Challenges in Mounting Examinations Used for Maintenance of Medical Specialty Certification

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Overview of Presentation
1. Quick overview of certification procedures
2. Challenges in mounting exams used for maintenance of certification (MOC)
3. Design of longitudinal assessments
4. Questions and discussion

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• Allergy and Immunology
• Anesthesiology
• Colon and Rectal Surgery
• Dermatology
• Emergency Medicine
• Family Medicine
• Internal Medicine
• Medical Genetics & Genomics
• Neurological Surgery
• Nuclear Medicine
• Obstetrics and Gynecology
• Ophthalmology
• Orthopaedic Surgery
• Otolaryngology
• Pathology
• Pediatrics
• Physical Medicine & Rehabilitation
• Plastic Surgery
• Preventive Medicine
• Psychiatry & Neurology
• Radiology
• Surgery
• Thoracic Surgery
• Urology

Requirements for Certification by ABMS Boards

Initial Specialty Certification
1. Medical license (active and unrestricted)
2. Completion of training in an accredited program
   • 3 – 7 years
3. Pass assessment(s) of knowledge, judgment, skills
   • MCQ exam
   • Oral exam (some Boards)

Maintenance of Certification
1. Medical license (active and unrestricted)
2. Satisfy requirements for lifelong learning and self-assessment
   • Accredited CME (mostly)
3. Pass assessment of knowledge, judgment, skills
   • Summative MCQ exam every 10 years (mostly)
4. Improvement in Medical Practice project(s)

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Challenges in Mounting MOC Exams
• It can be difficult to determine what content areas to assess: practices evolve (mostly narrow) over the course of a career

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Practice Narrows over Time

Challenges in Mounting MOC Exams
- It can be difficult to determine what content areas to assess: practices evolve (mostly narrow) over the course of a career
- The primary purpose of the test may be unclear

Assessment of Learning: Identification of Poor Performers

Criteria for Assessment of Learning
- Validity: There is a body of evidence that supports the use of the results of an assessment for a particular purpose.
  - Appropriate coverage of the desired knowledge and skills; no skills required on the test that are not required in real situations
- Reproducibility (reliability). The results of the assessment would be the same if a similar assessment were repeated under similar circumstances
  - Depends on broad sampling of content (items, cases) & raters
- Equivalence: The assessment yields equivalent scores or decisions when given at different places/points in time
  - These traditional psychometric criteria are critical for summative, high-stakes assessments

Assessment for Learning: Shifting the Performance Curve to the Right

Criteria for Assessment for Learning
- Feasibility: The assessment is practical, realistic, and sensible, given the circumstances and context
- Acceptability: Stakeholders find the assessment process and results to be credible.
- Educational effect: The assessment motivates those who take it to prepare in a fashion that has educational benefit.
- Catalytic effect: The assessment provides results and feedback in a fashion that creates, enhances, and supports education; it drives future learning forward.
Challenges in Mounting MOC Exams

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- The primary purpose of the test may be unclear
- Tests of knowledge may assess recall of isolated facts that are of marginal relevance to patient care
- Particularly problematic if the facts aren’t even relevant to the test taker’s practice

Testing Application of Knowledge, not just Recall

Recall Version
Which of the following is the most appropriate initial management of suspected optic neuritis in patients with multiple sclerosis?
A. Intravenous methylprednisolone
B. Oral methylprednisolone
C. CT scan of the orbit
D. MRI scan of the brain

Application Version
A 24-year-old woman experiences sudden loss of vision in her right eye with a visual acuity of 20/400. She has a right afferent pupillary defect, optic disc swelling, and a central scotoma. Her left eye is normal. A complete neurological history and physical examination reveal no abnormalities. Which of the following is the most appropriate next step? (same option list)

Challenges in Mounting MOC Exams

- It can be difficult to determine what content areas to assess: practices evolve (mostly narrow) over the course of a career
- The primary purpose of the test may be unclear
- Tests of knowledge may assess recall of isolated facts that are of marginal relevance to patient care
- In isolation, a high-stakes exam taken every 10 years may lack credibility, particularly toward the end of a career, particularly if they are not practice-focused

The “Ballistic Model” of Competence: The Trainee is “Launched into Practice”

Performance across Different Conditions

Point-in-Time Summative Assessment
**Overview of Presentation**

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## Research on Test-Enhanced Learning

### Direct Effects of Testing:
- Material is better remembered when it is tested than when it is not
- In well-controlled studies, being tested boosts retention substantially more than studying for equal amounts of time

### Indirect Effects of Testing:
- Study time increases and study strategies improve with frequent, longitudinal assessments
- Frequent, longitudinal assessments encourage keeping up to date

**“Spaced Repetition”**
- Benefits are increased if testing is spaced in time: Distributed practice superior to massed practice in promoting retention
- Testing effects are greater when "effortful retrieval" of information is required: test application of knowledge, not just recall of facts

*Suggests a different approach to MOC assessments*

## Hallmarks of Many Longitudinal Assessment Programs

- Longitudinal assessment with spaced repetition
- Adaptive learning to promote learning, retention, keeping up to date
- Ratings of certainty and relevance to practice collected
- High-quality, practice-relevant content
- Customization of content to better match diplomates’ practice
- Case-based items requiring application of knowledge to patient care
- Article-based items to assist doctors in keeping up to date
- Flexible administration using web and mobile delivery
- Diplomates control when, where, and how they take assessments
- Immediate feedback on performance to close knowledge gaps
- Correctness of response and rationale for answer (“critique”)
- Diplomate “Dashboard” displaying areas of strength and weakness
- Results accumulated over time to contribute to summative decisions regarding continuing certification
- Secure exam for those performing poorly or declining to participate

## Some Key Design Issues

- Approach to customization of exam content
- Assessment organization and item formats
- Assessment length and frequency
- Security issues in assessment delivery
- Making summative certification decisions based on aggregated cumulative longitudinal performance

## Some Related References