

# An introduction to the assessment of skills and performance

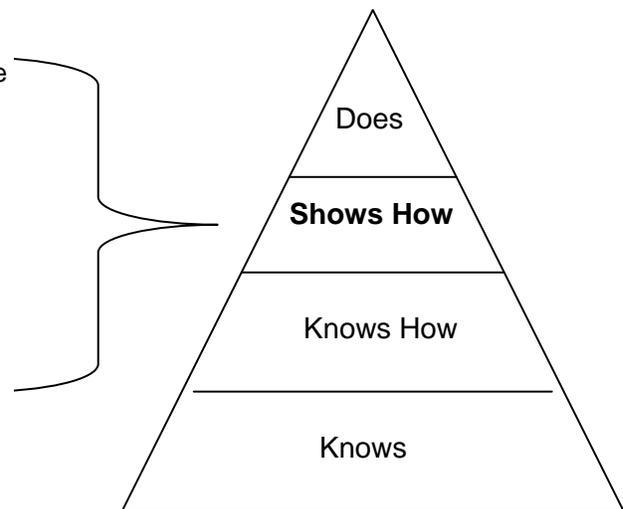
## AMEE 2008

John Norcini, PhD  
FAIMER, USA  
[jnorcini@faimer.org](mailto:jnorcini@faimer.org)

### What is included in an assessment of skills and performance?

Miller's Pyramid

In 1990, George Miller proposed a classification, in the form of a pyramid, for methods of assessment in medical education. 'Knows' (knowledge) is at the lowest level of the pyramid followed by 'knows how' (competence), 'shows how' (performance), and 'does' (action). Miller distinguished between the top two levels of the pyramid depending on whether the students were aware they were in a testing situation (i.e., for 'shows how' they know they are being assessed). Methods aimed at skills and performance generally fall into the 'shows how' level.



Miller, GE. The assessment of clinical skills/competence/performance. Acad Med;1990;**65(9)**:s63-s67.

### What are some popular methods of assessment?

The popular methods of assessing skills and performance fall into two broad classes: simulation and workplace-based methods.

**Simulation.** Simulation is a set of techniques that can be used to replace real patients with artificial experiences that replicate, to some degree, reality. In assessment, the student interacts with these recreations and they are judged based on the quality of their performance.

*Standardized patients* (SPs) are the most popular example of simulation. Actors are trained to play the role of a patient with a particular problem (e.g., chest pain) and the task of the examinee might be to take a history, do a physical exam, and then create a differential diagnosis. Scoring is based on a checklist completed by an SP or ratings provided by a faculty observer.

Other methods include computer simulations, manikins, and virtual reality.

**Workplace-based assessment.** In workplace-based assessment, real patient encounters are used. Trainee interactions with patients are observed and judgments are based on the quality of their performance.

*Mini-CEX.* The mini-CEX is one popular example of a work-based assessment method. A faculty member observes a trainee performing a focused clinical task (e.g., taking a history and performing a physical exam). At the end of the exercise, the faculty member rates the performance. Good assessment requires that trainees be observed on several encounters.

Other methods include Direct Observation of Procedural Skills and Case-based Discussion.

## **What are some of the criteria for judging assessments of skills and performance?**

**Reliability.** To generate scores that are reproducible, it is essential that trainees be observed across different patients. It is also important that several different trained observers are involved.

**Validity.** Validity refers to how well scores on the assessment generalize to actual performance in practice. Given reliable scores, both simulation and workplace-based assessments should be strongly related to routine performance.

**Feasibility.** For simulations, it can be labor-intensive to develop good test material and it not clear how faithful to reality the simulation needs to be (i.e., fidelity) to produce valid results.

**Equivalence.** For workplace-based assessment, it is difficult to compare results across individual trainees since the patients they see will vary in terms of the challenges they present and their complexity.

**Educational Effect.** Both simulation and workplace-based assessment will drive students to learn in the clinical setting (rather than the library).

**Opportunity for Feedback.** Properly deployed, both simulation and workplace-based assessment offer the opportunity for students to get feedback.

## **General readings**

Dent JA & Harden RM (Eds). (2005). *A practical guide for medical teachers*. Elsevier, Churchill, Livingston.

Collins JP & Harden RM. (1999). The Use of Real Patients, Simulated Patients and Simulators in Clinical Examinations. AMEE Guide 13.

Norcini J & Burch V. (2008). Workplace-based assessment as an educational tool. AMEE Guide 31.