PATIENT SIMULATION: AN ADJ UNCT TO THE ORAL EXAMINATION

Georges L Savoldelli MD, Viren N Naik MD MEd, Hwan S Joo MD,
Patricia L Houston MD MEd, Marianne Graham MD, Bevan Yee MBChB,
Stanley J Hamstra PhD

St. Michael's Anesthesia Research into Teaching (SMART) Simulation Group, Department of Anesthesia, St. Michael's Hospital, and the Wilson Center for Research in Education, University of Toronto, 30 Bond St, Toronto, ON, M5B 1W8

INTRODUCTION: Anesthesiologists increasingly regard realistic patient simulators as invaluable educational and research tools for the study of human performance. However, their use in the assessment of residents' performance and competence is controversial. Concerns regarding the reliability, the validity, and the "added value" of simulator-based examinations over traditional examinations have not been adequately addressed (1). The present study investigated the potential for assessing clinical performance of senior anesthesia residents with a simulator as compared with the traditional oral examination.

METHODS: Twenty final-year anesthesia residents at the University of Toronto were assessed in resuscitation and trauma scenarios using two assessment modalities: oral examination, followed by simulator-based examination using the SimMan™ Universal Patient Simulator (Leardal ™). Two pairs of examiners, including two current members of the Royal College of Physicians and Surgeons of Canada Anesthesia Oral Examination Board (RCOEB), scored all performances with a previously validated global rating scale developed by the RCOEB. Different examiners were used to rate the oral and the simulation performances.

RESULTS: The internal consistency of the rating scale was excellent across scenarios, raters, and assessment modalities: Cronbach's α: 0.93 to 0.98. The inter-rater reliability was good to excellent across scenarios and modalities: Oral examination: r = 0.79 * (Resuscitation) and 0.86 * (Trauma); Simulation examination: r = 0.88* (Resuscitation) and 0.76 * (Trauma) (* $p < 0.01$). Average total scores for both raters obtained in the oral exam were then correlated with the corresponding scores obtained during simulation. The Pearson correlation coefficient reflects the concurrent-related validity of the simulation-based examination compared to the oral examination for each scenario: Resuscitation: r = 0.52* * ; Trauma: r = 0.53* *(* * $p < 0.05$).

DISCUSSION: Clinical performance can be evaluated using simulators as reliably as the oral examination. The moderate level of concurrent validity, in conjunction with high reliability suggests that simulator-based assessment may be measuring different but important dimensions of clinical competence compared with the oral examination, and therefore may be considered a useful adjunct to more traditional summative assessments.

REFERENCES: (1) *Br J Anaesth* 2001; 86 :4 4 5-50.

This study was supported by a grant from the Physicians' Services Incorporated Foundation, North York, Ontario, Canada.