Assessment in Advanced Education Programs

COHAEP ADEA Annual Session Program
Sunday, February 22, 2010

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2010 ADEA Theme:

ASSESSMENT

Portraits of Change
Objectives:

- To define “assessment” in the context of advanced dental education programs
- To identify the unique challenges in assessing advanced education students/residents versus predoctoral students
- To discuss available models and lessons from ACGME (Accreditation Council for Graduate Medical Education)
- To detail case studies in assessing advanced education students/residents
- To support a proposed change in CODA specialty standards to requiring formal assessments
Dreyfus Model Of Knowledge Development

- Novice
- Advanced Beginner
- Competent
- Proficient
- Expert

Dreyfus Model Of Knowledge Development: Medicine

- **Novice:** First year medical student has no experiential background to base approach or understanding of the clinical situation but learns the process of taking a patient history and memorizes its elements.

- **Advanced Beginner:** Junior medical student begins to see aspects of common situations that cannot be defined objectively apart from concrete situations, and can only be learned through experience.

- **Competent:** Resident physician learns to plan the approach to each patient’s situation; consequences are known to the resident and offer the opportunity to learn.

- **Proficient:** Specialist physician early in practice struggles with developing routines that streamline the approach to a patient.

- **Expert:** Mid-career physician who has learned to recognize patterns of distinct clues and to move quickly using intuition to do the work.

Definitions for Advanced Education Programs

- **Assessment:** Process of gathering information to determine the knowledge, skills, abilities and performance levels of students/residents for graduation and/or certification

- **Assessment Tools:** Wide range of instruments and methodologies designed to gather information for feedback, diagnostic purposes and identifying attainment of the defined knowledge, skills and values particular to that specialty or area of postdoctoral general dentistry

Challenges for Assessing Advanced Education Students/Residents

- Assumed continuum of learning/skills acquisition from predoctoral dental experience
- Greater independent learning and decision making
- Higher risk level for patients given the complexity of needs and rendered care
- Efforts in enhancing program assessment methods usually self-initiated with little central support or coordination
- Limited guidance on assessment under current accreditation standards (Evaluation)
Current Language/Definitions Common to all Recognized Specialties (DPH, ENDO, OMP, OMR, OMS, ORTHO, PED DENT, PERIO, PROS)

- **Levels of Knowledge:**
  - In-depth: A thorough knowledge of concepts and theories for the purpose of critical analysis and the synthesis of more complete understanding.
  - Understanding: Adequate knowledge with the ability to apply.
  - Familiarity: A simplified knowledge for the purposes of orientation and recognition of general principles.

- **Levels of Skill:**
  - Proficient: The level of skill beyond competency. It is that level of skill acquired through advanced training or the level of skill attained when a particular activity is accomplished with repeated quality and a more efficient utilization of time.
  - Competent: The level of skill displaying special ability or knowledge derived from training and experience.
  - Exposed: The level of skill attained by observation of or participation in a particular activity.
Current Language/Definitions for Postdoctoral General Dentistry Education Programs (GPR, AEGC, Dental Anesthesiology and Oral Medicine)

- **Competencies**: Written statements describing the levels of knowledge, skills, and values expected of students/residents completing the program.
- **Competent**: The level of knowledge, skills, and values required by students/residents to perform independently an aspect of dental practice after completing the program.
- **Proficiencies**: Written statements describing the levels of knowledge, skills, and values attained when a particular activity is accomplished in more complex situations, with repeated quality, and with a more efficient utilization of time.
- **Proficient**: The level of knowledge, skills, and values attained when a particular activity is accomplished in more complex situations, with repeated quality, and with a more efficient utilization of time.
A system of ongoing evaluation and advancement must assure that, through the director and faculty, each program:

a. Periodically, but at least semiannually, evaluates the knowledge, skills, ethical conduct and professional growth of its students/residents, using appropriate written criteria and procedures;

b. Provides to students/residents an assessment of their performance, at least semiannually;

c. Advances students/residents to positions of higher responsibility only on the basis of an evaluation of their readiness for advancement; and

d. Maintains a personal record of evaluation for each student/resident which is accessible to the student/resident and available for review during site visits.

Intent: (b) Student/Resident evaluations should be recorded and available in written form. (c) Deficiencies should be identified in order to institute corrective measures. (d) Student/Resident evaluation is documented in writing and is shared with the student/resident.
Accreditation Standards for Dental Education Programs

- Standard 2 - Educational Program: Curriculum Management
  - 2-8 The dental school **must** employ student evaluation methods that measure the defined competencies.
  - **Intent:** *The evaluation of competence is an ongoing process that requires a variety of assessments that can measure not only the acquisition of knowledge and skills but also assesses the process and procedures which will be necessary for entry level practice.*
Available Models and Lessons from ACGME (Accreditation Council for Graduate Medical Education)

- Six core competencies recognized (medical knowledge, patient care, professionalism, communication and interpersonal skills, practice-based learning and improvements, and systems-based practice)

- Use of improved assessment techniques seen as a prerequisite collection of data on residents’ performances and outcomes (program effectiveness)
Goals of Assessment

- To provide direction and motivation for future learning including knowledge, skills and professionalism
- To protect the public by upholding high professional standards and screening out trainees and clinicians who are incompetent
- To meet public expectations of self-regulation
- To chose among applicants for advanced training

What to Assess?

- Habits of mind and behaviors
- Acquisition and application of knowledge and skills
- Communication
- Professionalism
- Clinical reasoning and judgment in uncertain situations
- Teamwork
- Practice-based learning and improvement

Types of Assessment

- **Formative:**
  - Guiding future learning
  - Promoting reflection
  - Shaping values
  - Providing benchmarks to orient the learner who is approaching a relatively unstructured body of knowledge

- **Summative**
  - Making an overall judgment about competence, or qualification to higher levels of responsibility
  - May be “high-stakes” if the assessment acts as a barrier to further practice or training

Assessment Methods

- All methods have strengths and intrinsic limitations
- Criteria for determining the usefulness of methods:
  - Reliability
  - Validity
  - Impact on future learning and practice
  - Acceptability to learners and faculty
  - Costs

# Commonly Used Assessment Methods: Written Exercises

<table>
<thead>
<tr>
<th>Method</th>
<th>Domain</th>
<th>Type of Use</th>
<th>Limitations</th>
<th>Strengths</th>
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</thead>
<tbody>
<tr>
<td>Multiple-choice questions</td>
<td>Knowledge, ability to solve problems</td>
<td>Summative assessments within courses or rotation; national in-service, licensing and certification exams</td>
<td>Difficult to write; can result in cueing; can seem artificial and removed from real situation</td>
<td>Can assess many content areas in relatively little time, have high reliability, can be graded by computer</td>
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<tr>
<td>Key-feature (cases) and script concordance (situation) questions</td>
<td>Clinical reasoning, problem solving ability, ability to apply knowledge</td>
<td>National licensing and certification exams</td>
<td>Not proven to transfer to real-life situations that require clinical reasoning</td>
<td>Assess clinical problem-solving ability, avoid cueing, can be graded by computer</td>
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<tr>
<td>Short answer question</td>
<td>Ability to interpret diagnostic tests, problem-solving ability, clinical reasoning skills</td>
<td>Summative assessments within courses or rotation</td>
<td>Reliability dependent on training of graders</td>
<td>Avoid cueing, assess interpretation and problem solving ability</td>
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<tr>
<td>Structured essays or theses</td>
<td>Synthesis of information, interpretation of biomedical literature</td>
<td>Preclinical courses, limited use in rotations</td>
<td>Time-consuming to grade, must work to establish inter-rate reliability, long testing time required to encompass a variety of domains</td>
<td>Avoid cueing, use higher order cognitive processes</td>
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## Commonly Used Assessment Methods: Assessments by Supervising Clinicians

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<td>Global ratings with comments at end of rotation or semester</td>
<td>Clinical skills, communication, teamwork, presentation skills, organization, work habits</td>
<td>Global summative and sometimes formative assessments in clinical rotations</td>
<td>Often based on second-hand reports and case presentations rather than direct observation, subjective</td>
<td>Use of multiple independent raters can overcome variability due to subjectivity</td>
</tr>
<tr>
<td>Structured direct observation with checklists for ratings</td>
<td>Communication skills, clinical skills</td>
<td>Limited use in rotations and residencies, board certification exams</td>
<td>Selective rather than habitual behaviors observed, relatively time-consuming</td>
<td>Feedback provided by credible experts</td>
</tr>
<tr>
<td>Oral exams</td>
<td>Knowledge, clinical reasoning</td>
<td>Limited use in rotations and residencies, board certification exams</td>
<td>Subjective, time-consuming, require training of examiners, summative assessments need two or more examiners</td>
<td>Feedback provided by credible experts</td>
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Commonly Used Assessment Methods with Supervising Clinicians

- “Minimal clinical experiences”
  - Formative assessments
  - Broad category grouping (e.g., for UNC Periodontology: comprehensive cases, limited care, dental implant, augmentation and sedation cases)

- “Proficiency report”
  - Summative assessment
  - Listing of skills defined in standard 4
  - Independent demonstration of reproducible clinical benefit to the patient with time efficiency
Quarterly Global Ratings by Assessing Clinicians

http://www.new-innov.com/pub/
Oral Exams with Supervising Clinicians: UNC Periodontology

- Two summative, high-stakes exams administered in the spring semester of year 3
  - Mock Board Exam
    - Integrated within Case Analysis Seminar (PERI 721, 723, 732) and linked to certificate
    - Evaluation of six areas (diagnosis, etiology, prognosis, treatment planning, therapy, evaluation of results/maintenance) within the context of three unknown cases
  - Oral Comprehensive Exam
    - Linked to MS degree
    - Depth and breath of knowledge (oral biology, microbiology, immunology, wound healing and epidemiology)
    - Clinical reasoning, critical thinking and evidence-based decision making
# Commonly Used Assessment Methods: Clinical Simulations

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<td>Standardized patients and objective structured clinical examinations</td>
<td>Some clinical skills, interpersonal behavior, communication skills</td>
<td>Formative and summative assessments in courses, rotations, licensure and certification exams</td>
<td>Time and setting may seem artificial, require suspension of disbelief, checklists may penalize examinees who use shortcuts, expensive</td>
<td>Tailored to educational goals; reliable, consistent case presentations and ratings; can be observed by faculty or standardized patients; realistic</td>
</tr>
<tr>
<td>Incognito, standardized patients</td>
<td>Actual practice habits</td>
<td>Primarily used in research, some courses, rotations or residencies for formative feedback</td>
<td>Requires prior consent, logistically challenging, expensive</td>
<td>Very realistic, most accurate way of assessing clinician behavior</td>
</tr>
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<td>High technology simulations</td>
<td>Procedural skills, teamwork, simulated clinical dilemmas</td>
<td>Formative and some summative assessment</td>
<td>Time and setting may seem artificial, require suspension of disbelief, checklists may penalize examinees who use shortcuts, expensive</td>
<td>Tailored to educational goals; can be observed by faculty; often realistic and credible</td>
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High Technology Simulators: SimMan for Medical Emergencies

http://www.laerdal.com
## Commonly Used Assessment Methods: Multisource ("360-Degree") Assessments

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<tr>
<td>Peer assessments</td>
<td>Professional demeanor, work habits, inter-professional behavior, teamwork</td>
<td>Formative feedback in courses and residencies, formative assessment for board recertification</td>
<td>Confidentiality, anonymity and buy-in essential</td>
<td>Ratings encompass habitual behaviors, credible source, correlates with future academic and clinical performance</td>
</tr>
<tr>
<td>Patient assessments</td>
<td>Ability to gain patients’ trust; patient satisfaction, communication skills</td>
<td>Formative and summative</td>
<td>Provide global impressions rather than analysis of specific behaviors, ratings generally high with little variability</td>
<td>Credible source of assessment</td>
</tr>
<tr>
<td>Self-assessments</td>
<td>Knowledge, skills, attitudes, beliefs, behaviors</td>
<td>Formative</td>
<td>Do not accurately describe actual behavior unless training and feedback provided</td>
<td>Foster reflection and development of learning plans</td>
</tr>
<tr>
<td>Portfolios</td>
<td>All aspects of competence, appropriate for practice-based learning</td>
<td>Formative and summative</td>
<td>Learner selects best case material, time consuming to prepare and review</td>
<td>Display projects for review, foster reflection and development of learning plans</td>
</tr>
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Multi-Source “360-Degree” Team Assessment of Behaviors

- Assessor: Supervising clinicians, peers (fellow residents), auxiliaries and patients

- Domains:
  - Professionalism: Maintaining trust and professional relationships with patients: Listens; is caring; shows respect for patient’s opinions, privacy dignity and confidentiality; is unprejudiced
  - Verbal communication skills: Gives understandable information; speaks at appropriate level for patient
  - Team-working: Respects others’ roles and works constructively in the team; hands over effectively; is supportive and fair
  - Accessibility: Takes proper responsibility; responds when called; arranges cover for absence

- Three-point interval scale: No concern; some concern; major concern

Case Portfolios: UNC Periodontology

- Critical formative and summative assessments
- 12 fully developed and documented cases (pre-, intra- and post-treatment)
  - 6 in comprehensive format
  - 6 in abridged (electronic) format
- Diversity of conditions, diagnoses, demographics and treatment approaches
- Discussion (reflection/self-assessment) is a required element
Multi-method and Longitudinal Assessment

- Use of multiple methods of assessment can overcome limitations of any individual assessment
  - Variation of the clinical context
  - Use of multiple formats
  - Input from multiple observers
- Longitudinal assessment avoids excessive testing at any one point in time and serves as the foundation for ongoing professional development
Proposed Changes to Language/Definitions Common to all Recognized Specialties (DPH, ENDO, OMP, OMR, OMS, ORTHO, PED DENT, PERIO, PROS)

Graduates of specialty education programs provide unique services to the public. While there is some commonality with services provided by specialists and general dentists, as well as commonalities among the specialties, the educational standards developed to prepare graduates of specialty programs for independent practice should not be viewed as a continuum from general dentistry. Each specialty defines the educational experience best suited to prepare its graduates to provide that unique specialty service.

- **Competencies:** Statements in the specialty standards describing the knowledge, skills and values expected of graduates of specialty programs.
- **Competent:** Knowledge, skills and values required of the graduates to begin independent, unsupervised specialty practice.
- **In-depth:** Thorough knowledge of concepts and theories for the purpose of critical analysis and synthesis.
- **Understanding:** Knowledge and recognition of the principles and procedures involved in a particular concept or activity.

Comments due June 1, 2010
PROPOSED CHANGES TO STANDARD 5 - ADVANCED EDUCATION (SPECIALTY) STUDENTS/RESIDENTS EVALUATION

A system of ongoing evaluation and advancement must assure that, through the director and faculty, each program:

a. Periodically, but at least semiannually, assesses the progress toward (formative assessment) and achievement of (summative assessment) the competencies for the specialty using formal evaluation methods; evaluates knowledge, skills, ethical conduct and professional growth of its students/residents, using appropriate written criteria and procedures;

b. Provides to students/residents an assessment of their performance, at least semiannually;

c. Advances students/residents to positions of higher responsibility only on the basis of an evaluation of their readiness for advancement; and

d. Maintains a personal record of evaluation for each student/resident which is accessible to the student/resident and available for review during site visits.

Intent: (a) The evaluation of competence is an ongoing process that requires a variety of assessments that can measure the acquisition of knowledge, skills and values necessary for specialty-level practice. It is expected that programs develop and periodically review evaluation methods that include both formative and summative assessments. (b) Student/Resident evaluations should be recorded and available in written form. (c) Deficiencies should be identified in order to institute corrective measures. (d) Student/Resident evaluation is documented in writing and is shared with the student/resident.

(Additions are Underlined; Strikethroughs indicate Deletions)
CODA Open Hearing

☐ Today at noon
☐ National Harbor 6
Best Practices for Assessing Advanced Education Students: Summary

- Use of multiple methods and a variety of environments and context to capture different aspects of performance
- Organize assessments into repeated, ongoing, contextual and developmental programs
- Balance the use of complex, real-life situations requiring reasoning and judgment
- Include directly observed behavior
- Use experts
- Use pass-fail standards that reflect appropriate developmental levels
- Provide timely feedback and mentoring