or Medical Student Performance Record.
 - Employ scheduled "wellness check-ins" facilitated by Student Affairs (or the body responsible for student wellness locally, ideally separate from undergraduate medical education):
 - Provide opportunities for students to reflect on their wellness and discuss any concerns in a confidential manner;
 - Offer available resources and non-mandatory personalized follow-up;
 - These sessions should be scheduled regularly (suggested once per semester) and be accessible in timing and modality for students in clerkship and at distributed sites.
 - No objective or subjective components, other than the mention of "pass" or "fail" for the wellness curriculum, should appear on the student's transcript and Medical Student Performance Record.

2. Individual summative assessment:

- Should be pass or fail and depend solely on:
 - Attaining the threshold percentage of flexible mandatory participation as defined by the local wellness curriculum committee. (Suggested is a threshold of 50% where students

- would decide to participate in the programming that aligns with their personal wellness needs);
 - Attendance at regular check-in sessions facilitated by local Student Affairs or equivalent.
 - Aggregate results of de-identified individual formative assessments should be shared to Student Affairs (or the body responsible for student wellness locally.) A purpose would be to identify periods of time within medical school that tend to be more challenging for the student population for prompt implementation of alleviating measures.
3. Program formative and summative evaluations:
- A scale should be chosen, repurposed, or created to measure students' perception of the impact of the implementation of the relevant domain(s) of wellness from the WCF on their personal wellness.
 - Ideally, each new component of the WCF that is introduced would be associated with a pre-implementation and post-implementation data collection measurement;
 - This scale and measurement, should be different than the individual formative assessment scale;
 - In the absence of a suitable validated and reliable scale, a mixed approach combining quantitative and qualitative data collection and analysis is suggested.
 - Should be integrated into the local school's common procedure for curriculum evaluation.
 - Should seek feedback (quantitative and/or qualitative) from students and staff interacting with the curriculum in regards to the curriculum's effectiveness in addressing the various domains of wellness, and use a different metric than the one used for individual formative assessments.

Limitations

The CFMS Wellness Curriculum Framework is a novel approach to wellness curricula in Canadian medical schools. The process of creating this framework revealed challenges relating to the high-level appraisal, design and implementation of curriculum content.

Our review of current wellness curriculum offerings was based on self-reported data from CFMS member schools. Thus our environmental scan may be subject to overinclusion of some curricular items. Conversely, there may be under inclusion of the sum wellness content offered as some schools may forgo formal curricular items in favour of student-driven initiatives, extracurricular offerings from various local resources, or systematic changes in the learning environment. The information collected in the environmental scan was obtained from student representatives, and did not include self-reported data on curriculum content from medical school administrators or faculty members. Further it is noted that not all current wellness interventions have specific data assessing their impact on medical students' metrics in personal, academic, social and occupational domains. Recommendations are based on students' experiences, self-reported needs, existing studies, and stakeholder feedback.

While formulating our suggested content and modalities, CFMS members' opinions were considered. However, members' subjective views can be influenced by a variety of factors that interact, including the specific content taught (e.g. specific mindfulness techniques), the manner of delivery, the instructor and myriad other factors. While this prevented formulating specific recommendations that reflected the environment of each school, it was an opportunity to create guidance and direction which could be suitably interpreted locally.

The addition of curricula can be a challenge in any environment. A limitation of our recommendations is that they are made without a full analysis of the curricular hours available at each member school. As student wellness is influenced by both personal skills and environmental factors, it will be important that the provision of wellness content does not negatively impact students. Even with a graded implementation of WCTF recommendations, there is the potential for local disruption. Development and inclusion of new curricular content is resource heavy, requiring content experts, support staff and the necessary physical facilities; these may be limited to varying degrees at each member school.

Coronavirus disease 2019 (COVID-19) has been disruptive to many medical schools during the development of the CFMS Wellness Curriculum Framework. As a result, schools have had to adapt with the provision of traditionally in-person curriculum online, modified curriculum schedules and altered availability of traditional student resources (e.g. physical wellness centers). The novel nature of COVID-19 limits the capacity of the WCTF to analyze its effects on students and wellness curricula; the data informing this report was collected prior to COVID-19's disruption of Canadian medical education. Thus, member schools will need to be attuned to ongoing concerns and anticipate future challenges to ensure adequate and timely delivery of wellness curricula.

Future Directions

The CFMS WCTF will continue to promote the importance of medical student wellness. The public availability of the CFMS Wellness Curriculum Framework on the CFMS website will allow for interested parties to collaborate with the CFMS in the process of their local wellness curriculum implementation/reform. The 2020-2021 WCTF is planning to pilot the WCF in at least one faculty to document the impact of the CFMS WCF on perceived medical student wellness. To then ensure the sustainability of wellness implementation into undergraduate medical education, the WCTF will play an active role in closing the loop on local curriculum implementation to assess progress, and furnishing schools with evidenced-based and student informed facilitators. Quality improvement of the WCF itself will be necessary to keep updated in the quickly changing medical landscape in Canada.

Even though wellness content development was outside the scope of this report, upcoming efforts may focus on gathering available wellness content, map these to specific objectives found in the WCF, and organize them within a public online medical education repository. The availability of such content, would make it more feasible for faculties to implement and design local wellness programming.

It will be important to develop strategies which will harness learners' intrinsic desires to become autonomous and competent self-regulators of their own wellness in order to promote students' engagement with the WCF. Coordination with efforts at the systemic level will ensure that students' barriers to maintaining wellness can be navigated through a combination of personal skills and a supportive working environment. As the domain of student wellness becomes forefront in the field of medical education, the CFMS Wellness Curriculum Framework will play an increasingly important role in students' lives.

Conclusion

The Wellness Curriculum Framework aims to provide Canadian medical schools with evidence-based strategies to facilitate the integration of wellness concepts into their medical programming. This framework strives to enhance the health and wellbeing of Canadian medical students and strengthen the wellness of the next generation of physicians, thus empowering them to provide the highest quality patient care.

We identified the necessity of a paradigm shift in wellness education for medical students, requiring a transition from student-directed wellness activities to the integration of the physical, emotional, professional, social and spiritual factors that play a role in medical student wellness. We wish that medical students will be able to recognize the role of the five domains of wellness in their personal and professional lives, and will be equipped to address wellness concerns impacting these domains, allowing them to thrive throughout their medical journey.

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Appendices

Appendix 1: CFMS Wellness Roundtable and Academic Roundtable Survey Questions and Selected Results

Wellness Roundtable Survey Questions

(n = 14 respondents)

Question #1: What school are you from?

Question #2: On average, how would you say students at your school manage the following components of the medical school experience considering what is included in your school's program? (Scale: 1 - Poor, 2 - Fair, 3 - Average, 4 - Good, 5 - Excellent, Not Applicable)

- Transition to Clerkship
- Transition to Residency
- Financial planning
- Mistreatment
- Time management and conflicting demands on their time
- Stress management
- Stress reduction techniques (E.g. Mindfulness)
- Personal nutritional needs
- Personal physical fitness
- Student Affairs services available to students at your school (E.g. Who students can go to if they are struggling or need to take time off)
- Career planning for residency and beyond
- Mentorship and network development (E.g. Do they feel connected to the community and are they able to develop relationships within their area of interest?)

Question #3: Overall, are students satisfied with the current components dedicated to wellness at your school, and why? (Short answer)

Question #4: Which of the following topics would students at your school value most as components of a Wellness Curriculum: (Choose up to 10)

- Cognitive Behavioural Therapy (CBT)
- Financial Literacy
- Resilience
- Nutrition
- Physical wellness
- Managing illness
- Sleep hygiene
- Fatigue risk management
- Journalling
- Time management
- Stress reduction techniques (e.g. Box breathing, mindfulness)
- Stigma in medicine
- Study skills
- Mistreatment
- Self-reflection
- CaRMS and Career Planning Stress
- Motivational speakers
- Peer support training
- Simulations of difficult situations (eg: announcing a patient death to a family)
- Professional mentorship
- Suicide awareness and prevention
- Communication skills
- Self-audits for wellness
- Creating and practicing professional boundaries
- Managing transitions
- Other:

Question #5: Which of the following topics would students at your school value least as components of a Wellness Curriculum: (Choose up to 5)

- Cognitive Behavioural Therapy (CBT)
- Financial Literacy
- Resilience
- Nutrition
- Physical wellness
- Managing illness

- Sleep hygiene
- Fatigue risk management
- Journalling
- Time management
- Stress reduction techniques (e.g. Box breathing, mindfulness)
- Stigma in medicine
- Study skills
- Mistreatment
- Self-reflection
- CaRMS and Career Planning Stress
- Motivational speakers
- Peer support training
- Simulations of difficult situations (eg: announcing a patient death to a family)
- Professional mentorship
- Suicide awareness and prevention
- Communication skills
- Self-audits for wellness
- Creating and practicing professional boundaries
- Managing transitions
- Other:

Question #6: Rank the following curriculum delivery methods from most valued (1) to least valued (9) for use in the delivery of a Wellness Curriculum at your school:

- Lectures
- Simulations (E.g. Mistreatment scenario followed by a debrief)
- Experiential learning (E.g. Guided mindfulness session)
- Small discussion group
- Personal reflection assignments
- Online modules
- Interactive large group sessions
- Panel discussions
- Half/full day workshops

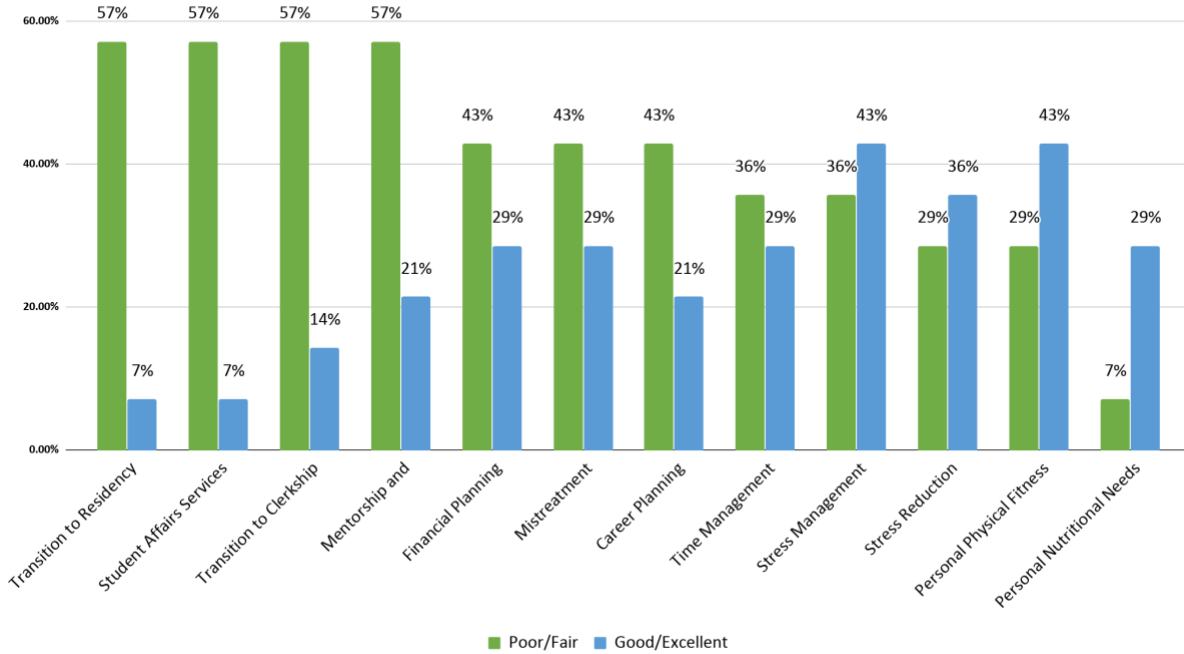
Question #7: Additional comments relating to the development, delivery, or topics of a Wellness Curriculum: (Short answer)

Wellness Roundtable Survey Results

(n = 14 respondents)

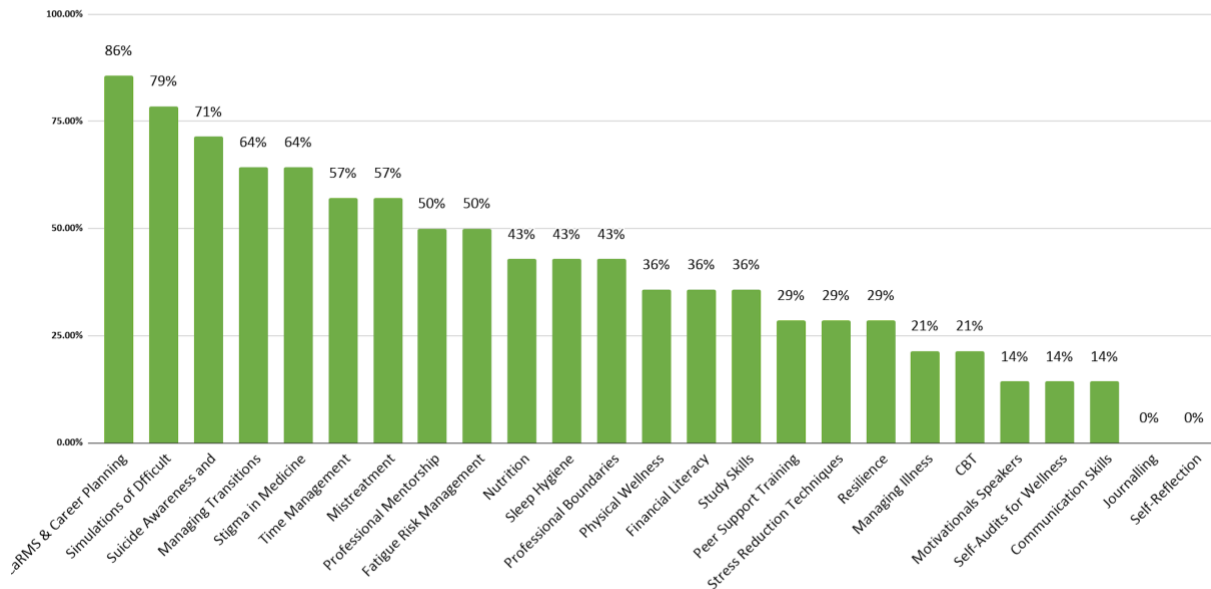
Question #2

On average, how would you say students at your school manage the following components of the medical school experience considering what is included in your school's program?

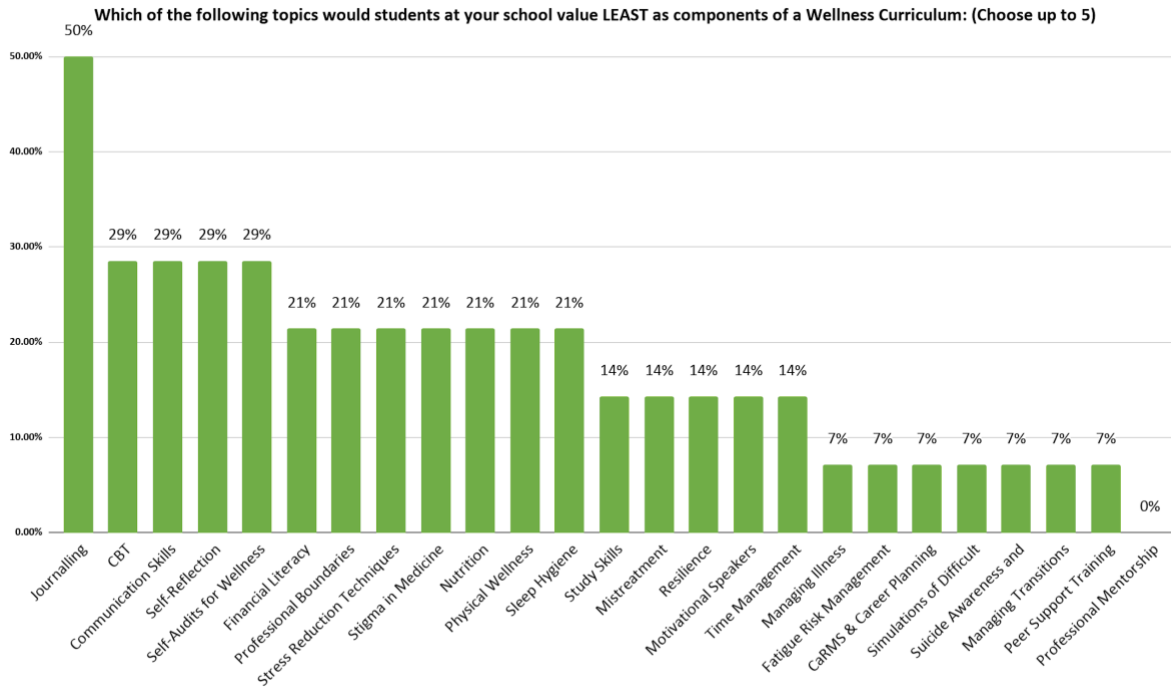


Question #4

Which of the following topics would students at your school value MOST as components of a Wellness Curriculum: (Choose up to 5)



Question #5



Question #6

Simulations (Rank #1)	Total = 111pts 1(10pts) x3 = 30 2(9pts) x3 = 27 3(8pts) x4 = 32 5(6pts) x2 = 12 6(5pts) x2 = 10	Small Group Discussion (Rank #2)	Total = 106pts 1(10pts) x2 = 20 2(9pts) x4 = 36 3(8pts) x2 = 16 4(7pts) x3 = 21 5(6 pts) x1 = 6 6(5 pts) x1 = 5 9(2 pts) x1 = 2	Panel Discussions (Rank #3)	Total = 105pts 1(10pts) x4 = 40 2(9pts) x1 = 9 3(8pts) x3 = 24 5(6pts) x3 = 18 6(5pts) x2 = 10 7(4pts) x1 = 4
Interactive Large	Total = 95pts 2(9pts) x2 =	Experiential	Total = 91pts 1(10pts) x1	Half/Full -Day	Total = 76pts 2(9pts) x1

Group Session (Rank #4)	18 $3(8\text{pts}) \times 2 = 16$ $4(7\text{pts}) \times 4 = 28$ $5(6\text{pts}) \times 3 = 18$ $6(5\text{pts}) \times 3 = 15$	Learning (Rank #5)	$= 10$ $2(9\text{pts}) \times 2 = 18$ $3(8\text{pts}) \times 3 = 24$ $4(7\text{pts}) \times 2 = 14$ $5(6\text{pts}) \times 1 = 6$ $6(5\text{pts}) \times 2 = 10$ $8(3\text{pts}) \times 3 = 9$	Workshop (Rank #6)	$= 9$ $3(8\text{pts}) \times 3 = 24$ $5(6\text{pts}) \times 3 = 18$ $6(5\text{pts}) \times 1 = 5$ $7(4\text{pts}) \times 3 = 12$ $8(3\text{pts}) \times 2 = 6$ $9(2\text{pts}) \times 1 = 2$
Online Module (Rank #7)	Total = 57pts $1(10\text{pts}) \times 2 = 20$ $6(5\text{pts}) \times 2 = 10$ $7(4\text{pts}) \times 2 = 8$ $8(3\text{pts}) \times 3 = 9$ $9(2\text{pts}) \times 5 = 10$	Lectures (Rank #8)	Total = 54pts $2(9\text{pts}) \times 1 = 9$ $4(7\text{pts}) \times 1 = 7$ $5(6\text{pts}) \times 1 = 6$ $7(4\text{pts}) \times 3 = 12$ $8(3\text{pts}) \times 5 = 15$ $9(2\text{pts}) \times 3 = 5$	Personal Reflection Assignment (Rank #9)	Total = 53pts $2(9\text{pts}) \times 1 = 9$ $4(7\text{pts}) \times 2 = 14$ $6(5\text{pts}) \times 1 = 5$ $7(4\text{pts}) \times 1 = 4$ $8(3\text{pts}) \times 3 = 9$ $9(2\text{pts}) \times 6 = 12$

Academic Roundtable Survey Questions

Question #1: What school are you from?

Question #2: Rank the following curriculum delivery methods from most valued (1) to least valued (9) for use in the delivery of a Wellness Curriculum at your school:

1. Lectures
2. Simulations (E.g. Mistreatment scenario followed by a debrief)
3. Experiential learning (E.g. Guided mindfulness session)
4. Small discussion group
5. Personal reflection assignments
6. Online modules
7. Interactive large group sessions
8. Panel discussions
9. Half/full day workshops

Question #3: How can wellness content or a wellness curriculum best be incorporated within existing programming at your school to avoid "curriculumegaly"? (Short answer)

Question #4: Using a competency-based framework, how can we best evaluate students as they progress through a wellness curriculum at your school? (Short answer)

Question #5: What measures could be used to assess the effectiveness of a new Wellness Curriculum to allow for continued quality improvement over time? (Short answer)

Question #6: Additional comments relating to the development, delivery, or topics of a Wellness Curriculum: (Short answer)

CFMS Academic Roundtable Selected Survey Result

(n = 14 respondents)

Question #2: Rank the following curriculum delivery methods from most valued (1) to least valued (9) for use in the delivery of a Wellness Curriculum at your school:

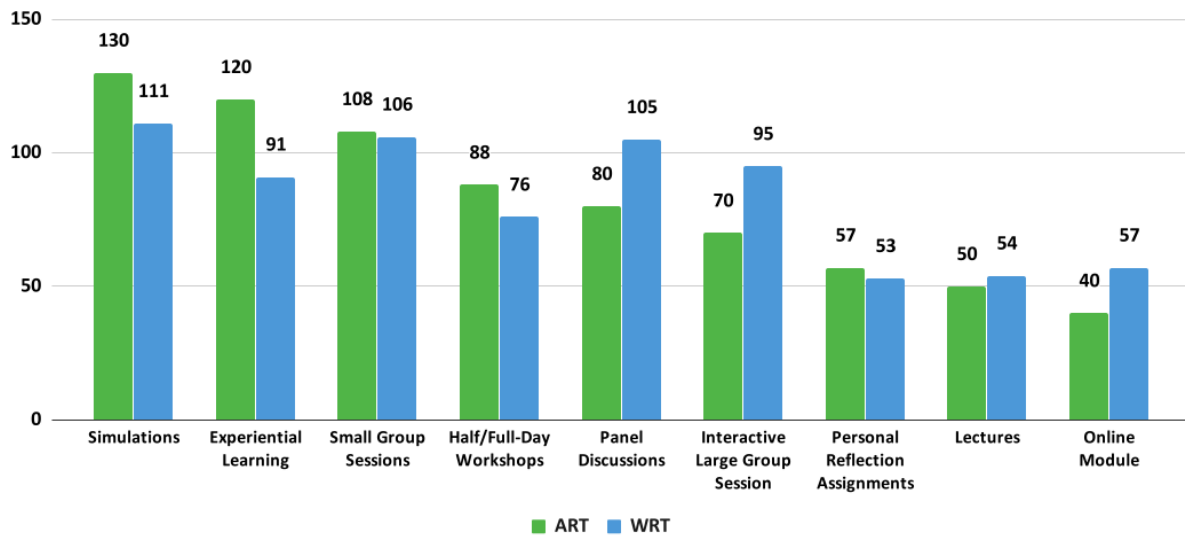
Simulations (Rank #1)	Total = 130pts 1(10pts) x10 = 100 2(9pts) x3 =	Experiential Learning	Total = 120pts 1(10pts) x3 = 30 2(9pts) x7	Small Group Discussion	Total = 108pts 2(9pts) x3 = 27 3(8pts) x6
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	$\frac{27}{8(3\text{pts}) \times 1 = 3}$	(Rank #2)	$\begin{aligned} &= 63 \\ 3(8\text{pts}) \times 2 &= 16 \\ 4(7\text{pts}) \times 1 &= 7 \\ 7(4\text{pts}) \times 1 &= 4 \end{aligned}$	(Rank #3)	$\begin{aligned} &= 48 \\ 4(7\text{pts}) \times 3 &= 21 \\ 5(6\text{pts}) \times 2 &= 12 \end{aligned}$
Half/Full-Day Workshop (Rank #4)	Total = 88pts $\begin{aligned} 1(10\text{pts}) \times 1 &= 10 \\ 3(8\text{pts}) \times 3 &= 24 \\ 4(7\text{pts}) \times 3 &= 21 \\ 5(6\text{pts}) \times 4 &= 20 \\ 6(5\text{pts}) \times 2 &= 10 \\ 8(3\text{pts}) \times 1 &= 3 \end{aligned}$	Panel Discussions (Rank #5)	Total = 80pts $\begin{aligned} 3(8\text{pts}) \times 2 &= 16 \\ 4(7\text{pts}) \times 4 &= 28 \\ 5(6\text{pts}) \times 3 &= 18 \\ 6(5\text{pts}) \times 2 &= 10 \\ 7(4\text{pts}) \times 1 &= 4 \\ 9(2\text{pts}) \times 2 &= 4 \end{aligned}$	Interactive Large Group Session (Rank #6)	Total = 79pts $\begin{aligned} 3(8\text{pts}) \times 1 &= 8 \\ 4(7\text{pts}) \times 2 &= 14 \\ 5(6\text{pts}) \times 3 &= 18 \\ 6(5\text{pts}) \times 7 &= 35 \\ 7(4\text{pts}) \times 1 &= 4 \end{aligned}$
Personal Reflection Assignment (Rank #7)	Total = 57pts $\begin{aligned} 5(6\text{pts}) \times 1 &= 6 \\ 6(5\text{pts}) \times 2 &= 10 \\ 7(4\text{pts}) \times 8 &= 32 \\ 8(3\text{pts}) \times 3 &= 9 \end{aligned}$	Lectures (Rank #8)	Total = 50pts $\begin{aligned} 2(9\text{pts}) \times 1 &= 9 \\ 4(7\text{pts}) \times 1 &= 7 \\ 5(6\text{pts}) \times 1 &= 6 \\ 7(4\text{pts}) \times 2 &= 8 \\ 8(3\text{pts}) \times 2 &= 6 \\ 9(2\text{pts}) \times 7 &= 14 \end{aligned}$	Online Module (Rank #9)	Total = 40pts $\begin{aligned} 6(5\text{pts}) \times 1 &= 5 \\ 7(4\text{pts}) \times 1 &= 4 \\ 8(3\text{pts}) \times 7 &= 21 \\ 9(2\text{pts}) \times 5 &= 10 \end{aligned}$

WRT and ART Results - Educational Strategies

Point allocation for the different rank order of answers for graph					
Pick #	# of points	Pick #	# of points	Pick #	# of points
1	10	2	9	3	8
4	7	5	6	6	5
7	4	8	3	9	2

Rank the following curriculum delivery methods from most valued (1) to least valued (9) for use in the delivery of a Wellness Curriculum at your school:



Appendix 2: WCTF proposition for allocation of wellness curriculum objectives across medical undergraduate programming

	WCF Objectives
Throughout medical school	2.1.1; 3.3.3; 4.1.2; 4.3.2; 4.4.2; 5.1.3; 5.2.2
Throughout pre-clerkship	3.1.1; 3.3.2; 5.1.1
By the first half of pre-clerkship	1.3.1; 1.3.2; 2.1.2; 2.1.5; 2.2.3; 2.3.1; 3.2.1; 3.3.1; 3.4.1; 4.1.1
By the end of pre-clerkship	1.1.1; 1.1.2; 1.2.1; 1.2.2; 2.1.4; 2.2.1; 2.2.2; 2.3.2; 2.3.3; 3.2.2; 3.4.2; 4.2.1
Throughout clerkship	2.3.4; 3.1.2; 3.4.5; 4.3.1; 4.4.1; 5.2.1
By the first half of clerkship	1.3.3; 3.2.3; 3.4.3; 5.1.2
By the end of clerkship	1.2.3; 2.1.3; 2.2.4; 3.2.4; 3.4.4; 4.2.2

Appendix 3: Curriculum Development for Medical Education Book References

Thomas, Patricia A., MD, David E. Kern, MD, MPH, Mark T. Hughes, MD, MA, and Belinda Y. Chen, MD, eds. *Curriculum Development for Medical Education: A Six-Step Approach*. pp. 69, Table 5.2; 103, Table 6.1. © 2015 Johns Hopkins University Press. Reprinted with permission of Johns Hopkins University Press.

Thomas et al. "Curriculum Development for Medical Education" Table 5.2. Matching Educational Methods to Objectives

Type of Objective					
Educational Method	Cognitive: Knowledge	Cognitive: Solving	Affective: Attitudinal	Psychomotor: Skills or Competence	Psychomotor: Behavioural or Performance
Readings	+++	+	+	+	
Lectures	+++	+	+	+	
Online learning resources	+++	++	+	+	
Discussion (large or small groups)	++	++	+++	+	+
Problem-based learning/ Inquiry-based learning	++	+++	+	+	+
Team-based learning	+++	+++	++	+	+
Peer-teaching	+++	+++	++	+	+
Real-life and supervised clinical experiences	+	++	++	+++	++
Reflection on experience, eg. writing	+	+	+++	+	++
Role models	+	+	+++	+	++
Demonstration	+	+	+	++	+
Simulation and artificial models	+	++	++	+++	++
Role-plays	+	+	+++	+++	++
Standardized patients	+	++	++	+++	++

Audio or video review of learner			++	+++	+++
Behavioural/ environmental interventions			+	+	+++

Note. Blank = not recommended; + = appropriate in some cases, usually as an adjunct to other methods; ++ = good match; +++ = excellent match (consensus ratings by author and editors).

Thomas et al. "Curriculum Development for Medical Education" Table 6.1. Checklist for Implementation

-
- ___ Identify resources
 - ___ Personnel: faculty, audiovisual, computing, information technology, secretarial and other support staff, patients
 - ___ Time: curriculum director, faculty, support staff, learners
 - ___ Facilities: space, clinical sites, clinical equipment, educational equipment, virtual space (servers, content management software)
 - ___ Funding/costs: direct financial costs, hidden or opportunity costs, faculty compensation, costs of scholarship
 - ___ Obtain support
 - ___ Internal
 - from: those with administrative authority (dean's office, hospital administration, department chair, program director, division director, etc.), faculty, learners, other stakeholders
 - for: curricular time, personnel, resources, political support
 - ___ External
 - from: government, professional societies, philanthropic organizations or foundations, accreditation bodies, other entities (e.g., managed care organizations), individual donors
 - for: funding, political support, external requirements, curricular or faculty development resources
 - ___ Develop administrative mechanisms to support the curriculum
 - ___ Administrative structure: to delineate responsibilities and decision making
 - ___ Communication
 - content: rationale; goals and objectives; information about the curriculum, learners, faculty, facilities and equipment, scheduling; changes in the curriculum; evaluation results; etc.
 - mechanisms: websites, social media, memos, meetings, syllabus materials, site visits, reports, etc.
 - ___ Operations: preparation and distribution of schedules and curricular materials; collection, collation, and distribution of evaluation data; curricular revisions and changes, etc.
 - ___ Scholarship: plans for presenting and publishing about curriculum; human subjects protection considerations; IRB approval, if necessary
 - ___ Anticipate and address barriers
 - ___ Financial and other resources
 - ___ Competing demands
 - ___ People: attitudes, job/role security, power and authority, etc.
 - ___ Pilot
 - ___ Phase-in
 - ___ Full implementation
 - ___ Plan for curriculum enhancement and maintenance
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Thomas et al. "Curriculum Development for Medical Education" 10 tasks approach to curriculum evaluation

Chapter 7: Evaluation and Feedback	
Task I	Identifying users
Task II	Identify uses
Task III	Identify resources
Task IV	Identify evaluation questions
Task V	Choose evaluation designs
Task VI	Choose measurement methods and construct instruments
Task VII	Address ethical concerns
Task VIII	Collect data
Task IX	Analyze data
Task X	Report results