2024

Technical Report

National Dental Examination of Clinical Competence (NDECC®)

Contents

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 candidates 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 NDECC, administered in 2024. It provides a summary of the information needed to support the validity and reliability of the examination. 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.

Background

The NDEB Equivalency Process was established in 2011 at the request of the Canadian Dental Regulatory Authorities Federation (CDRAF) to provide an alternative pathway toward licensure for dentists trained in non-accredited dental programs. At that time, the only existing pathway was the completion of a Qualifying Program (QP) at selected Faculties of Dentistry across Canada. QPs were established in 1997-1998 and were originally intended to be 22-month non-degree programs. Over time, they were all converted to Qualifying/Degree completion programs, 2.5 or 3 years in duration, and the number of positions available across Canada per year never exceeded one hundred.

In Canada, the Commission on Dental Accreditation of Canada (CDAC) is the organization responsible for accrediting dental education programs. CDAC develops and maintains national accreditation requirements for educational programs and evaluates programs using defined processes. The general dentistry programs accredited by CDAC, the American Dental Association's Commission on Dental Accreditation (CODA), the Australian Dental Council (ADC), the Dental Council of New Zealand (DCNZ) and the Irish Dental Council are considered accredited. Graduates of accredited programs have undergone a dental education program that demonstrably met the requirements of the CDAC. In contrast, graduates of non-accredited programs have undergone dental education programs that have not demonstrably met the requirements of the CDAC. Dental education and clinical experience vary widely around the world. Non-accredited programs may differ from accredited programs in terms of the scope of the programs, clinical experience, the evaluation of students, etc.

The purpose of the three examinations of the NDEB Equivalency Process is to verify that graduates of non-accredited programs are equivalent to graduates of accredited programs prior to allowing them to pursue the certification examination.

The following diagram illustrates the Equivalency Process pathway for a graduate of a non-accredited dental program to obtain NDEB certification.

Entry to Practice: Graduates of Non-Accredited Dental Programs[1]

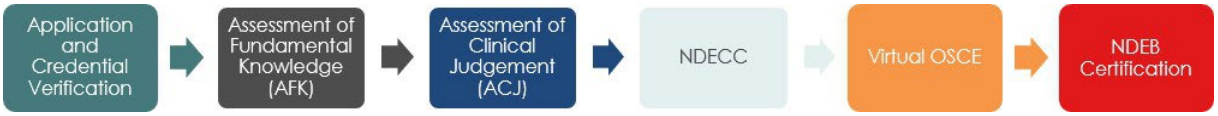

Diagram 1

Part A: Exam Development – General

Purpose and Format of the NDECC

The purpose of the NDECC is to assess clinical competence of dentists trained in non-accredited programs. The NDECC is comprised of two components over a two-day examination. The Clinical Skills component assesses clinical skills and techniques relevant to current Canadian standards. The Situational Judgement component assesses judgement required for solving problems in work-related situations. The NDECC is the only time a graduate of a non-accredited dental program has their clinical skills assessed prior to obtaining a license to practice dentistry in Canada.

Blueprint

The NDECC Blueprint was developed by a group of general dentists from different backgrounds (recent graduates, established practitioners, academics, private practitioners) in April 2021 and approved by the Board in 2021.

The Clinical Skills component blueprint consists of basic preparations and restorations that entry-level dentists must be able to offer to their patients. The procedures must be performed while following infection control and safety protocols.

The Situational Judgement component blueprint was developed in response to a request of the CDRAF. The intent is to examine communication and judgement as it relates to the practice of dentistry in five cognitive domains unrelated to the psychomotor components and manual dexterity necessary for the clinical practice of dentistry which are evaluated in the Clinical Skills component. The NDECC Situational Judgement blueprint is aligned with the competencies of the Association of Canadian Faculties of Dentistry Educational Framework for the Development of Competency in Dental Programs.

Component 1: Clinical Skills

Table 1: NDECC Clinical Skills Blueprint

Requirements
Class II amalgam preparation
Class II amalgam restoration
Class II composite resin restoration
Class IV composite resin restoration
Endodontic access cavity preparation
Crown preparation
Provisional crown restoration **The provisional crown restoration is fabricated on the candidate's crown preparation.*
Infection Control and Safety

Component 2: Situational Judgement

Table 2: NDECC Situational Judgement Blueprint

Requirements
Communication and Collaboration
Health Promotion
Patient-Centered Care
Practice and Information Management
Professionalism

Grading Rubric Development

The rubrics were developed in consultation with representatives from Canadian universities to ensure a level of assessment equivalent to that of a graduate from a Canadian dental program. The panel included clinical subject matter experts along with experts in dental education and

assessment. All requirements are graded using a Pass/Fail system. A Pass can be achieved by receiving a Minimally Competent or Competent grade. A Fail is obtained by receiving a Not Competent grade or a critical error. Critical errors for the clinical skills component are identified as errors that prevent the evaluation of the teeth/restorations or cause irreversible damage to the patient (e.g., preparing the wrong tooth). For the Situational Judgement component, the Not Competent category includes critical errors, unprofessional behaviours or decisions/actions/recommendations that would endanger or be detrimental to a patient, resulting in a failing grade for the station.

Validity and Reliability

Evidence of validity for a certification examination's scores is essential for a program to make confident interpretations and decisions about candidate results. Multiple sources of validity evidence can be evaluated to support the purpose of the examination. The primary sources come from whether the content of the examination is associated with job-related practice, and that processes used to create the examination, as well as the results obtained from candidates, are consistent with the professional domain of interest and the goals of the program. The NDEB has conducted several studies (internal and published) that support validity claims for the examination program. For certification programs, the results from a job analysis or practice analysis provides this foundational information.

Additionally, evidence of reliability for scores, graders, and decisions is vital to a certification examination because it provides an estimate of confidence. Different methods are used to estimate each potential source that could threaten reliability. Because examiners' judgements are particularly relevant to the NDECC program, estimates of grader performance and the overall decisions they produce are most important. For interpretation, the higher the reliability estimate, the greater the confidence that NDEB has about whether the outcomes of the examination – scores and decisions – would likely be reproduced over repeated administrations.

The examinations in the Equivalency Process are built to be consistent with the NDEB Knowledge Skills and Abilities (KSAs) Framework (Appendix B). The content categories reflect both the educational programs and the demands of practice.

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. These documents are also updated frequently (generally on an annual basis) to reflect the most recent information.

Publications, resources, and external evidence reinforcing the validity and reliability of NDEB processes can be found in Appendix A and C.

Part B: NDECC Staff

The following is a summary of the roles involved in the NDECC test construction, production, administration, and evaluation processes.

NDEB Appointed Staff

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

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.

Director of Examinations

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 NDECC. This includes:

- corresponding with the Chief Examiner/Assistant Chief Examiners
- providing directions to the NDECC manager
- corresponding with invited examiners
- producing and translating examination documents
- preparing examination materials and supplies

Chief Examiner and Assistant Chief Examiner(s)

The Chief Examiner and Assistant Chief Examiner(s), in consultation with the Executive Director and Registrar, the Director of Examinations and other NDEB staff, are responsible for overseeing the NDECC including:

- appointing appropriate personnel for examination administration and evaluation
- selecting the specific configurations for examination administration
- drafting Clinical Skills and Situational Judgement documents
- periodically reviewing and updating examination documentation
- directing staff on the preparation and assembly of materials
- reviewing typodonts: position, alignment, occlusion, and tightness of examination teeth
- overseeing the selection of Situational Judgement scenarios during Question Selection workshops
- training and debriefing simulated persons/patients to ensure consistency in examination delivery

- preparing training and calibration materials including PowerPoint presentations and example requirements for calibration
- directing the typodont and document setup for evaluation
- providing orientation to the evaluators and facilitators
- providing direction to facilitators and evaluators throughout the evaluation session
- providing daily orientation to the candidates
- responding to candidates email inquiries

NDECC Manager and Support Staff

Staff members are onsite to:

- assemble typodonts
- prepare the clinic prior to examination administration
- maintain equipment and supplies
- prepare the Situational Judgement rooms for examination administration
- provide support during examination administration
- secure NDECC materials and equipment
- prepare the evaluation sessions
- provide support during the evaluation sessions
- provide support for results processing
- ensure compliance with NDEB standardized processes and procedures

Simulated Persons/Patients

There are five simulated person/patient scenarios for each NDECC Situational Judgement administration. Simulated persons/patients are responsible for acting out specific scenarios and for providing an environment that allows candidates to demonstrate their skills.

NDEB Examiners

NDEB Examiners are appointed by the Board on the recommendation of a Dental Regulatory Authority, a Faculty of Dentistry, the Royal College of Dentists of Canada or the Canadian Armed Forces.

Content Experts

Examiners that are content experts developed Situational Judgement scenarios according to the blueprint during a series of workshops. They also wrote simulated persons/patients' scripts and grading rubrics. The scenarios were consistent with Canadian dental practice, were supported by the approved list of references, and were at the level of a minimally competent recent Canadian graduate.

Invigilators

Invigilators were on-site during the administration of the Clinical Skills component. They were responsible for:

- setting up the clinic
- monitoring compliance with the Protocol
- addressing candidates concerns during the administration of the examination
- reporting misconduct
- reporting medical incidents
- evaluating infection control and safety based on the grading criteria
- checking submitted provisional restorations for breakage

Supervisors

For each administration, one of the Invigilators was designated as a Supervisor. A Supervisor was onsite during the Clinical Skills component administration. In addition to invigilator tasks, they were responsible for:

- making various announcements throughout the examination
- managing situations during the administration of the examination
- managing emergency protocol if required
- completing a Supervisor report at the end of each clinical examination

Evaluators

Evaluators are examiners that grade the Clinical Skills typodonts and Situational Judgement responses. They assigned grades based on the established criteria listed in the NDECC Protocol during the Evaluation Sessions.

Facilitators

Facilitators are examiners that reviewed the grades given to the candidates by the individual evaluators in the case of a disagreement between evaluators.

Part C: Examination Administration

Candidate Orientation

Detailed information regarding the NDECC is provided on the NDEB website including:

- NDECC Protocol
- NDECC Practical Guide for Candidates
- NDECC Situational Judgement Reference List
- Tips for Taking the NDECC
- NDECC Situational Judgement Example(s)
- Video for "What to expect in the NDECC"
- NDEB By-laws

The NDECC Protocol includes the list of requirements and details of the criteria used in the evaluation process and Clinical Skills grading criteria rubrics. In addition, NDEB has developed policies and procedures for development, validation, administration, and maintenance of its examinations to support the validity, reliability, and fairness for candidates.

The website also includes information on the test format, registration information, dates and fees. After registering for the examination, candidates are provided additional site-specific examination information.

The quality and comprehensiveness of the information on the website about the NDECC represent best practices in transparency and accountability. The objective information available ensures fairness in allowing candidates to prepare and practice the requirements. The website is thorough and available to interested individuals prior to application.

NDECC Test Centre

The NDECC took place at the NDECC Test Centre located in Ottawa. The Test Centre typically accommodates 10 candidates for each Clinical Skills component administration and 10 candidates for each Situational Judgement component administration. One hundred and twenty-five examination days were offered and were administered throughout the year.

Candidates were provided a locker to secure their belongings. They had access to a candidate lounge for use during breaks. There was a mandatory lunch break, and they were permitted to take breaks anytime during the Clinical Skills component. A small private room was available for nursing mothers, for prayer and meditation. The private room could be reserved for specific times if candidates anticipated requiring it.

In the clinic, candidates also had access to a laboratory equipped to polish provisional restorations.

Exam Setup

The Test Centre was set up prior to each examination administration.

In the clinic, candidates are assigned to specific simulators based on seating charts prepared by NDECC staff. Invigilators verify that the typodont ID number on each typodont match the simulator assignment floorplan. Each candidate receives a typodont with brand new teeth and new gingiva, and a practice arch. Candidates are also provided with a communication form to communicate concerns they have during the NDECC. Invigilators verify the setup of each manikin and typodont, including the occlusion. The interincisal opening of the typodont are adjusted using a standardized measurement device. Invigilators confirm that there are no irregularities in the typodont.

NDECC staff set up the Situational Judgement rooms/stations. Candidates are assigned to specific stations based on seating charts prepared by NDEB staff. NDECC staff verify that appropriate documentation and answer sheets are available in each Situational Judgement room and match the scenarios room assignment map. NDECC staff also verify that all scenario videos/MP4s for the day are uploaded and projected on monitors in the correct room and that monitors, microphones and cameras work properly prior to the examination.

Training and Calibration of Invigilators Prior to the Examination

Each invigilator receives documentation and instructions by email before the NDECC Clinical Skills administration. This includes:

- Examiners manual
- NDECC Clinical Skills Instructions
- NDECC Invigilator Orientation and Calibration PowerPoint
- Link to the Practical Guide for Candidates
- Link to the NDECC Protocol

Invigilators are required to read and complete the orientation and calibration before the NDECC Clinical Skills administration. On the first day of their invigilator assignment at the NDECC Test Centre, invigilators are required to confirm that they have completed the Invigilator Orientation and Calibration prior to invigilating.

Training of Simulated Persons/Patients Prior to the Examination

Simulated persons/patients are required to complete training when onboarding. For each Situational Judgement examination administration, they are given a script which contains information and instructions specific to their scenarios for that day. After reviewing their scripts, the Chief Examiner and NDECC staff are available to discuss the scenarios and scripts prior to the examination administration. Simulated persons/patients are instructed to enter the room when the hallway clock indicated 10 minutes remaining in the station if the candidate has not invited them to enter the station by that time. Strict adherence to the NDECC schedule and procedures for uniform administration of the NDECC are emphasized.

Candidate Check-in and On-site Orientation

Candidates provide government-issued photo identification before entering the Test Centre and receive their NDECC ID card with the schedule of their specific room assignments for the Situational Judgement stations printed on the back. They store their personal belongings in their assigned lockers.

Clinical Skills Component

Candidates taking the Clinical Skills component are directed to their pre-assigned simulator in the clinic where they watch a Clinical Skills orientation video prior to the examination start. Invigilators are available to assist candidates and confirm that the equipment is in working order. During this time, candidates are permitted to prepare teeth on supplied practice arches.

Situational Judgement Component

After check-in, candidates are directed to the candidate lounge to watch a Situational Judgement orientation video.

Prior to the start of the examination, candidates are guided from the candidate lounge to the Situational Judgement hallway. Candidates are directed to their first room/station. Candidates progress through the 10 rooms during 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 a candidate'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 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 examinations 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 increased, and most accommodations involve no modifications to examination materials.

Test accommodations granted for the NDECC in 2024 can be found in Table 3.

Table 3: 2024 NDECC Test Accommodations

Accommodation	Numbers Requested	Numbers Granted
Alternate schedule	7	7
Approved item in exam room (ie. medical supplies, food, cushion, etc)	5	5
Religious accommodation	2	2
Strategic seating	1	1

Part D: Evaluation and Results

Evaluation Sessions

NDECC typodonts are graded at Evaluations Sessions. For examinations in 2024, there were four Evaluation Sessions in March, June, September and December.

Evaluation Set up

During the Evaluation Sessions, candidates' typodonts are set up in numerical sequence with their relevant communication forms, grading verification sheets and provisional crowns. Only candidates' ID numbers are visible. In addition, tables are set up for each requirement, where evaluators and facilitators perform their calibration exercises and store their calibration resources, guideline documents and grading criteria for their assigned requirements. Each evaluator and facilitator is issued a tablet computer for grading.

There is a separate room set up to grade Situational Judgement requirements. Evaluators are seated at tables of four. Each evaluator is provided with two tablet computers, one for grading and one for viewing recorded videos and written answers.

Training and Calibration

The Evaluation Sessions starts with an introduction to the Equivalency Process, and the purpose and administration of the NDECC. Evaluators assess candidate performances relative to the standard of recent graduates from a Canadian dental program. For the Clinical Skills requirements, evaluators and facilitators evaluate only one requirement. For the Situational Judgment component, each evaluator is assigned a mix of written and simulated patient/person scenarios. They grade all candidates in an examination administration for these scenarios.

Detailed information regarding the calibration of evaluators and facilitators for the Clinical Skills component and Situational Judgment component can be found in the relevant sections of the Technical Report.

Evaluation Process

The progress of the Examiners and Facilitators is monitored in the grading software and reports are generated to review grades and assign facilitation tasks. Reports are consulted to ensure that grading for each component is complete, and that any necessary facilitation is assigned and accomplished.

Reporting Results

Reporting Results

Once all grades are finalized, final results reports are generated, verified and compiled for each examination component, ready for final review. Following all reviews and verifications, the results are uploaded to the candidate registration software for final verification and then released to candidates. Results of candidates who submitted appeals are withheld by the NDEB until the appeal is heard, after which they are released.

Results are provided to candidates using the NDEB's online portal within eight weeks of their respective evaluation session. Candidates receive an email notification once results are posted. They have to log in to view their overall results and their Pass or Fail grade for each of the component requirements.

Example of a candidate's result report

NDECC - Clinical Skills — **Fail**

Requirement	Grade
Class II Amalgam Preparation	Fail
Class II Amalgam Restoration	Pass
Class II Composite Resin Restoration	Pass
Class IV Composite Resin Restoration	Pass
Endodontic Access Cavity Preparation	Pass
Crown Preparation	Pass
Provisional Crown Restoration	Pass
Infection Control and Safety	Pass

NDECC - Situational Judgement — **Pass**

Each Situational Judgement requirement has two stations. You must pass six of 10 stations to be successful. You cannot fail both stations for the same requirement.

Requirement	Grade
Communication and Collaboration	Pass
Communication and Collaboration	Fail
Patient-Centered Care	Fail
Patient-Centered Care	Pass
Practice and Information Management	Fail
Practice and Information Management	Pass
Professionalism	Pass
Professionalism	Pass
Health Promotion	Pass
Health Promotion	Pass

Appeals

The appeal mechanism for the NDECC is a verification of score. This is a verification of the grade calculations for each Situational Judgement station and each Clinical Skills requirement. This verification does not involve a re-grading of the typodont or the Situational Judgement stations.

Candidates who receive a failing grade on one or both components of the NDECC can request a verification of score within one month of the release of results by applying to the Board to have their examination score verified.

A fee is charged for a score verification. Fees are posted on the NDEB website.

Other Appeals

- *Appeals of the Conduct of the Examination*

  An appeal of the conduct of an examination is a request to void an examination attempt because of an irregularity or inconsistency that occurred during the examination.

  If, during the conduct of an examination, the candidate believes that there may be irregularities or inconsistencies in the conduct of the examination that are preventing them from demonstrating their ability with the subject matter of the examination, they must immediately report the matter to the onsite staff at the examination centre.

  Additional details can be found on the NDEB website and in the NDEB By-laws and Policies.

- *Compassionate Appeals*

  Compassionate appeals must be submitted in writing within seven days of the examination to info@ndeb-bned.ca.

  Information regarding compassionate appeals can be found on the NDEB website and in the NDEB By-laws and Policies.

There was one Compassionate Appeal and one Appeals of the Conduct of an Examination that were reviewed in 2024. A summary of the appeals for Clinical Skills is below.

Table 4: 2024 NDECC Appeals for Clinical Skills

Type of Appeal	Numbers Received	Granted	Grades Changed
Verification of Score	219	0	0
Compassionate Appeal	1	0	0
Conduct of the Examination	1	0	0

A summary of the appeals for Situational Judgement is below.

Table 5: 2024 NDECC Appeals for Situational Judgement

Type of Appeal	Numbers Received	Granted	Grades Changed
Verification of Score	149	0	0
Compassionate Appeal	0	0	0
Conduct of Examination	0	0	0

Part E: Security

The NDEB takes 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.

Candidate Information

The NDEB uses an online candidate portal called NDEBConnect. 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 NDECC 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. Supervisors and evaluators are trained to identify, manage, and report misconduct.

Onsite Security

The NDECC staff stores all physical examination material in a secure, locked area. All electronic materials are on secure password-protected servers.

The Test Centre is monitored through closed-circuit television (CCTV). Candidates entering the Test Centre are required to provide government-issued photo identification for comparison to material sent to the NDEB during the application process.

Candidates are required to leave their personal belongings in lockers located outside of the Test Centre. Their access to the Test Centre is limited to certain areas only. They must be accompanied by NDEB staff to access certain areas. These security measures help maintain the integrity of the examination by limiting exposure to examination materials.

Exam Security

The NDEB's sensitive information is stored on our restricted servers and in secure restricted databases. Access to examination files and applications is restricted and limited to those users who require access only.

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 in what 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.

Copyright

The NDEB periodically monitors online forums for exam content that is shared. Results of the monitoring are provided to senior staff who follow-up with legal action, as needed.

Part F: Clinical Skills Component

This section describes the development, test specifications, format of the examination, and criteria used to assess competencies for the Clinical Skills component of the NDECC.

Exam Development

Exam Format

The Clinical Skills component is a one-day examination during which candidates perform seven clinical requirements on simulated patients (manikins) in a clinical setting. The requirements assess clinical skills and techniques relevant to current Canadian standards and must be performed as if the candidates were working with actual patients. An eighth requirement is for candidates to follow accepted infection control and safety measures during the examination.

Candidates were expected to use their judgement and follow accepted clinical care guidelines and standards. The requirements could be performed in any order.

Exam Content

The teeth on which the requirements were performed were selected to create various configurations that fit in one typodont. The configurations were balanced in terms of difficulty. The configurations were approved by the Chief and Assistant Chief Examiner(s) prior to launching the examination.

Content Validity

Candidates' performances were evaluated relative to the standard of a recent graduate from a Canadian dental school.

To ensure that the examination is a sampling from a range of potential demonstrations of these foundational skills, examination administrations had different typodont teeth configurations. Comparability was initially evaluated by subject matter experts to ensure that alternate configurations continue to represent entry-level performance. Statistical analysis was conducted after each Evaluation Session. The difficulty of typodont teeth configurations was reviewed.

Equipment, Materials, and Instruments Selection

The clinic is equipped with dental simulators (A-dec) fitted with monitors, manikin heads and typodonts.

All necessary equipment, materials, and instruments, as detailed in the NDECC Practical Guide for Candidates, were provided to candidates. The materials are consistent with materials commonly used in Canada.

Candidates received detailed information on the simulated teeth used in the examination in the NDECC Practical Guide for Candidates. Kilgore International has teeth available for sale to individuals, allowing candidates to become familiar with the teeth used in the NDECC. For some of the requirements, Nissin manufactures custom teeth for the NDEB, and these are only available to the NDEB. However, Kilgore International has teeth with comparable preparations available for candidates to purchase.

On September 30, 2024, the NDEB switched from using the Kilgore International 200 series of teeth to the 700 series of teeth.

Exam Administration

At the examination start time, the requirements for the day are displayed on candidates' monitors.

Before starting, candidates inspect their typodonts for defects. If a candidate reports a defect on an examination tooth and if it is confirmed by an invigilator that it would affect the procedure, the tooth is replaced. If a tooth fracture is reported after a candidate has started the procedure, and it is confirmed by the supervisor, then the candidate is given the option to keep working on the defective tooth or have the tooth replaced, depending on the defect.

Candidates who experience an undue delay because of clinic equipment failures or other circumstances are given time extensions by an invigilator. Time delays are recorded on the Time Delay Forms. Time extensions are granted for cumulative delays of five minutes or more.

Various time announcements are made by the supervisor. Before the end of the examination, candidates place their provisional crown in a clear crown container. Invigilators remove typodonts from manikins and NDEB staff pack the typodonts, provisional crowns and the communication forms.

Infection control and safety are graded by invigilators throughout the Clinical Skills examination administration.

Exam Grading

Calibration

Facilitators are given instruction in the use of the tablet computers for grading and facilitation procedures.

The calibration of facilitators takes place the day prior to the Evaluation Session. The Chief Examiner and facilitators review the grading criteria for the teeth selected for the NDECC. The facilitators for each requirement select six typodonts from the NDECC typodonts that represent different levels of performance for their requirement. First, they individually grade their requirement for each of the six typodonts. Then the facilitators discuss their grades to reach an agreement on the final grade for each typodont.

Calibration of evaluators happens on the morning of the first day of the Evaluation Session. Evaluators meet with facilitators to discuss the grading criteria for their requirement. Evaluators then grade the six typodonts selected by the facilitators for their requirement. They are required to understand and agree with the six calibration evaluations of the facilitators prior to proceeding with the evaluation process.

Evaluation Process for Clinical Skills

Typodont Requirements

Examination teeth are graded in the typodonts. Each requirement is graded independently by two evaluators. If there is any disagreement in the grade or the errors selected between the two evaluations, NDEB staff assign the typodont to a designated facilitator. A facilitator reviews the typodont, the grades and assigns the appropriate grade. Facilitators are advised to look for patterns of grading discrepancies amongst evaluators. If such patterns are noted, facilitators re-calibrate the evaluators involved.

Each restorative and endodontic requirement is evaluated based on three, four, or five criteria depending on the requirement. Each criterion is graded individually. If all the requirements is graded in the “Competent” or “Minimally Competent” category, this results in an overall grade of Pass. Any requirement graded as “Not Competent” results in an overall grade of a Fail.

Table 6: Typodont Requirements Grading

Grade	Category	Narrative
Pass	Competent	Best clinical outcome. Optimal preparation and/or restoration. No errors.
	Minimally Competent	Improvements could be made but the clinical outcome is acceptable. Some overpreparation, under preparation, damage or tissue trauma as defined in the criteria.
Fail	Not Competent	Errors are correctable but indicate significant lack of clinical skills or judgement and compromise clinical outcome. Errors are not correctable and compromise clinical outcome. Errors requiring alternative treatment (e.g., more extensive restoration, extraction, root canal treatment).

Infection Control and Safety - January 1 – September 29, 2024

Infection Control and Safety were assessed by invigilators throughout the clinical skills component administration.

The grade was determined by the number of infection control errors occurring during the examination. More than three errors resulted in a failing grade. Repeatedly making the same error during the examination counted as one infection control and safety error.

Table 7: Infection Control Requirement Grading

Number of Errors	Requirement Grade
3 or fewer infection control and safety errors	Pass
More than 3 infection control and safety errors	Fail

Infection Control and Safety - September 30, 2024 – December 31, 2024

On September 30, 2024, new Infection Control and Safety grading criteria became effective. Following an audit of the Infection Control and Safety Guidelines, it was determined that allowing more than two errors could significantly compromise the safety of both patients and staff. As a result, the guidelines were revised to permit no more than two errors. Infection Control and Safety were assessed by invigilators throughout the clinical skills component administration.

The grade was determined by the number of infection control errors occurring during the examination. More than two errors resulted in a failing grade. Making an error one or more times during the morning counted as one infection control and safety error. Repeating the same error in the afternoon of the examination counted as an additional infection control and safety error.

Table 8: Infection Control Requirement Grading

Number of Errors	Requirement Grade
2 or fewer infection control and safety errors	Pass
More than 2 infection control and safety errors	Fail

Recording Infection Control Errors

Infection control and safety errors are manually recorded during the examinations on Infection Control Grading sheets. The errors are reviewed by the Chief Examiner or Assistant Chief Examiner(s) and entered in the grading system by staff at the Evaluation Session. Two NDECC staff independently enter each candidate's grade into the grading system. If there are any discrepancies between these two independent entries, they are flagged for verification. This allows the NDEB to ensure that the data is correctly entered into the system.

Statistical Analysis

NDEB staff perform multiple quality assurance steps. Results are checked to confirm their accuracy. Statistical analysis is performed, and results are provided to the Chief and Assistant Chief Examiners, the Director of Examinations and the Executive Director and Registrar. Requirements with unusually high or low difficulty are reviewed.

Results Reliability

Evaluators and Decision Consistency

Clinical Skills result reliability is heavily tied to the strong agreement between evaluators at the overall pass/fail decision level. Evaluators calibrate prior to grading at every session, and facilitators will help to realign and recalibrate their teams of evaluators, if needed.

After the evaluation session, data are evaluated with respect to the level of agreement among the examiners at the decision level. These average decision consistency values are calculated for each requirement to provide information about the confidence that NDEB has with the decision that results in a candidate's performance. The program's goal of 85% or higher is met in most requirements examined at each session. In instances where the results are below this level, it provides feedback to the NDEB on where additional clarification of the criteria as well as training and calibration for examiners could occur in the future.

Table 9: Clinical Skills 2024 Evaluators Decision Consistency

Requirement	March Evaluation Average Decision Consistency	June Evaluation Average Decision Consistency	September Evaluation Average Decision Consistency	December Evaluation Average Decision Consistency
Class II Amalgam Preparation	91%	83%	93%	84%
Class II Amalgam Restoration	93%	90%	94%	98%
Class II Composite Restoration	95%	95%	96%	96%
Class IV Composite Restoration	94%	94%	97%	97%
Endodontic Access Cavity Preparation	97%	98%	97%	95%
Crown Preparation	86%	86%	94%	95%
Provisional Crown Restoration	89%	91%	88%	89%
Infection Control and Safety	N/A	N/A	N/A	N/A

Standard Setting

In 2019, a standard setting meeting was held for the Assessment of Clinical Skills, the predecessor to the Clinical Skills component of the NDECC. During this session, a panel of subject matter experts systematically evaluated the performance that was needed to pass the examination at a level that was equivalent to the expectations for Canadian graduates. The panel recommended that candidates should not be permitted to pass with any egregious errors. With this in mind, the criteria and decision rules developed for the Clinical Skills requirements of the NDECC were carefully constructed to ensure that minor, correctable errors were defined in passing performance, and to ensure that the errors under the Critical Error and Not Competent sections were truly errors that merit a failing grade.

Psychometric Results

Pass Rate Statistics for 2024

Table 10: Clinical Skills 2024 Pass Rates

	Clinical Skills
Number of Candidates	1247
Number of Passes	571
Pass Rate	45.8%

Historical Candidate Numbers

Table 11: Clinical Skills 2024 Candidates

Number of Candidates	Clinical Skills
Total	1247
No. of 1st Try Candidates	802
No. of Repeat Candidates	445

Note: Numbers are based on original candidates who participated in the NDECC from January 1, 2024 to December 31, 2024, and include compassionate appeals which may have been granted and removed at a later date.

Results by Requirement

Table 12: Clinical Skills 2024 Pass Rates by Requirements

Requirement	Pass Rate
Class II Amalgam Preparation	77.6%
Class II Amalgam Restoration	91.8%
Class II Composite Restoration	92.9%
Class IV Composite Restoration	90.0%
Endodontic Access Cavity Preparation	93.4%
Crown Preparation	87.7%
Provisional Crown Restoration	73.5%
Infection Control and Safety	98.9%

Part G: Situational Judgement Component

This section describes the development, test specifications, format of the examination, and the criteria used to rate competencies for the Situational Judgement component of the NDECC examination.

Examination Development

Examination Format

The Situational Judgement component is a half day examination during which candidates are required to complete 10 stations (five with Simulated Patients/Persons portraying the scenarios and five requiring candidates to provide a written answer to the scenarios). There are two stations per Situational Judgement requirement.

Examination Content

Scenarios, simulated patient/person scripts and grading rubrics are developed by examiners who are content experts recommended by Canadian universities and provincial dental regulatory bodies, including private practitioners and academics. The Situational Judgement scenarios are reviewed by a different group of examiners. NDEB staff revise the scenarios, scripts and rubrics to ensure consistency in style and with the NDEB Glossary. All examination materials are translated and reviewed by examiners recommended by the Ordre des dentistes du Québec (ODQ).

The selection of the scenarios is made by a different group of content experts and NDEB staff.

Content Validity

Candidates' performances are graded relative to the standard of a minimally competent recent graduate from a Canadian dental program.

Examinations administrations have different combinations of scenarios for each requirement category to ensure that candidates were capable of managing a variety of clinical situations. Scripts, grading rubrics and performances are reviewed throughout the year. Each scenario is reviewed to ensure that all scenario combinations are comparable, targeting an appropriate level for entry-level practice, represents common situations faced by entry-level practitioners, and are fair to candidates.

Exam Administration

Scenarios are uploaded and displayed as MP4 videos on a monitor in each room/station prior to the examination. There are one or more directives at the end of each scenario explaining to candidates the task(s) to be performed. Candidates have 13 minutes to complete the task(s). Candidates receive an audio warning five minutes before the end of each station. This is later followed by an audio announcement when time for that station expires and that it is time to move to the next station. There is a two minute transition during which candidates move from one station to another. Candidates move from station to station according to an individual assignment they receive at check-in.

For stations with a simulated patient/person, candidates are instructed to state their candidate number out loud at the beginning of the station. All Situational Judgement stations are audio and video recorded and monitored live throughout the examination. At the end of each session, audio and video recordings of stations with simulated patients/persons were verified, labeled with the scenario identifier, candidate number and examination date, and saved for the evaluation session.

For written stations, answer sheets are available in each room along with pen or coloured pencils and erasers depending on the topic of the station. Candidates are required to write their NDEB ID number on each answer sheet. Candidates have to place their answer sheets and scrap papers in a locked box available at each Situational Judgement station prior to moving on to the next station. The answer sheets are collected by NDECC staff at the end of each session. After verifying that the answer sheets are properly labelled, NDEB staff scan the sheets and save them in preparation for the evaluation session.

Exam Grading

Calibration

For each evaluation session, three simulated patient/person scenarios and three written scenarios are selected as calibration cases from the previous evaluation session and reviewed by the Chief Examiner. The six selected scenarios represents two unfacilitated pass scenarios, two unfacilitated fail scenarios, and two facilitated scenarios. Evaluators are provided with the grading rubrics and independently grade each of the calibration scenarios. They then discuss their grades in groups of four and are required to come to agreement on evaluations of all calibration scenarios prior to proceeding with the evaluation.

Evaluation Process for Situational Judgement

The evaluation is performed using tablet computers and the grading software. An orientation on the use of tablet computers is provided. Each evaluator have the exclusive use of two tablet computers for the duration of the evaluation session, one tablet computer for grading and one tablet computer for viewing videos or answer sheets.

Evaluators are given instruction on the grading process, the facilitation process and in the use of the tablet computers for grading and facilitation procedures.

Each requirement is graded independently by two evaluators. If there is any discrepancy in the grading between the two evaluations, NDEB staff assign a third evaluator to facilitate discussion and determine the final grade for the candidate.

All Situational Judgement stations are graded using a Pass/Fail system. The grading criteria for the Situational Judgement requirements are determined for the competent dentist, the minimally competent dentist and the not competent dentist. A candidate's answer has to include all the elements listed in the minimally competent category of the rubric to obtain a passing score. Any performance graded in the "Competent" category do not contribute to the passing score as the behaviours/answers in that category are appropriate, but not necessary or expected of a minimally competent beginning general dentist. The "Minimally Competent" category describes the lowest end of the range of performances considered competent. Any performance graded in the "Not Competent" category of the rubric resulted in a failing grade for the station.

Situational Judgement Grading Rubrics

Table 13: Situational Judgement Requirements Grading

Grade	Category	Narrative
Pass	Competent	Optimal. No errors. Management of the situation follows current evidence, standards, guidelines, or best practice.
	Minimally Competent	Minor error(s) or omission(s) but management is within the range of acceptable practice.
Fail	Not Competent	Major error(s) or omission(s) that indicate a lack of knowledge or judgement. Management is not within the range of acceptable practice.

Stations are graded as Pass or Fail. Candidates have to pass six of ten stations and have to pass at least one station in each of the five requirements.

Statistical Analysis

NDEB staff perform multiple quality assurance steps. Results are checked to confirm their accuracy. Statistical analysis is performed. Items are flagged if they have a pass rate higher than 90%, or 50% and lower. Items flagged are reviewed in depth by a group of content experts. Grading rubrics of any scenarios with a pass rate of 50% or below are also reviewed. Based on the review, scorable elements that performed poorly may be voided.

Results Reliability

Evaluators and Decision Consistency

Because evaluators are involved in making judgements about candidates' performance, the reliability evidence for the Situational Judgement component is evaluated based on the level of agreement at the decision level. Evaluators are calibrated prior to grading at every session, and facilitators help to realign and recalibrate their teams of evaluators if there is a need.

After each evaluation session, data is gathered and reviewed with respect to the level of agreement among the evaluators. The analysis assesses whether evaluators would have made the same pass/fail decision about the candidate. This evidence provided the NDEB with confidence in the overall decision that is made about a candidate's performance. Results indicate that the observations reached the program's goal of 85% or higher agreement. In instances where the results are below this level, it provides feedback to the NDEB on where additional clarification of the criteria as well as training and calibration for examiners could occur in the future.

Table 43: Situational Judgement 2024 Evaluators Decision Consistency

Requirement	March Evaluation Average Decision Consistency	June Evaluation Average Decision Consistency	September Evaluation Average Decision Consistency	December Evaluation Average Decision Consistency
Communication and Collaboration	98%	87%	89%	88%
Health Promotion	96%	90%	91%	94%
Patient-Centered Care	96%	91%	89%	92%
Patient and Information Management	98%	87%	90%	92%
Professionalism	99%	91%	90%	91%

Psychometric Results

Pass Rate Statistics for 2024

Table 15: Situational Judgement 2024 Pass Rates

	Situational Judgement
Number of Candidates	1046
Number of Passes	656
Pass Rate	62.7%

Historical Candidate Numbers

Table 16: Situational Judgement 2024 Candidates

Number of Candidates	Situational Judgement
Total	1046
No. of 1st Try Candidates	803
No. of Repeat Candidates	243

Note: Numbers are based on original candidates who participated in the NDECC from January 1, 2024 to December 31, 2024, and include compassionate appeals which may have been granted and removed at a later date.

Results by Requirement

Table 17: Situational Judgement 2024 Pass Rates by Requirement

Requirement	Pass Rate for Both Written and Simulated Patient/Person Items
Communication and Collaboration	82.7%
Health Promotion Professionalism	89.2%
Patient-Centered Care	75.2%
Practice and Information Management	81.6%
Professionalism	82.2%

Part H: Appendices

Appendix A – Key Supporting References

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Appendix B – Knowledge Skills and Abilities (KSAs) Framework

This document lists 43 KSAs that are required for the safe and effective practice of a beginning dental practitioner in Canada. The KSAs in this document are organized into three groups and 15 categories:

GROUP A: Multi-discipline (23 KSAs)

These KSAs apply to more than one discipline or area of practice. The KSAs in this group are organized into two categories: *Patient Assessment and Treatment Plan* and *Management*.

GROUP B: Discipline-specific (11 KSAs)

These KSAs are specific to dentistry practice in one of 9 disciplines/areas of practice: *Oral Medicine and Pathology*, *Radiology*, *Periodontics*, *Endodontics*, *Prosthodontics*, *Orthodontics*, *Operative*, *Oral Surgery*, and *Pain*.

GROUP C: General (9 KSAs)

The KSAs are organized into four categories: *Scientific Literature*, *Communication*, *Professionalism and Practice*, and *Health Promotion*.

GROUP A: Multi-Discipline KSAs

1	Patient assessment and treatment plan
1.1	**Exam**
1.1.1	Obtain the patient's chief complaint, medical, psychosocial, and dental histories.
1.1.2	Perform a clinical examination.
1.1.3	Assess patient-specific risk factors for oral disease or injury.
1.2	**Diagnosis**
1.2.1	Differentiate between normal and abnormal hard and soft tissues of the maxillofacial complex.
1.2.2	Interpret the findings from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests.
1.2.3	Develop a problem list and establish diagnoses.
1.3	**Treatment Plan**
1.3.1	Determine when consultation, referral, and/or further diagnostic testing are indicated.
1.3.2	Communicate relevant patient information for consultation/referral with health care professionals.
1.3.3	Develop treatment options based on the evaluation of all relevant data (i.e., obtained from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests).
1.3.4	Engage the patient in the discussion of the findings, diagnoses, etiology, risks, benefits, time requirements, costs, responsibilities, and prognoses of the treatment options.
1.3.5	Develop a comprehensive, prioritized and sequenced treatment plan.
1.3.6	Obtain and record informed consent.
2	**Management**
2.1	**Prevention**
2.1.1	Promote measures to prevent oral disease/injury in response to identified risk.
2.1.2	Provide therapies for the prevention of oral disease/injury.
2.1.3	Implement measures to prevent medical emergencies from occurring in dental practice.
2.1.4	Implement measures to prevent the transmission of infectious diseases.

2.2	Treatment
2.2.1	Manage the anxious or fearful patient.
2.2.2	Manage dental emergencies.
2.2.3	Manage medical emergencies that occur in dental practice.
2.2.4	Manage trauma to the orofacial complex.
2.2.5	Manage occlusal function.
2.2.6	Prescribe and administer pharmacotherapeutic agents used in dentistry.
2.2.7	Manage complications, outcomes and continuity of care.

GROUP B: Discipline-Specific KSAs

3	Oral medicine and pathology
3.1	Manage oral mucosal and osseous diseases.
4	**Radiology**
4.1	Prescribe, make and interpret radiographs.
5	**Periodontics**
5.1	Manage conditions and diseases of the periodontium.
6	**Endodontics**
6.1	Manage diseases and injury of the pulp.
7	**Prosthodontics**
7.1	Manage partially and completely edentulous patients.
8	**Orthodontics**
8.1	Manage abnormalities of orofacial growth and development.
9	**Operative**
9.1	Restore carious lesions and manage other defects in teeth.
10	**Oral surgery**
10.1	Manage surgical procedures related to oral soft and hard tissues.

11	Pain
11.1	Achieve local anesthesia for dental procedures.
11.2	Manage odontogenic pain.
11.3	Manage non-odontogenic pain.

GROUP C: General KSAs

12	Scientific literature
12.1	Evaluate the scientific literature and justify management recommendations based on the level of evidence available.
13	**Communication**
13.1	Communicate effectively with patients, parents, guardians, staff, peers, other health professionals and the public.
14	**Professionalism and practice**
14.1	Know ethical and legal obligations (e.g., confidentiality requirements, task delegation, commitment to continued professional development, patient-centered care).
14.2	Maintain accurate and complete patient records.
14.3	Manage occupational hazards related to the practice of dentistry.
14.4	Take appropriate action when signs of abuse and/or neglect are identified.
14.5	Know principles of practice administration, financial and personnel management.
15	**Health promotion**
15.1	Recognize the determinants (influencing factors) of oral health.
15.2	Promote oral health within communities.

Appendix C – Publications

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