Assessment Tools in EM Residencies: Integrating the Core Competencies

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overview

Introduction: ACGME Outcome Project
What is “Assessment?”
Quick review of the Core Competencies
“Toolbox” of Assessment Techniques
Which tools are relevant to EM residency, which CCs do they assess, and why?
Summary
Clinical Scenario

A 57-year old intoxicated male is being transported to your ED by EMS after being involved in an altercation in a bar. He was struck in the head by a pool cue and beaten repeatedly in the face and torso by “two dudes”. On arrival, the paramedics report there was significant blood loss and transient loss of consciousness (prehospital/Interpersonal Skills). On exam (history and physical/Patient Care, Medical Knowledge), the patient is confused and combative, non-English-speaking (modifying factor/Interpersonal Skills) with initial blood pressure of 89/46.
You direct staff to initiate two large bore intravenous lines, (multi-tasking and team management/Patient Care), and infuse one liter normal saline. The patient’s blood pressure responds to the fluid bolus and the initial FAST exam is negative for intraperitoneal fluid. Since the patient remains confused and combative, you prepare to intubate with rapid sequence induction (emergency stabilization, pharmacotherapy, and therapeutic intervention/Patient Care, Medical Knowledge), and notify Radiology of the need for immediate CT imaging (diagnostic studies/Systems Based Practice, Interpersonal Skills).
Clinical Scenario

The head CT shows a moderate subdural hematoma (diagnosis/Medical Knowledge). The abdominal CT confirms the negative FAST exam. Patient reassessment shows unilateral pupillary dilatation (observation and reassessment/Medical Knowledge, Patient Care). Immediate Neurosurgical consultation is obtained (consultation and disposition/Systems Based Practice, Interpersonal Skills, Professionalism) and arrangements for the patient to be taken to the operating room for craniotomy.
Clinical Scenario

The police arrive and request information on the patient’s specific injuries. You inform the police that the patient’s condition is critical (professional and legal/Professionalism, Interpersonal Skills). On your chart you document (documentation/Patient Care, Professionalism) the need for social services to follow-up with the patient after surgery to provide educational resources for alcoholism (prevention and education/ Systems Based Practice, Professionalism, Interpersonal Skills).
ACGME Outcome Project, or

“Why all this assessment all of a sudden?”

Increasing emphasis on outcomes

Concerns about the new graduates' ability to meet today's practice environment demands
Enhance residency education and accreditation effectiveness
Evidence of residency program educational effectiveness
Information to guide improvement.
Their assumptions:

Exposure to education does not ensure learning. Assessment methods most often used in residencies do not optimally ascertain how well residents perform. Assessment results can stimulate and direct performance improvement of both the individual resident and the educational program.
So what is Assessment???

Two types:

Formative
- Supports the learning process
- Constructive feedback ideally utilized to modify behaviors

Summative
- Determines the status of learning and performance
- May be used for decision-making, like promotion
Assessment key features

Reliable:

Consistency of scores across time, observers/raters, situations

Enhanced by

Well-defined scoring or rating criteria,
Training of observers/raters on those criteria
Assessing specific tasks

Essential for high-stakes decisions
Not essential for formative assessment
Assessment key features

Valid:

AKA “accurate”

The extent to which an assessment measures what it sets out to measure.

Enhanced by

Evaluating a broadly representative sample
Evaluating clinical tasks in an authentic setting

Very important for formative assessment
The EM General Competencies:

**Patient care**

Emergency Medicine Residents will learn to practice **Patient Care** that is timely, effective, appropriate, and compassionate for the management of health problems and the promotion of health.
The EM General Competencies:

Medical knowledge

The Model of Clinical Practice of Emergency Medicine defines the Medical Knowledge base for EM. Residents are expected to formulate an appropriate differential diagnosis with special attention to life-threatening conditions. Demonstrate the ability to utilize available medical resources effectively and concurrent with patient care. Apply this knowledge to critical problem solving and clinical decision making.
The EM General Competencies: Practice-based learning and improvement

Residents are expected to analyze and assess their practice experience and perform practice-based improvement; locate, appraise and utilize scientific evidence related to their patient’s health problems and the larger population from which the patient is drawn; apply knowledge of study design and statistical methods to critically appraise the medical literature; utilize information technology to enhance their education and improve patient care; facilitate the learning of students, colleagues, and other health care professionals in emergency medicine principles and practice.
The EM General Competencies:

**Professionalism**

As it pertains to EM, is defined by a set of model behaviors and specific knowledge expectations:

- Code of Conduct for Academic Emergency Medicine or ACEP Code of Ethics
- Definitions of justice, autonomy, beneficence, non-malfeasance, health care decision-making capacity, living will, advanced directive, health care power of attorney, informed consent
- Criteria appropriate to apply when allowing patients to sign out “AMA.”
- Etc.
The EM General Competencies:

Interpersonal and communication skills

Demonstrate the ability to respectfully, effectively, and efficiently develop a therapeutic relationship with patients and their families.

Demonstrate respect for diversity and cultural, ethnic, spiritual, emotional, and age-specific differences in patients and other members of the health care team.

Demonstrate effective listening skills and be able to elicit and provide information using verbal, nonverbal, written, and technological skills.

Etc.
The EM General Competencies:

Systems-based practice

EM residents must demonstrate an awareness of health care systems and the ability to effectively mobilize system resources to provide optimal care.
ACGME Assessment Toolbox

360° evaluation
Chart stimulated recall
Checklist evaluation of direct observation
Global rating of live or recorded performance
OSCE
Procedure, operative or case logs

Patient surveys
Portfolios
Record review
Simulations and models
Standardized oral exam
Standardized patients
Written exam (MCQ)
Global Rating Evaluation Forms

Most widely used eval tool
Subjective judgment about behaviors, skills, knowledge, and attitudes
Evaluator must mentally sum up and formulate a general impression based on resident’s performance over a period of time and many patient experiences
Global Rating Evaluation Forms

Problems:
- Grade inflation
- Range restriction
- Halo or millstone effects
- Poor reliability
- Poor validity
- Numbers only are not helpful for formative assessment without narrative comments
Global Rating Evaluation Forms

How can we make them more useful?
- The more the better (increases reliability)
- Include narrative comments in addition to scores
- Contract down the rating range and provide “anchors” at each end and in middle
- More useful for competencies in which a “general impression” is what’s needed
  - Professionalism
  - IPS&C
  - Patient Care
  - Systems-Based practice

Most useful for pattern detection
360° Assessment

Individuals from the *full circle* of reporting relationships perform global assessment. Thought to have relevance and credibility because of the multiple perspectives and number of evaluators.

Faculty (20-50), resident peers, students, nurses (1-5), clerks, patients (20-50), etc. Self-evaluation may be included.
360° Assessment

Most useful for detecting patterns and comparing perspectives in:

- Professionalism
- IPS&C
- Patient Care
- Systems-Based practice

More of a summative assessment tool
360° Assessment

Problems

Same as for regular global evaluation forms
Huge amount of data to be collated, redacted, summarized
$$$, time
Compliance
360° Assessment

How can we make them more useful?
The more the better (increases reliability)

*Insure confidentiality*

Include narrative comments in addition to scores

Consider phasing-in evaluator groups over time to make the process more do-able
Checklist of Direct Observation

Direct Observation:
Supervising OR extra attending directly observes resident performance in the clinical environment.

Checklist Evaluation Tool:
List of specific actions that make up a more complex activity
- Were they done and in the right order?
- Key actions performed?
- How competently were they done?
Checklist of Direct Observation

High reliability, if the form is well constructed
High validity, because in the clinical environment
High relevance, if there has been expert consensus about what items go on the checklist
CORD is developing a standardized direct observation checklist form to be available for use by all EM programs.
Checklist of Direct Observation

Ideal for some aspects of all 6 competencies. Better for assessing fundamental skills than for assessing nuances of the more experienced clinician. Better for formative assessment than other evaluation tools, especially if results discussed with the resident in real time.
Checklist of Direct Observation

Problems:

Expense of having an extra attending for the period of time the resident is observed, OR
Compliance by the on-line attending, (who doesn’t have time)
The form must be constructed such that the efficiencies learned with experience are not scored as omitted steps.
Portfolios

A collection of work products or other evidence of accomplishment

Different way of assessing resident competencies – completely removed from clinical setting

Best way of getting at aspects of SBP and PBL&I

Contents of the portfolio should be assessed using some sort of scoring system

*Reflection* of one’s own learning and experiences is an important component
Portfolios

Contents can include:

- Written In-service results (MK)
- Oral exam scores (MK, PC, Prof., IPS&C)
- Procedure logs (PC)
- Follow-up logs (PC, PBL&I)
- Scholarly project write-up (PBL&I)
- Journal club article assessment (PBL&I)
- Teaching evaluations by med students and for lectures (PBL&I)
- QI project (SBP or PBL&I)
- Administrative project write-up (SBP)
- Case write up, with emphasis on systems issues (SBP)
Portfolios

Problems:
  Buy-in…
  Who determines the content?
  How should these be scored?
  Who should do the scoring?

*This could be an opportunity for faculty and residents to come together and learn these new elements of the curriculum together in a formative manner.*
Standardized oral examinations

By role-playing, the resident performs a “virtual” H&P, orders and interprets tests, and manages the case from start to finish. Evaluate resident’s ability to manage various aspects of unknown clinical case.
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Standardized oral examinations

Scoring – useful for summative feedback
  General score for each section
  Integrated score for each core competency
Narrative section usually most helpful for formative feedback
  May be helpful even when reviewed at a later date (within a few months)
Standardized oral examinations

Advantages:

Practice for the “real thing”

*Potential* for both formative and summative assessment
Standardized oral examinations

Problems:

- Time and resource intensive for faculty
- Time intensive for residents
- Some people are not good at role playing…
  - Validity and reliability haven’t been assessed for trainees in their training program
Simulation

Refers to a variety of technologies that allow residents to work through realistic patient problems that allow them to make mistakes, learn, and be evaluated without exposing a real patient to risk. Studied well in surgical disciplines, ultrasound, medical schools.
Simulators

May be useful for assessing the core competencies particularly:

Patient care (decision making, prioritizing, procedural skills)
Interpersonal skills (team leadership, communication)
Systems-based practice (team structure and utilization, resource use)
Simulators

High fidelity simulators mimic physical findings
Respiratory rate, breath sounds, central and peripheral pulses, murmurs, and pupil reactivity
They generate an electrocardiographic (ECG) waveform, cardiac indices, and oxygen saturation
Can be viewed on standard monitoring equipment
Can be programmed to respond physiologically to medications and invasive procedures
Simulators

Advantages

Can provide opportunity to practice many skills in a “risk free” environment

Can be programmed to simulate low frequency but high risk scenarios and procedures for EM trainees

Opportunity to teach and evaluate many of the core competencies
Simulators

Problems

Cost

Availability

Is it truly a substitute for the real thing?

If used for evaluation, may not account for the manner in which expert clinicians function (nonlinear reasoning)

May be best for formative evaluation
Summary

ACGME assumes:
- Assessment will provide information about physician competency
- Increased assessment will improve “outcomes”

Global evaluation form is the most used but least useful for assessing residents
- Neither reliable nor valid
- Only summative, not formative assessment

360° evaluation increases validity, but requires huge infrastructure, training, and buy-in.
Summary

Checklist evaluation of direct observation has promise for real-time formative assessment
  Labor and time intensive
  CORD developing standardized form for all programs
Portfolios are best for assessing SBP and PBL&I
  New and different in medicine
  Need faculty time and training for assessment
Summary

Standardized oral exams may provide both formative and summative assessment of PC, MK, ICS, SBP, and Prof., if scored appropriately.

- Time/resource intensive for both residents and faculty

Simulations can simulate low frequency but high risk scenarios and procedures for EM trainees.

- All CCs may be assessed, depending on the simulation environment

Scoring for assessment may not account for the manner in which expert clinicians function (nonlinear reasoning).
References


Hayden, S., Dufel, S., Shih, R. Definitions and Competencies for Practice-Based Learning and Improvement. *Acad EM* 2002;9:1242-1248.


