Implications of Competency-Based Curriculum on Training Assessment and Evaluation

Andrea Milam, M.S. Ed., P.T.
Director of Education
Department of Family and Community Medicine
ACGME General Competencies

- Patient Care (PC)
- Medical Knowledge (MK)
- Practice-Based Learning and Improvement (PBLI)
- Interpersonal and Communication Skills (ICS)
- Professionalism (P)
- Systems-Based Practice (SBP)
Goal

Integration of these standards as measurable competencies into our daily teaching in such a way that we can ensure the outcome of competent physicians.
So What’s The Big Deal?

**Traditional Evaluation**
- Medical knowledge (MK)
- Procedural Skills (PC)
- End-of-rotation Summative Evaluation

**Competency-Based Evaluation**
- Self-learning (PBLI, SBL)
- Communication Skills (IPC)
- Professionalism (P)
The Change

- **Structure and Process-Based**
  - Traditional
  - Pre 1990
  - Block rotations
  - Unstructured observations
  - Promotion based on attendance and “team player”
  - Potential to be educated
  - Global summative evaluations

- **Competency (Product)-Based**
  - Contemporary
  - Post 1990
  - Longitudinal experiences
  - Skills, attitudes, and knowledge directly observed
  - Promotion based on progress toward competency
  - Graduation based on demonstrated competency
  - Multi-source evaluations
But...How do we get there from here?
Objectives

- Describe the basic tenets of a competency-based curriculum.
  - Write learning objectives that support the intended curriculum.
  - Write evaluation questions that support the intended outcomes.

- Discuss ways in which learner assessment in a competency-based education program can drive program evaluation to:
  - Facilitate continuous improvement of the educational experience, and
  - Facilitate continuous improvement of residency program performance.
Objectives

- Differentiate between formative assessment and summative evaluation.
- Describe key considerations for selecting assessment instruments and implementing assessment systems in a competency-driven educational environment.
Basic Terminology

- Competency
- Competency-Based (Driven) Education
- Educational Goal
- Educational Objective
- Educational Outcome
- Assessment
Competence

**Competent**
- The quality of being adequately or well qualified physically and intellectually.

**Competency**
- The work-related skills and behavior required to effectively perform a role
- Knowledge, skill or attitude that enables one to effectively perform the activities of a given occupation or function to the standards expected in employment.
- An underlying characteristic of an individual which is causally related to effective or superior performance.
**Professional Competence**: The habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served.

- Epstein and Hundert 2002
The “Art” of Medicine is Part of Competence

- Patient-physician relationship
- Communication with patients and colleagues
- Professionalism
  - affective / moral dimensions
  - patience, willingness, self-awareness
Competency-Based Education

- An approach to instruction and assessment that places primary emphasis on identifying and measuring specific learning outcomes, or competencies.

- Unlike goals, competencies are written as real-life abilities that are required for effective professional practice.
Basic Tenets of Competency-Based Education

- Teaching and learning are explicit and clearly aligned with expected competencies;
- Criteria-driven, focusing on accountability in reaching benchmarks, and ultimately, competence;
- Grounded in “real-life” experiences;
- Focused on fostering the learner’s ability to self-assess; and
- Individualized providing more opportunities for independent study.
Competency-Based Education

- Also known (in some circles) as
  - Mastery learning
  - Outcomes-based learning
  - Performance-based learning
Potential Obstacles

- Basic knowledge about the principle
- Practical issues
  - Staffing time
  - Educator time
  - Education of educators
  - Implementation strategies
  - Evaluations technique development
  - Changing the educational culture

- Quillen DM, 2001
Basic Terminology

- Competency*
- Competency-Based Education
- Educational Goal
- Educational Objective
- Educational Outcome
- Assessment
- Terminology
Educational Goal

An educational goal states the broad target of an educational effort. Goals are typically not measurable, but offer a general focus for an activity or set of experiences.

ACGME Example: “Residents must be able to provide Patient Care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.”
Educational Objective

- An educational objective is a **measurable target to be achieved** by an educational activity or intervention.

- The educational objective specifies the educational outcome to be assessed.

ACGME Example: “Residents are expected to develop and carry out patient management plans.”
Who Cares:
The ACGME, among others

The ability to demonstrate educational outcomes as the achievement of competency-based learning objectives provides evidence of preparing competent physicians who can meet the health care needs of the public. Educational assessment is, therefore, a key component of the Outcome Project and is intended to:

- Assess residents' attainment of competency-based objectives
- Facilitate continuous improvement of the educational experience
- Facilitate continuous improvement of resident performance
- Facilitate continuous improvement of residency program performance

Besides, it’s just good educational practice, and

- Don’t just be good at something, Do something good!
Write evaluation questions to support the intended outcomes of a competency-based curriculum.
Basic Terminology

- Competency
- Competency-Based Education
- Educational Goal
- Educational Objective
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- Terminology
Educational Outcomes

- Provide evidence that goals and objectives have been accomplished
- Outcomes assessment refers to intermediate or end results of the educational process
  - Student/Resident
  - Graduate/Alumni
  - Faculty
  - Department
  - Community
  - Institutional
Assessment vs. Evaluation

 Definitions

- (Summative) evaluation is the process by which people establish or fix the value or worth of something.

- Assessment is the “process of collecting, synthesizing, and interpreting information to aid decision-making” (Airasian, 1997)
  - Identifying and measuring specific learning outcomes, or competencies.

- Formative assessment includes the cumulative collection of findings from a variety of relevant sources...designed to result in corrective action or improvement
  - used at the program level and/or the resident level
Assessment vs. Evaluation

- Formative
- Low stakes
- For improvement
- Ongoing
- 2-way (Preceptor and learner participate)
- Incremental steps toward goals
- Gives feedback for use toward correction and/or improvement

- Summative
- High stakes
- For proclamation
- Occurs at critical points at end of rotation
- One-way
- Preceptor only—one way
- Relative to endpoint (i.e., competencies)
- Generates grades or statement about competence
Putting It All Together…

- **Assessment**: The "process of collecting, synthesizing, and interpreting information to aid decision-making". The results of an assessment should allow sound inferences about what learners know, believe, and can do in defined contexts.

- **Professional competence**: The habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served.

- **Competency-Based Assessment for Residents**: The process of collecting, synthesizing, and interpreting information to aid decision-making about the resident’s progression toward achieving professional competence.

- **Competency-Based Evaluation for Residents**: Coming to conclusion about the resident’s attainment of professional competence.
What’s the Difference?

- **Traditional**
  Instructional Design Model
  - Needs Assessment
  - Goal
  - **Objective(s)**
  - Strategies
  - Evaluation

- **Competency-Driven**
  Instructional Design Model
  - Needs Assessment
  - Goal
  - **Competencies (Outcomes)**
  - **Objective(s)**
  - Strategies
  - Evaluation
Write learning objectives to support the intended outcomes of a competency-based curriculum.

What is an objective, anyway?
What is an educational goal?
Is an objective the same thing as an outcome?
Basic Terminology

- Competency*
- Competency-Based Education
- Educational Goal
- Educational Objective
- Educational Outcome
- Assessment
- Terminology
(Educational) Outcomes Assessment

- Provides evidence that goals and objectives have been accomplished
- The educational objective specifies the educational outcome to be assessed.

Objectives SHOULD Drive Outcome Assessment!
Remember Our Educational Objective?

- An educational objective is a **measurable target to be achieved** by an educational activity or intervention.

- The educational objective specifies the educational outcome to be assessed.

ACGME Example: “Residents are expected to develop and carry out patient management plans.”

Not yet there...
A-B-C-D... Competency-Based Objectives

- **A = Audience**
  - Reference the individual learner (i.e., the resident)

- **B = Behavior**
  - Performance-based (i.e., knowledge, skill, attitudes or values)

- **C = Condition**
  - Context-dependent (i.e., work-related)

- **D = Degree**
  - Specific (effective, entry-level, superior)
Educational Outcome Statement

- PGY-1 Residents are expected to develop and carry out patient management plans independently, to include
  - Prescribing medication appropriately.
    - Audience = PGY-1 Resident
    - Behavior = develop and implement (carry out)
    - patient management plan
    - Condition = independently
    - Degree = appropriate
Tools...Educational Taxonomy

- Cognitive, Affective, Psychomotor

- Useful in the development of educational objectives, particularly since they *typically use verbs* to describe learner behaviors that can be assessed at each level of knowledge acquisition.
  - Provide
  - Prescribe
  - Demonstrate
  - Perform

- Good resources: Bloom, Gagne, Krathwol (affective taxonomy)
Tools...The Dreyfus Model

- Novice
- Advanced Beginner
- Competent
- Proficient
- Expert
- Master

- Learning rules
- Applying rules to a situation
- Using judgment
- Efficient use of time and resources
- Seeking answers, reducing uncertainty
- Cultivating doubt, seeking surprise
Competency = (Educational) Outcomes Assessment

- Provides evidence that goals and objectives have been accomplished
- Can be immediate, short term, delayed, and long term
- Outcomes validate program effectiveness
  - Student/resident outcomes
  - Graduate/alumni outcomes
  - Faculty outcomes
  - Patient outcomes
  - Community outcomes
  - Departmental
Kirkpatrick’s Levels of Evaluation

Competencies

As they relate to assessment
Key Considerations For Selecting Assessment Instruments - 1

- The assessment approach provides **valid** data.
- The assessment approach yields reliable data.
- The assessment approach is feasible.
- The assessment approach is likely to apply to the assessment circumstances.
- The assessment approach **provides valuable information**.
Key Considerations For Selecting Assessment Instruments - 2

- The assessment approach provides valid data.
- The assessment approach yields **reliable** data.
- The assessment approach is **feasible**.
- The assessment approach is likely to apply to the assessment circumstances.
- The assessment approach provides valuable information.
Key Considerations For Selecting Assessment Instruments - 3

- The assessment approach provides valid data.
- The assessment approach yields reliable data.
- The assessment approach is feasible.
- The assessment approach is likely to apply to the assessment circumstances (external validity).
- The assessment approach provides valuable information.
Key Considerations For Implementing Assessment Systems In A Competency-driven Educational Environment - 1

- Assessment is consistent with curriculum/program objectives
- The educational objectives are a representative sample of the educational domains of interest.
- Multiple assessment approaches/instruments are employed.
- Multiple observations are conducted.
- Multiple observers/raters provide assessments.
- Performance is assessed according to pre-specifed standards or criteria.
- Assessment is fair.

(Lynch, Swing 2005)
Key Considerations For Implementing Assessment Systems In A Competency-driven Educational Environment - 2

- Assessment is consistent with curriculum/program objectives
- The educational objectives are representative of the educational domains of interest.
- Multiple assessment approaches/instruments are employed.
- Multiple observations are conducted.
- Multiple observers/raters provide assessments.
- Performance is assessed according to pre-specified standards or criteria.
- Assessment is fair.

(Lynch, Swing 2005)
Key Considerations For Implementing Assessment Systems In A Competency-driven Educational Environment - 3

- Assessment is consistent with curriculum/program objectives.
- The educational objectives are representative of the educational domains of interest.
- Multiple assessment approaches/instruments are employed.
- Multiple observations are conducted.
- Multiple observers/raters provide assessments.
- Performance is assessed according to pre-specified standards or criteria.
- Assessment is fair.

(Lynch, Swing 2005)
Discuss ways in which learner assessment in a competency-based education program can drive program evaluation to:

- facilitate continuous improvement of the educational experience and residency program performance.
Writing Evaluation Questions To Support Intended Outcomes Of A Competency-Based Curriculum

- **Identify** learning outcomes
  - Knowledge, skill, attitude/value
  - Clear
  - Measurable

- **Connect** outcomes to the **curriculum**
  - Program outcome should be introduced, reinforced, measured

- **Connect** outcomes to **assessment** methods
Performance-Based Evaluation Process

- Step 1: Define **purpose** of the evaluation.
- Step 2: Identify **subject** of the evaluation.
- Step 3: Define **objectives** of evaluation subject.
- Step 4: Select **evaluation** criteria.
- Step 5: Determine method of **measurement**.
- Step 6: Establish performance **standards**.
- Step 7: **Assess** performance.
- Step 8: **Compare** assessed performance to standards.
- Step 9: Apply **results** of evaluation.
Improvement of the Education Experience
Basic Tenets of Competency-Based Education

- Teaching and learning are explicit and clearly aligned with expected competencies;
- Criteria-driven, focusing on accountability in reaching benchmarks, and ultimately, competence;
- Grounded in “real-life” experiences;
- Focused on fostering the learner’s ability to self-assess;
- Individualized providing more opportunities for independent study
Therefore… Priorities of a Competency-Based Curriculum

- Clear end point (Competence)
- Competencies are minimal standards and attainment as an outcome is non-negotiable
  - explicitly taught
  - Performance-based (product) vs. Process-based
- Frequent opportunities for
  - Supervised practice
  - Immediate feedback
  - Formative assessment
- Intentional (planned) remediation occurs with resident’s full participation in the process
  - Grounded in self-reflection
  - Teaches, implements, and incorporates self-assessment as credible source of information
- Grounded in the profession’s values
Teaching Methods

- Experience-Based Education
- Apprentice Model
- Mentoring
- Reflection-in-Action (Schon)
- Reflection-on-Action (Schon)
- Guided Learning Experiences (GLE)
  - ACGME web site
Teaching Methods – Ex 1

- Experience-Based Education
- Apprentice Model
- Mentoring
- Reflection-in-Action (Schon)
- Reflection-on-Action (Schon)
- Guided Learning Experiences (GLE)
  - ACGME web site
Teaching Methods – Ex 2

- Experience-Based Education
- Apprentice Model
- Mentoring
- Reflection-in-Action (Schon)
- Reflection-on-Action (Schon)
- Guided Learning Experiences (GLE)
  - ACGME web site
Teaching Methods – Ex 3

- Experience-Based Education
- Apprentice Model
- Mentoring
- Reflection-in-Action (Schon)
- Reflection-on-Action (Schon)
- Guided Learning Experiences (GLE)
  - ACGME web site
Teaching Methods – Tips

- Experience-Based Education
- Apprentice Model
- Mentoring
- Reflection-in-Action (Schon)
- Reflection-on-Action (Schon)
- Guided Learning Experiences (GLE)
  - ACGME web site
Teaching Methods – Notes

- Experience-Based Education
- Apprentice Model
- Mentoring
- Reflection-in-Action (Schon)
- Reflection-on-Action (Schon)
- Guided Learning Experiences (GLE)
  - ACGME web site
Teaching Methods – References

- Experience-Based Education
- Apprentice Model
- Mentoring
- Reflection-in-Action (Schon)
- Reflection-on-Action (Schon)
- Guided Learning Experiences (GLE)
  - ACGME web site
Improvement in the Educational Program Evaluation Process

- The residency program should have in place a process for using resident and performance assessment results together with other program evaluation results to improve the residency program (ACGME).

- The residency program must demonstrate that it has an effective plan for assessing resident performance throughout the program and for utilizing assessment results to improve resident performance, to include:
  - Use of dependable measures
  - Mechanisms for regular and timely performance feedback to residents
  - Use of assessment results to achieve progressive improvements in residents’ competence and performance
# Outcomes Assessment

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1/22/2007
Conclusion

- Competence depends on habits of mind including:
  - attentiveness,
  - critical curiosity,
  - self-awareness and
  - presence.

- It is developmental, impermanent, and context-dependent.

- Epstein and Hundert 2002
References

3. Lynch DC, Swing SR. Research Department ACGME