Assessment in Medical Education: Evidence Based Clinical Skills Assessment in the Competency Era

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Who Watched You?
Objectives

1. Describe theories supporting importance of direct observation (DO) of trainees’ clinical skills

2. Articulate factors that impact the quality and accuracy of rater assessments

3. List strategies to improve assessment of clinical skills
Objective 1: Theories Supporting DO Importance

- Importance of and current state of clinical skills
- Development of expertise
- Role in competency based medical education
- Necessity as part of effective supervision
Objective 1: Theories Supporting DO Importance

- Importance of and state of clinical skills
- Development of expertise
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History and Exam Skills Importance

- Leads to diagnosis > 80% of the time
- Even in era of technology
- Required to avoid unnecessary testing
- Faulty data gathering common source of diagnostic errors

State of History & Exam Skills

- Trainees
  - Wide variability in students’ clinical skills as MS4s or starting internship
- Practicing physicians
  - Variability in history taking skills
  - Variability in exam skills

Lypson M. *Acad Med.* 2004; 79(6):564-70
Mangione S et al. *JAMA*;1997; 278(9):717-22
Paauw DS et al. *JAMA* 1995;274(17);1380-2
High Quality Care

Crossing the Quality Chasm

- Timely
- Efficient
- Equitable
- Safe
- Effective
- Patient Centered

Crossing the Quality Chasm: A New Health System for the 21st Century 2001
Patient Centered Care

“A partnership among practitioners, patients, and their families (when appropriate) to ensure that decisions respect patient’s wants, needs, and preferences and that patients have the education and support they need to make decisions and participate in their own care.”

IOM 2001
Importance of Effective Communication

- Patient involvement in care
- Patient knowledge and self-efficacy
- Adherence to treatment
- Patient well-being
- Patient satisfaction
- Improved outcomes
- Decreases costs

Levinson W et al. 2010; Health Aff 29: 1310-18
AHRQ 2005.
State of Patient Centered Care

- Practicing physicians
  - Missing elements of informed decision making

- Why the gap?
  - Communication is sophisticated procedure
  - Needs to be taught/ honed
  - Skills are rarely taught or practiced

Direct Observation to Assess Core Skills

Legitimates the subject
Sends message skills are important
Ensures assessment of essential skills
Objective 1: Theories Supporting DO Importance

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Dreyfus and Dreyfus Model

Instruction, Time, Practice, Experience

Novice
Advanced Beginner
Competent
Proficient
Expert/Master

Dreyfus SE and Dreyfus HL. 1980
Carraccio CL et al. Acad Med 2008;83:761-7
Expert Performance vs. Everyday Skills

Ericsson KA. Acad Med. 2004;79(10):S70-81
How Do People Become Experts?

- Deliberate practice
- Working on well defined tasks
- Informative feedback
- Repetition
- Self-reflection
- Motivation
- Endurance

Self-assessment is inaccurate

Davis D et al. *JAMA* 2006; 296:1094-1102
What Do They Have in Common?

- Meryl Streep
- Babe Ruth
- Bobby Fischer
- Isaac Stern
- Nadia Comaneci
Role of the Coach

 “They observe, they judge, and they guide”

 “That one twenty-minute discussion gave me more to consider and work on than I’d had in the past five years”

 “Medical practice is largely unseen by anyone who might raise one’s sights. I’d had no outside ears and eyes.”

Atul Gawande, New Yorker 10/3/2011
Direct Observation and Expertise

DIRECT OBSERVATION

CLINICAL COACH

EXPERTISE

Deliberate Practice
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Competency Based Medical Education

Structure and Process and Time

Outcome (Competency)

Societal Needs
Defining Competency Based Education

Milestone

Observable & Assessed

Defined outcome Competence

Frank JR et al. Med Teach. 2010;32:631-7
Miller’s Assessment Pyramid

Van der vleuten CPM et al. Best Practice & Research Clinical Obstetrics and Gynaecology. 2010(24) :703–19
Evidence Based Strategies to Assess Does

Direct Performance Measures

- Individual Encounter
  *Mini-cex

Longer term methods
- *Multi-source feedback
- *End of rotation evaluations
- *In-training evaluations

Aggregated Methods

- Sampling over time
  * Logbook
  * Portfolios

In-Training Performance Assessment

- Assessment in authentic situations
  - Learners’ ability to combine knowledge, skills, judgments, attitudes in dealing with realistic problems of professional practice

- Assessment in day to day practice
  - Enables assessment of a range of essential competencies, some of which cannot be validly assessed otherwise

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Resident Duty Hours: Enhancing Sleep, Supervision and Safety
Assessing Does

THE PATIENT

- **Does**
  - *Stimulus format*: habitual practice performance
  - *Response format*: direct observation, checklists, rating scales, narratives

- **Shows how**
  - *Stimulus format*: hands-on (patient) standardized scenario or simulation
  - *Response format*: direct observation, checklists, rating scales

- **Knows how**
  - *Stimulus format*: (patient) scenario, simulation
  - *Response format*: menu, written, open, oral, computer-based

- **Knows**
  - *Stimulus format*: fact-oriented
  - *Response format*: menu, written, open, computer-based, oral
“A practitioner has demonstrated the necessary knowledge, skills, and attitudes to be trusted to independently perform this activity.”

Ten Cate O, Scheele F. *Acad Med* 2007;82:542-7
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High Inter-Assessor Variability of Scores

- Leniency effect
- Stringency effect
- Halo effect
- Central tendency effect
- Anchoring bias
- Contrast bias
- Poor accuracy
Objective 2: Rating Quality & Accuracy

- Sources of high inter-rater variability
  - Frame of reference
  - Faculty clinical skills
  - Inference
  - Contextual factors
  - Emotions
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Variable Frames of Reference

- Different basis for judgments/ratings
  - Self (predominant)
  - Normative (trainee level)
  - Absolute standard
  - Practicing physicians

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  - Contextual factors
  - Emotions
Faculty Characteristics

- Minimal impact of demographics
  - Age, gender, clinical and teaching experience

- Faculty’s own clinical skills may matter
  - Faculty with higher history and patient satisfaction performance scores provide more stringent ratings

Objective 2: Rating Quality & Accuracy

- Sources of high inter-rater variability
  - Frame of reference
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  - Contextual factors
  - Emotions
High Level Inference

- Feelings
  - Comfort/Confidence
  - Intentions
  - Ownership/work-ethic
- Personality
- Culture
- Skills
  - Knowledge
  - Competence
- Prior experience/familiarity with scenario

Problems with Inference

- Not recognized
- Rarely validated for accuracy
- Can be wrong

Objective 2: Rating Quality & Accuracy

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  - Frame of reference
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  - Inference
  - Contextual factors
  - Emotions
Contextual Factors and Emotion

- Encounter complexity
- Trainee characteristics
- Trainee relationships
- Institutional culture
- Constructive feedback
Direct Observation: A Conceptual Model

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Objective 3: Strategies to Improve Assessment

- Evidence based psychometric principles
- Rater training
- Meaningful feedback
- Culture change
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Evidence Based Principles from 1st Three Layers

1. Competence is specific, not generic
2. Objectivity ≠ reliability
3. Need for programs of assessment

Evidence Based Principles about “Does”

1) Reliable assessment requires sampling (8-10) across contexts & assessors
2) Bias inherent in expert judgment
3) Qualitative/narrative information important
4) Validity resides in “instrument user”

Van der Vleuten CPM et al. *Best Practice & Research Clinical Obstetrics and Gynaecology* . 2010(24) :703–19
Objective 3: Strategies to Improve Assessment

- Evidence based psychometric principles
- Rater training
  - Develop a shared mental model
  - (Re)define frame of reference and scale anchor
  - Re-think assessment goals
  - Align rater training with clinical skills education
- Build in meaningful feedback
- Transform culture
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Performance Dimension Training
Performance Dimension Training

Identify specific dimensions of a competency in behavioral terms

Discuss the criteria and qualifications required for each dimension of that competency

Develop a **SHARE MENTAL MODEL**

Achieve evidence-based standardization and calibration

Holmboe ES ABIM 2010
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Re-define the Frame of Reference

Self, Normative, Gestalt

Competency Based Education

Criterion Based defined by High Quality Care Milestones Entrustment
What is Needed by the Patient

Novice

Advanced Beginner

Competent

Proficient

Expert/Master

Time, Practice, Experience

Dreyfus SE and Dreyfus HL. A 1980
Carraccio CL et al. Acad Med 2008;83:761-7
Re-define Scale Anchor

Scale Midpoint

=

Satisfactory

=  

Competent

=  

Safe, Effective, Patient Centered Care
A Foot In Two Worlds

Normative

Competent for Entrustment
Implications

- Many trainees considered “unsatisfactory”
- Educational culture shift in meaning of unsatisfactory
- Non-aspirational
- Defining superior
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Utility Elements of Assessment

- Validity
- Reliability
- Educational impact
- Practicability
- Acceptability
- Cost effectiveness


Trainee Learning Process Assessment

Inform Supervision
What can trainee do independently? What does supervisor need to contribute?

Patient care outcome
Accountable Supervision and Quality Index

Trainee Performance
* Function of level of trainee competence in context

Appropriate Supervision Level
** Function of level of attending competence in context

Must = Safe, Effective, Patient Centered Care
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Leverage Rater Assessment Problem

- Faculty development on skills being assessed
  - Patient centered communication
  - Evidence based physical exam
  - Effective use of EHR

- Dual benefit
  - Clinical skills
  - Educator Skills
Objective 3: Strategies to improve assessment

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- Transform culture
Build in Meaningful Feedback
Transform Culture

1) Buy-in about DO importance
2) Faculty champions
3) Systems to accommodate DO
4) Motivations/reward
Conclusions: Direct Observation

Quality improvement for the patient

Quality improvement for the trainee
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Questions