Restructure Update

California Board of Optometry
October 23, 2020
Brianne Hobbs, OD, FAAO
Director of Exam Innovation
Patient Encounters and Performance Skills (PEPS)
Purpose of PEPS Exam

To assess the ability of candidates to enter the independent practice of optometry by evaluating essential skills and the application of knowledge to patient care.
Goals of the PEPS Exam

01 Protect the health of the public (safety and welfare)
02 Align with changes in optometry
03 Meet needs of licensing board by ensuring competency of candidates
Timeline

Spring 2019
- Research
- Stakeholder survey
- Strategic partnerships

Spring 2020
- Creation of Task Force
- Job Task Analysis
- Development of blueprint and model
<table>
<thead>
<tr>
<th></th>
<th>Osteopathic Medicine</th>
<th>Medical Doctors</th>
<th>Podiatry</th>
<th>Pharmacy</th>
<th>Chiropractic Medicine</th>
<th>Physical Therapy</th>
<th>Veterinary Medicine</th>
<th>Dentistry</th>
<th>Optometry</th>
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<tbody>
<tr>
<td>Requirements for</td>
<td>D.O. degree</td>
<td>M.D degree</td>
<td>D.P.M degree</td>
<td>PharmD.</td>
<td>D.C. degree</td>
<td>D.P.T. degree</td>
<td>D.V.M. degree</td>
<td>D.D.S./D.M.D. degree</td>
<td>D.O. degree</td>
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<td>licensure</td>
<td>COMLEX I-III</td>
<td>USMLE I-III</td>
<td>AMPLE I-III</td>
<td>NAPLEX</td>
<td>NBCE I-IV</td>
<td>NPTE</td>
<td>NAVLE</td>
<td>NBDE I-II</td>
<td>NBEO I-III (exc OK)</td>
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<td></td>
<td>Residency</td>
<td>Residency</td>
<td>Residency</td>
<td>Jurisprudence exam</td>
<td></td>
<td></td>
<td>Regional clinical skills exam</td>
<td>State jurisprudence</td>
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<tr>
<td></td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td></td>
<td>NO</td>
<td>National Testing Centers (2)</td>
<td>Regional testing centers (6) in 5 cities</td>
<td>National testing center (with NBOME)</td>
<td>PearsonVue</td>
<td>Chiropractic colleges</td>
<td>Prometric</td>
<td>Prometric</td>
<td>Dental colleges (and potentially other universities)</td>
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<tr>
<td></td>
<td>1295</td>
<td>1290</td>
<td>1230</td>
<td>575*</td>
<td>1535</td>
<td>485*</td>
<td>650*</td>
<td>2000-3000+ (varies)</td>
<td>850</td>
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<tr>
<td></td>
<td>12 standardized</td>
<td>12 standardized</td>
<td>12 standard</td>
<td>Written</td>
<td>Diagnostic imaging</td>
<td>Written</td>
<td>4 major procedures</td>
<td>4 stations</td>
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<td>patients (14 min</td>
<td>patients (14 min</td>
<td>patients (15 min each) and 10 min to chart</td>
<td>(15 min each) and 10 min to chart</td>
<td>250 MC questions</td>
<td>(20 stations x 2 min)</td>
<td>360 MC questions</td>
<td>(3 x 30 min)</td>
<td>(1 x 15 min)</td>
<td>(varies)</td>
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<tr>
<td>each) and 9 min to</td>
<td>each) and 10 min</td>
<td>(15 min each) and 10 min to chart</td>
<td>(15 min each) and 10 min to chart</td>
<td>6 hrs</td>
<td>Chiropractic testing (5 stations x 5 min)</td>
<td>6.5 hrs</td>
<td>2 patient</td>
<td>2 days</td>
<td>83% - 2016</td>
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<tr>
<td>chart</td>
<td>to chart</td>
<td>to chart</td>
<td>to chart</td>
<td></td>
<td>Case management (20 stations x 5 min)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>7 hrs total</td>
<td>8 hrs total</td>
<td>7.5 hrs total</td>
<td>21</td>
<td>2 hrs 25 min testing</td>
<td></td>
<td>4 stations</td>
<td>19 clinical skills</td>
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<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes (recently)</td>
<td>No</td>
<td>Yes (currently)</td>
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<td>Yes (currently)</td>
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<tr>
<td></td>
<td>92.8%</td>
<td>96%</td>
<td>85-89% (?)</td>
<td>89.46%</td>
<td>88% - 2017</td>
<td>89.1%*</td>
<td>85-99.8%</td>
<td>85% - 2016</td>
<td>81% - 2017</td>
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<tr>
<td></td>
<td>First-time 2017-2018</td>
<td>First-time</td>
<td>First-time</td>
<td>First-time</td>
<td>94% - 2018</td>
<td>91.7%(0)*</td>
<td>91.7%(0)*</td>
<td>Overall</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6504 (114,000)</td>
<td>19524 (1.1 million)</td>
<td>500-600 (14,000)</td>
<td>~15000 (312,500)</td>
<td>~2500 (70,000)</td>
<td>3000 (71,060)</td>
<td>6238 (153,500)</td>
<td>1658 (37720)</td>
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<tr>
<td>Psychometric method</td>
<td>Modified Angoff</td>
<td>Modified Angoff</td>
<td>Modified Angoff</td>
<td>Classical Test Theory</td>
<td>IRT</td>
<td>---</td>
<td>---</td>
<td>Rasch model (IRT)</td>
<td>Modified Angoff</td>
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### States with Minimum Exam Components

<table>
<thead>
<tr>
<th>State</th>
<th>Case history</th>
<th>Visual acuity</th>
<th>Refraction</th>
<th>Binocularity</th>
<th>Ocular Motility</th>
<th>Tonometry</th>
<th>Internal examination</th>
<th>Pupils</th>
<th>Slit lamp exam</th>
<th>Comment</th>
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<td>D.C.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Tonometry &gt;12 yrs</td>
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<tr>
<td>Maine</td>
<td>X</td>
<td>X*</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>Tonometry &gt; 40 yrs</td>
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<td>Maryland</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>“standard of care”</td>
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<td>North Dakota</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>“standard of care”</td>
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<td>Puerto Rico</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>CL fitting</td>
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<td>Rhode Island</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>“defined by department”</td>
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<tr>
<td>South Carolina</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td></td>
<td>Visual field screening</td>
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<tr>
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<td>X</td>
<td>X</td>
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<td>Accommodation, convergence, visual field screening</td>
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<tr>
<td>Tennessee</td>
<td>X</td>
<td>X*</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>Visual field screening, “Coordination testing”, CL fitting</td>
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<td>X*</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>Accommodation, “angle of vision”</td>
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<td>Virginia</td>
<td>X</td>
<td>X</td>
<td>X*</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>CL fitting</td>
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<td>Wisconsin</td>
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<td>X*</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>“measuring corneal curvature”, convergence and accommodation</td>
</tr>
</tbody>
</table>

X= required  
* Includes objective refraction
Simulations

2 BIO simulators

Slit lamp simulator

Foreign body removal model
Timeline

Spring 2019
- Research
- Strategic partnerships
- Stakeholder survey

Creation of Task Force

Job Task Analysis

Spring 2020
- Development of blueprint and model
12 stations with standardized patients

10 patient encounters

2 skills stations

Patient Encounter
Patient Encounter
Patient Encounter
Patient Encounter
Patient Encounter
Patient Encounter
Patient Encounter
Patient Encounter
Patient Encounter
Patient Encounter

Performance skills
Performance skills
<table>
<thead>
<tr>
<th>Competency Domains</th>
<th>Weight</th>
</tr>
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<tbody>
<tr>
<td>Clinical Assessment and Interpretation</td>
<td>29</td>
</tr>
<tr>
<td>Management and Documentation</td>
<td>25</td>
</tr>
<tr>
<td>Skills</td>
<td>22</td>
</tr>
<tr>
<td>Patient Education</td>
<td>13</td>
</tr>
<tr>
<td>Communication and Professionalism</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Clinical Presentations</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anterior Segment Disease</td>
<td>17</td>
</tr>
<tr>
<td>Posterior Segment Disease</td>
<td>16</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>14</td>
</tr>
<tr>
<td>Systemic Disease</td>
<td>11</td>
</tr>
<tr>
<td>Refraction</td>
<td>11</td>
</tr>
<tr>
<td>Neuro-Ophthalmic Disease</td>
<td>9</td>
</tr>
<tr>
<td>Contact Lenses</td>
<td>8</td>
</tr>
<tr>
<td>Binocular Vision</td>
<td>8</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>
10 patient scenarios
Format of Scenario Stations

- Doorway information
- Case History
- Clinical Data
- Additional Tests
- Patient Education
- SOAP note
2 skills stations

Tonometry
Gonioscopy
Biomicroscopy
BIO
Dilated biomicroscopy
Where are we at now?
committees are working to further develop the exam

Scenario Development Committee
- Develop scenarios
- Review and edit submitted cases

Exam Development Committee
- Generate recommendations regarding exam structure, content, scoring
Pilot Testing

Pilot 1
September 22

Case portrayal by SPs
Evaluation forms
Timing of stations
Format of scenario stations
SOAP note

Analysis
Adjustment

Pilot 2
November 21

Scale Fidelity
Examination Development Process

Brooke Houck, Ph.D.
Director of Psychometrics & Research
Test Development
"Validity refers to the degree to which evidence and theory support the interpretations of test scores for proposed uses of tests. Validity is, therefore, the most fundamental consideration in developing and evaluating tests."¹ (p.11).

To ensure a test is valid for assessment, we determine if we have sufficient evidence to allow us to draw inferences from the test results, and to take actions based upon those results.

This initial and ongoing process determines key aspects of the testing program:

- **Goals**: What is the purpose of the test?
- **Audience**: Who are the stakeholders in the exam?
Structured process to determine and document a test’s defining characteristics:

• Test form
• Test administration format
• Score Reports
Analyze Domains

A review is conducted to define and document, knowledges and skills that are relevant to the test.

• **Knowledges**: What basic concepts and subject areas should appear on the test?

• **Skills**: What types of tasks should examinees be able to complete?
Develop Blueprint (Content Matrix)

• How many test items/tasks should be devoted to each content area?

• What item format is most appropriate for each content area?

• How many items should be developed for each cognitive complexity level?
Develop & Review Content

- Test items/tasks are drafted, using the content areas determined by the Blueprint.

- The items/tasks are reviewed and revised, and approved for either pre-testing, further review and revision, or rejected.

- The result is a bank of items/tasks that aligns with the blueprint and the intended interpretations and uses of test scores.
• Items/tasks are administered as **pilot items on operational forms** to collect response data.

• After these items/tasks are piloted, they are **evaluated** for their usefulness based on statistical characteristics such as:
  • model fit,
  • difficulty, and
  • discrimination (the ability of the question to distinguish the minimally qualified candidate from the unqualified candidate).
• Committees and councils work to assemble items/tasks into one or more test forms that are administered to test takers to be scored.

• The forms meet the blueprint specifications and are balanced for content and statistical characteristics such as difficulty, discrimination, test time, reliability, and standard error.

• If an appropriate benchmark (i.e., pre-defined) cut score exists, the cut score on the new forms is equated to the benchmark.
Conduct Standard Setting

• If an appropriate cut score does not exist, a panel of experts reviews the test to establish performance standards for a **minimally qualified candidate** (MQC) to pass.

• Performance standards are translated into one a cut score for the test.
As a group, subject matter experts (SMEs) discuss the skills and abilities of the minimally qualified candidate (MQC).

SMEs judge how they believe a minimally qualified candidate would likely perform on each item on the exam.

They review and provide judgments for all items independently, each determining their own passing score.

SMEs provide individual recommendations.

Recommendations are combined, and an aggregate recommendation is calculated.

- Statistically defensible cut score range determined.
Maintain Test

• Once a test is developed and put into operational use, it requires **ongoing care and attention** to improve upon or, at a minimum, maintain validity evidence.
  • Security Analyses
  • Creation and updating of new items/task
  • Job task analyses
  • Standard settings every 5-7 years
  • Using subject matter experts in our annual committees and councils to verify that each test contains questions that are up to date and relevant to current best practices
  • Calibrating examiners and standardized patients through training
  • Inter-rater reliability studies to ensure accuracy of scores on performance-based exams
Task Force to Review Alternative Testing Methodologies during COVID-19

Bill Rafferty, OD
Executive Director, North Carolina State Board of Optometry
Emeritus Professor, Duke University
Members of the Task Force

Bill Rafferty, OD (chair) – State Board Executive Director/ ARBO/NBEO
Larry Davis, OD – UMSL Dean/ASCO/NBEO
Donovan Crouch, OD – ARBO/NBEO
Jerry Richt, OD – NBEO Board Member/ ARBO
Patricia Bennett, MSW – ARBO Board Member/State Board Executive Director
Ron Hopping, OD, MPH – State Board Member/ARBO (NBERC)
Annabelle Storch, OD – recent AOSA President

Larissa Smith, PhD - NBOME Psychometrician
John Sicotte, MBA - NBEO Board Member
Lisa Fennell – ARBO Executive Director
Jill Bryant, OD, MPH – NBEO Executive Director
Patrick O’Neill, OD – ex-officio, ARBO President
Lewis Reich, OD, PhD – ex-officio, NBEO President/SCO President/ASCO

Advisory to Task Force

Dennis Maynes, CESP – Caveon Chief Scientist, Data forensics
Brooke Houck, PhD -- NBEO Psychometrician
Task Force Approach
The Task Force ultimately recommended the following guidance to the NBEO Board of Directors:

1. Examination integrity, reliability, and validity must be maintained;
2. Any changes to testing should be able to be implemented within a 3-month time frame;
3. NBEO should make accommodations in the Part III CSE testing schedule to accommodate group travel of students from schools and colleges;
4. NBEO further investigate the feasibility of a temporary testing site on the west coast
5. Consider outreach for potential advocacy efforts by other organizations; and
6. NBEO should continue to negotiate scheduling options for the computer-based examinations with Pearson VUE.