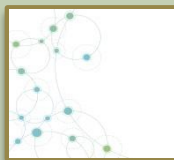


Canadian Assessment of Competence in Optometry

# Summary Report 2016-17



**OUR VISION:** Be the recognized leader in competence assessments for optometry in Canada.



MESSAGE FROM  
OUR CEO



2016-17 ADMINISTRATION RESULTS



ASSESSING COMPETENCY  
WITH CONFIDENCE



## Report Purpose and Use

The annual exam report provides OEBC members and stakeholders, including the public, with information about the performance of the CACO exam. This is the final administration of the CACO exam, with its replacement by the OEBC exam. The reporting period is October 1 to May 30.

Optometry regulators rely on the CACO exam for the purpose of registration, i.e. that individuals who have passed the CACO exam have met the minimum required competence for registration to practice. This report including exam reliability statistics provides assurance to the regulatory bodies that they may rely on the CACO exam for the purpose intended. This report is presented to OEBC members and published on the OEBC website annually.

NB: Examination statistics in this report are approved by Martek Assessments Ltd. and OEBC's principal psychometrician A. Marini, PhD.



## What is OEBC?

The Optometry Examining Board of Canada (also called “OEBC”) is the national examining body for optometry incorporated as a not-for-profit corporation in 1995 as “Canadian Examiners in Optometry.” Its members are the ten provincial regulatory bodies of optometry in Canada who elect the board of directors of OEBC. The board governs the corporation and the CEO manages the operations.

OEBC’s vision is to be the recognized leader in competence assessments for Optometry in Canada. OEBC’s mission is to create and administer a legally valid and defensible examination to assess competence in the practice of optometry in Canada. OEBC’s values are a commitment to trust, integrity, transparency, engagement and responsibility. OEBC’s exam services and policies are described at [oebc.ca](http://oebc.ca).

Send communication inquiries to [exams@oebc.ca](mailto:exams@oebc.ca).



## A Message from our CEO

At OEBC, our mission is to create and administer a legally valid and defensible examination to assess competence in the practice of Optometry in Canada. We have been busy this year, making several changes or enhancements at OEBC and its exam services, as we continue to implement OEBC's 5-year strategic plan.

### New corporate name

A corporate name change from Canadian Examiners in Optometry to Optometry Examining Board of Canada was approved by the members in January and came into effect in March 2017. Our new name better signals the corporation's national purpose and identity.

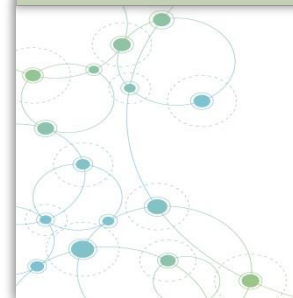
### New exam names

The exam is known now as the OEBC exam with its two parts known as OEBC Written exam and OEBC OSCE. The company name changed mid-year and business was conducted under "CEO" until this time. All information in this report refers to OEBC.

### Transitioning from the CACO

In October 2016 OEBC offered the final administration of the Canadian Assessment of Competence in Optometry (CACO). OEBC administered the CACO one final time in May 2017 for retakes only. The CACO has been the entry exam since 2011, when it replaced the Canadian Standards Assessment in Optometry (CSAO).

**"Our mission is to create and administer a legally valid and defensible examination to assess competence in the practice of Optometry in Canada"**



TAMI HYNES  
CEO

### OEBC exam launch

In May 2017, OEBC launched the OEBC exam with a written exam and a practical exam (Objective Structured Clinical Exam, “OSCE”). OEBC updated the exam to reflect current optometry practice and to align with Canadian testing best practice, both competency-based assessment and adoption of the OSCE method for the practical exam. The exam assesses entry-level competencies in the OEBC exam blueprint with content and weightings derived directly from OEBC’s *National Competency Profile (May 2015)* (“NCP”). The NCP is published at [oebc.ca](http://oebc.ca)

### Competency article accepted

The Canadian Journal of Optometry has accepted an article describing the process that took place to develop the OEBC’s National Competency Profile for Entry-Level Optometry May 2015. Publication is expected in 2018.

### Online registration is here

OEBC introduced an online registration portal in order to make exam registration easier and to continue our organization’s efforts to automate manual processing. Online registration launched in June 2017 and accommodates all five eligibility paths in the Exam Eligibility & Retake policy. In May 2017, an announcement about the change, reason for the change, steps for candidates to follow and deadlines was posted online and sent to accredited optometry programs (Canada, US). Stakeholders are invited to refer to [oebc.ca](http://oebc.ca) for future updates including implementation of online results reporting for exam candidates.

“Online registration launched in June 2017 accommodates all five eligibility paths in the Exam Eligibility & Retake policy.”

“Through my involvement I was able to enjoy daily practice at the office more as it kept me very current on practice standards.”

— D. Lu, OD

Learn more about volunteer qualifications, training and continuing education credits [here](#).

## Updated Policies

Exam policies provide guidance and information to candidates for fairness and transparency. In June, OEBC published a new policy “Administration Dates, Location & Frequency” that gives information about why and how exam administration dates are set. In addition, OEBC updated the following policies and documents:

- Appeals policy – administrative updates
- CACO Eligibility & Reassessment Transitional Candidates – clarification for those attempting the OEBC exam in fall 2017 having previously attempted the CACO
- Publication of Results – the registration form now allows the OEBC office to verify a candidate’s pass/fail to FORAC, the Federation of Optometry Regulatory Authorities of Canada
- Fail report - OEBC provides a report to candidates who have not passed. The report reflects the new exam design and gives performance information for the practice areas in the blueprint.

OEBC continues to strive to set Canadian testing best practice standards that reflect current optometry practice. When we reach those goals, we are able to support each candidate with transparency and fairness.



Tami Hynes  
CEO

OEBC exam policies are available in English and French at [oebc.ca](http://oebc.ca) under “Exam Policies.”

“OEBC published a new policy that gives information about why and how exam administration dates are set.”

## What Has Changed in This Year's Report?

- There are two annual exam reports this year, one for the CACO and one for the OEBC Exam. The CACO report aggregates performance data for fall 2016 and spring 2017 reassessments and the OEBC Exam report aggregates performance data for fall 2016 CACO written and spring 2017 OEBC OSCE as well as the spring 2017 OEBC Exam (OSCE and written).
- This report is for the CACO Exam. OEBC returns to one annual exam report in 2017-18. OEBC continues to publish annual reports for the Canadian optometry education programs.

---

“The opportunity to meet and discuss with colleagues keeps me up to date in my optometric knowledge.”

— G. Raby, OD

## 2016-17 CACO Administration Results

### 2016-17 CACO Exam Delivery

OEBC completed five administrations in two locations in this administration cycle. OEBC delivered three CACO administrations at the University of Waterloo School of Optometry and Vision Sciences. Another two administrations were held at the École d'optométrie de l'université de montréal. CACO administrations were held:

- October 2016 CACO (written, skills) in Montreal
- October 2016 CACO (written components only) in Waterloo
- May 2017 CACO (written, skills) in Waterloo

---

The total pass rate amalgamates Canadian, US and internationally-educated candidate performance and reflects the diversity of the subgroups.



## 2016-17 Exam Performance Highlights

### Candidates challenging the CACO

This administration cycle represents a transition period to the new OEBC examination. In total, 255 candidates were seen during the 2016-17 cycle, with 183 candidates sitting the new OEBC exam while 72 candidates sat CACO, the results of which are reported in this document.

### Pass rates

The CACO 2016-2017 Administrations Scorecard provides pass rates by candidate subgroup and by attempt. This year, the total pass rate was 69.4%, down 17.4% from 86.8% in the previous year. A number of factors contribute to this significant drop in pass rates. First, a high proportion of the candidates were in fact reassessment candidates with only 39 of the 72 being first time candidates, including only 1 first time Canadian trained candidate. Second, the dominant proportion of the candidate pool was made up of international candidates, 38 of 72, who typically reflect a lower pass rate for the CACO exam. Taken together, the demographic characteristics of this reporting period of the CACO are not representative of previous years.



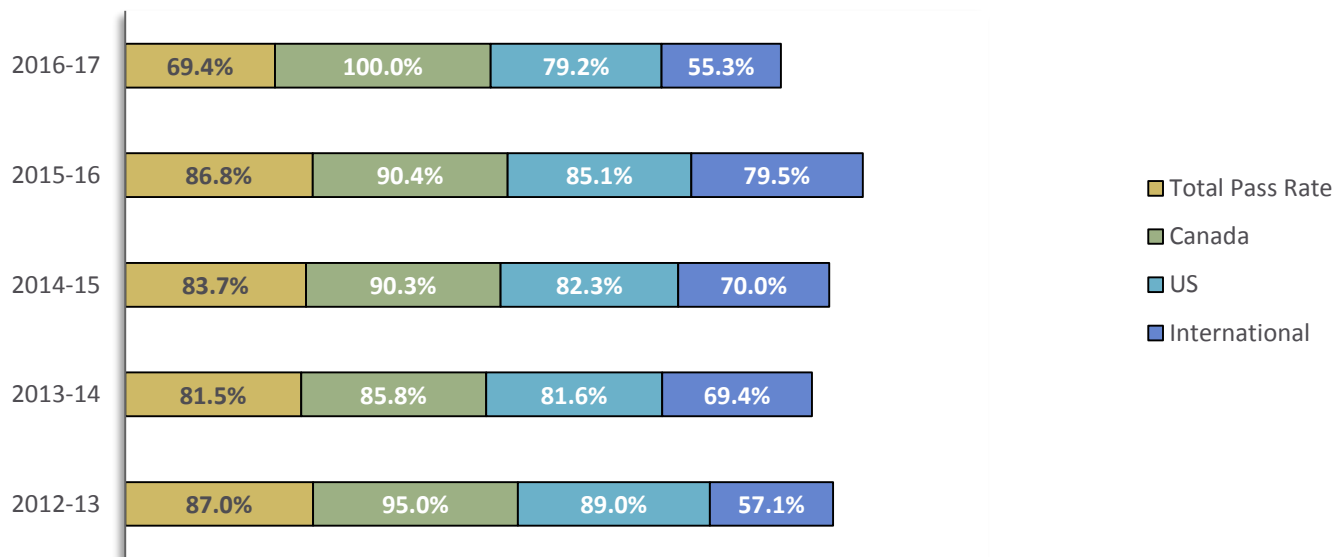
## CACO Administrations Scorecard — 2016-17

	Canadian				US				International				<b>Total Pass Rate</b> (All groups in All attempts)
	First Attempt	Second Attempt	Third Attempt	Total CDN	First Attempt	Second Attempt	Third Attempt	Total US	First Attempt	Second Attempt	Third Attempt	Total INT	
Pass Rate	0%	100%	N/A	100%	55.6%	64.7%	60.0%	79.2%	44.8%	53.3%	0%	55.3%	69.4%
Candidate Totals	0/1	10/10	0	10/10	5/9	11/17	3/5	19/24	13/29	8/15	0/2	21/38	50/72

*For the purposes of interpretation, note that the results of this report are a reflection of the status of a candidate at the end of this year's administration cycle (fall and spring). Therefore the report reflects a "candidate lifecycle", however a candidate's lifecycle can extend beyond one administration cycle (year). Third attempt candidates are always from a prior administration cycle. This year, a small number of candidates undertook two administrations. Second attempts within the reporting cycle typically involve international candidates, particularly if international candidates first attempt in the fall. Some candidates are counted as both first attempt and second attempt. For example, of the 15 international candidates who made a second attempt, 8 of these were part of the first attempt.*

A pass is conferred on a **candidate** when he/she meets or exceeds the minimum performance level for each of the CACO's components.

## CACO Candidate Performance – Five-year Pass Rates

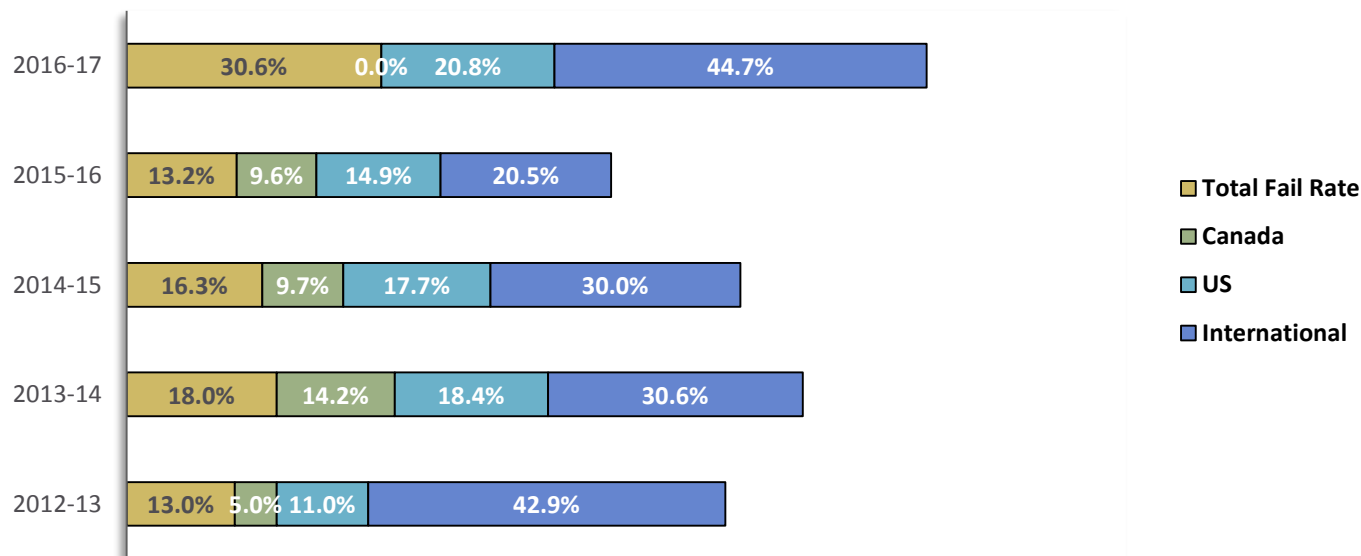


The reporting period is October 1 to September 30 for the past five examination years, starting 2012-13.

The data in the table presents pass rates collapsed across the three subgroups (Canadian-educated, US-educated and Internationally-educated) which make up the overall candidate pool. Given the diversity within and across the candidates, performance level for each of the three main subgroups is also reported.

“I found the workshop a very rewarding experience that allowed me to have a say in ensuring that the questions reflected current clinical experience.”  
— T. Wilbee, OD

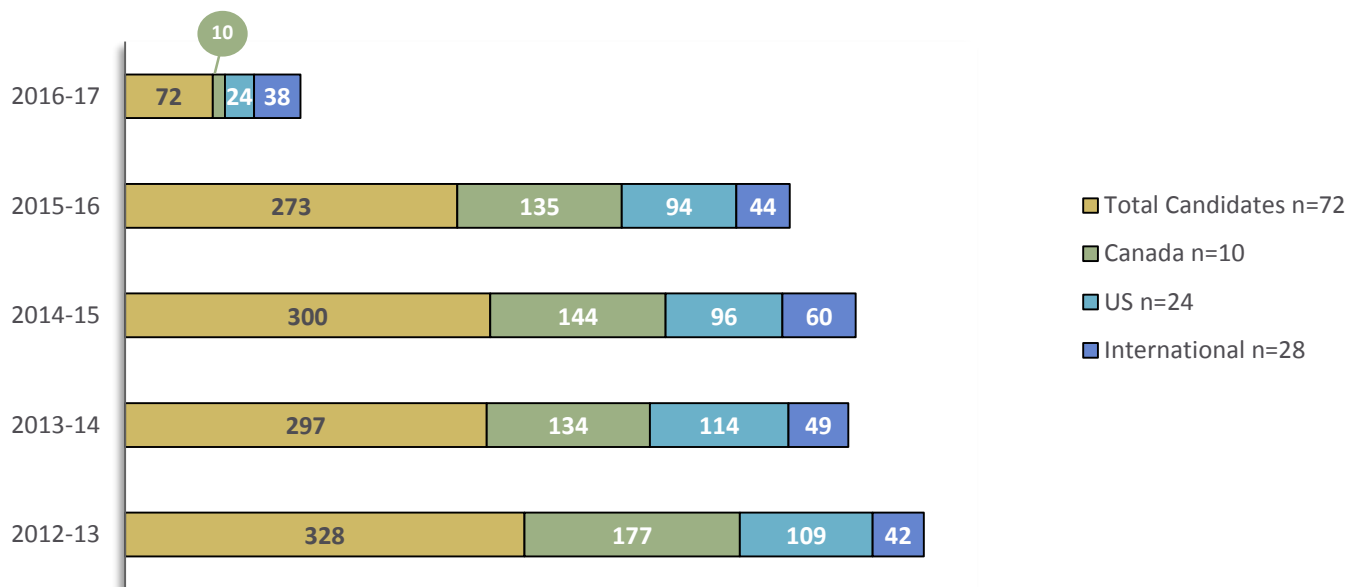
## CACO Candidate Performance – Five-year Fail Rates



*The reporting period is October 1 to September 30 for the past five examination years, starting 2012-13.*

“Optometrists should get involved in the exam because it's our profession and we need to make sure that it remains a profession with educational currency.”  
— T. McNab, OD

## CACO Candidates – Five-year Candidate Numbers Trend



The reporting period is October 1 to September 30 for the past five examination years, starting 2012-13 Note - Total Candidates does not include candidates who took the CACO written-only.

“I can see the importance of communication and participate in changes that advance our profession forward”  
— D. Monea, OD

## Understanding CACO Components

Component	Assesses	Competency assessed through...	To pass candidate must...
Ocular Therapeutics	<ul style="list-style-type: none"> <li>General Microbiology</li> <li>General Immunology</li> <li>General Pharmacology</li> <li>Ocular Pharmacology</li> <li>Ocular Disease/Trauma</li> </ul>	A multiple-choice written exam based on 120 stand-alone test items.	<p>Meet or exceed the minimum level of performance as determined by members of the profession using the <b>Angoff cut-score setting method.</b></p>
Synthesis	<ul style="list-style-type: none"> <li>Refractive conditions of the eye and their management</li> <li>Accommodative conditions of the eye and vision system and their treatment and management</li> <li>Oculomotor conditions of the eye and vision system and their treatment and management</li> <li>Sensory–integrative conditions of the Eye and vision system and their treatment and management:</li> <li>Ocular conditions</li> <li>Systemic disease and its treatment and management</li> </ul>	A multiple-choice written exam based on 62 comprehensive cases with four test items per case.	
Clinical Skills as of April 2015	<b>Clinical Skills</b> <ol style="list-style-type: none"> <li>Visual Function</li> <li>Physical Examination</li> <li>Optometric Treatments</li> </ol>	Three, 45-minute performance-based clinical skills stations.	
	<b>Communication Skills</b> <ol style="list-style-type: none"> <li>Case History</li> <li>Communicating a Diagnosis</li> <li>Communicating a Treatment Plan</li> </ol>	Three, 10-minute performance based stations.	

“Through my involvement in writing cases for the exam I am contributing to the profession as well as challenging myself.”

— S. Brooks, OD

## Exam Reliability by Component – 2016-17

Component	Administration October 2016	
	Alpha	K <sup>2</sup> (Livingston's Coefficient Kappa)
Ocular Therapeutics	.81	.95
Synthesis	.83	.97
Skills #1: Visual Function and Case History	.74	.98
Skills #2: Physical Examination and Communicating a Diagnosis	.80	.97
Skills #3: Optometric Treatments and Communicating a Treatment Plan	.76	.96

The Livingston coefficients in this table meet and exceed the generally expected level of .80 which demonstrates the reliability of our test measures.

*Please note that Exam Reliabilities have not been reported for the May 2017 administration as all candidates were reassessment candidates.  
Find out more about interpreting the numbers [here](#).*

## Item Analysis and Scoring Changes – 2016-17

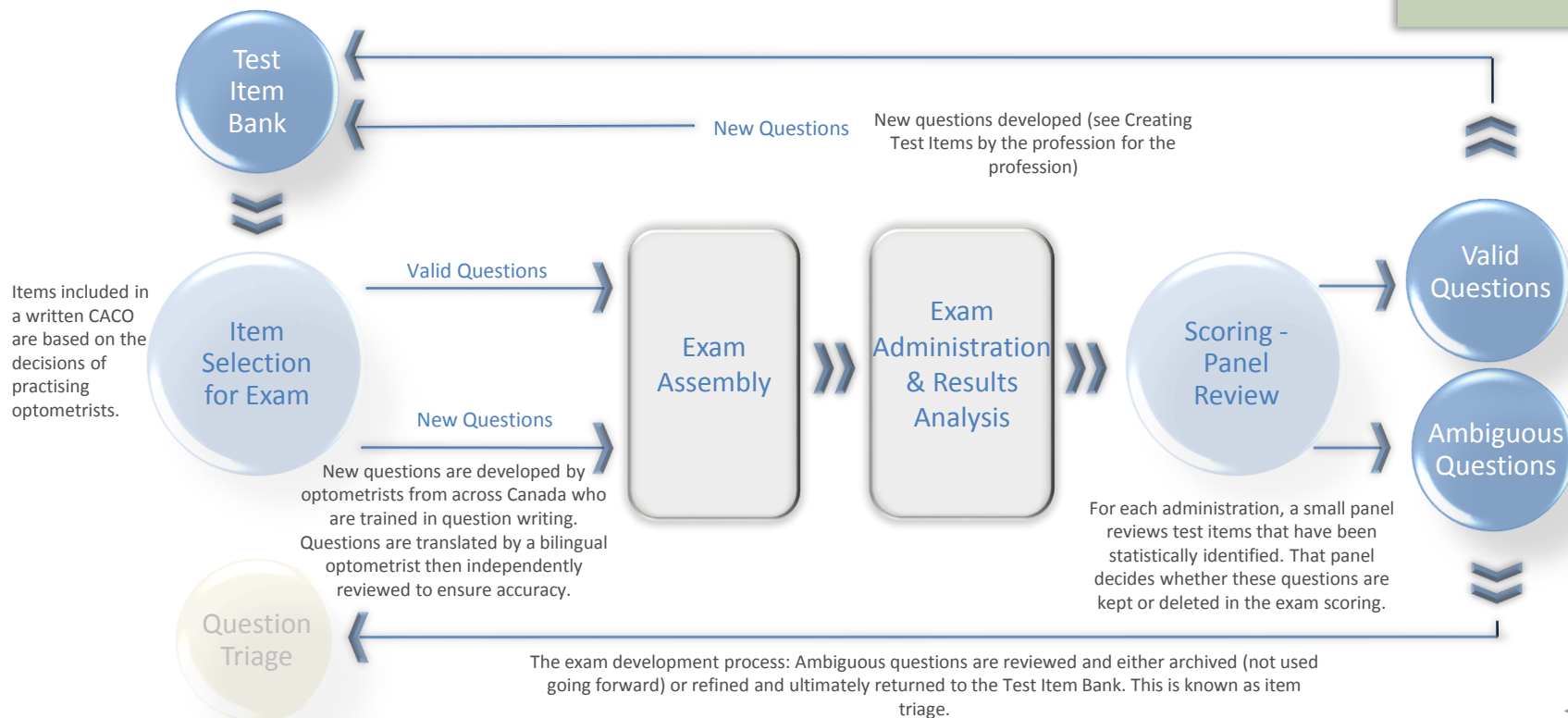
Component	Items Deleted from Scoring	Reason for Change
Ocular Therapeutics	October 2016- Two of 120 items or 1.7% May 2017 - Four of 120 items or 3.3%	Items are deleted if they fail to meet psychometric criteria. This may include items that have performance levels within acceptable difficulty levels or items failing to discriminate positively.
Synthesis	October 2016 - Seven of 248 items or 2.8% May 2017 – Seven of 248 items or 2.8%	
Clinical Skills	October 2016 – All items performed at the appropriate level and were included in scoring. May 2017 – All items performed at the appropriate level and were included in scoring.	

Following each exam administration, OEBC analyses items to ensure they perform in the anticipated manner.

Learn more about the process [here](#).



## Exam Development Process: Choosing and Using Test Items



## Exam Development Process: Creating Test Items

The content of the CACO is based on an exam blueprint. We create new items for the written exam. To create these items, our writers draw from content specifications in the CACO blueprint.

### CACO Blueprint

The CACO blueprint provides the foundation of the written and skills components of the CACO.

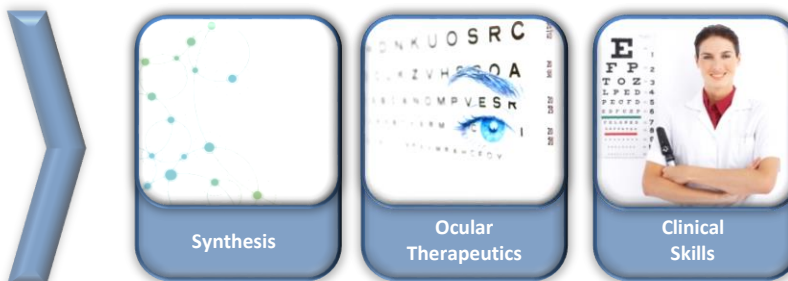
#### Written components

- Synthesis
- Ocular Therapeutics

#### Clinical skills components

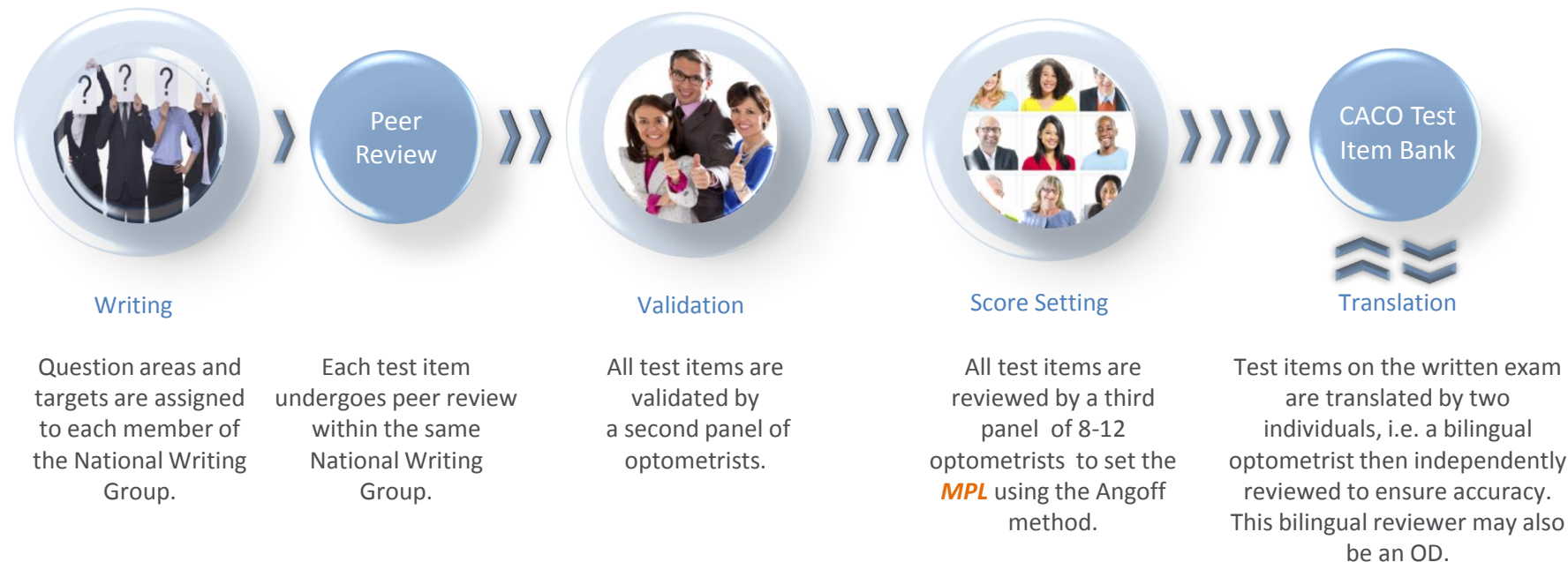
- Clinical skill stations

### CACO Exam Question Areas



## Exam Development Process: Creating Test Items by the Profession for the Profession

The CACO process follows best-practice in exam development methodology and exam content is grounded in professional practice. All optometrists undergo training to develop technical and judgement skills that ensure optometrists become subject matter experts in a particular area of the exam. Different optometrists work in each stage of exam development.





## By the Profession for the Profession

### Qualifications and requirements

Members of the profession volunteer or respond to recruitment invitations to help develop and deliver our exams. These optometrists:

- have been in practice three or more years;
- are registered in good standing with a provincial optometry regulatory body in Canada; and
- meet OEBC's conflict of interest guidelines.



Conflict of interest guidelines exclude optometrists who participate in other optometry exams, exam preparatory courses or optometry degree/bridging programs. Optometrists related to an individual enrolled in a program are prohibited from participating in CACO development. Our volunteer application form along with conflict of interest and confidentiality agreements ask optometrists to disclose their other connexions. We use this information to identify the best path for professional involvement that works for them and OEBC.

### Trained for success

All optometrists undergo training to develop technical and judgement skills in a specific area of assessment that supplement their professional expertise. This process helps ensure valid exam content and assessments.

### Continuing education

Optometrists who volunteer their time and expertise earn hours that can count towards the continuing education requirements of their respective regulatory bodies. OEBC provides a letter confirming an optometrist's participation and the actual and credit hours earned in each event. See **Volunteer with OEBC**.

“Through my involvement in Candidate Skills Assessment [CACO], I was able to revitalize my interest in optometry, and interact with interesting colleagues from different parts of the country.

— C. Alford, OD



OPTOMETRY EXAMINING  
BOARD OF CANADA

BUREAU DES EXAMINATEURS  
EN OPTOMÉTRIE DU CANADA

Canadian Assessment of Competence in Optometry

# Summary Report APPENDICES

## General Definitions

**Angoff cut-score setting method:** is an industry standard in determining the passing score for any licensure (registration) exam. To set the pass score, eight to 12 subject matter experts predict how many minimally competent candidates will respond correctly to a test item. The estimates for each item from all the subject matter experts are averaged, then tallied to yield the cut score or pass score for the examination. Return to

***Understanding CACO Components.***

**OSCE:** stands for Objective Structured Clinical Examination. It is a form of practical examination that provides candidates with a consistent exam experience, and provides assessors with objective behavioural criteria for scoring candidate performances. Return to OSCEs are used by many Canadian licensing bodies (regulators) as one criterion for entry to practice. Examples include medicine, pharmacy, physiotherapy, dental hygiene and nurse practitioners.

**Standardized patient:** is a person who has been trained to present the signs and symptoms of a condition, and respond to candidate questions, statements and actions consistently.



## General Definitions

**Total Pass Rate and Total Fail Rate:** amalgamates Canadian, US and internationally-educated candidate performance. It is the total number of candidates who took the exam this year and who passed. It is calculated by dividing the number of candidates — first, second and third attempt — who completed and passed the CACO (all components) by the total number of candidates who attempted. For regulatory bodies, the Total Pass Rate can be interpreted as the number of candidates who have met the examination requirement for registration/licensure.

The Total Fail Rate amalgamates Canadian, US and internationally-educated candidate performance. It is the total number of candidates who took the exam this year and who failed. For regulatory bodies, the Total Fail Rate can be interpreted as the number of candidates who have not met the examination requirement for licensure/registration.

## General Definitions

**MPL:** stands for Minimum Performance Level and is based solely on performance criteria. CACO candidates attempt to meet or exceed the minimum standard of performance rather than competing against other candidates. The MPL ensures the standard for minimally acceptable competence is consistent despite variation in question content between administrations.

This method also removes predetermined passing rates for the administration of the CACO. If the candidate population has a high level of performance on the assessment, the failure rate will be low. If the performance level of the candidate population on the assessment is low, the failure rate will be higher. The MPL is established in advance of a CACO administration by a panel of practising optometrists. See the definition of **Angoff cut-score setting**. Return to **Creating Test Items by the Profession for the Profession**.

[PURPOSE OF REPORT](#)[WHAT IS OEBC](#)[MESSAGE FROM OUR CEO](#)[2016-17 ADMINISTRATION RESULTS](#)[ASSESSING COMPETENCY WITH  
COMPETENCE](#)[Exam Development Process  
Optometrist Qualifications](#)





## Candidate Definitions

**Candidate:** CACO eligible candidates:

1. have graduated from an Accreditation Council on Optometric Education or ACOE-accredited optometry program; or
2. have completed an optometry bridging program through the IOBP or the EOUM, if they are internationally-educated; or
3. have been practising as optometrists in Canada or the U.S. For example a Canadian OD educated and practising in the U.S. who wants to move back to Canada; or
4. have successfully completed the evaluating exam and been approved to take the CACO.

OEBC adheres to the CACO Eligibility and Registration Policies on its website to verify eligibility for each CACO applicant.

**Canada:** Candidates who have graduated from an accredited Canadian school of optometry.

**US:** Candidates who have graduated from an accredited U.S. school of optometry.

**International:** Candidates who have completed a Canadian bridging program at the International Optometric Bridging Program (IOBP) or were approved to take the CACO by the Quebec Order following bridging education at the L'École d'optométrie de l'Université de Montréal (EOUM) [...More](#)

[Click \*\*here\*\* to return to the Administrations Scorecard.](#)

---



## Candidate Definitions

**First-attempt Candidate:** Candidates who complete the CACO (written and skills components) for the first time in an assessment cycle — October 1 to September 30. Eligible candidates taking the CACO the first time may attempt the written before the skills.

**Second-attempt Candidate:** Candidates who complete CACO component(s) that they failed during their first attempt.

**Third-attempt Candidate:** Candidates who complete CACO component(s) they failed during their second attempt.

Click [here](#) to return to the Administrations Scorecard.

---

## Interpreting the numbers

### What the numbers tell us

The traditional Cronbach's alpha is reported. This coefficient is suitable for norm-referenced tests common in educational testing and which compare exam takers to each other.

The Livingston's reliability coefficient is also reported. This coefficient is suitable for a criterion-referenced test such as the CACO which measures how a candidate's knowledge and skills compared to a defined body of content.

A closer examination of the Livingston's coefficients across all components for the three administrations indicates that they are strong, exceeding .80 – a threshold for high-stake exams. This strong reliability indicator contributes to the validity of CACO test measures.

Click [here](#) to return to Exam Reliability by Component

---



## Understanding item analysis and scoring

Following each exam administration, OEBC performs item analysis. This is a process to examine how each item performed on the exam which helps ensure only valid items are kept for scoring. During this process, a panel of optometrists reviews items that do not meet established criteria and determines whether to include them in scoring.

### When items may be deleted from scoring

Test items are subject to review and possibly deleted from scoring if:

- less than 20% of the total group successfully answer; or
- the item fails to discriminate positively.

### How we make that final decision

A panel of practising optometrists, in consultation with a psychometrician, decides whether to delete the item. Items that are deleted are removed from scoring for all candidates thereby ensuring that reported results are both valid and fair. An item deleted from the scoring of written components is generally made for the entire group of candidates (the whole group level).

It is rare for skills station items to be deleted at the group level. It is more likely for adjustments to occur at the individual candidate level where there was evidence that some factor, such as equipment failure, negatively affected candidate performance.

[Click \*\*here\*\* to return to Item Analysis and Scoring Changes](#)

---