**Academic Section of CAEP: Featured Education Innovation**

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<th>Name of Innovation</th>
<th>Competency-based Assessment of Resuscitation Skills by Simulation-based OSCE using the Queen’s Simulation Assessment Tool (QSAT)</th>
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<td>Lead Innovators</td>
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| Description of the Innovation | Background and Goals: Assessment of clinical expertise in postgraduate medical education is moving away from knowledge-based examinations towards competency-based assessments. The use of high-fidelity simulation is emerging as an effective approach to competency-based assessments. Over a four year period, we developed and validated a modifiable anchored global assessment scoring tool for simulation-based Objective Structured Clinical Examinations (OSCEs) of resuscitation competence in postgraduate emergency medicine (EM) trainees: the Queen’s Simulation Assessment Tool (QSAT)  
Methods: The Department of EM at Queen’s University implemented a longitudinal simulation-based resuscitation curriculum that has employed bi-annual simulation-based OSCEs to assess resident performance in resuscitation since 2009. In these exams, 20 to 25 EM residents are individually presented with 2 or 3 resuscitation scenarios and debriefed by a faculty member immediately following their performance.  
The QSAT was developed for use in these exams, using a modified Delphi technique with a panel of EM physicians. It is a hybrid scoring tool comprised of four anchored domain scores and an overall global assessment score. The QSAT is unique in its simple and compact generic structure, which can be easily modified for utilization in any resuscitation scenario. The figure below demonstrates the generic QSAT, and a specific scenario QSAT with anchor modification.  
Following an initial blueprinting technique, 10 standardized resuscitation OSCE scenarios were developed and administered to EM trainees. Video-recorded resident performances were scored by multiple blinded EM attending physicians trained in the use of the |
scenario specific QSATs. Utilizing the “unified model” of an argument for validity, originally proposed by Messick we designed the QSAT, OSCE stations, and review process with principles of content and response process validity; and collected data relating specifically to the internal structure validity, relations with other variables such as level of training, and perceived benefit to learning.

Results: Discriminatory validity (Senior vs Junior) was excellent and inter-rater reliability showed acceptable levels of agreement for each scenario. Generalizability studies yielded G-coefficients ranging from 0.67 to 0.84. D-studies suggested that increasing the number of scenarios per OSCE (>6) with a single examiner per station would produce G-coefficients close to 0.90, which would be acceptable for high-stakes examinations. Resident trainees reported comfort being assessed in the simulation environment and found the simulation-based examination very valuable to their learning. Detailed descriptions of the QSAT development and validation and our program of simulation-based OSCE assessment are available.

Reflective critique: In summary, these OSCEs have become an important part of the assessment system within our EM program at Queen’s University and will help us as we transition to a fully integrated competency-based medical education (CBME) curriculum by July 2017. This assessment methodology has subsequently been evaluated in a multi-center study including 4 other Canadian sites. Looking forward, our next step is the administration of single-center 8-stations simulation-based resuscitation OSCE examining EM residents from across the country. It is our hope this form of resuscitation skills assessment will be included in the Royal College’s Competency by design (CBD) project for emergency medicine across Canada.

References

1. Hamstra SJ: Keynote address: the focus on competencies and individual learner assessment as emerging themes in medical education research. Acad Emerg Med 2012; 19: 1336-43

Who wrote this summary? Andrew K. Hall and J. Damon Dagnone