NAC EXAMINATION ANNUAL TECHNICAL REPORT

2022

National Assessment Collaboration

MEDICAL COUNCIL OF CANADA
LE CONSEIL MÉDICAL DU CANADA

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OVERVIEW

In response to the 2004 *Report of the Canadian Task Force on Licensure of International Medical Graduates* (Federal/provincial/territorial Advisory Committee on Health Delivery and Human Resources, 2004), the Medical Council of Canada (MCC) began a series of related initiatives to support the assessment and training of international medical graduates (IMGs) in Canada. A steering committee was created and convened from 2005 to 2009 to develop a framework and governance structure for a National Assessment Collaboration (NAC).

The NAC is an alliance of Canadian organizations that are streamlining the evaluation process for IMGs seeking a license to practise medicine in Canada. A significant development of the NAC program is the pan-Canadian objective structured clinical examination (OSCE), known as the NAC Examination. The purpose of the NAC Examination is to assist the clinical residency programs of Canadian medical schools in selecting IMGs into the first year of postgraduate training. The intent of this national exam is to avoid duplication of assessments performed by provincial IMG assessment programs. Residency program directors are able to use candidate results to assist in making decisions about which IMG candidates are best qualified for entry into their programs. In 2021, the NAC Examination was delivered in 8 sites in Alberta, Manitoba, Nova Scotia, Ontario, and Saskatchewan, and it was mandatory for application to the Canadian Resident Matching Service (CaRMS) in all provinces.

A committee of physician subject matter experts oversaw the creation of the NAC Examination content and ensured that the content adhered to the NAC Examination blueprint and guidelines. The Examination Oversight Committee (EOC) approved the release of results.

Policies and procedures have been established to ensure comparability of results from year to year, faster release of results over time, and uniform quality control and quality assurance (QA) across exam dates and jurisdictions. To this end, the MCC has developed and continues to update a library of structured procedures that help maintain uniformity in administration across regions and sites, as well as provide the basis for support materials for

standardized participants (SPs) and physician examiners (PE)[1]. The standardization of procedures is necessary to support the validity argument that differences in test scores are due to differences in candidates' abilities as assessed by the NAC Examination and not to extraneous differences. Additionally, these policies and procedures are necessary for high-volume testing programs, such as the NAC, where the exam sessions may be geographically distributed, and results must be comparable and uniform in quality.

This report summarizes exam administration aspects as well as key psychometric properties of the 3 test forms for the NAC Examination that took place in 2022.

Due to the COVID-19 pandemic, changes to the structure of the content, format, and delivery were made to the September 2020 NAC Examination to ensure the safety of all involved in the exam. The changes due to COVID-19 were also implemented for 2022.

[1] In all stations, a PE marks the candidate while interacting with the SP. In most cases, the PE will be a physician. However, in some cases the PE may be another medical professional. All PEs are trained to use standardized scoring tools to observe and assess candidate performance.

1. EXAM DEVELOPMENT

This section describes the blueprint and test specifications for the NAC Examination, the format of the exam, how exam content is developed, and the scale and criteria used to rate competencies.

Blueprint and test specifications

The NAC blueprint was drafted over a series of meetings between 2009 and 2010 by a group of assessment experts and ratified by the NAC Steering Committee in 2010. From 2011 to 2018, the NAC Steering Committee's successor group, the NAC Examination Committee (NEC), maintained the original blueprint except for the testing of therapeutic knowledge. In 2014, the NAC Therapeutics Examination (a written exam) was removed from the blueprint, and the testing of this knowledge was incorporated into the testing of clinical management skills to create a revised Management and Therapeutics competency. In 2015, the NEC struck a subcommittee to consider and recommend updates to the NAC Examination, and in 2019 those changes, which include the removal of Language Fluency and Organization as measured competencies, the use of key-featured checklist items, and the introduction of a more streamlined scoring process, took effect. See **Table 1** for the updated blueprint and test specifications.

Test specifications were developed for the NAC Examination and approved by the NEC to meet the blueprint and ensure that similar content is measured on each of the test forms. Adhering to a blueprint and test specifications ensures that candidates are measured on similar content across different test forms of the exam. All exam test forms are constructed by selecting OSCE cases/stations to best represent NAC test specifications.

Table 1 outlines the test specifications for the NAC Examination and provides a summary of the required content and skills to be assessed in a test form, including clinical competencies, systems, disciplines, and patient age groups. An additional constraint of gender is also included to ensure the proportional distribution of patient gender across stations.

***Table 1**. Test specifications for 2022 NAC Examination*

Discipline	Recommended stations, No.	System	Recommended stations, No.
Medicine	2–4	Respiratory	≥ 1
Surgery	2–4	Cardiovascular	≥ 1
Psychiatry	1–2	Gastrointestinal	≥ 1
OB/GYN	1–2	Musculoskeletal	2–3
Pediatrics	1–2	Genitourinary	
Geriatric medicine	1–2	Endocrine	
Urgent care	1	Neurologic	
		Mental health	2–3
		Reproductive health	
		Multisystem	
Clinical competency	**Recommended stations, No.**	**Age[a]**	**Recommended stations, No.**
History-taking	6–7	0–2 mo (newborn)	1–2
Physical examination	1	2–23 mo (infant)	
Combined history and physical examination	2–3	2–5 y (preschool child)	
Communication skills	≥ 6	6–12 y (child)	
Diagnosis	≥ 3	13–17 y (adolescent)	1–2
Data interpretation	≥ 3	18–44 y (young adult)	4–5
Investigations	≥ 3	45–64 y (adult)	
Management[b]	≥ 3	≥ 65 y (older adult)	2–3
		Gender[c]	
		Of 10 stations, no more than 60% should be male or female	

Abbreviations: OB/GYN, Obstetrics and Gynecology; SP, standardized participant.
[a]Age of actual participant, not necessarily the SP's age.
[b]Up to 20% must be therapeutics-specific.
[c]Gender of actual participant, not necessarily the SP's gender.

Content changes due to COVID-19 protocols

Under normal circumstances, in addition to completing 10 operational stations, candidates would complete 2 pilot stations that did not count towards the final score. However, the pilot stations were replaced with wait stations for the May 2022 exam session, and 1 pilot station was added back into the exam for the September 2022 sessions, leaving 1 wait station.

Additionally, stations that included a physical examination, where the candidates would normally demonstrate their skills by physically examining the SP, were adjusted to a "described" or "verbalized" physical examination. Candidates were asked to tell the PE what physical examination manoeuvres they would perform and describe what they were examining and why. Then the PE would verbally provide physical examination findings as appropriate. The "normal" blueprint constraints call for 1 station with a physical examination only (no history-taking component), and for the purposes of the 2022 NAC Examinations, that station was removed and replaced by a combined history-physical examination station.

Exam content

NAC Examination content is developed by a panel of clinical subject matter experts (SMEs) along with experts in medical education and assessment. In this reporting year, there were several content development workshops where OSCE cases/stations were written, peer-reviewed, and approved for use.

To ensure that all NAC Examinations are comparable, each test form or iteration of the exam must meet specific testing criteria (see **Table 1** for test specifications).

Content validity

Measuring how well a test form matches the test specifications is 1 piece of evidence supporting the validity of score interpretations for the intended purpose of the examination (Kane, 2006; 2013). This section highlights the test specifications and how well each test form measures the required content and skills.

The test forms are drafted by the NAC Assessment Content Developer in accordance with the test specifications. The physician SME group then reviews the test forms, including individual stations, to ensure that test specifications are met, and that content is at the appropriate assessment level—that of a recent graduate from a Canadian medical school. The final version of the content for each test form is then considered approved. For security reasons, each exam sitting uses a different test form.

Table 2 shows the sampling of test specification characteristics, clinical competencies, and number of stations for each form. The Recommended Stations column specifies the desired number of stations for each test form for each clinical competency, discipline, gender, system, and age group. There were 3 test forms administered in October (Forms 1 to 3).

***Table 2**. Sampling of OSCE content by test specifications for 2022 test forms*

		Recommended stations, No.	Form 1	Form 2	Form 3
Clinical competency	History-taking	6–7	7	7	7
	Physical examination	1	0	0	0
	Combined history-taking and physical examination	2–3	3	3	3
	Communication skills	≥ 6	10	10	10
	Diagnosis	≥ 3	6	6	6
	Data interpretation	≥ 3	2	4	2
	Investigations	≥ 3	4	4	5
	Management[a]	≥ 3	7	8	7
Discipline	Medicine	2–4	7	9	7
	Surgery	2–4	2	2	2
	Psychiatry	1–2	2	1	1
	OB/GYN	1–2	1	1	1
	Pediatrics	1–2	1	2	1
	Geriatric medicine	1–2	1	2	1
	Urgent care	1	1	2	1
Gender[b]	Of 10 stations, no more than 60% should be female or male		M = 5 F = 4 E = 1	M = 5 F = 5	M = 5 F = 5
System	Respiratory	≥ 1	1	2	1
	Cardiovascular	≥ 1	1	2	1
	Gastrointestinal	≥ 1	1	2	2
	Musculoskeletal	2–3	4	4	4
	Genitourinary				
	Endocrine				
	Neurologic				
	Mental health	2–3	8	2	3
	Reproductive health				
	Multisystem				
Age[c]	0–2 mo (newborn)	1–2	1	1	1
	2–23 mo (infant)				
	2–5 y (preschool child)				
	6–12 y (child)				
	13–17 y (adolescent)	1–2	1	1	1
	18–44 y (young adult)	4–5	6	6	6
	45–64 y (adult)				
	≥ 65 y (older adult)	2–3	2	2	2

Abbreviations: E, either sex; F, female; M, male; OB/GYN, Obstetrics and Gynecology; OSCE, objective structured clinical examination; SP, standardized participant.

[a]Up to 20% must be therapeutics-specific.

[b]Gender of actual participant, not necessarily the SP's gender.

[c]Age of actual participant, not necessarily the SP's age.

Exam format

For each administration, the NAC Examination test forms comprised 10 operational 11-minute OSCE stations. In the May session, there were 2 wait stations. In the September sessions, there was 1 wait station and 1 pilot station. The overall exam is designed to assess 7 clinical competencies: communication skills, data interpretation, diagnosis, history-taking, investigations, physical examination, and management.

In each station, an SP portrayed the clinical scenario, and each candidate's performance was evaluated by a PE. Each station measured up to 7 clinical competencies.

Standardized procedures, including training for PEs and SPs and data analyses, were followed to ensure that the NAC Examination results were comparable across test forms for all candidates.

Scoring candidate performance

PEs rated candidate performance relative to the standard of a recent graduate from a Canadian medical school. The scoring tools use a combination of short, key-featured checklists and rating scales.

The key features methodology gives score points to only the critical or key steps a physician must take to manage the patient's case effectively. Both the patient interaction component and the oral question component (if applicable by station) are scored in this key-featured format.

PEs also scored the candidates' proficiency on several competencies on a 5-point Likert-type scale. The 5 rating points, along with a description of the acceptable performance level for each competency, are described in **Appendix A** and **Appendix B**.

Orientation and training materials were given to PEs to provide more specific context for these scoring tools.

Each station had 1 PE and, by the conclusion of the exam, each candidate had been evaluated by PEs on 10 operational stations. The scores from the 10 operational stations provided by each PE were used to calculate all scores as described in the Exam Scoring section.

2. EXAM ADMINISTRATION

This section describes procedures to standardize exam administration, including candidate orientation, responsibilities of exam administration staff, SP training, role of CEs, and PE recruitment and training.

Exam sites and candidate numbers

The exam sites and number of candidates for each test form in 2022 are depicted in **Table 3**.

__Table 3__. NAC candidate numbers by test form for 2022 administration

	Test form	Sites	Total candidates, No.	First-time test-takers, No.	Repeat test-takers, No.
May	**1**	AB – Edmonton	425	369	56
		MB – Winnipeg			
		ON – London			
		– Ottawa			
		– Toronto			
		SK – Saskatoon			
Sept.	**2**	AB – Calgary	674	561	113
		– Edmonton			
		MB – Winnipeg			
		ON – London			
		– Ottawa			
		– Sudbury			
		– Toronto			
		SK – Saskatoon			
	3	AB – Calgary	619	481	138
		– Edmonton			
		MB – Winnipeg			
		NS – Halifax			
		ON – London			
		– Ottawa			
		– Sudbury			
		– Toronto			
	Total		**1,718**	**1,411**	**307**

Abbreviations:
AB, Alberta; NAC, National Assessment Collaboration; NS, Nova Scotia; MB, Manitoba; ON, Ontario; SK, Saskatchewan.

Candidate orientation

The MCC provides detailed information about the NAC Examination for candidates on the MCC website. Topics include what to expect on exam day, scoring and results, and registration information.

For the 2022 exam sessions, candidate orientations were online. Candidates were not given a face-to-face orientation but were given exam-day reminders and a chance to ask questions before the exam.

NAC administration under COVID-19 protocols

The MCC worked closely with the examination sites throughout the summer and fall of 2022. The sites continued to enforce the COVID-19 changes made to the delivery and administration of the September 2020 NAC Examination to ensure the health and safety of all exam participants.

Social distancing measures and proper usage of personal protective equipment (PPE) were enforced on exam day, including all encounters. All participants wore face masks covering their nose and mouth, adhered to sanitizing protocols, and signed and passed a COVID-19 screening questionnaire. Hand sanitizer was placed in each station and strategically placed throughout the exam sites, and exam staff would sanitize items that were regularly touched, such as doorknobs and pencils.

To limit the number of people at the exam sites, SP rotations were removed, sites issued staggered track arrival times, candidate catering services and sequestering were removed, orientations and training were implemented online, and groups were registered and deregistered individually to avoid contact.

To follow local public health and institutional guidelines, proof of vaccination (POV) protocols were implemented in 2 of the 9 exam sites. Since both sites had different policies and requirements, the MCC sent tailored communications to each candidate, based on their assigned exam site, to ensure that they were aware of the POV requirements, or alternatives, well ahead of their exam day.

Exam administration staff

Each exam site is responsible for recruiting and supervising exam staff, who work with the MCC to ensure the security of exam materials and the quality of performance of all people involved in the exam (SP trainers, SPs, chief examiners (CEs), PEs, exam staff, caterers). NAC policies and procedures provided by the MCC ensure the standardization of the exam administration. On exam days, MCC staff oversees exam staff at each site across the country, either in person or via electronic communication. MCC also offers an assistance line.

SP training

Each site is responsible for hiring and supervising the SP trainers who, in turn, oversee the SPs and assure the quality of their standardized performance on exam days. SPs are trained at each site using standardized NAC training material provided by the MCC. Training support is provided centrally to SP trainers by MCC staff, primarily by the NAC training officers.

For the 2022 sessions of the exam, SPs were trained, and the dry runs were conducted online.

CEs

All NAC Examination sites employ physicians as CEs. The role of the CE depends on exam site size and on how the site administrator chooses to delegate tasks.

Each CE is responsible for the following:

- Assisting with PE recruitment and training if needed
- Assisting with the dry runs of SPs before exam day, including a final assessment of SP readiness to perform in a standardized manner according to their patient scripts on exam day
- Overseeing PEs and candidates on exam day
- Addressing, where appropriate, candidates' questions, concerns, and complaints on exam day
- Reviewing and signing all incident reports recorded on exam day

Note: One exam site, Nova Scotia, also hires a deputy registrar to share responsibilities with the CE.

Common PE recruitment requirements for all MCC exams

Requirements are as follows:

- PEs or markers must be registered and in good standing with a medical regulatory authority in Canada
- PEs or markers may be retired, but they must have an active licence with a medical regulatory authority in Canada
- PEs or markers must be practising in Canada or they must have practised in Canada within the last 5 years
- All PEs and markers must adhere to the MCC Code of Business Conduct
- PEs or markers must have the ability and stamina to complete the task (e.g., uncorrected hearing loss can seriously affect the ability to score an exam)

All exceptions must be approved by the examination manager.

NAC Examination recruitment requirements for PEs

PEs must meet **all** the common PE recruitment requirements for all MCC exams. Additionally, PEs for the NAC Examination must meet the following requirements:

- Physicians must have the Licentiate of the Medical Council of Canada (LMCC) and must provide their LMCC registration number. Other PE requirements are as follows:
    - Physicians must have recent experience supervising clerks and/or postgraduate training year 1 (PGY-1) residents, and/or they must have experience as an PE at this level of training
    - Physicians may be community physicians (i.e., they do not need to be faculty members if all other criteria are met)
    - Physicians must be currently practising medicine in Canada; if they are a resident physician, they must be PGY-3 or higher or have College of Family Physicians of Canada (CFPC) certification at the time of the exam
    - If retired, physicians must be within 3 years of practising in Canada
- Physicians who do not have their LMCC will be accepted as PEs under the following conditions:

- Non-licentiate PEs must be faculty members (e.g., faculty lecturer, assistant professor, associate professor, professor);

and

- Non-licentiate PEs must be certified by and provide their certification number for 1 of the following:
    - Royal College of Physicians and Surgeons of Canada
    - Collège des médecins du Québec
    - CFPC;

and

- Non-licentiate PEs must sign a waiver indicating that they have no intention of taking the NAC Examination.

The MCC provides training to standardize PE scoring to the exam standard using a scoring exercise with guided discussions. It provides pre-exam online training for all new and returning PEs.

For the 2022 exam sessions, the PE orientations were modified to be completed online. PEs were given exam-day reminders and had an opportunity to ask questions before the exam.

3. EXAM SCORING

In this section, we describe the QA and quality control procedures related to the scoring of the NAC Examination as well as what scores are reported and how they are calculated.

Standard QA and quality control procedures

To ensure the accuracy and integrity of the candidates' exam day electronic records, several data QA steps are performed as outlined below. PEs complete a score sheet for every candidate seen in their OSCE station. These score sheets are scanned at the exam sites and transmitted securely to the MCC. The MCC staff import the score sheets into OpenText's TeleForm, a form-processing program, where they are reviewed. Scanning anomalies are identified (for example, an unreadable candidate barcode, PE pencil marks that are too faint) and corrections are made. The data are then exported electronically into a scoring application for preliminary scoring and the results are used to generate a list of candidates who fall within 10 points above and below the pass score. Once the paper copies of the score sheets arrive at MCC, all the sheets for this candidate group are reviewed by staff for discrepancies against the electronic data reports. Although rare, any differences are corrected in the electronic data files to reflect the paper score sheets. The updated electronic files are then reimported into the scoring application for final scoring and scale score transformation for all candidates. All scores are also calculated independently in parallel using the statistical analysis system (SAS) and compared with the results from the scoring application. All values must match before results are released to candidates.

Exam result approval

NAC Examination results are reviewed by the EOC, which approves the release of results after each administration, including reconsiderations. Once approved by the EOC, results are imported to physiciansapply.ca and released to candidates.

When an incident occurs during the exam that may impact a candidate's performance, it is reviewed as a reconsideration as per the processes and policies ratified by the EOC. Depending on the nature of the incident (e.g., illness, fire alarm, SP misportrayal, a candidate's inappropriate behaviour), a decision may be made to remove a station from a candidate's exam or award a candidate a No Standing or a Denied result.

A No Standing result indicates that procedural irregularities in the exam process may have seriously affected the performance of the candidate and/or may have prevented a reliable assessment of the candidate's knowledge and abilities. A No Standing result does not count towards a candidate's number of attempts.

A Denied result indicates that a candidate has been found to have committed an infraction related to the MCC's examination process and/or breached confidentiality of the exam. A Denied result counts as an attempt towards a candidate's total number of attempts. Additionally, candidates that are given a Denied result may be denied eligibility to 1 or more future MCC exams for a specified period.

Exam result reporting

About 1 week after results are released to candidates, the MCC issues a Statement of Results (SOR) and a Supplemental Information Report (SIR) to each candidate through their physicianapply.ca account (see **Appendix C** for an SOR example and **Appendix D** for an SIR example). The SOR includes the candidate's final result and total score, as well as the pass score. The SIR includes the candidate's final result, total score, and additional information in graphic display about the candidate's domain subscores and comparative information.

The total score is reported on a standard-score scale ranging from 1300 to 1500. In contrast, the score profile in Figure 1 of the sample SIR in **Appendix D** displays a candidate's domain subscores in terms of a percentage. As a result, total scores cannot be compared with domain subscores in the SIR because they are reported on different scales. Additionally, it is important to note that because subscores have fewer items than total scores, subscores have less measurement precision. Subscores are provided to individual candidates for feedback only and are not meant to be used by organizations for selection.

The following sections outline the steps in creating the results reported to candidates, IMG programs and the Canadian Resident Matching Service (CaRMS).

Scale scores

The scale score is a candidate's total score reported on a scale that ranges from 1300 to 1500 (as opposed to a candidate's total raw score that is on a percentage metric). Deriving the scale score for the 2022 NAC Examination involves 3 steps.

Step 1: Calculate total raw scores

The first step in deriving a total raw score is to calculate the station score for each OSCE station with the following formula:

$$station\ score = \frac{sum\ of\ a\ candidate's\ item\ scores}{sum\ of\ maximum\ possible\ item\ scores} * 100$$

where the numerator is the sum of each candidate's scores on each item *i* for that station and the denominator is the sum of the maximum possible score for each item for that station. For example, a station with several checklist items, oral questions, and competency rating scales could result in the following score:

$$station\ score = \frac{1+0+1+1+4+0+3+2+3}{1+1+1+1+4+4+4+4+4} * 100 = \frac{15}{24} * 100 = 62.5$$

The station scores are then used to calculate the total raw score for each candidate using the following formula:

$$total\ raw\ score = (\text{sum of 10 station scores})/10$$

Since station scores are based on the sum of the candidate's item scores for that station, missing data needs to be taken into account so that it does not negatively impact a candidate's score. Missing data occurs when the PE does not provide a score for an oral question or does not provide a rating for a competency for a given candidate on the score sheet. When this occurs, the station score is based on the item scores provided by the PE.

In the above example, if the last item is missing from a candidate's score sheet, it is excluded from both numerator and denominator when calculating this candidate's station score as shown below.

$$station\ score = \frac{1+0+1+1+4+0+3+2}{1+1+1+1+4+4+4+4} * 100 = \frac{12}{20} * 100 = 60$$

The station score would have been 50% if the missing item were treated as 0 and the adjustment not applied. However, to be fair to the candidate, we exclude the missing item from the calculation of the station score and would use a station score of 60% instead.

Step 2: Linking

This step is to link through common stations the scores from the 2022 test forms to scores

from previous test forms through a chain of linking steps dating back to a test form in September 2020 that was used for setting the cut score and establishing the scale.

As described in Section 1, Exam Development, multiple test forms are used each year for security reasons. All test forms are assembled based on the same blueprint and test specifications, so they are as similar as possible in terms of content coverage. However, they may slightly differ in difficulty due to variations in clinical scenarios and tasks sampled on each test form.

The process of linking total scores statistically takes into account small differences in test form difficulty and adjusts total scores for the test form being linked so that all scores are on the same metric and can be compared. Linking also provides a way to apply the same pass score to candidates who take different test forms.

One method to link test forms is to have a subset of content appear identically across test forms. This is a common-item non-equivalent anchor test (NEAT) design. The subset of content that is presented identically is called an anchor set. The rule of thumb for determining the number of items in an anchor set for a multiple-choice exam is 20% of the total test or 20 items, whichever is greater, to ensure that the anchor set is representative of the total test in terms of content and difficulty. Since the NAC Examination is an OSCE with a small number of stations (less than 20), we use a 30% rule. The anchor set is used to statistically estimate the overall ability of candidates that took each test form and the difficulty of each test form into account.

For the 2022 NAC Examination test forms, an anchor set was based on 3 stations. A reference group of first-time test-takers was used for all linking calculations. The linking calculations from this reference group are applied to all candidates to calculate each candidate's linked score. This linked score is then transformed as described in step 3 below. For the linking steps, the Tucker observed-score method was employed (Kolen & Brennan, 2014). Full details of the method can be found in *Test equating, scaling, and linking: methods and practice* (3rd ed.) authored by Kolen and Brennan (2014).

Step 3: Scale score transformation

This step is to convert the linked total scores for the 2022 test forms to scale scores that are reported to candidates and IMG programs. Once total scores are calculated and linked to the

base test form, the linked scores are transformed into scale scores ranging from 1300 to 1500 for reporting purposes. The score scale was established using the September 2020 session results to have a mean of 1400 and a standard deviation (SD) of 25. This final transformation ensures that any differences in scale score means and SDs on the current test forms can be directly compared with the test form of September 2020 for which the pass score was established. The final score transformation formula is as follows:

$$ScaleScore_X = (slope)(LinkedScore_X) + (intercept)$$

where

> $ScaleScore_X$ is defined as the linear function to calculate the scale score for candidate X, $slope$ is equal to 2.53 based on the transformation of the 2022 NAC Examination, $intercept$ is equal to 1246.28 based on the transformation of the 2022 NAC Examination, and $LinkedScore_X$ is the linked score for candidate X.

All scale scores are rounded to a whole number between 1300 and 1500. The reported scale scores as seen by candidates are these rounded values. For example, a passing candidate with a linked score of 83.5 would have a scale score of 1458:

$$ScaleScore_X = (2.53) * (83.50) + (1246.28) = 1457.54 \text{ rounded to } 1458$$

A failing candidate with a linked score of 34.77 would result in a scale score of 1334:

$$ScaleScore_X = (2.53) * (34.77) + (1246.28) = 1334.25 \text{ rounded to } 1334$$

Pass/fail status

The pass score for this exam was set by a panel of 21 physicians from across the country, representing various specialties, demographics, and years of experience supervising students and residents. The panel recommended the pass score of 1374 through a rigorous standard-setting exercise in October 2020. It was subsequently approved for implementation by a MCC test committee in November 2020. A test form from September 2020 was used to establish the pass score, and a contrasting group method was used for standard setting. Full details of the standard-setting exercise can be found in the *Technical report on the standard-setting exercise for the NAC Examination* (July 2019). The established pass score of 1374 was used to assign each candidate either a pass or fail status[2].

Domain subscores

Domain subscore calculations are used to create the figure in the candidates' SIRs. For each domain subscore, the associated items are converted to a percentage ranging from 0 to 100, where the total number of score points obtained by a candidate is divided by the maximum score points per domain, multiplied by 100.

For example, if a candidate received scores of 5, 7, 8 and 1 on a domain with associated maximum scores of 10, 10, 9 and 1, the total number of score points obtained by the candidate is 21, the maximum number of score points for this domain is 30. The domain subscore is 21/30 × 100 or 70.0. There are 3 subscores (reflecting 3 broad domains of physician activities) that are presented to candidates in their SIRs: Assessment & Diagnosis, Management, and Communication.

As a reminder, domain subscores should not be compared with scale scores as they are reported on different scales, and because they have fewer items than the scale scores, they have less measurement precision than scale scores. Domain subscores are intended to provide general feedback to candidates on their relative strengths and weaknesses in their performance on the NAC Examination.

4. PSYCHOMETRIC RESULTS

This section includes summary statistics for scale scores and pass rates, estimates of reliability, classification decisions, and a summary of station quality and domain subscore profiles. Results reviewed and approved by the EOC following the 2022 administrations are used in this section, excluding candidates whose status is No Standing or Denied.

Scale scores

Summary statistics and pass rates from the 2022 sessions are presented in **Table 4**. The score distribution is displayed in **Figure 1**. These statistics are based on the scale scores reported to candidates. The minimum, maximum, and SD are indicators of the variation in scale scores.

__Table 4__. Summary statistics of scale scores by test form for 2022 NAC Examination

	Test form	Candidates, No.	Min. score	Max. score	Mean score	Median score	SD	Pass rate, %
May	1[a]	424	1313	1457	1398.9	1400	26.5	84.0
September	2	674	1308	1467	1403.4	1406	25.9	86.5
	3[b]	618	1305	1468	1401.7	1404	26.9	86.4
	Total	**1716**	**1305**	**1468**	**1401.7**	**1404**	**26.5**	**85.8**

Abbreviations: NAC, National Assessment Collaboration; SD, standard deviation.
[a]One Denied Standing case from test form 1 was excluded from results.
[b]One No Standing case from test form 3 was excluded from results.

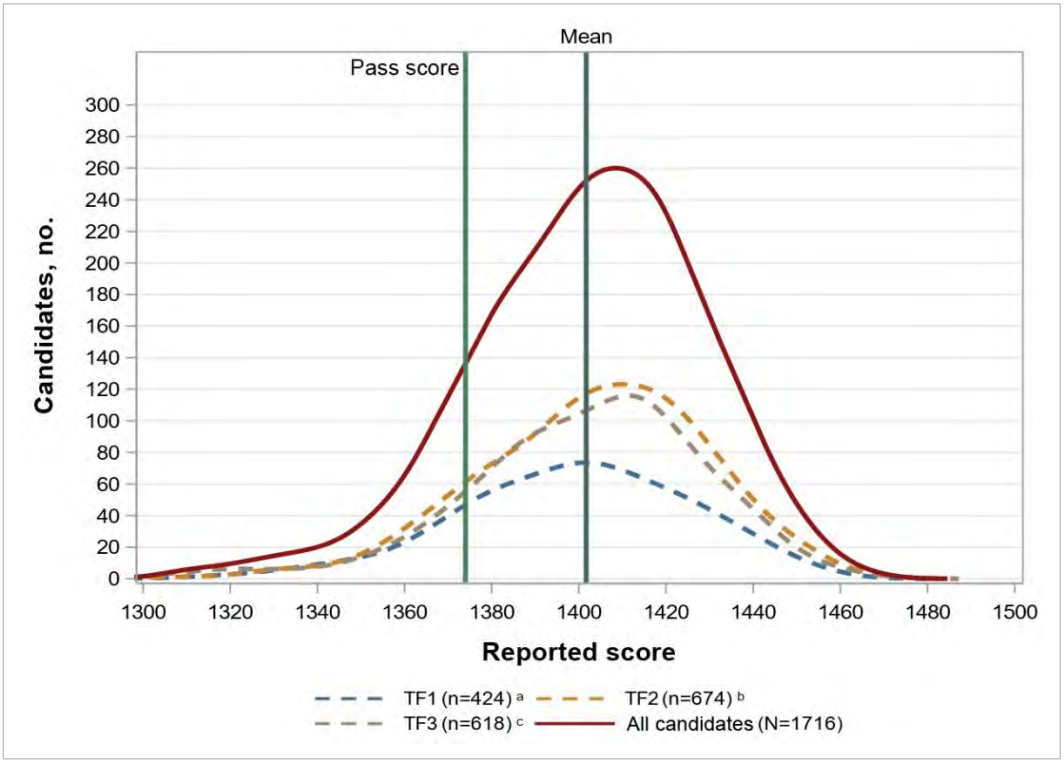


***Figure 1**. Score distribution by test form for 2022 NAC Examination*

Abbreviations: TF, Test form; No. number.
Note: The lowest reported score is 1300 and the highest reported score is 1500.

Estimates of score reliability and classification decisions

Table 5 shows the reliability estimates, the standard error of measurement (SEM), the decision consistency and decision accuracy estimates along with the associated false-positives and false-negatives by test form.

Cronbach's alpha

Cronbach's alpha was used to estimate score reliability for the NAC Examination. A score reliability estimate indicates the desired consistency (or reproducibility) of exam scores across replications of measurement (Crocker & Algina, 1986; Haertel, 2006). Scores that are highly reliable are reproducible and consistent from one testing occasion to another. In other words, if the testing process was repeated with a group of test-takers, essentially the same results would be obtained. This reliability estimate is described in *Educational Measurement*

by Haertel in section 2.4.4 (Haertel, 2006). The formula for Cronbach's alpha is:

$$_{\alpha}\rho_{XX'} = \frac{n}{n-1}\left(1 - \frac{\sum \sigma_{X_i}^2}{\sigma_X^2}\right)$$

where n is the number of stations, $\sigma_{X_i}^2$ is the score variance for station *i*, and σ_X^2 is the variance of the total scores (Haertel, 2006, p. 74). As a rule, a reliability estimate greater than 0.80 on an OSCE is desirable. The reliability estimate in conjunction with the total exam SEM provides further evidence of the reliability of the candidate's scale score.

SEM

The SEM provides a value that can be used to construct a confidence range (for example, +/- 1 SEM and +/- 2 SEM represent 68% and 95%, respectively) within which a candidate's observed score is expected to fluctuate if the candidate was to repeat the exam over and over again. The SEM value should be as small as possible so that the measurement of the candidate's ability contains as little error as possible. The SEM is calculated as follows:

$$SEM = \sigma_X\sqrt{1 - {}_{\alpha}\rho_{XX'}},$$

where σ_X is defined as the SD for the total score (square root of the variance), and $_{\alpha}\rho_{XX'}$ is defined as the reliability estimate as shown above.

Decision accuracy and decision consistency

Estimates indicating the consistency and accuracy of pass/fail decisions are important in providing validity and reliability evidence for candidate scores on 1 test form with possible equivalent test forms. To this end, the NAC Examination uses the Livingston & Lewis (1995) procedure. Decision consistency is an estimate of the agreement between classifications on potential parallel test forms, and decision accuracy is the estimate of agreement between the observed classifications of candidates and those based on their true score (i.e., observed score ± measurement error). Ideally, both values should be high, such as 0.80 and above, suggesting reliable and valid pass/fail classifications.

Table 5 shows the decision consistency and accuracy values along with associated false-positive and false-negative rates, reliability estimates, and the SEM for each test form for 2022. The estimated false-positive rates indicate the expected proportion of candidates who

pass based on their observed scores but who should fail based on their true ability. The estimated false-negative rate indicates the expected proportion of candidates who fail based on their observed scores but who should pass based on their true ability.

***Table 5**. Decision consistency, decision accuracy, reliability estimate, and SEM by test form for 2022 NAC Examination*

	May	September	
	Form 1[a]	Form 2	Form 3[b]
Decision consistency	0.86	0.88	0.90
False-positive	0.08	0.06	0.06
False-negative	0.07	0.06	0.05
Decision accuracy	0.90	0.92	0.93
False-positive	0.03	0.02	0.02
False-negative	0.06	0.06	0.05
Reliability estimate	0.66	0.61	0.68
SEM (scale score)	**15.39**	**16.12**	**15.20**

Abbreviations: NAC, National Assessment Collaboration; SEM, standard error of measurement.
[a]One Denied Standing case from test form 1 was excluded from calculations.
[b]One No Standing case from test form 3 was excluded from calculations.

Reliability is impacted both by the amount of variability in scores among candidates taking a particular test form and the number of items or stations included in any given exam. It is more difficult to obtain reliability estimates above 0.80 given the restricted number of stations that can be administered in any OSCE test form.

OSCE station statistics

Summary statistics for each of the OSCE stations for each test form for 2022 are provided in **Table 6** and **Table 7**. The percentage of missing data, average station scores or p-values, SD of station scores and station total correlations (STCs) are presented. Please refer to Section 3, Exam Scoring, for calculation of station scores.

P-values are the average station scores that candidates achieved on each of the stations. In general, p-values indicate station difficulty and range between 0 and 1. Station p-values that are low (< 0.20) indicate a difficult station and those that are high (> 0.90) indicate an easy

station. P-values are sample dependent. That is, comparisons of p-values across different samples of candidates do not take into account potential differences in overall candidate ability. As such, p-values should not be overinterpreted or used as the only indicator of difficulty. Rather, p-values provide a general sense of the range of difficulty of stations on a particular test form.

SDs indicate the general variability of scores on any given station. STCs are indicators of discrimination between low- and high-ability candidates for a given station. A low positive or negative STC (< 0.30) indicates that there is a weak or negative relationship between the station score and the overall exam score. Along with the p-values, this information is useful in flagging stations that should be reviewed by content experts and possibly removed from scoring. A moderate to high STC (≥ 0.30) indicates that high-ability candidates are performing well on a given station. Flagged and reviewed stations may still be included on an exam when the content is deemed relevant, important and verified to be correct.

***Table 6**. Summary statistics for OSCE stations for test form 1 for 2022 NAC Examination*[a]

	MAY			
	Form 1[b]			
Station[c]	**Missing data, %**	**Mean p-value**	**SD**	**STC**
1	0.19	0.60	0.21	0.38
2	0.55	0.47	0.17	0.34
3		0.58	0.26	0.22
5		0.61	0.19	0.32
6	0.24	0.60	0.21	0.41
7	0.19	0.65	0.23	0.32
8		0.60	0.22	0.30
10	0.24	0.45	0.22	0.33
11		0.48	0.20	0.36
12	0.33	0.61	0.21	0.33
Mean	**0.17**	**0.56**	**0.21**	**0.33**

Abbreviations: NAC, National Assessment Collaboration; OSCE, objective structured clinical examination; SD, standard deviation; STC, station total correlations.

[a]Empty cells indicate there was no missing data.

[b]One Denied Standing case from test form 1 was excluded from calculations.

[c]Stations 4 and 9 were wait stations (no encounters).

Table 7. Summary statistics for OSCE stations for test forms 2 and 3 for 2022 NAC Examination[a]

	SEPTEMBER							
	Form 2				Form 3[b]			
Station[c]	Missing data, %	Mean p-value	SD	STC	Missing data, %	Mean p-value	SD	STC
1	0.32	0.69	0.20	0.34	0.16	0.65	0.21	0.21
2	0.77	0.52	0.18	0.23	0.22	0.48	0.18	0.34
3	0.47	0.65	0.17	0.27		0.62	0.26	0.34
5	0.15	0.61	0.19	0.18		0.62	0.18	0.34
6	1.63	0.51	0.23	0.30	0.97	0.58	0.20	0.38
7	0.27	0.63	0.18	0.35	0.03	0.64	0.23	0.37
8	0.05	0.61	0.20	0.30	0.22	0.60	0.21	0.27
10	0.05	0.48	0.23	0.20	0.97	0.53	0.16	0.42
11	0.15	0.52	0.19	0.35	2.88	0.57	0.18	0.43
12	0.04	0.72	0.18	0.37	0.36	0.64	0.17	0.42
Mean	**0.39**	**0.59**	**0.19**	**0.29**	**0.58**	**0.59**	**0.20**	**0.35**

Abbreviations: NAC, National Assessment Collaboration; OSCE, objective structured clinical examination; SD, standard deviation; STC, station total correlations.

[a]Empty cells indicate there was no missing data.

[b]One No Standing case from test form 3 was excluded from calculations.

[c]Stations 4 and 9 were wait stations (no encounters).

Table 6 and **Table 7** show the mean p-values for each test form for 2022. There were no stations flagged as being too difficult (p-value < 0.30) or too easy (p-value, > 0.90). Stations with an STC < 0.30 were reviewed for content appropriateness. All the reviewed stations were deemed to be important and acceptable from a content perspective.

PE analyses

PE analyses are conducted routinely for each of the OSCE stations. The PE analyses are based on the method outlined by Bartman, Smee, and Roy (2013). For the PE analyses, the following 3 steps are followed.

Step 1

For each PE and station scored by the PE, the average across the candidates' station scores is calculated. This average is the PE average for that station. Then the average of the PE averages is calculated along with the SD. PEs that scored fewer than 10 candidates on a

station are excluded from these analyses as they have observed too few candidates to be compared with other PEs. PEs are flagged as being a “dove” if their station score is higher than 3 times the station SD from the station average. PEs are flagged as being a “hawk” if their station score is lower than 3 times the station SD from the station average. For example, if the average across PE averages was 72.5 and the SD across PEs was 6.5 and a PE had an average of 50.7 (difference of 21.8, which is more than 3 SDs [6.5*3=19.5]) then they are flagged as a hawk.

Step 2

For each PE flagged in step 1, the station distribution (histogram) for the PE is compared with the distribution of station scores from other PEs across the country. This is a visual check to evaluate whether the PE is providing a range of scores that looks somewhat normally distributed (not providing all high or low scores). If a PE’s distribution looks reasonable, they are no longer flagged at this step as being either a dove or hawk.

Step 3

For each PE flagged in steps 1 and 2, the scale-score distribution (histogram) for the cohort they scored is compared with the distribution of scale scores based on the candidates across the country. This is a check that the cohort’s average scale-scores and pass rate based on all 10 PEs is higher or lower than the values across the country. In this step, we evaluate if a cohort may be higher or lower in ability that may explain a dove or hawk flag in step 1. For example, an PE may be flagged as being a hawk in steps 1 and 2, but the candidates’ scale-scores based on all 10 stations may be lower, indicating a weaker cohort. Thus, the PE would not be flagged as a hawk at step 3.

No PEs were flagged across all 3 steps for the test forms used in 2022.

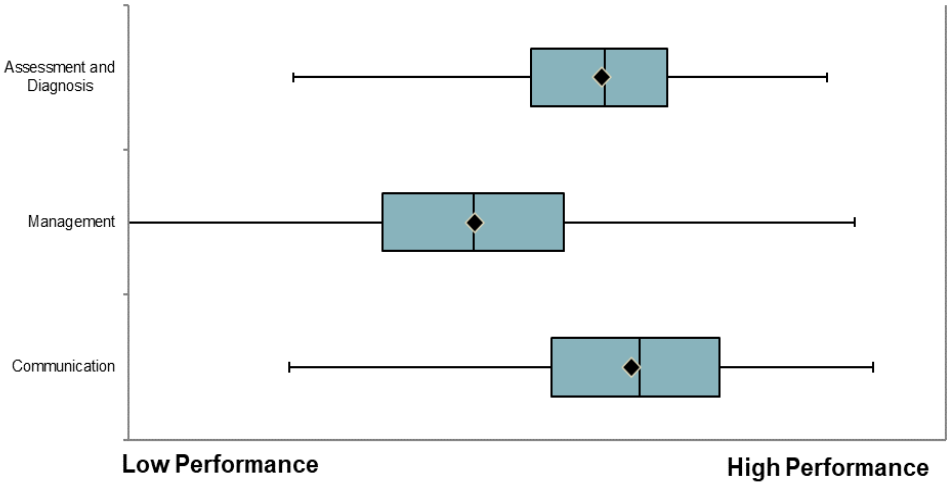
Domain subscore profiles

The purpose of the domain subscore profile is to provide general feedback to candidates by highlighting their relative strengths and weaknesses on 3 broad categories of physician activities assessed by the NAC Examination. A domain subscore profile is presented in the form of a graph to each candidate in the SIR (see **Appendix D** for a sample SIR). The graph shows the domain subscore for each of the 3 domains and the SEM around the domain

subscore. The calculation of the domain subscores for each candidate is outlined in Section 3, Exam Scoring, of this report.

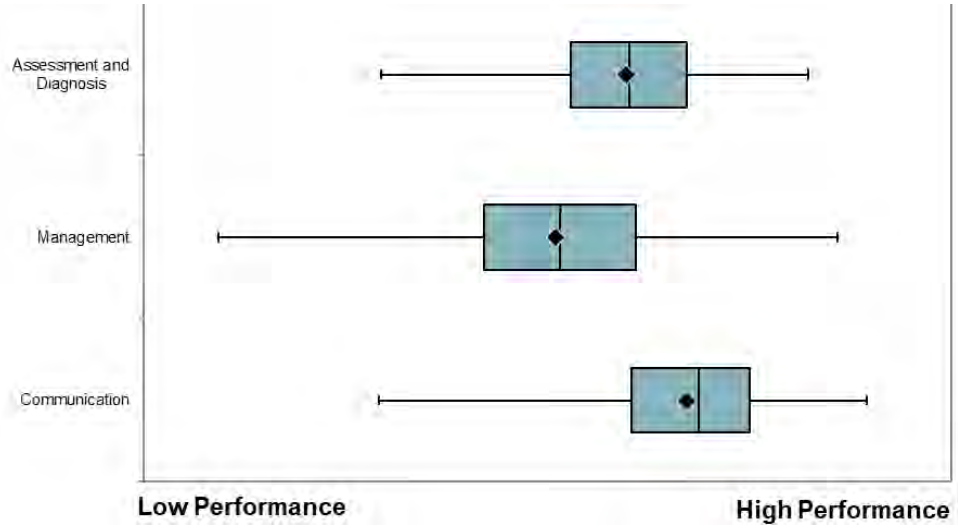
This section provides domain subscore profiles for 2022. The range of domain subscores is shown graphically in **Figure 2** through **Figure 4**. The boxes for each domain indicate the range for 50% of candidates' domain subscores. The vertical line represents the median or 50th percentile domain subscore. The remaining 25% of domain subscores are shown to the right or left of the box as a line (25% to the right and 25% to the left). The mean domain subscore is indicated by the diamond.

Figure 2. *Domain subscore profile for test form 1 for 2022 NAC Examination*



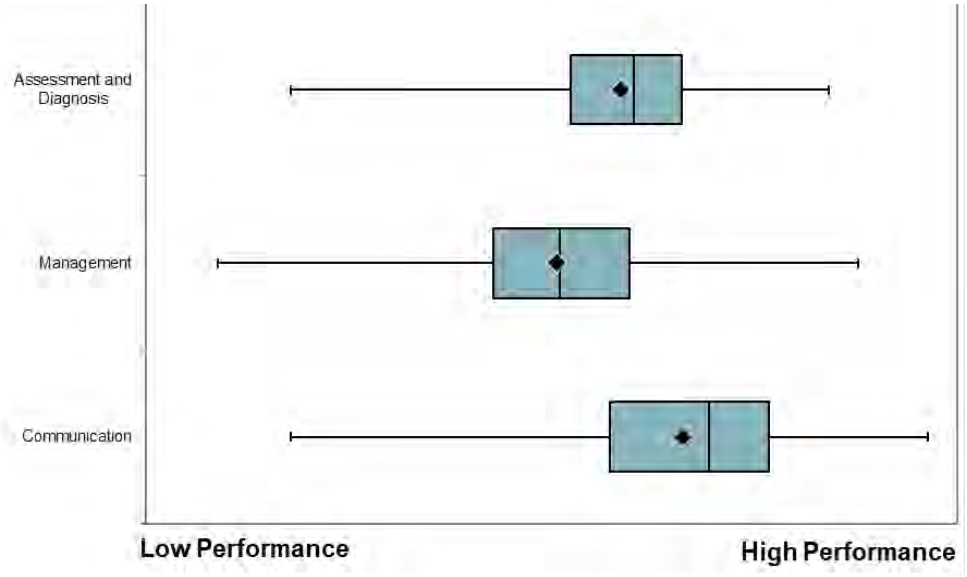
NAC indicates National Assessment Collaboration.
The error bars indicate 25% of values above and below the box.
The left and right ends of the boxes indicate the interquartile range. A box contains 50% of subscores. The vertical line inside the boxes is the median subscore (50th percentile). The diamond indicates the mean subscore.

***Figure 3**. Domain subscore profile for test form 2 for 2022 NAC Examination*



NAC indicates National Assessment Collaboration.
The error bars indicate 25% of values above and below the box.
The left and right ends of the boxes indicate the interquartile range. A box contains 50% of subscores. The vertical line inside the boxes is the median subscore (50th percentile). The diamond indicates the mean subscore.

***Figure 4**. Domain subscore profile for test form 3 for 2022 NAC Examination*



NAC indicates National Assessment Collaboration.
The error bars indicate 25% of values above and below the box.
The left and right ends of the boxes indicate the interquartile range. A box contains 50% of subscores. The vertical line inside the boxes is the median subscore (50th percentile). The diamond indicates the mean subscore.

Historical comparisons

Table 8 presents candidate performance data for the total group, first-time test-takers and repeat test-takers since March 2019 when the new blueprint was implemented. A different score scale was implemented September 2020 through 2022 due to COVID-19 changes to the physical examination and PPE adjustments, though the same blueprint and scoring approach were implemented. Data before 2019 is not included as the previous NAC Examination was very different in terms of blueprint, format, scoring approach, pass score, and score scale. For historical data on the NAC Examination before 2019, see the *2018 NAC Annual Technical Report*.

***Table 8**. NAC Examination candidate performance data for March 2019 to 2022*

	First-time test-takers		Repeat test-takers		Total test-takers	
Session	**Candidates, No.**	**Pass rate, %**	**Candidates, No.**	**Pass rate, %**	**Candidates, No.**	**Pass rate, %**
March 2019[a]	342	53.5	70	61.4	412	54.9
Sept 2019[b]	939	67.7	354	68.6	1293	68.0
Total 2019	**1281**	**63.9**	**424**	**67.5**	**1705**	**64.8**
March 2020[b]	315	60.6	119	71.4	434	63.6
Sept 2020[a]	916	82.2	322	86.6	1238	83.4
Total 2020	**1231**	**76.7**	**441**	**82.5**	**1672**	**78.2**
Total 2021[a,c]	**982**	**83.5**	**323**	**79.2**	**1305**	**82.5**
May 2022[d]	368	84.8	56	78.6	424	84.0
Sept 2022[b]	1042	86.6	250	86.0	1292	86.5
Total 2022	**1410**	**86.1**	**306**	**84.6**	**1716**	**85.8**

Abbreviation: NAC, National Assessment Collaboration.
[a]Two No standing cases were excluded from the calculation.
[b]One No standing case was excluded from the calculation.
[c]Due to COVID-19, there was only 1 exam session in October 2021.
[d]One Denied Standing case was excluded from the calculation.

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APPENDIX A:
NAC Examination competency ratings

National Assessment Collaboration

COMPETENCY RATINGS

Based on this interaction, please rate ***this candidate's performance in the following competencies*** as compared to a recent Canadian graduate accepted into postgraduate training (for rating scale anchors, refer to RATING SCALE CRITERIA page).

QUALITY OF HISTORY TAKING

UNACCEPTABLE	BORDERLINE UNACCEPTABLE	BORDERLINE ACCEPTABLE	ACCEPTABLE	ABOVE
O	O	O	O	O

Acquires from the patient, family or other source a chronologic, medically logical description of pertinent events, including questioning about onset, location, duration, character, severity, etc., as appropriate to the case. Gathers information efficiently in sufficient breadth and depth to permit a clear definition of the patient's problem(s).

DIAGNOSIS

UNACCEPTABLE	BORDERLINE UNACCEPTABLE	BORDERLINE ACCEPTABLE	ACCEPTABLE	ABOVE
O	O	O	O	O

Discriminates important from unimportant information and reaches a reasonable differential diagnosis and/or diagnosis.

MANAGEMENT

UNACCEPTABLE	BORDERLINE UNACCEPTABLE	BORDERLINE ACCEPTABLE	ACCEPTABLE	ABOVE
O	O	O	O	O

Discusses therapeutic management, including but not limited to pharmacotherapy, adverse effects and patient safety, disease prevention and health promotion when appropriate. Selects appropriate treatments (including monitoring, counselling, follow-up); considers risks and benefits of therapy and instructs the patient accordingly. Identifies medication classes, except when specific drugs and dosages would reasonably be expected in the context of the clinical problem.

COMMUNICATION SKILLS

UNACCEPTABLE	BORDERLINE UNACCEPTABLE	BORDERLINE ACCEPTABLE	ACCEPTABLE	ABOVE
O	O	O	O	O

Uses a patient-centred approach: establishes trust and respect and shows sensitivity to the patient's needs. Provides clear information and confirms patient's understanding: encourages questions and uses repetition and summarizing to confirm and/or reinforce understanding. Respects confidentiality when appropriate. Avoids use of jargon/slang and uses tone and vocabulary appropriate to the patient. Demonstrates appropriate non-verbal communication (e.g., eye contact, gesture, posture and use of silence).

QUALITY OF PHYSICAL EXAMINATION

UNACCEPTABLE	BORDERLINE UNACCEPTABLE	BORDERLINE ACCEPTABLE	ACCEPTABLE	ABOVE
O	O	O	O	O

Elicits physical findings in an efficient logical sequence that documents the presence or absence of abnormalities and supports a definition of the patient's problem(s). Demonstrates sensitivity to the patient's comfort and modesty; explains actions to the patient.

INVESTIGATIONS

UNACCEPTABLE	BORDERLINE UNACCEPTABLE	BORDERLINE ACCEPTABLE	ACCEPTABLE	ABOVE
O	O	O	O	O

Selects suitable laboratory or diagnostic studies to elucidate or confirm the diagnosis; takes into consideration associated risks and benefits.

DATA INTERPRETATION

UNACCEPTABLE	BORDERLINE UNACCEPTABLE	BORDERLINE ACCEPTABLE	ACCEPTABLE	ABOVE
O	O	O	O	O

Interprets investigative data appropriately in the context of the patient's problem(s).

APPENDIX B:
NAC Examination competency descriptors

National Assessment Collaboration

COMPETENCY DESCRIPTORS

Based on this interaction, please rate ***THE QUALITY OF THIS CANDIDATE'S PERFORMANCE IN THE FOLLOWING COMPETENCIES*** as compared to a recent Canadian graduate accepted into post-graduate training (for rating scale anchors, refer to RATING SCALE CRITERIA page).

UNACCEPTABLE as compared to a recent Canadian graduate accepted into postgraduate training	**BORDERLINE UNACCEPTABLE** as compared to a recent Canadian graduate accepted into postgraduate training	**BORDERLINE ACCEPTABLE** as compared to a recent Canadian graduate accepted into postgraduate training	**ACCEPTABLE** as compared to a recent Canadian graduate accepted into postgraduate training	**ABOVE** the level expected of a recent Canadian graduate accepted into postgraduate training
○	○	○	○	○

QUALITY OF HISTORY TAKING
Acquires from the patient, family or other source a chronologic, medically logical description of pertinent events, including questioning about onset, location, duration, character, severity, etc. as appropriate to the case. Gathers information efficiently in sufficient breadth and depth to permit a clear definition of the patient's problem(s).

DIAGNOSIS
Discriminates important from unimportant information and reaches a reasonable differential diagnosis and/or diagnosis.

MANAGEMENT
Discusses therapeutic management, including but not limited to pharmacotherapy, adverse effects and patient safety, disease prevention and health promotion when appropriate. Selects appropriate treatments (including monitoring, counselling, follow-up); considers risks and benefits of therapy and instructs the patient accordingly. Identifies medication classes, except when specific drugs and dosages would reasonably be expected in the context of the clinical problem.

COMMUNICATION SKILLS
Uses a patient-centered approach: establishes trust and respect and shows sensitivity to the patient's needs. Provides clear information and confirms patient's understanding: encourages questions and uses repetition and summarizing to confirm and/or reinforce understanding. Respects confidentiality when appropriate. Avoids use of jargon/slang and uses tone and vocabulary appropriate to the patient. Demonstrates appropriate non-verbal communication (e.g., eye contact, gesture, posture and use of silence).

QUALITY OF PHYSICAL EXAMINATION
Elicits physical findings in an efficient logical sequence that documents the presence or absence of abnormalities and supports a definition of the patient's problem(s). Sensitive to the patient's comfort and modesty; explains actions to the patient.

INVESTIGATIONS
Selects suitable laboratory or diagnostic studies to elucidate or confirm the diagnosis; takes into consideration associated risks and benefits.

DATA INTERPRETATION
Interprets investigative data appropriately in the context of the patient's problem(s).

APPENDIX C:
NAC Examination statement of results (SOR)

National Assessment Collaboration Examination
Statement of Results

Candidate name:	XXXXXXXXX, XXXXXXXX		
Candidate code:	XXXXXXXXXX		
Examination session:	September 2022	**Your final result:**	Pass
Pass score:	1374	**Your total score:**	1467

November 3, 2022

We are writing to inform you of your final result on the National Assessment Collaboration Examination.

Your total score is reported as a scaled score ranging from 1300 to 1500 with a mean of 1400 and standard deviation of 25. The mean and standard deviation were set using the results from the September 2020 session.

Your final result is based on your total score relative to the pass score.

For more information, please visit the exam's Scoring web page on our website, mcc.ca.

Supplemental information on your examination performance is reported to you in a separate document within your physiciansapply.ca account.

mcc.ca
physiciansapply.ca
inscriptionmed.ca

APPENDIX D:
NAC Examination supplemental information report (SIR)

National Assessment Collaboration Examination
Supplemental Information Report

Candidate name: XXXXXXXXX, XXXXXXX

Candidate code: XXXXXXXXXXX **Your final result:** Pass

Examination session: September 2022 **Your total score:** 1467

This report provides you with supplemental information on your performance on the National Assessment Collaboration (NAC) Examination.

The NAC Examination assesses core abilities to apply medical knowledge, demonstrate clinical skills, develop investigational and therapeutic clinical plans, as well as demonstrate communication skills at a level expected of a medical graduate entering into postgraduate training in Canada.

The exam assesses your performance across three broad domains that reflect a physician's scope of practice as indicated in the following table. Each domain is assigned a weighting on the exam and the content weights are expressed as percentages.

Domains	Weighting (%)
Assessment and Diagnosis	70 ± 5
Management	15 ± 5
Communication Skills	15 ± 5

See p. 2 of this report for the domain definitions.

Figure 1 displays your performance in each domain. We provide your subscores along with the mean subscore of first-time takers who passed the same exam. We also provide the standard error of measurement (SEM) for each of your subscores. It represents the expected variation in your subscore if you were to take this exam again with a different set of questions covering the same domains.

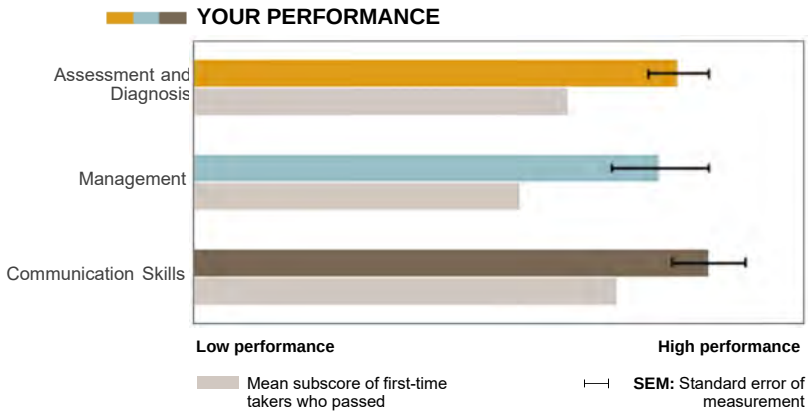
Small differences in subscores or overlap between SEMs indicate that performance in those domains was somewhat similar. Overlap between the SEM and the mean score of first-time takers who passed signifies that performance is similar to the mean.

Subscores are based on less data than the total score and have less precision. Your total score and subscores cannot be compared as they are calculated differently. The pass score cannot be applied to Figure 1.

For more information, please visit the exam's Scoring web page on our website, mcc.ca.

mcc.ca
physiciansapply.ca
inscriptionmed.ca

Figure 1: NAC Examination score profile



The following defines the three domains assessed by the exam:

- **ASSESSMENT AND DIAGNOSIS** covers the following physician activities:
  - **History Taking:** Acquires from the patient, family or other source a chronologic, medically logical description of pertinent events; gathers information in sufficient breadth and depth to permit a clear definition of the patient's problems.
  - **Physical Examination:** Elicits physical findings in an efficient logical sequence that documents the presence or absence of abnormalities, and supports a definition of the patient's problems; sensitive to the patient's comfort and modesty; explains actions to the patient.
  - **Diagnosis:** Discriminates important from unimportant information and reaches a reasonable differential diagnosis and/or diagnosis.
  - **Data Interpretation:** Interprets investigative data appropriately in the context of the patient's problems.
  - **Investigation:** Selects suitable laboratory or diagnostic studies to elucidate or confirm the diagnosis; takes into consideration associated risks and benefits.
- **MANAGEMENT:** Discusses therapeutic management, including but not limited to pharmacotherapy, adverse effects and patient safety, disease prevention and health promotion, when appropriate; selects appropriate treatments (including monitoring, counseling, follow-up); considers risks and benefits of therapy and instructs the patient accordingly.
- **COMMUNICATION SKILLS:** Uses a patient-centered approach; establishes trust and respect, and shows sensitivity to the patient's needs; provides clear information; confirms patient's understanding (encourages questions, and uses repetition and summarizing to confirm and/or reinforce understanding); respects confidentiality when appropriate; speaks clearly (volume and rate); avoids use of jargon/slang and uses vocabulary appropriate to the patient; demonstrates appropriate non-verbal communication (e.g., eye contact, gesture, posture and use of silence).

Report: November.3, 2022 2/2
Candidate code: XXXXXXXXX