



Content Development Process for CMTO's Certification Examinations

This document describes the process for developing the College of Massage Therapists of Ontario (CMTO) Certification Examinations. Successful completion of these examinations is required for registration as a Registered Massage Therapist (RMT or MT) in Ontario. CMTO and Prometric are committed to excellence in the creation and execution of the Certification Examinations. Strict adherence to international testing standards ensures the development of standardized, fair, valid, reliable and defensible examinations.

Why does the College of Massage Therapists of Ontario have Certification Examinations?

The goal of certification examinations is to protect the public by evaluating a candidate's level of proficiency against a predefined set of competencies specified for entry to practice. This helps ensure that therapists entering the profession can deliver massage therapy care in a safe, effective, and ethical manner. The Certification Examinations are developed and administered by Prometric on behalf of CMTO and include the Multiple-Choice Question (MCQ) examination and the Objectively Structured Clinical Evaluation (OSCE) examination.

Massage Therapy is a regulated health profession in Ontario. CMTO is the regulatory body that provides oversight and guidance to registrants of the profession. CMTO uses several pieces of legislation in fulfilling its mandate of public protection, most notably the *Regulated Health Professions Act (RHPA), 1991* and the *Massage Therapy Act (MTA), 1991*. With regard to the requirements for registration, the *RHPA* states that each regulated health profession in Ontario must "develop, establish and maintain standards of qualification for persons to be issued certificates of registration." With regard to certification examinations, the *MTA* states: "in setting the examinations to be taken by applicants to the College for registration, the College shall specify the general areas of competency to be examined and shall ensure that the examinations provide a reliable and valid measure of a candidate's competency in knowledge, skills and ability for the practice of massage therapy in Ontario."

Who is on the team that develops the content for CMTO's Certification Examinations?

The content development team for the Certification Examinations is composed of Prometric's Assessment Development Specialist, various Subject Matter Experts (SMEs), and other Prometric staff with psychometric expertise. All SMEs are Registered Massage Therapists (RMTs) in good standing with CMTO. Typically, these individuals have several of the following qualifications:

- a) Extensive clinical experience;
- b) Relevant post-secondary education in addition to Massage Therapy training;
- c) Abundant continuing education in Massage Therapy;

- d) Prior teaching or assessment experience; and
- e) A solid understanding of the role of CMTO and the examinations demonstrated through prior roles with CMTO (e.g., having served as a peer assessor, examiner, etc.).

How is the examination content kept secure?

Keeping the examination content secure is critically important. Security policies, including examination candidate requirements and item (question) bank protection and access, are strictly monitored and enforced. There is careful screening of examination staff and those involved in examination standard setting. In addition, statistical analyses of item performance are conducted when required to identify possible examination security breaches.

However, to demonstrate that the Certification Examinations are developed and administered in an objective and fair manner, there is a necessary degree of transparency regarding examination content and delivery. Information about the development process is shared with Massage Therapy programs, instructors, examination candidates and the public as much as possible without compromising examination security or validity. Exam specific information is also published in the annually-updated Candidate Handbook.

How is the list of references used for item (question) development generated?

Massage Therapy education programs in Ontario are key contributors to the list of references that support content development. Every three to five years, CMTO/Prometric conducts a survey of these programs to identify the references they use to teach their Massage Therapy curriculum. This information helps generate an updated list of references.

References that two or more programs use are considered for inclusion on the list. In addition, the Assessment Development Specialist and the Subject Matter Experts (SMEs) consider the following when reviewing a reference:

- a) the availability of the publication;
- b) the quality of the content;
- c) the relevance of the content to the exam's content outlines;
- d) the expertise of the author(s) and/or editors(s); and
- e) the degree of content overlap with other approved references.

If a specific examination content area is lacking relevant references to support content development, the Assessment Development Specialist and SMEs may select an appropriate reference and recommend its inclusion on the list. Updates to the list are shared with CMTO for feedback and approval.

Are Massage Therapy programs required to teach from the approved list of references?

Massage Therapy programs are not required to teach from materials on the approved list of references. Programs select the references they wish to use to support the delivery of their curriculum. The goal of

developing and publishing the approved list of references is to create transparency with respect to the references that are used to support the development of Certification Examination test items.

What are the steps for developing defensible Certification Examinations?

There are six broad steps involved in Certification Examination development:

1. Content Outline Development
2. Item Writing
3. Item Review (and Translation)
4. Test Development
5. Standard Setting/Score Scaling/Scoring and Reporting
6. Examination and Test Question Statistical Analysis, Review and Candidate Feedback

These steps are further described below.

Step 1: Content Outline Development

The Inter-jurisdictional Practice Competencies and Performance Indicators for Massage Therapists at Entry-to-Practice (PCs/PIs) are national standards describing Massage Therapy practice in Canada and they provide the foundation for the Certification Examination content outlines (both OSCE and MCQ).

To be included in the content outlines, an item must be easily referenced, reasonable and important to test, as well as assessable in a fair and psychometrically sound manner. Overall, the CMTO content outlines are less detailed than the PCs/PIs document except with regard to provincial rules and regulations. This content area reflects CMTO's responsibility to ensure that its registrants demonstrate competency in the legislation and policies that govern Massage Therapy practice in Ontario.

Step 2: Item Writing

Once the content outlines have been established, test items are developed. Each test item (i.e., each MCQ question and each individual task in an OSCE case scenario) is 'linked' to a specific content area on the content outline. MCQ items and OSCE scenarios are reviewed regularly and are updated and retired as needed to keep the item banks 'fresh' and to ensure the items remain relevant. New OSCE and MCQ items are continuously developed to provide greater flexibility for test development and to avoid overexposure of items.

Item development is a collaborative effort, using the expertise of the Assessment Development Specialist, SMEs, and Prometric's psychometric resources. Item writers receive training on how to properly write items: for example, no tricky or confusing formats, no humour or slang, no idioms, elimination of bias, appropriate language level, etc. Training identifies high-functioning item formats, teaches item writers what makes a strong test item, and reviews various item types.

Writing a single item for the MCQ is fairly straightforward. Developing a case for an OSCE station includes considerably more steps: it requires the creation of candidate instructions (i.e., the stem), standardized client instructions and standardized scripts, marking criteria or rater sheets, and rater training materials

for the examiner. Specific and detailed instructions ensure that client performance is standardized and that the examiner's scoring is based on specific, observable, and objective criteria for each task.

Generally, test items are supported by a minimum of two references. Some exceptions apply for content areas such as legislation or CMTO Standards of Practice and policies, which may only have one reference. If a topic is covered by more than two references, all references are reviewed to ensure that the correct answer is unequivocally supported and/or that variations in correct performances have been accounted for.

Step 3: Item Review and Translation

Newly written items are reviewed by a team of SMEs to ensure that the questions or scenarios are clear and unambiguous, properly referenced, psychometrically sound, free from bias, clinically relevant, appropriate for entry to practice, and linked to a specific content area of the content outline.

Approved items are translated into French by a translator experienced with translation for Massage Therapy. Bilingual SMEs also review translated items to ensure that the language is appropriate within the Massage Therapy context.

Step 4: Test Development

MCQ Examination

The MCQ examination is a computer-based test that consists of 150 questions. Of these, 125 are scored questions that form the basis of the candidate's result. The remaining 25 questions are 'pretest' questions, which are newly written items that are being tested for validity and reliability. A statistical analysis of candidate performance on the pretest items is used to determine if a newly written item is appropriate to be included as a scored item on future exams. All scored questions are pre-tested. The length of time given to candidates to complete the MCQ exam includes sufficient time to complete the pretest questions.

The examination is usually available in four administration windows each year. Different forms (sets of questions) are used throughout the year and are assembled by psychometric experts. If a candidate takes the exam more than once, they will be given a different form than their previous attempt(s). A statistical method, referred to as equating, is used to ensure that candidates taking a new form of the examination will be evaluated using the same standard as was in place for prior forms of the examination.

The minimum passing score for the examination is established by a panel of SMEs based upon considerations such as the relevance of each question to competent practice, the difficulty of each question, and the ability of the question to differentiate between the competent and non-competent candidate at the entry-to-practice level.

OSCE Examination

Each year, a new set of OSCE examinations is developed. For each of the seven stations, several cases are selected for inclusion in the OSCE. The number of cases per station can vary given anticipated candidate volume, but usually includes 5 or 6 cases. The examination is reviewed to ensure that it matches content outline requirements. Cases are randomly assigned to scheduled exam days in order to avoid overexposure. Given the matrix of seven stations, each with at least five scenarios, there are numerous possible examination combinations. Repeat test-takers are unlikely to encounter the same set of cases across the seven stations.

Mandatory training for OSCE examiners and standardized clients is conducted over several days prior to the first OSCE administration of each year. Quality assurance checks and retraining (if necessary) is provided throughout the exam season. Examiners and standardized clients are trained on their respective roles/stations using the OSCE case material. OSCE staff work only in stations for which they've been trained.

OSCE candidates are observed by two examiners in each of the seven stations. Each examiner independently determines if the candidate has, or has not, performed the behavioural criteria associated with that station. Standardized clients do not score candidates. Occasionally, a member of the supervising team may be present in the OSCE station for quality assurance purposes. This individual does not score candidates but rather monitors the performance of examiners and standardized clients.

Step 5: Standard Setting/Score Scaling/Scoring and Reporting

Standard setting refers to establishing the score needed to pass the exam(s). This must be done in a standardized, defensible manner. As mentioned, the goal of the Certification Examinations is to identify candidates who demonstrate minimum competency for entry-level practice. Minimum competency represents a level of proficiency that enables protection of the public and maintenance of professional standards. By establishing the criteria required of the minimally competent entry-level practitioner, and judging candidate performance against those criteria, we have confidence that all candidates who demonstrate the required minimum competencies will pass, and those candidates who do not demonstrate minimum competency will fail.

Prometric uses a standard setting approach based on the Angoff Method, which is the most widely used and universally recognized method within the international professional testing industry. The method relies on the judgment of practicing RMTs to define minimum competence. The RMTs recruited to participate on a standard setting panel are in good standing with the College and, as a group, they reflect the profession in terms of diversity of practice, education, experience, training, age, gender, ethnicity and geographic practice settings. Diversity and expertise provides the foundation for the establishment of an appropriate passing standard.

Standard setting begins by identifying the attributes of a minimally competent entry-level practitioner. Discussion focuses on the knowledge, skills and abilities that are required to practise safely while serving and protecting the public. The method then requires each RMT on the panel to individually rate the difficulty level of each case and the minimum criteria points expected of a minimally competent candidate. Under the guidance of the Assessment Development Specialist and a Psychometrician, the discussion and ratings continue until there is panel consensus and the standards can be set.

Each examination form is unique because the forms consist of different questions and cases. As a result, it is reasonable to assume that some examination forms may be slightly more difficult, or easier, than others. This means that when the standard-setting process is complete, a passing score for demonstrating minimum competence on a 'difficult' exam could be 68, whereas a passing score for demonstrating the same level of minimum competence on an 'easy' exam could be 72. In order to provide consistent reporting, CMTO reports results using a 'scaled score' where the raw score data are converted to eliminate the effect of any differences in test difficulty. Using this conversion method, CMTO is able to keep the passing score for the examinations at 70.

Step 6: Statistical Analysis, Review and Feedback

CMTO's Certification Examinations are regularly reviewed and updated to ensure that they remain a fair and valid measure of minimum competence. For the MCQ, item performance is statistically analyzed on an ongoing basis. Items that are too easy or too difficult, or are not differentiating among candidates of varying abilities, are highlighted for review by the SME team. Pre-test items that have been sufficiently tested are statistically reviewed to determine if they are appropriate for inclusion in the live examination. Additionally, candidate comments, which are collected on individual items during test taking, are reviewed to identify potentially problematic items. If scored items require revisions based on candidate comments or statistical performance, the revised items are moved back into the pre-testing stage.

For the OSCE, custom software at Prometric enables real-time statistical monitoring of essential examination components. These include the consistency of marking decisions amongst examiners (inter-rater reliability); examiner harshness; pass rates for individual OSCE scenarios and stations; overall ease or difficulty of individual tasks; and discrimination of individual tasks among candidates of varying abilities. Examiner retraining is provided in cases where inter-rater reliability or rater harshness falls outside of acceptable ranges.

Generally, official OSCE results are released within six (6) weeks after the test date. However, for candidates who take the OSCE during the first month or two of the exam season, results may be issued up to 12 weeks after the examination date. This additional time is required in order to obtain enough statistical information to ensure the validity and fairness of the OSCE scoring and reporting process.

Transparency is a cornerstone of CMTO's Certification Examinations. Candidates who fail the examinations receive information about their performance, outlining areas of strength and weakness designed to help in future study and success. Each year, Massage Therapy education programs are provided with reports that provide aggregate information on their graduates' performance on the MCQ and OSCE examinations. Areas of strength and weakness based on the examination content are highlighted by comparing individual program performance to the performance of all programs combined.