The DLOSCE:
A National Standardized High-Stakes Dental Licensure Examination

Richard C. Black, D.D.S., M.S.
Chair, DLOSCE Steering Committee

David M. Waldschmidt, Ph.D.
Director, ADA Department of Testing Services

ADA American Dental Association®
Overview

- Background and overview of the DLOSCE
- Test development and the construction of a high stakes OSCE for Dental Licensure
- Q & A
Objective Structured Clinical Examinations (OSCEs)

- Objective Structured Clinical Examinations (OSCEs) were developed to assess clinical competence in the medical field.
- OSCEs are now widely used in the health sciences:
  - Part of the US Medical Licensing Examination for all US medical graduates.
  - The NDEB Canada uses an OSCE for dental licensure in Canada.
- OSCEs can measure clinical skills such as communication, clinical examination, knowledge of procedures, prescriptions, etc.
- Typically, examinees rotate through a circuit of short standardized stations (e.g., 5 to 10 minutes each).
- Stations can focus on different elements of clinical competence.
OSCE Benefits

- OSCEs offer many potential benefits (Harden, Lilley, and Patricio, 2016):
  - Can assess a broad range of clinical skills
  - All examinees are assessed using the same stations, on the same competencies and the same tasks
  - Allows for more reliable skill assessment
  - Can assess candidate skills without endangering patient health
  - Capable of assessing clinical and theoretical knowledge
  - Improved candidate perceptions of fairness
DLOSCE Background

- At the request of the Council on Dental Education and Licensure (CDEL), a business plan was developed by the ADA Department of Testing Services (DTS) under the direction and guidance of CDEL.
- Both CDEL and the ADA/ADEA Joint Licensure Task Force strongly endorsed the business plan.
- As recommended by the ADA Board of Trustees Budget and Finance Committee, in February 2017 the Board of Trustees approved the requested funds to begin examination development in 2017.
- The ADA Board of Trustees authorized formation of a DLOSCE Steering Committee, charged with the task of developing and validating the DLOSCE.

- The DLOSCE pilot exam will be available in late 2019, with anticipated deployment in 2020.
Per the directive of the ADA Board of Trustees, the composition of the DLOSCE Steering Committee includes:

<table>
<thead>
<tr>
<th>Number of Members</th>
<th>Representing Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>ADA Board of Trustee members</td>
</tr>
<tr>
<td>2</td>
<td>Council on Dental Education and Licensure (CDEL) -- general practitioners</td>
</tr>
<tr>
<td>2</td>
<td>Dental educators -- experience in teaching comprehensive clinical dentistry</td>
</tr>
<tr>
<td>2</td>
<td>Current state dental board members -- practicing dentists</td>
</tr>
</tbody>
</table>
Dr. Gary L. Roberts, former ADA president, has appointed the following individuals to the DLOSCE Steering Committee:

<table>
<thead>
<tr>
<th>BOT Directive</th>
<th>Appointee</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADA Board of Trustees members</td>
<td>Dr. Richard Black- Chair (TX)</td>
</tr>
<tr>
<td></td>
<td>Dr. Roy Thompson (TN)</td>
</tr>
<tr>
<td>CDEL members who are general dentists</td>
<td>Dr. Edward J. Hebert (LA)</td>
</tr>
<tr>
<td></td>
<td>Dr. Prabu Raman (MO)</td>
</tr>
<tr>
<td>Educators with experience teaching comprehensive clinical dentistry</td>
<td>Dr. Michael Kanellis (IA)</td>
</tr>
<tr>
<td></td>
<td>Dr. Frank Licari (UT)</td>
</tr>
<tr>
<td>Current state dental board members</td>
<td>Dr. David Carsten (WA)</td>
</tr>
<tr>
<td></td>
<td>Dr. Mark R. Stetzel (IN)</td>
</tr>
</tbody>
</table>
DLOSCE Steering Committee Charge and Activities

• Identify governance structure for DLOSCE administration
  – Governance structure must avoid conflicts of interest; potential means of accomplishing this could be through a Commission.
• Identify and establish examination content areas and test specifications (using results from a practice analysis).
• Establish general structure for examination and permissible item formats (multiple choice, manikin, haptic feedback device, etc.).
  – Contract key vendors (e.g., technology, testing vendors) to support examination administration.
• Establish test construction team (TCT) structure.
  – Call for Test Constructor applications
• Identify state(s)/region(s) for the DLOSCE field test(s).
• Develop an examination guide.
ADA Policy and OSCE Acceptance

- DLOSCE development supports ADA policy calling for the elimination of patients from the dental licensure examination process.
- The DLOSCE will serve as another tool that state boards can use to help determine candidate qualifications for licensure.
- Each dental board will make its own choice on whether or not to use the DLOSCE.
- Currently Colorado and Washington accept an OSCE for initial licensure, with no restrictions.
- Currently Minnesota accepts the Canadian OSCE for initial licensure. Canadian OSCE is administered annually at the University of Minnesota, for UM graduates only.
- Other states currently considering an OSCE for initial licensure, with no restrictions.
DTS is working with the Steering Committee to implement the DLOSCE. DTS is a shared service of the ADA that implements high-stakes admission and licensure testing programs for:

<table>
<thead>
<tr>
<th>Joint Commission on National Dental Examinations (JCNDE)</th>
<th>Council on Dental Education and Licensure (CDEL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• National Board Dental Examinations (NBDE)</td>
<td>• Dental Admission Test (DAT)</td>
</tr>
<tr>
<td>• Part I</td>
<td>• Advanced Dental Admission Test (ADAT)</td>
</tr>
<tr>
<td>• Part II</td>
<td></td>
</tr>
<tr>
<td>• INBDE (under development)</td>
<td></td>
</tr>
<tr>
<td>• NBDHE</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outside clients</th>
<th>ADA Board of Trustees</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Optometry Admission Test (OAT)</td>
<td>• Dental Licensure Objective Structured Clinical Examination (DLOSCE)</td>
</tr>
<tr>
<td>• Canadian Dental Admission Test (CDAT)</td>
<td></td>
</tr>
<tr>
<td>• Additional clients</td>
<td></td>
</tr>
</tbody>
</table>
# DTS Units

## Examination Content, Scoring, Analysis, New Development

<table>
<thead>
<tr>
<th>Test Development</th>
<th>Research &amp; Development - Psychometrics</th>
<th>New Psychometric Development &amp; Innovations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conducts Test Construction Team (TCT) meetings for seven examination programs (80+ meetings annually)</td>
<td>Oversees analysis and scoring of examinations (45,000+), professional investigations, and technical publications in support of examination programs</td>
<td>Provides psychometric support in the development of new testing programs.</td>
</tr>
</tbody>
</table>

## DTS Operations

<table>
<thead>
<tr>
<th>Test Administration</th>
<th>Test Security and Fraud Prevention</th>
<th>Communications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oversees application processing and test vendor administrations (40,000+ examinations)</td>
<td>Test security policies, procedures, and candidate appeals; risk assessment</td>
<td>Provides communications for stakeholders and communities of interest</td>
</tr>
<tr>
<td>Responds to phone calls, live chats, emails, faxes (nearly 70,000 annually)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolves testing day problems</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Client Services/Special Projects</th>
<th>Volunteer and Meeting Coordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project management and services to outside clients</td>
<td>Oversees volunteer activities and meeting logistics for TCT and governance meetings.</td>
</tr>
</tbody>
</table>
Standards for Educational and Psychological Testing (2014)

• DLOSCE development efforts are informed by the *Standards for Educational and Psychological Testing*

• The *Standards* provide considerations for developing, implementing, and evaluating tests

• The *Standards* were developed by the American Educational Research Association (AERA), American Psychological Association (APA), and the National Council on Measurement in Education (NCME)
Validity

• The concept of validity is the most important fundamental consideration in developing and evaluating tests (AERA et al., 2014, p. 11)

• Validity refers to the degree to which evidence and theory support a specific interpretation of a test score for a proposed use (AERA et al., 2014, p. 11)

• A validity argument lays out the evidence in support of a specific interpretation of a test score

• Standard 1.0. Clear articulation of each intended test score interpretation for a specified use should be set forth, and appropriate validity evidence in support of each intended interpretation should be provided (AERA et al., 2014, p. 23)
Validity: An Example

- An example…

- **Intended test use:** A testing organization might propose that its examination can be *used* by dental boards to identify candidates who do NOT possess the clinical skills required for safe practice.

- **Proposed score interpretation:** The organization might propose that scores from the examination can be *interpreted* as representing “competence” with respect to the clinical skills required for safe practice.

- Validity is the degree to which evidence and theory support that specific score interpretation.
The Validation Process

• *Validation* is the process of developing a validity argument and collecting evidence to support that argument.

• Kane (2013) has indicated that validation involves evaluating the coherence and completeness of arguments supporting the interpretation of test scores for a given purpose.

• When acquired validity evidence reveals weaknesses or deficiencies, the testing organization is expected to take steps to address the deficiencies to strengthen the validity argument.

• The validation process is an ongoing one – validity should *not* be thought of as being dichotomous (yes/no).
Content-related Validity Evidence

According to the *Standards*, “Validation of credentialing tests depends mainly on content-related evidence, often in the form of judgments that the test adequately represents the content domain associated with the occupation or specialty being considered” (AERA et al., 2014, p. 175)

“Construct underrepresentation” – a threat to validity – occurs when test content does not fully represent the relevant content domain (AERA et al., 2014, p. 175)
Content-related Validity Evidence: Practice Analysis

• Typically, some form of *practice analysis* provides a basis for defining the content domain covered by a licensure test (AERA et al., 2014, p. 182)

• A practice analysis is a systematic study of the tasks performed by members of a given occupation or profession (e.g., general dentistry)

• Often, a practice analysis involves surveying members of the profession regarding the frequency with which they perform certain tasks, and the criticality of those tasks in practice

• The results of a practice analysis help test developers establish “a close link between test content and the job or professional/occupational requirements” (AERA et al., 2014, p. 178)
Content-related Validity Evidence: Expert Judgment

• Typically, decisions about examination content are informed by judgments from *subject matter experts* who are familiar with the requirements of the profession/occupation (AERA et al., 2014, p. 175)

• Subject matter experts often provide judgments regarding the appropriateness or representativeness of the content appearing on a licensure examination (AERA et al., 2014, p. 25)

• Expert judgment can provide a rationale and evidence in support of the inclusion or exclusion of certain content from an examination
Reliability

• In testing, *reliability* refers to the consistency of scores across replications of a testing procedure (AERA et al., 2014, p. 33)

• **Standard 2.0.** Appropriate evidence of reliability/precision should be provided for the interpretation for each intended score use (AERA et al., 2014, p. 42)

• Reliability is reduced by random error, which can be caused by such things as fluctuations in candidate attention or memory, momentary distractions present in the testing environment, and inconsistencies in examiner ratings

• Evidence of high score reliability strengthens a validity argument
Standard Setting

• *Standard setting* is the process of determining a cut score for an examination.

• **Standard 5.21.** When proposed score interpretations involve one or more cut scores, the rationale and procedures used for establishing cut scores should be documented clearly (AERA et al., 2014, p. 107).

• **Standard 5.22.** When cut scores defining pass-fail or proficiency levels are based on direct judgments about the adequacy of item or test performances, the judgmental process should be designed so that the participants providing the judgments can bring their knowledge and experience to bear in a reasonable way (AERA et al., 2014, p. 108).
Documentation of Validity Evidence

• “Supporting documents for tests are the primary means by which test developers, publishers, and other providers of tests communicate with test users” (AERA et al., 2014, p. 123)

• “The objective of the documentation is to provide test users with the information needed to help them assess the nature and quality of the test, the resulting scores, and the interpretations based on the test scores” (AERA et al., 2014, p. 123)

• **Standard 7.4.** Test documentation should summarize test development procedures, including descriptions of the results of the statistical analyses that were used in the development of the test, evidence of the reliability/precision of scores and the validity of their recommended interpretations, and the methods for establishing performance cut scores (AERA et al., 2014, p. 126)
<table>
<thead>
<tr>
<th>1. Planning</th>
<th>7. Test Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Content Definition</td>
<td>8. Test Scoring</td>
</tr>
<tr>
<td>4. Item Development</td>
<td>10. Reporting Test Results</td>
</tr>
<tr>
<td>5. Test Design and Assembly</td>
<td>11. Item Banking</td>
</tr>
<tr>
<td>6. Test Production</td>
<td>12. Technical Reports / Validation</td>
</tr>
</tbody>
</table>
The DLOSCE and the Cone of Uncertainty*

- We are in the beginning phases of a very complex undertaking.
- Cognitive skills assessment vs. performance based assessment.
- Development of a DLOSCE represents an innovative research endeavor.
  - Research findings can sometimes perplex.
  - Planning has to be flexible to address project needs and stay as close as possible to schedule.
DLOSCE Website and Resources

www.ada.org/dlosce
Questions?
Thank you!