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Creating space for leadership education in undergraduate medical education in Canada

Faire une place pour l'enseignement du leadership dans la formation médicale prédoctorale au Canada

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Abstract

The need for effective leadership by physicians is clear, yet the design/delivery of curricula, and assessment of leadership competencies, in Undergraduate Medical Education (UGME) continues to need work. In reappraising their UGME assessment strategies, the Medical Council of Canada (MCC) invited position papers across diverse lenses, including the CanMEDS Intrinsic Roles. This article is foundational work derived from the report on leadership assessment to the MCC. Using Kern's Model of Curriculum development as a guide, we reviewed the landscape of Canadian UGME leadership education through an environmental scan of the published and grey literature, Canadian leadership frameworks and resources, and consultation with learner and faculty leadership. Leadership education across programs was highly variable and learners were often unaware of available opportunities. In response, we have suggested processes for curricular development, including strategies for key content, teaching and assessment, and program evaluation considerations. Leadership education cannot remain another checkbox on a list of UGME experiences. Such training necessitates focused attention and investment to foster ongoing identity formation toward becoming a good doctor.

Résumé

Même si le besoin d'un leadership médical efficace est clair, la conception et l'implantation d'un cursus et de stratégies d'évaluations sur la compétence de leadership en éducation médicale prédoctorale demeure à optimiser. Dans le cadre de l'examen de ses stratégies d'évaluation de la formation médicale prédoctorale, le Conseil médical du Canada (CMC) a sollicité des énoncés de position portant sur divers aspects, y compris sur les rôles CanMEDS intrinsèques. Cet article s'appuie sur la soumission des auteurs concernant l'évaluation du leadership faite pour le CMC. Prenant le modèle de développement de cursus de Kern comme guide, nous avons examiné le paysage de l'enseignement du leadership dans la formation prédoctorale au Canada par le biais d'une analyse environnementale de la littérature scientifique et grise, des cadres et des ressources de leadership canadiens et d'une consultation avec des leaders parmi les étudiants et le corps professoral. L'enseignement du leadership dans les programmes est très variable et bien souvent, les apprenants ne sont pas au courant des possibilités offertes. En conséquence, nous suggérons des processus d'élaboration de cursus, y compris des stratégies d'enseignement en lien avec les sujets importants, l'enseignement, l'évaluation des apprenants et l'évaluation de programme. La formation au leadership ne peut pas demeurer un élément de la liste « à faire » pour l'éducation médicale prédoctorale. Une telle formation nécessite une attention et un investissement ciblés afin de favoriser la construction continue de l'identité de futurs bons médecins.

Introduction

Why should leadership be taught and assessed in undergraduate medical education (UGME)? Leadership is a cornerstone of being a 'good doctor' and is necessary for a system that supports health and quality healthcare. If we accept that leadership development is important in UGME, then what might be the essential elements of such teaching and assessment? Can these elements be incorporated into the current Canadian UGME contexts, or will transformational changes be necessary within curricula, teaching and assessment strategies, high stakes assessments, and licensure?

These questions are addressed in this commentary, derived from a position paper created as part of the Medical Council of Canada's (MCC) review of their assessment strategies. It was developed by a team deliberately chosen using a diversity lens including learners across different years of training, and faculty invested in leadership education and health professions education across undergraduate, graduate/postgraduate and faculty development. Discipline-specific diversity (pediatrics, psychiatry, and surgery) and geographical representation (across three provinces including western, central, and eastern Canada) were also considered. Using Kerns' six step Model of Curriculum Development[1] as an organisational framework**,** we review historical and current medical education contexts in Canada while exploring future possibilities for UGME leadership education.

Background

Breakthroughs in health and healthcare rarely occur by chance. Advancements in healthcare and systems design have all required leadership, much of which is tacit. Flexner's 1910 North American medical school review proposed that medical education should concentrate on the science of medicine.[2] Schools were urged to admit those with an already heightened education who could study medical sciences, apply these learnings to patient care, and bring advancements of science to the sick. Thus, the intrinsic characteristics and competencies that make a 'good doctor' were deemphasized and assumed to be present. These intrinsic characteristics such as leadership are being re-defined and developed, but now there is little space to fit them within existing curricula.

The science-based approach to medicine from Flexner's day has now transitioned to outcome-based competency frameworks especially in postgraduate education. The CanMEDS Leader Role was reframed from the Manager Role in 2015, using the lens of competence.[3] The process created an outcome-based, observable and, purportedly, objectively measurable description (in terms of action and capability) of one meta-competency of a physician. Although there is much overlap between what might be broadly termed leadership and the other competencies in the CanMEDS framework, the Leader Role has described the physician leader as being able to: "contribute to the improvement of health care delivery in teams, organisations, and systems; engage in the stewardship of health care resources; demonstrate leadership in professional practice; and manage career planning, finances, and health human resources in a practice."[3]

The core 'why' for health leadership education (i.e., knowing, and leading self through identity formation, recognizing core values, and understanding strengths) is well-accepted; it is critical for quality patient care, high functioning teams, provider wellness and necessary for continuous system improvement.[4-8] The impact of systems on patients, their families/caregivers/communities, and providers is immense, but poorly understood by many doctors, and seldom discussed. Examples from the domain of system change include funding silos (e.g., federal vs provincial/territorial funding), poorly integrated care delivery, poverty, climate change, and gun control. Many quality domains are affected by system factors including access to care, equitable care, patient safety and provider wellness. When future physicians do not learn adequate leadership skills to manage or influence these constraints through a system approach, then quality suffers.[4]

A leadership foundation must also be in place for professional identity formation during undergraduate training to adequately prepare medical students for transition into residency training, and then practice. Leadership knowledge, skills, and attitudes (KSA), while they overlap with other Intrinsic Roles, add critical elements that situate the provider as part of healthcare systems (micro, meso, macro).[9] The microsystem includes close relations of an individual; meso includes institutions such as hospitals and universities; and macro refers to society and cultural factors.[10] To that end, physicians' contributions and accountability is not only to their licensing bodies, but to improving overall health systems.

There is no paucity in the call for leadership education in medicine and across the health professions. Frenk and Chen's 2010 Lancet paper placed leadership squarely within medical and health professions education, calling

the international community to make this change.[4,11-12] Over the last several years, leadership training has shown sporadic inclusion in UGME curricula. For there to be a more standard approach to leadership training in medicine, it must be woven into the curricula of Canadian schools.

Therefore, to understand the current landscape of leadership education in Canadian UGME, and to make recommendations for change, we have approached the issue and are presenting our findings through the lens of Kern's 6 step approach to curriculum development.[1]

Step 1. Problem identification and general needs assessment

The need for good leadership is clear and yet the design/delivery of teaching and assessment of leadership competencies in UGME continues to be a work-in-progress. To better understand the current Canadian context of leadership teaching and assessment within UGME, we utilised three strategic approaches. 1) Environmental scan of published and grey literature to analyse the current state of leadership education across Canadian medical schools 2) Health leadership framework review to understand the Canadian and broader global health leadership education context 3) Consultation with current medical student leadership, recent graduates, residents immersed in leadership education, and faculty leads in various student/resident leadership development programs across Canada and internationally (Sanokondu, Royal College International). Our results from these approaches have identified eight general themes to help define the current approach.

Table 1. A comparison of leadership curriculum delivery, content, and non-curricular opportunities across 17 Canadian medical schools[3,12-71]
Curriculum delivery assessed medical schools' ways of providing leadership education to its learners. Curriculum content assessed medical schools' integration of key competencies from the CanMEDS/CanMEDS FM Physician Competency Framework into their curriculum. Non-curricular opportunities assessed the number of non-mandated leadership opportunities that some (but not all) learners could become involved in.

	UBC	Calgary	Alberta	Saskatchewan	Manitoba	NOSM	Western	McMaster	Toronto	Queens	Ottawa	McGill	Montreal	Laval	Sherbrooke	Dalhousie	Memorial
Curriculum Delivery																	
Program Level Objectives include leadership	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Formal leadership-focused curriculum components (e.g., modules)	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Leadership assessment explicitly mentioned (e.g., quiz, written assignments, OSCEs, EPAs)	✓			✓	✓	✓	✓				✓		✓		✓		✓
Graduate-level leadership degrees (e.g., MBA, MSc) available in conjunction with medical studies		✓	✓						✓								
Specialised leadership programs offered in conjunction with medical studies (e.g., certificate, symposium, conference)						✓		✓	✓	✓	✓		✓				✓
Curriculum Content (Key Competencies from the CanMEDS/CanMEDS FM Physician Competency Framework)																	
Contribute to the improvement of health care delivery in teams, organisations, and systems	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	
Engage in the stewardship of health care resources	✓	✓	✓	✓	✓		✓	✓	✓			✓	✓			✓	✓
Demonstrate leadership in professional practice	✓		✓	✓	✓		✓		✓	✓	✓	✓	✓		✓	✓	
Manage career planning, finances, and health human resources in a practice	✓	✓	✓	✓			✓	✓	✓			✓			✓	✓	✓
Objectives tagged as leadership that fall within other CanMEDS Roles	✓	✓	✓	✓	✓	✓				✓	✓				✓		✓
Non-Curriculum/Extracurricular Opportunities																	
Extracurricular leadership opportunities (e.g., student council, interest groups, unit representatives)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student leadership consultation in decision making committees (e.g., curriculum, assessment, evaluation, professionalism, EDID)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Financial support or other promotion (e.g., flexible schedules) of student engagement in leadership	✓		✓				✓	✓					✓		✓		
Recognition of student achievements in leadership (e.g., awards, scholarships)	✓		✓	✓	✓	✓					✓						✓
School sponsored activities with partnering organisations (e.g., Students & Trainees Advocating for Resource Stewardship (STARS) leadership program).	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: There are many formal and informal opportunities for leadership development outside of the University setting including those within many medical education organisations, health organisations and specialty-specific societies. These may be at the regional, national, or international levels and they are not identified in this table.

Current approach

***Leadership requirements*:** Canadian medical schools are variable in their investment in leadership education (see Table 1) and Canadian UGME needs to reconsider how to enhance and standardise this investment. The Association of Faculties of Medicine of Canada (AFMC)'s UGME entrustable professional activities (EPAs) required by the end of training do not include explicit language reflecting leadership competencies. This state exists despite the 2010 Future of Medical Education in Canada (FMEC) UGME report's recommendation 10: Foster Medical Leadership.[72] More specifically, this recommendation defines medical leadership as "essential to both patient care and the broader health system, which is not yet reflected in curriculum, nor does it include how to accomplish this task. Faculties of Medicine must foster medical leadership in manage, navigate, and help transform medical practice and healthcare systems in collaboration with others."[72]

Leadership curriculum: All 17 Canadian medical schools included some form of leadership content within their UGME curriculum; however, not all schools assessed leadership explicitly (see Table 1). Leadership content appears less explicit compared to other CanMEDS Roles, with eight of the 17 schools having leadership-specific programming (certificates, symposiums, conferences etc.). Some schools have a robust UGME leadership curriculum, outlining specific stages of development each student must acquire before promotion to the next stage in training. This degree of curricular transparency was not consistently conveyed across schools, with leadership teaching often intertwined with other competencies or Roles rather than on its own. Because of this integration, the importance of leadership development may be perceived as less valued when compared to other Roles or may "highlight the absence of the holistic development of leadership skills in medical students."[73(p1505)]

Leadership assessment: Assessment of leadership was less consistent. The use of written assignments, in pre-clerkship and clerkship, was the most common strategy. This methodology assessed perspectives or reflections about leadership but not necessarily the 'doing' of leadership. EPA assessment on rotations was used by some schools, while Observed Structured Clinical Evaluations (OSCEs) were used by others to assess leadership for formative and/or summative purposes. Portfolios were used throughout training by three schools, describing benefits to students as being able to review development with a mentor or academic coach longitudinally.

Perceived value of UGME leadership education: In the 2020 FMEC report, 10 of the 17 medical schools responded to the question regarding the importance of all the FMEC MD recommendations on a Likert-type scale, from 1 (not important) to 5 (very important) - There was a general lack of value placed on *Fostering Medical Leadership* which was eighth in its importance (average rating 3.7/5, range: 3.4 - 4.7) just above *Diversify Learning Contexts* and *Build on the Scientific Basis of Medicine*.[74] Of note, two schools were excluded because of their ordinal responses, four schools did not provide responses, and one school only ranked three FMEC recommendations.[74]

Gaps in learner awareness of leadership curricula: When consulted, many student leaders redirected us to their faculty to answer the questions about UGME leadership curriculum content. Of those student leaders who provided a response, many were unable to identify where the leadership competencies fit into their curriculum, except for explicitly labelled courses or training.

Extracurricular leadership education opportunities: Leadership education opportunities outside the curriculum were quite varied across schools and not consistently reported. These included, but were not limited to, local, regional, national, and international opportunities within medical student-specific organisations, healthcare professional learner groups, and discipline-specific or medical education related groups and organisations. All schools had curriculum decision-making committees that integrated student membership, though such leadership opportunities are limited to a small number of learners.

Continuity across the learning continuum: The Canadian Federation of Medical Students (CFMS) identified a lack of coordination between UGME and postgraduate medical education (PGME) on the development of leadership curriculum and flagged variability of opportunities for learners.[74] More co-creation is required across the continuum, especially in the areas of advocacy, high-stakes communication and leadership at community and population levels.[75]

Substantive resources and expertise within Canada: UGME-specific leadership curricula (e.g., Advocacy and Leadership Curriculum co-created by CFMS and Fédération médicale étudiante du Québec (FMEQ)) have been well established.[76] Leadership programs are available to learners (e.g., MSc in System Leadership & Innovation,

University of Toronto).[77] Frameworks (e.g., CanMEDS and CanMEDS-FM competency-based medical education frameworks and LEADS leadership capabilities framework) are available for health leadership education across the continuum of undergraduate, graduate/postgraduate and faculty development/continuing professional development (CPD).[3,78,104] The CFPC's CanMEDS-FM Indigenous Health Supplement and RCPSC Indigenous Health in Specialty PGME Guide inform an enriched understanding of the educational frameworks from a social accountability and EDIIA lens.[79-80] The National Consortium on Indigenous Medical Education (NCIME) established January 2021, which brought together IPAC, AFMC, MCC, CFPC, and RCPSC, is available to reform Indigenous medical education in Canada. Finally, we must not overlook the human resources, including learners, faculty, community members and organisations, who are committed to health leadership education at all levels. Currently, these substantive resources and expertise are underutilised within UGME and across the learning continuum.

Overall, the current approach in UGME highlights substantive leadership resources, and leadership learning opportunities; however, the value of leadership education, awareness of available learning resources, the integration across training, and its assessment are variable across medical schools.

Key concepts

Canadian healthcare is a complex adaptive system and has self-evolving interactive and interdependent processes from which learning, innovation and adaptation emerge. Leadership of such systems (all human systems: micro, meso to macro) can positively influence change through distributed leadership and leadership emerging from need.[8] As shown in Figure 1, elements with the greatest impact on health correlate to the size of the circle.[81] The acute structured healthcare system (first circle), while using most of the healthcare budget and being the dominant focus of medical education, may not be sustainable without developing and connecting with the second circle (public and preventative health) and third circle (global determinants of health).[82-84] This complexity, coupled with the following five concepts, should inform our curricular design.

1. *Social accountability* is at the core of the "why" of medical education. Curriculum development and refinement, coupled with cumulative and final assessments, must ensure that physician competence for provision of high-quality healthcare is aligned with community-derived needs. For this reason, each program's curriculum will be nuanced to meet the unique needs of the population it serves.

2. *Equity, Diversity, Inclusivity, Indigeneity and Accessibility (EDIIA)* must remain a central tenet within our re-learning in medical education. The intent behind EDIIA is to direct deliberate action to correct past and present injustices, for example, systemic barriers to medical school and disparity in access to care.[85-86] This examinatory lens must be applied to all curriculum to ensure systemic injustices are not further perpetuated.

3. *Relationship Centred Care (RCC)* recognizes that relationships and interacting partnerships at all levels influence outcomes and processes. Aligning RCC with complex adaptive systems theory illustrates important relationships, as illustrated in Figure 1, and should remain at the forefront of curriculum delivery.

4. Physicians need to be engaged in *reshaping the health system* from point of care to system factors through leadership KSA. Framed as a leadership practice whereby physicians speak up and use their influence wisely, it is about the right people, leading at the right time, for the task at hand.[86] Physicians can also be engaged as constituents to support change when they develop leadership/ participant (followership) competencies and be equipped with the right tools to do so.[87]

5. Goals of medicine should include both *health and healthcare.* To achieve these goals, silos must be bridged (e.g., between medicine and public health) so that care needs extend beyond illness care into prevention, and global issues like climate health and social determinants of health (e.g., poverty or housing) are incorporated.[88] The system for which we are educating is aspirational and quintessential universal healthcare "where citizens can access health services without incurring financial hardship. It would include the full spectrum of essential, quality health services, from health promotion to prevention, treatment, rehabilitation, and palliative care across the life course."[89] As such, curriculum must focus on both health and healthcare.

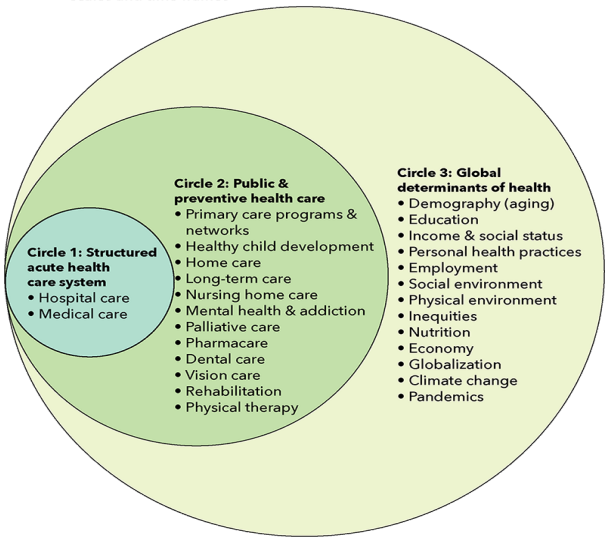

Figure 1. Elements of health and the Canadian healthcare system. The circles represent multiple, interactive complex systems at different scales and time frames. Used with permission.[81]

With an understanding of the current landscape within UGME, coupled with the complexity of our health system, a notable gap exists between where we currently are and where we need to be. A targeted needs assessment aides in filling that gap.

Step 2. Targeted needs assessment

A targeted needs assessment takes the general needs assessment results from Step 1 and applies them to the targeted *learner(s)* and targeted *learning environment*. Given our national-level approach, we recognize that the general needs assessment will need to be applied by each individual program at the local level, examining their current practices, as outlined in part in Table 1. The call for community-aligned priorities such as Indigenous Health and anti-oppression, planetary health, adverse childhood experiences and violence, mental health and addictions remains vital. Partnering with communities and groups of interest to establish culturally-derived frameworks, curricula and assessment establishes/reinforces social accountability. For example, each school must ensure support for future Indigenous physicians, as required by the Truth and Reconciliation Commission of Canada Calls to Action, United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), Missing and Murdered Indigenous Women and Girls (MMIWG) Report I and II and ensure extension of this support to all oppressed individuals and groups.[90-92] This engagement will help inform a program's goals and objectives.

Step 3. Goals and objectives

Goals and objectives help focus the leadership curriculum. At the start of medical school, clear and concise goals and objectives related to leadership should be defined. These goals and objectives should lay the foundation upon which residency education builds. Using a medical education framework (CanMEDS) and a leadership framework (LEADS), in keeping with FMEC's Recommendation 10, *Foster Medical Leadership,* will help focus the development of such overarching goals and objectives.[72,93] Organised by the CanMEDS and LEADS frameworks, Table 2 provides broad educational objectives and suggested key content, educational methods and assessment approaches. Key goals must be matched with appropriate educational strategies.

Step 4. Educational strategies

Educational strategies should focus on principles for delivering an effective leadership curriculum (the method), paired with the content. A one-size fits all approach will never suffice in teaching leadership. A diversified approach, which is cognizant of individual learning goals, should help guide the process. Consider leadership as a social construct. A broader look at leadership teaching is needed, beyond individual capability, using concepts of collective (team) competency and learning within social networks, including the interplay in the virtual context.[100-103] Taking advantage of continuity across the learning continuum with spiral progression from UGME to PGME should be leveraged; the LEADS Framework has a spiral learning architecture, from leading self (awareness and regulation) to engaging others (relationship development and communication) then moving to the remaining domains.[99,104]

The following specific educational methods lend themselves well to leadership content, with contextual reference in Table 2. **Case-based learning (CBL) with reflection** is a strong educational tool that can highlight micro/meso/macro considerations. This teaching and learning strategy can be enhanced if schools collaborate to develop cases and implementation strategies. Furthermore, they offer opportunities for interprofessional education and assessment and can be embedded relatively easily regardless of each school's curricular organisation (e.g., organ system, competency-based). Opportunities for **experiential learning**, defined as lived leadership experience, should be expanded during the academic and clinical phases for all learners not just a select few.

Table 2. Specific goals, content, educational methods, and assessment approaches for medical leadership development as organised by the LEADS and CanMEDS Framework. The LEADS in a Caring Environment Framework has five domains: Lead self, Engage others, Achieve results, Develop coalitions, and Systems transformation.[104]

Intrinsic CanMEDS/ CanMEDS Role(s)	Goals	Content	Educational Methods	Assessment Approaches
Lead Self				
Leader Collaborator Communicator	Self-understanding: ensure the journey has commenced by the end of medical school. Develop: ● Character ● Values Emotional intelligence	Self-awareness (emotions, values, traits) Self-regulation Unconscious bias Perception of and by others	Mentorship Coaching Portfolio and reflective practice	Low stakes formative feedback from peers, coaches, mentors, sponsors and/or advisors
Leader Scholar	Develop Growth mindset: allows people to thrive during challenges[95]	Growth mindset Fixed mindset Equity Impact of intersectional barriers	Support those with systemic barriers in developing internal/external resources through mentorship/coaching/supervision. Portfolio with reflective practice: Use to showcase strengths and reflect on areas for improvement.	Low stakes formative and summative feedback from peers, coaches, mentors and/or advisors
Engage others, Develop coalitions				
Communicator Collaborator Professional Leader	Communication: foundational capability for clinical and teamwork Foundation for high stakes communications	Neuroscience of communication: perception and impact of communication.[96] Crafting evidenced based communication.[97] Listening skills	Reflection (pairs or groups) Case-Based Learning (CBL)	Low stakes assessments with increasing complexity and more diverse contexts. Incorporate leadership with other Intrinsic Roles in low and high stakes OSCEs. Adapt PGME-level OSCEs to UGME and include team-based assessments.
Collaborator Leader Scholar Professional	Relationship development: to begin the process of creating an integrated health system. Wellness	Network development (interprofessional, institutional, geo-socio-political) Social determinants of health Preventive healthcare Psychological safety High functioning interprofessional teams.	Caring environment /community cultivated in the culture of medical school. Interprofessional CBL. Written reflection exercises: amplify benefits and address challenges experienced on interprofessional teams.	Written reflection exercises for formative and summative purposes
Health Advocate Collaborator Leader	Advocacy and Diplomacy	Art of advocacy and diplomacy ● when each is optimal ● thriving and protecting self while addressing systemic issues and barriers ● 'hidden curriculum' ● Managing power dynamics[98]	CBL scenarios Portfolio with reflective practice Mentorship Coaching	Written reflection exercises for formative and summative purposes
Achieve Results & System Transformation				
Leader Scholar Professional	Health System Science	Macro picture of health system and care delivery Patient safety Moral distress and wellness (leadership and system factors)[99] Role of physicians, other health professional	Map of patients/caregivers' journey through the health and healthcare system. Identify improvement area(s) and potential solutions.	Multisource feedback (including near peer feedback)

Mentorship and coaching are particularly effective for just-in-time leadership learning.[105] Expanding our use of mentors or academic coaches to specifically target leadership development along with other supports and programming will continue fostering leadership skills. It is important to understand each student's leadership education journey and identify their individual barriers and needs including those based on intersectionality, structural disadvantage, and career aspirations. This understanding will help us identify the mechanisms to facilitate and eliminate the barriers that prevent students from accessing or engaging in leadership opportunities. The use of a **portfolio** for self-guided and narrative reflection will pair well with the mentorship experience for enhanced learning.

The above suggestions are not exhaustive and should remain nimble to a program's changing context. The methodological approach should be closely aligned with implementation to achieve effective delivery.

Step 5. Implementation

For curricular success, careful consideration must be given to implementation. The following resources, supports, administrative mechanisms, and curriculum maintenance should be considered for optimal implementation.

Resources: Dedicated personnel, time, facilities, and funding must be secured as for all aspects of curriculum implementation; leadership curriculum is no different. It must be seen as core content and supported as such.

Supports: Internal support from those with administrative authority, such as university and hospital administration, must set leadership development as a priority. Postgraduate, faculty development, and continuing professional development colleagues should be engaged throughout the implementation process. External support from partner organisations involved with licensure and ongoing practice (e.g., provincial colleges, CMPA), educational organisations who work in these spaces (e.g., MCC, CAME, RCPSC, CFPC, AFMC), learner organisations (e.g., CFMS, FMEQ, RDoC, FMRQ) and other universities should be leveraged by building coalitions. International and interprofessional contexts would be important further considerations. The latter is especially important given that health and healthcare is increasingly a team sport.

Administrative Mechanisms: Explicitly tagging curricular elements as leadership will make the curriculum more readily apparent to learners and teachers. Mapping may also mitigate any disconnect for learners and can be an effective implementation strategy.

Curriculum enhancement and maintenance**:** Voices of patients, caregivers, communities, learners, programs (e.g., undergraduate directors, program administrators, curriculum committees), healthcare professional colleagues/learners, and health leadership education experts will be important to explore during implementation to ensure community needs are being prioritised and evolving in medical education. This maintenance feeds directly into the need for ongoing evaluation and feedback from a broader perspective.

Step 6. Evaluation & feedback

Understanding the impact of leadership education is critically important. As such, we suggest adopting a model of continuous quality improvement (CQI). Principles of CQI must be explicitly modelled in various contexts. Highlight ongoing work by learners, teachers, and programs to showcase lifelong learning in leadership development in tandem with other learning. Feedback should be collected to support meaningful change. Medical schools should collect feedback from various stakeholders for actionable changes. Informed curricular adaptations can be made with ongoing feedback to measure the direct and indirect consequences of those changes. Such feedback shouldn't be limited to the scope of the questions medical schools deem important to evaluate; they should also include stakeholder perspectives and community priorities as identified in Step 1.

As is true for the broader CQI approach for program evaluation, the choice of measurement methods is important to consider when selecting specific assessment and evaluation methods at the learner level.[105] Given that what we assess drives learning, and what we reward/award drives attitudes and behaviour, we should align assessment and other rewards/awards with learning goals. Develop low stakes (formative) leadership assessment throughout training and into practice. This plan will allow programs to assess and document leadership development across the learning continuum starting in medical school. Such strategies would allow for assessment *for* learning rather than *of* learning. Given that much of leadership education is experiential, OSCEs could be useful to assess leadership/constituent participation (followership or citizenship) in action. The intersection of leadership with other competencies should be highlighted and assessment should reflect the overlaps. Further consideration of the value of integrating leadership assessment in a high stakes setting is needed. High stakes learning-driven assessment as part of the overall leadership assessment strategy would send a message about the importance of leadership education.

Conclusion

Scholars, educational bodies, students, residents and faculty all call for teaching and assessing leadership through medical education frameworks, leadership frameworks, and national curriculum renewal projects in Canada.[3,5,72-74] Internationally, medical curricula focus on traditional components of leadership development (e.g., change agency, conflict negotiation) with limited attention

to interprofessionalism and ethics, as they pertain to leadership.[73] In Canada, many barriers to widespread adoption of leadership training recommendations remain, including the challenge of adding more content into packed curricula and the broad variability of leadership training from school-to-school.[106]

Leadership training cannot remain a checkbox on a list of needed medical school experiences. Rather, its thoughtful inclusion into curricula will foster professional identity formation and requisite skill development. Self-development as a fundamental leadership skill, an understanding of and ability to participate in health and healthcare systems at various levels, and the skills to foster relationship development in interprofessional teams, will be core components of a holistic approach to being a good doctor.

Exploring why and how to respond through a leadership framework, such as LEADS, paired with assessment strategies, may provide a way forward. Developing effective coalitions to co-create the curriculum commencing with foundational competencies in UGME, with further development in PGME and into practice, creates a continuum of leadership development that is achievable. Continuous educational improvement and life-long learning in leadership and health system science may add to our ability to respond collaboratively to ever changing health and healthcare needs of the populations we serve.

Conflicts of Interest: Ming-Ka Chan: Stipend for role as Co-Director for Office of Leadership Education, Rady Faculty of Health Sciences, University of Manitoba and Chair of Sanokondu's Leadership & Governance Team, a community of practice focused on health leadership education (volunteer). Lyn K. Sonnenberg: Member of the MCC's Assessment Innovation Task Force (AITF) during the writing process and Vice President, MCC during the paper's final stages, both unpaid roles. Deepak Dath: Member, Sanokondu's Leadership & Governance Team (volunteer). Diane de Camps Meschino: Vice Chair of Sanokondu's Leadership & Governance Team (volunteer). The other authors have no conflicts to declare.

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Glossary

AFMC: Association of Faculties of Medicine of Canada

CAME: Canadian Association for Medical Education

CFPC: College of Family Physicians of Canada

CMPA: Canadian Medical Protective Association

FMEQ: Fédération Médicale Étudiante du Québec

FMRQ: Fédération des médecins résidents du Québec

IPAC: Indigenous Physicians Association of Canada

RCSPC: The Royal College of Physicians and Surgeons of Canada

RDoC: Resident Doctors of Canada

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