

# Airway Management

Steps on the road to expertise

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# Objectives

1. Review challenging airway management case studies along with relevant lessons for anesthesia practice.
2. Review current, peer-reviewed literature and best practices related to airway management including tools, techniques and emerging trends.
3. Provide recommendations for action related to the topics discussed.

# Case Study

37 yo female

- endoscopic sinus surgery
- NKA
- normal weight/height
- no significant medical hx
  
- previous surgeries:
  - hernia/appendectomy at age 7
  - c-section x 2



- congenitally fused cervical vertebrae with slightly reduced neck rotation (good flexion/extension)
  
- Mallampati 2, good thyromental distance & mouth opening
- preop labs: Hemoglobin is normal

# Case Study

Plan:

- “Doc-only” case
- LMA with propofol induction general anesthetic
- Isoflurane and remifentanil maintenance
- standard monitors

OR progression:

- No pre-oxygenation
- Smooth IV induction (200 mg propofol)
- Remi started at 0.3 mcg/kg/min

## OR progression

- **two attempts** at placing an LMA are unsuccessful d/t rigid jaw despite additional propofol
- **unable to mask ventilate** between or after LMA attempts
- SpO<sub>2</sub> falls to 75%, then 40%
- succinylcholine is given and **1st intubation attempt is unsuccessful**
- 8-min post-induction: additional anesthesiologist, nurses and ENT surgeon arrive
- 10-min post induction: **2nd intubation attempt:** no airway anatomy is discernible
- **additional attempts at intubation** made by both anesthesiologists
- **fiber optic scope used** but unsuccessful d/t presence of blood
- 20-min: ENT surgeon **attempts blind intubation** with DL + bougie: **unsuccessful**
- **intubating LMA allows for some ventilation**, SpO<sub>2</sub> rises to 90%
- **attempts at passing ET through LMA** blindly *and* with fiberoptic scope are also unsuccessful (SpO<sub>2</sub> falls again)
- **35 min: decision made to awaken pt;** spontaneous ventilation with oral airway is observed p/t transport to PACU

## Additional details:

- during attempts at intubation a nurse brings in a tracheostomy kit and announces it to the team, she is ignored.
- another nurse reserves an ICU bed, then cancels it when she feels the physicians questioned her decision
- PACU nurses are not comfortable with the patient, who fails to awaken
- pt is taken to ICU; husband is notified
- severe ischemic brain injury is diagnosed
- 13 days later, the patient, Elaine Bromiley, a 37 year old mother of 2 children, dies after life support is withdrawn

# Elaine Bromiley Case Study

*“So that others may learn, and even more may live.”*

*- Martin Bromiley, Elaine’s husband*



**chfg**

**clinical human factors group**

working with clinical professionals and managers to make healthcare safer

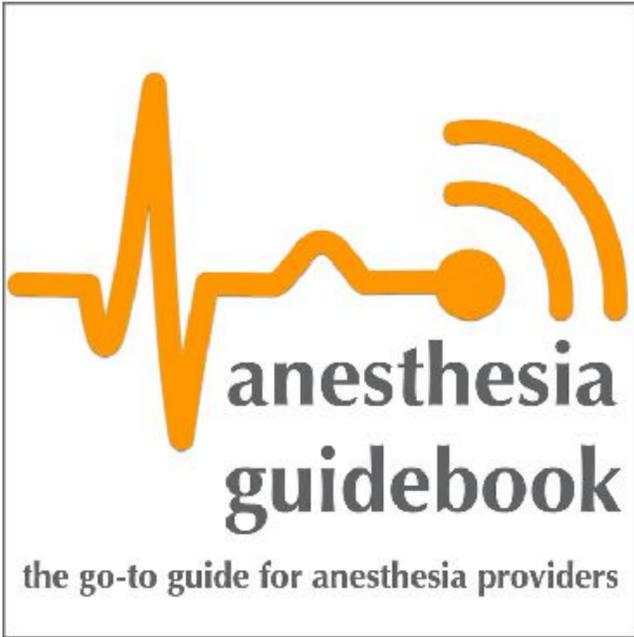
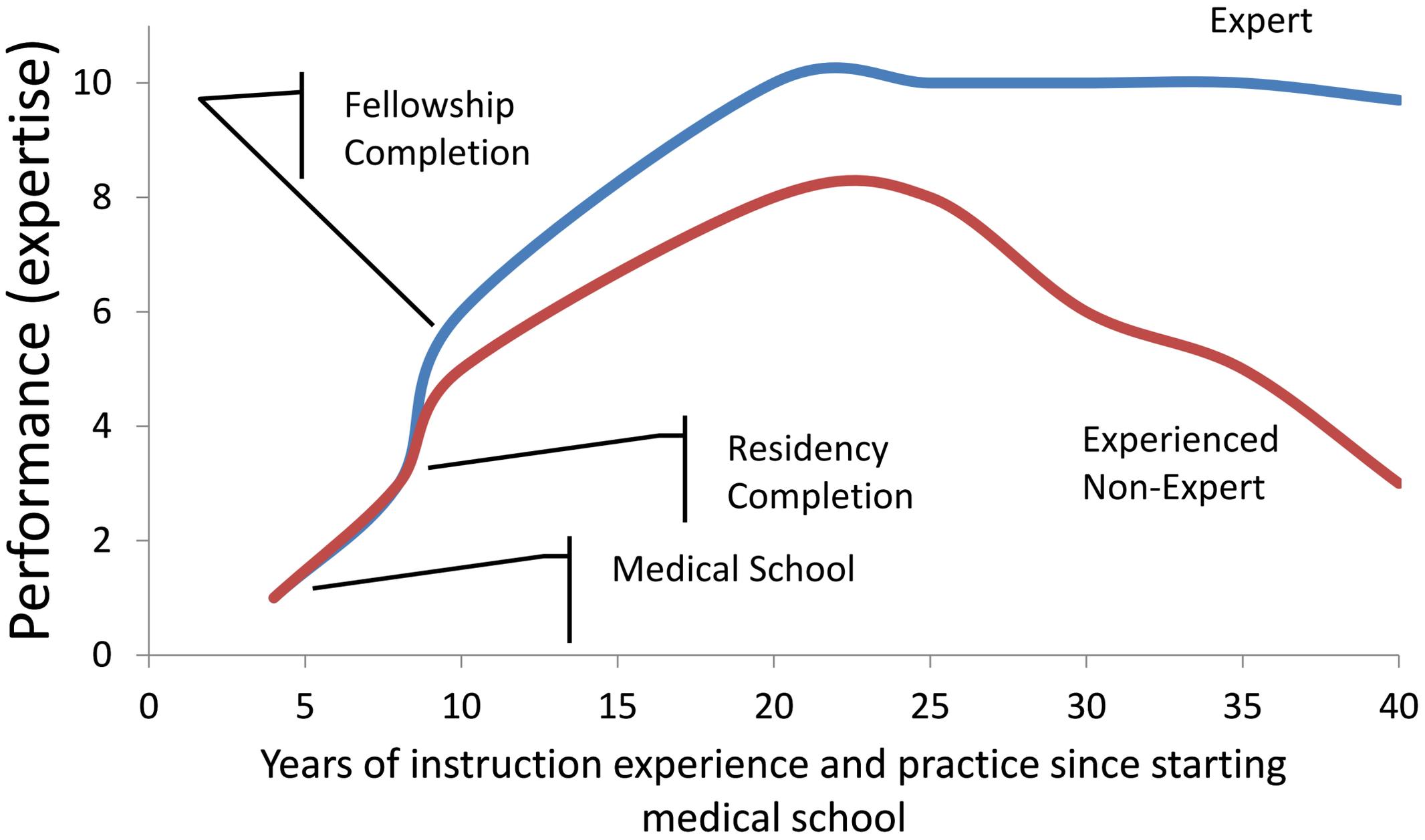
How do you define expertise  
in airway management?

“Most professionals reach a stable, average level of performance within a relatively short time frame and maintain this mediocre status for the rest of their careers.”

Anders Ericsson (2004)

# Expertise in Anesthesia

Episode #31 with Denham Ward, MD



How do you become an expert?



# Deliberate practice involves:

1. developing accurate **mental representations**
2. identifying a **specific plan** for improvement
3. requires **reflection and concentration**
4. involves **feedback** from a **teacher or coach**
5. **builds on other skills** previously attained & mastered
6. **substantial time** developing the skill

# What's your difficult airway plan?

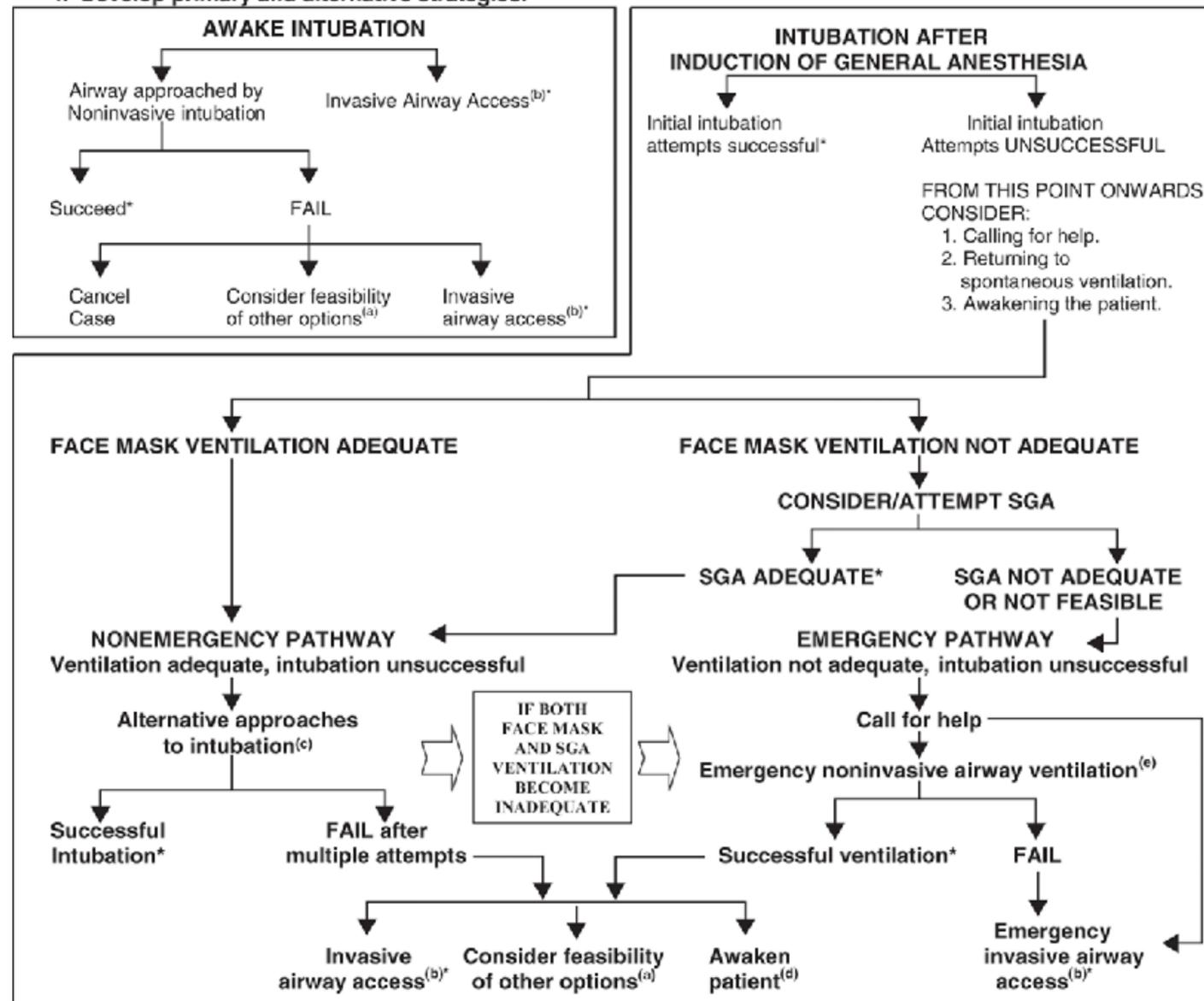
Danish registry of closed claims...

- 188,000 total cases
- 3,391 difficult airways
- 93% were not anticipated by preop assessment



1. Assess the likelihood and clinical impact of basic management problems:
  - Difficulty with patient cooperation or consent
  - Difficult mask ventilation
  - Difficult supraglottic airway placement
  - Difficult laryngoscopy
  - Difficult intubation
  - Difficult surgical airway access
2. Actively pursue opportunities to deliver supplemental oxygen throughout the process of difficult airway management.
3. Consider the relative merits and feasibility of basic management choices:
  - Awake intubation vs. intubation after induction of general anesthesia
  - Non-invasive technique vs. invasive techniques for the initial approach to intubation
  - Video-assisted laryngoscopy as an initial approach to intubation
  - Preservation vs. ablation of spontaneous ventilation

4. Develop primary and alternative strategies:



**\*confirm ventilation, tracheal intubation, or SGA placement with exhaled cO<sub>2</sub>.**

a. Other options include (but are not limited to): surgery utilizing face mask or supraglottic airway (SGA) anesthesia (e.g., LMA, ILMA, laryngeal tube), local anesthesia infiltration or regional nerve blockade. Pursuit of these options usually implies that mask ventilation will not be problematic. Therefore, these options may be of limited value if this step in the algorithm has been reached via the Emergency Pathway.

b. Invasive airway access includes surgical or percutaneous airway, jet ventilation, and retrograde intubation.

c. Alternative difficult intubation approaches include (but are not limited to): video-assisted laryngoscopy, alternative laryngoscope blades, SGA (e.g., LMA or ILMA) as an intubation conduit (with or without fiberoptic guidance), fiberoptic intubation, intubating stylet or tube changer, light wand, and blind oral or nasal intubation.

d. Consider re-preparation of the patient for awake intubation or canceling surgery.

e. Emergency non-invasive airway ventilation consists of a SGA.

“Plans are crucial  
and  
plans are crap.”

“Prior proper  
planning  
prevents poor  
performance.”



Paul Petzoldt (1909-1999), founder of NOLS

“What occurs in an emergency is either immobilization... incoherent action... or coherent action.

If we act, we act out of the habitual. If no serviceable habit is available, we will use an unserviceable one and become either immobilized or incoherent.”

Elaine Scarry, “Thinking in an Emergency” (2011)

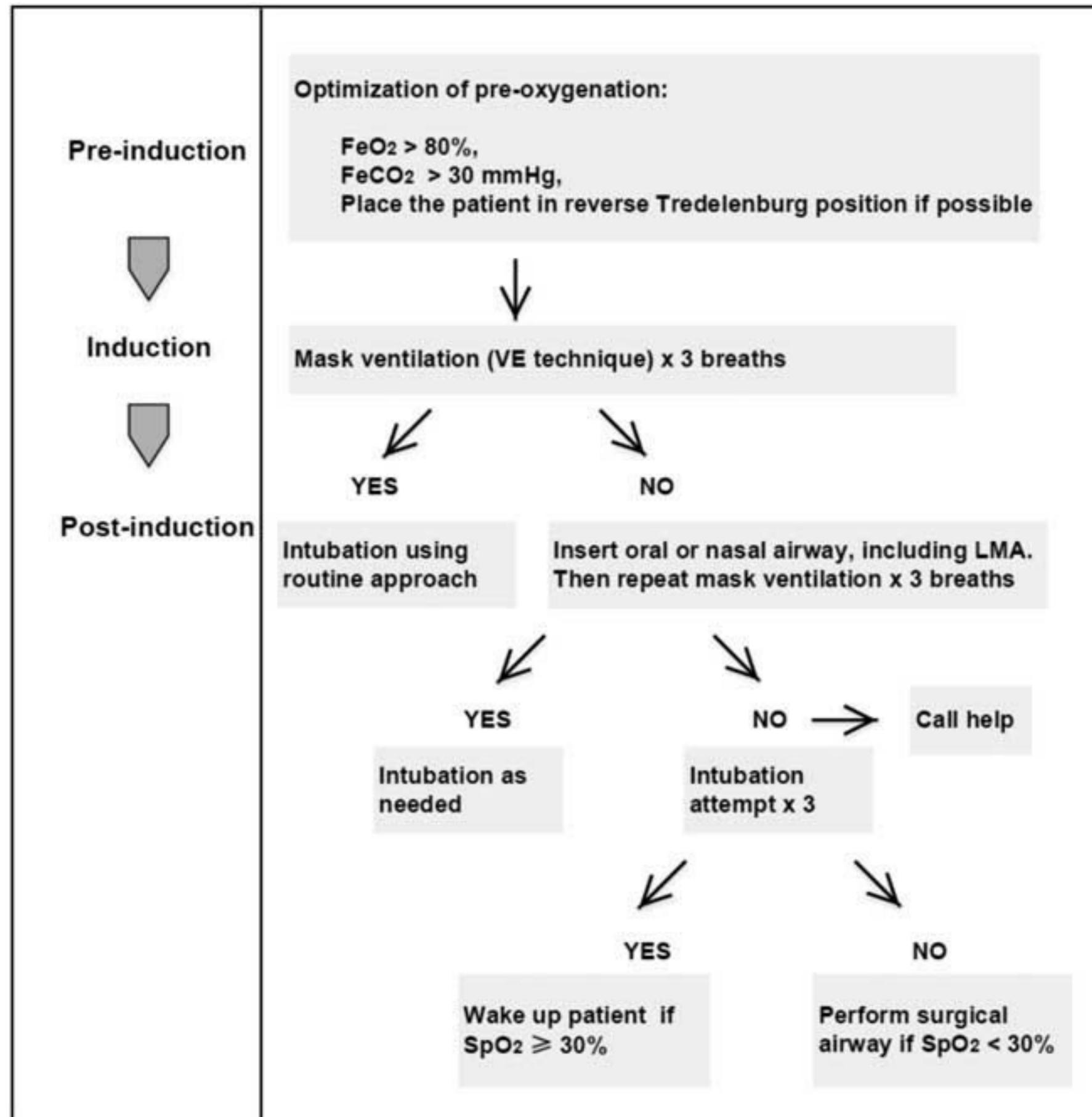
“It is commonly seen during emergency airway management that **providers repeat ineffective interventions, which wastes time...**

Once CICV [can't intubate, can't ventilate] is encountered, **psychological preparations** of the provider may be as important as technical preparation...

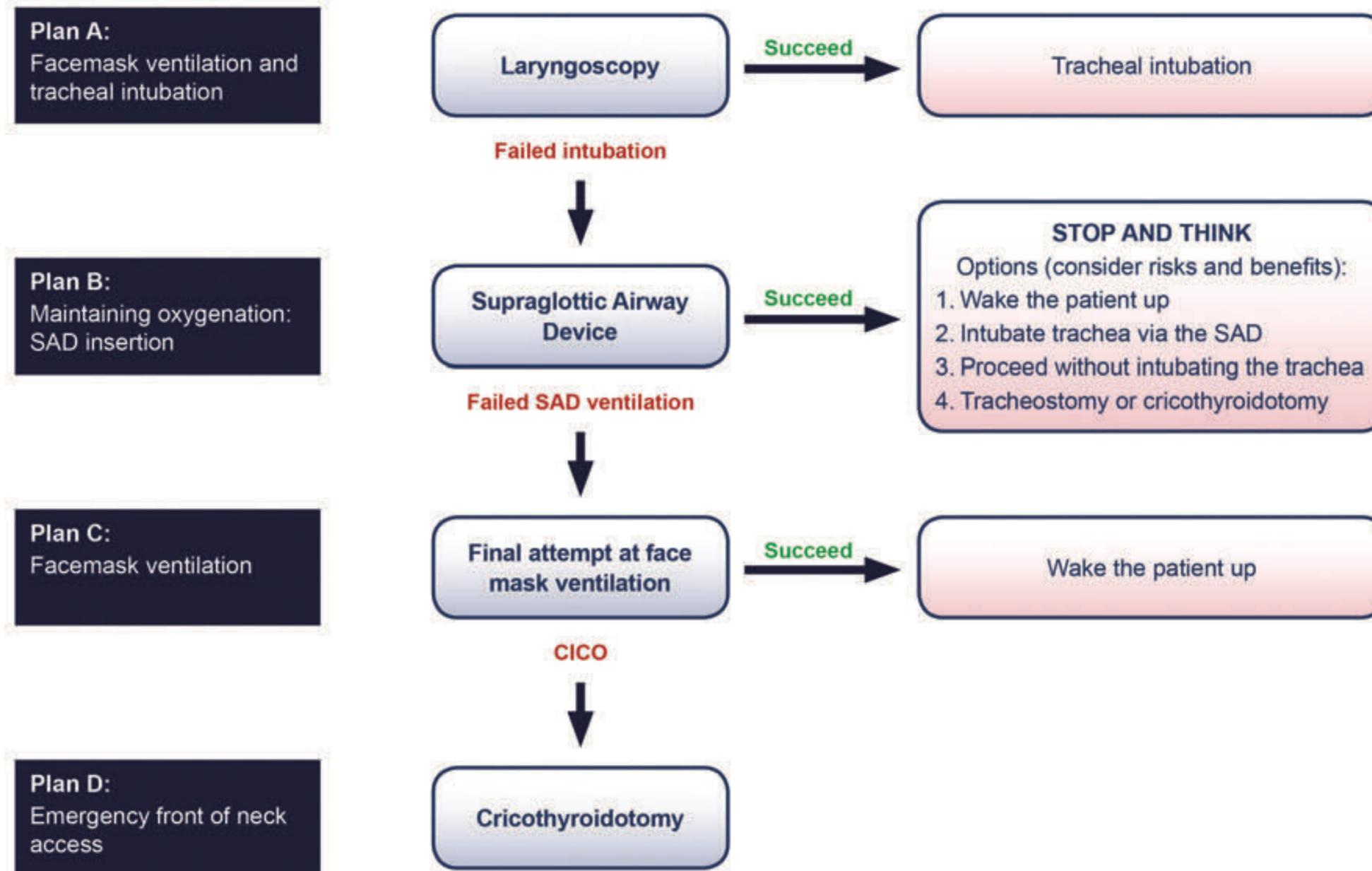
In addition, **the difficult airway management algorithm is often not followed correctly because of the difficulty of the 'difficult airway algorithm.'**”

Xu, Z., Ma, W., Hester, D. L., & Jiang, Y. (2017). Anticipated and unanticipated difficult airway management. *Current Opinion in Anesthesiology*.

Xu, Z., Ma, W., Hester, D. L., & Jiang, Y. (2017). Anticipated and unanticipated difficult airway management. *Current Opinion in Anesthesiology*.



# DAS Difficult intubation guidelines – overview



This flowchart forms part of the DAS Guidelines for unanticipated difficult intubation in adults 2015 and should be used in conjunction with the text.

## Failed intubation, failed oxygenation in the paralysed, anaesthetised patient

**CALL FOR HELP**



Continue 100% O<sub>2</sub>  
Declare CICO

### Plan D: Emergency front of neck access

Continue to give oxygen via upper airway  
Ensure neuromuscular blockade  
Position patient to extend neck

#### Scalpel cricothyroidotomy

**Equipment:** 1. Scalpel (number 10 blade)  
2. Bougie  
3. Tube (cuffed 6.0mm ID)

**Laryngeal handshake to identify cricothyroid membrane**

**Palpable cricothyroid membrane**

Transverse stab incision through cricothyroid membrane  
Turn blade through 90° (sharp edge caudally)  
Slide coude tip of bougie along blade into trachea  
Railroad lubricated 6.0mm cuffed tracheal tube into trachea  
Ventilate, inflate cuff and confirm position with capnography  
Secure tube

**Impalpable cricothyroid membrane**

Make an 8-10cm vertical skin incision, caudad to cephalad  
Use blunt dissection with fingers of both hands to separate tissues  
Identify and stabilise the larynx  
Proceed with technique for palpable cricothyroid membrane as above

#### Post-operative care and follow up

- Postpone surgery unless immediately life threatening
- Urgent surgical review of cricothyroidotomy site
- Document and follow up as in main flow chart

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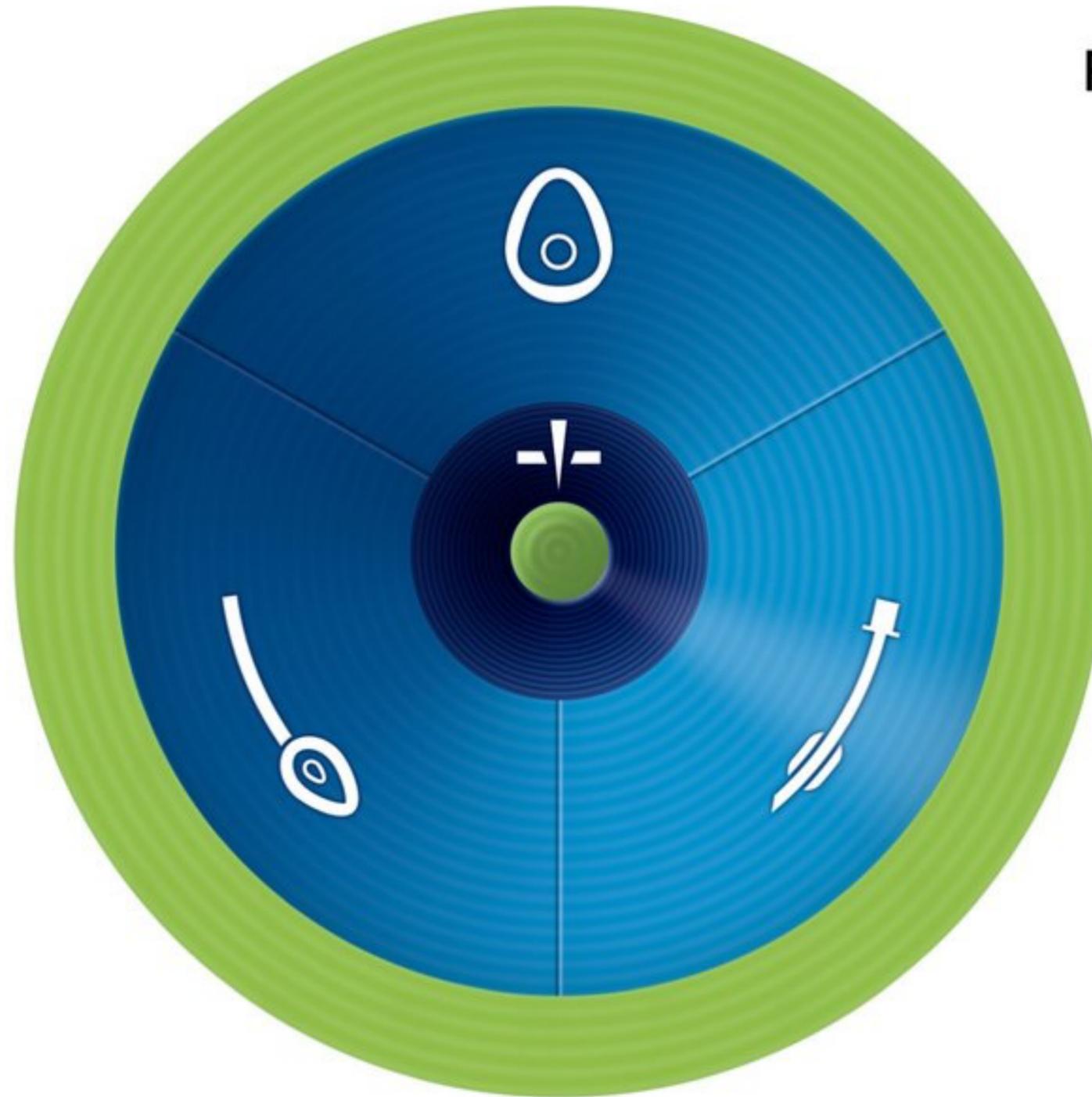
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# T H E V O R T E X



**FOR EACH LIFELINE CONSIDER:**



## MANIPULATIONS:

- HEAD & NECK
- LARYNX
- DEVICE



## ADJUNCTS



## SIZE / TYPE



## SUCTION / O<sub>2</sub> FLOW



## MUSCLE TONE

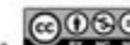
**MAXIMUM THREE ATTEMPTS AT EACH LIFELINE (UNLESS GAMECHANGER)  
AT LEAST ONE ATTEMPT SHOULD BE BY MOST EXPERIENCED CLINICIAN  
CICO STATUS ESCALATES WITH UNSUCCESSFUL BEST EFFORT AT ANY LIFELINE**



VortexApproach.org

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# C I C O S T A T U S

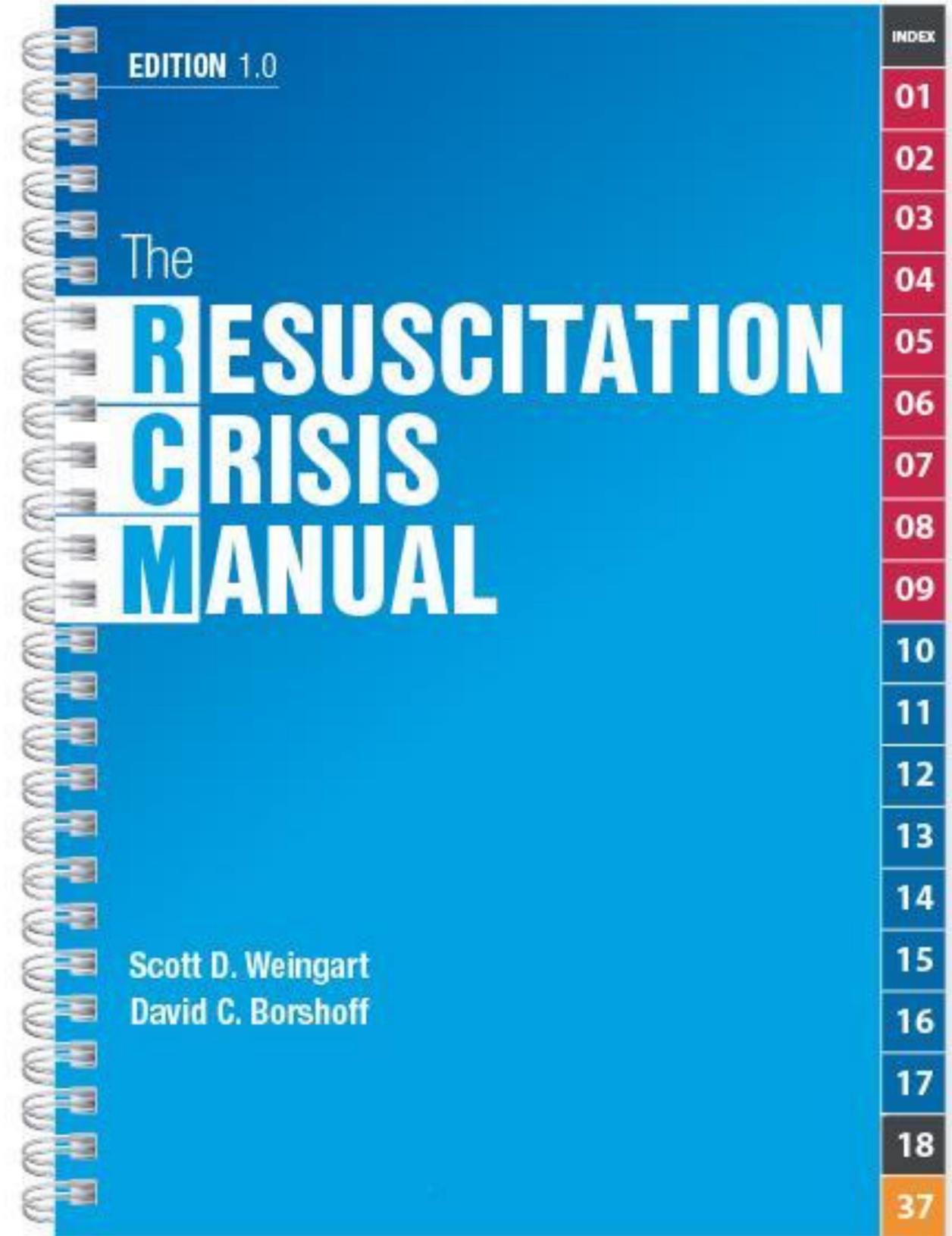
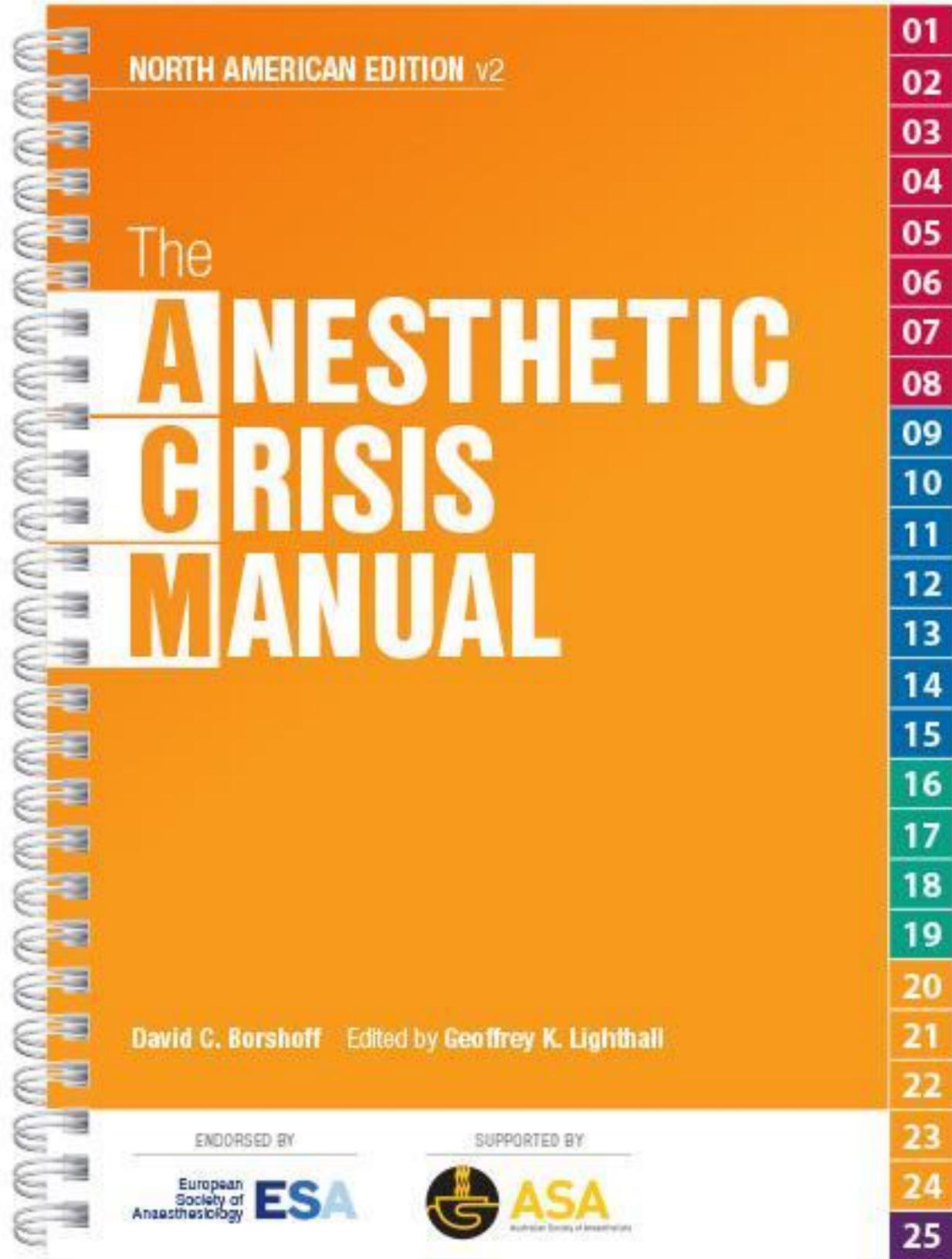
**CICO STATUS ESCALATES WITH A UNSUCCESSFUL BEST EFFORT AT ANY LIFELINE\***

Consider additional escalation in CICO Status if:

- Consecutive unsuccessful attempts at any two lifelines
- SaO<sub>2</sub> < 90%
- Rapidly deteriorating SaO<sub>2</sub>
- Predicted difficult airway



**\*ENSURE BEST EFFORTS AT ALL 3 LIFELINES BEFORE DECLARING GO STATUS**



# FAILED INTUBATION



**13A**  
 CRISIS PROTOCOLS  
 SECTION ONE SECTION TWO  
 CRISIS PROCEDURES

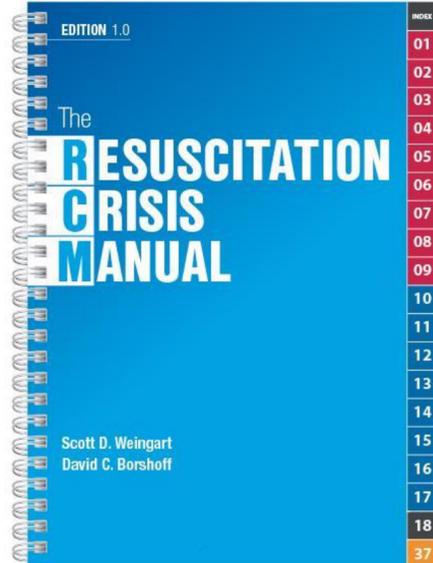
George Kovacs

Continue BMV between attempts, call for help and remember each attempt mandates a different approach.

- 1 If SpO<sub>2</sub> permits allow a maximum of 3 attempts.
- 2 For direct or Macintosh videolaryngoscopy optimize technique, ELM, head position and consider using adjuncts.
- 3 If there is hold up at the glottic inlet when using a bougie, rotate ETT *counterclockwise*.
- 4 For hyperangulated videolaryngoscopy, pull back if glottis is occupying more than the screen's upper half.
- 5 Manage hold up *after* the glottic inlet with partial retraction of stylet (~ 3cm) and/or rotation of ETT *clockwise*.
- 6 Ensure assistant's technique is not impeding progress (MILS, cricoid pressure).

If BMV fails at any point move to failed oxygenation protocol.

- 7 Aim to achieve rescue oxygenation within 90 seconds.
  - Rescue attempt 1** single attempt at supraglottic airway (SGA) with EtCO<sub>2</sub> monitoring.
  - Rescue attempt 2** emergency surgical airway (ESA) if SGA not successful within 45 seconds. ESA may be primary rescue approach.
- 8 Place gastric tube.



# FAILED INTUBATION



**13B**  
 CRISIS PROTOCOLS  
 SECTION ONE SECTION TWO  
 CRISIS PROCEDURES

George Kovacs

**Failed intubation** is an emergency mandating action, but as long as the patient can be oxygenated there is time. **Failed oxygenation** is a crisis mandating *immediate action* and there is time pressure.

The number of laryngoscopy and intubation attempts is associated with an increase in morbidity and mortality. **Three attempts is a suggested limit.** However, it may be appropriate to abort attempts earlier (<3 attempts) based on predicted likelihood of success or patient condition.

Placement of a polyvinyl tube does not define success so don't persist. The goal of airway management is to maintain end organ oxygen delivery whether it be by BVM, SGA, ETT or ESA.

The method of intubation should be based on the skill set of the clinician, predicted difficulty, and availability of equipment. Regardless of the plan A device choice, the clinician must be equally skilled with their plan B device option.

Successful rescue of the patient from a *cannot intubate cannot oxygenate (CICO)* scenario requires regular decision-making and procedural practice using predefined equipment.

## CricCon2

Simplified Cricothyrotomy Alert Posture ©cmcrit

<b>Ready</b> (All Patients)	Discuss/Feel/See Kit
<b>Set</b> (Difficult Airway)	Mark/Kit Bedside
<b>About to Go</b> (Crashing/Hypoxemic)	Inject/Prep/Open and Set Kit Scalpel in Hand

For **all patients** rescue oxygenation equipment should be chosen and within reach, the neck assessed for landmarks and procedure roles assigned (CricCon2 green).

For **high risk patients** equipment should be out of packaging, the neck landmarks marked and the decision to act defined and communicated (CricCon2 yellow).

For the **crashing patient** a single primary supraglottic approach can be attempted with emergency surgical airway (ESA) in assigned clinician's hands (CricCon2 red).

While reversal of neuromuscular blockade with sugammadex is rapid (~4 min to 90% TOF) critically ill patients in a failed oxygenation scenario are not likely to return to their already compromised preintubation state. A partially awake patient may make rescue conditions even more difficult.

# UNANTICIPATED DIFFICULT INTUBATION



10A

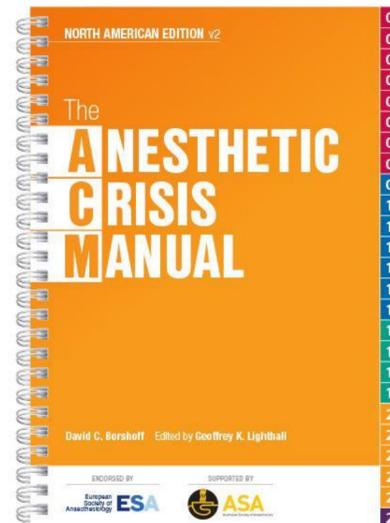
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CRISIS PREVENTION

If oxygenation is established at any stage in supraglottic rescue, stop and think through options, including waking the patient.

- 1 Call for help, communicate and delegate.
- 2 Revert to FMV, get difficult airway cart, and consider options.
- 3 Ensure adequate anesthetic depth and muscle relaxation.
- 4 Monitor SpO<sub>2</sub>, EtCO<sub>2</sub> and elapsed time until rescue complete.
- 5 Try the maneuvers listed opposite to maximize laryngeal view and utilise adjuncts like bougie, introducer or stylet.
- 6 Allow up to 3 optimized intubation attempts and consider videolaryngoscopy +/- hyper-angulated/low profile blade.
- 7 If unsuccessful, mobilize resources for CICV rescue. **READY**
- 8 Attempt up to 3 LMA insertions – try different size or type.
- 9 If unsuccessful, have CICV equipment open and ready. **SET**
- 10 If following complete muscle relaxation and an FiO<sub>2</sub> of 1:
  - best effort at all 3 supraglottic rescue options fails
  - one final maximized FMV fails
  - SpO<sub>2</sub> is rapidly falling and EtCO<sub>2</sub> not detectable

Optimize patient position and initiate CICV rescue **tab 11**. **GL**



# UNANTICIPATED DIFFICULT INTUBATION



10B

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CRISIS PREVENTION

There is overlap of the **Difficult Mask Ventilation** and **Difficult Intubation** protocols, as each technique uses the other as a rescue option. This is also highlighted in The Vortex Approach to Airway Management.

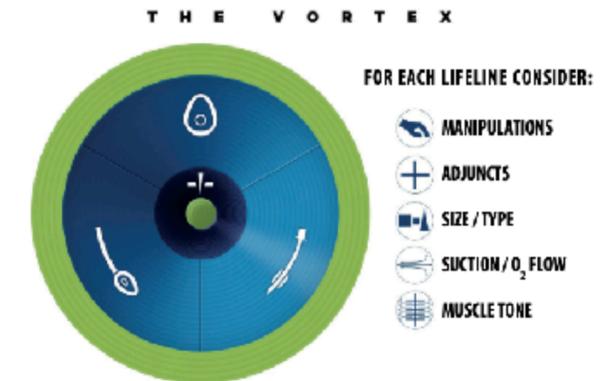
## Rescue Options

### Can't bag and mask

- ▶ Wake the patient if possible
- ▶ Use LMA
- ▶ Intubate

### Can't intubate

- ▶ Wake the patient if possible
- ▶ Bag and mask
- ▶ Use LMA



## To maximize laryngeal view:

- Neck flexion head extension
- Adjust cricoid pressure
- Use external manipulation
- Try long or straight blade
- Use video laryngoscope

Delegating someone to monitor SpO<sub>2</sub>, EtCO<sub>2</sub> and elapsed time can prevent both profound hypoxia and the development of fixation error with multiple intubation attempts converting a can't intubate **can** ventilate to a can't intubate **can't** ventilate emergency (CICV).

Given the variability in difficult airway scenarios, familiarity with the principles underlying the decision making process is a prerequisite for safe practice. LMA insertion after muscle relaxation may improve rescue success rate.

Once facemask or LMA ventilation of the lungs is established, the airway can be secured by an increasing number of techniques available. The clinician should use that which is most familiar and likely to be successful in the particular clinical circumstance.

Depending on type and availability, many experienced clinicians would use videolaryngoscopy (VL) immediately. Hyper-angulated and low profile blades, combined with skillful bougie manipulation can significantly improve the chance of success.

FMV = facemask ventilation

READY, SET, GO = The Vortex Approach to priming for CICV rescue

CICV also known as CICO (can't intubate can't oxygenate)

Chrimis N. The Vortex: a universal 'high-acuity implementation tool' for emergency airway management. *Br J Anaesth* 2016; **117** Suppl 1: i20-i27

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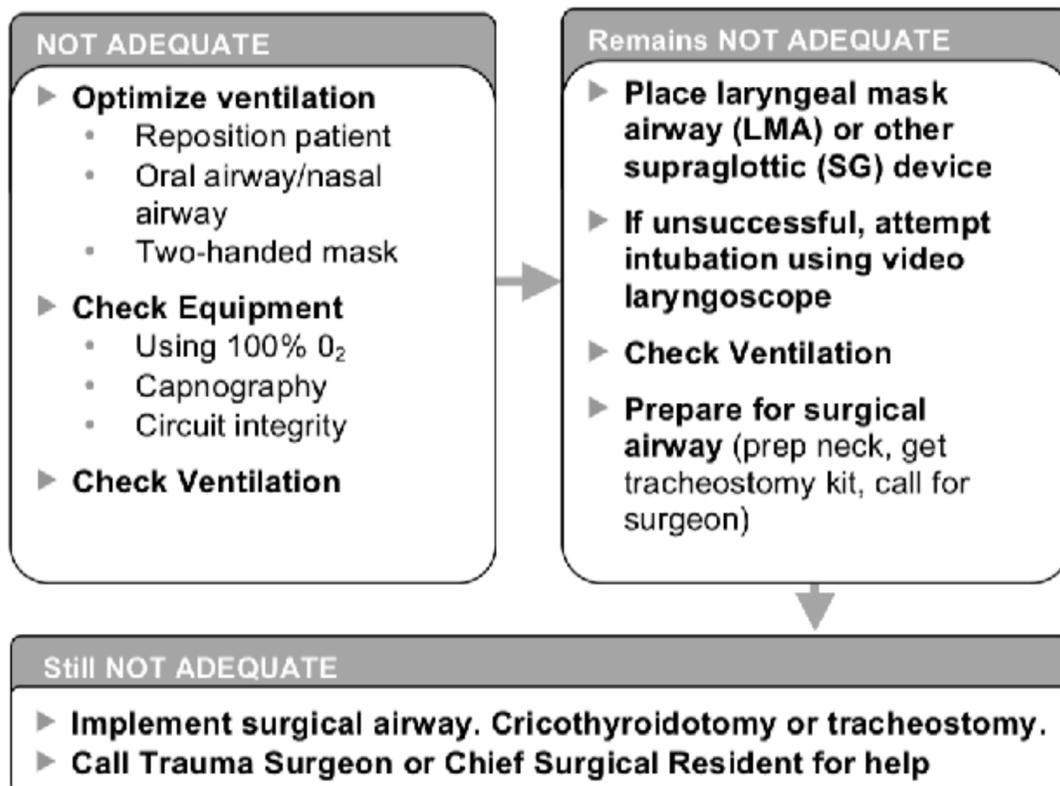
# 6 Failed Airway

2 unsuccessful intubation attempts by an airway expert

## START

- 1 Call for expert anesthesiology help. (Floorwalker 662-4351 or 0610)
  - ▶ Ask: "Who will be the crisis manager?"
- 2 Get Difficult Airway Cart and a video laryngoscope. Have code cart available
- 3 Bag-mask ventilate with 100% oxygen
- 4 Is ventilation adequate?

### Ventilation NOT ADEQUATE



← Switch list →  
if ventilation  
status changes

### Ventilation ADEQUATE

- ▶ Consider awakening patient or alternative approaches to secure airway...
  - Operation using LMA, face mask
  - Video laryngoscope
  - LMA as conduit to intubation
  - Return to spontaneous ventilation
  - Different blades
  - Intubating stylet
  - Fiberoptic intubation
  - Retrograde intubation
  - Blind oral or nasal intubation
- ▶ If awakening patient, consider:
  - Awake intubation
  - Do procedure under regional/local
  - Cancel the case

# What's your difficult airway plan?

- personal plan
- team plan
- backup plan
- algorithm use
- system functionality



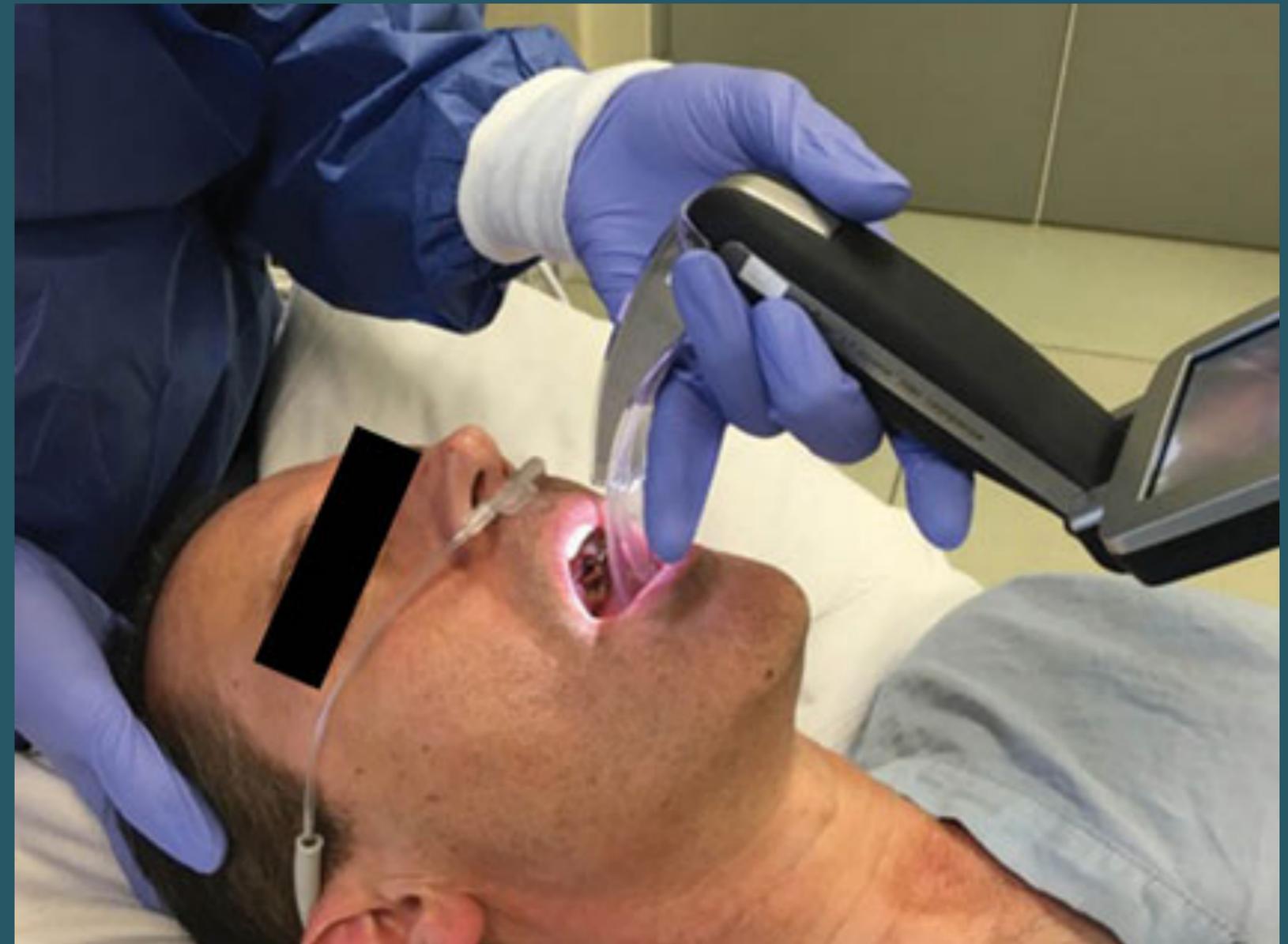
# Tips for airway management

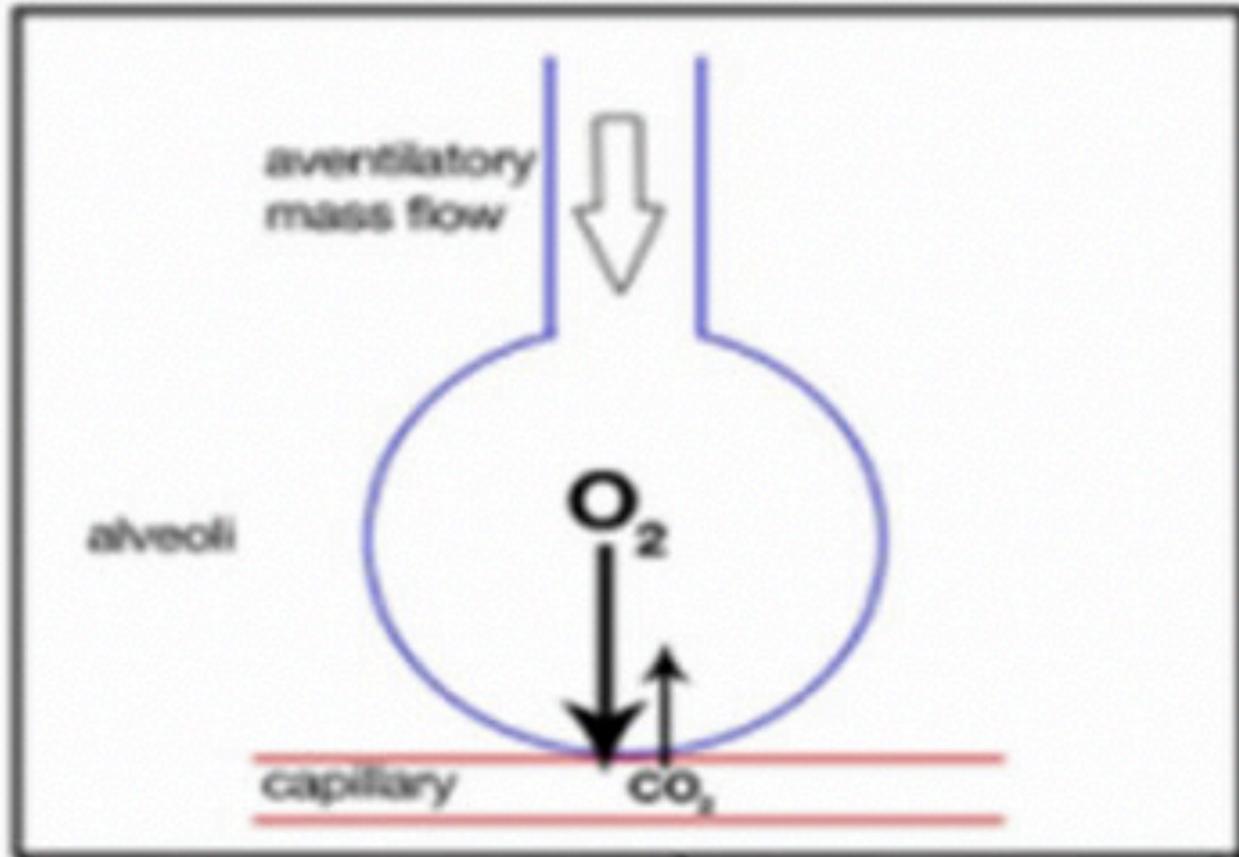
# Apneic oxygenation

**Optimal after adequate denitrogenation ( $F_{iO_2} > 80\%$ ).**

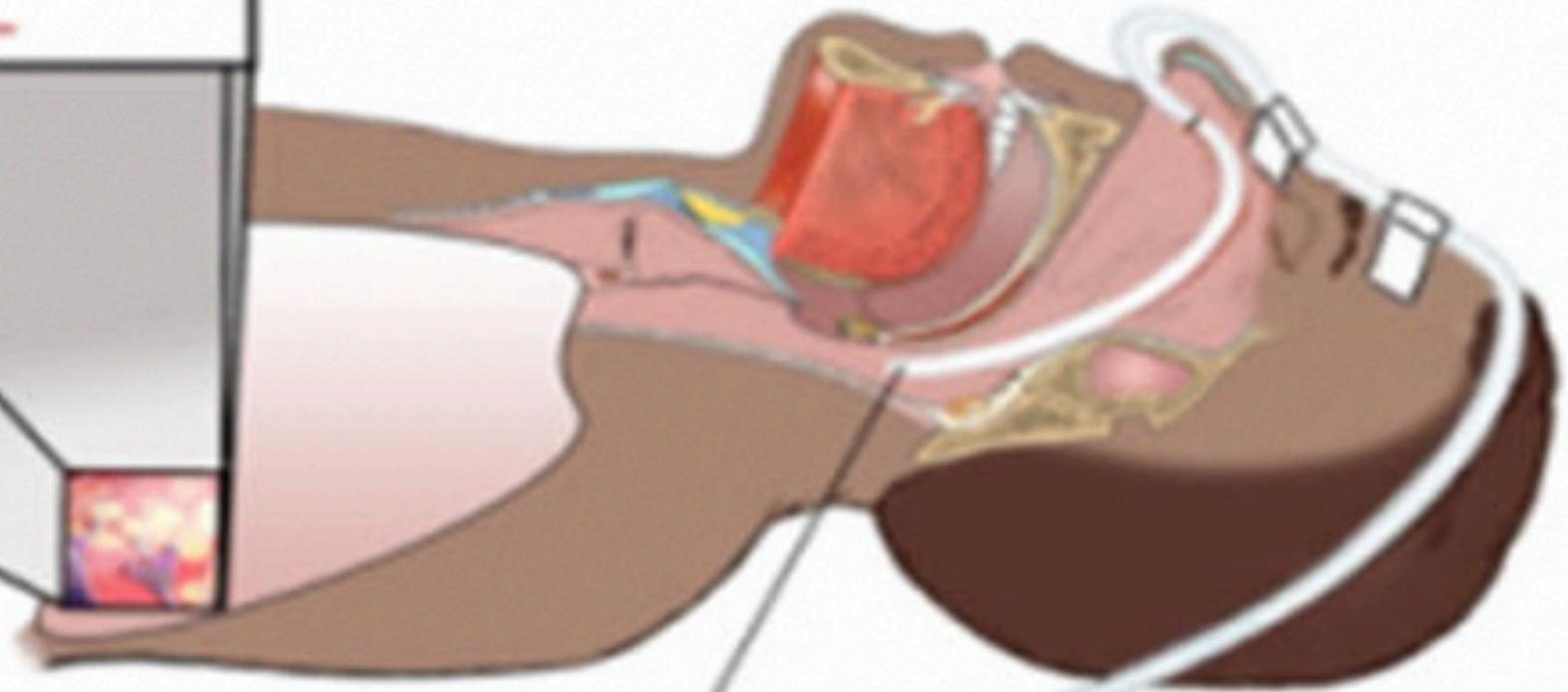
**Efficacious only with a patent airway.**

**Substantially prolongs time to desaturation.**





O<sub>2</sub> diffuses at 250 mL/min,  
CO<sub>2</sub> diffuses at 10 mL/min,  
generating a negative  
pressure gradient



catheter tip  
placed behind uvula

# Efficacy of apneic oxygenation

**Study 1: nasal prongs with 5 lpm O<sub>2</sub> vs no O<sub>2</sub> post induction.**

- cut off of 6 min or SpO<sub>2</sub> <95%
- Mean apnea time O<sub>2</sub> group: **5.29 minutes**
- Mean apnea time no O<sub>2</sub> group: **3.49 minutes**

**Study 2: nasal catheter vs nasal prongs at 5 lpm**

- cut off 10 min or SpO<sub>2</sub> <95%
- nasal catheter group: **no desaturation at 10 minutes**
- nasal prong group: **32% desaturated**

**Study 3: modified 3.5 mm Ring-Adair Elwyn (RAE) tube for buccal oxygenation in obese patients at 10 lpm O<sub>2</sub> with prolonged laryngoscopy**

- cut off 12.5 min or SpO<sub>2</sub> <95%
- standard care group: **all patients desaturated; median apnea time: 4.9 min**
- buccal oxygenation group: **65% maintained SpO<sub>2</sub> >95% for 12.5 min**

# Buccal apneic oxygenation



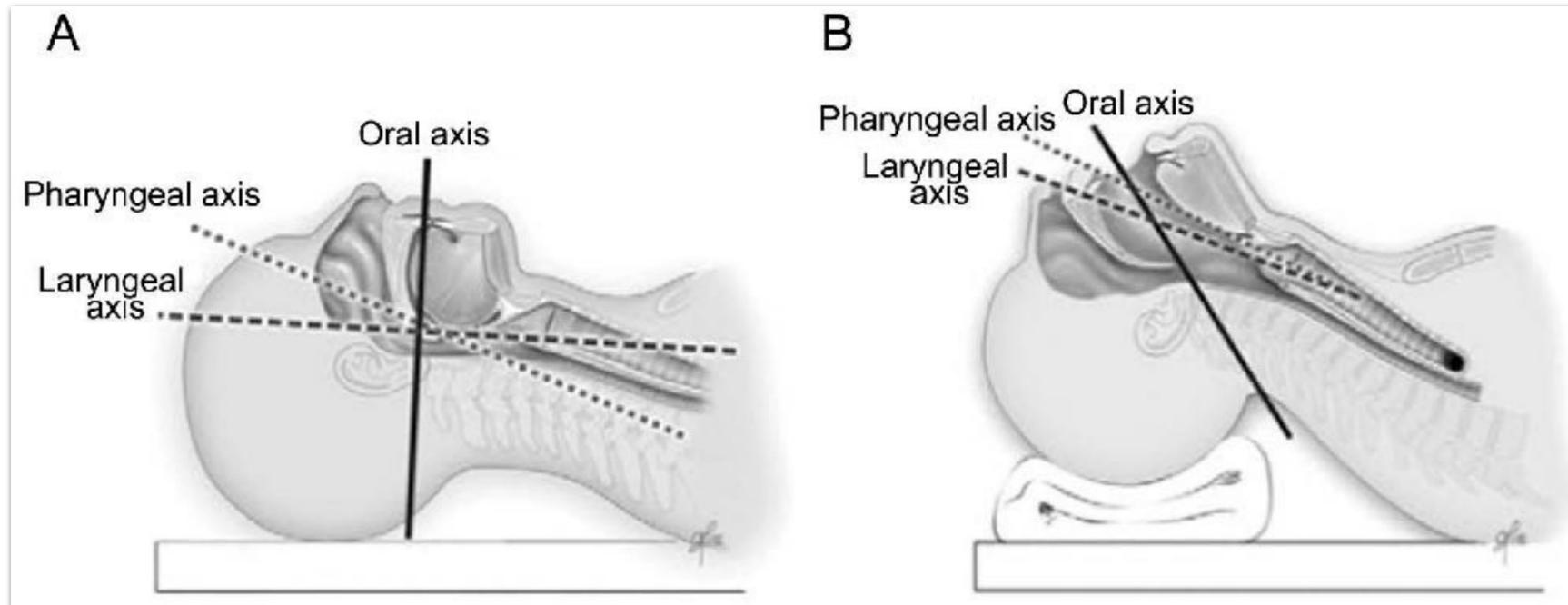
**Modified 3.5 mm Ring-Adair-Elwyn (RAE) tube for insufflation of buccal oxygen.**



# Positioning

**What's the goal?**

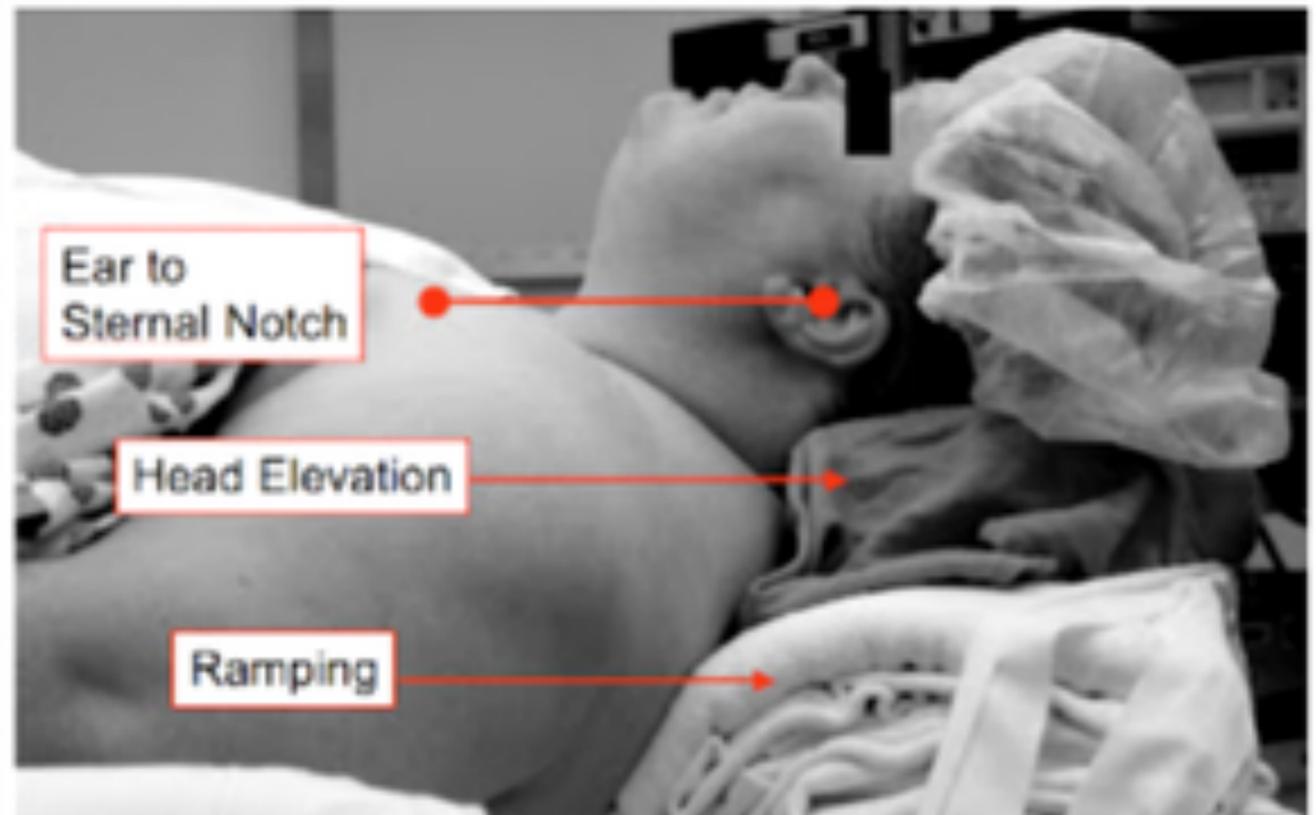
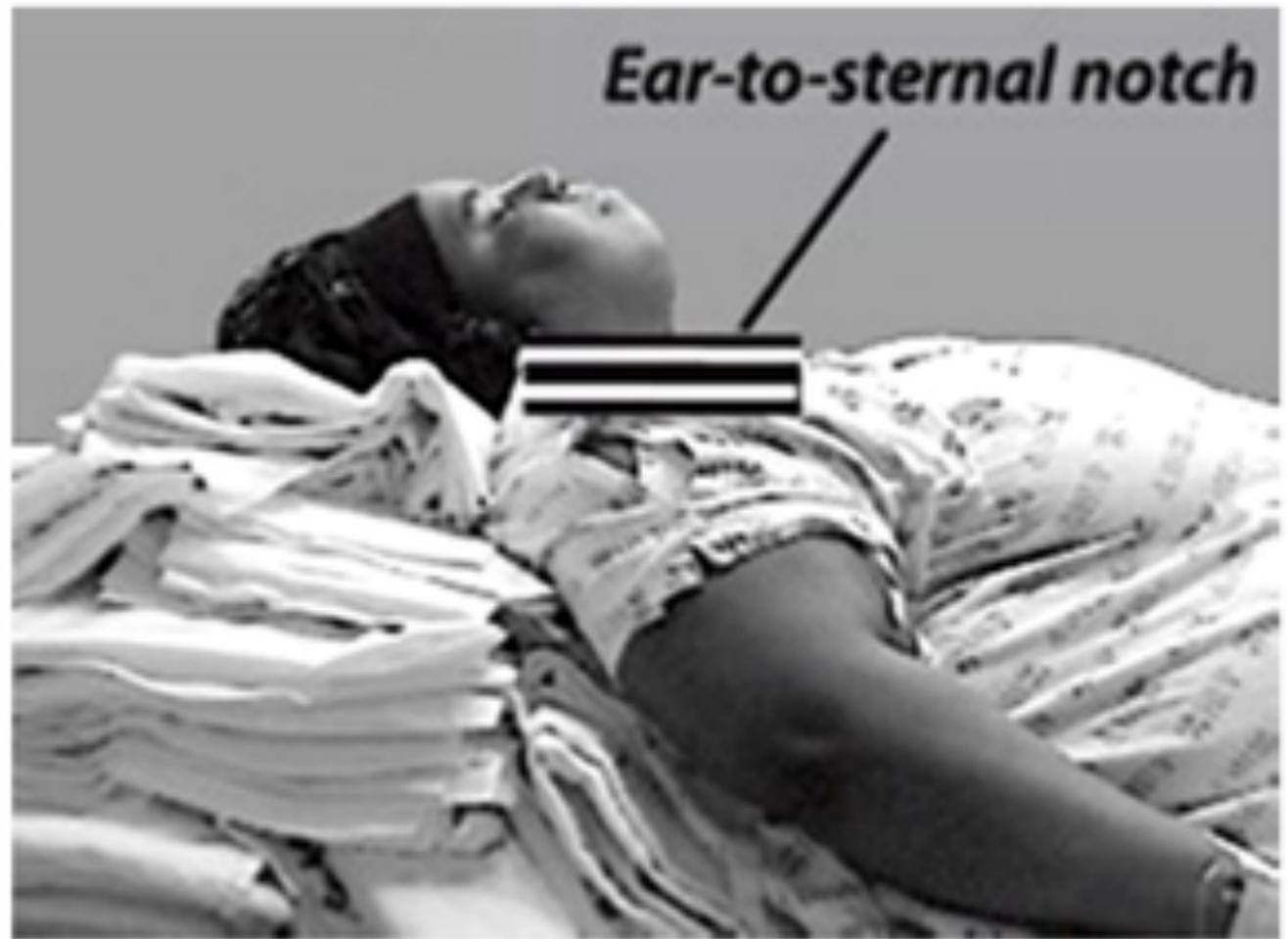
# Positioning



“axis alignment”

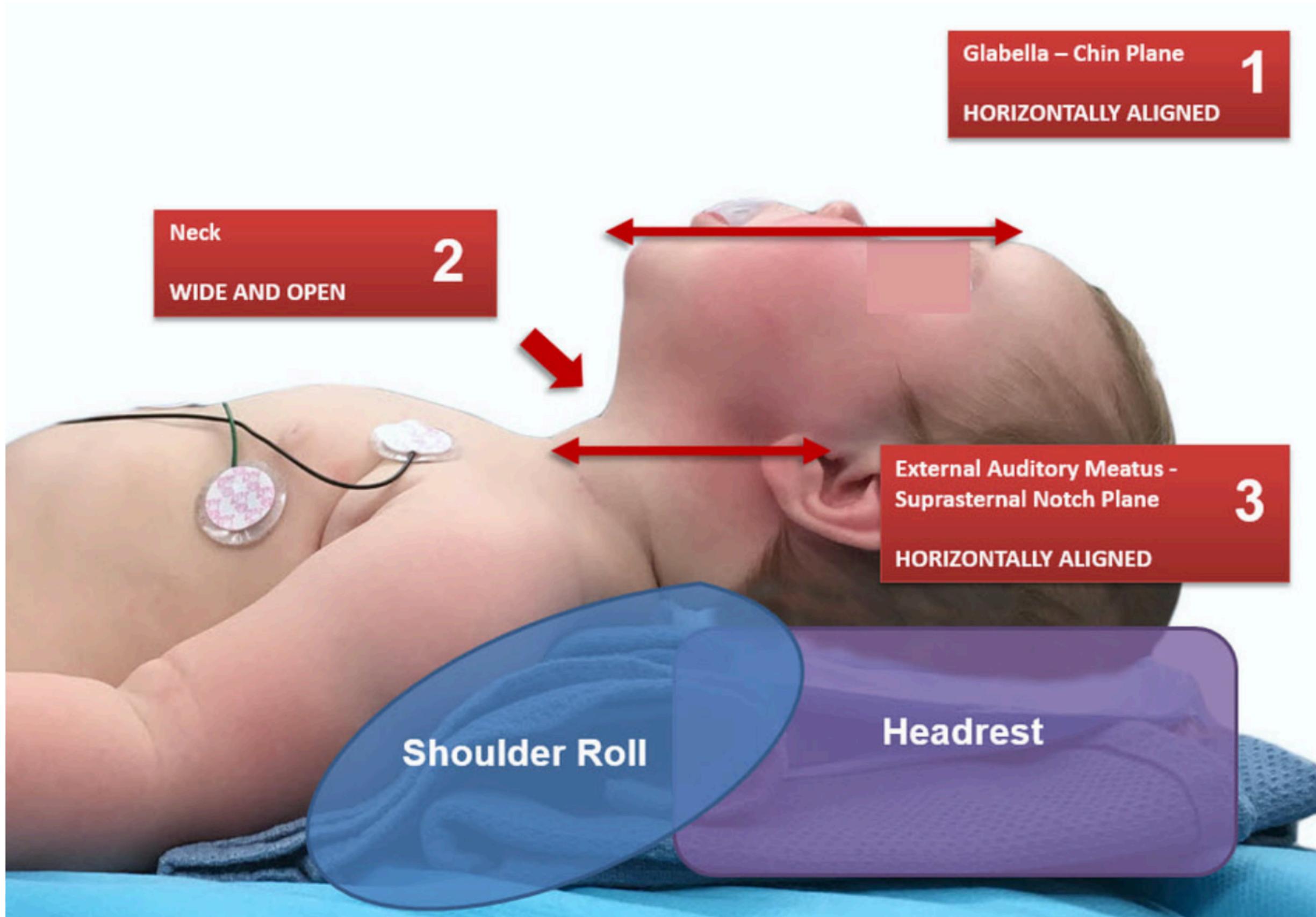
vs

“ear above sternal line”









**1**  
Glabella – Chin Plane  
HORIZONTALLY ALIGNED

**2**  
Neck  
WIDE AND OPEN

**3**  
External Auditory Meatus -  
Suprasternal Notch Plane  
HORIZONTALLY ALIGNED

**Shoulder Roll**

**Headrest**

# Direct vs Video Laryngoscopy

## Video laryngoscopy resulted in:

- fewer failed intubations
- less airway trauma and hoarseness
- improved glottic view

## No difference in:

- hypoxia or mortality
- first attempt success
- number of intubation attempts
- *failed intubations with inexperienced providers (<20 intubations)*



# How to maximize video laryngoscopy



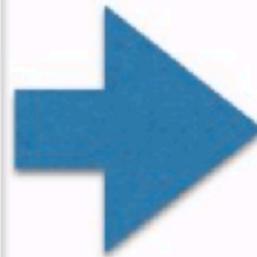
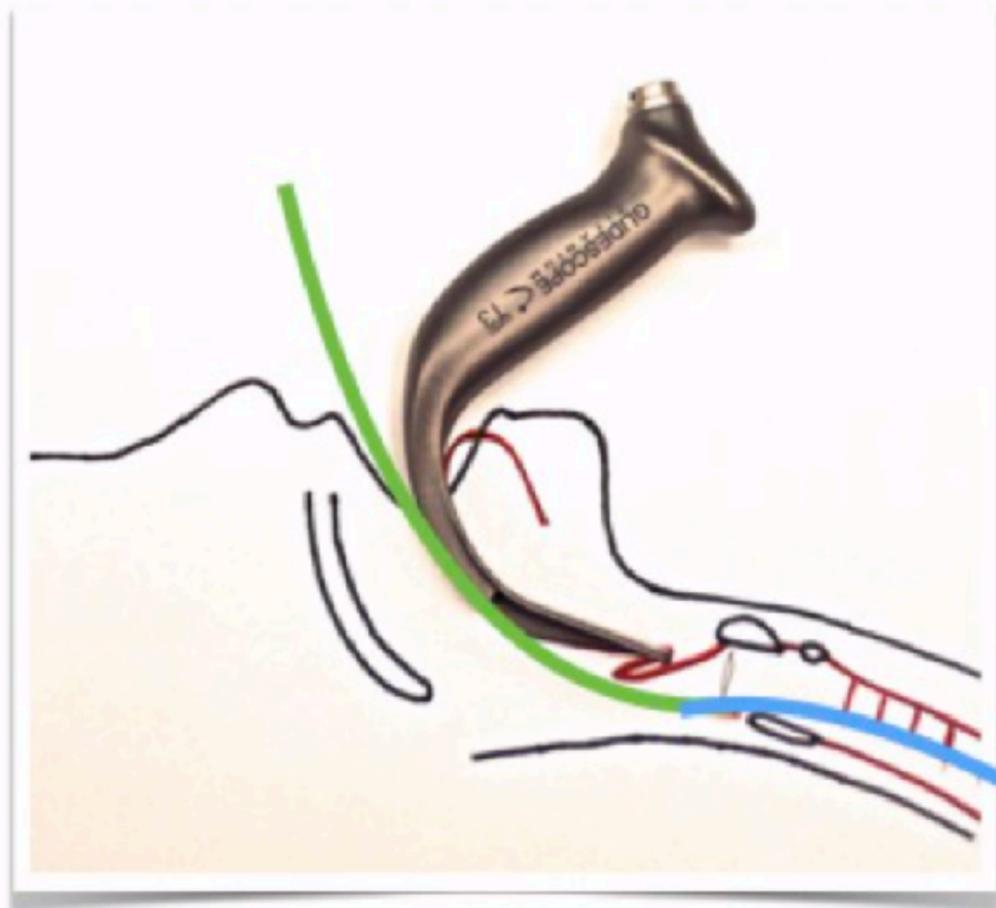
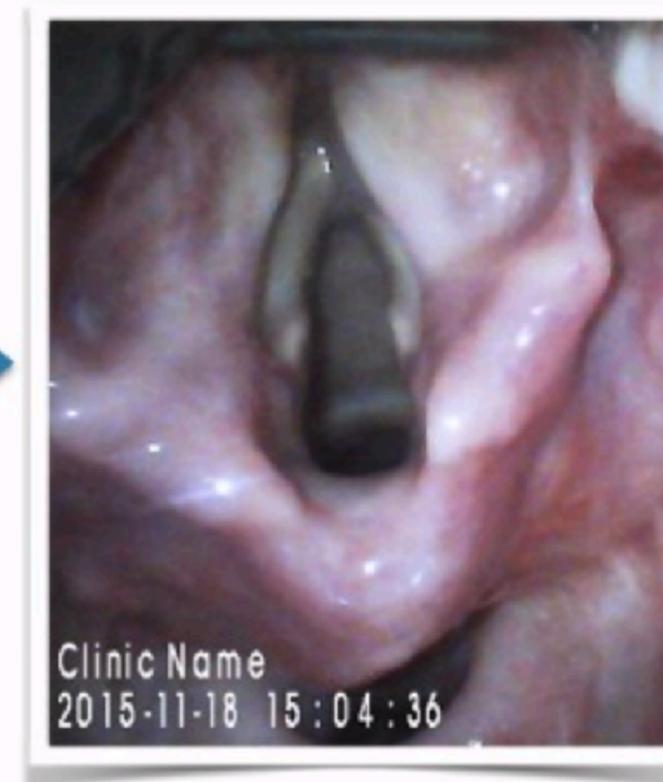
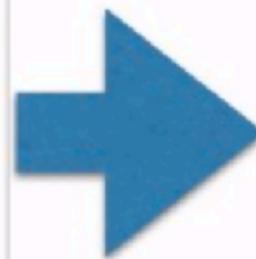
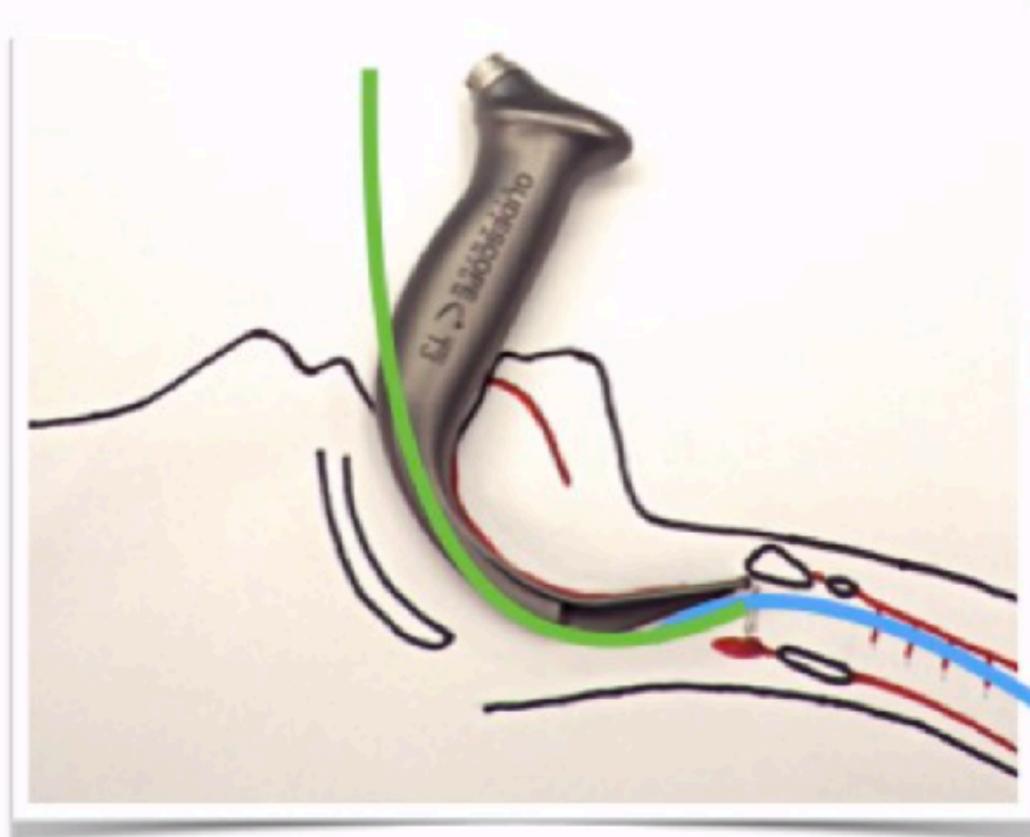
**A.**

Figure: 5A.  
 Restricted view  
 where blade/camera  
 are in-line with  
 trachea (POGO  
 [percentage of glottic  
 opening] <50%,  
 Glottis <50% Screen;  
 trachea= black hole).

**B.**

5B. Full view over-  
 rotated, too close  
 (anterior trachea/  
 cricoid ring in view).

# Awake fiberoptic intubation

**Success will be a combo of:**

- **patient selection & buy-in**
- **effective sedation**
- **effective airway anesthesia**
- **effective fiberoptic skills**

**\*outline of steps provided at end**



# Awake intubation

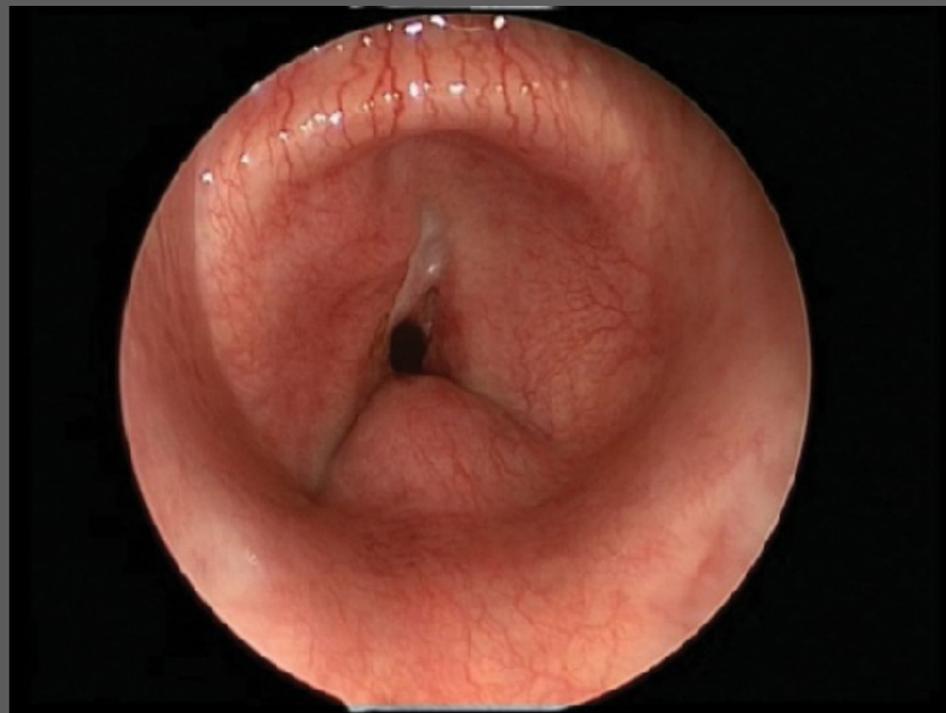
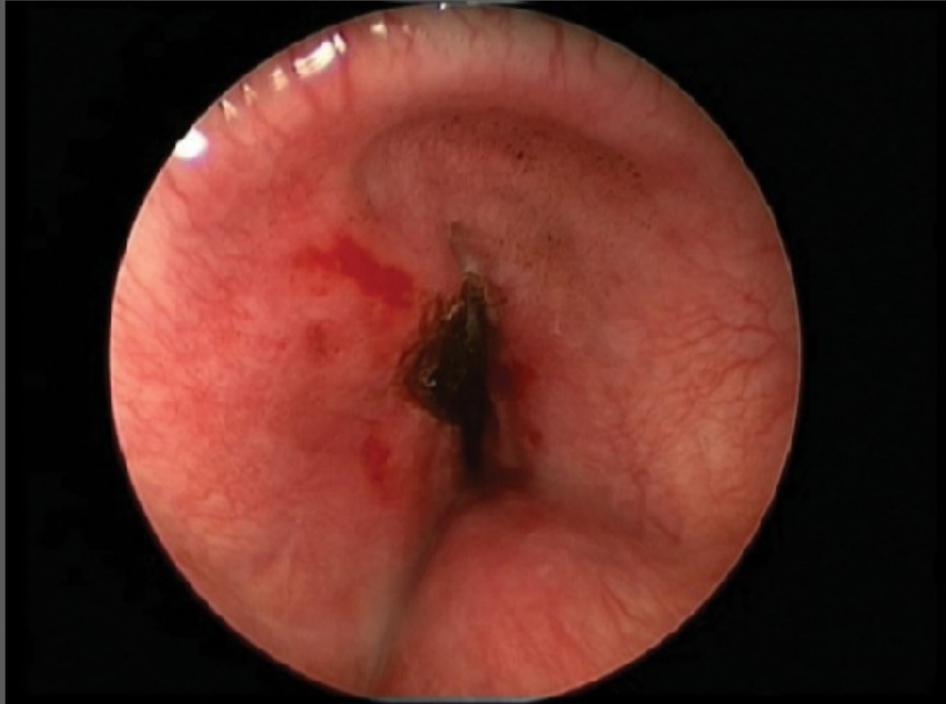


What about not intubating?

# “Spontaneous Respiration using Intravenous anesthesia and Hi-flow nasal oxygen (STRIVE-Hi)”

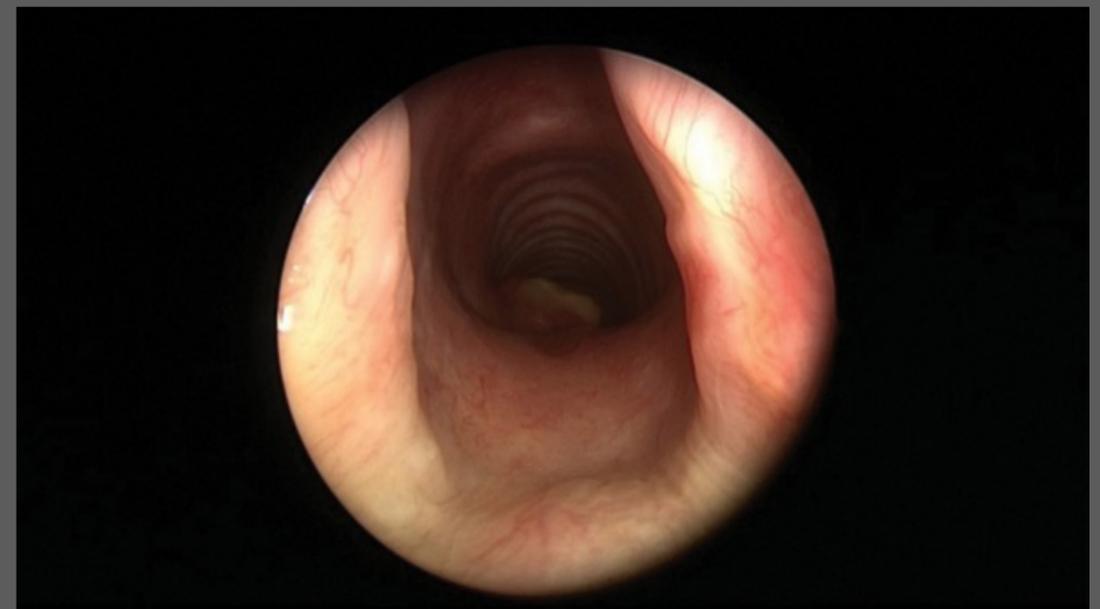


- Study of 30 pt's undergoing laryngeal surgery.
  - TIVA with natural airway
  - median EtCO<sub>2</sub> 51 mmHg
  - median surgical time 44 min
  - max surgical time 130 min (final EtCO<sub>2</sub> 57 mmHg)





Patient with known difficult airway demonstrating maximal mouth opening (left) and maximal neck extension (right).



# Other airway considerations

## Checking ability to mask ventilate prior to paralysis?

- paralysis makes masking easier (Warters, 2011)

## Cricoid pressure?

- no benefit, slows time to intubation, worsens view (Birenbaum, 2019)

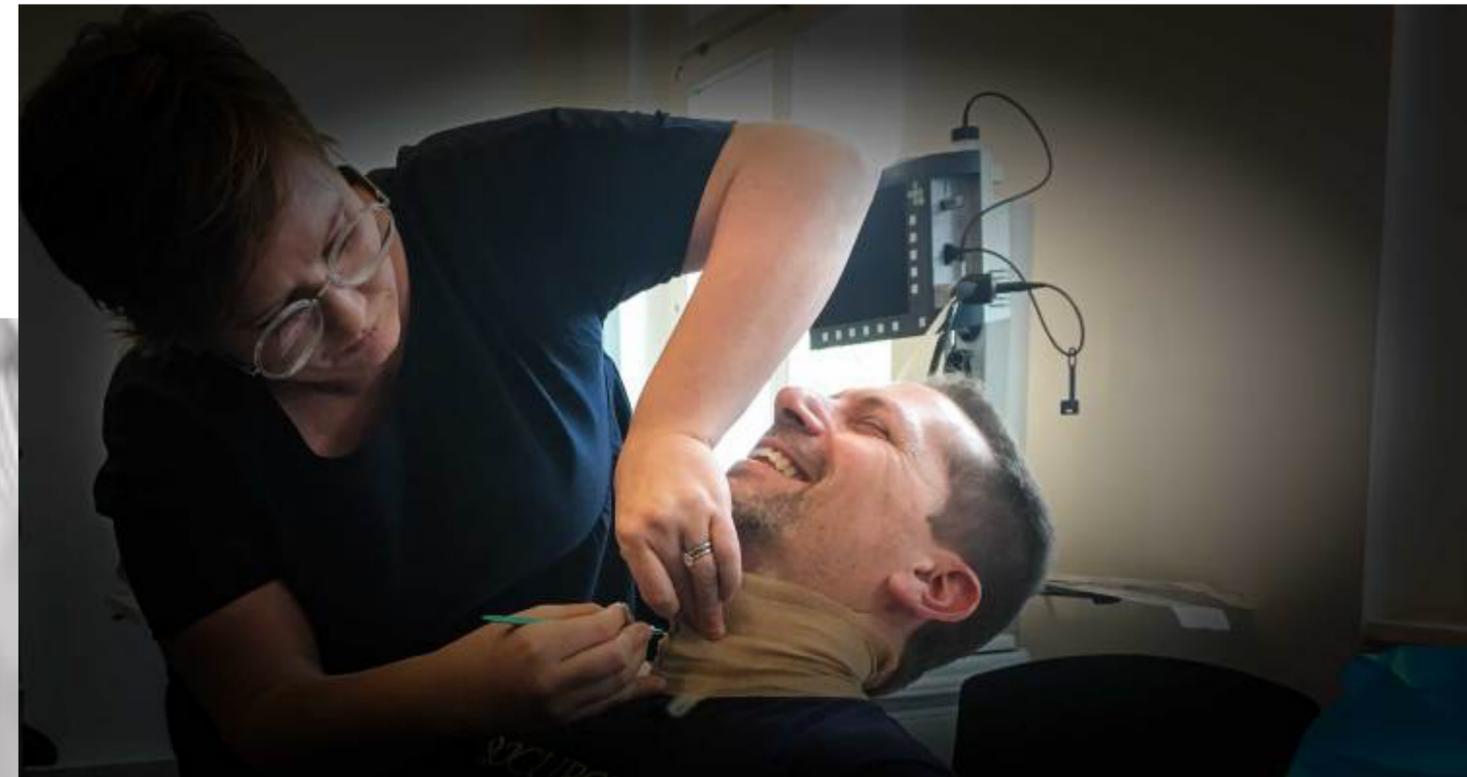
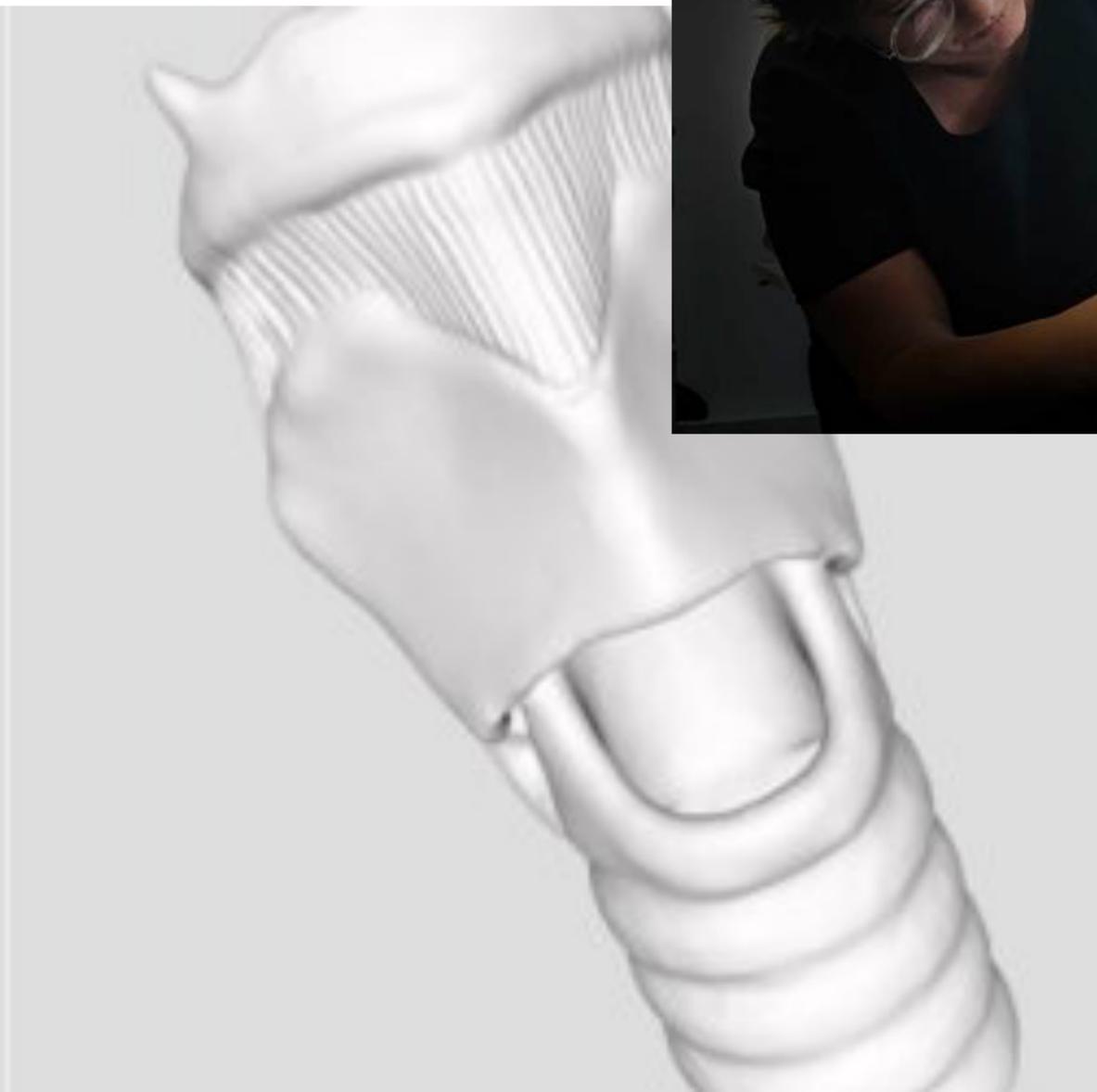
## Successful emergence (Mitchell, 2012; Joyce, 2017)

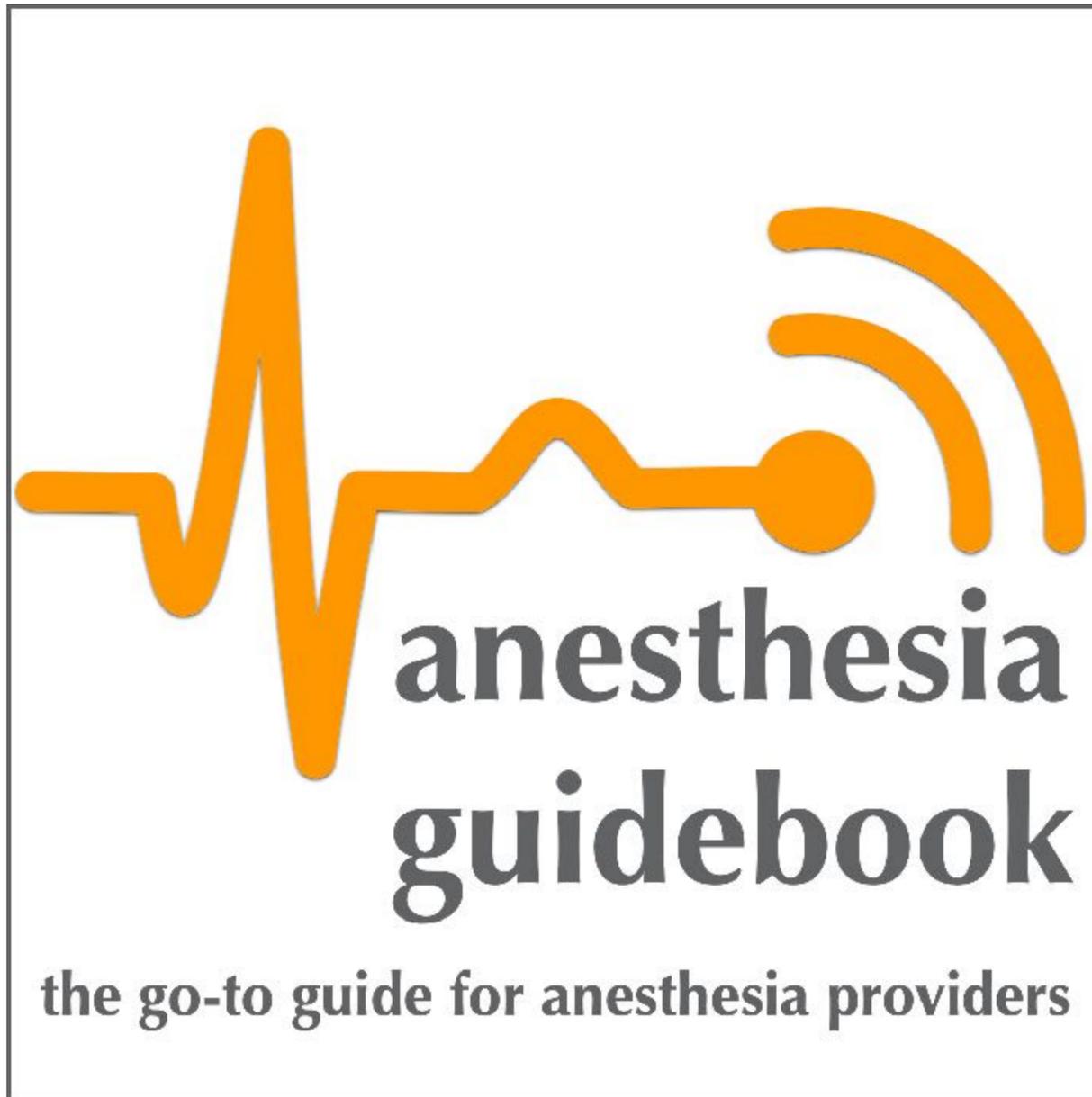
- often as risky as induction/intubation
- have a plan (i.e. positioning, airway adjuncts, reversal...)
- consider denitrogenation before extubation

## Sugammadex + rocuronium as the DOCs in RSI?

- time to recovery is faster than spontaneous recovery from succinylcholine (Bridion prescribing information, 2015)

# 3D printed airway models for cricothyrotomy practice





# 10 Quick Tips for Learning Airway Management

[www.anesthesiaguidebook.com/episode10](http://www.anesthesiaguidebook.com/episode10)



# Call to Action:

1. Pick ONE area of your airway management practice to improve in the next month.
2. Discuss how you would manage a difficult airway with a colleague.
3. Use apneic oxygenation on ANY 2 cases in the next month.

# Here's to grade 1 views and high SpO2's!



# Awake fiberoptic intubation

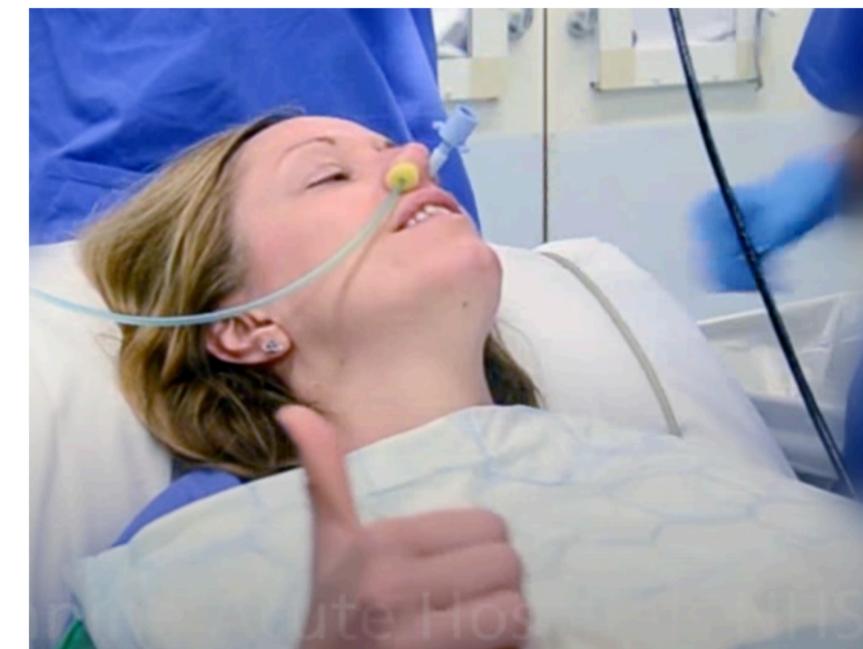
The nose is usually better than the mouth.

- easier to topicalize
- less stimulating
- straight shot to the cords

Decide if you're doing an oral or nasal approach, which one will you attempt first and have plan A, B & C thought out for both airway management & sedation.

Aborting procedure or front of neck access (while still awake is likely best) are the typical 2 end points if intubation is not successful. Consider your decision points for when to transition to either.

Remember to bring a few "Cans of Calm" and pass some around to the people in the room before you get going, reminding them to enjoy their beverage throughout the procedure.



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# Awake fiberoptic intubation

## Supplies:

- Can of Calm (located on your invisible hip belt)
- Six-Pack of Calm (located in the bottom drawer of the difficult airway cart)
- Difficult airway cart
- Portable O2 tank on a dolly (allows you to use both supplemental O2 via your machine and the lidocaine atomizer separately)
- Various LMAs/ETTs
- Succinylcholine and/or RSI dose of rocuronium (and 16 mg/kg sugammadex reversal) available
- ENT surgery on standby?



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# Awake fiberoptic intubation

## Prepare:

### Dry pt:

- Glycopyrrolate 0.2mg IV 10 min p/t intubation
- Pad out mouth with gauze
- Ondansetron 4mg IV up front

### Airway supplies/plan:

- Set up fiberoptic scope (small enough for ETT)
- Warm ETT in pillow case with Bair Hugger or warm saline
- LMAs & variable ETT (nasal/oral) available
- Identify cricothyroid membrane for front of neck access (consider marking with a pen or sharpie)
- Front of neck access kit (at minimum, identify reinforced needle cricothyrotomy kit is in room/available; we keep these in the top drawer of the anesthesia machine)

### Patient/team:

- Discuss clear plan and roles with anesthesia team/OR RN/surgeon
- Inform patient of plan - their participation is critical
- Position patient seated in High Fowler's or at least ramped with tragus of ear at or above level of sternal notch/line
- Consider having ENT/trauma surgery in room



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# Awake fiberoptic intubation

## Topicalize:

- consider using several of the following techniques
- remember, the max dose of lidocaine is 4.5mg/kg (300 mg total)
- 5cc 4% lidocaine nebulizer at 5 lpm
- gargle viscous lidocaine (4% best, 2% ok)
- 2% lido jelly coating the nasopharynx
- spray posterior oropharynx, epiglottis, cords & trachea with 4% lidocaine in a mucosal atomized device or LTA (helps prevent laryngospasm)
- the mucosal atomizer is located in the top drawer of the difficult airway cart. Add lidocaine to the attached bottle & hook the device up to a portable O2 tank to supply spraying pressure (this leaves your auxiliary O2 port on the machine available for supplemental O2 administration via NC during the procedure)



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# Awake fiberoptic intubation

## Sedate:

- use a sedation plan that you can execute well with the goal of keeping the patient breathing and able to participate
- Ketamine/propofol
- 50 mg propofol
- 50 mg ketamine
- 10cc syringe; push 1-2 mls/min
- or ketamine alone (0.1-0.5 mg/kg; start with 20mg and follow with 10mg q5min until adequately sedated)
- or Dexmedetomidine boluses (0.25 mcg/kg, repeated q3-5 min)
- and/or 2mg midazolam
- remember: **KEEP THE PATIENT BREATHING & COOPERATING!**



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# Awake fiberoptic intubation

## Intubate:

- Preoxygenate/denitrogenate (use supplemental O2 throughout procedure)
- Place nasal cannula
- Position (sitting up with ear at or above to sternal notch at least)
- Gently restrain arms
- Thread ETT on fiberoptic scope
- Oral approach: use intubating oral airway
- Slowly intubate with fiberoptic scope
- If you started with oral approach, consider nasal if its not going well
- If you started with nasal approach, consider oral if its not going well
- Go slow, add more topicalization if needed & give the patient a break if needed
- Have clear communication/decision points about when to switch plans
- A lost airway is the only failed airway.
- Aborting is not a failed airway.
- Front of neck access is not a failed airway.



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# Awake fiberoptic intubation

## Post intubation:

- Prepare to induce general anesthesia immediately after intubation
- Tape the tube well (don't lose what you worked hard to attain)
- Discuss what went well & how to improve
- Discuss plan for recovery/awake extubation



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# Airway Management

Steps on the road to expertise

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