



UGME Curriculum Renewal 2021

Report | Phase I **Entrustable Professional Activities (EPA) Implementation Working Group**

*University of Ottawa, Faculty of Medicine
Undergraduate Medical Education*

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1. Introduction

In 2010, the first report on the *Future of Medical Education in Canada (FMEC): A Collective Vision for MD Education* included a recommendation to adopt a flexible competency-based approach to medical education.

“Physicians must be able to put knowledge, skills, and professional values into practice. Therefore, in this first phase of the medical education continuum, MD education must be based primarily on the development of core foundational competencies and complementary broad experiential learning” (1)

The rationale for defining the foundational competences of an undifferentiated physician was to aid curriculum designers in determining the learning and assessment activities required to demonstrate these outcomes and ensure students are equipped with the knowledge, skills and abilities they require to respond to population health needs.

In 2016, the Association of Faculties of Medicine of Canada Entrustable Professional Activities (EPA) working group created a document entitled “*AFMC Entrustable Professional Activities for the Transition from Medical School to Residency*”. (2) This document included the description of twelve (12) EPAs that collectively define the core activities that all medical students are expected to perform with indirect supervision prior to starting residency programs regardless of the school of MD training, the residency training program site or the chosen specialty. These twelve EPAs are considered an essential foundation to enable students to achieve more advanced EPAs as they move along the medical education continuum to their selected discipline and eventually into practice.

Given the expectations that these national EPAs are an accreditation requirement for all medical schools, an ad hoc EPA Working Group was formed in May 2019 at the University of Ottawa, Faculty of Medicine. The 28 recommendations developed by this EPA Working group (3) provided a framework for EPA development and implementation endorsed by the Curriculum Content Review Committee (CCRC) in October 2019 and the Undergraduate Curriculum Committee (UCC) in November 2019.

2. EPA Implementation Working Group Mandate

The transition to a competency-based medical education model for the MD Program at the University of Ottawa was a key component of a comprehensive curriculum review of the MD Program. The revised Project Charter for curriculum renewal endorsed by the Undergraduate Curriculum Committee in March 2021 included the goal of creating a national EPA implementation plan by June 2021. (4) The plan to implement the national EPAs within the MD Program included the need to identify the:

- Aspects of the professional tasks students are expected to perform for each EPA;
- knowledge, skills, attitudes and behaviours students will be expected to perform and demonstrate by the end of second year (pre-clerkship) and fourth year (clerkship) to demonstrate achievement of each EPA; and
- information sources that will collectively inform decisions on EPA achievement.

The EPA Implementation working group's mandate included the expectation of identifying recommendations related to:

- Required revisions to the educational design of the curriculum;
- Faculty development initiatives that would support EPA implementation;
- Elements of the implementation plan that would benefit from pilot projects during the 2021-22 academic year; and
- The technology support systems that would be essential to integrate multiple data sources for each EPAs and the monitoring of student progression across the curriculum.

3. EPA Implementation: Core Principles

Given the complexity and duration required to transition to a competency-based education model, the following core principles were endorsed by the Undergraduate Curriculum Committee to establish, monitor and evaluate an EPA implementation plan. These core principles informed the recommendations of the EPA Implementation Working Group.

1. Apply entrustment within assessment.

The curriculum must enable and facilitate students' abilities to perform professional activities in order that they may be entrusted with patient care; this is the ultimate goal of medical education – to provide the public with safe, high-quality health care. Each EPA must be observed and entrustment determined as part of a revised approach to assessment within Faculty of Medicine's UGME program.

2. Create a longitudinal view of student performance.

Decisions regarding entrustment should be made at each step of a learner's development and not just at the end of the curriculum. Monitoring students as they progress through the pre-clerkship and clerkship stages of the curriculum is expected prior to achieving the level of entrustment required at graduation.

3. Gather evidence using multiple methods and sources of data.

Decisions on a student's achievement of an EPA must be based on multiple sources of data, not just direct observation alone. Every day work or performance (including but not limited to health record entries, knowledge and skills assessments, log books, self-reports of confidence or comfort with performing a specific function) across the preclerkship and clerkship contribute to a student's achievement of entrustment of an EPA.

4. *Ensure a process for formative feedback.*

The observation of professional tasks (performing a history) or the use of other data sources in entrustment decisions (documentation in a health record) provides an opportunity for faculty to provide students with feedback on what tasks were performed well, what tasks need further enhancement or what tasks were not performed. This explicit feedback is intended to help students to understand areas of achievement and focus on areas for further improvement.

5. *Create a process to render summative entrustment decisions.*

The use of multiple aggregated data sources from multiple observers over time should be analyzed to determine whether an EPA has or has not been achieved. Summative decisions related to entrustment decisions should be allocated to a committee responsible to perform this function.

6. *Ensure that the student is an active participant.*

Each student should be empowered to engage in the assessment process and use the feedback they have received to improve. Feedback between a student and faculty member should involve a bidirectional, rather than a unidirectional conversation. Learner ownership and engagement in this process will contribute to a 'growth' mindset and promote increasing autonomy that may motivate students to request observation and feedback on areas in need of assessment or improvement.

4. *Working Group Process*

The working group members inaugural meeting was held on November 9, 2020. At that inaugural meeting the working group utilized and, over time, adapted a template to develop a comprehensive description of each EPA including the:

- professional tasks students would be expected to perform at the end of the year 2 and year 4;
- potential consequences from a professional and patient perspective if not able to adequately perform these tasks;
- alignment of each EPA to the MD Program's competencies and program objectives;
- knowledge, skills, attitudes and behaviours students will need to perform the EPA under varying levels of supervision;
- sources of information that will inform progression towards achievement of each EPA;
- level and timing entrustment is expected; and
- circumstances under which prior EPA achievement would need to be re-established.

Over the course of the next six months, working group members divided into small subgroups to create descriptions of each EPA, starting with EPAs 1 to 6 followed by EPAs 7 to 12. Two of the subgroups, led by Isabelle Desjardins, worked in French to complete the initial draft of their assigned EPAs. The remaining four sub-groups, led by Craig Campbell worked in English. Each EPA was presented to the entire working group for discussion, debate and proposed revisions

which were then completed, reviewed and further revised or adopted at future meetings. A similar process was completed for EPAs 7 through 12.

A description of EPAs 1 to 12 is included in [Appendix A](#).

Subsequent to completing the descriptions of the national EPAs for the uOttawa MD Program, the working group members then focused on strategic recommendations related to:

- how the national EPAs will be effectively integrated within the MD Program's curriculum;
- proposed revisions to the assessment strategies utilized in the pre-clerkship and clerkship;
- mechanisms to monitor and support EPA implementation;
- the technological infrastructure required to enable EPA implementation; and
- the implications of EPA implementation for faculty, and administrative staff development.

The members of the working group formulated strategic recommendations for consideration that have been organized under the following themes.

5. Key Issues and Recommendations

The recommendations included in this report are based in part on a review of selected articles from an International Online Course entitled "*Ins and Outs of Entrustable Professional Activities*" completed by Craig Campbell in October 2020; topic or theme specific articles; and three recent scoping reviews (5 -7). The working group recommendations are divided into the following themes.

Theme 1: Aligning EPAs to curriculum content and design

The transition to a competency-based medical education curriculum provides the MD Program with a unique opportunity to align the knowledge, skills, attitudes and behaviours included in the descriptions of the national EPAs with the content and sequencing of learning activities in the curriculum. The EPAs collectively describe a national performance standard that can be used to identify potential gaps in our current curriculum, improvements we can make to our teaching and assessment strategies, and changes that may be required to the educational design of the curriculum. Embedding the EPA implementation process within the broader focus of curriculum renewal presents a unique opportunity to enhance horizontal and vertical integration of the curriculum to ensure the content taught and the educational strategies embraced will facilitate EPA achievement.

Recommendation 1. *Create a longitudinal EPA Achievement Course within the MD Program for implementation in September 2022.*

Rationale: Entrustable professional activities are the bridge between well-elaborated but generic competency frameworks and the professional tasks physicians are being trained to perform under indirect supervision. The integration of the national Entrustable Professional Activities within the MD Program initiates a transition to a competency-based medical education model for the MD Program. This new EPA Achievement Course will be introduced with a new interactive learning session on competency-based medical education within the Introduction to the Professions Unit and supported by multiple planned educational sessions throughout the four-year curriculum for both streams. The content of these educational sessions would not only introduce students to the concepts, support strategies, technological infrastructure and expectations related to EPA achievement and provide students with the knowledge and skills to effectively use data and feedback from multiple sources to continuously learn and improve throughout the MD Program. This course will build upon the skills and competencies of effective lifelong learning that are linked to the Scholar Role in the CanMEDS framework. (8)

Given that EPAs are developmental in nature and not specific to any stage of the curriculum or any specific clinical context or discipline, the integration of a competency-based framework for the MD Program at the University of Ottawa will require a new course code which will require the approval of UCC, Faculty Council, the Committee of Undergraduate Studies and the Senate of the University of Ottawa. Learning activities across all four years of the curriculum will be designed to collectively contribute to EPA achievement to prepare our students “for residency training – rather than successful completion of individual curricular components.” (9).

Recommendation 2. *Provide students entering the MD Program in September 2022 with a learning plan tool to enable students to reflect, set goals and create plans to improve.*

Rationale: Learning plan tools have been introduced in residency training programs (9) and continuing professional development (10) to facilitate the ability of a physician to utilize their learning experiences and the feedback received from multiple sources to identify goals and set plans to support their continuous growth as health professionals. In UGME, learning plan tools have largely been associated with students who are required to enter a formal education remediation process. The MD Program learning plan tool will provide all medical students with a tool to promote continuous growth and improvement throughout their professional career.

Recommendation 3. *Create a longitudinal Clinical Skills Education course across all four years of the MD Program to facilitate the achievement of EPA 1, 2 and 9.*

Rationale: Clinical skills education is foundational to the training of medical students. Clinical skills education during the first two years of the MD Program aligns with EPA 1 and 2 and the interviewing skills component provides educational activities that align with elements of EPA 9.

Mapping the learning objectives of individual PSD / DAC and Clinique Simulée sessions with the above EPAs will facilitate identification of any gaps that may exist. Moreover, the enhancement of clinical skills education must be supported throughout the core clerkship rotations and ensure that all students have the opportunities to enhance their history and physical examination skills and apply these skills to a broad spectrum of patients. In 2019, the inaugural EPA working group determined that the first six EPAs were relevant to all core clerkship rotations. Preliminary mapping of the generic assessment strategies utilized by all core clerkship rotations further promoted the alignment with EPAs 1 through 6. Expanding the clinical educational skills course to support training and enhancement of clinical skills within the final two years of the curriculum will help students to utilize feedback on their performance of EPAs within the clinical learning environments and ensure these professional activities have been adequately demonstrated prior to entering residency training.

Recommendation 4. *Utilize all educational activities based on clinical cases to promote greater emphasis on clinical reasoning; the formulation of a differential diagnosis; a proposed plan of investigation; interpretation of common diagnostic and screening tests; and recognition of clinical situations that require urgent or emergent care.*

Rationale: Case-based learning is one of the core educational learning activities during the first two years of the curriculum. The use of clinical cases is a central strategy to facilitate student learning about how diseases or disorders present, and provides a structure to facilitate the integration of clinical, basic, and social science concepts to enhance student understanding of the relationships between symptoms, physical findings and investigations, the formulation of a differential diagnosis, the development of proposed diagnostic steps, the interpretation of test results, and the formulation of treatment options informed by research. Each of these components of case-based learning strategy aligns well with multiple aspects of EPA 2, 3, 4, 5 and 8. The implementation of EPAs will provide students with an opportunity to use the Case-based Learning (CBL), Clinical Patient Management (CPM), Team-based Learning (TBL), standardized patient interactions, their observerships, clinical placements and electives, and their immersion within multiple clinical learning environments to gain the knowledge, skills, attitudes and behaviours they require to perform these professional activities under indirect supervision by the end of the MD Program.

Recommendation 5. *Utilize the skills, training and expertise of ePortfolio coaches to provide students with feedback on their achievement of the entrustable professional activities.*

Rationale: The ePortfolio is a longitudinal course within the MD Program where one ePortfolio coach is assigned to a group of seven or eight students. The ePortfolio requires students to describe an experience, reflect on what they learned from that experience and consider any changes they are contemplating in the future. Students currently align the posts they record in their ePortfolio to one or more MD Program curriculum objectives. There is a unique opportunity for the ePortfolio course to utilize the experience and expertise of ePortfolio coaches to provide feedback to students on their achievement of the EPAs as well as the MD

Program objectives without changing the foundational purpose, design or outcomes established for the ePortfolio course.

In 2019, the first EPA implementation working group completed a mapping strategy between the EPAs and the MD Program objectives. There was a significant alignment between the EPAs and the MD Program objectives in every role except the Person Role. Given that students are currently aligning posts to a specific Role and Program objective, the general alignment with EPAs is at least implied.

ePortfolio coaches currently participate in the faculty development program that is specific to their ability to provide timely and effective feedback. Working in collaboration with the Lead, ePortfolio on Core Competencies, a strategy to provide ePortfolio coaches with a tailored faculty development program about competency-based medical education, the EPAs and the changes to the curriculum resulting from curriculum renewal will be required to support the role ePortfolio coaches can play in providing feedback to students on their progress to demonstrating each of the EPAs before entering residency training.

Recommendation 6. *Create a longitudinal procedural skills curriculum that provides medical students with opportunities to learn, practise, and be observed performing the following procedural skills.*

- Suturing the skin* using a local anesthetic;*
- Skin punch biopsy;
- Intravenous catheter insertion;*
- Foley catheter insertion;*
- Arterial artery blood gas from radial artery;
- Bag-mask ventilation;*
- Nasogastric tube insertion;*
- Phlebotomy;*
- Performing sterile technique;
- Large joint (knee) aspiration;
- Vaginal speculum exam with pap smear; and
- Endotracheal intubation.

Rationale: The generic competences required to perform any procedure are summarized in the description of EPA 11, but specific procedures are not listed. Given that the AFMC did not provide specific guidance on which procedures were required, a procedural skills survey was developed and distributed to the core clerkship rotational directors and faculty members who teach POCUS to seek their advice on which procedures the MD Program should provide opportunities for students to learn and perform under direct supervision. The above procedures were identified as appropriate for student learning and performance under direct supervision. The pre-clerkship procedural skills curriculum currently provides an opportunity to learn eight skills (procedures identified with an Asterix plus casting) prior to entering the

clinical learning environment. There is an opportunity to create a longitudinal procedural skills curriculum that extends into the third and fourth years of the MD Program.

Recommendation 7. *Establish a process to ensure students have the ability to perform, under indirect supervision, procedural skills expected of every physician.*

Rationale: The ability of students to be capable of performing procedures that are expected by the public of every medical doctor regardless of their specialty focus is an important guiding principle for procedures to meet the threshold for entrustment purposes.

The procedural skills survey distributed to the core clerkship directors and faculty who teach POCUS was asked to identify the procedural skills that students should be entrusted to perform under direct supervision by the end of the MD Program. The skills identified initially included:

- Sterile technique;
- Suturing including the use of local anesthetic;
- Bag-mask ventilation; and
- NG tube placement

However, the working group members have identified a number of additional skills that have been recommended be considered including (but not limited to) IV insertion; performance of a pap test; large joint aspirations, skin biopsies, among others. In addition, Point-of-Care Ultrasound is evolving as a standard of care and could be considered as a skill set that would be expected to have been acquired by the end of medical school in the future.

Finally, the working group members recommended we consider strategies for procedural skill demonstration during the fourth year's Transition to Residency course where students can be trained and assessed to perform procedures relevant to the residency training program that they have selected. This 'streaming' of procedural training will assist in part on achieving the balance between what procedural skills the MD Program is committed to ensuring all students are entrusted to perform under indirect supervision with procedures that are more specific to training expectations and practice requirements of a specific specialty.

A plan to formally assess all procedures that are expected to be performed under indirect supervision; the minimum number of procedures that will be required to provide adequate experience and achieve competent performance will need to be developed.

Theme 2: Aligning EPAs to Assessment Strategies

The national EPAs provide the UGME program with a national performance expectation of all medical students. Using the descriptors of the knowledge, skills, attitudes and behaviours students must acquire to achieve each EPA will enable our program to analyze sources of assessment data to determine the effectiveness of our teaching and assessment processes, contribute to program evaluation strategies; identify gaps in the curriculum based on the levels

of entrustment achieved at specific stages of the curriculum and enable us to benchmark our program against other MD Programs.

Recommendation 8: *Utilize the modified Ottawa entrustment scale (O-SCORE) with the expectation that students will aim to have achieved level 3 by the end of the second year of the MD Program and level 4 by the end of the fourth year of the MD Program. (11-12)*

Rationale: Observing students performing various professional tasks that integrate multiple competencies and providing students with feedback to facilitate learning and continuous growth is a learning opportunity for students. The level of entrustment students achieve is expected to increase over time.(13) EPAs and their performance descriptors provide a useful benchmark for observing students at different stages of their development. In the initial two years of the curriculum, students will be observed completing components of various EPAs. During the clinical learning experiences in the third and fourth years of the curriculum, faculty and residents will be observing and providing actionable feedback to students performing EPAs across a range of patients presenting in various contexts (emergency room, operating rooms, ambulatory care clinics, in patient units of hospitals).

Setting clear and reasonable expectations for what students will be expected to demonstrate by the end of the first two years of the curriculum will provide students and faculty with a tangible expression of how well the curriculum has prepared students to progress to their clinical years. (14)

In the initial implementation phase, working group members recommended that the CCRC, UCC and Faculty Council establish a policy where consistent achievement of level 4 for EPAs 1 to 6 by the end of the fourth year, is an expectation for graduation from the MD Program. These EPAs are central to all core clerkship rotations and reflect the generic competencies that are utilized by all students entering every residency training program. The expectation that all students aim to achieve level 4 for EPAs 7 to 12 can be promoted and supported through the EPA Achievement Course (see recommendation 1) where educational sessions can emphasize the potential consequences, professional and for patient care, if the student is not able to adequately perform these professional tasks.

Recommendation 9: *Establish, train and support an MD Program Competence Committee with the mandate to monitor student progression, identify students who require greater support and determine achievement of each EPA for all students.*

Rationale: In residency education, competence committees are a key component to ensuring the EPA assessment processes are systematic and rigorous. Utilizing the model implemented in postgraduate medical education, a longitudinal Competence Committee, with voting members representing multiple stakeholder groups, is proposed for the MD Program. This Competence Committee will regularly review multiple sources of assessment data to identify the strengths and challenges of all students; provide feedback across multiple competency domains over time; and determine when EPAs have been achieved.

Given the challenges of integrating multiple sources of assessment data (observations completed by faculty or residents, preceptors, tutors, OSCEs among others) into determining whether or not a student can perform an EPA without direct supervision, the Competence Committee members will be a definite focus for both faculty development programs and pilots.

The MD Program Competence Committee will complement current Promotions Committee functions and report directly to Student Promotion Executive Committee on student achievement of EPAs required to graduate from the MD Program. (15-17)

Recommendation 10. *Review and revise assessment strategies utilized across the curriculum to facilitate the provision of detailed feedback to students on their achievement of the entrustable professional activities.*

Rationale. Student assessment strategies including written exams, OSCEs, CBL, CPM, PSD / DAC, clerkship rotations among others provide evaluation data that contributes to determining whether or not a student has passed a specific unit, course or core clerkship rotation. Given that EPAs are developmental and the student progresses in their ability over the four years of the MD Program, revisions to the student assessment strategies (see Assessment Working Group report) will need to enable the ability of low and high stakes assessments to contribute meaningful feedback to students and facilitate decisions on achievement of EPAs.

Theme 3: EPA Implementation Infrastructure.

The integration of multiple, varied sources of assessment data will require a technological infrastructure that provides a summary of assessments across multiple competency domains to facilitate a review of student progress towards the achievement of each EPA.

Recommendation 11. *Utilize the Elenra platform to facilitate the collection of assessment data into a student dashboard for review by students and competence committee members.*

Rationale: The implementation of a competency-based education model for the MD Program will require the integration of a wide range of assessment sources. Working in collaboration with an information technology team within MedTech, the MD Program will require the creation of a student dashboard to facilitate a review, analysis and / or weighting of assessment data elements by Competence Committee members. This dashboard will be essential to the effective and efficient review of student assessment data by Competence Committee members and will contribute to the development of a learning analytics strategy (18) that will enable Competence Committee members to predict which students are on track, progressing beyond expectations or require greater support.

Theme 4: Pilot Project Options

The design and implementation of a competency-based medical education model based on the descriptions of the EPAs will require the design and implementation of multiple pilot projects to ensure the system meets the expectations of students, faculty, administrative staff and the MD Program.

Recommendation 12. *Throughout the 2021-22 academic year, implement a series of pilot projects including but not limited to the implementation, analysis and revisions to:*

- *Student assessment strategies;*
- *Competence Committee activities; and*
- *Student EPA dashboard for the MD Program.*

Rationale: Curriculum renewal will require the deployment of multiple PDSA cycles that will ensure that our assumptions, implementation and evaluation plans and faculty development processes for EPA implementation are assessed. Given that we will require a technological platform to monitor and determine achievement of individual EPAs we will need to pilot various elements of that process (new assessment forms, completion of EPA observation templates, data capture and presentation in the student dashboard, etc.) and determine user-acceptance testing by faculty and students.

Theme 5: Faculty Development

The implementation of a competency-based medical education curriculum must be supported by the development and implementation of a UGME Program faculty development program.

Recommendation 13. *Develop and implement a tailored UGME Faculty Development Program for Competence Committee members; Unit Leaders, Clerkship Rotational Directors, content experts, tutors, coaches and supervisors.*

Rationale: The transition to a competency-based medical education model is a complex change management initiative that will require a comprehensive Faculty Development Program. The effectiveness of this transition will be based in part on facilitating a shared mental model for competency-based medical education that ensures our graduates are meeting the standards expected to enter residency training. Expected changes to our curriculum's content, teaching, evaluation and feedback strategies will require an investment in our faculty.

Recommendation 14. *Create targeted faculty certificate courses on competency-based assessment strategies and design multiple initiatives to promote and reward faculty for their expertise in student evaluation.*

Rationale: The implementation of a competency-based assessment system will require an educational system to support the development of expertise in competency-based approaches to assessment. Creating a certificate course in competency-based assessment will promote the

formal recognition of faculty whose career path is focused on the design, development and implementation of innovations in assessment and support scholarship in assessment more broadly within the undergraduate medical education. The MD Program, working in collaboration with Faculty Development Office and the clinical and basic science departments within the Faculty of Medicine should develop multiple strategies to recognize and celebrate the faculty who are participating in the assessment process and providing excellent supervision and feedback to medical students.

Recommendation 15. *Develop and implement processes to inform teachers about the timeliness, frequency and quality of their interactions with and feedback provided to students to guide their professional development.*

Rationale: Currently student feedback is focused on providing Unit Leaders with information on the strengths and areas for improvement and providing tutor, lecturers, and ePortfolio coaches with feedback. The implementation of the national EPAs is an opportunity to provide educators and clinical supervisors with data on the quality of their interactions with students and the quality of the written feedback provided to students.

6. Conclusion

The recommendations included within this report, supported by evidence from the peer-reviewed literature, reflect the strategic priorities required to facilitate the transition to a competency-based education model within the MD Program. The successful implementation of this complex initiative will be based on four pillars:

1. Our ability to align the knowledge, skills, attitudes and behaviours required to perform each EPA with the content and sequencing of educational activities across the four years of the MD Program;
2. A robust technology infrastructure;
3. A comprehensive faculty development program; and
4. Revisions to current approaches to student assessment strategies that place a greater emphasis on direct observation with feedback.

Despite these challenges, the transition to competency-based medical education provides the MD Program at the University of Ottawa with a unique opportunity to re-imagining a curriculum that is focused on not just ensuring competence of all medical students but to enhancing the safety and quality of health care received by patients.

Members of the working group

The following are the faculty, students, administrative staff and public members of this working group staff who generously gave their time and shared their knowledge, experience, perspectives and wisdom in contributing to the recommendations of this report.

1. Michelle Anawati
2. Robert Bell
3. Isabelle Burnier, MD, M.Ed.
Associate Professor, Family Medicine
Director, Pre-clerkship
Director, Clinical Skills - francophone stream
MD Program, Faculty of Medicine, University of Ottawa
4. Craig Campbell*, MD, FRCPC, FSACME
Associate Professor of Medicine, Department of Medicine
Director, Curriculum
MD Program, Faculty of Medicine, University of Ottawa
5. Stefan de Laplante, MD, CCFP
Assistant Professor, Department of Family Medicine
Unit IV Leader, UGME
Faculty of Medicine, University of Ottawa
6. David de Launay, MD 2022 student representative
7. Manon Denis-Leblanc
8. Isabelle Desjardins*, MD, FRCPC
9. Jolanta Karpinski, MD, MedEd, FRCPC
Associate Professor of Medicine, Department of Medicine, University of Ottawa
Associate Director, Office of Specialty Education – Specialties Unit, Royal College of Physicians and Surgeons of Canada
10. Kurtis Kitagawa, PhD, MPhil, MA, BA Co-Chair, Patient Partner Council, Bruyère Academic Family Health Team

11. Eric Larouche, Project Manager, Elentra, UGME
Faculty of Medicine, University of Ottawa
12. Suzie Lee, MD, FRCPC
Interventional Pediatric Cardiologist, Children's Hospital of Eastern Ontario
Assistant Professor of Medicine, Department of Pediatrics, University of Ottawa
13. Vishesh Patel, BMSc, MD 2022 student representative
14. Niève Séguin, MD 2023 student representative
15. Timothy Wood

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