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Foundation for Advancement of International Medical Education and Research

Assessment in Medical Education: State of the Art

John Norcini, Ph.D.

The Past

- Assessment was based on a few methods
  - Essays, oral exams
- Methods limited
  - Competencies
  - Validity/realism
  - Reliability
  - Educational effect
  - Feasibility

The Past

"That part of eternity with some small fraction of which we have a slight and regrettable acquaintance."

A Bierce

The Devil's Dictionary

The Present

- Needs
  - Quality assurance-improvement
    - Postgraduate training and practice
  - Assessment of all competencies
- Advances
  - Technology
  - Psychometrics

The Present

"That part of eternity dividing the domain of disappointment from the realm of hope."

A Bierce

The Devil's Dictionary

The Future

- Assessment in clinical training
  - mini-CEX, DOPs, CbD
- Assessment of work
  - Outcomes and process
- Enhanced realism
  - Simulation
- Assessment of all competencies
  - Professionalism

The Future

"That period of time in which our affairs prosper, our friends are true, and our happiness is assured."

A Bierce

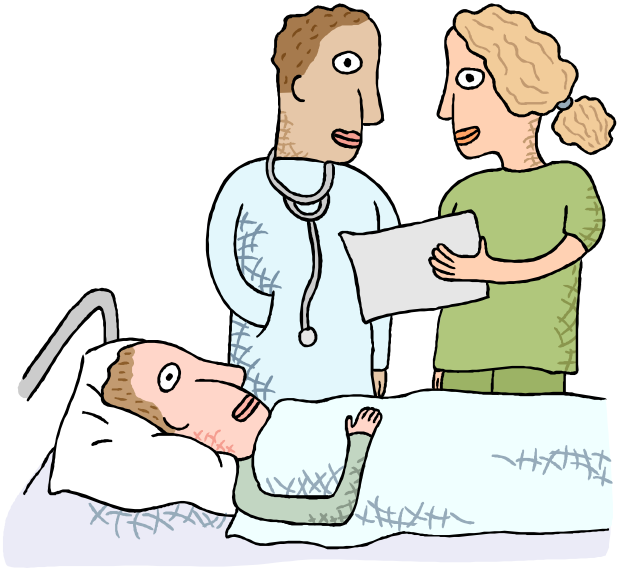
The Devil's Dictionary

Assessment in Clinical Training

- Assessment in clinical training is difficult
- Foundation Programme
  - Two years of training
    - Bridge between medical school and specialist training
  - Series of placements in a variety of settings
  - Requires demonstration of clinical competence
- Three of the methods used
  - mini-Clinical Evaluation Exercise (mini-CEX)
  - Directly Observed Procedures (DOP)
  - Case-Based Discussion (CbD)

Mini-CEX

- Process
  - Trainee picks a patient
  - Assessor observes the encounter
    - Focused clinical task
  - Assessor rates Hx, PE, Comm, CJ, Prof, Org/Eff and provides feedback
- Takes 15-20 minutes
- 6 assessments/year



DOPs

- Process
  - Trainee picks a patient
  - Assessor observes the encounter
    - Procedure
  - Assessor rates Prep, Sedation, Asepsis, Technical skill, etc. and provides feedback
- Takes 15-20 minutes
- 6 assessments/year

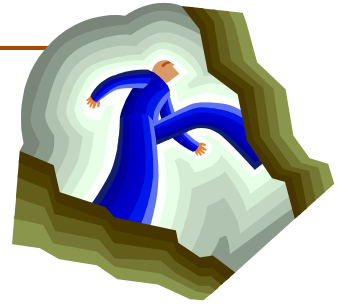
CbD

- Process
  - Trainee picks 2 case records
    - Assessor selects one
  - Discussion centered on the trainee's notes
  - Assessor rates Diag, Treat, Planning, Prof, etc.
- Takes 15-20 minutes
- 6 assessments/year

Advantages

- Pose a broad range of patient problems
- Support clinical education
  - Ensures that trainees are observed
  - Proper feedback after the encounter can be very powerful
- Feasible in the context of small work-based training programs

Challenges

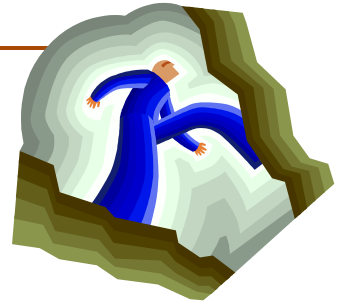


- Not many trainees will be considered unsatisfactory
  - There remains a need for national assessment, perhaps near the end of specialist training

"Everywhere I go I'm asked if I think the university stifles writers. My opinion is that they don't stifle enough of them."

F O'Connor

Challenges

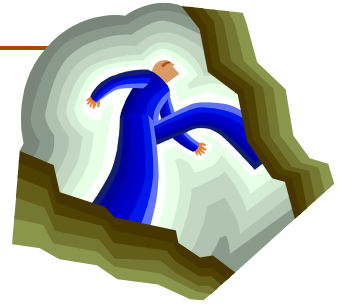


- Another assessment process needed for unsatisfactory trainees
  - Traditional measures of knowledge and clinical skill
  - Rule out false negatives
  - Provide diagnostic feedback

"The power of accurate observation is frequently called cynicism by those who don't have it."

GB Shaw

Challenges

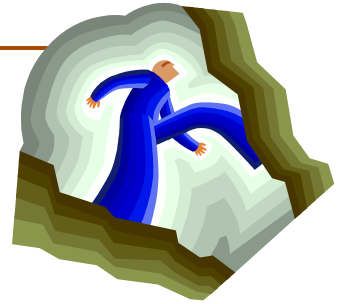


- Trainees have some control over who examines them and indirectly over the content of the assessment
  - The assessment might be biased in their favor

"It is hard to believe that a man is telling the truth when you know that you would lie if you were in his place."

HL Mencken

Challenges



- Standards across programs will not be equivalent
  - Results will not be useful for national ranking of trainees

"Equal opportunity means everyone will have a fair chance at becoming incompetent."

LJ Peter

Assessment of Work

- Assessment of work is a growing area of focus around the world
  - Desire to improve the quality of care
    - Important part of continuous quality improvement
  - Establish accountability to patients and the public
  - Avoid high profile cases of misbehavior
    - e.g., Swango and Shipman
- Assessment based on
  - Patient outcomes
  - Process of care

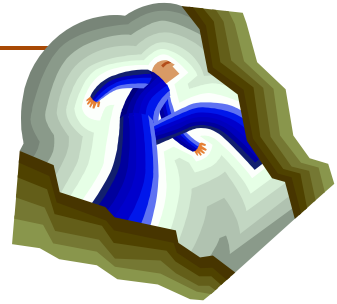
Assessment of Work: Outcomes

- Physicians judged on the outcomes of their patients
  - Mortality and Morbidity
  - Plus a series of newer outcomes
    - Patient satisfaction
    - Functional status
    - Cost effectiveness
    - Intermediate outcomes (e.g., HbA1c and lipid levels for diabetics)

Outcomes: Advantages

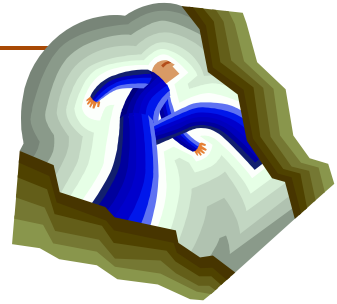
- Public
  - Measure of accountability
- Patients and the health care system
  - Offers a basis for deciding among doctors dependent on quality and efficiency
- Doctors
  - Offers assessment tailored to their unique practice
  - Based on real work performance

Outcomes: Challenges



- Attribution
  - Good assessment requires that the doctor be solely responsible for the patient's outcomes
  - Patient care is increasingly provided in systems by teams supported with guidelines
- Case mix
  - Good assessment requires that all doctors face the same challenge
  - There is variability in the frequency and type of patient problems encountered

Outcomes: Challenges



- Patient complexity
  - Good assessment requires that all doctors face the same challenge
  - Patients with the same condition vary in severity, comorbidities, compliance, etc.
- Numbers
  - Reliable assessment requires that many patients be sampled
  - Only common conditions can be included in assessment

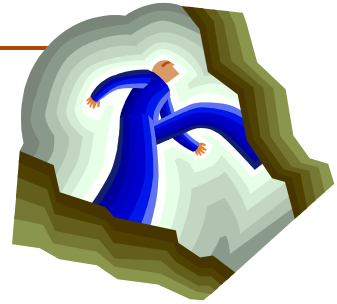
Assessment of Work: Process

- Judge physicians based on the process of care they provide their patients
  - General processes such as
    - Screening and preventative services
    - Diagnosis and management
    - Prescribing
    - Counseling
  - Condition-specific processes
    - HbA_{1c} monitoring and foot exams for diabetics

Process: Advantages

- More directly in physician control
  - Problems of attribution are reduced
- Less directly influenced by complexity
  - HbA_{1c} should be monitored in all diabetics
- For certain processes, case mix is not a problem
  - Most patients need immunizations
- Applicable in postgraduate setting

Process: Challenges



- Doing the right things does not ensure a good outcome
- Complexity and case mix still have an effect
- A sizeable number of a doctor's patients need to be sampled

"I know how hard it is for you to put food on your family."

GW Bush

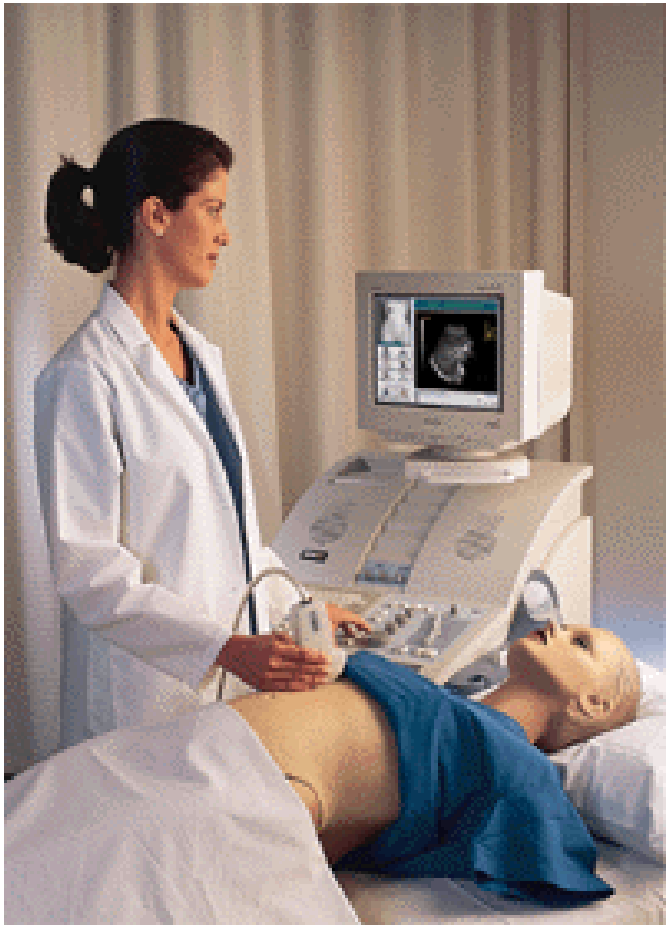
Enhanced Realism: Simulation

- Present
  - Moderate fidelity simulators are coming into use
    - Task specific models such as manikins designed around a specific task
    - Computer programs focused on testing facts, treatment decisions, etc.
    - Models where the responses are created by an instructor
- Future is high fidelity human patient simulators: Model-driven and virtual reality

Human Patient Simulators: Model-Driven

- Physical representation of the body
- Underlying physiologic and pharmacologic models
- Number of adjustable parameters to simulate disease
- Real time response to interventions such as drugs, inhalation agents

Human Patient Simulators: Virtual Reality

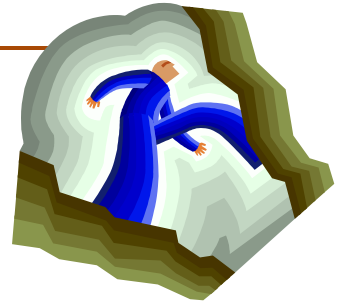


- Simple physical representation
- Sensing device that informs computer of user actions
- Computer models realistic reactions
  - 3D imaging
  - Haptics

Advantages

- Validity
  - Realistic challenges
  - Content coverage
    - Rare conditions
    - Errors cause no harm
- Equivalence
  - Standardization
- Educational effect
- Supports integration of the curriculum

Challenges



- High fidelity may not be necessary
  - Research suggests low fidelity is as effective as high fidelity
  - Detailed recreation of a task includes redundancies
    - Focus and shorten tasks

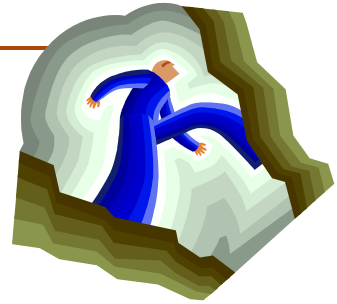
Fidelity

"A virtue peculiar to those who are about to be betrayed."

A Bierce

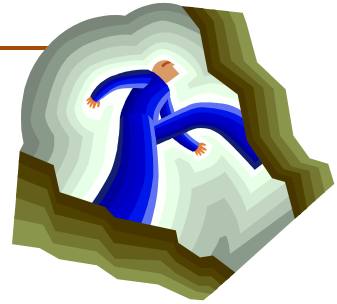
The Devil's Dictionary

Challenges



- Topics are difficult to select
  - Support right and wrong responses
  - Be of appropriate difficulty
  - Separate good and bad examinees
  - Justify the testing time
- Cases are difficult to write
  - Authoring tools needed
- Cases are difficult to refine
  - Extensive tryout
  - Knowledgeable reviews

Challenges



- Scores from simulations are not very reliable per unit of testing time
  - Case specificity
    - Performance on one problem does not predict performance on others
  - Complexity
    - Simulations are often targeted at complex skills
  - Controversy
    - Experts do not always agree on what constitutes acceptable responses

Assess All Competencies: Professionalism

- Multi-source feedback
  - Expands the opportunities to observe professionalism

Professionalism is built upon the…"wise application of principles of Professionalism: excellence, humanism, accountability, and altruism."

David Stern

Measuring Medical Professionalism, 2006

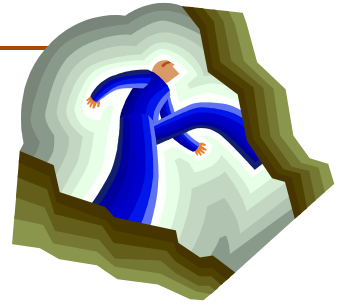
Multi-source Feedback: Peer Assessment

- Process
  - Doctor identifies
    - Patients
    - Peers (physicians and non-physicians)
    - Self-rates
  - Ratings collected by an independent organization
  - Doctor given self-ratings, peer ratings, patient ratings and national mean ratings
    - Few doctors referred

Advantages

- Validity
  - Supported by considerable research
- Educational effect
  - Supported by quality improvement tools
- Feasibility
- Applicability across the continuum
  - Peer assessment from medical school and throughout a career

Challenges

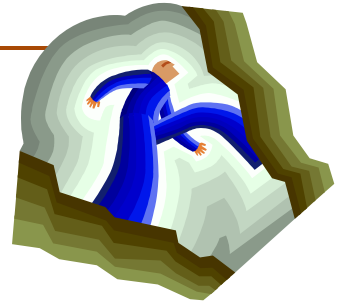


- Assessor
  - Peers
    - Need to have observed the doctor
    - Differ in stringency and perspective
  - Patients vary by
    - Age
    - Illness
    - Gender
    - SES

"I do remain confident in Linda. She'll make a fine labor secretary. From what I've read in the press accounts, she's perfectly qualified."

GW Bush

Challenges

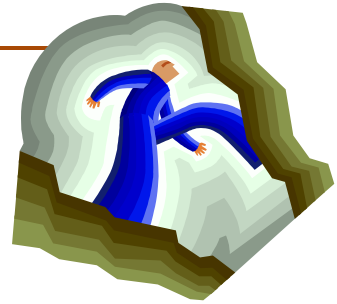


- Context
  - Settings within which assessments occur differ in their demands, stresses, etc.

"[A]s you know, these are open forums. You're able to come and listen to what I have to say."

GW Bush

Challenges



- Relationships
  - Competition, friendship, patient-doctor imbalance may influence assessments
- Stakes
  - In high stakes setting assessments might be inflated
- Anonymity is important

"I've got a preference for friends"

GW Bush

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- Future trends
  - Assessment in clinical training
    - mini-CEX, DOPs, CbD
  - Assessment of work
    - Outcomes and process
  - Enhanced realism
    - Simulation
  - Assessment of all competencies
    - Professionalism

"I have opinions of my own—strong opinions—but I don't always agree with them."

GW Bush