Appendix 1: Full standard setting worksheet to be completed by experts containing all 51 items

and scenario descriptions.

Comprehensive Airway Management Scenario

"You are an Emergency Physician managing a patient following a motor vehicle collision. Your patient is a 70 year old male. He is 5'10" and about 90 kg. Inside the ED, you find him making incomprehensible sounds. With painful stimuli, he opens his eyes and withdraws. He has a boggy contusion in the left temple area. You are the only Emergency Physician available. Proceed as you normally would."

Vital signs: BP 150/70, HR 110, RR 30, O2 saturation on NRB 95%.

For each item, please state if the item is critical for patient safety and/or outcome. Then decide if a beginning resident must do the item to pass and whether a mastery level resident must do the item to pass.

Item Number	Item Description	Critical to patient safety and/or outcome? (Yes/No)	Beginning resident must do item to pass? (Yes/No)	Probability that a well prepared, beginning resident will accomplish this task (0-100%)	Mastery level resident must do item to pass? Yes/No	Probability that a mastery level resident will accomplish this task (0-100%)
1	Positions patient optimally (trauma, ramp, sniffing)					
2	Does not assess gag reflex					
3	Assures continuous pulse oximeter					
4	Identifies primary and back- up plan*					

	blockade (local standards)					
7	Uses straight-to-cuff stylette curvature technique					
8	Checks equipment for cuff leaks					
9	Maintains C-spine precautions during airway management					
10	Uses cricoid pressure					
11	Equipment organized for 1st pass without loss view					
12	Selects and uses appropriate equipment					
13	Suctions airway fluids safely*					
14	Grasps laryngoscope with left hand at junction of blade and handle					
15	Laryngoscope tip in vallecula					

16	Inserts laryngoscope to appropriate depth					
17	Moves blade tip smoothly without shaking or jerking					
18	Elevates mandible from 45-90 degrees w/ laryngoscope					
19	Flips up epiglottis or exposes laryngeal inlet					
20	Changes angle ETT toward feet when 2-3” in mouth*					
21	Maintains view until ETT has stopped advancing					
22	Passes ETT with limited or no cord impingement					
23	Passes tube through cords (laryngoscope in mouth to tracheal placement) in < 20 seconds					
24	Disconnects syringe IMMEDIATELY					

	after inflating cuff of ET tube					
25	Confirms presence of breath sounds over each lun					
26	Confirms absence of breath sounds on epigastric region					
27	Checks end-tidal CO2- After ET Tube placement					
28	Checks pulse oximeter-After ET Tube placement					
29	Secures ET tube					
30	Successfully intubates in one ETI attempt					

At this time in the Scenario, the Emergency resident has managed the airway successfully intubating the patient or has failed to intubate the patient.

If the resident successfully intubated the patient, the facilitator will pause the scenario and provide the following information:

> *"In the process of patient care, the endotracheal tube was dislodged accidentally. You have attempted to intubate this patient twice since your first successful endotracheal intubation. You noted that the airway is significantly edematous, full of secretions and you are unable to visualize the ET tube pass through the vocal cords. The EtCO2 is 0; Pulse oximetry is 70%. Please proceed with the scenario."*

If residents failed to intubate the patient, the resident is provided the following:

"You have attempted to intubate this patient and noted that the airway is significantly edematous, full of secretions and you are unable to visualize the ET tube pass through the vocal cords. The EtCO2 is 0; Pulse oximetry is 70%. Please proceed with the scenario."

Item Number	Item Description	Critical to patient safety and/or outcome? (Yes/No)	Beginning resident must do item to pass? (Yes/No)	Probability that a well prepared, beginning resident will accomplish this task (0-100%)	Mastery level resident must do item to pass? Yes/No	Probability that a mastery level resident will accomplish this task (0-100%)
31	Inserts oropharyngeal airway prior to BVM ventilation					
32	Inserts oropharyngeal airway to proper depth					
33	Chooses correct oropharyngeal airway size					
34	Ventilates patient immediately (w/in 30 sec) with BVM					
35	02 attached & flow > 12 l/min					
36	Ventilates patient at rate of 10-12/min					
37	Evaluates BVM technique for visible chest rise					
38	Uses thenar eminence technique (E-C grip)					
39	Pre-oxygenates prior to backup plan					

40	Recognizes need for backup airway					
41	Identifies an appropriate backup airway device					
42	Back up airway appropriately used					
43	Immediately inflates cuff, prior to ventilation					
44	Immediately disconnects syringe after inflating cuff					
45	Confirms proper back up placement by auscultation over each lung					
46	Confirms absence of BS on epigastric region					
47	Checks end-tidal CO2- after Backup airway placement					
48	Checks Pulse Oximeter- after Backup airway placement					
49	Maintains control over backup airway after placement					
50	Successfully places backup airway within 1 attempt					
51	Ventilates without interruption of >30 sec at any time*					

Appendix 2: Names, titles and affiliations of each of the subject matter experts involved in the standard setting exercise.

Name	**Title**	**Institution**
Michael Beeson, MD, FACEP	Professor of Emergency Medicine; Residency Program Director; Past President Council of Residency Directors (CORD); NEOMED Medical Director Simulation, American Board of Emergency Medicine	Cleveland Clinic Akron General Hospital, Akron Ohio
Sharon Griswold-Theodorson, MD, MPH, FAAEM	Associate Dean, Graduate Medical Education; Director, Medical Simulation Laboratory; Professor of Emergency Medicine	Drexel University College of Medicine, Philadelphia, PA
Todd B. Peterson, MD	Associate Professor of Emergency Medicine; Director of Medical Student Simulation; Assistant Residency Program Director; Medical Student Clerkship Director	University of Alabama School of Medicine, Birmingham, AL
W. Bosseau Murray, M.B., Ch.B., MD	Professor of Anesthesiology, Researrch Director, Clinical Simulation Center	Pennsylvania State University College of Medicine, Hershey, PA
Ashish R. Panchal, MD, PhD	Associate Professor of Emergency Medicine, Director, Center for EMS, Airway Management Researcher	The Ohio State University College of Medicine, Columbus, OH
Calvin A. Brown, III MD FAAEM	Assistant Professor of Emergency; Co-Director, The Difficult Airway Course; Director of Faculty Affairs; Primary Investigator for the National Emergency Airway Registry	Brigham and Women's Hospital, Harvard University Medical School, Boston, MA
Brendan Byrne, MD	Assistant Professor of Emergency Medicine; Assistant Director, Emergency Medicine Residency Program	University of Michigan Medical School, Ann Arbor, MI
Sorabh Khandelwal, MD	Professor of Emergency Medicine; Program Director, Emergency Medicine Residency; Assistant Dean of Clinical Sciences; Director of the Patient Care Competency in the College of Medicine	The Ohio State University College of Medicine, Columbus, OH
Andrew King, MD	Assistant Professor of Emergency Medicine; Assistant Director, Emergency Medicine Residency Program	The Ohio State University College of Medicine, Columbus, OH

Thomas Terndrup, MD	Professor of Emergency Medicine, Airway management researcher	The Ohio State University College of Medicine, Columbus, OH
Michael A Gisondi, MD	Associate Professor of Emergency Medicine; Residency Program and Medical Education Fellowship Director; Feinberg Academy of Medical Educators	Northwestern University Feinberg School of Medicine