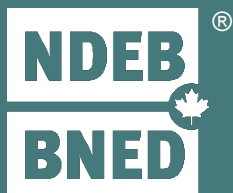


2023

Technical Report

National Dental Specialty Examination (NDSE)



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Introduction

Organizations who administer high-stakes examinations must be concerned with validity, reliability, and fairness because these measures are required in making pass/fail decisions affecting candidates for licensure or certification. Fairness to examinees and protection of the public are the foremost concerns for the NDEB, and the NDEB has an obligation to provide the highest quality examination program possible.

This Technical Report is a summary of the processes followed by the NDEB to develop, administer, and score the National Dental Specialty Examination (NDSE) administered in 2023. It provides a summary of the information needed to support the validity and reliability of the NDSE. For additional information, key references are included in Appendix A. Any background information is included to assist in understanding the development of the NDEB's examination processes.

This report serves as a reference for the members of the NDEB Examinations Committee, NDEB Board, and Provincial Dental Regulatory Authorities (DRAs). The processes described in this report may differ from those used in other years.

Part A – The NDSE

Purpose of the NDSE

As per the Act of Parliament, the NDEB is 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.

The purpose of the NDSE is to test entry-level competencies required of specialists in Canada. The NDSE covers general specialty knowledge including basic sciences, clinical diagnosis, and treatment planning. The level of knowledge required is consistent with Commission on Dental Accreditation of Canada requirements in each of the nine specialties.

Successful completion of the NDSE will allow an individual to obtain licensure as a specialist anywhere in Canada.

There are nine nationally recognized dental specialties in Canada:

1. Dental Public Health
2. Endodontics
3. Oral and Maxillofacial Surgery
4. Oral Medicine and Pathology
5. Oral and Maxillofacial Radiology
6. Orthodontics and Dentofacial Orthopedics
7. Pediatric Dentistry
8. Periodontics
9. Prosthodontics

The NDEB is responsible for developing, administering, and scoring the examinations. To do this, the NDEB appoints an Examinations Committee who, along with the Chief Examiners and staff, oversees all aspects of the examination processes. The responsibilities of the Examinations Committee are outlined in the NDEB By-laws.

The NDSE

The NDSE is a six-hour electronic examination with one or more breaks. All specialties, except Dental Public Health (DPH), had one break and the examination was delivered in two parts. For DPH, there were two breaks and three parts.

The number of questions and question values varied depending on the specialty. Specifics for each specialty can be found in the corresponding parts of the NDSE Protocol.

Each NDSE examination was held in one day at established examination centres in Canada and the United States. Generally, candidates completed the NDSE with time remaining. Consequently, there is no evidence that the NDSE is a speeded test.

Resources for the NDSE were available on the NDEB website and included:

- The Examination format
- The Examination Protocol including the blueprint and exam regulations
- Information on scoring and appeals
- A list of reference texts commonly used in Canadian dental specialty programs
- For Oral Medicine & Oral Pathology, practice files that can be loaded on Leica Aperio ImageScope pathology slide viewings software.
- For Oral and Maxillofacial Radiology, practice files that can be loaded using Invivo Dental Viewer

NDSE Certification

A person shall be granted an NDSE Certificate and have their name entered in the Board's National Register upon presentation of the following documentation:

- A. Proper application to the Board which includes, if applicable, providing evidence to the satisfaction of the Board that the NDSE Candidate is considered in good standing with all Dental Licensing or Regulatory Authorities in all jurisdictions in which the NDSE Candidate has been or is currently registered or licensed;
- B. Evidence, to the satisfaction of the Board, of graduation from an Accredited Specialty Program; and
- C. Evidence, to the satisfaction of the Board, that the person has passed the NDSE described in By-law 23.00.

Part B – Exam Development

Blueprints

The NDSE evaluates a candidate's knowledge and clinical competence at the entry specialty level. The blueprint for each specialty shows the domains and approximate percentage of questions covered in each domain. The blueprints are reviewed annually by the Examinations Committee and approved by the NDEB Board as part of the NDSE protocol.

Table 1: Dental Public Health Blueprint

Dental Public Health Content Area	Approximate % of questions
Assess community oral health status, needs, and resources	10
Diagnose community oral health problems and identify the cause or strength of contributing factors	15
Assess policies, strategies, programs, services, and devices that affect oral health and the provision of oral health services	20
Plan activities or programs that would be worthwhile in improving oral health within the given ethical, legal, political, social, demographic, economic, and environmental context	15
Manage oral health programs	10
Assemble, synthesize, and communicate relevant, accurate and clear information that will enable individuals, families, communities, public and private health organizations, and government decision-makers to improve oral health	20
Conduct education on and research into community oral health problems and services to assure a diverse and competent public oral health workforce and advancement of the specialty	10
Total	100%

Table 2: Endodontics Blueprint

Endodontics Content Area	Approximate % of questions
Biomedical sciences (includes anatomy, physiology, oral histology, oral pathology, oral histopathology, oral microbiology, immunology, biomaterials)	20
Non-surgical root canal therapy	20
Surgical root canal therapy	10
Diagnosis, treatment planning, and patient management	15
Pharmacology	8
Trauma	7
Anesthesia	6
Treatment of medically compromised patient	5
Radiology	5
Research methods	2
Miscellaneous topics (includes prosthodontics, periodontics, orthodontics, ethics, asepsis & sterilization, implantology)	2
Total	100%

Table 3: Prosthodontics Blueprint

Prosthodontics Content Area	Approximate % of questions
Removable complete dental prosthesis	10
Removable partial dental prosthesis	10
Fixed dental prosthesis supported by natural teeth	20
Dental implant supported prosthesis	30
Maxillofacial prosthetics	5
General prosthetic topics (including basic sciences, medical management of dental patients, dental management of medically compromised patients, tooth wear, theories of occlusion, materials)	25
Total	100%

Table 4: Pediatric Dentistry Blueprint

Pediatric Content Area	Approximate % of questions
Growth and development	8
Cariology, preventive dentistry, and anticipatory guidance	8
Restorative dentistry and oral rehabilitation	12
Child development & non-pharmacological behaviour guidance	8
Pharmacological behaviour guidance	8
Pharmacology	5
Oro-facial trauma	10
Medical management	10
Oral diagnosis, oral pathology, oral medicine, oral radiology	10
Periodontology	5
Pulp therapy	10
Infection control and occupational hazards	2
Biostatistics and epidemiology	2
Record keeping and informed consent	2
Total	100%

Table 5: Orthodontics Blueprint

Orthodontics Content Area	Approximate % of questions
Anatomy, growth, and development	17
Physiology	5
Patient management	7
Statistics	6
Biology and physical science	10
Diagnosis	25
Treatment	30
Total	100%

Table 6: Oral and Maxillofacial Surgery Blueprint

Oral and Maxillofacial Surgery Content Area	Approximate % of questions
Temporomandibular disorders	5
Implants	10
Cleft lip and palate, and craniofacial syndromes	5
Dentoalveolar and preprosthetic surgery	10
Medicine	10
Pathology	10
Orthognathic surgery	10
Reconstructive surgery	10
Trauma	15
Anesthesia and sedation	15
Total	100%

Table 7: Oral and Maxillofacial Radiology Blueprint

	Oral and Maxillofacial Radiology Content Area	Approximate % of questions
Part 1	Interpretation of diagnostic imaging of the maxillofacial region	50
Part 2	Radiation sciences	12.5
	Imaging techniques	12.5
	Head and neck anatomy	12.5
	General head and neck pathology	12.5
Total		100%

Table 8: Periodontics Blueprint

Periodontics Content Area	Approximate % of questions
Oral medicine and oral pathology	10
Anatomy, radiology, radiographic interpretation	10
Immunology and microbiology	10
Etiology, physiology, periopathology	10
Patient history and examination	5
Diagnosis	5
Prognosis	5
Treatment of periodontal disease (including evidence-based treatment)	20
Implantology	15
Medically compromised patients and medical emergencies	5
Anxiety, pain management, and pharmacology	5
Total	100%

Table 9: Oral Medicine Blueprint

Oral Medicine Content Area	Approximate % examination
Basic Medical Sciences • General and systemic pathology, orofacial anatomy and physiology • Pharmacology and therapeutics • Immunology • Microbiology • General medicine	15
Developmental conditions Benign and malignant neoplasms Immunological conditions Infectious diseases Disorders of bones and joints Disorders of salivary glands Physical and chemical injuries Metabolic and hormonal disease Orofacial disorders arising from aging, systemic disease, and medical therapies	45
Temporomandibular disorders	10
Oral and dental management of patients with complex medical conditions	15
Orofacial pain and neurosensory disorders	15
Total	100%

Table 10: Oral Pathology Blueprint

Oral Pathology Content Area	Approximate % examination
Microscopic examination	50
Basic medical sciences • General and systemic pathology, orofacial anatomy and physiology • Pharmacology and therapeutics • Immunology • Microbiology • General medicine	15
Developmental conditions Immunological conditions Infectious diseases Disorders of bones and joints (including temporomandibular joint disorders) Disorders of salivary glands Physical and chemical injuries Metabolic and hormonal disease	22
Benign and malignant neoplasms	10
Laboratory pathology (including gross pathology, molecular, immunohistochemistry, tests, electron microscopy, laboratory management)	3
Total	100%

Table 11: Oral Medicine and Oral Pathology Blueprint

Oral Medicine and Oral Pathology Content Area	Approximate % examination
Microscopic examination	50
Basic medical sciences • General and systemic pathology, orofacial anatomy and physiology • Pharmacology and therapeutics • Immunology • Microbiology • General medicine	7
Developmental conditions Benign and malignant neoplasms Immunological conditions Infectious diseases Disorders of bones and joints (including temporomandibular joint disorders) Disorders of salivary glands Physical and chemical injuries Metabolic and hormonal disease	29
Oral and dental management of patients with complex medical conditions Orofacial pain and neurosensory disorders Orofacial disorders arising from aging, systemic disease, and medical therapies	11
Laboratory pathology (including gross pathology, molecular, immunohistochemistry, tests, electron microscopy, laboratory management)	3
Total	100%

Test Construction Process and Validity Evidence

Examination Content

Examiners are content experts at Canadian Faculties of Dentistry or specialists recommended by the RCDC. They were sent preparatory material for review prior to a content development workshop.

Examiners were provided with the assignment for writing content in specific blueprint categories prior to the workshop. Examiners also developed scoring rubrics and scoring rules for new items. During the question development workshops, examiners reviewed, revised, and modified items as required. They ensured the items were in accordance with the blueprint and were at the level of a beginning specialist in Canada. The examinations consisted of a combination of new items and previously used items.

Examination Format

The examination formats used were single correct answer multiple choice questions and one or more correct answers multiple choice questions for all specialties. Some specialties had constructed-response questions (DPH, OMR, OM-OP and Prosthodontics). All specialties except DPH had case-based questions that were associated with images.

All exams used a third party platform for the examination delivery. The following specialties also used additional software:

Dental Public Health (DPH)

One component of the DPH NDSE is a data analysis of dental epidemiologic data delivered through an IBM SPSS® Statistics software data set provided on a PC laptop computer with a standard mouse.

Oral & Maxillofacial Radiology (OMR)

One component of the Oral and Maxillofacial Radiology NDSE consisted in the radiographic interpretation of images. In 2023, they were presented as CBCT volumes with Anatomage Invivo Dental Viewer or simple images. The files were provided on a PC laptop computer with a standard mouse.

Oral Medicine and Oral Pathology (OMOP)

One component of the Oral Medicine and Oral Pathology NDSE was a microscopic evaluation of tissue sections using Leica Aperio ImageScope pathology slide viewing software. The tissue sections were provided on a PC laptop computer with a standard mouse.

Item Selection, Review, Verification, and Production

Following question development, a selection and review meeting was held with a team of examiners to select questions and verify the technical accuracy of the items. This included identifying items of similar content that should not be on the same examination and verifying the representativeness of the content domain and the significance of the content being tested. During this review, questions were subjected to analysis to verify the wording and the correct answer. Should a question need to be reworded, it was either revised for the examination or replaced. Furthermore, items were selected based on several criteria including consistency with the blueprint, taxonomy of cognitive levels, and statistical properties available for any previously used items.

For the selection and review meeting, an electronic exam form was built by NDEB staff. The examination was reviewed for accurate transcription by staff, and then was reviewed by examiners. The layout of the questions and the quality of the images were verified. Examiners consulted with additional subject matter experts when required. The review focused on three things. First, the technical content of the question was verified to ensure that it was consistent with acceptable practices and supported by the literature. Second, a sensitivity review was done to ensure that the question content was not offensive and did not discriminate against candidate subgroups. Third, a language review was done to ensure that the content did not exceed the language level needed to practice dentistry safely and effectively in Canada. All required changes were made, and a second version of the examination was created.

Translation

All NDSE examinations are offered in both official languages. This includes all forms and preparation materials on the NDEB website.

Exams with candidates registered in French were translated. Translation is a multi-stage process. After the examination review, a first translation was performed by a French examiner, who is approved by the Ordre des dentistes du Québec (ODQ). This draft translation was then reviewed by an examiner who is a specialty content expert. A final review by one or more NDEB staff specialists was performed.

The NDEB has developed a detailed glossary of translated terms. This glossary is updated annually. The glossary was made available to the translators to ensure that candidates writing in either official language had equal opportunity to demonstrate their competence. The translation process ensured consistency between English and French versions of the questions.

The examinations offered in 2023 in English and French are found in the Table below.

Table 12: 2023 NDSE Languages for Exams Administration

Specialty	English	French
Dental Public Health	√	
Endodontics	√	
Oral and Maxillofacial Surgery	√	√
Oral Medicine and Pathology	√	
Oral and Maxillofacial Radiology	√	
Orthodontics	√	√
Pediatric Dentistry	√	√
Periodontics	√	√
Prosthodontics	√	

Table 13: NDSE Registrations per Choice of Testing Language in 2023

English	French
137	10

Final Review

The final versions of the examinations were reviewed by NDEB staff specialists in exam format. Various information screens were added to these versions and the exam settings were activated. The first screen consisted of information on the number of sections, time allowed per section, and break(s). The second screen was a non-disclosure agreement, which candidates must accept to continue. There were instruction screens before each part of the exam, and a break screen between parts.

Before the examinations were administered, technical testing took place. NDEB staff ensured that the exam functions as expected and that the various tools provided in the examination software are working.

Staff Support

The following is a summary of the roles involved in the NDEB's test construction and production processes.

Lead Examiner

There is one Lead Examiner per specialty. The Lead Examiner is responsible for the development of the examination including coordination of question development, question selection, monitoring the item bank and results within the guidelines and parameters established by the NDEB as stipulated in the protocol.

Chief Examiner/Assistant Chief Examiner

The Chief Examiner is responsible for providing guidance on NDEB processes to the examiners through the development and grading of the examination.

Executive Director and Registrar

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

NDEB Staff

The Director of Examinations is responsible for the oversight of the examinations department. The Director of Examinations and NDEB staff manage the operational delivery of the examinations. This includes corresponding with examiners, developing administration instructions, production and translation of the examinations, maintenance of the question banks, and arrangements with host institutions and third-party test centres.

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

Test Validity and Reliability

Validity is the degree to which the inferences made about a candidate's knowledge and professional competence based on their examination score are accurate and meaningful. In high-stakes testing, examination items must have a direct link to the domain being tested (i.e., task representation; Downing, 2006). The validity of credentialing examinations is based primarily on how well the examination content reflects the concepts it is intended to measure as outlined in the blueprint. Thus, the goal of a well-constructed NDSE is to make valid assertions about clinical competence through a representative sampling of the content outlined in the blueprint. The content categories or domains reflect both educational programs and the requirements of

specialty practice, and specialists select the content for the NDSE. In addition, each form is built to match the specialty's NDSE blueprint approved by the Board and contained in the protocols.

Reliability

Test reliability refers to the degree to which examination scores for a group of candidates are consistent over repeated administrations of the test and are therefore considered to be dependable and consistent for an individual candidate. Reliability is estimated using a reliability coefficient, which is a unit-free indicator that reflects the degree to which scores are free of random measurement error.

In 2023, reliability with Cronbach's alpha was estimated for the specialty examinations with sufficient sample size for the estimator (20 candidates or greater). Reliability was disattenuated for range restriction (Fife, Mendoza & Terry, 2012). The adjustment was based on average standard deviation of 9% for licensure exams. As a general guideline, a reliability of 0.80 or higher is desirable for a high-stakes assessment (Fabrey & Hartigan, 2009), which the specialties met.

Table 14: 2023 NDSE Reliability for exams with more than 20 candidates

Specialty	2023 Corrected (uncorrected)
Dental Public Health	Not Reported
Endodontics	0.91 (0.91)
Oral Maxillofacial Radiology	Not Reported
Oral Maxillofacial Surgery	0.90 (0.83)
Oral Medicine	N/A
Oral Medicine and Oral Pathology	Not Reported
Oral Pathology	N/A
Orthodontics	0.91 (0.82)
Pediatric Dentistry	0.91 (0.84)
Periodontics	0.89 (0.86)
Prosthodontics	Not Reported

Documentation

Evidence of test validity is collected through multiple means, one of which is the documentation of development and administration procedures. The NDEB makes these documents publicly available. Only confidential material or material that could jeopardize the integrity of the examination is retained internally. To support the various sources of validity evidence, the NDEB produces the following documents:

NDEB By-laws

The NDEB By-laws contain sections related to the NDEB's examination programs. Examples of relevant information include:

- The National Dental Specialty Examination (NDSE) eligibility
- NDSE Certification
- Repeating the NDSE
- Appeals
- Test accommodations
- Misconduct

The By-laws are available on the [NDEB website](#).

NDSE Protocol

The NDSE Protocol contains all the information the candidate needs to prepare to write the NDSE. In addition to providing logistical information, this document is meant to reduce construct irrelevant variance related to testing. The document details the purpose and intended use of the examination. Candidates acquire advance information on examination content, instructions, and other procedures. At a high level, the NDSE Protocol for each specialty contains the following information:

- Content and format
- Instructions
- Sample questions
- Reference texts
- Examination regulations
- Scoring and Passing standard
- Results
- Appeals and rescores
- Repeats

The NDSE Protocol was available in English and French on the [NDEB website](#) in 2023.

Part C – Exam Administration

Locations and Procedures

The NDSE was administered at third-party test centres in Canada and the United States. All examinations were administered in a distraction-free and comfortable environment where candidates were optimally able to demonstrate their competence on the examinations.

The NDEB tried to accommodate location preferences but may have had to offer alternative locations due to space limitation at some examination sites. The examinations were offered in French and English at all centres.

The NDSE was administered for all specialties on June 29, 2023.

Examination locations and number of candidates for the 2023 NDSE are shown in the table below.

Table 15: June 2023 NDSE locations and candidate numbers

Canadian Sites	Total Candidates at Canadian Locations	US Locations	Total Candidates at US Locations
• Halifax, NS • Quebec City, QC • Pointe-Claire, QC • Greater Toronto Area, ON • Ottawa, ON • Winnipeg, MB • Saskatoon, SK • Edmonton, AB • Calgary, AB • Vancouver, BC	103	• Boston, MA • New York area, NY • Columbia, MD • Lansing, MI • Dallas, TX • Houston, TX • Alexandria, LA • Augusta, GA • Boca Raton, FL • Jacksonville, FL • Chicago, IL • Falls Church, VA • Grand Forks, ND • Nashville, TN • Philadelphia, PA • Portland, OR • Portsmouth, NH • Toledo, OH • Fair Oaks, CA • Diamond Bar, CA • Rancho Cucamonga, CA	42

Candidate Orientation and Registration

Detailed information regarding the NDSE was provided on the NDEB website. This included: test format, examination protocol, registration information, fees, and an electronic examination orientation. After registering for the exam, candidates were provided with scheduling instructions to secure their location and exam time at a Prometric test centre. Prometric provided candidates with the exact location of their exam centre and additional site-specific information via email.

Standard check-in procedures were in place for all candidates at each test centre. Candidates were reminded of the rules of conduct. No variation from the examination administration was allowed unless a test accommodation was granted by the NDEB.

Exam Administration Staff

Each third-party test centre had a designated proctor. The proctor's primary responsibility was ensuring the examinations are administered according to NDEB procedures.

The NDEB has developed standard administration procedures for each of the examinations. These procedures were communicated to the third-party delivering the examinations and were included in a document called Client Practices made available to all proctors. The document contained uniform directions for proctors such as the schedule for the examination and security protocols that should be undertaken during the examination. This document ensured that candidates had a similar experience when completing the examination, regardless of where they wrote. Proctors also had an orientation session prior to the examination to review Client Practices. NDEB staff was available during the examinations, by phone, to assist proctors with registration issues and misconduct. Client Practices are reviewed on a regular basis and as required.

NDEB staff was also available during the examination to assist the third-party command centre staff in addressing issues such as permissions, exam authorization problems, technology issues, and emergency situations.

Reporting

The third-party proctors were responsible for completing a report following the administration of the examinations. The reports included any irregularities that occurred that may have disrupted the administration of the examination. The reports also included details regarding any misconduct that occurred prior, during, or after the examination.

Test Accommodations

Pursuant to the NDEB By-laws and policies, test forms or administration conditions may be modified to accommodate candidates requiring testing accommodations. The purpose of test accommodations is to remove construct-irrelevant barriers that would interfere with an examinee's ability to demonstrate their competence. Accommodations may be provided for a disability, medical condition, or religious reason. Candidates must submit a written request prior to the registration deadline and are required to provide supporting documentation.

Accommodations may include an alternate writing date, separate examination room, a reader, or longer examination times. The number of requests for these types of accommodations is small,

and as such, the NDEB is unable to establish the validity of these modified examination forms for this specific population.

Test accommodations represent the only allowable variations in administration conditions, and these variations are documented in detail. In recent years, the number of examination accommodations has been increasing, and most accommodations involve no modifications to examination materials.

There were no test accommodations granted for the June 2023 NDSE.

Part D – Examination Scoring

Standards for Pass/Fail

It is the NDEB's statutory obligation to certify only those who are qualified to enter a dental specialty profession in Canada. In the interest of public health, the NDEB establishes standards necessary to ensure competency.

Standard Setting and Rescaling

Standard setting was performed for each specialty examination (Cizek, 2016, and Impara & Plake, 1997). During the standard setting, teams of specialty examiners set the passing scores for the 2023 NDSE in each specialty. The passing standard reflects the level of performance required of the minimally competent specialist.

For all standard setting meetings, the modified Angoff method (Angoff, 1971 and Hambleton & Plake, 1995) was used to establish a single passing point (or "cut score") for new specialty examination forms (i.e., the score in the examination that differentiates competent from not-yet-competent performance).

Passing Score

Passing scores for the various specialties were recommended by the Examinations Committee and approved by the Board on August 24 2023. The new standards reflecting the minimally competent specialists were applied to the June 2023 examination.

In line with national standards, the NDEB uses a standardized (rescaled) passing score of 75 for all its examinations. Rescaling the passing score has no impact on the difficulty or reliability of the NDEB's examinations.

Scoring

Multiple choice questions were automatically graded in the examination software. For constructed-response questions, examiners were assigned a number of questions to grade remotely in ExamStudio. Several examiners were involved in the grading for OMR, and only one examiner was required for OMOP, DPH and Prosthodontics. Any suggested revisions to the answer key were sent to the Lead Examiner for approval. If approved, the revisions were added to the answer key and provided to all Examiners marking the question to provide the same scoring for all candidates.

All candidates' marks and responses for every question were then exported from the examination software to an Excel spreadsheet and verified for accuracy by staff. A third-party

psychometrician reviewed the NDSE spreadsheet and identified questions that should be reviewed based on statistical performance.

Statistical Analysis

For each specialty, a key validation review workshop was convened that included the Lead Examiner, the Chief or Assistant Chief Examiner, and NDEB staff. During this meeting, the following were reviewed:

- Question Performance – item average (difficulty) and item discrimination values
- Comments from the graders about individual items
- Examination Performance
- Candidate Performance

The accuracy of the answer keys was verified, and non-performing or compromised items were eliminated from the examination.

Questions were flagged based on the following criteria:

- Item difficulty: Less than 0.30. This is not used for specialties with an insufficient number of candidates; typically, these include the Dental Public Health, Oral Medicine and Oral Pathology, and Oral Radiology examinations.
- Item discrimination: Less than or equal to 0 (unless the item difficulty is greater than 0.95). Because of the small number of candidates taking each NDSE, the item discrimination will be interpreted with caution. This index is not used for specialties with an insufficient number of candidates; typically, these include the Dental Public Health, Oral Medicine and Oral Pathology, and Oral Radiology examinations.
- Content-related comments provided by the examiners. This may include comments provided by Francophone examiners regarding possible English to French translation issues.

The Lead Examiner and Chief Examiner reviewed the identified questions to:

- confirm the accuracy of the answer key and to identify potential ambiguities, including the possibility of multiple correct answers
- identify potential “trick” items or unclear wording

The Lead Examiner and Chief Examiner used their expert judgement to determine if a question should be voided (i.e., will no longer be used on examinations), if it was unclear, ambiguous, tricky, or if it presented a translation issue.

Subgroup Differences

Due to the small number of candidates taking each NDSE, in particular the small number of French candidates, no formal statistical analysis of the difference between English and French candidates at the item and test level is performed.

Reporting

Candidate Results

Results were posted on a secure website within ten weeks of the administration date.

Candidates accessed their results by logging in to their online profile. Candidates received an email notification when results were posted. Successful candidates were given only a pass result. Failing candidates received their re-scaled score and the pass mark for the examination. This allowed failing candidates to determine how close they were to passing. They were also provided with instructions on how to appeal their score.

Candidate results and records are kept pursuant to the NDEB's internal document retention policies and procedures. All information related to the NDSE (e.g., test protocol, reports) is retained.

Other Reporting

A general statistical performance report for the NDSE was prepared and presented to the Examinations Committee and Board. A summary of pass rates was also posted on the NDEB website. Results for specialties with less than 10 candidates a year were not reported.

Successful candidates who have provided all the required documentation will have their name and NDSE certificate information included in the NDEB National Register. Canadian dental regulatory authorities can consult the online NDEB National Register to confirm that an individual is certified.

Appeals

Candidates who received a failing grade could, within 30 days of the release of results, request either a rescore or a regrade. This was done through the candidate's online profile. A fee was charged for manual rescoring and for manual regrades. Fees were posted on the NDEB website.

Rescore

A rescore is a verification of the calculation of the final grade. The purpose is to confirm that no errors were made during the scoring process. The score produced by the manual rescore is the final grade.

Regrade

A regrade is a re-evaluation of performance using the original grading rubric. Only examinations with constructed responses, Dental Public Health, Oral and Maxillofacial Radiology, Prosthodontics, and Oral Medicine and Oral Pathology examinations were eligible for regrades. During a regrade, two examiners who are specialists in the discipline and were not involved with the initial grading of the NDSE individually regraded the examination using the original answer

key. They then met with staff and the Chief Examiner, who acted as a facilitator, to resolve disagreement(s). A new NDSE score was then calculated. The score produced by the manual regrade was the final mark.

Other Appeals

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

- a decision of the Examinations Committee regarding misconduct
- compassionate grounds
- procedural grounds (conduct of an examination)

A summary of all 2023 NDSE appeals can be found in the following table.

Table 16: June 2023 NDSE Appeals

Type of Appeal	Number Received	Granted	Grades Changed	Decision Changed (from Fail to Pass)
Verification of score	10	-	0	0
Regrade	3	-	2	0
Compassionate Appeal	-	-	-	-
Conduct of the Examination	-	-	-	-

Part E – Security

The NDEB undertakes several measures to ensure the security of its processes.

Credential Verification

Credential verification of applicants is performed to ensure that applicants to all processes are eligible for participation. While the credential verification process differs depending on the process applied for, each process includes source verification with the university to confirm the applicant's graduation.

In 2023, the credentials of new applicants to the NDSE were verified.

Candidate Information

In 2022, the NDEB launched an online candidate portal NDEBConnect using a third-party platform. Candidate accounts are password protected.

In-house, the NDEB has candidate information stored on secure NDEB servers. This information is only accessible to staff with valid network accounts and drive permissions.

Administration

The NDEB is in regular communication with on-site staff to keep them apprised of changes to administration processes and emphasize the importance of security measures such as standardized check-in procedures and restricted items. Proctors, Test Administrators, and invigilators are trained to identify, manage, and report misconduct.

On-site Security

For examinations delivered electronically by a third-party, proctors use hand-held metal detector wands to scan all candidates in the test centers prior to each entry into the test room. Proctors patrol the test room regularly and monitor candidates by video. Proctors document any irregularities and communicate with the NDEB as necessary on and after the exam.

Exam Security

The NDEB's sensitive information is stored on a restricted server and in secure restricted databases. Examination files and applications are not accessible to all those who work for the NDEB but are limited to those users who require access.

The NDEB has a policy that written exam content under development is never sent via email. Rather, these files are uploaded to our password-protected secure sites for sharing and collaboration. Users are limited to what if anything they can view, edit, upload and download based on their roles.

All NDEB portable devices use encryption so no one can access anything on the device without the proper credentials.

There are guidelines for the retention of test materials.

Part F - Outcome Summaries

This report provides summary information on the structure of the 2023 NDSE, as well as statistical summaries at the item and test levels.

Each NDSE sample of candidates consists of first-time Canadian-trained, first-time American-trained candidates, first-time candidates trained in non-accredited programs that completed DSATP, along with repeat candidates.

NDSE Candidates

Table 17: Number of Candidates by Specialty

Specialty	2023 Candidates
Dental Public Health	1
Endodontics	21
Oral Maxillofacial Radiology	3
Oral Maxillofacial Surgery	22
Oral Medicine	0
Oral Medicine and Oral Pathology	1
Oral Pathology	0
Orthodontics	34
Pediatric Dentistry	23
Periodontics	31
Prosthodontics	11
Totals	147

As a Canadian examination program, the target candidate group (or “reference group”) for calculating overall pass rates is candidates who are graduates of Canadian programs. One should expect non-target trained candidates, such as graduates of non-accredited programs and graduates of American programs, and those candidates retaking an examination to perform more poorly than the Canadian reference group. The following table shows the performance of candidates trained in Canadian programs compared to that of candidates trained in American programs. The column “Canadian programs” includes candidates that have completed a Dental Specialty Assessment and Training Program (DSATP). First and second time test takers are lumped together.

Table 18: Results by Country

Cohort 2023		
Graduates of Canadian Programs	Number of test takers	79
	Pass rate %	86
Graduates of American programs	Number of test takers	68
	Pass rate %	72
Total	Number of test takers	147
	Pass rate %	80

Table 19: Results by Number of Attempts

	Attempt	NDSE 2023
Number of Candidates	1	117
	2	23
	3	6
	4	1
	Total	147
Pass (#)	1	97
	2	17
	3	3
	4	0
	Total	117
Pass (%)	1	82.9
	2	73.9
	3	50.0
	4	0.0
	Overall	79.6

Results by Specialty

The following is a summary of the results for each specialty. Numbers are based on all candidates who sat the examination.

Because of the very small number of candidates, statistical results are not provided for Dental Public Health, Oral and Maxillofacial Radiology, and Oral Medicine and Oral Pathology to maintain confidentiality.

Table 20: 2023 Statistics for the NDSE in Endodontics

Results of the NDSE in Endodontics	
Number of Candidates	21
Pass (#)	15
Pass (%)	71
Passing Raw Score (%)	63
Total Angoff Standard Error of Measurement (%)	3.23
Re-Scaled Score Range	46 - 88

Table 21: 2023 Statistics for the NDSE in Oral and Maxillofacial Surgery

Results of the NDSE in Oral Maxillofacial Surgery	
Number of Candidates	22
Pass (#)	19
Pass (%)	86.36
Passing Raw Score (%)	58
Total Angoff Standard Error of Measurement (%)	3.89
Re-Scaled Score Range	50 - 93

Table 22: 2023 Statistics for the NDSE in Orthodontics

Results of the NDSE in Orthodontics	
Number of Candidates	34
Pass (#)	31
Pass (%)	91
Passing Raw Score (%)	60.02
Total Angoff Standard Error of Measurement (%)	3.80
Re-Scaled Score Range	42 - 99

Table 23: 2023 Statistics for the NDSE in Pediatric Dentistry

Results of the NDSE in Pediatric Dentistry	
Number of Candidates	23
Pass (#)	17
Pass (%)	73.91
Passing Raw Score (%)	67
Total Angoff Standard Error of Measurement (%)	2.95
Re-Scaled Score Range	63 - 95

Table 24: 2023 Statistics for the NDSE in Periodontics

Results of the NDSE in Periodontics	
Number of Candidates	31
Pass (#)	29
Pass (%)	93.56
Passing Raw Score (%)	61.50
Total Angoff Standard Error of Measurement (%)	3.20
Re-Scaled Score Range	61 - 105

Table 25: 2023 Statistics for the NDSE in Prosthodontics

Results of the NDSE in Prosthodontics	
Number of Candidates	11
Pass (#)	5
Pass (%)	45.45
Passing Raw Score (%)	59.0
Total Angoff Standard Error of Measurement (%)	3.50
Re-Scaled Score Range	55 - 85

Part G – Appendix

Appendix A - References

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