Common Challenges of Endotracheal Intubation (EI): Pulmonary and Critical Care Medicine (PCCM) Trainee and Expert Perceptions

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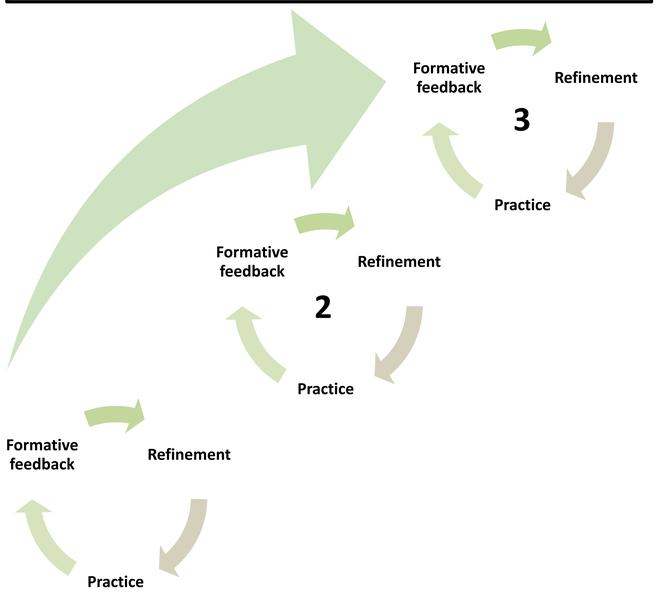
Rationale:

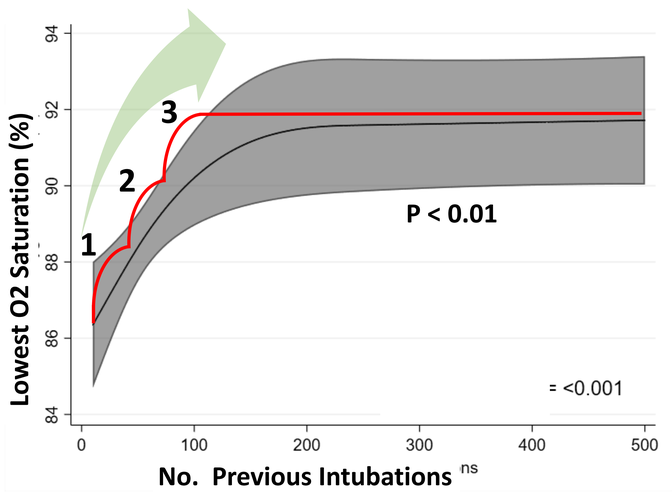
- EI is a very high risk procedure – complications in around 50% in ICU[1].
- Previous procedural experience does *not* predict competence[2].
- Trainees in critical care medicine must demonstrate competence – 40% of graduates do not *feel* competent[3,4].
- Mastery learning with deliberate practice has been shown to reduce complications in most procedures – central venous catheterization, lumbar puncture, IV placement, shock management, pediatric resuscitation, paracentesis, ENT laryngoscopy, hernia repair, and cric [5,6,7,8,9,10,11,12].

Background results:

- Reason for 1st pass failure = poor view (44%), difficulty passing tube (43%).
- Fifty-one percent of low experience operators (vs 40% of not low) report > grade 1 view during intubation (P <0.01).
- Thirty-three percent of low experience operators (vs 23% of not low) report worse than "easy" airway (P <0.01).
- PCCM fellow does not perform procedure as a result of "Attending comfort" in 17% [13].

Model:





Fellow Survey:

General endotracheal intubation questions.

When intubating I use:

Direct Laryngoscope (DL):	• Always • Very Often • Sometimes • Rarely • Never
Video Laryngoscope (VL):	• Always ←→ Never
VL, but attempt direct visualization (don't look at screen) initially:	• Always ←→ Never
DL, but supervisor views by video screen:	• Always ←→ Never

In general, when an intubation procedure is NOT easy, I believe it is the result of:

Poor View:	• Always ←→ Never
Acceptable view, but can't advance endotracheal tube/Bougie into trachea:	• Always ←→ Never
Difficult situation (patient on floor, coding, uncooperative patient, etc):	• Always ←→ Never

For the next questions, think about times you have performed endotracheal intubations and the procedure was NOT easy.

In my experience, a poor view via DL is the result of:

Poor head and neck movement/inability to position correctly	• Always ←→ Never
Small oral aperture:	• Always ←→ Never
Tongue (Large/swollen/dry, etc):	• Always ←→ Never
Redundant oropharyngeal tissue	• Always ←→ Never
Abnormal oropharyngeal anatomy (infection, trauma, tumor, edema):	• Always ←→ Never
Material in Oropharynx (blood, vomit, secretions, foreign object, etc):	• Always ←→ Never
Anterior Airway:	• Always ←→ Never
Lost view (tube obscures, operator moves):	• Always ←→ Never

In my experience, poor view via VL is the result of:

Poor head and neck movement/inability to position correctly	• Always ←→ Never
Small oral aperture:	• Always ←→ Never
Tongue (Large/swollen/dry, etc):	• Always ←→ Never
Redundant oropharyngeal tissue	• Always ←→ Never
Abnormal oropharyngeal anatomy (infection, trauma, tumor, edema):	• Always ←→ Never
Material in Oropharynx (blood, vomit, secretions, foreign object, etc):	• Always ←→ Never
Anterior Airway:	• Always ←→ Never
Lost view (tube obscures, operator moves):	• Always ←→ Never

In my experience, difficulty passing the ETT + stylet is the result of:

Difficulty getting ETT + stylet to cords	• Always ←→ Never
Difficulty passing ETT + stylet through cords	• Always ←→ Never
Difficulty advancing tube after passing through cords	• Always ←→ Never

In my experience, difficulty passing the Bougie + ETT is the result of:

Difficulty getting Bougie to cords	• Always ←→ Never
Difficulty passing Bougie through cords	• Always ←→ Never
Difficulty advancing Bougie after passing through cords	• Always ←→ Never
Difficulty advancing tube over bougie	• Always ←→ Never

Additional comments regarding issues that frequently complicate endotracheal intubation (Optional):

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Project:

- Creation of "coaching scripts" for trainer to facilitate trainee deliberate practice.
- National survey PCCM fellows at six academic medical centers to identify common challenges during EI in the MICU.
- Delphi methodology + national intubation expert generation of consensus "solutions" to PCCM fellow challenges (identified above).
- Future directions – faculty development/implementation of deliberate practice teaching practices with continual measurement of complications.

Project Challenges:

- Survey/Delphi methodology during pandemic.
- Qualitative methods with smaller population of trainer/trainee participants? Other?

References: