26035 - MANAGEMENT OF SIMULATED OXYGEN SUPPLY FAILURE: IS THERE A GAP IN CURRICULUM?

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INTRODUCTION: The routine checking and maintenance of anesthesia equipment is a task that is increasingly being delegated to non-physician personnel. Subsequently, anesthesia trainees may not have exposure to this everyday practice. This could result in a diminished ability to manage an equipment-related crisis, which may compromise patient safety. High-fidelity patient simulation provides a safe environment to identify gaps in a trainee's knowledge and clinical performance.(1) We conducted this study to evaluate the management of a simulated oxygen pipeline failure in our residency program.

METHODS: After institutional ethics approval, twenty participants were videotaped while they managed an oxygen pipeline failure during a simulated carotid endarterectomy. The reserve O₂ cylinder on the anesthesia gas machine was empty. If a new O₂ cylinder was not requested by the subject, one was delivered, and the candidate was prompted to change the reserve O₂ cylinder. At all times a self-inflating resuscitation (Ambu®) bag was available to ventilate the patient's lungs. The videotapes were scored by two staff anesthesiologists using a validated performance checklist.

RESULTS: Twelve fourth-year (PGY4) and 8 second-year (PGY2) anesthesia residents participated in the study. Performances are summarized in the Table. Fourth year residents did not perform significantly better than second year residents (all p=NS).

DISCUSSION: Our results suggest that the understanding and management of oxygen supply failure was deficient among relatively experienced residents at our institution. We suspect that the delegation of gas machine maintenance to perioperative personnel has created a new gap in knowledge. Our results also demonstrate that simulation-based programs that are integrated into the residency can identify gaps in trainee education, and provide useful feedback for responsive curriculum modification and improvement.

REFERENCE: (1) JAMA 1999 282: 861-6.

Proportion of Key Actions Performed			
Key Action	PGY2 (%) n=8	PGY4 (%) n=12	Total (%) n=20
Recognizes the O ₂ supply and pressure alarms	37.5	41.7	40.0
Opens the O ₂ cylinder on the machine	50.0	50.0	50.0
Recognizes that O ₂ cylinder is empty	37.5	50.0	45.0
Calls for a new O ₂ cylinder	50.0	66.7	60.0
Changes the O ₂ cylinder successfully	37.5	41.7	40.0
Ventilates patient with the Ambu® bag	100	91.7	95.0
Anticipates patient awakening	37.5	41.7	40.0