

CCMG *ad hoc* Examination Reform Committee

Final recommendations and implementation plan

September 2014

Executive Summary

The *ad hoc* exam reform committee has carried out its work over the past 2 years. This document, submitted to the CCMG Board of Directors, reflects the final recommendations from this committee. Pros and cons of adopting the recommendations are laid out.

The 10 recommendations of the committee are:

- *At this time, exams should continue to be offered every 2 years, rather than annually, until this new process has been implemented and exam question banks have been built up*
- *Exams should be completed in a single 2 day session, rather than split into spring and fall part*
- *The exam should be held in the fall to minimize the number of candidates writing before completion of their training programs*
- *The exam should consist of an MCQ general and short answer/OSLE practical sessions, held over 2 consecutive days*
- *The MCQs for the general must be aligned with the General Training guidelines*
- *The SA/OSLE questions must be aligned with the Specialty Training guidelines, and adhere to the Specialty Blueprints designed by the ad hoc committee*
- *All exam questions must be securely stored and centrally located*
- *Exam questions must be continually updated and validated; training must be available for CCMG members who will participate in this process*
- *The exam process and examination content must be scrutinized on an ongoing basis by a new core CCMG committee*
- *Creation of new exams should be done on the non exam years in a 2 day face to face meeting of the exam committee*

Background

This *ad hoc* committee was struck to assess and redesign the examinations of the CCMG to improve issues of consistency and transparency and to better align the examination process with the expectations of candidates as detailed in the training guidelines. In addition, the committee agreed to make recommendations around exam logistics, the secure storage for the exam questions and continuing improvements to the new process.

The current examination structure has evolved over many cycles. It is cumbersome and not well aligned with the training experiences of the candidates. However, it is also a rigorous test that allows examination of many different facets of the candidates. In particular, the practical elements of the current exam- the oral - is an excellent opportunity to allow candidates to demonstrate their depth of understanding and comfort with common scenarios and issues confronting diagnostic laboratorians. Therefore, the following recommendations are made to allow us to retain some of the excellent aspects of our current system, while supporting changes and improvements in transparency, objectivity and adherence to a standard format that seeks to examine those elements most emphasized in the training program guidelines.

Details of the recommendations

1. Exams should continue to be offered every 2 years, rather than annually.

Holding the exams annually has appeal from the point of view of decreasing the impact of failure on the career plans of candidates. However, this comes at a cost because setting and administration of exams is time consuming and expensive. Therefore, the recommendation at this time is to retain the biannual scheduling of exams. This provides the opportunity to use the non-exam years to write new questions and create the exams for the pending cycle in a face-to-face format. Furthermore, the validation of new questions will be made faster with greater numbers of candidates per cycle. It is possible that in the future once the exam bank is sufficiently built up, yearly examinations would be possible without undue burden on the College and the volunteer committee members.

Pros of adopting	Cons of adopting
Reduction of overall expenses	Candidates must wait longer if they fail
Less onerous for Exam Committee members	Less flexibility for choosing when to sit exam
Can use the off year to create next year's exam, supporting security of exam	

material and consistency of exam preparation	
Greater number of candidates per exam cycle gives faster feedback on question validity	

2. Exams should be completed in a single 2 day session, rather than split into spring and fall parts

The logistics of mounting two separate exams, one at the trainee’s centre, and one centrally at the AGM locale, is expensive and cumbersome. We recommend a single exam sitting, which could be held over two days in conjunction with the annual meeting (except see #3 below). This removes the cost of shipping exams to centres across the country, shipping them back again, scanning and sending images for marking. It requires that a single large room be available at the exam venue such that all candidates writing the General part of the exam can write at the same time with one or two proctors present.

Pros of adopting	Cons of adopting
Streamline exam process	
Reduce mailing and copying expenses	
Less waiting time for candidates	

3. The exam should be held in the fall to minimize the number of candidates writing before completion of their training programs

The exam has always been held in conjunction with the CCMG’s AGM. However, when the AGM moves to the spring, this becomes a logistically difficult strategy. With a spring exam, candidates who start their training programs in the summer will not have completed their programs by the time the exam occurs. Waiting for an additional two years is not going to be appealing, and candidates will try to get provisional approval from Credentials to sit the earlier exam. Successful candidates will then have to prove completion of their training program before they can be welcomed to the College, and the Credentials committee will have a great deal of extra work to follow up with each one to ensure that the training program was completed. This would appear to be a suboptimal arrangement.

It is understood that having exams held in the fall, with the AGM set to move to the spring, will not be appealing to the BoD or to members or candidates because of the increased cost to everyone of hosting two events every two years. Therefore, while it is the *recommendation of this committee* that a fall exam is optimal from an exam perspective, alternatives are suggested below.

Alternatives include:

i) Have candidates start their training programs in the spring or late winter. This would require that all training programs reset their clocks, and the Ontario MOH fellowships would need to change their funding cycle. While possible, this is also very difficult to implement and would likely meet with resistance.

ii) Insist that training programs have candidates complete the most critical rotations for their specialties in the first year, leaving less critical rotations (research) to later years.

iii) Dissociate the exams from the AGM, and allow the exams to continue to be held in the fall. There would be additional cost for examiners to fly to the exam venue specifically for the exams. The reimbursement policy would need to be re-examined to cover all costs of travel and accommodation for examiners. Candidates would also be financially disadvantaged if they also wanted to attend the AGM later in the year.

iv) Keep the AGM in the fall, and keep the exams associated with it.

Pros of adopting	Cons of adopting
Candidates can complete training program before writing	May dissociate the exam from the AGM, leading to extra cost
Less work for Credentials	May require reconsideration of the moving of AGM to spring
Less confusion about when to apply in training program	
No requirement for training centres to shift schedules of rotations	

4. The exam should consist of an MCQ general and short answer/OSLE practical sessions, held over 2 consecutive days

MCQ remains a simple and effective tool to examine general knowledge. Therefore, the recommendation is to maintain this aspect of the current examination, but to improve the quality and applicability of this portion of the exam (see #5). To examine the practical requirements of specialty training, the format will be a series of short answer (SA) and objective structured laboratory examination (OSLE) stations. Some of these stations may be common to all exam specialties. This SA/OSLE component of the exam will replace the 3 hour May written exam and the oral examination component now held in conjunction with the AGM.

Pros of adopting	Cons of adopting
Proven format for many colleges	Limits the types of questions that can be used
Objective evaluation tool if questions are high quality	Require high quality questions be created-more work for the Exam committee

Objective marking with clear pass and fail parameters	
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5. The MCQs for the general must be aligned with the General Training guidelines

One of the major complaints from candidates and training program directors has been about the poor quality and scope of the General examination questions. Therefore, the *ad hoc* committee has undertaken a review of the current question databank, and has removed or edited outdated, confusing or erroneous questions. The committee received the General Training Guidelines from the Training Committee (App A). Alignment of the existing MCQs against the training guidelines (App B) shows clearly the gaps that exist where additional questions must be created.

The committee recommends that the current Exam Committee now take on the task of adding questions to the MCQ databank to address these gaps. The existing questions and gap analysis has been forwarded to the Chair of Examinations. It is also recommended that the Exam Committee members being asked to develop new questions be provided with training in methods of writing high quality questions. Some documentation from the RC has already been provided, and can be made available to this group, but an education session at the upcoming AGM is also recommended. The *ad hoc* committee has identified a faculty member at UBC with expertise in this area, who is willing to provide a workshop on these issues to relevant CCMG members. With Board approval, this individual, Dr Ido Roll, has agreed to provide Exam Committee members with a workshop on how to design effective questions, which will be held on the Monday prior to the annual meeting in Vancouver.

Pros of adopting	Cons of adopting
Will alleviate some anxiety for candidates	Requires training of exam committee members which may have a cost
Will address some of the major concerns of candidates and program directors	
Is flexible enough to keep up with training guideline changes	

6. The SA/OSLE questions must be aligned with the Specialty Training guidelines, and adhere to the Specialty Blueprints designed by the ad hoc committee

The current specialty training guidelines were provided to the *ad hoc* committee (App C). These were used as the basis to create specialty exam blueprints (App D).

The training guidelines across specialties are sufficiently similar that a single specialty blueprint can be used for Molecular, Cytogenetics and Biochemical exams. The exam blueprint can be iteratively filled in to allow variations in the proportion of questions addressing each training requirement, within limits set by the committee. These limits are meant to broadly reflect the relative importance of different areas of training.

Similar to the General MCQ database, there must be a databank of questions (SA and OSLE) for creating new exams every two years. While there should be continued new questions being added by the Exam Committee members, it would be beneficial to have a buffer of stored questions. One approach could be to go through the more recent specialty examinations that are available, and retrieve questions that lend themselves to the SA or OSLE format. These could be rewritten, and then stored and linked to specific training competencies. This would be a task for the Exam Committee.

Pros of adopting	Cons of adopting
Will alleviate some anxiety for candidates	Requires training of exam committee members which may have a cost
Will address some of the major concerns of candidates and program directors	
Is flexible enough to keep up with training guideline changes	

7. All exam questions must be securely stored and centrally located

An ongoing concern is the current practice of having the exams unsecured, and unprotected. They are broadly available on computers of current and past Exam Committee chairs, and the specialty exams have always been made available to trainees for study purposes. It is suggested that this practice may need to cease, especially if questions are to be recycled to any degree.

All exam material should be centrally stored in a secure location. Exam material should NOT be removed from this location by anyone. Exam committee member access to the existing exam question banks should be exclusively through a secure portal, and all work done on the exam bank should be done on a remote secure server, rather than allowing download of any material to individual computers. It is recognized that this can present difficulties to the members who often operate behind firewalls of their local institutions. Therefore, the recommendation that the exams be set and created in a face-to-face session associated with the AGM (see #10) goes towards removing the requirement for any committee member to need access from their local institutions.

The *ad hoc* committee has obtained cost estimates of housing the exam question databanks at a secure high performance virtual computing laboratory in Kingston. The cost for setting up the portal and ongoing secure storage will be ~\$5000. Annual fees for maintaining this site for the College will be ~\$200.

Pros of adopting	Cons of adopting
Less chance that questions will be accessible	Associated cost of ongoing storage
Creates consistency when formatting exams if each chair is not using their own version of question bank	
Reinforces the idea that question creation, editing, etc, can only be done in controlled manner	

8. Exam questions must be continually updated and validated; training must be available for CCMG members who will participate in this process

A difficulty with the current exam process is that exam committee members are subjected to a schedule of frantic exam question creation every two years, followed by a year with no requirement to think about new questions. For the General exam, no significant improvements of the exam bank has been made for many years. Therefore, the quality overall of questions in the exams is lower than it might be with a concerted ongoing effort to maintain effective and relevant questions. It is recommended that members of the Exam Committee should be updating the exam banks every year. This can be done in non-exam years during the face to face meeting where the new exam is being set. In Exam years, there is still the possibility of scheduling time for face-to-face development of a more limited set of new questions.

Validation of new questions is an important component of examinations. For the General, it is suggested that validation can be done by inserting a limited number of new questions into the exam. The performance on the question can then be assessed, while the result does not impact the candidate- the questions are essentially “dummies”. Discussion of the proportion of questions that can be vetted this way in each cycle must be completed, but it is estimated that at least 6-7 new questions in the MCQ exam could be added with no significant risk that the exam is too long (currently the MCQ exam is usually about 90 questions, but it has ranged between 85-100 over the years).

Validation of SA and OSLE questions is more difficult, but each question must be assessed by the performance of the group. Metrics on performance should be kept for all questions, and stored with the exam banks. Over time, this will allow the editing or removal of poorly performing or poorly discriminating questions from

our banks. The job of evaluating the metrics of questions can be assigned to an oversight committee (see Recommendation #9).

Pros of adopting	Cons of adopting
A much superior exam product can be developed over years	Requires additional work to organize the collection of effective metrics
Provides substantial hard evidence for the effectiveness of the process	Requires annual meetings of the exam committee to prepare new questions
Ensures that the question banks are kept relevant	
Allows an easy mechanism to add questions to address new areas of competency as they are added	

9. The exam process and examination content must be scrutinized on an ongoing basis by a new core CCMG committee

There should be a core (ie not *ad hoc*) committee of the CCMG set up to continually review and evaluate exams and the exam process. The CCMG nominations committee could cycle committee members from Examinations to this review committee, which would be tasked with review and evaluation of the exams and the exam process on an ongoing basis. This Examination Blueprint and Evaluation Committee (EBEC) could act as liaison between exams and training. The chair must have a place on the PEACE committee. There should be at least one member with Royal College connections. In it's first incarnation, this committee should also include at least one member of the *ad hoc* exam reform committee. It should also include representation from the Training Committee.

Pros of adopting	Cons of adopting
Allows continuous oversight	Requires another committee
Allows continuous improvement of the process and the exams themselves	
Shows accountability for the conduct of exams	
Provides a forum to implement needed changes	
Allows non-exam committee members to assess and evaluate the exams	

10. Creation of new exams should be done on the non-exam years in a 2 day face to face meeting of the exam committee

New specialty exams are created every two years by Exam committee members who communicate by email. Questions are created based on previous exams. These are checked by the Exam Chair and potentially by Chairs of the Specialty committees to ensure fairness, appropriate length, appropriate content. This process can take months to complete, and generally requires prodding from the Exam Chair and the subcommittee lead to get the job done. Because the process is very ad hoc, consistency in approach is minimal. New exam committee members simply follow the lead of the more experienced members. Work can be unevenly allocated, and the timelines can become frustrating for all involved.

Following the process of the RC, it is recommended that examination creation should be a tightly controlled process. Face to face development of the exams is highly recommended, allowing all members to contribute in real time. Given sufficient volume in the exam question banks, the requirement to develop new questions is less than is currently the case, although this is still an opportunity for new questions to be written and discussed.

Two days of focused meetings with exam committee members who have received some basic training in the construction of effective questions should be sufficient to come up with the exam products for the following year. No questions are removed from the secure storage facility. The newly minted exam resides at the secure facility as well. Members may be asked to review the new exams, but again, no downloads are permitted.

Pros of adopting	Cons of adopting
Standardize the time and effort put into creating new exams	Requires yearly meetings of the entire exam committee
Removes requirement to follow up multiple times with committee members	Must ensure that exams are secure for the year before they are administered
Allows sufficient time for translation, review, edits, as needed	
Is a better training ground for new exam committee members than current situation	