

Canadian Midwifery Registration Examination

Technical Report 2006-2007

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For the Canadian Midwifery Regulators Consortium

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Introduction

Each province and territory is responsible for ensuring that all applicants for registration as midwives meet an acceptable level of competence before they begin to practise in Canada. This level of competence is measured, in part, by the Canadian Midwifery Registration Examination (CMRE).

The CMRE is a national written examination designed to assess internationally educated and Canadian-educated applicants for midwifery registration to ensure that they meet entry-level competency standards set out in the Canadian Competencies for Midwives. Its goal is to ensure that midwives gaining registration are competent and safe practitioners providing a consistent standard of care across Canada.

Examination Format

The examination consists of between 210-230 multiple-choice questions. The majority of questions on the exam are case-based. Exam questions come from the CMRE exam databank according to the CMRE Blueprint (Appendix A). The exam content is based on the Canadian Competencies for Midwives (Appendix B). In order to represent the range of care a Canadian midwife is expected to provide, slightly more than half of the questions are set in an out-of-hospital setting with the remainder in a hospital setting. Slightly more than half of the questions represent normal midwifery situations and the remainder, abnormal situations.

Overview of Examination History

In 2003, the Canadian Midwifery Regulators Consortium launched the HRSDC funded National Midwifery Assessment Strategy (NAS) project, an initiative designed to determine the best strategy for assessing the skills and abilities of internationally-educated midwives applying for registration in Canada. NAS research involved

consultation with a wide variety of stakeholders. One of its results was a clear directive to create a national registration exam to ensure a consistent evaluation of midwives' competence to practise in Canada. Initial development of the examination took place in 2005 and 2006. The participants involved in the exam development are provided in Appendix C. It was led by the exam committee (also known as the NAS project steering committee) with support and guidance from the NAS project coordinator and Assessment Strategies Inc. More than 45 content experts (mostly practicing midwives) participated directly in the development activities outlined below in this report. This represents approximately 8% of the registered midwives in Canada.

The exam was first offered to internationally-educated applicants in some provinces in May and September 2006. In 2007, the exam was again offered internationally-educated candidates in May and September. The 2007 administrations took place in three provinces: British Columbia, Alberta and Manitoba. From 2008 onward it will be required for registration in Canada, both of Canadian graduates and internationally-educated applicants in all jurisdictions where legislation permits.

Examination Committee

The Exam Committee was launched initially as the NAS Steering Committee. It includes representatives of midwifery regulators in the five jurisdictions that assess applicants for registration directly. (The Northwest Territories accepts registrants who have been assessed in the other Canadian regulated jurisdictions). Committee members were appointed by their provincial regulatory authority and they have worked closely together since 2003. The committee reports to the larger CMRC where all major decisions are made, sometimes after explicit consultation with boards and councils of each regulatory authority. The committee provided guidance to the project coordinator and to Assessment Strategies Inc., and is the decision-making authority for issues related to the specifics of the initial exam development and implementation. The

committee currently operates under the Exam Committee Terms of Reference (Appendix D) for the purpose of overseeing the CMRE.

Confidentiality and Security

The examination and all associated materials are protected by copyright law. Stringent measures were in place throughout examination development to protect the examination before, during, and after the administration. All those with access to exam materials (e.g. item writers, pilot participants, and others) were required to sign affidavits of non-disclosure. Exam materials were kept locked and/or password protected at all times when not in use. Additional security measures were used during the administration and marking of the exam in order to ensure its protection.

Examination Standards

The CMRE development was guided by research into exam standards and the resulting exam adheres as much as is feasible to generally accepted examination standards. These standards can be found in resources such as Standards for educational and psychological testing; Development, Administration, Scoring, and Reporting of Credentialing Examinations; and Principles of Fairness: An Examination Guide for Credentialing Boards. Specific references used in the exam development and as Midwifery content resources are provided in the reference section of this document.

Exam Development

Canadian Competencies for Midwives

Standards dictate that a credentialing examination must be based on clearly defined competencies that fit the purpose of the exam. In keeping with this, the exam committee started exam development in 2004 with the creation of a document that details the knowledge and skills expected of an entry-level midwife in Canada.

The first step in this process was a comparative analysis of provincial competency documents resulting in a spreadsheet providing a detailed comparison competency-by-competency. The first draft of the Canadian Competencies for Midwives document was then created based on common competencies. A 12- person working committee composed of CMRC representatives and midwifery educators from 6 jurisdictions reviewed these documents extensively at an all-day in-person meeting in Calgary, Alberta. While the group functioned mainly in English, whisper interpretation was available and the French translation was reviewed as well. Extensive revisions were made to both English and French versions based on feedback from the meeting and this revised draft was circulated to the working group for confirmation. Feedback was then solicited from the CMRC representatives and from board/council members of each midwifery regulator. After several more drafts, the final document was approved in May 2005.

In carrying out this work, it became clear that there was a high degree of commonality in midwifery practice across Canada. In fact, the group identified only a short list of competencies required in only one or some of the provinces. This list became known as “advanced competencies” since they were specialized to specific regions. It was confirmed that the basic model of midwifery practice is the same across Canada, thus the approved Canadian Competencies for Midwives includes a brief description of the Canadian model of midwifery practice as well as the detailed list of competencies required for safe practice.

CMRE Blueprint

It is critical that a credentialing exam be standardized in format and content. Assessment Strategies Inc. (ASI), a high stakes exam development consulting firm, was contracted to coordinate the initial exam development, including the development of the CMRE Blueprint. A written survey sent to exam committee members enabled ASI to identify the relative importance of each competency so that the blueprint could define the number of questions on each competency. Several teleconferences with the exam committee were held to discuss and refine survey results and to make decisions regarding the exam structure (e.g. item type, length of exam), contextual issues (e.g. the fact that both hospital and out-of-hospital settings should be included), and standards to be used (e.g. metric measurement). The resulting exam blueprint approved in June 2005 provides a detailed description of the CMRE.

Item Writing

In order to create as many items (questions along with a correct response and distracters) as possible for the CMRE, regulators and educators were asked if they would contribute questions from provincial examinations that the CMRE would be replacing. The CMBC, the CMO, and the Alberta MHDC contributed their PLEA written examinations to the process. Assessment Strategies Inc coordinated and facilitated the process of revising and creating items in two item-writing workshops. The first step was to map all the items from previous exams to the competencies; this was accomplished by an experienced midwife who received training and direction from ASI. Next, item-writing workshops were organized. Research indicates that for a truly bilingual exam, it is best to create items in both languages, rather than creating items all in one language and then translating them. Thus one workshop took place in English and one in French. Participants were selected by provincial regulators based on the following criteria: amount and type of experience

practising in Canada, knowledge of provincial standards, past experience writing or marking exams, and ability to work well as part of a team. Item writing teams included participants from as many jurisdictions as possible and ensured a balance of experience and perspectives.

The initial English-language workshop took place in August 2005 in Ottawa, Ontario and involved five experienced, practising midwives from four jurisdictions. This five-day workshop commenced with training by ASI staff on the process of item writing as well as pointers on how to create good exam items. Participants began by revising the “old” questions, ensuring that each question was up-to-date, relevant in all jurisdictions, accurate, followed CMRE standards, and was referenced to two appropriate reference sources (e.g. midwifery textbook). The last few days of this workshop consisted of writing new items. Participants wrote and revised items independently and then reviewed each one as a full group to further refine it. The workshop resulted in 128 potential items for the CMRE.

The initial French-language workshop took place in October 2005 in Laval, Quebec and involved five midwives from two jurisdictions. This three day workshop was facilitated by ASI and it focused on the creation of new items. The workshop commenced with training and then involved independent item-writing and group review of each item. It was challenging to find appropriate reference texts in French so participants were asked to use at least one French and one English reference (unless two French references were readily available). As in the English workshop, items had to be reflective of current practice across Canada and adhere to standards laid out in the CMRE blueprint and by the ASI facilitator. Forty-seven items were developed in this workshop.

In February 2007, two in-person workshops were held for the purpose of creating new exam items for the CMRE. One workshop was held in English and one in French. Both were two full-days in length. Six practicing midwives participated in each workshop. The participants represented a diverse group:

- From across Canada (3 BC, 1 AB, 2MB, 1 ON, and 5 from QC);
- Educated via direct entry, apprenticeship, and post-nursing programs;
- Educated in Canada, France, Switzerland, Tunisia, Belgium, UK, and USA;
- Registered via PLEA, graduation from approved Canadian program, or via initial registration processes;
- Very experienced practitioners and relatively new practitioners.

The (Anglophone) NAS Project Coordinator facilitated the English session. In order to ensure there were no language issues at the French session, the Quebec member of the Exam Committee was brought on as a co-facilitator.

Pilot

Due to the small numbers of potential participants in the exam pilot, ASI recommended a qualitative, rather than quantitative, pilot of the exam. In addition to being more valid than interpreting statistics from a pilot with small numbers of participants, it allowed for detailed feedback to be received on each item. A posting was circulated to registered midwives in all regulated jurisdictions for twenty volunteers to take part in the pilot for a small honorarium. More than twenty expressions of interest were received. The committee selected twenty applicants that together ensured a balance of types of midwifery experience (e.g. rural/remote, urban), education (e.g. internationally-educated, Canadian educated), length of time working as a midwife, and first language. As well, the committee ensured there were as many participants with backgrounds in exam development/marketing as possible and that each regulated jurisdiction was well represented.

Eighteen participants took part in the exam pilot in November 2005 in Halifax, Nova Scotia. The pilot took place in English and all items that had been created in French were translated by ASI's professional translation team into English in preparation for this pilot. The pilot was organized by ASI and facilitated by the NAS Project Coordinator. There were two sittings of four hours each.

Each participant reviewed half of the more than 250 items that were available to the CMRE. Participants were asked to answer each item without reference to the answer key, and then to review the answer key and provide written feedback on each item regarding its clarity, currency, and accuracy. Participants were asked to pay special attention to ensuring the item represented current practice in their community and province or territory. Following the pilot, the written feedback was incorporated into the LXR-Test exam databank by ASI staff in preparation for the validation meeting.

Validation

A four-day in-person exam committee meeting was held in English in November 2005 to review the feedback from the exam pilot and to confirm the exam items. This “validation meeting” was facilitated by an ASI staff member and it involved reviewing each item and revising them as appropriate.

A 10-hour session was held in March 2007 for the purpose of validating each new exam question for the CMRE. The process was planned and facilitated by project coordinator Wendy Martin. The validation took place via web-conferencing. The validation process involved committee members ensuring that each of the new questions was appropriate for all Canadian jurisdictions, that it was relevant to the competency selected, and that it read clearly. Five exam committee members took part, representing British Columbia, Alberta, Manitoba, Ontario and Quebec. Three were practicing midwives and all were involved in the regulation of midwifery. Each item was reviewed and discussed. Revisions were made, as required, to the items and to references. In a few cases, items were flagged for more extensive revisions at a later date.

Translation

ASI’s professional translation team translated the 2005 items into French. In order to ensure that the midwifery language used in the translation is correct, a team of two bilingual midwives then reviewed each item in detail in a three day in-person

meeting in Ottawa, Ontario. This session was organized and facilitated by ASI staff and translators.

In March 2007, all exam items originally written in French were translated professionally into English for the validation and standard setting processes. Following these sessions, all final items were translated into French. All translators were professionally certified and experienced.

A one-day session was held in April 2007 for the purpose of reviewing the final translation. Two bilingual midwives previewed the translations in detail and then participated in a translation verification meeting with the translator and a facilitator. This team of four reviewed each question in turn to ensure that the meaning of each question is the same in both languages. Additionally translations were obtained of the various documents and materials needed for each stage of the item writing process.

Cut-Score Setting

It is critical that the pass score set for a credentialing exam be done through careful analysis to determine the level of skills and knowledge needed for safe, entry-level practice. In order to accomplish this, a standard setting procedure was used to determine an administration specific cut-score (pass score). The initial process was organized and facilitated by the NAS project coordinator. Based on a recommendation from ASI and further research, the Angoff method was used.

In 2005, six participants from four jurisdictions participated in a four-day workshop held in Winnipeg, Manitoba. Due to funding limitations participants included exam committee members from four jurisdictions (who were meeting for other reasons as well) plus two local, experienced midwives. Participants reviewed each exam item to estimate the probability that an entry-level candidate would get it correct. Several “rounds” ensured that the group considered all aspects (e.g. how often the competency is used, type of language used in the items, quality of distracters, etc.). A provisional cut-score resulted from this workshop. The group also confirmed that cut-scores for the CMRE will range from 70-80%. A follow-up teleconference with the exam committee was held to review item statistics following the first offering of the exam and revisions were made as appropriate.

The Angoff method was used again in March 2007. The process was planned and facilitated by project coordinator Wendy Martin. A 6-hour session was held to identify a standard score for each new item in the bank. This ensured the ability to set an appropriate cut-score for new exam forms. Five exam committee members took part. Panelists were all educated as midwives and had experience working as a midwife in Canada. They came from five different jurisdictions in Canada, including both English and French language areas. Four were actively practicing; the remaining two were actively involved in Canadian midwifery although not currently practicing. All new items were successfully reviewed and assigned an Angoff score.

Policies & Procedures

The NAS Project Coordinator engaged in research to determine the policies and procedures that would best protect the security of the exam, ensure the effectiveness of the exam, and be most fair to exam candidates. Based on this research, the Coordinator drafted policies, procedures, manuals, and forms for review by exam committee members and other relevant stakeholders. This process resulted in the following documents available in both English and French that outline approved policies and procedures:

- Candidate information sheets posted to the website (also available by PDF to candidates).
- Proctor Manual, and associated forms.
- Marker Manual, and associated form (not required for the September 2007 administration).

Exam Administration 2007

Overview

A total of 24 candidates from BC, Alberta, and Manitoba took the CMRE in 2007. All candidates were internationally-educated midwives taking part in provincial PLEA processes. The exam was administered in a paper-based format to 13 candidates on May 8, 2007 and to 11 candidates on September 12, 2007. One candidate took advantage of the option to write in an alternate province.

Administration was managed by the NAS Project Coordinator and assisted by CMBC staff. In total, 15 of the 24 candidates who took the CMRE in 2007 were within the passing range.

Due to differences in the May and September exam formats and items, results from the sittings are on different scales may not be combined for statistical analysis. Item variation makes linking for the purpose of comparability impossible at this time. Any attempt to do so would result in skewed statistics and incorrect interpretations. The Consortium will take steps to ensure that, in the future, the exam is constructed such that scores obtained across exam administrations can be placed on a common scale. By establishing comparability of scores in this way, the Consortium may track exam results over time, calculate accurate statistics, combine scores across time and monitor changes.

Marking

For the May sitting, 168 multiple-choice exam items were double-marked by hand by administrative staff at CMM and at CMBC. Marks were manually entered into the LXR-Test database item-by item. This system ensured that no errors could be made.

In May, 59 short answer items were double-marked by hand by expert-midwives who had been oriented to the specific marking procedures and standards for the CMRE. Following independent marking, a marker teleconference, facilitated by the NAS project coordinator, was held to review each item where a different mark was given by each marker.

The September sitting included 216 multiple-choice exam items. Exam items were scored hand scored by two members of the CMRE exam team and using a LXR-Test software compatible Optical Mark Reader Scanner. Scores obtained using these two methods were matched for accuracy. Scores were automatically transferred from bubble sheets into LXR -Test software

Statistical Analysis

Statistics based on results from the May exam sitting were generated from the LXR-Test software. Descriptive exam statistics generated included: high and low scores, mean score, number of candidates passing and failing the entire exam and each sub-section, standard deviation, a measure of internal consistency (reliability) and a summary of candidate response patterns.

In order to ensure accuracy of statistical analysis and interpretation for a low number of obtained scores (N=11), statistics based on scores obtained from the September sitting were hand calculated with the assistance of SPSS. Some of the statistics were automatically generated by LXR-Test software. Descriptive exam statistics included high and low scores, mean score, number of candidates passing and failing the entire exam and each sub-section, standard deviation, a measure of internal consistency (reliability) and a summary of candidate response patterns. Exploratory analyses included the identification of outlier scores and a distracter analysis, conducted for the purpose of identifying aberrant response patterns.

Exam committee teleconferences were held to review statistics, with particular attention to item statistics. In May, sixteen items were identified as aberrant with revision required. None of the items were identified as seriously aberrant such that they were deleted from the exam bank. It was noted that six of the items, however, could not be included in scoring. As such, these items were removed and the exams were re-scored. In September, seven items were identified for review. Although suggestions were made for minor changes to items, none of the items were concerning enough to be removed from the item bank nor from the exam itself.

Reporting

CMRE results were reported to provincial regulators and all correspondence with candidates was via their provincial regulator. Regulators received information regarding their candidates' pass/fail status and general weak areas, as well as summary comparisons with other candidates at this sitting (without candidate names). Candidates received reports with their pass/fail status, and with general feedback of strong and weak areas vis-à-vis the competency categories (e.g. intrapartum, newborn, etc.).