Innovations in Assessment Across the Physician Education-Training-Practice Continuum that Support Physician Development & Entrustment Decisions

OIA 2016
Jeanne M. Sandella, DO
NBOME Vice-President for Clinical Skills Testing
What We Are About…

Our Mission

To protect the public by providing the means to assess competencies for osteopathic medicine and related healthcare professions.

Our Vision

To be the global leader in assessment for osteopathic medicine and related healthcare professions.
Who We Serve…

Patients and the osteopathic medical community

- 1000+ National Faculty
- 97,000+ DOs
- 26,000+ Students
- 32,000+ Active Certifications
- 19,000 DO Residents
- Related Health Care Professionals
Assessment across the Continuum

Education → Licensure → Practice → CATALYST

CLIENT ASSESSMENTS

Supporting Physician Development & Entrustment...
What we DO

Clinical skills and performance testing centers

Philadelphia

Chicago
Comprehensive Osteopathic Medical Licensing Examination-USA: COMLEX-USA
COMLEX-USA Series

- COMLEX-USA Level 1
- COMLEX-USA Level 2 - Cognitive Evaluation (CE)
- COMLEX-USA Level 2 - Performance Evaluation (PE)
- COMLEX-USA Level 3
A 24-year-old male presents to the office with a 7-day history of nausea, malaise, and vague abdominal pain. He denies any vomiting or diarrhea. He states his urine looked "funny" yesterday which prompted him to call for an appointment. He has a negative history of drug or tobacco usage. He drinks an average of two beers each weekend, but stated he attended a family barbecue a week ago where he admitted to drinking 5 beers on Saturday. The patient has intact skin and jaundice noted on inspection. Abdomen reveals active bowel sounds, mild fulness and tenderness in both the right and left upper quadrants. The remainder of the physical examination is unremarkable.

Vital signs are:

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>38.0°C (100.4°F)</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>118/72 mmHg</td>
</tr>
<tr>
<td>Heart rate</td>
<td>88/min</td>
</tr>
<tr>
<td>Respiratory rate</td>
<td>20/min</td>
</tr>
</tbody>
</table>

Laboratory evaluation reveals:

<table>
<thead>
<tr>
<th>Test</th>
<th>Patient's Value</th>
<th>Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspartate amino transferase</td>
<td>100 U/L</td>
<td>&lt; 35 U/L</td>
</tr>
<tr>
<td>Alanine amino transferase</td>
<td>52 U/L</td>
<td>&lt; 47 U/L</td>
</tr>
<tr>
<td>Total bilirubin</td>
<td>3.9 mg/dL</td>
<td>0.3-1.2 mg/dL</td>
</tr>
<tr>
<td>Direct bilirubin</td>
<td>1.5 mg/dL</td>
<td>0.5-1.0 mg/dL</td>
</tr>
<tr>
<td>Albumin</td>
<td>3.2 g/dL</td>
<td>3.8-5.0 g/dL</td>
</tr>
</tbody>
</table>

The most likely diagnosis is:
- A. acute alcohol-induced hepatitis
- B. acute pancreatitis
- C. acute viral hepatitis
- D. gallstone pancreatitis
- E. primary biliary cirrhosis
Advanced item technology

Avatars

Videos
COMLEX-USA Level 2-Performance Evaluation

- One-day clinical skills examination (7 hours); AM and PM sessions throughout the year 6 days/week
- NBOME National Centers for Clinical Skills Testing Philadelphia & Chicago!
- 12 encounters with standardized patients
- Timed stations (14-minute encounters, 9 minutes for electronic SOAP Note)
- Integrates and assesses OPP and OMT
- Orientation Guide, Instructional Program and eSOAP Practice module on-line
Clinical Decision Making / Key Features Cases

- Clinical scenarios
- Constructed response/short-answer
- Proprietary scoring tool

Attention candidates registered to take COMLEX-USA Level 3 beginning September 2015: click here for CDM practice cases, and click this link for CDM FAQs.

NOTIFICATION FOR COMLEX USA LEVEL 3 CANDIDATES
COMLEX-USA Level 3 examinations now include Clinical Decision-Making (CDM) cases. Click here for more information about these cases.
Clinical Decision-Making and Key Feature Test Cases/Items

Given a patient who presents with…

What are the challenges associated with the presentation?

- What are the likely difficulties candidate would encounter?
- What are the critical errors that could be made?
- What are diagnostic or management challenges that must be considered?
- What are the cost-effective/resource utilization or system-based challenges?

Only the critical points or actions (“key features”)
Clinical Decision Making / Key Features

Clinical Scenarios – 30-35 cases

- Each case has 2-5 questions
  - Aimed at leading dx/consideration; diagnostic steps (H&P, lab, imaging, etc.) and/or management/follow-up

Responses

- Short answer: fill in the blank (e.g. Leading Dx)
- Menu: select X# from a list of 15-20 that may include correct, no harm options as well as “KILLER” options
- Extended write in: List up to X# (lose credit of exceed #)
Future Developments for COMLEX-USA

Enhancing the Licensure Examination:
# Assessment Purpose

<table>
<thead>
<tr>
<th>COMLEX-USA EXAMINATION PROGRAM</th>
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</thead>
<tbody>
<tr>
<td><strong>LEVEL 1</strong></td>
<td><strong>LEVEL 2-CE</strong></td>
</tr>
<tr>
<td><strong>ASSESSMENT PURPOSE</strong></td>
<td></td>
</tr>
<tr>
<td>Successful promotion</td>
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<tr>
<td>along licensure pathway for</td>
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<tr>
<td>entry into graduate medical</td>
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<tr>
<td>education:</td>
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<tr>
<td>“supervised practice”</td>
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<tr>
<td><strong>DECISION POINT 1</strong></td>
<td><strong>DECISION POINT 1</strong></td>
</tr>
</tbody>
</table>
## Assessment Formats

### COMLEX-USA Examination Program

<table>
<thead>
<tr>
<th>LEVEL 1</th>
<th>LEVEL 2-CE</th>
<th>LEVEL 2-PE</th>
<th>LEVEL 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One-day computer-based examination 400 predominantly multiple-choice test questions</td>
<td>One-day 12 station standardized patient-based performance evaluation of fundamental clinical skills</td>
<td>Two-day computer-based examination 500-550 MCQs, clinical decision-making cases, and other novel test item formats (up to 30 additional clinical cases)</td>
<td></td>
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</tbody>
</table>
Two Distinct Dimensions and Decision Points

FOUNDATION FOR BOTH DIMENSIONS IN COMLEX-USA

The foundation of COMLEX-USA and both dimensions continues to be osteopathic principles and practice, specifically:

- The body is a unit; the person is a unit of body, mind, and spirit.
- The body is capable of self-regulation, self-healing, and health maintenance.
- Structure and function are reciprocally interrelated.
- Rational treatment is based upon an understanding of the basic principles of body unity, self-regulation, and the interrelationship of structure and function.
PATIENT PRESENTATIONS RELATED TO:

- Human Development, Reproduction, and Sexuality
- Endocrine System and Metabolism
- Nervous System and Mental Health
- Musculoskeletal System
- Genitourinary System
- Gastrointestinal System and Nutritional Health
- Circulatory and Hematologic Systems
- Respiratory System
- Integumentary System
Dimension 1

<table>
<thead>
<tr>
<th>COMPETENCY DOMAINS - DIMENSION 1</th>
<th>MINIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osteopathic Principles, Practice, and Manipulative Treatment</td>
<td>10%</td>
</tr>
<tr>
<td>Osteopathic Patient Care and Procedural Skills</td>
<td>25%</td>
</tr>
<tr>
<td>Application of Knowledge for Osteopathic Medical Practice</td>
<td>30%</td>
</tr>
<tr>
<td>Practice-Based Learning and Improvement in Osteopathic Medical Practice</td>
<td>5%</td>
</tr>
<tr>
<td>Interpersonal and Communication Skills in the Practice of Osteopathic Medicine</td>
<td>10%</td>
</tr>
<tr>
<td>Professionalism in the Practice of Osteopathic Medicine</td>
<td>5%</td>
</tr>
<tr>
<td>Systems-Based Practice in Osteopathic Medicine</td>
<td>5%</td>
</tr>
</tbody>
</table>
Guidelines for Assessment for Osteopathic Medical Licensure and the Practice of Osteopathic Medicine
COMPETENCY DOMAIN 4

OVERVIEW AND TERMINOLOGY

Practice-based learning and improvement is the continuous self-evaluation of osteopathic medical practice, utilizing evidence-based medical approaches to develop and improve patient outcomes. Osteopathic physicians must assimilate and apply evidence-based medical concepts and practices, fundamental biostatistical and epidemiologic concepts, critical decision-making skills, and methods to evaluate relevance and validity of established and evolving scientific evidence. Osteopathic physicians must also appraise the clinical significance of research evidence.

Osteopathic physicians must demonstrate the use of best medical evidence, practical strategies for integrating evidence-based principles and practices into patient care, and systematic methods relating to continuous self-evaluation of clinical practice patterns and practice-based improvements, including those that reduce medical errors and promote health. Osteopathic physicians must set learning and quality improvement goals and must incorporate feedback and reflection into daily practice.

REQUIRED ELEMENT 4.1
Fundamental Epidemiologic Concepts
DEFINITION: The osteopathic physician must understand and apply fundamental epidemiologic concepts to practice-based learning and improvement.

MEASURED OUTCOMES FROM REQUIRED ELEMENT 4.1
The osteopathic physician must:

M4.1.1 Interpret features and meanings of different types of data, including quantitative and qualitative, and different types of scales (e.g., nominal, dichotomous, ordinal, continuous, ratio, proportion).

M4.1.2 Interpret measures of central tendency, including mode, median, and mean, and measures of variability, including variance and standard deviation.

M4.1.3 Explain and interpret measures of frequency of disease, injury, and death in terms of rate, ratio, and proportion, including incidence and prevalence.

REQUIRED ELEMENT 4.2
Clinical Decision-Making Tools
DEFINITION: The osteopathic physician must interpret literature regarding research and clinical topics for use in understanding disease-oriented and patient-oriented evidence.

MEASURED OUTCOMES FROM REQUIRED ELEMENT 4.2
The osteopathic physician must:

M4.2.1 Conduct, interpret, and apply systematic reviews (e.g., meta-analysis) of literature regarding specific research and clinical topics with an understanding of limitations, such as design bias and sources of scientific uncertainty.

M4.2.2 Compare and contrast disease-oriented evidence and patient-oriented evidence in the interpretation of literature.

M4.2.3 Identify and apply population health data to address health care disparities.

REQUIRED ELEMENT 4.3
Evidence-Based Medicine Principles and Practices
DEFINITION: The osteopathic physician must be familiar with and apply evidence-based osteopathic medical principles and practices.

MEASURED OUTCOMES FROM REQUIRED ELEMENT 4.3
The osteopathic physician must:

M4.3.1 Access the best available/highest level of evidence in order to answer a clinical question with accuracy and maximum efficiency.

M4.3.2 Critically appraise the available evidence and its validity, impact, and applicability.

REQUIRED ELEMENT 4.4
Clinical Significance of Research Evidence and Statistical Inferences
DEFINITION: The osteopathic physician must determine the clinical significance of research evidence.

MEASURED OUTCOMES FROM REQUIRED ELEMENT 4.4
The osteopathic physician must:

M4.4.1 Judge and interpret aspects of statistical inference and hypothesis testing (e.g., decision errors, sample size, power, confidence intervals, degree of freedom, blinding, external and internal validity, number needed to treat, number needed to harm, sample size) as applied to osteopathic medical practice.
# Dimension 2

<table>
<thead>
<tr>
<th><strong>CLINICAL PRESENTATIONS - DIMENSION 2</strong></th>
<th><strong>MINIMUM</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Health &amp; Presentations related to Wellness</td>
<td>12%</td>
</tr>
<tr>
<td>Human Development, Reproduction &amp; Sexuality</td>
<td>5%</td>
</tr>
<tr>
<td>Endocrine System &amp; Metabolism</td>
<td>5%</td>
</tr>
<tr>
<td>Nervous System &amp; Mental Health</td>
<td>10%</td>
</tr>
<tr>
<td>Musculoskeletal System</td>
<td>13%</td>
</tr>
<tr>
<td>Genitourinary System</td>
<td>5%</td>
</tr>
<tr>
<td>Gastrointestinal System &amp; Nutritional Health</td>
<td>10%</td>
</tr>
<tr>
<td>Circulatory &amp; Hematologic Systems</td>
<td>10%</td>
</tr>
<tr>
<td>Respiratory System</td>
<td>10%</td>
</tr>
<tr>
<td>Integumentary System</td>
<td>5%</td>
</tr>
</tbody>
</table>
Point-of-Care Items:

- **Aim to assess use of resources in patient care**
  - Mirrors modern, real-life practicer
  - Can they use clinical-decision making tools and robust information-sources to learn at the point of care
  - Source of medical education to the patient

- **Expanded assessment of Competency Domains/Required Elements**
  - Permits assessment of Outcomes not currently tested or not tested as thoroughly as they could be.
  - Protects the public and contributes to patient safety
NBOME Competency Domain Required Elements (FOMCD 2016) classified as Practice-Based Learning and Improvement, including:

- 4.3 Evidence-Based Medicine Principles and Practices
- 4.5 Translating Evidence into Practice and Continuous Learning
A 17 year old female presents for a sports participation physical. Her parents ask about vaccinations for school and upcoming college. She has a past history of beta-thalassemia minor. A review of her vaccination records reveals that she has not been vaccinated against either meningococcal or pneumococcal but is up to date with all others.
pneumococcal / meningococcal vaccine

What is the appropriate pneumococcal vaccination schedule for her at this visit?

A. 1 dose of PCV13 now
B. 1 dose of PPSV23 now
C. No vaccine is indicated
D. 1 dose of PCV13 now and PPSV23 in 8 weeks *
E. 1 dose of PPSV23 now and repeat in 8 weeks

Outcome: M4.5.1 use information technology, including the Internet, to optimize learning and access and manage online medical information.

poCkEt Project ExaMple Item

meningococcal vaccination

What is the appropriate meningococcal vaccination for this child?

A. Single dose Meningococcal B
B. Two dose Meningococcal B
C. Single dose Meningococcal ACWY *
D. Two Dose Meningococcal ACWY
E. Single dose Meningococcal ACWY and Meningococcal B

Outcome: M4.5.1 use information technology, including the Internet, to optimize learning and access and manage online medical information.

Feasibility Study

Goals: to:

1. Gather further validity evidence
2. Obtain baseline estimates of item response times
3. Obtain resident opinions of how to improve item format

Plan: Pilot with residents from 3 locations during September 2016

14 scenarios, 38 items
Quantitative and qualitative data
ENHANCING ENTRUSTABILITY...
## General Conditions for Trust:

From: ten Cate O. Entrustment as Assessment: Recognizing the Ability, the Right, and the Duty to Act. Journal of Graduate Medical Education: May 2016, Vol. 8, No. 2, pp. 261-262. doi: http://dx.doi.org/10.4300/JGME-D-16-00097.1

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability</td>
<td>Competence, including specific competencies and associated milestones</td>
</tr>
<tr>
<td>Integrity</td>
<td>Benevolence: having favorable intentions, honesty, and truthfulness</td>
</tr>
<tr>
<td>Reliability</td>
<td>Working conscientiously and showing predictable behavior</td>
</tr>
<tr>
<td>Humility</td>
<td>Discernment of own limitations and willingness to ask for help when needed</td>
</tr>
</tbody>
</table>

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ten Cate O. Nuts and Bolts of Entrustable Professional Activities. JGME, March 2013, Vol. 5, No. 1, pp. 157-158. doi: http://dx.doi.org/10.4300/JGME-D-12-00380.1
What can a Portfolio provide?

• **Broader methods of assessment**
  – Movement away from the single event “snap shot”
  – The possibility for triangulation using different evidence sources

• **Ability to assess outcomes that are difficult to measure using standard MCQ items or OSCE format**
  – Being able to “do,” rather than just “know how” (performing tasks that a practicing physician does)
  – The ability to assess outcomes and competencies necessary for lifelong learning

• **Potential for harmonization across the continuum, including with “Milestones” and “Entrustable Professional Activities”**
NBOME “Attested Outcomes”:  

- Explicit description statements of detailed, well-defined, desired abilities, including knowledge, skills, experiences, attitudes, values, and/or behaviors  

- Indirectly assessed through verification by a trusted agent in a supplemental portfolio which could eventually be required for successful completion of the COMLEX-USA licensure examination program
Attested Outcomes, Examples:

**Osteopathic Patient Care and Procedural Skills**
- perform suturing for simple repair of superficial wounds.

**Practice-Based Learning and Improvement in Osteopathic Medical Practice**
- set learning and improvement goals and incorporate feedback and reflection into daily practice.

**Professionalism in the Practice of Osteopathic Medicine**
- be readily accessible to patients and colleagues when on duty, making suitable arrangements for coverage when off duty.
Continuous Professional Development at NBOME:

Supporting Continuous Professional Development for DOs and related Health Care Professions
<table>
<thead>
<tr>
<th>C2: Lifelong Learning/ CME</th>
<th>C3: Cognitive Assessment</th>
<th>C4: Practice Performance Assessment and Improvement</th>
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</thead>
</table>
| • Self-assessments – pre and post tests for on-line or traditional CME courses or modules | • Secure, proctored examinations  
• Test development: Item development, computerized item banking, customer service/administrative support  
• Customized score reporting  
• Psychometric consulting  
• CATALYST- continuous assessment program | • Performance Testing and Clinical Skills assessments  
• OPAIM program |
Osteopathic Performance Assessment and Improvement Modules
Designed for AOA’s OCC Component 4

- Six osteopathic performance assessment and improvement modules
- Evidence-based formative practice based assessment
- Osteopathically distinctive
- Cost effective, convenient on-line format
- Self reflection individualized learning plans with remediation directed to specific performance gaps
- Designed to satisfy AOA’s BOS Component 4 OCC
- Category 1B CME Credits

AOBEM
AOBFP
AOBIM
AOBNMM
AOBOG
AOBP

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Three-Stage Model

Stage A: Assess Current Performance
“How well am I doing?”

Stage B: Implement Interventions
“What can I do to improve?”

Stage C: Reassess Performance
“Have I improved as a result?”
Three-Stage Model

Stage A - Assess Current Performance

- Step 1: Measure performance on metrics

Unique Identifier:

The name of my newly prescribed medication is (please list only one if multiple medications were given today):

I understand the purpose (reason) for taking the newly prescribed medication.

I understand the consequences for not taking the newly prescribed medication.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree
- Not Sure

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree
- Not Sure

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree
- Not Sure
Three-Stage Model

Stage A
Assess Current Performance

1. I understand the purpose (reason) for taking the newly prescribed medication

<table>
<thead>
<tr>
<th>PRE-SCORE</th>
<th>POST-SCORE</th>
<th>NATIONAL BENCHMARK 90.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0.0%</td>
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</tbody>
</table>

RECOMMENDATIONS
Participants should use the performance assessment report to determine which educational tools or interventions will best serve your patients. Use this information to complete your Individualized Learning Plan and build your strategy for Continuous Quality Improvement. All participants in this performance improvement module should view a minimum of 4 OPAIM presentations, including:

- Presentation 1: Communicating With Patients to Ensure Medication Compliance and Adherence
- Presentation 5: Research and Summary of Best Practices for Medication Safety
- 2 Additional Presentations of your choosing

If less than 90% of your patients attest to full understanding of the purpose of taking their prescribed medication, the following presentations should be viewed along with Presentations 1 and 5:

- Presentation 2: An Osteopathic Approach to Obtaining a Patient History
- Presentation 3: An Osteopathic Approach to Obtaining a Comp

2. I understand the consequences for not taking the newly prescribed medication.

Step 2: Compare to benchmarks

If less than 90% of your patients attest to full understanding of the consequences of not taking their prescribed medication, the following presentations should be viewed along with Presentations 1 and 5:

- Presentation 4: General Strategies for Ensuring Accurate Written Communication Regarding Medication Use
Three-Stage Model

Stage A

Assess Current Performance

1. I understand the purpose (reason) for taking the newly prescribed medication

<table>
<thead>
<tr>
<th>PRE-SCORE</th>
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</table>

   **NATIONAL BENCHMARK**: 90.0%

   **0.0%**

   **RECOMMENDATIONS**
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   - Presentation 2: An Osteopathic Approach to Obtaining a Patient History
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2. I understand the consequences for not taking the newly prescribed medication.

<table>
<thead>
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<th>POST-SCORE</th>
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</tbody>
</table>

   **RECOMMENDATIONS**
   - If less than 90% of your patients attest to full understanding of the purpose of taking their prescribed medication, the following presentations should be viewed along with Presentations 1 and 5:
   - Presentation 4: General Strategies for Enhancing Medication Adherence

- **Step 2**: Compare to benchmarks
- **Step 3**: Identify appropriate interventions
Three-Stage Model

Stage A: Assess Current Performance

“How well am I doing?”

Stage B: Implement Interventions

“What can I do to improve?”

Stage C: Reassess Performance

“Have I improved as a result?”
Medication Safety Communications OPAIM

Physicians said this module helped:

• Demonstrate effective communication at patient’s level of understanding (78%).

• Identify techniques for more effective communication to:
  – improve medication adherence (82%) and
  – reduce adverse drug reactions (75%).

• Demonstrate effective techniques to improve communication (81%)
Alternative methods to ensure ongoing physician competence

**CATALYST (a new customizable approach)**

- **Assessment FOR learning to enhance physician practice**
- **Continuous practice relevant assessment:**

```
<table>
<thead>
<tr>
<th>Quarter 1</th>
<th>Quarter 2</th>
<th>Quarter 3</th>
<th>Quarter 4</th>
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<tbody>
<tr>
<td>40 – 80 Items Per Year (or 400 – 800 Items over 10 years)</td>
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- **Items (questions) map to the Certifying Board blueprint and align with the physicians practice**
Alternative methods to ensure ongoing physician competence

CATALYST – access

- Easily accessible on smartphones, tablets or computers 24/7
- Diplomates receive notification of new assessment questions
- Short questions to fit busy schedules
- Low cost
Alternative methods to ensure ongoing physician competence

CATALYST – content

- Assessment content determined by each Certifying Board
- Questions align to scope of practice
- Questions vary based on learner needs
- Enables continuous assessment and learning
Alternative methods to ensure ongoing physician competence

CATALYST – results

- Diplomates receive immediate feedback based on their performance

- Diplomates directed toward improvement resources based on individual learning needs

- Enables spaced repetition fostering practice improvement
THANK YOU!

The NBOME creates and administers the Comprehensive Osteopathic Medical Licensure Examination of the United States (COMLEX-USA), the examination series that provides the pathway to licensure for osteopathic physicians. COMLEX-USA is accepted in all 50 states and many international jurisdictions.

NBOME...Committed to promoting excellence in osteopathic medical education and assessment.