Video Speaks a Thousand Words: A Novel Educational Tool in Airway Management

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Tracheal intubation is a critical procedure that is used routinely in intensive care units and associated with high rates of adverse events. It is taught in various nonanesthesiology training programs, including pulmonary and critical care medicine fellowships. Opportunities for trainees to perform tracheal intubation have been declining as a result of several factors, including the increased use of noninvasive ventilation, a reduction in trainee work hours, and an increase in advanced practice provider staffing in academic institutions. It is known that there is individual variability in the process to achieve competency in tracheal intubation skills (1, 2). Standardized educational curricula can address some of the variability in procedural opportunities for tracheal intubations. Such educational curricula may also use targeted feedback and interventions based on specific, objective measures to narrow variability in the achievement of procedural competency. For example, video review of procedures and clinical events have already been shown to improve reported performance in trauma management (3) and objective performance in surgical skills (4) and cardiac arrest management (5).

In this issue of *ATS Scholar*, Jiang and colleagues report on an institutional comprehensive educational curriculum for pulmonary and critical care fellows (6). Their airway curriculum includes structured standardized educational content delivery and retrospective review of tracheal intubation case videos with standardized feedback using an objective scale. This intubation scale rubric was developed based on critical care medicine and emergency medicine expert opinions and was specifically aimed to evaluate video images from video laryngoscopy itself (i.e., not the

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external view of intubation). Investigators reviewed the videos from clinical cases with clinical fellows in a stepwise fashion, noting if each component of the rubric was adequately performed. Importantly, this structured video review was added to the other components of their airway curriculum and included traditional didactic sessions, hands-on simulation with whole-body simulators, task trainers for cricothyrotomy, and review of the airway checklist. In addition, their airway management curriculum included knowledge assessment and self-confidence (Kirkpatrick levels 1 and 2) level evaluation. Learner feedback to the curriculum shows promise, indicating that the addition of an airway video review conference was effective and well received by learners. They ranked the video feedback conference as the most valuable element of the curriculum.

The authors are to be commended for this important foundational step forward to advance the development of their airway curriculum. Although this curriculum provides concrete experience with clinical and simulated intubations, neither real-time performance nor learner competence is assessed. Using a well-accepted six-step curriculum development model (Kern approach), we recommend as the next step to build a system to track learners' clinical performance in tracheal intubation as an objective assessment. Using such data, individualized skill development can be visualized and personalized for each learner. Further, mastery learning theory can be used for individual learner success with deliberate practice (7, 8). This will be a critical next step for program success and continued growth.

The authors stated that the real-time video-based coaching or "hot debrief" immediately after the procedure would be difficult to implement in their clinical setting. There are well-described benefits and shortcomings of "hot" (i.e., immediate) versus "cold" (i.e., scheduled, conference-style) debriefs noted in the resuscitation literature (9, 10). Although it may be logistically challenging to implement real-time video-based coaching, pilot work has been done in pediatric critical care (11) in a setting in which many trainees were pediatric critical care fellows. Although concerns for intubation procedural delays were considered, the use of succinct coaching language may facilitate timely intubation and was feasible and accepted by many faculty members and learners (11, 12).

With more data becoming readily available for clinical debriefing, we should consider how to best use these data for education. We must think about the optimal modalities for different educational objectives (e.g., timing of feedback, instruction modality such as conference-style vs. individual feedback, and integration of other "traditional" education modules). However, we must also be cognizant of creating psychological safety for learners, especially when sharing individual performance data with other faculty members and colearners (13–17). The use of video images from recent tracheal intubation is just a first step to substantially enhance our critical care fellowship education system.

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