

## Whole Task Human Simulation Accurately Predicts Competent Managers of the Difficult Airway

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**Introduction:** Whole task human simulation is one of the tools that has been used to try to evaluate competence in difficult airway management (DAM).<sup>1</sup> However, the validity of many characteristics of whole task human simulation remain unproven. One such characteristic is predictive validity, i.e., can simulation discriminate between acknowledged experts and untrained novices. We determined the predictive validity of whole task human simulation to accurately screen for competence in DAM.

**Methods:** We defined two groups *a priori*: “experts” and “novices”. “Experts” were faculty anesthesiologists who taught DAM to faculty and residents, and “novices” were CA-1 residents in their fourth month of training. Subjects participated in four difficult airway scenarios which all used SimMan® human dynamic macrosimulators. Scenarios replicated the four arms of the ASA Difficult Airway Algorithm: (A) can’t intubate, can’t ventilate where supraglottic or subglottic tools will work, (B) can’t intubate, can’t ventilate where only subglottic tools will work, (C) can’t intubate, can ventilate, and (D) awake intubation required. Participants were labeled competent if they successfully passed all four scenarios by following the ASA Difficult Airway Algorithm.

**Results:** Ten “experts” and twenty-one “novices” participated. Nineteen novices failed the test, and 8 experts passed (2-tailed Fisher's exact test  $p=0.0002$ ). Sensitivity, specificity, and positive and negative predictive values for competency were 80%, 90%, 80% and 90% respectively.

**Discussion:** In order for a test to be valid, it must accurately measure for the metric in question. By testing “experts” who are competent and “novices” who are not (by our definitions), we were able to show a statistically significant difference in performance and very good sensitivity, specificity, and positive and negative predictive values.

**Summary:** This study shows that the results obtained during whole task human simulation accurately reflect the DAM abilities of the participants, and demonstrates the predictive validity of whole task human simulation as an effective tool to measure competence in managing the difficult airway.

**Reference:** Romeo R, Quinlan J, Metro D, Talarico J, Schaefer J: Difficult Airway Management Using Human Dynamic Macrosimulation: Practicing Anesthesiologists do not Follow the ASA Difficult Airway Guidelines. *Anesthesiology*, 101:A1262, 2004

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**Comment:** I think this graph is superfluous

