Saudi Commission for Health Specialties

Use of Simulation in High Stakes Exams

Contents

Intent of use:

This document is intended to be used as a guideline for regulating simulation modalities in clinical examinations.

Simulation in Summative Assessment:

Definition:

A process in which a clinical encounter is imitated/enacted to evaluate candidates' performance against predetermined standards for certification.

Purpose:

Using simulation in Objective Structured Clinical Examination (OSCE) to evaluate clinical reasoning, psychomotor skills, and attitude, including communication, collaboration, and professionalism.

General guidelines for using simulation in high stakes exam:

- Consider available resources at SCFHS
- Consider feasibility (number of candidates, number of exam centers, and time)
- Ascertain candidates' exposure to simulation in training
- Assure accreditation of exam center for assessment
- Ensure validation of the assessment method

Modalities of simulation used in OSCE and definition of each

Includes but not limited to standardized patients, low-fidelity simulators, high-fidelity simulators, and virtual simulators.

Standardized Patients

An individual trained to portray a patient with a specific condition in a realistic, standardized, and repeatable manner in which portrayal/presentation varies based only on candidates' performance.

Low-Fidelity Simulators

Not needing to be controlled or programmed externally for the learner to participate; examples include case studies, role playing, or task trainers used to assess a candidate's performance in a clinical situation or practice.

High-Fidelity Simulators

A term often used to refer to the broad range of manikins that have the ability to mimic, at a very high level, human body functions (also known as a high-complexity simulator). Other modalities of simulators can be considered high-fidelity, and fidelity (realism) has other characteristics beyond a particular modality of simulator.

Virtual Reality Simulation

Simulations that use a variety of immersive, highly visual, 3D characteristics to replicate real-life situations and/or health care procedures; virtual reality simulation is distinguished from computer-based simulation in that it generally incorporates physical or other interfaces such as a computer keyboard, a mouse, speech and voice recognition, motion sensors, or haptic devices.

Prerequisites that need to be met for each modality:

Standardized Patients (SP)

- Certified
- Station orientation: Standardized calibration process with completion of assessment readiness record
- Play the role of a patient/relative
- If a health care worker (HCW) role is needed, they must be recruited from the main profession
- The complete detailed script addressing all possible questions, responses, and must asked/must react actions
- A dry run/warm up rehearsal on the same day
- Separate pool area for SP to avoid contact threats with candidates and examiners
- Communication devices (smartwatches/phones) must be taken away from SP's
- Confidentiality consent to be signed by SP

Low-Fidelity Simulators

- Skill to be assessed adequate for the time frame of the station
- Specific instructions clearly stated for the candidate
- Skill observable by the examiner
- Available replacements and easily setup for the next candidate
- Same manufacture of the task trainer for standardization of all exam circuits

High-Fidelity Simulators

- SP criteria need to be met
- Skill to be assessed adequately for the time frame of the station
- Specific instructions clearly stated for the candidate
- Skill observable by the examiner
- Availability of a simulation technologist/operator trained to run the scenario
- Available replacements and easily setup for next candidate
- A dry run/warm up rehearsal on the same day
- Back up a replacement for any technical issues
- Same manufacture for standardization of all exam circuits

Virtual Reality Simulators

- Skill to be assessed adequate for the time frame of the station
- Specific instructions clearly stated for the candidate
- Software that provides a reliable, valid assessment of the required competencies
- A dry run/warm-up rehearsal on the same day
- Back up a replacement for any technical issues
- Same manufacture/software for standardization of all exam circuits

Case Development

- Plan a scenario from clinical practice based on one or more of the following domains (Data-gathering skills, Reasoning, and Analytical skills, Decision-making skills, and Professional attitude)
- Confirm availability of imaging or investigation results necessary for the case
- Assure that the age and gender of the SP is consistent with the scenario
- Certified case designer designs the case based on SCFHS guidelines
- Select the most applicable simulation modality and meets the prerequisites
- Write up the scenario using the appropriate SCFHS template
- SP instructions must be provided in the intended language and reviewed by SME
- Dry run on the day of the exam
- Final modifications based on dry run feedback and examiner calibration

Scoring

- Assessment Tools/Valid, reliable instruments must include:
  - Checklist + Global rating scales based on the main objective of the station
  - Scoring each element of the stations (e.g., not more than 1 item)
  - SMART (Specific, Measurable, Attainable, Relevant, Timely) action verbs
  - No killer item/fatal/dangerous act (the examiner can provide a flagged comment)
  - Flagged comments may be taken into consideration of borderline candidates
  - Checklist alignment with curriculum competencies and blueprint
  - Limited descriptive items 8-25 for checklists with blinding of scores
  - Observable interaction that enables the examiner to assess the performance
  - Dichotomous (e.g., Satisfactory/Unsatisfactory or Done/Not done)
  - Detailed behavior descriptions for the global rating scale with blinding of numbers
  - Global assessment is part of the Minimum Performance Level (MPL)
  - Weight of the global rating scales assessment, not more than 20% of the overall station score
  - Rater training for calibrating process
  - Follow SCFHS scoring regulations

Examiners

- Each station may have two examiners when feasible
- A valid clinical examiner certification process + calibration
- Refresh calibration process online 1-day pre-exam
- Auditing of examiners based on following the regulations and psychometric analysis
- Examiners can be utilized for quality assurance during the exam
- Subspecialists must not be examiners for the station in their same subspecialty
- Must not be Program Director (PD)/deputy PD
- Recommended that examiners are not from the same region or at least not the same center of the candidates

Exam Validation:

Standards for OSCE assessment validation, evidence from five sources:

1. Content evidence:

Comprises a description of steps taken to ensure that assessment content (including scenarios, questions, response options, and instructions) reflects the construct it is intended to measure (e.g., ''professionalism''). This might involve basing the assessment on prior instruments, obtaining expert review, or using an assessment blueprint.

2. Internal structure evidence:

Comprises data evaluating the relations among individual assessment items and how these relate to the overarching construct. This most often takes the form of reproducibility measures (reliability) across items, stations, or raters, but can also include item analysis (item difficulty and item discrimination) and factor analysis.

3. Relations with other variables:

Regards the statistical associations between assessment scores and another measure or feature with a specified theoretical relationship. This relationship might be strongly positive (e.g., two measures that should measure the same construct) or negligible (for measures that should be independent).

4. Response process:

Comprises theoretical and empirical analyses evaluating how well rater or examinee actions (responses) align with the intended construct. This includes assessment security (those who cheat are not responding based on the intended construct), quality control, and analysis of examinees' or raters' thoughts or actions during the assessment activity.

5. Consequences

Regards the impact, beneficial or harmful, of the assessment itself and the decisions and actions that result (e.g., remediation following sub-standard performance). This also includes factors that directly influence the rigor of such decisions, such as the definition of the passing score (e.g., at what point is remediation required?) and differences in scores among subgroups where performance ought to be similar (suggesting that decisions may be spurious).

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