

Content Development Process for CMTO's Certification Examinations

This document provides a detailed description of 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 the identified entry-to-practice standard of competence. The Certification Examinations developed and administered by Prometric on behalf of CMTO are 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. The work of CMTO is subject to several pieces of legislation, 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 Content Specialist and various Subject Matter Experts (SMEs). The team also includes Prometric psychometric staff.

The Content Specialist and the 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 additional post-secondary education;
- c) Abundant continuing education in Massage Therapy;

- d) Prior related teaching experience;
- e) Test development experience; and
- f) 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 analysis of item performance is conducted regularly to identify possible examination security breaches.

However, in order to demonstrate that the Certification Examinations are developed and administered in an objective and fair manner, there needs to be a certain amount 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 is possible without compromising examination security.

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

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

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

- a) The quality of the referencing;
- b) Confirmation that the text is evidence based;
- c) The expertise of the author(s); and
- d) If the reference covers content that is not sufficiently covered by another approved reference.

If more than one edition of a book is being used, only the most recent edition is included on the approved list of references. If only one program uses a given reference, the Content Specialist and SMEs review the reference using the criteria noted above to determine if it should be included on the list. If a specific examination content area does not have a reference on the approved list, the Content Specialist and SMEs will select an appropriate reference for that content area and include it on an updated version of the approved list of references.

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?

The six main steps involved in Certification Examination development are:

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 six steps are described in detail 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 our province.

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 ensure the items are relevant. New OSCE and MCQ items are continuously being written to provide greater flexibility for test development and avoid overexposure of items.

Item development is a collaborative effort, using the expertise of the Content Specialist, OSCE and MCQ SMEs, and Prometric's psychometric resources. Item writers receive training on how to properly write new items - e.g., 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 an item for the MCQ is fairly straightforward. Developing a case for an OSCE station includes the creation of candidate instructions (i.e. the stem), standardized client instructions, and marking criteria for the examiner. Specific and detailed instructions ensure that client performance is standardized and that the examiner's marking is based on specific and objective 'yes' or 'no' criteria for each task.

Each test item must be supported by a minimum of two approved references. Some exceptions may 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, then all references are reviewed to ensure that the correct answer is unequivocally supported.

Step 3 – Item Review and Translation

The content of each newly written item is reviewed to ensure that it is clear and unambiguous, properly referenced, psychometrically sound, free from bias, clinically relevant, and linked to a specific content area on the outline of the examination content.

Approved items are translated into French by a translator experienced with translation for Massage Therapy. A bilingual SME reviews the translation to ensure it is appropriate within a Massage Therapy context, and a pair of bilingual SMEs completes a final review of the translation before it's approved for inclusion on an examination. The College has developed a French lexicon (available on the CMTO website) that is used to ensure consistency of translation across time.

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 questions 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 a future exam. All scored questions have been 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, a minimum of six cases are selected for inclusion in the OSCE (i.e. a total of at least 42 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 six scenarios, there are a total of 279,936 different possible examination combinations.

Mandatory training for OSCE examiners and clients is conducted over several days prior to the first OSCE administration each year. Examiners and clients are trained on their respective standardized roles using the OSCE case material.

OSCE candidates are observed by two examiners in each of the seven stations. Each examiner determines if the candidate has, or has not, performed the behavioural criteria associated with that station.

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

Standard setting refers to establishing the score needed to pass. This must be done in a standardized, defensible manner.

As mentioned earlier, 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 referred to as 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.

The Angoff Method requires each RMT on the panel to individually define minimum competence as it relates to each exam item. Items that are deemed to be an essential element of minimal competence are given more weight in the determination of the minimum passing score than items that do not reflect essential elements of minimal competence.

A meeting to set standards 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 opinions of the RMTs (the weights mentioned above) for each examination question are discussed by the RMT panel and a minimum passing score is determined.

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 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 constantly reviewed to ensure that they are continuing to serve as a fair and valid measure of minimum competence required for an RMT in Ontario.

For the MCQ, live and pretest 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 MCQ 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.

Candidates' comments, which are collected on individual items during test taking, are also reviewed to identify potentially problematic items. Items may be left unchanged, permanently retired or edited depending on the specific issue(s) identified. Edited items are considered new items and moved back into the pre-testing stage. Periodically, a review of the entire test bank is undertaken to ensure that the bank represents current practice, adequate referencing and general suitability in a consistent manner. Candidates complete an exit survey at the end of the MCQ, which is used to help ensure overall quality control of the examination process.

For the OSCE, custom software has been developed to enable 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 is not acceptable. Daily evaluation forms for OSCE staff are also used to collect feedback and support retraining initiatives, when required. Pass rates for individual OSCE cases that differ from other cases at a statistically significant level (i.e. are much easier or harder than the average case) are reviewed to ensure there is no confusion or fault. If deemed appropriate, cases are modified and/or new cut score studies are undertaken. Individual tasks that are very easy, very difficult or do not show the difference between the minimally competent candidate and the not minimally competent candidate are also reviewed. Decisions may be made to edit, delete or leave a task unchanged, depending on the specific issue(s) identified. Typically, alterations in the examination are made at the end of an OSCE season.

Generally, official OSCE results will be e-mailed to candidates within six (6) weeks after the date of their OSCE examination. However, for candidates who take the OSCE during the first month it is offered each year, result notifications 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.

The data obtained in the first weeks of the OSCE administration are compiled and analyzed and once this analysis is complete, official scores can then be released.

Transparency is a cornerstone of CMTO's Certification Examinations. Candidates who fail the examinations receive detailed information concerning their performance, outlining areas of strength and weakness designed to help in future study and success. Also, Massage Therapy programs may direct

questions about the examinations to the Prometric Content Specialist at any time. 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.