Editor's Note: In this section, we are pleased to present the 2015 New Ideas articles showcasing novel and implemented innovative initiatives in graduate medical education (GME). This year almost 100 submissions were reviewed in collaboration with the Society of Directors of Research in Medical Education. This process yielded 15 innovative approaches with the potential to advance the GME community's deliberations about innovation and improvement.

New Ideas

Induction of General Anesthesia Is in the Eye of the Beholder—Objective Feedback Through a Wearable Camera

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Setting and Problem

Anesthesiologists work in a fast-paced environment that is not always conducive to timely feedback and reflection on actions and minute-to-minute decision making. We pride ourselves on situational awareness, responding astutely to a decompensating patient, and attentiveness to detail. Trainees and faculty alike are challenged to capitalize on teaching moments without compromising the immediate demands of patient care. Ultimately, we wondered whether there were subtle signs or events happening that we were unaware of as we cared for a patient.

Intervention

We chose immediate review of a first-person recording of a complex procedure as an opportunity for performance review of our trainees. Anesthesiology fellows and residents in our program used a head-mounted high-definition video camera (GoPro HERO3) to record a patient during induction of general anesthesia. The video encompassed the inhalation induction of general anesthesia, including observation of mask ventilation, intravenous catheter insertion, direct laryngoscopy, and endotracheal intubation at the start of a pediatric surgical procedure. The attending and trainee subsequently conducted a detailed debriefing based on the video clip. To the trainee's astonishment, the wide-angle optics and video quality enabled detailed observation of events, from subtle changes in thoracic movement during mask induction to the blood return observed during insertion of a 24-gauge catheter in a 6-month-old child. Most importantly, the video captured a first-person perspective of the situation. This unique perspective enabled objective discussion of the sequence of events with attention to details that may not have been otherwise appreciated. The unedited footage provided a platform to constructively critique performance using an objective source of feedback.

Outcomes to Date

Our trial in the operating room made evident the following: Use of the wearable camera captures a first-person view and learner's perspective of the event and enables objective feedback between teacher and trainee. High-quality footage allows detailed observation of actions from the wearer's perspective. The behavior and action of the wearer and other members in the operating room can be analyzed to augment the teaching opportunities in the operating room. One of the recording sessions included a patient with acute upper airway obstruction and the subsequent clinical interventions to relieve that problem. The video provides an objective source of observation that can be used to highlight strengths and suggest areas of improvement to a trainee. Residents universally acknowledged appreciation for the feedback provided from the video review. Subsequent discussions focused on events observed in the video, leading to a mutually engaging dialogue of learning.

The equipment necessary to review videos consists of the video camera with head-strap and a laptop computer, making this a portable teaching tool. The TABLE lists the technical requirements. Technical limitations include inability to use the camera or computer if batteries are depleted, if there is no access to memory card readers, or if there is another technical failure. The video files generated with our camera were approximately 2.5 gigabytes for 20 minutes. Video file storage and management should be considered prior to implementation of this intervention. Additionally, photo and video consent must be obtained from patients and respective caregivers prior to initiating recording. Other members of the operating room team

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TABLE **Technical Requirements**

Equipment	Brands/Specifications
High-definition wearable camera **and** head-mount strap	GoPro (GoPro Inc) Sony Action Cam (Sony Electronics Inc)
Memory card	At least 8 gigabytes (fast memory card for optimal video recording performance; review camera specifications for memory card requirements)
Computer	Computer with card reader capability and software for video playback
Memory card reader	Optional, only required if computer is not equipped with card reader slots

should be informed about the recording as well as the intent of the recording.

Since the initial trial, 5 sessions have been performed and have been met with equal enthusiasm by trainees. Initial skepticism to wearing the camera as a learning tool turned into universal receptiveness by the residents and fellows upon reviewing the footage and receiving meaningful, objective feedback that could be readily applied to their everyday clinical practice. Wearable camera devices are invaluable educational tools, highly suitable for the perioperative environment, and should be incorporated as an adjunct in anesthesiology training.

We plan to conduct a formal evaluation of wearable cameras as a training tool to reinforce core skills anesthesiology residents and fellows should have in a pediatric surgical setting. Once established as a teaching method in anesthesiology, there is certainly potential to expand its educational utility into other specialties.

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