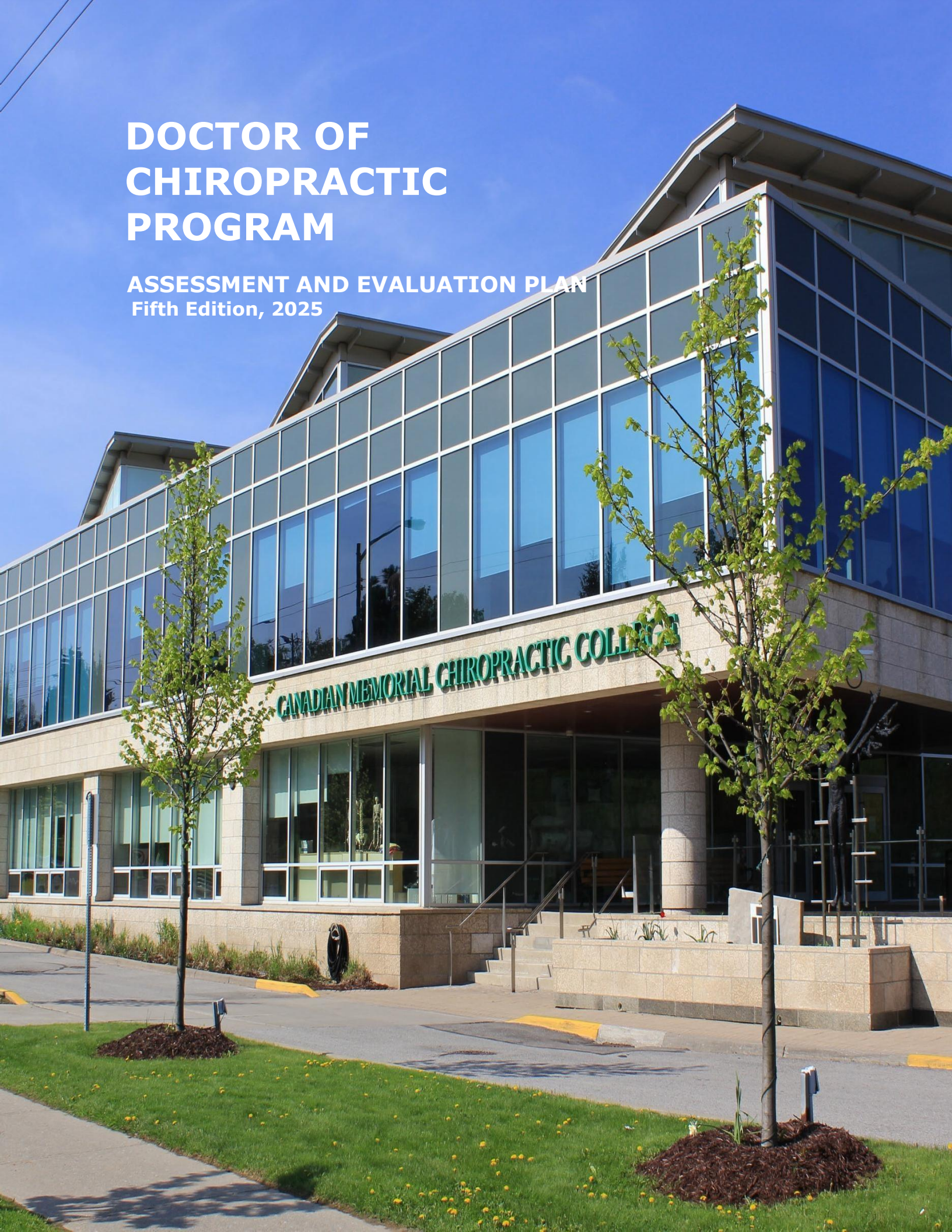
DOCTOR OF CHIROPRACTIC PROGRAM

ASSESSMENT AND EVALUATION PLAN

Fifth Edition, 2025



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Assessment and Evaluation Plan

PREFACE

The Assessment and Evaluation Plan for the Doctor of Chiropractic Program guides ongoing program enhancement and effectiveness. Rooted in our dedication to academic excellence, it systematically assesses student learning outcomes, program goals, and institutional effectiveness. Under the oversight of the Institutional Effectiveness Committee (IEC), this plan collaboratively upholds high standards of quality assurance and innovation in chiropractic education. Through diligent assessment, reflective practice, and data-driven decision-making, we aim to cultivate graduates who are proficient clinicians and lifelong learners, ready to adapt to the evolving healthcare landscape.

This plan aligns with the Academic Quality Assurance Framework (AQAF), which outlines the institution's quality assurance process and guides program development at the undergraduate and graduate levels. The AQAF ensures the highest standards of quality in meeting regulatory, legislative, and degree-level requirements, maintaining the integrity of curricula, and achieving rigorous quality outcomes through the review of institutional and student performance metrics. Together, the AQAF and the Assessment and Evaluation Plan provide a comprehensive and cohesive approach to quality assurance and continuous improvement in chiropractic education.

Purpose of the Assessment and Evaluation Plan

This Assessment and Evaluation Plan describes the levels and types of assessments used to determine institutional performance, achievement of student learning outcomes and attainment of competency, and progress towards strategic goals.

This document describes the regularly occurring assessments, analysis of performance and formal reporting at CMCC. There are some smaller and less frequent assessments that may be done upon occasion and are not captured in this document. Performance outcomes are reported in the annual program effectiveness report, committee minutes, reports to the President, reports to the Board of Governors and reports to external accreditation entities.

Updates to this Edition

The 2025 edition of the Assessment Plan is a modest revision of the 2024 version and continues to function as a dynamic, evolving document. Updates are made as experience is gained, new assessment tools are developed, or changes occur in evaluation or reporting practices. In this edition, program-level metrics are now identified to enhance clarity and support ongoing efforts in measuring and improving institutional effectiveness.

Organization of this Plan and Levels of Assessment and Evaluation

Three levels of assessment and evaluation are found in this plan and include Institutional, Curricular and Programmatic Assessment and Evaluation, and are described in detail in Parts III, IV and V. There is an inherent overlap between these levels, and the assessment was placed in the level with the greatest relevance.

Definitions

CMCCs model for assessment takes into account each student's attainment of program learning outcomes, and proficiency towards competencies across accreditation standards. It involves more frequent lower-stakes assessments, to ensure we are providing students with quality feedback to promote individualized student learning and to better identify and support students in difficulty.

In the context of this Assessment and Evaluation Plan, the following simplified definitions are used:

Assessment: Assessment is a broad term that includes the systematic measurement of student learning outcomes and competencies. It also considers non-academic assessment and takes a holistic approach to data collection and analysis that informs overall institutional performance.

Evaluation: Evaluation is the process of using assessment data to make a judgement about the value, effectiveness or impact of the institution, academic programs, or curriculum. Evaluation informs decision-making for the purposes of improvement.

Part I: Context and Background of the Assessment and Evaluation Plan

CMCC Vision

An academic institution recognized for creating leaders in spinal health.

CMCC Mission

Deliver world class chiropractic education, research, and patient care.

CMCC Core Values

- **C**ommunication
- **A**ccountability
- **R**espect
- **E**xcellence

CMCC Model of Care Statement

"Chiropractic is a primary contact health care profession with expert knowledge in spinal and musculoskeletal health, emphasizing differential diagnosis, patient centered care and research." To ensure that the model of care statement is reflected in CMCC curriculum, exit competencies have been designed for the CMCC Doctor of Chiropractic undergraduate program as well as the Graduate Studies programs. These are also termed as graduate competencies and can be found in the CMCC Academic Calendar.

Strategic Themes

CMCC's Strategic Plan (2022-2025) identifies six Strategic Themes of Excellence:

1. Excellence in support and service for students and employees
2. Excellence in teaching and learning
3. Excellence in research scholarship and innovation
4. Excellence in institutional leadership and management
5. Excellence in collaboration and communication
6. Excellence in clinical care

The achievement of our strategic goals and outcomes, and instructional effectiveness are described in our institutional Assessment and Evaluation Plan. This is a living document that evolves in response to future Strategic Plans, curriculum changes, input from the Curriculum Committee (CC), input from IEC, input from the Board Learning and Engagement Committee (LEC), input from the Program Advisory Committee (PAC), new evidence in higher education,

items raised by stakeholders, and new initiatives undertaken by CMCC.

CMCC Core Functions

Core functions of CMCC include:

- Undergraduate Education: CMCC's undergraduate program consists of four years of comprehensive and rigorous education leading to a Doctor of Chiropractic degree. The evidence-based program is aligned with the CMCC Model of Care.
- Graduate Studies: CMCC provides opportunities for advanced post-graduate studies in Clinical Sciences, Diagnostic Imaging, and Sports Sciences. Completion of these programs provides learners with expert knowledge in their respective fields.
- Continuing Education: CMCC provides chiropractors (and others) with easy access to high-calibre programs developed to meet the evolving needs of professional practice. These include conferences and seminars to improve knowledge, skills, and the quality of patient care.
- Patient Care: In Years I, II and III, students receive almost 3,000 hours of education and hands-on clinical or simulation-based training. In Year IV they apply this knowledge in a real clinic setting as chiropractic interns in CMCC's teaching clinics, under the supervision of clinical faculty. CMCC has a network of chiropractic teaching clinics throughout the Greater Toronto Area that provide care for approximately 7,000 patients in 80,000 visits each year. Interns who have demonstrated competence at CMCC clinics have an opportunity to participate in the Community- Based Clinical Education Program (CBCEP). CBCEP provides interns with the opportunity to work alongside external field practitioners in their offices to gain experience in a private practice environment. The program currently operates in six provinces.
- Research: CMCC has one of the most innovative chiropractic research programs in North America. Five main research domains are pursued by CMCC researchers: Biological Basis of Musculoskeletal Injury and Manual Therapies, Clinical and Health Sciences Research, Education in Health Care, Health and Wellness, and Knowledge Translation and Health Policy**.** The scholarship of teaching and learning (SOTL) is also a focus in the academic domain.

CMCC Key Stakeholders

CMCC serves a broad group of stakeholders and the data collected and evaluated as part of the Assessment and Evaluation Plan is used to tailor reports to these and other stakeholders. The following are some of the stakeholders that have an influence on CMCC's core functions:

- Applicants
- Students
- Faculty
- Staff and Administration
- CMCC Board of Governors

- Researchers
- Research Funding Agencies
- Patients
- Clinical Placement Host Institutions
- Higher Education Strategic Partners
- Program Advisory Committee (PAC)
- Alumni, Profession and Donors
- Accreditation and Regulatory Bodies
- Licensing Bodies
- National and Provincial Associations
- Canadian Chiropractic Protective Association (CCPA)
- Ontario Ministries
- Post Secondary Education Quality Assurance Board (PEQAB)

Part II: Overview of Assessment and Evaluation

Interrelated Categories of Evaluation

CMCC uses three basic categories of assessment and evaluation (institutional, programmatic, and curricular). There is overlap between all three categories, but for the purposes of this Plan, assessments have been placed in the category with the greatest impact or relevance.

Institutional Evaluation:

- Student Engagement Survey
- Profession Survey
- Employee Engagement Survey
- Program Effectiveness Report
- Clinic Quality Assurance Evaluation
- *Program Completion Rates Undergraduate DC degree
- Program Completion Rates Graduate Studies
- *Research Productivity
- Audit of Financial Statements
- *Financial Ratios and Indicators
- Ontario Student Assistance Program (OSAP) - Audit Designated Learning Institution
- *OSAP Financial Aid Loan Default Rate
- President's Report to the Board of Governors
- Annual Report Ministry of Colleges, Universities, Research Excellence and Service
- Annual Short Report Council on Chiropractic Education (C)
- Program Characteristics Report Council on Chiropractic Education (US)
- External Reviews

Programmatic Evaluation:

- Applicant Assessment Undergraduate Education
- Applicant Assessment Graduate Studies
- Assessment of Clinical Competencies
- Longitudinal Tracking of Competencies
- Clinical Competency Evaluations Year IV
- *Canadian Chiropractic Examining Board
- National Board of Chiropractic Examiners
- Annual Program Enrolment Admissions Report Council on Chiropractic Education (US)

Curricular Evaluation:

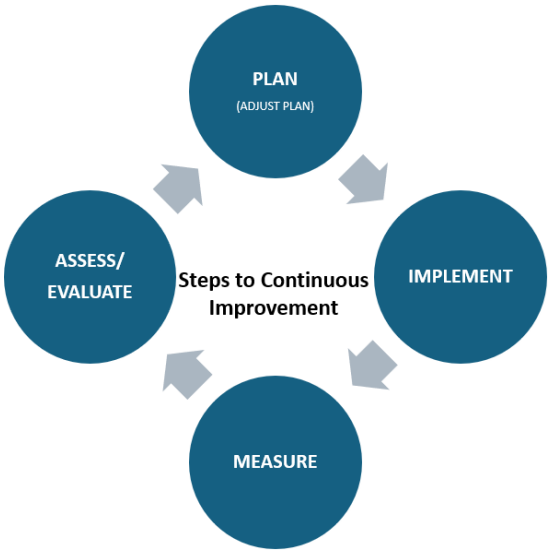
- Course Evaluations Years I-IV
- Faculty Evaluations Years I-IV
- Curriculum Working or Focus Groups Years I-IV
- Exit Student Survey Year IV
- Cohort Course Grades and Supplemental Examinations Years I-IV
- *Objective Structured Clinical Examinations Years I-IV

Items marked with an asterisk (*) denote established performance targets.

Interrelationship with Planning, Assessment, Evaluation, and Improvement

Under the oversight of the Division of Institutional Planning and Assessment (IPA) and the Institutional Effectiveness Committee (IEC), CMCC upholds a comprehensive and continual system of planning, assessment, and metrics evaluation. This framework reinforces CMCC's dedication to continuously improve.

The diagram below outlines CMCC's approach to curricular and programmatic assessment and evaluation. This plan also encompasses institutional assessment, and a more detailed approach is described in the Assessment Cycle section.



Academic Assessment – Concepts, Definitions, Types and Principles of Planning

Academic assessment is the systematic collection of data to monitor the success of a program or course in achieving intended student learning outcomes[1]. The data collected covers a range of activities using different forms of assessment such as pre-tests, observations, and examinations. Once this data is gathered, it is used to evaluate the target population's (student or instructor) performance.

Evaluation is the next step that provides judgement about the overall value of an outcome based on the assessment data. During the academic decision-making process both assessment and evaluation are used in a synchronized manner for institutional effectiveness by making improvements on the recognized weaknesses, gaps, or deficiencies in target populations, learning environment, polices, processes, procedures, teaching methods, course content, and overall curriculum.

[1] Hanna, G. S., & Dettmer, P. (2004). *Assessment for Effective Teaching: Using Context-Adaptive Planning*. Pearson A and B. https://books.google.ca/books?id=sL1KAAAAYAAJ

Academic assessment of students is generally used to determine what students have learned (outcome); the way they learned the material (process); and their approach to learning before, during, or after the program or course. Assessment of faculty is carried out for purposes similar to that of students to ensure that teaching methods, course content and student teacher interaction continue to meet the highest standards and a culture of scholarship in teaching and learning can be established.

At CMCC there are two basic types of assessment:

- **Formative assessment** provides feedback and information during the instructional process while learning is occurring. Formative assessment measures student progress. This type of assessment can also assess the progress of an instructor/teacher.
- **Summative assessment** takes place after the learning has been completed and provides information and feedback that sums up the teaching and learning process.

Formative assessments are usually lower stakes and can be seen as being "for" the purposes of learning. Summative assessments are usually higher stakes and are seen as assessments "of" learning. All assessments should be looked at as opportunities "for" learning and cannot be treated independently of teaching practices.

There are also two types of measurement used in academic assessment to evaluate a learner.

- **Direct measures** are the outcomes of an assessment process that is responsible for a direct examination of student knowledge against measurable student learning outcomes. A direct assessment of student learning can be conducted throughout a course using techniques such as exams, quizzes, demonstrations, reports, etc. These techniques provide a direct sample and strong evidence of student learning.
- **Indirect measures** of student learning ascertain the perceived extent or value of learning experiences. They assess opinions or thoughts about student knowledge or skills. Indirect measures can provide information about student perception of their learning and how this learning is valued by different constituencies. An indirect measure is useful in that it can be used to measure certain implicit qualities of student learning, such as values, perceptions, and attitudes, from a variety of perspectives[2]. Examples of indirect measures would include surveys following experiential learning activities, reflections from observed or simulated patient experiences, and assignments within clinical education courses.

CMCC utilizes direct and indirect measures to measure the acquisition of knowledge, skills and attitudes at regular intervals throughout the curriculum.

All assessment methods have their limitations and contain various biases. Assessment data quality is a key consideration of any assessment plan to ensure that the conclusions are based upon reliable and valid data. To accomplish this, CMCC's Assessment and Evaluation Plan uses

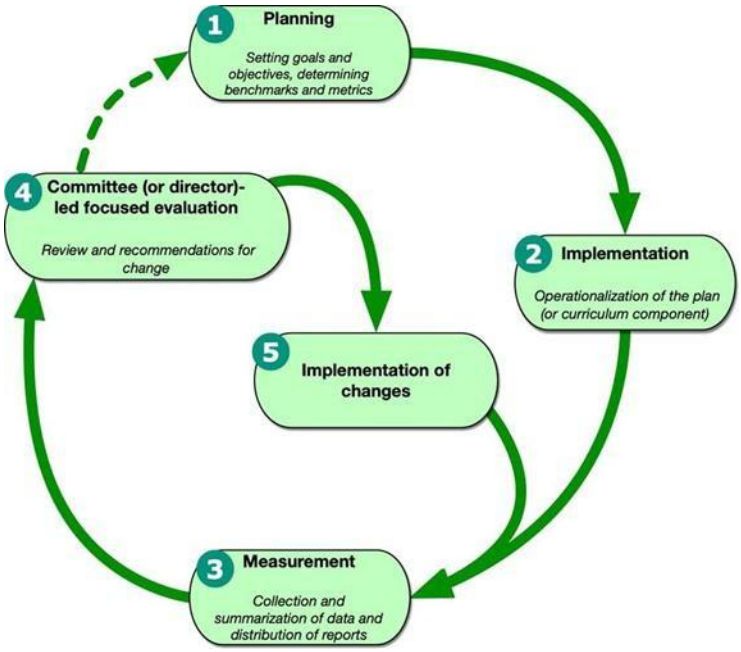
[2] Goldie J. AMEE Education Guide no. 29: Evaluating educational programmes. Medical Teacher. 2006 Jan 1;28(3):210-24.

both direct and indirect measures from a variety of sources and target populations(stakeholders). The use of diverse formative, summative, high and low stakes assessments help in providing integrated evidence of student learning. For a full list of CMCC's Academic Assessment Methods Used see Appendix 1.

Assessment Cycle

In general, assessment within each aspect of CMCC's assessment plan adheres to a parallel spiral pathway, as illustrated in the diagram, and elaborated upon below. This methodology, akin to the PLAN/IMPLEMENT/MEASURE/ASSESS model highlighted earlier for curricular and programmatic assessment, is a more detailed representation of institutional evaluation.

Steps to Continuous Improvement



1. Planning can be at the level of the institution (e.g., CMCC Institutional Plan, Board directive), executive (President and Executive Leadership Team), academic division (undergraduate and graduate), or committee (Board committees, administrative committees, program committees and working groups). When possible, plans are accompanied by metrics, assignments of authority and responsibility, and any available benchmarks. In the context of this Assessment Plan, "planning" includes curriculum development activities.

2. Implementation follows the development of plans. This might include curriculum delivery, faculty and staff training, operationalization of strategic goals/strategies/objectives, delivery of services, acquisition and deployment of equipment or other capital items and physical or virtual renovations.

3. Measurement is performed in a variety of ways, including external examinations (e.g., national licensing exams), surveys, audits, internal business intelligence, classroom and laboratory exams, direct observations, clinical exams (e.g., Objective Structured Clinical Examinations – OSCE), external reviews and consultancies, self-evaluations, and employee performance evaluations. For classroom, small group, and laboratory assessments, data analysis is performed by the Academic Team. For clinical assessments, data analysis is performed by the Clinic Management Team (CMT). The Office of IPA manages most formal surveys and institutional measures.

4. Committee or Director-led Focused Evaluation is the process by which data collected from the above steps is reviewed and acted upon by the appropriate committee(s). CMCC is highly collaborative and depending on the nature of the assessment and the respective committee, a report may be generated that includes recommendations for change to effect improvement. In some cases, this reporting is simply captured by committee minutes, whereas in other cases a more formal report is issued. Minor changes may be managed at the individual or department/divisional level, whereas recommendations for more significant changes are forwarded to the CC and/or Institutional Affairs Committee (IA).

5. Implementation of Changes is the resulting step after the respective committee has recommended or directed a change to address any deficiencies or weaknesses identified in the Committee-led Focused Evaluation to ensure established benchmarks or thresholds are met and continuously improved upon.

   Any changes that are made are then re-assessed at either the next regularly scheduled assessment date or at a sooner date if urgent, forming a continuous spiral of assessment, change and feedback needed for continuous quality improvement.

At times, the Committee or Director-Led Focused Evaluation may result in the need to modify benchmarks, metrics, or objectives in the initial plan.

Part III: Institutional Assessment and Evaluation

This section covers the assessment of non-academic operations and entities, including physical facilities, environmental factors, external factors, institutional leadership, IT, student services, library, clinics, campus climate, employees, safety, and financial performance.

Data is primarily collected from surveys. Several major surveys are administered and compiled by an external consulting firm, and the results may inform future goals and strategies.

The surveys cover multiple areas, as shown in the Areas of Interest column for the following tables.

Institutional Evaluation:

- Student Engagement Survey
- Profession Survey
- Employee Engagement Survey
- Program Effectiveness Report
- Clinic Quality Assurance Evaluation
- *Program Completion Rates Undergraduate DC degree
- Program Completion Rates Graduate Studies
- *Research Productivity
- Audit of Financial Statements
- Financial Ratios and Indicators
- Ontario Student Assistance Program (OSAP) - Audit Designated Learning Institution
- *OSAP Financial Aid Loan Default Rate
- President's Report to the Board of Governors
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- Annual Short Report Council on Chiropractic Education (C)
- Program Characteristics Report Council on Chiropractic Education (US)

Student Engagement Survey

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Biennial	March-April 2017, 2019, 2022, 2024, 2026	Academic program, faculty and academic instruction, clinical experience, communication, support services, facilities, resources, student life, community, and equity, diversity and inclusivity (EDI).	Executive Leadership Team (ELT), Academic Team, Student Services. Curriculum Committee (CC) also reviews survey elements related to the academic program(s). Further evaluation by respective Division Directors.

The student engagement (satisfaction) survey, conducted biennially by a third party, engages all undergraduate students anonymously. Input for survey planning is gathered from core departments, ensuring alignment with institutional goals. Recognizing students' unique perspective, the survey aims to assess various areas such as teaching, student services, and facilities, enabling identification of strengths and areas for improvement. The ELT oversees the evaluation process, with administrators responsible for different operational aspects leading discussions based on survey results. The data is further reviewed by the CC annually, guiding potential changes for the upcoming academic year.

Profession (Alumni) Survey

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Biennial	May-June 2018, 2020, 2022, 2024, 2026	Practice income, practice status and type, professional and community engagement, satisfaction with CMCC curriculum, relevance of curriculum to practice, postgraduate experiences, continuing education, CMCC donor program.	ELT, Academic Team, and Clinic. CC also reviews survey elements related to the academic program(s). Further evaluation by respective Division Directors.

The Profession Survey, conducted biennially by a third party, typically given to all alumni, was narrowed in scope in 2024 to include only those who graduated within the last decade. Spearheaded by the ELT, this focused evaluation process prompts discussions and actions led by the appropriate ELT member and committee in response to survey findings.

Employee Engagement Survey

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Biennial	November-December 2017, 2019, 2021, 2023, 2025	Coworker relationships, culture, inclusion, manager relationships, employee empowerment, company potential, recognition, work life balance, working environment, department collaboration, executive leadership, career advancement & development, total compensation.	ELT, Human Resources (HR), and further evaluation by respective divisions or departments.

The Employee Engagement Survey, conducted biennially by a third party, is administered in the late fall of odd years. Responsibility for the focused evaluation begins with the ELT. The HR Division also receives the survey results for review and planning. If required, further discussion is undertaken by the respective ELT member with various division directors. The survey evaluations often result in new HR initiatives and training programs.

Program Effectiveness Report

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	August	Academic program, student performance, survey results, performance metrics, and curriculum changes.	IPA in collaboration with IEC.

The Program Effectiveness Report (implemented in 2023) is used to make data driven decisions to improve the DCP. The data provided in the report is reviewed by IEC, which meets regularly to foster a culture of continuous improvement. The IEC facilitates program review and analyzes procedures and processes to assess how effectively the College is advancing its mission, goals, objectives & key results. The report includes student outcomes/performance, survey data, performance metrics, curriculum changes and a list of recommendations for action.

The reporting period is June 1 – May 31, coinciding with the fiscal year.

Clinic Quality Assurance Evaluation

Frequency	Timing	Areas of Interest	Focused Evaluation Done by

Two File Audit periods per academic year.	Results are reviewed with clinicians at individual meetings between faculty members and their Director. Results are reviewed monthly by CMT.	Health records quality. adherence to standards, application of evidence-based care, clinical reasoning management plans.	CMT and CC.
Patient Experience Survey collected on yearly basis.	Patient Satisfaction Survey Results are reviewed monthly by CMT	Patient satisfaction and experience on a variety of domains.	CMT and CC.

The clinic quality assurance evaluation is included in the Institutional section of the Plan because of its broad review of multiple components of patient care that extend beyond student involvement.

The Clinic QA evaluation consists of three major components (the first two are discussed in this section):

- Patient File Audits
- Patient Experience Survey Intern Supervision – Clinical competency evaluations (see section IV)

Patient File Audits: Using an in-house procedure, the CMT exports data from the electronic health record into a database, allowing auditors to assess approximately 60 quality elements. These audits ensure compliance with accreditation and provincial regulatory standards and track educational goals for clinical learning at CMCC. Identified gaps are reported to committees like the CC for corrective action.

The system notifies clinicians if essential steps are overlooked or if best practices are missed, aiding improvements at both individual and clinic levels. Audit results are reviewed with clinicians in one-on-one meetings with their director, where individual files are assessed and improvement goals are set.

Each audit element is tagged as an educational, accreditation, or practice standard, with the program calculating a score based on presence. A “report card” is generated at the audit's conclusion, with any critical issues addressed immediately, requiring clinicians to correct

deficiencies.

Patient Experience Survey: CMCC uses Health Quality Ontario's (HQO) Patient Experience Survey (PES), completed in 10-15 minutes to capture patient experiences from recent visits and the past year. Participation is voluntary and anonymous, with the survey link available on CMCC's website and e-blasts sent twice yearly.

The CMT added questions specific to CMCC, such as clinician name, clinic location, and visit type. Following HQO's year-round rolling approach, all patients can contribute. Data is reviewed monthly by the Clinic Business Analyst, with trends prompting changes through the Plan-Do-Study-Act cycle.

In addition to the formal file audits and PES surveys, attending clinicians in the CMCC system are subject to external QA Audits by the Regulatory College, a process by which a peer member of the CCO audits a select number of patient files. These confidential audits are not shared with CMCC but do serve to provide the clinician with additional feedback.

***Program Completion Rates Undergraduate DC degree**

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	June-August	Four-, Five-, Six- and Seven-year completion rates of DC degree program students.	Registrar, Dean, Undergraduate and Graduate Education, and Dean, Research and Assessment, LEC and Board of Governors.

Program completion rates measure the percentage of Doctor of Chiropractic (DC) program students who successfully complete the program within four years (normal time) or within extended periods of five, six, or seven years after matriculation. Accreditors and governmental bodies may request different reporting intervals.

The evaluation of program completion rates is conducted by the Registrar, Dean of Undergraduate and Graduate Education, and Dean of Research and Assessment. The Board's Learning Environment Committee (LEC) and the full Board have designated program completion rates as a Key Performance Indicator (KPI), with results reviewed annually.

To establish thresholds for completion rates, a five-year average serves as the baseline. A caution threshold is set at one standard deviation below this average, and an alert threshold at two standard deviations below. This method allows for slight annual adjustments. Results are reported in the annual Program Effectiveness Report and presented on the Board of Governor's KPI dashboard each fall.

Program Completion Rates Graduate Studies

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	August	Graduate studies completion rates.	Director of Graduate Studies, CC and LEC.

Graduate studies program completion rates are the percentages of graduate students who successfully complete their residency within the normal time (two years for clinical sciences and sports sciences; three years for diagnostic imaging). Students in the joint CMCC clinical sciences program and IHPME master's degree program are expected to finish in three years.

Specialty certification or fellowship status is the percentage of graduate students who receive specialty certification or fellowship status following completion of their graduate studies at CMCC.

Initial evaluation is done by the Director of Graduate Studies. The CC is the primary committee charged with analysis. The LEC also reviews the program completion rates as a KPI and is reviewed annually.

***Research Productivity**

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Bi-annual	August	Publications, presentations, grant applications and grants received.	Research and Innovation Team, CC, ELT, LEC and Board of Governors.

The Office of Research Administration compiles a catalogue of research and scholarship outcomes, including publications, presentations, grant applications and grants received. An evaluation of the data is done by the Research and Division Team, and the CC reviews the reports for relevant application to the curriculum and knowledge transfer.

The LEC and full Board also annually review the faculty publication rates as a KPI. Thresholds for *"Number of Peer-Reviewed Publications by CMCC Faculty" are* presented on the Board of Governor's KPI dashboard each fall.

Audit of Financial Statements

Frequency	Timing	Areas of Interest	Focused Evaluation Done by

Annual	May-October	Audit risks: tuition revenue, salaries, investments, capital assets, management and controls, fraud.	ELT, Board Finance Committee and Board of Governors.

The annual audit of CMCC's financial statements is performed by an independent auditor. The timeline for the process varies slightly from year-to-year, but generally follows the following sequence:

- May – planning and interim fieldwork by the auditors
- June – approval of the audit planning report by the Board Finance Committee
- July-August – fieldwork by the auditors
- September – presentation of the draft audited financial statements report by the auditors to the Board Finance Committee
- October – approval of audited financial statements by Board of Governors

The audit follows Canadian generally accepted auditing standards for not-for-profit organizations. These standards require the auditor to comply with ethical requirements and plan the audit to ensure the financial statements are free from material misstatement. The audit involves obtaining evidence about amounts and disclosures, assessing risks of misstatement, evaluating accounting policies and estimates, and reviewing the overall financial statement presentation.

***Financial Ratios and Indicators**

Frequency	**Timing**	**Areas of Interest**	**Focused Evaluation Done by**
Annual	July-Sept	Institutional financial health, fundraising performance, tuition dependency and non-tuition revenue, long-term debt, institutional reserves, investments.	ELT, Board Finance Committee and Board Institutional Advancement Committee.

After the fiscal year has closed (May 31) and the annual independent audit has concluded, there are several KPIs based on financial ratios that are calculated and reported to the Board. Annual performance as well as five-year trends are reported. These ratios produce an overall picture of CMCC's financial health and provide valuable information for risk management, strategic planning and annual and long-range budgeting.

Ratios and other financial measurement that are used for evaluation purposes fall into two general categories:

Fundraising Performance	General Financial Performance and Investments
*Net donations	*General Fund
*Cost to raise $1	*Tuition as a Percent of Total Operating Expenses
*Net Special Events	*Primary Reserve Ratio
Net Annual Giving Program Revenue	Net Income
	Return on Net Assets
	Viability Ratio
	Composite Financial Index (CFI)

Items marked with an asterisk (*) are included annually on the Board KPI dashboard.

There are several other indicators and ratios that are used for special purposes and which are not included above. Similarly, grant revenue is not specifically identified in the above ratios.

Ontario Student Assistance Program (OSAP) Audit - Designated Learning Institution

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	July - August	Manuals and policies, admissions requirements and processes, OSAP administrative procedures.	Student Services, ELT and Board Finance Committee.

In order for a student at CMCC, a private postsecondary institution, to be eligible to apply for financial assistance under the Ontario Student Assistance Program ("OSAP"), which includes Canada and Ontario student loans, Ontario Student Grants and associated grants, scholarships and bursaries, both the institution and the student's program of study must be approved by the Minister of Colleges and Universities for Ontario Student Loan purposes. Approval is also subject to a Performance Requirements agreement containing terms that the Minister considers proper. This Performance Requirements agreement is revised and renewed annually.

Private postsecondary institutions approved by the Minister for student financial assistance purposes under the Ontario legislation become designated institutions for student financial assistance purposes.

OSAP Financial Aid Loan Default Rate

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	November	OSAP default rates, OSAP Repayment Assistance Plan (RAP) usage rates.	Student Services and ELT.

The cohort default rate on student loans managed through OSAP is an indirect measure of the success of CMCC's graduates. Rates are issued by the Ministry in November of each year and are posted, along with data from prior years, on the Ontario Government website.

President's Report to the Board of Governors

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Biannual	April and October	Strategic plan – status of goals and strategies. Operational activities may also be included.	President, ELT and Board of Governors.

The President provides a comprehensive report to the CMCC Board of Governors for its semiannual and annual meetings. This is primarily a report on the status of the goals and strategies in the institutional Strategic Plan. A reporting template, based on the Strategic Plan, is provided to ELT members and other designees.

Following presentation of the report to the Board, the report is posted on the Learning Management System (KIRO) and fully accessible for review by the CMCC community.

Annual Report Ministry of Colleges, Universities and Research Excellence and Service

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	July	Changes in legal or accreditation status, transcript access and storage, tuition trust fund, audited financial statements, annual enrolment numbers.	Student Services and IPA.

This is an annual report required by the MCURES. It is typically submitted in July of each year. The reporting period is June 1 – May 31, coinciding with the fiscal year.

Annual Short Report Council on Chiropractic Education (C)

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual (except years of site visit or mid-cycle review)	October	Annual enrolment and admissions, student outcomes (including performance and completion rates), faculty size,	IPA, ELT and LEC.

		finances, response to enrolment changes.	

The CCE(C) requires an annual report and the following is required information listed in the handbook:

In all years of the eight-year accreditation cycle, except for those years in which there is an accreditation site visit, or, in the year in which there is a mid-cycle review, which is typically at year four, DCPs will provide to CCEC an Annual Short Report. The Annual Short Report describes key components necessary to maintain open communication between CCEC and the DCP, and shall contain:

- annual enrolment and admission;
- student outcomes, including performance and completion rates;
- student full-time enrolment, including current and prior year;
- faculty full-time employment, including current and prior year;
- a narrative discussing how the program has responded to enrolment changes regarding planning, budgeting, resources, staff and other impacted factors;
- a financial report.

Program Characteristics Report Council on Chiropractic Education (US)

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Biennial	Fall 2023	Academic program, institutional initiatives, clinics and research.	IPA, Academic Team, Research, Clinic and Registrar.

The CCE(US) accreditation standards require DCPs to report on the three most impactful strategic initiatives implemented over the past two years, substantive changes (as defined in the Standards; things like changes in the mission, governance model, significant departures from the former curriculum or mode of delivery, new degree programs, change in method of awarding credit hours, moving the campus, adding a branch campus), Policy 56 thresholds/performance (program completion rate, licensing exam results), list of clinics and research and scholarship. An email notification with instructions and templates is sent by the CCE(US) to the President and VP, Administration and Finance 60 days prior to the report due date.

External Reviews

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
At the discretion of the President	At the discretion of the President	Department or topic/theme.	CC and/or IA.

CMCC conducts specific department or topic/theme reviews at the discretion of the President.

The review must include a report which outlines areas of strength and recommendations for improvement and must be submitted to the President. Evidence of revisions made as a result of the review are to be documented and recorded in the minutes of CC and/or IA.

Part IV: Curricular Assessment and Evaluation

Part IV of the Assessment Plan focuses on the curriculum itself. Although there is overlap between the categories of evaluation in Parts III, IV and V, assessments in Part IV tend to be those that focus on learning outcomes in a single year or individual courses, rather than learning from across multiple years (see Part V for the latter).

Curricular Evaluation:

- Course Evaluations Years I-IV
- Faculty Evaluations Years I-IV
- Curriculum Focus Groups Years I-IV
- Exit Student Survey Year IV
- Course Grades and Supplemental Exams Years I-IV
- *Objective Structured Clinical Examinations Years I-IV

Course Evaluations Years I-IV

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	At the conclusion of each course; staggered release	Value of instructional methods, resources and assessments, clinical relevance of content, suggestions for improvement.	Director of Education, Curriculum and Faculty Development, Directors of Education and CC.

Courses in Years I-III are evaluated through electronic methods where students are invited to evaluate the course. Course evaluation data may not be tied directly to any one individual instructor and is therefore made available to Directors and all faculty involved in the course shortly after the course ends.

Courses in Year IV were evaluated through the Intern Exit Survey in past years. From 2024, these will be evaluated through the same electronic process as is used in Years I-III. Course evaluation data are presented and discussed at the end of the academic year to CC.

Faculty Evaluations Years I-IV

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	Interim (at ~25% of course progress) and Final (at conclusion of course)	Years I-III: helpful instructional methods, suggestions for improvement, demonstrations and explanations, clinical integration, modeling of professional behaviors, use of educational technology.	Directors of Education
	Quarterly	Year IV: Clinical teaching skills: learning environment, autonomy, organization, feedback, questioning, modification of teaching methods, use of research and evidence-based guidelines, demonstrations, diagnostic skills, communication skills, cost appropriate care.	CMT

Faculty evaluations are distributed through electronic means where students are invited to evaluate their teaching faculty. For Years I-III, interim and final evaluations of faculty members are conducted.

The collected responses are accessible to the Directors and individual faculty members shortly after the close of each evaluation period and can be reviewed in consultation with their Director of Education shortly after each evaluation period and at the faculty member's annual performance appraisal. Changes to the teaching methodologies are planned, along with any additional professional development or support needed.

Quarterly, Year IV students provide feedback about their supervising clinical faculty member (clinician) through the anonymous completion of the Cleveland Clinical Teaching Effectiveness Instrument[3]. Feedback is relayed through a one-on-one meeting with the clinician and their Director. Although specific questions are asked about several areas related to the students' learning and the clinician's teaching and management style, the questionnaire also allows for the students to provide open text feedback about what the clinician does well and where they can improve. Summary reports are then generated, after which this feedback is shared with the respective clinician. Any urgent concerns are addressed quickly by a Director of Clinical Education and Patient Care.

Clinicians are asked to review and reflect on their student feedback and then select one or two items where they feel that they would be able to make appreciable changes to their teaching and management practices commensurate with the feedback received from their students. A Director of Clinical Education and Patient Care will also review all four sets of the evaluations with the clinician at their annual Performance Review.

Curriculum Focus Groups Years I-IV

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	Summer	Course and faculty evaluation trends, general comments on the DC degree curriculum.	Director, Curriculum and Faculty Development and CC.

Focus groups with representatives from each class, led by the Director of Curriculum and Faculty Development, are conducted in a semi-structured interview format and documented. These sessions provide an opportunity for students to share their thoughts on the curriculum and offer additional insights on trends and themes identified from the annual evaluations. However, these focus groups are conditional upon sufficient participation from student volunteers. The results are subsequently reviewed by the CC.

[3] Copeland HL, Hewson MG. Developing and testing an instrument to measure the effectiveness of clinical teaching in an academic medical center. Acad. Med. 2000;75:161-6

Exit Student Survey Year IV

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	Twice per year	Work-life balance, clinical skills development, faculty relationships, peer relationships, expectations, educational settings and resources.	Clinic Education Directors and CMT. Further evaluation done by Director, Curriculum and Faculty Development and CC.

In 2024, Year IV adopted the Health Education Learning Environment Survey (HELES) to evaluate the learning environments and experiences of Year IV Interns. It is considered a measure of the quality of the learning environment and experience within the context of psychosocial experiences, technical skills acquisition, and training environments. The HELES considers the three domains of Personal Development, Relationships, and School Culture with subscales as identified above. The HELES provides a valid and reliable assessment of the learning environment and is used to inform accreditation and program planning.

Course Grades and Supplemental Exams Years I-IV

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	At end of the academic year	Course grades, number of supplemental exams, number of withdrawals from the program.	Education Directors, Student Promotions Committee and CC.

Years I-IV course grades are compiled and reviewed as an aggregate. Course performance and OSCE assessment trends are analyzed by the respective Education Director and the Dean, Research and Assessment. The number of supplemental exams, OSCE redos, and any program withdrawals are reviewed by the Education Directors, Student Promotions Committee and CC.

***Objective Structured Clinical Examinations Years I-IV**

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	At end of the academic year (Years I- III); mid- and end-year for Year IV	Clinical competencies relevant to each year.	Education Directors, Director, Curriculum and Faculty Development, CMT and CC.

Years I-III each have a year-end OSCE that is required for promotion to the next year. Year IV has both a mid-year and a year-end exam. OSCEs require the integration of information from across multiple courses given in the respective year and are thus useful for evaluation of the overall learning outcomes of each year.

These standardized patient-based exams are Years I-III year-end and Year IV mid- and year-end summative assessments of the level of clinical competence expected for the respective year. These assessments aim to integrate the foundational and clinical sciences, with demonstration of specific clinical skills within a clinical situation. OSCEs are blueprinted to ensure that an appropriate array of conditions and skills are covered within a set number of stations. These stations are also tagged to CCE (Canada and US) competencies and the roles outlined in CMCC's Exit Competencies. ExamSoft™ has recently been incorporated into OSCE grading, providing greater inter-examiner agreement on scoring.

In the 2023-24 academic year, a pilot was done which involved the use of the borderline regression approach to setting the pass mark for each station and the exam as a whole. The thresholds were calculated using borderline regression but were not used for those particular exams. Rather the traditional standard of a 60% score was used as a threshold. Now that it has been established that the statistics for the borderline regression indicates good reliability and validity, in 2024-25, borderline regression will be utilized to set the pass thresholds for each station and each exam, and the minimum number of stations required to be passed.

Review and reflection of the exam is encouraged for students afterwards and is seen as a useful experience by both strong and weak students. Remediation is done with those students who are unsuccessful in their first attempt. This involves meeting regularly with a faculty member and practicing extensively on areas of deficiency in preparation for a supplemental exam. In addition to this in Years I-III, students are also provided feedback from noted markers for each OSCE station.

Part V: Programmatic Assessment and Evaluation

Programmatic and curricular evaluation are closely related, but an effective academic program is achieved only when a quality curriculum is supported by many other functions outside of the curriculum itself. These include admissions processes, faculty characteristics, curriculum delivery methods, student supports, and the learning environment. Learning outcomes assessments in Part V are those that measure learning across multiple years, rather than just within one year or in individual courses (see Part IV for the latter). Student supports and the learning environment were included in the institutional assessments discussed in Part III.

Programmatic Evaluation:

- Applicant Assessment Undergraduate Education
- Applicant Assessment Graduate Studies
- Assessment of Clinical Competencies
- Longitudinal Tracking of Competencies
- Clinical Competency Evaluations Year IV
- *Canadian Chiropractic Examining Board (CCEB)
- National Board of Chiropractic Examiners (NBCE)
- Annual Program Enrolment Admissions Report Council on Chiropractic Education (US)

Applicant Assessment Undergraduate Education

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	Jan-Mar	Applicant eligibility, applicant suitability for CMCC.	Undergraduate Admissions Committee (interview and written response scoring done by Admissions Assessment Team) and CC reviews admissions data.

Admissions to the DC program follow a two-stage process evaluating both academic and non-academic attributes. In phase one, applicants complete an online application, including submitting official undergraduate grades. Qualified applicants are then invited to participate in an online interview and submit a written personal statement as part of phase two. The Undergraduate Admissions Advisory Committee reviews applications and makes admissions recommendations to the Registrar.

The effectiveness of the admissions process is evaluated by the ELT and LEC through analysis of program completion rates, with adjustments considered if performance falls below acceptable thresholds.

Applicant Assessment Graduate Studies

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	Nov-Dec	Applicant eligibility, applicant suitability for residency program.	Graduate Studies Selection Committee

Admission to the Graduate Studies program follows a two-phase process, evaluating both academic and non-academic attributes. Phase one involves submitting an application package including a CV, personal essays, official transcripts, three letters of reference, and a letter of good standing. Qualified applicants proceed to phase two, consisting of a 45-minute interview with the Selection Committee. The committee assesses various aspects such as program understanding, motivation, and communication skills using a Likert scale. Final decisions are based on both the application materials and the interview.

The effectiveness of the admissions process is evaluated by the ELT and the LEC through analysis of program completion rates, with adjustments considered if performance falls below acceptable thresholds.

ExamSoft™ Longitudinal Tracking of Competencies

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	Ongoing	Student attainment of clinical competencies, curricular content mapped against Bloom's taxonomy.	CC and LEC.

After every assessment the faculty reflect on assessment questions and ensure that they are measuring learning outcome attainment. Reports generated by ExamSoft™ provide both students and faculty with information that can be used to remediate and improve performance, and which can be reviewed and acted upon by CC.

ExamSoft™ reporting allows for tracking assessments against accreditation body competencies, graduate competencies, Bloom's taxonomy, and the Canadian Chiropractic Examining Board (CCEB) benchmarks (for the 2023-24 academic year, we ceased to track CCEB topics because CCEB changed their exams to competency based and the original CCEB topics are no longer relevant). Emphasis over the past few years has been on the addition of written assignment dimensions due to the increased use of the rubric's functionality. About 50% of Year I-III students' GPA is achieved through examinations delivered via ExamSoft™. Year IV reporting of a student's attainment of all graduate competencies is included at year-end, when entry-to-practice competency is demonstrated. Much of this comprehensive tracking is now being accomplished in ExamSoft™.

Clinical Competency Evaluations Year IV

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	Five times during the internship; schedule is set by the clinician – one set over each two-month period, except final two-month period.	Student attainment of clinical competencies.	Supervising Clinician, CMT and CC.

In the clinic system, each clinician is responsible for evaluating their assigned interns' performance by conducting a standard set of clinical competency evaluations over a two-month interval, five times per year. The final two-month period has no mandatory competency assessments. During every competency assessment, the clinician observes the intern's

performance. Several of these are performed in real time with clinic patients. These assessments represent snapshots in time regarding the state of the intern's clinical skills. Whenever possible, immediate constructive feedback is provided to the intern as soon as possible after the evaluation as part of the learning process.

These are demonstrations of competencies in application to real patients and real clinical situations. These competencies are built in layers over the four years of the academic program. In Miller's pyramid, these clinical competency evaluations are at the highest level of authenticity, the "Does" category. Many of the CMCC Graduate Competencies, CCEC Entry to Practice Competencies, and CCE Meta-competencies are specifically assessed during these clinician-directed intern evaluations. Six of these clinical competency evaluations are done each two-month period. It may require multiple observations for a clinician to complete a full set on an intern.

A set of Clinical Competency Evaluations consists of eight assessments:

- file audit
- case history
- history directed physical examination
- report of findings
- therapeutic care
- case presentation
- two separate assessments of professional conduct

***Canadian Chiropractic Examining Board (CCEB)**

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	February, May and October (single report received in Nov-Dec)	Written Exam (NMS Expert, Communicator, Professional, Collaborator, Scholar, Health Advocate, Leader). Clinical Exam OSCE (NMS Expert, Communicator, Professional, Collaborator).	Academic team, CC and LEC.

CCEB licensing examinations are needed for registration in all of the Canadian provinces. Students must pass a written exam before being eligible to apply for the clinical exam. Although students receive results approximately one month after test administration, CMCC is not provided with individual student results. CMCC is also not privy to CCEB exam questions or the exam creation process. CMCC is provided with an annual report November or December that provides aggregate performance results on the winter, spring and fall administrations.

The Board and its Learning and Engagement Committee have established CCEB performance as a KPI. To establish KPI thresholds for the CCEB, a five-year average is used as a baseline. One standard deviation below the average sets the caution threshold, two standard deviations below set the alert threshold. This method results in annual adjustments to the threshold. Results are reported in the annual Program Effectiveness Report and presented on the Board of Governor's KPI dashboard each fall.

National Board Chiropractic Licensing Examinations (NBCE)

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	Part I: Jan, Apr, Aug. Part II: Feb, Jun, Sep. Part III: Mar, July, Oct. Part IV: May, Nov	Part I: foundational (basic) sciences, Part II: clinical sciences, Part III: written clinical competency, and Part IV: OSCE clinical competency practical exam.	Academic team, CC and LEC.

NBCE licensing examinations are required for licensure in all of the states in the USA. A small number of CMCC students sit for these exams annually. Because of the small cohorts, evaluation of validity as a measure of CMCC program effectiveness is difficult.

NBCE provides CMCC with individual student results, making it possible to identify students with a need for academic remediation. NBCE also provides periodic aggregate performance after every test administration.

Annual Program Enrolment Admissions Report Council on Chiropractic Education (US)

Frequency	Timing	Areas of Interest	Focused Evaluation Done by
Annual	November	Annual enrolment demographics, academic performance of AATP vs regular admissions, student to faculty ratios, and CCEB performance outcomes.	IPA, Registrar and HR.

The CCE(US) accreditation standards require DCPs to collect and report program enrolment and admissions data annually. DCP annual enrolment demographics; student to faculty ratio; and, alternative admissions track plan (AATP) data and analysis. An email notification with instructions and templates is sent by the CCE(US) to the President and VP, Administration and Finance 60 days prior to the report due date.

Appendices

Appendix 1: Academic Assessment Methods Used At CMCC

Doctor of Chiropractic program students are assessed using the following methods. Each of the following methods has their own strengths and weaknesses, so by selecting an appropriate combination of approaches, a comprehensive overall assessment of student learning can be achieved.

Level of Miller's Pyramid at CMCC			
Knows	**Know How**	**Shows How**	**Does**
MCQ*/True-False	MCQ/True-False	Radiology written exam	Clinical Patient Interaction DI MCQ Exams
Fill in the Blank	Fill in the Blank	HPD*	Patient Care Interaction
Short Answer	Short Answer	Clinical Diagnosis Practical	Patient Case Write-up
Matching	Matching	Technique Practical	Clinical Competency Evaluation
Hot spot	Hot spot	Simulated Case Presentation	Video Creation
In-class quiz	In-class quiz	Simulated Competency	Information Outreach
Online quiz	Online quiz	Grand Rounds Reflection	Externship
Written Assignment	Written Assignment	Simulation Lab Manikin	Faculty Experience
		Simulation Lab Force Table	Interprofessional Communication and Collaboration
		Clinical Skills Simulation Lab	Special Populations Interviews
		Written Assignment	Learning Objectives Exercise
		Portfolio Reflection	Nutrition Risk Exercise
		OSCE*	Patient Exercise Handout Creation
*MCQ=multiple choice question; HPD=history, physical, diagnosis exam; OSCE=Objective Structured Clinical Examination			

Multiple Choice Questions (MCQ) and True/False

Multiple choice questions require a student to recognize a correct answer among a set of options that include two-four wrong answers. Less often used are true/false questions. Frequently, MCQ and true/false questions test students at a low level (i.e., recognition) of Bloom's taxonomy. Faculty training programs have included methods of using MCQ to involve the application, analysis and synthesis levels of learning and result in students demonstrating higher-order learning.

Short Answer Questions

Short answer questions involve open ended questions that require students to create an answer. They are commonly used in examinations to assess basic knowledge and understanding (i.e., low cognitive levels) of a topic before more in-depth assessment questions (i.e., higher cognitive levels) are asked on the topic. In clinic entrance, midterm and exit examinations, short answer questions are used to assess knowledge and understanding, but also deeper assessment of clinical reasoning. Short answer format questions allow students to describe their thought processes for clinical decisions such as determining diagnosis and management.

Quizzes (in-class and online)

Quizzes are short assessments that are used to challenge student understanding and assess comprehension of course material. Quizzes may be graded or ungraded and test from lower to higher order thinking. At CMCC in-class quizzes are often implemented through the use of a classroom response system (Top Hat® is most common).

Online Self-Assessments

Self-assessments provide students with the opportunity to work through cases and assess their level of knowledge in a given course in a formative manner.

Assignments (in-class and online)

Assignments are utilized in a variety of courses. Some focus on a specific topic to be explored, while others are case based in nature. Assignments generally are completed in a written format and submitted electronically through the LMS and undergo plagiarism detection, although a number of assignments may direct students to complete online work as part of their process.

Simulation Laboratory Assessments

The Simulation Lab (aka "SIM Lab") is home of a clinical skills diagnostic lab, a treatment skills development lab, and a high technology audiovisual environment used to conduct history, physical, and diagnostic (HPD) exercises. This lab is an integral part of the educational resources at CMCC and provides a venue for experiential learning through the assessment of manikin (computerized simulators) and standardized patient clinical scenarios.

Clinical Skills Diagnostic Lab

The clinical skills diagnosis arm of the Simulation Laboratory involves the use of a physical space which is designed as a mock clinic containing a waiting room, reception area, and individual treatment rooms. This space is outfitted with an audio-visual management system, five highly sophisticated computerized manikin simulators (high-

fidelity manikins), simulation tasks trainers for otoscope and ophthalmoscope assessment as well as wearable simulation auscultation task trainers. This allows students to experience a wide variety of rare and/or serious conditions that mat be seen in a chiropractor's office.

Treatment Skills Development Laboratory

The psychomotor skills development arm of the Simulation Lab utilizes a combination of video feedback using mobile devices and Force Sensing Table Technology (FSTT®). Force Sensing Table Technology provides students with the ability to finely tune their manual treatment skills (including manipulation, adjusting, mobilization, and massage) in a way that was previously impossible. This unique laboratory setting provides an opportunity for CMCC to enhance, evolve and standardize core education and practice. This is relevant to the teaching of chiropractic skills, sharing of learning resources and assessment of performance. Using live and rich animated video demonstrations, students learn the required skills and practice them in parts while receiving augmented objective feedback from the FSTT®, delayed video feedback of their kinematics, observational feedback from their instructors/peers, and feedback from their surrogate patient. Although the SIM lab is used mostly for formative feedback and remediation of students, some formal assessments are now being implemented within technique courses.

History, Physical and Diagnosis (HPDs)

History, Physical, Diagnosis assessments are a formative learning and assessment experience that take place in both first and second years. Students are provided with a Standardized Patient who mimics a particular presentation, and the student performs a comprehensive history and physical examination for the purpose of rendering a diagnosis. The entire process is recorded, and feedback is provided in two forms. One source of formative feedback is given immediately following the encounter. Suggestions for improvement are given by both the assessor and the patient. A secondary source of feedback is the video recording of the entire encounter (including marker and patient feedback), which the student then reflects on later. Students undergo an assignment to facilitate reflection on not only their competencies as an expert in musculoskeletal health, but also other roles (e.g., communicator, professional) as well. Students retain access to their videos of experiential learning over the course of their education and can review them as necessary to see the development of competency. From Year I to Year II, the cases increase in complexity and relate to the body region which students are currently studying.

<u>Team-Based Learning (TBL) Assessments</u>

TBL activities are whole cohort sessions that involve testing student's individual understanding of material (Individual Readiness Assurance Test - IRAT), then participating in group activities and

assessments (Team Readiness Assurance Test - TRAT). A final assessment helps solidify the learning that has taken place.

Grand Rounds

Grand Rounds is another type of Experiential Learning activity whereby students observe and engage a practicing chiropractor in the assessment and management of a patient. Through this interactive patient encounter, students play an active role in determining what they would do in taking a history, performing a physical examination, and then delivering a report of findings and plan of management to the patient.

Students are also able to probe the doctor's thought process in clinical reasoning and discuss alongside their peers. There is an additional reflective component to Grand Rounds completed in written form shortly after the encounter to solidify and personalize the learning to the individual student. This reflective component is essential to complete the experiential learning cycle[1].

Grand Rounds takes place in Years I-III. These planned experiences relate to an area of study and subsequently increase in complexity and co-morbidities, while enhancing patient diversity as part of CMCC's institutional commitment to Equity Diversity and Inclusion. These 2-3-hour sessions take place on average once per module and offer a team-teaching opportunity to further integrate the foundational sciences within this clinical experience, along with evidence-based practice (EBP) instruction relating to patient management from the Library.

Objective Structured Clinical Examinations (OSCEs)

Another type of assessment which utilizes Standardized Patients is our year-end Objective Structured Clinical Examinations. These assessments aim to integrate the foundational and clinical sciences, with demonstration of particular clinical skills within a clinical situation. Students encounter a year-end OSCE for Years I-III, with both a clinic mid-term and exit OSCE exam being delivered in Year IV.

OSCE's are blueprinted to ensure that an appropriate array of conditions and skills are covered within the 10 active stations[2]. These stations are also tagged to the roles outlined in the CMCC Graduate Competencies, and the tasks required are at an appropriate level for the student at that point in their learning. Care is taken in the training of Standardized Patients, with the utilization of actors and practicing chiropractors portraying various presentations.

[1]Sanders, J. The use of reflection in medical education: AMEE Guide No.44. Med Teach. 2009 Aug;31(8):685-95

[2]Pugh, D. & Smee, S. 2013. *Guidelines for the Development of Objective Structured Clinical Examination (OSCE) Cases*. Ottawa: Medical Council of Canada.

The examinations are designed in line with best pedagogical practices and the current literature. The Year I-III OSCE examinations increase in complexity as well as by body part being assessed and potential comorbidities/multiple diagnoses. Review and reflection of the exam is encouraged for students afterwards and is seen as a useful experience by both strong and weak students.

Remediation is done with those students who are unsuccessful in their first attempt. This involves meeting regularly with a faculty member and practicing extensively on areas of deficiency in preparation for a supplemental exam.

Psychomotor Skills Examinations

At CMCC manipulation, mobilization, joint assessment and soft tissue treatment skills are learned and assessed primarily in three technique courses. These skills are taught by explaining, demonstrating, practicing and receiving immediate feedback. Assessment is both formative and summative. Through the use of Force Sensing Table Technology students are given quantitative feedback on their timing, amplitude and the direction of their force.

Summative assessment for student performance of psychomotor skills takes place two times per year. Students are given a formal assessment that grades each procedure taught in that module utilizing the following criteria:

- Doctor position
- Patient position
- Hand positions
- Direction of force application (line of drive)
- Tissue preload (soft tissue and joint slack)
- Movement produced by doctor

In addition, six biomechanical factors are commented on: presence of energy leaks in the doctor's body; insufficient momentum transfer from doctor to patient; insufficient impact between doctor and patient; creating long moment arms about the joints of the doctor; creating insufficient moment arms on the patient; and table not adjusted properly for the procedure.

In Clinical Diagnosis (CD) courses students learn and are assessed on psychomotor skills and physical examination skills (with emphasis on neurological and orthopaedic testing) and gain the ability to apply these tests in a real clinical setting. They learn to recognize the clinical significance and interpret the results of these tests. Students are assessed using the following methods:

- Lab Workbook: Students must complete a workbook which requires them to repetitively deliberately practice all procedures on multiple classmates while they receive feedback from their experienced tutor.

- Lab Presentation (CD 3305): Students work in groups and role play simulator and assessor roles. In the simulator role, the student must create a real-life clinical situation, sometimes from a pre-constructed clinical case. As the assessor, a student must perform a patient examination; develop a list of differential diagnoses, a plan of management, and a report of findings.

- Interview Skills: CD 1303, CD 2303 and 3406 (Clinical Psychology) have labs specifically designed to develop patient interviewing skills. There is also an interview assignment in CD 3408, CD 3409 and CD 3410

- Formal lab testing, where students perform various examination procedures at various junctures throughout the year.

- Case studies are used in some of the CD courses. Of note, online and in-class case scenarios are used in CD 3303 and CD 3408. Students are assessed on cases where they must answer questions related to the case. Completion requires the student to retrieve and synthesize relevant research articles.

- Assignments that help the student recognize the impact of various conditions and understand issues surrounding conditions that will often present to the chiropractor.

- Written exams are especially useful for ensuring that the student recognizes the signs and symptoms and clinical features of the various conditions covered in each course, is able to select an appropriate diagnosis or differential diagnosis through consideration of the signs and symptoms, recognizes the clinical relevance of a particular condition or finding, recognizes the risk factors which may predispose a particular condition, and are able to differentiate between basic patient management strategies that can be employed when working with challenging patients (or in an emergency response situation).

- Indirect assessment of skills learned in the CD department occurs regularly in CE courses and cumulatively within the year-end OSCEs. These skills are also applied to real patients and evaluated within a student's internship.

<u>Clinical Competency Evaluation and Workbook</u>

Assessment in the Year IV clinic internship course (CE 4405) is intended to demonstrate knowledge, skills and abilities in situations in, or in close alignment with competencies. Clinical Competency Assessments are demonstrations of competencies in application to real patients and real clinical situations. In Miller's pyramid, this is in the highest level of authenticity, the "Does" category. Eight of these types of assessments are done each 2-month period. The Clinical Competency Assessment assess the following areas: history, examination, case presentation, report of findings, therapeutic care, file audit and two professional conduct.

OSCE assessments take place twice within the clinic year, at the midterm and near the end of the program. These examinations assess clinical skills and problem solving in near-real demonstration of “Shows How”, as interns respond in real time to Standardized Patients role-playing various clinical scenarios.

Two written examinations are also performed each year. These examinations contain questions that involve significant application of knowledge to cases, and content based on current literature and Guidelines. These two assessments fit within the “Knows How” level.

The CMT has long used a benchmarking tool to track intern progress through their experiences within the internship. An important part of the intern learning journey involves seeing enough clinical cases and having enough experiences to become competent in the skills required to become an entry-to-practice graduate. To assist with managing experiences, CMCC has targeted requirements and experiences that students must meet in order to complete the clinical internship. Monthly reporting allows the Directors of Clinical Education and Patient Care to determine individual plans for interns at risk (interns that are at risk of not completing their requirements and clinical experiences). This may include mentorship or advice on building a clinical practice or result in supplemental clinical placements or experiences to increase the opportunity and clinical exposure for an intern. An additional metric has been developed from this data, entitled Productivity. Each Patient Management Team is reviewed as a practice to determine whether the productivity of that practice is sufficient for all students in the group to meet their benchmarks. This management tool provides each Primary Clinician with a measure that they can manage, over time, in collaboration with CMT.

Quality patient care checks are incorporated into each patient workup in real time, as part of the usual workflow on the clinic floor. When a patient is assessed, each stage of assessment, diagnosis and plan of management is completed by an intern working with a clinician. Each plan of management is constructed with goals and outcomes set for a limited plan of management. At the end of each limited plan of management, a re-evaluation is performed to measure outcomes, assess for improvement, and develop a subsequent plan, if necessary, based on that re-assessment. Each patient case is reviewed on a monthly basis by the intern in a meeting with the supervising clinician, during the month end audit process.

As interns interact with patients on the clinic floor, clinicians observe care, provide oversight, and offer feedback to the interns. This interaction is a quality measure for patients, a feedback opportunity for learners and an assessment of competency. This demonstration of competency in real time for a patient is an important part of the clinic year.