

**Technical Manual for  
The National Dental Examining Board of Canada  
Written Examination  
and  
Objective Structured Clinical Examination**

INTRODUCTION:

The National Dental Examining Board of Canada (NDEB) was established by an Act of Parliament in 1952 (Appendix A) with a mandate to establish the qualifying conditions for a national standard of competence for general dentists and to issue certificates to dentists who successfully meet this standard. The Act was supported by all ten provincial licensing authorities and by the Canadian Dental Association (CDA). Since that time, the NDEB certificate has been accepted by provincial licensing authorities as evidence of having met the national standard.

High-stakes examinations such as those conducted by the NDEB should be concerned with reliability and validity because these measures are required in making pass/fail decisions affecting candidates for licensure or certification. Protection of the public is of foremost concern and the NDEB has the obligation to inform its ten provincial constituents that it is doing its best to provide the highest quality examination program possible. Examination policies and procedures provide a guide for the examination program. Such policies and procedures assist with establishing and improving reliability and validity. The *Standards for Educational and Psychological Testing* {American Educational Research Association (AERA), American Psychological Association (APA), and the National Council on Measurement in Education (NCME)} provides national standards for testing organizations. This Technical Manual provides a comprehensive summary of information pertaining to the examinations developed and administered by the NDEB and demonstrates the NDEB's compliance with accepted international standards.

**PART A: POLICIES AND PROCEDURES FOR THE WRITTEN EXAMINATION AND THE OBJECTIVE STRUCTURED CLINICAL EXAMINATION**

I BACKGROUND AND OVERVIEW

A. History

In 1906 under the auspices of The Canadian Dental Association (CDA) the Dominion Dental Council was formed to conduct national written examinations, the successful completion of which would grant the candidate a Dominion Dental Council certificate. The National Certificate could then be presented to the Provincial Dental Regulatory Authorities (DRA's) as evidence of the candidate's ability to meet a basic national standard of competence. Some DRA's were prepared to grant licenses to practice on the basis of the certificate, however, others chose to accept the certificate as an academic base only and required the candidate to pass additional provincial practical tests.

The Dominion Dental Council proved to be rather ineffective. A name change to The Dental Council of Canada in 1950 along with attempts to improve the efficiency of the examination mechanism still failed to attract strong support from the DRA's. This was in spite of the fact that the DRA's agreed with the general concept. They had indicated a desire to be free of provincial licensing examinations, providing a reliable national examination system could be established.

The following year, 1951, the CDA encouraged the ten DRA's to develop a satisfactory plan for a National Examining Board. Its purpose was to provide a facility by which members of the profession could become eligible, on a national basis, to apply for practice privileges in the province of their choice. The result was the incorporation of The National Dental Examining Board of Canada (NDEB) in 1952 by an Act of Parliament of Canada. The Act was supported by all ten DRA's and by the CDA and this support continues today.

#### B. Purpose

According to the Act of Parliament, the NDEB is responsible for the establishment of qualifying conditions for a national standard of dental competence for general practitioners, for establishing and maintaining an examination facility to test for this national standard of dental competence and for issuing certificates to dentists who successfully meet this national standard.

#### C. Structure

The National Dental Examining Board of Canada is composed of twelve members. Each DRA appoints one member and two members are appointed by the Commission on Dental Accreditation of Canada (CDAC). In 1994, the Board designated representatives from the Royal College of Dentists of Canada (RCDC), the CDAC, the CDA and the CDA Committee on Student Affairs as official observers. In 2004, the Board designated a representative from the Canadian Dental Regulatory Authorities Federation (CDRAF) as an official observer and appointed a Public Representative. The full Board meets annually. The NDEB also has standing committees dealing with examinations, appeals, finances and by-laws. The NDEB is a non-profit organization supported by fees charged to candidates for examination and certification.

#### D. Certification

The NDEB grants certification to candidates from the following groups:

1. Graduates of Dental Programs accredited by the Commission on Dental Accreditation of Canada and by the American Dental Association Commission on Dental Accreditation.

Prior to 1971, a graduate of an undergraduate dental program in Canada was required to successfully complete the NDEB examination (written essay-type) in order to be certified. This policy was changed in 1971, when the NDEB decided to recognize the examinations and evaluation administered by Canadian faculties of dentistry and issue certificates to current graduates of these faculties without further examination. The condition for certification established at this time was graduation from an undergraduate dental program approved by the Commission on Dental Accreditation of Canada.

In 1988 concern was expressed by several DRA's about the validity of establishing clinical competence solely by accreditation. This concern was further intensified by the extension of the accreditation cycle from five to seven years. Therefore, in 1989, the NDEB established a committee "to explore whether the granting of a certificate on the basis of accreditation alone continues to be acceptable." This committee (Certification Review Committee or CRC) presented its report at the 1990 NDEB Annual Meeting. The report stated that certification based on accreditation alone was no longer acceptable, a finding which was further supported in the Parker Report.

As a result, the NDEB authorized pilot projects which introduced and tested the use of NDEB external examiners/observers. The pilot projects were deemed highly satisfactory by the NDEB. In 1993, certification for graduates of accredited Canadian Faculties of Dentistry was based on present requirements and a successful report on the faculty's participation in the NDEB External Examiner System.

In 1994, at the request of the DRA's, the NDEB abandoned the External Examiner System and required that Canadian graduates pass the Written Examination and the Objective Structured Clinical Examination (OSCE).

As of January 1, 1997, graduates of both US and Canadian accredited undergraduate dental programs are considered "accredited graduates". To be certified, these graduates must pass the Written Examination and the OSCE within a specified period of time.

The NDEB, through its representatives on the Commission on Dental Accreditation of Canada and through an appointee on each undergraduate program survey team actively participates in the accreditation process. In addition, the NDEB gives an annual grant to the Commission to be applied to accreditation costs of undergraduate dental programs in Canada and the United States.

## 2. Certification of Graduates of Non-Accredited Dental Programs

Until December 31, 1999, graduates of non-accredited dental programs were certified either by passing a certification examination that consisted of the Written Examination and a three part Clinical Examination or by successfully completing an accredited Qualifying or Degree Completion Program at an accredited university and then successfully completing the Written Examination and the OSCE.

Since January 1, 2000, graduates of non-accredited dental programs have been required to successfully complete a Qualifying or Degree Completion Program prior to being eligible to take the NDEB examinations.

### E. Current Examinations

#### 1. Written Examination

The Written Examination consists of 2 papers, each with 150 multiple choice type questions. Each paper is given in a 2.5 hour examination session. The sessions are held in the morning and afternoon of one day at established examination centres.

The examination tests basic science knowledge and applied clinical science knowledge and judgement including diagnosis, treatment planning, prognosis, treatment methods and clinical decisions. Prior to the Written Examination, candidates are provided with an examination outline and a list of reference texts commonly used in Canadian dental programs along with all necessary logistical detail.

#### 2. Objective Structured Clinical Examination (OSCE)

The OSCE is a one day station type examination designed to test aspects of clinical judgment. The majority of the stations have 2 questions and require the candidate to review the information supplied (e.g. case history, photographs, radiographs, casts, models) and answer extended match type questions. Each extended match type question has up to 15 answer options and one or more correct answer(s). A few stations may require the candidate to review the information supplied and write an acceptable prescription for a medication commonly prescribed by general dentists in Canada.

Candidates have 5 minutes at each station to answer the questions. After 5 minutes the candidates move to the next station. Detailed examination information is available on the website at [www.ndeb.ca](http://www.ndeb.ca).

The list of competencies from which examination items are developed is included in the examination regulations and references which is mailed to all candidates. Information is also posted on the NDEB website.

## F. Competencies for a Beginning Dental Practitioner in Canada

In 1993, the NDEB in cooperation with the ACFD, CDA and CDAC conducted a process to establish “Competencies for the Beginning Dental Practitioner in Canada”. These competencies, which were the first nationally accepted competencies, were used to establish examination blueprints, guide educational programs and were included in accreditation standards. They have also been used as a resource for many national and international processes in dentistry and other professions.

In 2004, the NDEB initiated a review process that resulted in the revision of the competency document (Appendix B). This document has been accepted by the NDEB, the ACFD, CDA and CDAC.

## G. Assistance to Other Organizations

The NDEB provides consultation and existing examination related material to the DRA’s on request. Since 1998, the NDEB has assisted the ACFD in the administration of the ACFD Eligibility Examination. In 2001, formal agreements between the NDEB and the ACFD were signed. These agreements related to the administration of the ACFD Eligibility Examination and to administrative services provided by the NDEB for the ACFD. The NDEB also provides examination services on request to any DRA and has formal agreements for provision of services with L’Ordre des Dentistes du Québec.

## H. Summary

The NDEB is conscious of its responsibility to certify only candidates who meet the national standard for the purpose of public protection. The Board has proposed and followed a series of strategic plans.

Each year, the NDEB assesses its certification and examination procedures and the responses of the candidates, making adjustments where indicated to improve the validity and reliability of the examination. The Examinations Committee annually reviews the standards and procedures of the respective examinations and makes recommendations to the Board.

In addition to this ongoing internal review, the NDEB has initiated several external evaluation procedures over the years (Appendix C).

## II TEST CONSTRUCTION PROCESS

### A. Personnel and Committee Structure

#### 1. Examinations Committee

The Examinations Committee has 5 members appointed by the Board. Its members include general practitioners, specialists and academic faculty members. Staff support for the Committee includes the Executive Director, the Examinations Project Manager, the Examinations Coordinator and the Chief Examiners for the Written Examination and

the OSCE. The Committee generally meets once a year. Its mandate is to:

- a) develop, revise and recommend protocol changes to the Board
- b) develop and revise the Examiner's Manual
- c) recommend examination dates
- d) recommend the appointment of examiners
- e) recommend the appointment of consultants to the examination process
- f) monitor the results of the examinations
- g) ensure the integrity of the examination
- h) identify the number and focus of workshops to be scheduled during the year.

Suggestions for protocol changes are initiated at the staff level from experience during the administration of the examination and from changes in the structure or format of the examination.

The Examiner's Manual is used as a reference by examiners when developing questions for the Written Examination and the OSCE.

Examination dates are published by policy, well in advance, to permit the staff and candidates to plan appropriately. Normally, the examinations are offered in March, June and December of each year.

Individuals recommended for appointment as examiners by the DRA's and by the Deans and Directors of the dental programs in Canada are reviewed by the Examinations Committee and nominations are forwarded to the Board for appointment.

In addition to appointing examiners, on recommendation of the Examinations Committee, the Board appoints consultants who are recognized for their expertise and/or experience in examination development.

The results of the examinations are reported to the Examinations Committee so it can ensure consistency of the examinations over a period of time. This is to ensure all candidates are treated equally, independent of the particular examination taken.

Examination integrity is maintained by the Committee through the review of Presiding Examiners' reports on irregularities identified during an examination session. If a candidate is reported to have compromised the examination by cheating or violating the examination regulations, the Committee has the authority to void the results of that candidate's examination and to prohibit the candidate from taking the examination in the future.

## 2. Staff Support

The Executive Director/Registrar is responsible for staff supervision and the implementation of all policies approved by the Board to ensure the examination process operates efficiently and effectively.

The Chief Written and Chief OSCE Examiners are responsible for the development of the respective examinations including coordination of question development, question selection, monitoring the examination item bank and examination results. The two Chief Examiners are each supported by an Assistant.

The Examinations Project Manager, in consultation with the Executive Director/Registrar, prepares and administers all NDEB examinations including arrangements with hosting institutions and staff, preparing examination protocols, identification cards, correspondence with candidates and examiners and production and translation of examination material. The Examinations Project Manager is supported by an Examinations Coordinator and the Examinations Clerks. The Examinations Project Manager contracts with a specific person who has been trained to administer the Written Examination and the OSCE at a test centre.

All staff are responsible for carrying out directives from the Examinations Committee as approved by the Board.

#### B. Item Development and Selection

As noted earlier, the purpose of the Written Examination and the OSCE is to assess those aspects of the “Competencies for a Beginning Dental Practitioner in Canada” that can be evaluated through multiple choice or station formats. The 47 competencies give rise to the major content categories that form the blueprint for the examinations. Guided by the competencies, item writers create questions that are aligned to content categories.

The following table shows a typical distribution of items according to content categories for the Written Examination.

Written Examination	%
Clinical Therapeutics	10
Ethics	2
Geriatric Dentistry	2
Infection control	1
Oral Health Sciences	20
General Medicine	20
Operative Dentistry	10
Orthodontics	5
Surgery	5
Pediatric Dentistry	5
Periodontics	10
Prosthodontics	10
Total	100

The following table shows a typical distribution of items according to content categories for the OSCE.

OSCE	%
Anesthesia	4
Emergency	4
Endodontics	8
Fixed Prosthodontics	5
Operative Dentistry	9
Oral Medicine	12
Orthodontics	9
Pain and Swelling	9
Pediatric Dentistry	8
Periodontics	10
Pharmacology	3
Radiology	13
Removable Prosthodontics	3
Surgery	3
Total	100

Examiners who are dental specialists/content experts at Canadian dental programs are sent copies of the Examiner's Manual and other preparatory material for review prior to the question development workshop. During the workshop, examiners are trained in question construction and then construct and criticize potential new items in their discipline. All new items are reviewed and, if required, edited by staff. A second group of examiners reviews and revises new items prior to their being eligible for use on an examination.

Examiners who are practicing general dentists select all of the items for every examination. They use an examination blueprint and the results of item analysis as a guide in the item selection process.

### C. Item, Translation, Review and Verification

After items have been selected for an examination they are reviewed again and identified for translation. In some isolated cases, the French translation may identify difficulties in the English version of the question and, occasionally, this will lead to the English wording being revised.

Following selection and translation, questions are subjected to intensive review to verify the wording and the correct answer. Should a question need to be reworded, it is either revised for the selected examination or replaced with one of the 20 questions reserved from the previous selection process. Changes to the French translation for any existing question initiates a similar verification process.

After selection, translation and review, a printed version of the examination is produced. The purpose of this step is to verify that all the changes have been made to the questions and that the French translation is accurate. At this point, the review committee will sign off that the examination is accurate.

### III TEST VALIDITY

The primary basis for establishing validity for certification examinations is to show that the process for examination development is a valid reflection of that part of the professional domain that the examinations purport to assess. That is, construct validity is about the relationships between the construct (professional competence) and the instruments. As noted above, both the Written Examination and the OSCE are built to be consistent with the “Competencies for a Beginning Dental Practitioner in Canada”. The content categories reflect both the educational programs and the demands of practice, and the examinations are vetted by practitioners.

In addition to the logical basis for asserting construct validity, the NDEB has carried out several studies, both internal and published, that support validity claims (Appendix D).

### IV EXAMINATION PRODUCTION AND SECURITY

The Selection Committee for each of the Written Examination and the OSCE provides a hard copy of the questions from the NDEB item bank to be used for each examination. Translation of questions into French does not occur until after a question has been selected for a specific examination. During Examination Review meetings, there is always a team of French examiners who are delegated the task of translation of questions as the examination is processed by the Committee. One of these examiners is always the representative from l’Ordre des Dentistes du Quebec (ODQ).

An examination is created in the Performance Evaluation Technology (PET) databases relevant to each examination using the list of questions provided by the Selection Committee. After the documents have been approved at the Committee level a final document is “built” and printed in the appropriate examination format.

#### A. Written Examination

This examination requires the creation of 2 – 4 versions of each of the two “books”. Each book must be copied, re-sorted in a random computer generated pattern and then re-built. Afterwards each book is reviewed and revised to correct any formatting or numbering errors caused by the migration of the questions into the final document. Prior to printing, the appropriate cover page and instruction pages are added to the documents (i.e. NDEB only - English; NDEB/ODQ - English; NDEB/ODQ - French; ODQ only – French, etc.). Computer generated labels indicating candidate names, NDEB identification numbers and assigned seat numbers are affixed to the front of each examination book.

## B. OSCE Examination

For the OSCE the questions need to be reorganized according to the sequence within each section that the Committee has determined best facilitates the timing of the examination and/or the materials required for the question. The examination is then “built” as a final document.

## C. Printing

All printing is done on site. Documents that have been finalized are saved as .pdf files in a specific directory and are forwarded electronically to a specific printer, depending upon which examination is being printed. For the OSCE, once the examination document has been printed staff assembles the required number of copies of the complete examination. Each page of the document must be inserted into a plastic sleeve, any radiographs associated with specific pages must be added; new pages must be created and formatted to accommodate panoramic radiographs and inserted into the document; rest stations are inserted at pre determined locations; “Post-it”<sup>TM</sup> notes are placed on pages that have questions requiring other materials, e.g. casts, models, Boley gauge, etc.

## D. Quality Control - Written Examination

A Final Review Committee meeting is set up after approval of the content and translation of the Written Examination by the Review Committee and the French translators. At this time all versions that will be used for the examination are created and an original copy of each is printed. The Committee reviews the document in order to verify that there are no errors in numbering of questions and distractors. After printing the batches of examination books, a random check of documents is performed by two staff members in order to verify that no errors have been made during the printing process.

## E. Quality Control – OSCE Examination

During the Examination Review Committee meetings staff provides any materials that are required to the Committee along with the examination document. At this time the Committee is asked to provide feedback with regard to changes that might be required to either the material being used or a change to the answer key to more accurately reflect the findings from the material provided.

The Executive Director verifies the colour quality of the images being printed and the final assembly of all material used in the examination.

## F. Locations and Procedures

The Written Examination and the OSCE are presented three times annually (March, June and December) as established by NDEB policy.

The March examination session is held across Canada with a centre being established in each of the ten dental schools. June and December examination sessions may be established

in Canada in several locations, provided that a minimum of ten candidates apply in a location. Written Examination and OSCE centres may be established outside of Canada, provided that a minimum of fifty candidates apply for a centre and that an acceptable examination location with acceptable security can be established. The NDEB tries to accommodate location preferences but may have to offer alternative locations due to space limitation at some examination sites. Candidates are assigned to the centre closest to them whenever possible.

#### G. On-site Security

The Test Administrator is responsible for reserving rooms appropriate for each type of examination and handling and training invigilators for the examination sessions. Examination material is shipped to the Test Administrator at each test centre one to two weeks in advance of the examination date by courier. The Test Administrator confirms receipt of materials by fax and stores materials in a secure, locked area. After the completion of the examination all materials are returned to the NDEB office by courier. NDEB staff verifies the return of all materials including individually labeled examination booklets, rough notes sheets, answer score sheets and examination materials.

### V SCORING AND RESCALING

#### A. Scoring – Written Examination

Each of the three hundred multiple choice items is scored correct (1) or incorrect (0-zero). Item analyses are carried out as an aid to detecting weak items. Such items are eliminated, and a percent correct test score is calculated for each candidate.

#### B. Scoring –OSCE Examination

As noted earlier, the OSCE items (except for prescription items) are of the extended matching format with up to 15 different options. The items are scored using a weighted template that yields an item score between 0 and 1. Prescription items are scored on a scale of 0 to 2. After discarding weak items, a percent correct score is calculated by dividing the sum of the achieved item scores by the total possible score.

#### C. Equating

To provide consistent standards over time, scores for each administration are equated to the 2001 metric. The equating process, described in detail in Maguire (2004) is taken from Angoff (1971) and uses a set of common items to equate the scores from one administration to another. Equating functions are calculated separately for the Written Examination and the OSCE.

#### D. Rescaling

In 2004, the OSCE format was changed into its current form although the construct being assessed remained consistent with previous administrations. Candidates in March 2004 wrote both versions of the exam. In order to make comparisons over time, scores derived from the “new” OSCE format, are rescaled to the metric of the “old” OSCE format. The

rescaling procedure is based on scores obtained by candidates who wrote in 2004. The rescaling procedure for the OSCE includes equating to the 2001 pass/fail standard of 65.

#### E. Standards for Pass/Fail

The Written Examination is scored as percent correct. The passing standard set in 2001 was 65. The OSCE is also scored as a percentage (total score achieved divided by total score possible). Consistent with the Written Examination, the OSCE standard is 65 on the 2001 scale.

The 65% standard was established in 1995. It was set to be consistent with the existing practice in dental schools throughout the country. Since candidates who are first time writers from Canadian dental schools must meet their own school standard it follows that the NDEB standard should be at about the same level. Monitoring the failure rate among recent graduates provides evidence concerning the appropriateness of the standard. A validation study using a modified Angoff procedure (Boulais, 1995) showed that 65% was an appropriate level. Finally, the performances of first time writers from Canadian faculties of dentistry are carefully monitored by the NDEB, and by the individual Deans.

#### F. Reporting

A report letter is produced for each candidate's performance on the Written Examination and OSCE. Candidates are given their equated score on each examination, and the value of the pass equated mark (65).

School reports are sent to each of the Canadian Faculties of Dentistry. For each of the two examinations, three kinds of information are provided:

1. A list of candidates who are students at the school and their equated scores;
2. National level means and standard deviations of scores broken down by blueprint category;
3. School level means and standard deviations of scores broken down by blueprint category.

A general report consisting of six tables is prepared for the Board and other interested parties. The first table shows the number of candidates, mean raw score, mean equated score, range of equated scores, and Cronbach's alpha. These results are shown for each of the March, June and December administrations of the Written Examination. The second table shows the number of candidates, mean raw score, range of raw scores, mean equated score, mean rescaled score, and Cronbach's alpha for each of the March, June and December administrations of the OSCE. The third fourth, fifth and sixth tables give the total number of candidates, the number of candidates from Canadian universities, and the number of candidates from American universities who wrote the Written Examination and the OSCE for the current year and three previous years. In addition the success rate (number and percent) is provided for each group.

## VI STATISTICAL ANALYSES

### A. Item Level Analyses

For the Written Examination, item statistics are calculated using a commercial item analysis program (PET). For the OSCE, the multi-answer item statistics are calculated using Inanimex with custom programming. The statistics produced are: item means (difficulties), item test correlations (point biserials in the case of the Written Examination), the number of candidates choosing each distractor, and the performance on the item and each distractor for the upper 50% of the candidates and the lower 50% of the candidates. (Upper 50% and lower 50% are defined in terms of the overall performance on the examination.)

In each administration all items are reviewed for statistical or procedural abnormalities. As a result of the review, some items may be rejected. All item and test statistics are calculated using only items that contribute to the final score.

### B. Test level Analyses

For each of the two examinations, the following test statistics are calculated: means of raw scores and equated scores, standard deviations of raw scores and equated scores, ranges of raw and equated scores, Cronbach's alphas, standard errors of measurement for raw scores and equated scores. In addition, the passing rates are calculated for all examinees, for writers from Canadian universities, and for writers from US universities.

### C. Security Analysis

The test analysis program Scrutiny<sup>©</sup> can be applied to the item results of all candidates. Those with extreme values are flagged for attention.

## VII APPEALS

### A. Appeals

Within three months of the release of results of the Written Examination and OSCE, candidates who have failed one, or both, may apply to the Board to have their answer score sheets manually checked against the answer key. Application for review must be accompanied by a filing fee. The mark for the candidate will be produced by the manual check and verified by the Chief Examiner or the Registrar, or both. This mark will determine whether a candidate passed or failed.

B. Petitions from Candidates

Within a specified timeframe, candidates may petition the Board or Executive Committee in writing, with an accompanying filing fee, in regard to the following:

- examination results have been voided
- candidate has been denied the privilege of repeating an examination
- compassionate grounds.

## Part B - Outcomes Summary for the Written Examination

### I Introduction

This report provides summary information on the structure of selected exams, as well as statistical summaries at the item and test levels. The yearly results are based on the March administration only since June and December administrations use instruments from other years.

### II Examination Results

Table of Examination Items By Category

RootCategory	March2001	WMarch2006	WMarch2007	WMarch2008
Dental Anatomy/Occlusion	2	4		1
Dental Emergency	1	1	1	2
Endodontics	16	23	18	19
Ethics and Jurisprudence	1	3	5	4
Foundation Science	73	55	50	62
FPD/Removable/Implants	26	33	34	34
Geriatrics	4	3		1
Infection Control	4	1	1	3
Local Anesthesia	6	7	9	6
Medical Emergency	1	1		
Occupational Hazards			1	
Operative	31	22	24	13
Orofacial Pain		1	1	1
Oral Medicine/Pathology	21	29	35	39
Oral Surgery	23	18	22	20
Orthodontics	16	15	15	16
Pediatrics	18	12	11	10
Periodontics	14	31	32	30
Pharmacology/Therapeutic	21	15	14	13
Prevention	5	4	5	4
Radiology	11	16	17	16
Special Needs	2	1	1	
Total Scored	296	295	296	294
Rejected	4	5	4	6
Total	300	300	300	300

Table of Item Difficulties

Difficulty	March2001	WMarch2006	WMarch2007	WMarch2008
Easy (.90+)	69	59	90	45
Medium (.40 to .89)	213	231	202	238
Difficult (0 to .39)	14	5	4	11
Total	296	295	296	294

## Table of Item Discriminations

Item Test Correlation	March2001	WMarch2006	WMarch2007	WMarch2008
High (.26+)	35	40	59	68
Medium (.10 to .25)	198	200	192	179
Low (0 to .09)	63	55	45	47
Total	296	295	296	294

## Test Level Results for the Examination

	March2001	WMarch2006	WMarch2007	WMarch2008
Number Of Candidates	452	595	588	576
Number Of Scored Items	296	295	296	294
Mean Score (Raw)	77.79%	76.07%	80.14%	74.62%
Standard Deviation (Raw)	6.09%	6.82%	6.89%	7.48%
Mean score (Adjusted)		76.30%	78.03%	77.84%
Standard Deviation (Adjusted)		6.35%	7.24%	6.73%
Alpha	0.87	0.89	0.9	0.9
Standard Error (Raw)	2.20%	2.29%	2.13%	2.33%
Standard Error (Adjusted)		2.13%	2.24%	2.10%
Passing Score (Raw)	64.50%	63.39%	67.26%	59.80%
Passing Score (Adjusted)		64.50%	64.50%	64.50%
Source Exam		Written - March2001	Written - March2001	Written - March2001
Mean Score (Common)		76.12%	79.66%	78.17%
Standard Deviation (Common)		8.27%	9.04%	8.52%
Adjustment		Equated	Equated	Equated
Alpha (Adjusted)		5.4627	-6.1417	10.6762
Beta (Adjusted)		0.9313	1.0503	0.9001
R		0.8298	0.858	0.8343
R-Squared		0.6886	0.7361	0.6961

NOTE: Adjusted Score = Beta (Adjusted) x Raw Score + Alpha (Adjusted)

## Part B - Outcomes Summary for the OSCE EXAMINATION

## I Introduction

This report provides summary information on the structure of selected examinations, as well as statistical summaries at the item and test levels. The yearly results are based on the March administration only since June and December administrations use instruments from other years.

## II Examination Results

Table of Examination Items By Category

RootCategory	OMarch2005	OMarch2006	OMarch2007	OMarch2008
	1	1		1
ANESTHESIA	4	4	4	4
EMERGENCY	5	4	5	5
ENDODONTICS	5	8	7	8
FIXED PROSTHODONTICS	6	10	10	9
OPERATIVE	10	9	9	9
ORAL MEDICINE	9	9	11	8
ORTHODONTICS	8	6	6	7
PAIN	3	4	4	4
PEDIATRICS	7	6	6	7
PERIODONTICS	9	7	6	7
PHARMACOLOGY	2	2	2	2
RADIOLOGY	13	13	13	13
REMOVABLE PROSTHODONTICS	4	5	3	5
SURGERY	3	2	3	3
SWELLING	2	4	3	5
Total Scored	91	94	92	97
Rejected	1	1	3	2
Total	92	95	95	99

Table of Item Difficulties

Difficulty	OMarch2005	OMarch2006	OMarch2007	OMarch2008
Easy (.90+)	15	9	9	12
Medium (.40 to .89)	67	72	75	76
Difficult (0 to .39)	9	13	8	9
Total	91	94	92	97

Table of Item Discriminations

Item Test Correlation	OMarch2005	OMarch2006	OMarch2007	OMarch2008
High (.26+)	17	16	21	17
Medium (.10 to .25)	68	71	67	71
Low (0 to .09)	6	7	4	9
Total	91	94	92	97

## Test Level Results for the Examination

	<b>OMarch2005</b>	<b>OMarch2006</b>	<b>OMarch2007</b>	<b>OMarch2008</b>
Number Of Candidates	577	596	591	578
Number Of Scored Items	91	94	92	97
Mean Score (Raw)	70.20%	66.64%	70.28%	68.23%
Standard Deviation (Raw)	7.27%	7.68%	7.94%	7.37%
Mean score (Adjusted)		71.58%	80.82%	82.98%
Standard Deviation (Adjusted)		7.20%	7.20%	7.20%
Alpha	0.71	0.74	0.75	0.73
Standard Error (Raw)	3.90%	3.95%	3.94%	3.84%
Standard Error (Adjusted)		3.70%	3.57%	3.75%
Passing Score (Raw)	64.50%	59.09%	52.28%	49.30%
Passing Score (Adjusted)		64.50%	64.50%	64.50%
Source Exam		OSCE2 - OMarch2005	OSCE2 - OMarch2005	OSCE2 - OMarch2005
Mean Score (Common)		69.97%	69.28%	74.68%
Standard Deviation (Common)		9.35%	10.11%	8.71%
Adjustment		Rescaled	Rescaled	Rescaled
Alpha (Adjusted)		9.0855	17.0971	16.3627
Beta (Adjusted)		0.9378	0.9067	0.9764
R		0.8102	0.8432	0.8191
R-Squared		0.6564	0.711	0.671

NOTE: Adjusted Score = Beta (Adjusted) x Raw Score + Alpha (Adjusted)

**GLOSSARY**

ADAC	American Dental Association Commission on Dental Accreditation
AERA	American Educational Research Association
APA	American Psychological Association
CDA	The Canadian Dental Association
CDAC	Commission on Dental Accreditation of Canada
CDRAF	Canadian Dental Regulatory Authorities Federation
DRA	Provincial Dental Regulatory Authorities
NCME	National Council on Measurement in Education
NDEB	The National Dental Examining Board of Canada
RCDC	Royal College of Dentists of Canada

## APPENDIX A

A Summary of the Act relating to The National Dental Examining Board of Canada originally established in 1952 and revised in 1973.

#### Preamble to 1952 Act

Whereas the persons hereinafter named have by their petition prayed that it be enacted as hereinafter set forth and it is expedient to grant the prayer of the petition: Therefore Her Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows :

#### Preamble to 1973 Revision

Whereas The National Dental Examining Board of Canada, hereinafter called "the Board", has by its petition prayed that it be enacted as hereinafter set forth, and it is expedient to grant the prayer of the petition: Therefore Her Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:

#### 1973 Section 1: Name in French

The Board may use, in the transaction of its business, either the name The National Dental Examining Board of Canada or the name Le Bureau national d'examen dentaire du Canada, or both of such names as and when it so elects. It may sue or be sued in either or both of such names, and any transaction, contract or obligation entered into or incurred by the Board in either or both of the said names shall be valid and binding on the Board.

#### 1973 Section 2: Existing rights saved

Nothing contained in section 1 shall in any way alter or affect the rights or liabilities of the Board, except as therein expressly provided, or in any way affect any proceeding or judgment now pending, either by or in favour of or against the Board, which, notwithstanding the provisions of section 1, may be prosecuted, continued, completed and enforced as if this Act had not been passed.

#### Incorporation and Composition (in the 1952 Act)

1. Harold M. Cline, doctor of dental surgery, of the city of Vancouver in the province of British Columbia, Gustave Ratte, doctor of dental surgery, of the city of Quebec in the province of Quebec, and Don W. Gullett, doctor of dental surgery, of the city of Toronto, in the province of Ontario, together with such persons as may hereafter become members of the Board as hereinafter provided, are incorporated under the name of "The National Dental Examining Board of Canada", hereinafter called "the Board".

2. The persons named in section one of this Act shall be provisional members of the Board with power to organize the Board as in this Act provided.

3. The head office of the Board shall be at the city of Toronto, in the province of Ontario, or at such other place as the Board may determine by by-law from time to time.

4. (1) The Board shall be composed of  
 (a) one member appointed as its representative by the appropriate licensing body of each province in Canada;  
 and  
 (b) two members appointed by the Council on Dental Education of the Canadian Dental Association.

(2) The term of office for each member of the Board shall be three years, except in respect of the members appointed to constitute the first Board.

(3) The term of office for one-half of the members of the first Board shall be two years and for the other one-half shall be four years; the members constituting each such one-half shall be chosen by lot in such manner as the Board may determine.

(4) A member of the Board on the expiration of his term of office, if properly qualified, shall be eligible for reappointment.

(5) If the appropriate licensing body of any province fails to appoint a member of the Board within a reasonable time a vacancy occurs, the Secretary of the Board shall notify such licensing body and require such licensing body to make such appointment and certify the result to the Board within one month of the date of service of the notice.

(6) All members of the Board shall continue in office until their successors are appointed or until expiration of their term of office if their successors are appointed before the expiration of such term of office.

5. (1) The appropriate licensing body of any province may at any time upon twelve month's notice to the Board, withdraw from participation in and recognition of the activities of the Board, and such licensing body shall not thereafter, so long as such withdrawal continues, be entitled to appoint any representative to the Board.

(2) The Board may upon the application of any licensing body which has so withdrawn, restore the participation and representation of such licensing body.

#### Purposes of the Board (revised by 1973 Act)

“6. The purposes of the Board shall be  
 (a) to establish qualifying conditions for a single national standard certificate of qualification for general practitioner dentists;  
 (b) to establish qualifying conditions for national standard certificates of qualification for dental specialists subject to the approval of The Royal College of Dentists of Canada;  
 (c) to ensure that the rules and regulations governing examinations will be acceptable to all participating licensing bodies and provide for the conducting of examinations in a manner fair and equitable for all concerned; and  
 (d) to promote enactment, with the consent and at the instance of the provincial licensing bodies, of provincial legislation necessary or desirable to supplement the provisions of this Act.”

Powers of the Board (revised by 1973 Act)

- “7. The Board shall have power to
- (a) establish qualifications for general practitioner dentists to ensure that the qualifications may be recognized by the appropriate licensing bodies in all provinces of Canada;
  - (b) establish, subject to the approval of the Royal College of Dentists of Canada, qualifications for dental specialists, to ensure that, in each case the qualifications may be recognized by the appropriate licensing bodies in all provinces of Canada;
  - (c) establish the conditions under which a general practitioner dentist may obtain and hold a certificate of qualification;
  - (d) establish subject to the approval of The Royal College of Dentists of Canada, the conditions under which a dental specialist may obtain and hold a certificate of qualification;
  - (e) prescribe compulsory examinations as evidence of qualifications for registration, subject to the rights of The Royal College of Dentists of Canada as hereinafter set forth;
  - (f) establish and maintain a body of examiners to hold examinations and to recommend the granting of certificates of qualification to general practitioner dentists;
  - (g) establish and maintain a body of examiners appointed by The Royal College of Dentists of Canada to hold examinations and make recommendations concerning the granting of certificates of qualification of properly trained dental specialists;
  - (h) issue certificates of qualification to general practitioner dentists and dental specialists in accordance with the recommendation of the examiners;
  - (i) establish a register for Canada of general practitioner dentists and dental specialists who have been granted certificates of qualification by the Board;
  - (j) delete from the register the name of any person whose provincial registration has been cancelled or suspended and to restore such name to the register if and when such cancellation or suspension is reversed, or the period of suspension is terminated; and (k) publish and revise the register from time to time.”

Bylaws (1952 Act)

8. (1) The Board may make such by-laws and regulations, not contrary to law or the provisions of this Act, as it may deem necessary or advisable for
- (a) the government and management of its business and affairs;
  - (b) the selection and election or appointment and remuneration of officers and employees and prescription of their respective powers and duties;
  - (c) the imposition and collection of dues or fees; and
  - (d) the carrying into effect of the purposes of the Board and its powers under this Act.
- (2) The Board may, from time to time alter or repeal all or any of such by-laws or regulations as it may see fit.
- (3) No such by-law or regulation shall be enacted, altered or repealed except with the concurrence of two-thirds of the representatives on the Board of the provincial licensing bodies then represented on the Board.

Property (1952 Act)

9. The Board may acquire, own, hold, deal with and dispose of, subject to the provisions of applicable provincial laws, any real and personal estate and property rights and privileges necessary or expedient for the purposes of the Board.

Ability to borrow money (1952 Act)

10. The Board shall have power to
  - (a) borrow money on the credit of the Board when required for the purposes of the Board and to give security for any sum or sums of money so borrowed;
  - and
  - (b) draw, make, accept and endorse all bills of exchange and promissory notes necessary for the purposes of the Board under the hands of such officers as may be designated by the by-laws and in no case shall it be necessary that the seal of the Board be affixed thereto nor shall the signing officers be individually responsible therefore, provided that nothing herein shall be construed to authorize the Board to issue notes or bills of exchange payable to bearer or intended to be circulated as money or as notes or bills of a bank.

Certificate of Qualification for Specialists (revised 1973 Act)

"11. (1) The Board shall issue its certificate of qualification to all Fellows of The Royal College of Dentists of Canada who are dental specialists, and whose specialties are recognized by the Canadian Dental Association and who make application for such a certificate within five years from the date on which this Act comes into force.

(2) In the event of the dissolution of The Royal College of Dentists of Canada, all powers conferred upon it herein shall become vested in The National Dental Examining Board. Any reference in this Act to The Royal College of Dentists of Canada or The National Dental Examining Board shall include their successors or assigns."

## COMPETENCIES FOR A BEGINNING DENTAL PRACTITIONER IN CANADA

A competent beginning dental practitioner in Canada must be able to provide oral health care for the benefit of individual patients and communities in a culturally sensitive manner.

Competency assumes that all behaviours are supported by foundation knowledge and skills in biomedical, behavioural and clinical dental science and by professional behaviour. Beginning dental practitioners in Canada must be able to apply foundation knowledge and skills to justify their decisions and actions and to evaluate outcomes. Therefore, foundation knowledge, skills and professional behaviour are understood to be a part of every competency.

Competency also assumes that all behaviours are performed to an acceptable level and that the practitioner can evaluate their quality and effectiveness. Competency cannot be achieved without the ability to self-evaluate. Moreover, there are no degrees of competence: a dentist is either competent or not competent. The competencies below refer to general dental practice and include the management of patients of all ages including those with special needs. It is assumed that all oral health care is provided in an ethical manner, in accordance with legal requirements at the national and provincial level.

A beginning dental practitioner in Canada must be competent to:

1. recognize the determinants of oral health in individuals and populations and the role of dentists in health promotion, including the disadvantaged.
2. recognize the relationship between general health and oral health.
3. evaluate the scientific literature and justify management recommendations based on the level of evidence available.
4. communicate effectively with patients, parents or guardians, staff, peers, other health professionals and the public.
5. identify the patient's chief complaint/concern and obtain the associated history.
6. obtain and interpret a medical, dental and psychosocial history, including a review of systems as necessary, and evaluate physical or psychosocial conditions that may affect dental management.
7. maintain accurate and complete patient records in a confidential manner.
8. prevent the transmission of infectious diseases by following current infection control guidelines.

9. perform a clinical examination.
10. differentiate between normal and abnormal hard and soft tissues of the maxillofacial complex.
11. prescribe and obtain the required diagnostic tests, considering their risks and benefits.
12. perform a radiographic examination.
13. interpret the findings from a patient's history, clinical examination, radiographic examination and from other diagnostic tests and procedures.
14. recognize and manage the anxious or fearful dental patient.
15. recognize signs of abuse and/or neglect and make appropriate reports.
16. assess patient risk (including, but not limited to, diet and tobacco use) for oral disease or injuries.
17. develop a problem list and establish diagnoses.
18. determine the level of expertise required for treatment and formulate a written request for consultation and/or referral when appropriate.
19. develop treatment options based on the evaluation of all relevant data.
20. discuss the findings, diagnoses, etiology, risks, benefits and prognoses of the treatment options, with a view to patient participation in oral health management.
21. develop an appropriate comprehensive, prioritized and sequenced treatment plan.
22. present and discuss the sequence of treatment, estimated fees, payment arrangements, time requirements and the patient's responsibilities for treatment.
23. obtain informed consent including the patient's written acceptance of the treatment plan and any modifications.
24. modify the treatment plan as required during the course of treatment.
25. provide education regarding the risks and prevention of oral disease and injury to encourage the adoption of healthy behaviors.

26. provide therapies for the prevention of oral disease and injury.
27. recognize and institute procedures to minimize occupational hazards related to the practice of dentistry.
28. achieve local anesthesia for dental procedures and manage related complications.
29. determine the indications and contraindications for the use of drugs used in dental practice, their dosages and routes of administration and write prescriptions for drugs used in dentistry.
30. manage dental emergencies.
31. recognize and manage systemic emergencies which may occur in dental practice.
32. manage conditions and diseases of the periodontium, provide periodontal treatment when indicated and monitor treatment outcomes.
33. assess the risk, extent and activity of caries and recommend appropriate non-surgical and surgical therapy.
34. manage dental caries, tooth defects and esthetic problems and, when restoration is warranted, use techniques that conserve tooth structure and preserve pulp vitality to restore form and function.
35. manage patients with orofacial pain and/or dysfunction.
36. manage surgical procedures related to oral soft and hard tissues and their complications
37. manage trauma to the orofacial complex.
38. manage conditions and pathology of the pulp and provide endodontic treatment when indicated.
39. manage abnormalities of orofacial growth and development and treat minor orthodontic problems.
40. recognize and manage functional and non-functional occlusion.
41. select and, where indicated, prescribe appropriate biomaterials for patient treatment.

42. manage partially and completely edentulous patients with prosthodontic needs including the provision of fixed, removable and implant prostheses.
43. make records required for use in the laboratory fabrication of dental prostheses and appliances.
44. design a dental prosthesis or appliance, write a laboratory prescription and evaluate laboratory products.
45. apply accepted principles of ethics and jurisprudence to maintain standards and advance knowledge and skills.
46. apply basic principles of practice administration, financial and personnel management to a dental practice.
47. demonstrate professional behaviour that is ethical, supercedes self-interest, strives for excellence, is committed to continued professional development and is accountable to individual patients, society and the profession.

## DEFINITION

To “manage” the oral health care needs of a patient is assumed to include all actions performed by a health care provider that are designed to alter the course of a patient’s condition. Such actions may include providing education, advice, treatment by the dentist, treatment by the dentist after consultation with another health care professional, referral of a patient to another health care professional, monitoring treatment provided, but also may include providing no treatment or observation. “Manage” assumes the use of the least invasive therapy necessary to gain a successful outcome in accordance with patient wishes

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