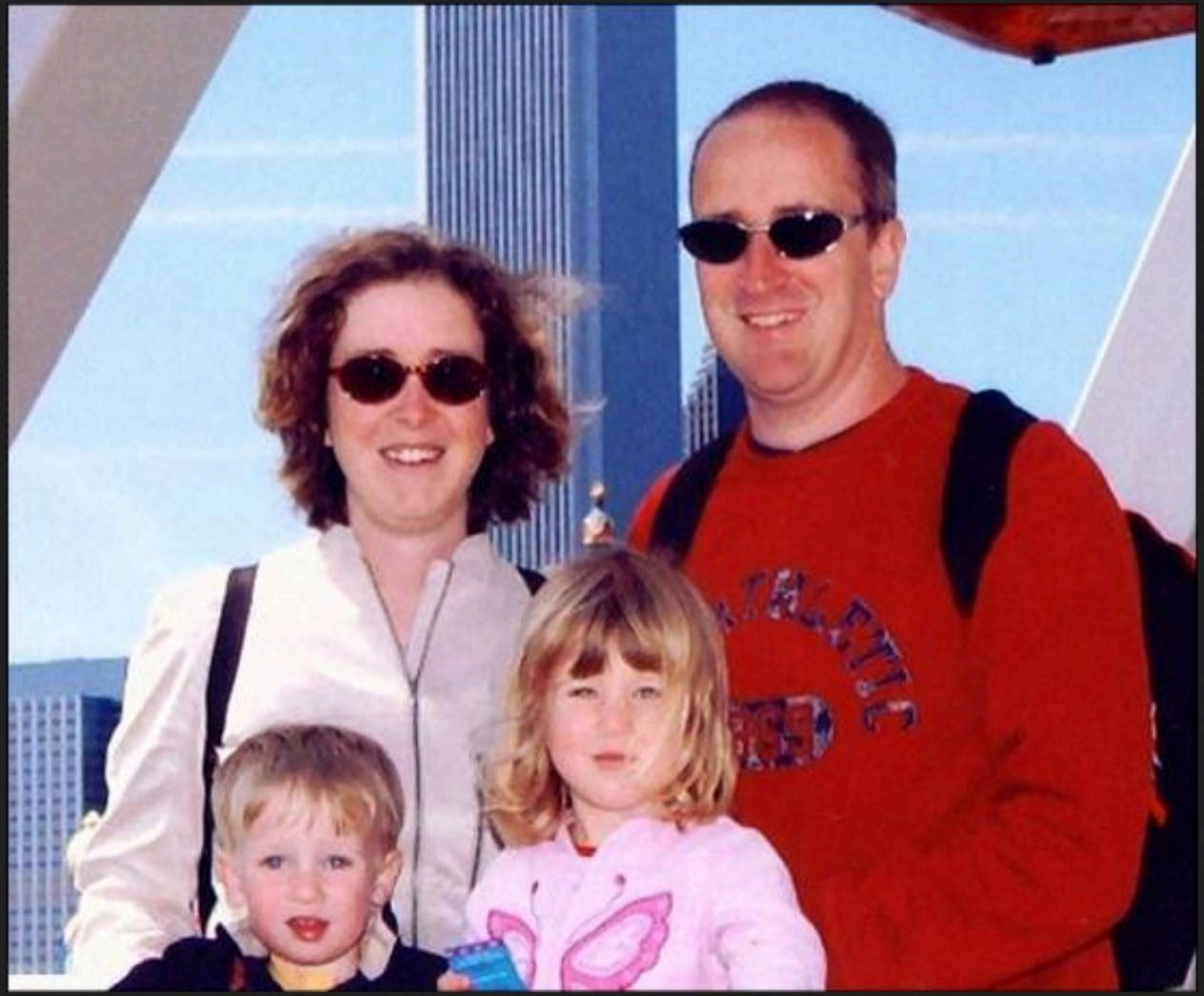
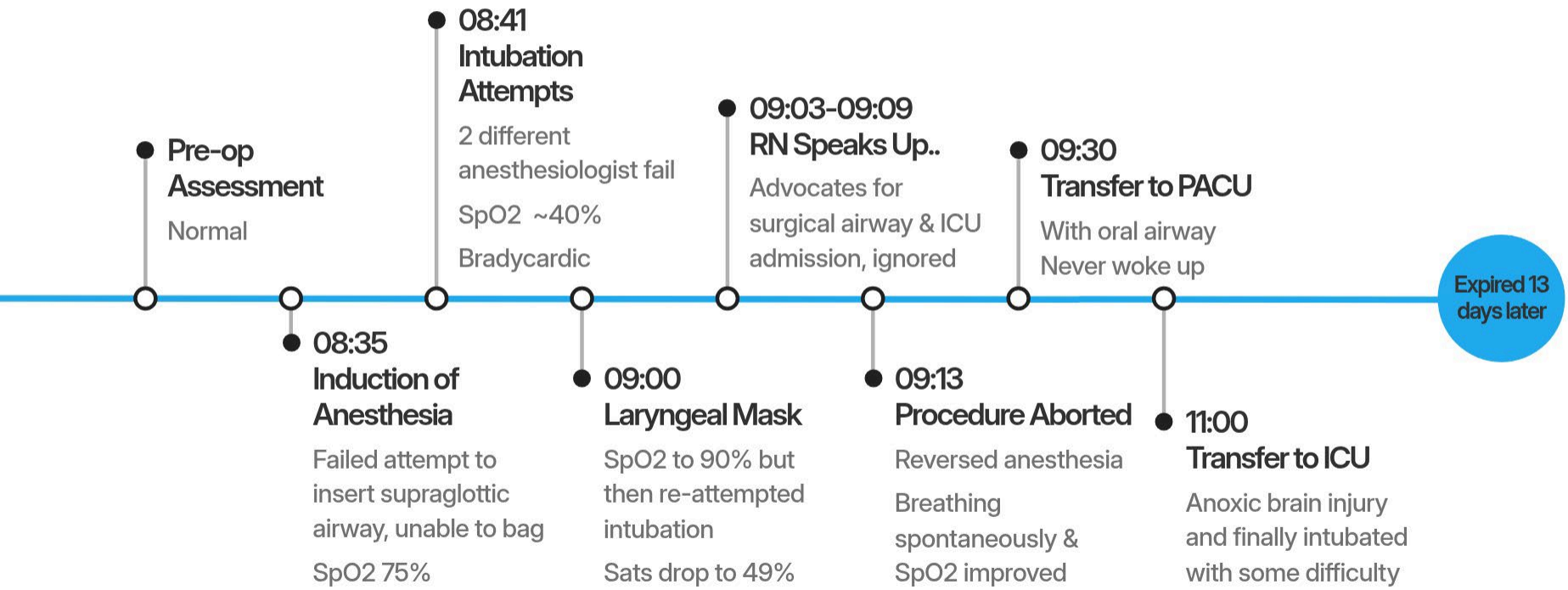
Managing the Difficult Airway: When Every Breath Matters

Adrian Ramos FNP-C, AGACNP-BC

October 18, 2025



Timeline


Pre-op Assessment
Normal
08:35 Induction of Anesthesia
Failed attempt to insert supraglottic airway, unable to bag
SpO2 75%
08:41 Intubation Attempts
2 different anesthesiologist fail
SpO2 ~40%
Bradycardic
09:00 Laryngeal Mask
SpO2 to 90% but then re-attempted intubation
Sats drop to 49%
09:03-09:09 RN Speaks Up..
Advocates for surgical airway & ICU admission, ignored
09:13 Procedure Aborted
Reversed anesthesia
Breathing spontaneously & SpO2 improved
09:30 Transfer to PACU
With oral airway
Never woke up
11:00 Transfer to ICU
Anoxic brain injury and finally intubated with some difficulty
Expired 13 days later

What Went Wrong?

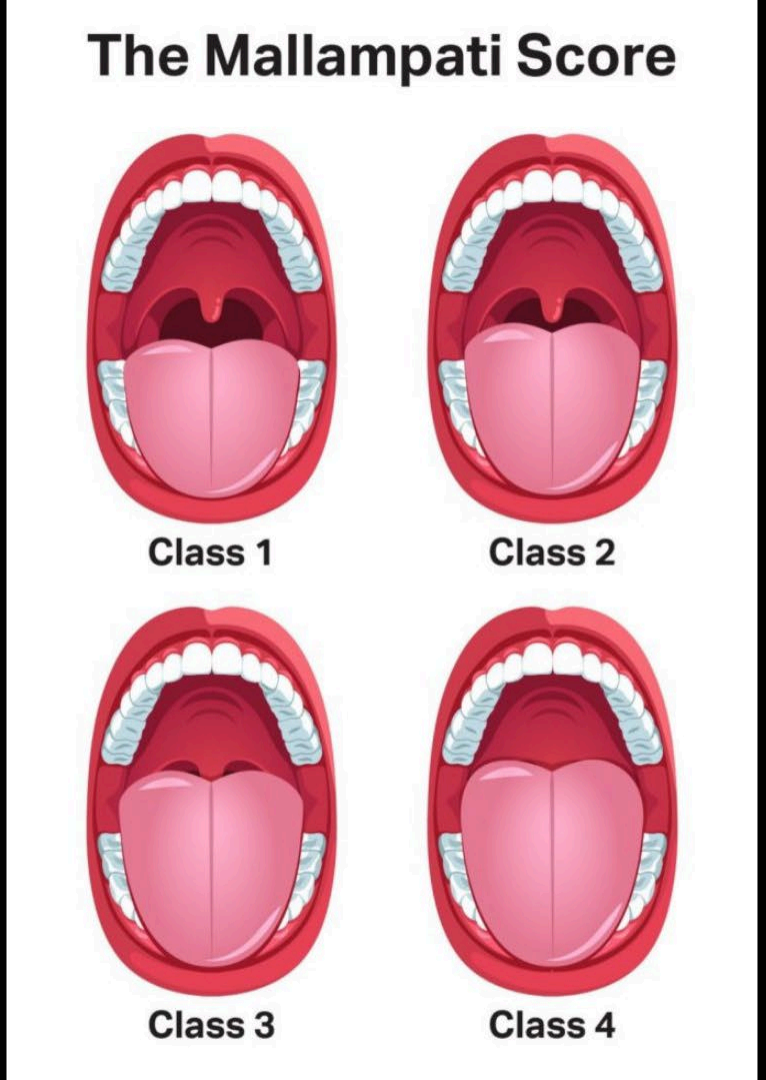
- Communication/Listening
- No backup plan
- Oxygenation > Intubation
- Humility
- "We are all wrong, no matter how good we are"
  Martin Bromiley, Clinical Human Factors Group

Outline

- Predicting - Airway Assessment
- Preventing - Safe Apnea Time
- Preparing - Know the Tools
- Protecting - Hemodynamic Mayhem
- Processing a Dynamic Situation

Predicting Difficulty:

Assessment



Difficult airway

LEMON

(Challenging laryngoscopy/intubation)

L — Look externally

E — Evaluate 3:3:2 rule

M — Mallampatti score

O — Obstruction

N — Neck mobility

AIRWAY MANAGEMENT FOR EARLY RESPONDER

EM OD
Your Daily Pill of Emergency Skill

LEMON ©

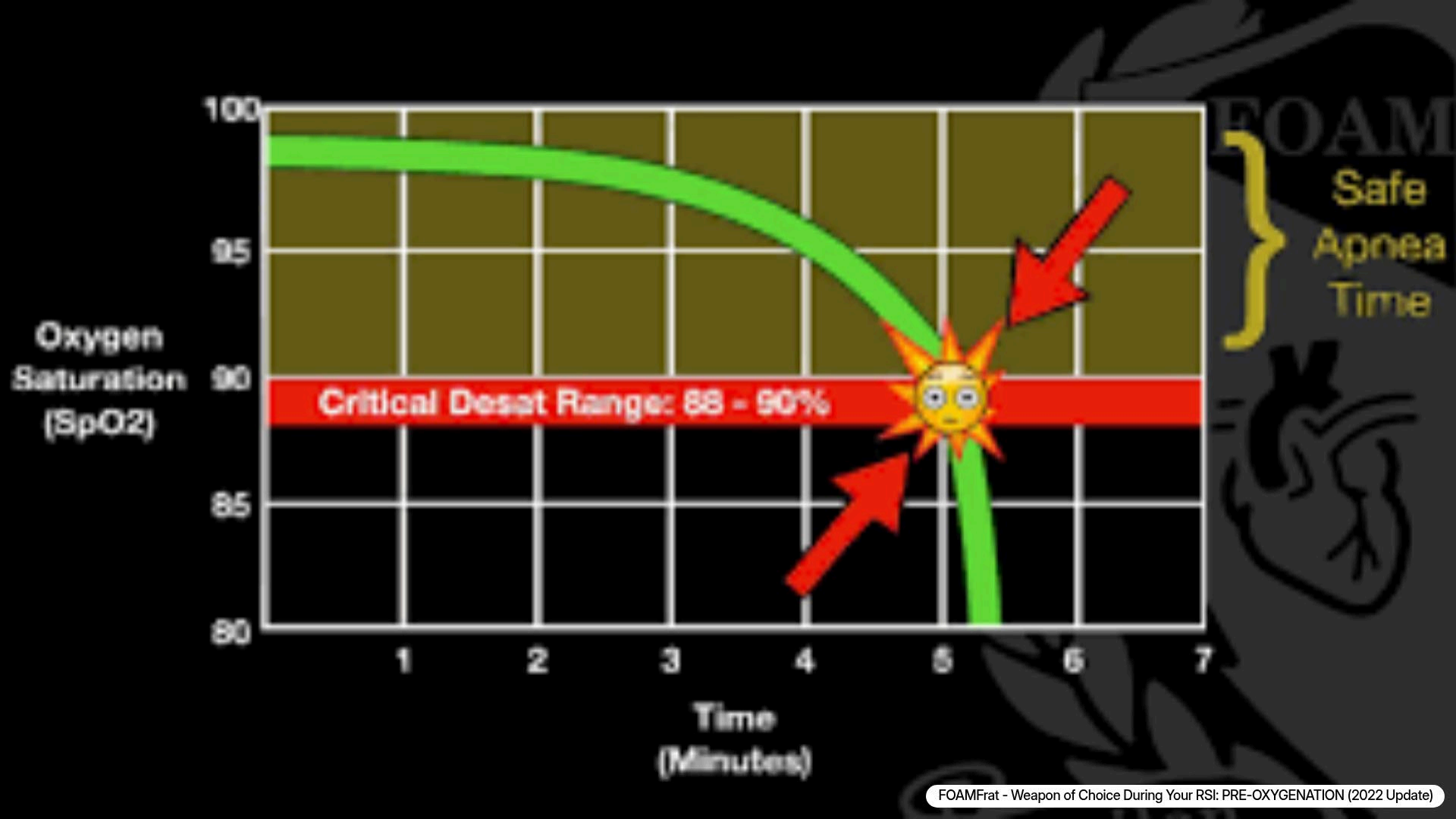
Evaluate 3-3-2

- 3-fingers in the mouth
- 3-fingers between the mentum and hyoid
- 2-fingers between the hyoid and laryngeal prominence

“Difficult airways are often surprises”

Preventing:

Safe Apnea Time


100
95
90
85
80
Oxygen Saturation (SpO2)
Critical Desat Range: 88 - 90%
1
2
3
4
5
6
7
Time (Minutes)
Safe Apnea Time

ORIGINAL ARTICLE

Noninvasive Ventilation for Preoxygenation during Emergency Intubation

Authors: Kevin W. Gibbs, M.D. , Matthew W. Semler, M.D., Brian E. Driver, M.D. , Kevin P. Seitz, M.D., Susan B. Stempek, P.A., Caleb Taylor, M.D., M.P.H., Daniel Resnick-Ault, M.D., +51 , for the PREOXI Investigators and the Pragmatic Critical Care Research Group* Author Info & Affiliations

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- Multi-center RCT in ED/ICU
- BiPAP to preoxygenate vs no BiPAP
- 6.2% vs 13.2% desaturated to < 80
- 2.4% vs 5.7% desaturated to < 70%
- Worth it!

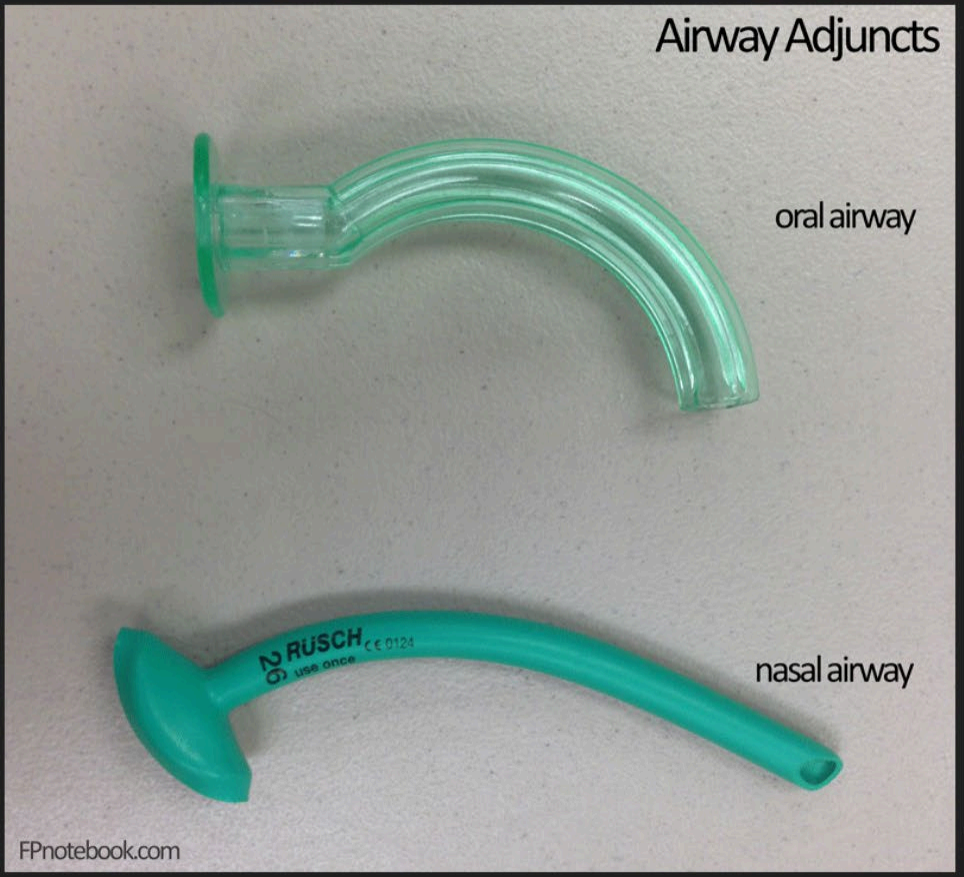
Apneic Oxygenation

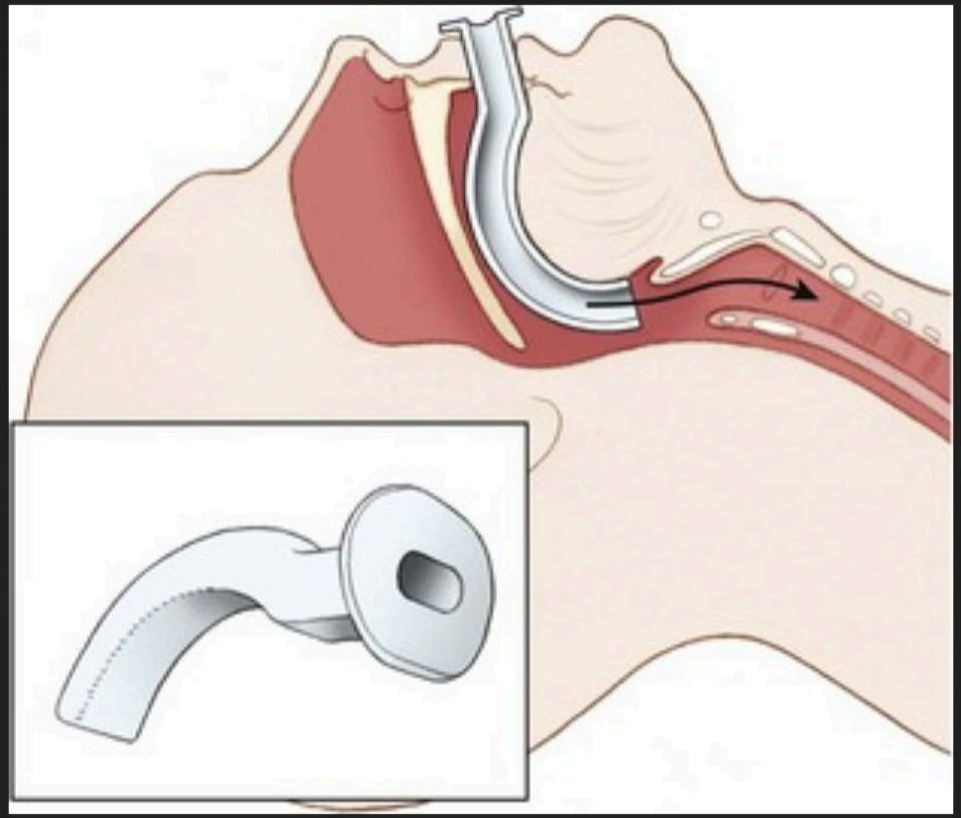
- Oliveira J E Silva et al (2017) - less hypoxemia and increased 1st pass success
- Binks et al (2017) - less critical desaturation, raised minimum recorded SpO2 during intubation
- White et al (2017) - improved SpO_2 in elective surgical patients, obese patients
- Worth it!

Preparing

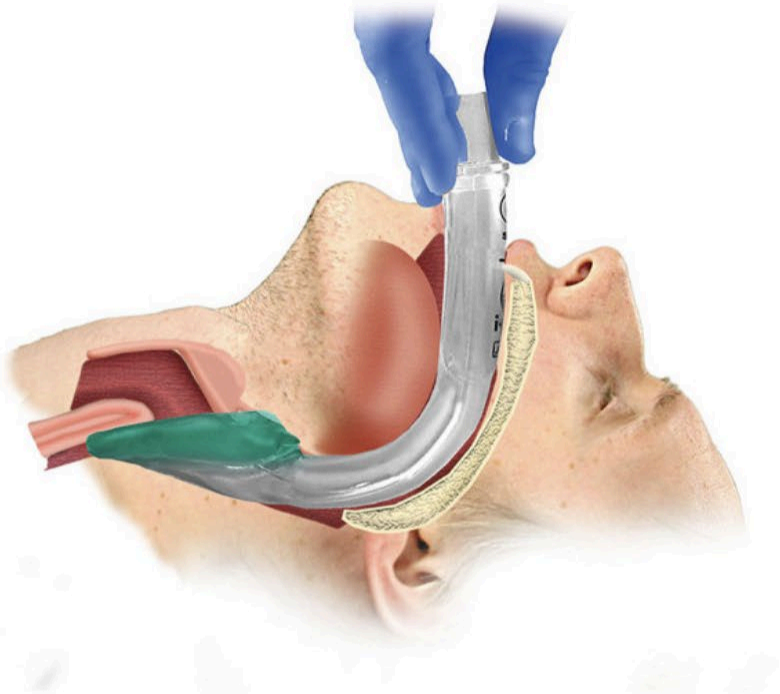
Know the Tools

Airway Adjuncts





A: i-gel™ Laryngeal mask airway



B: King LT - D

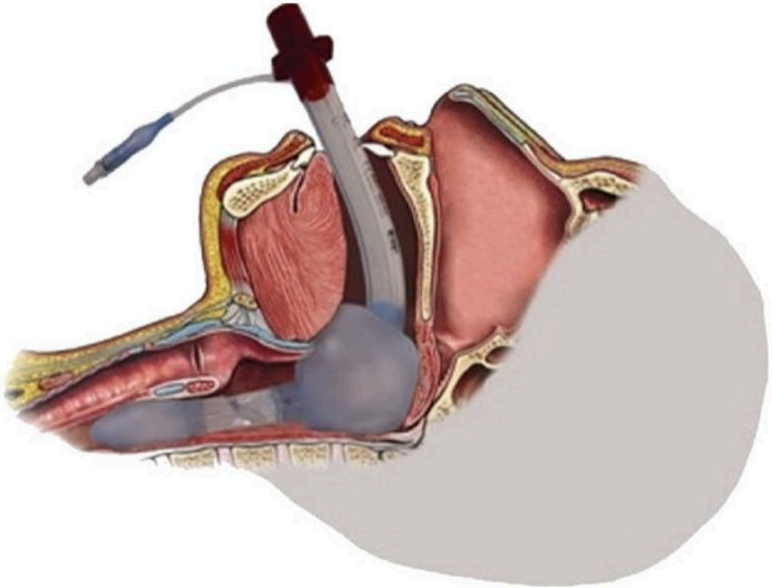
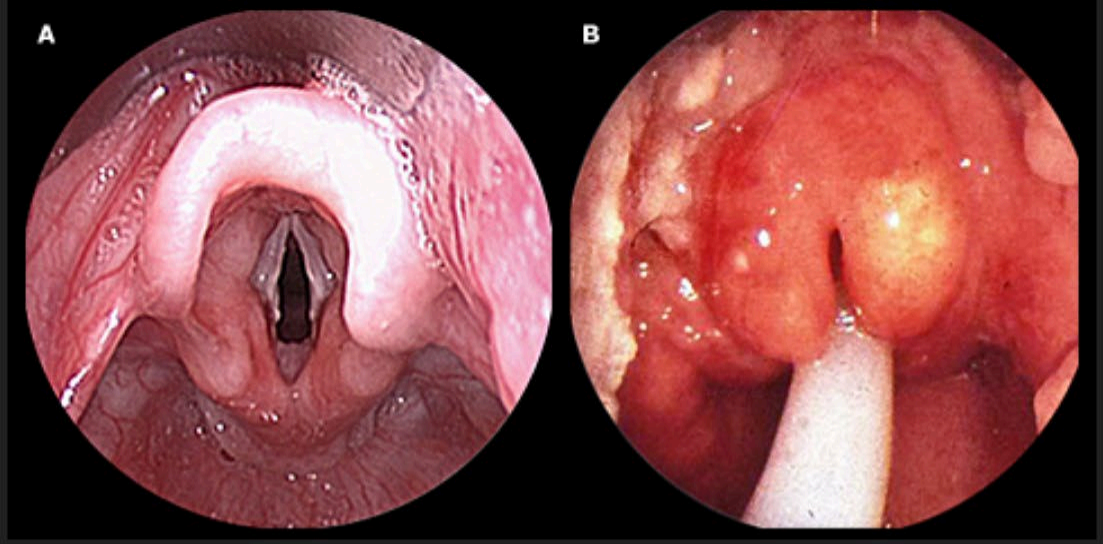
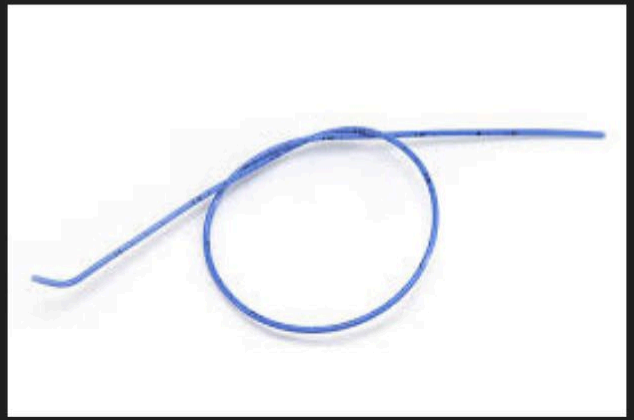


Image sources: www.intersurgical.com & aneskey.com

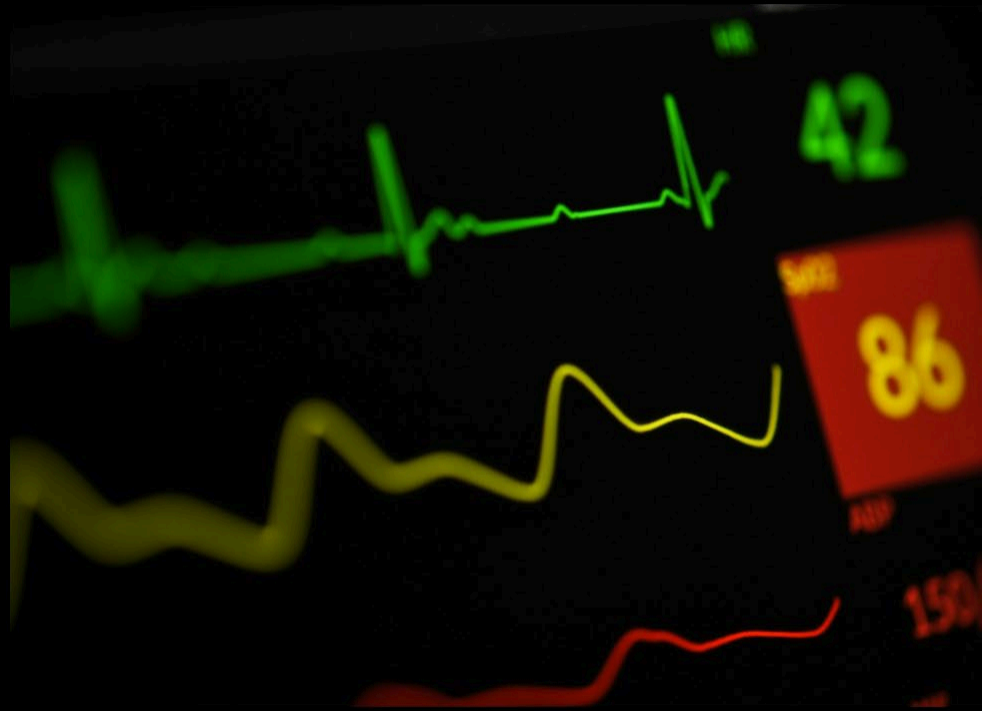

A
B

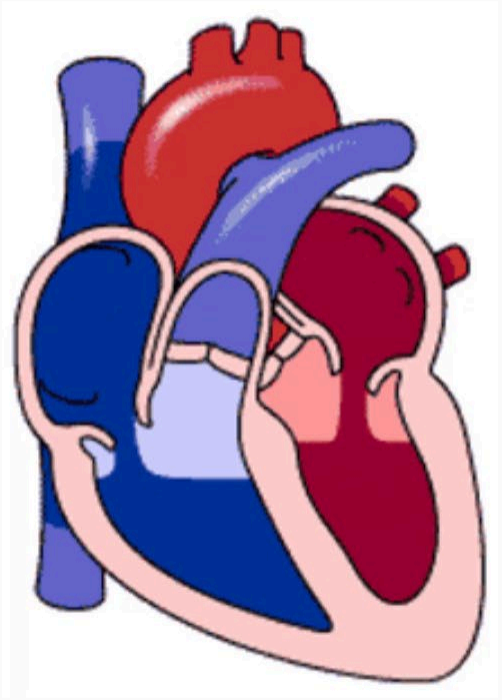


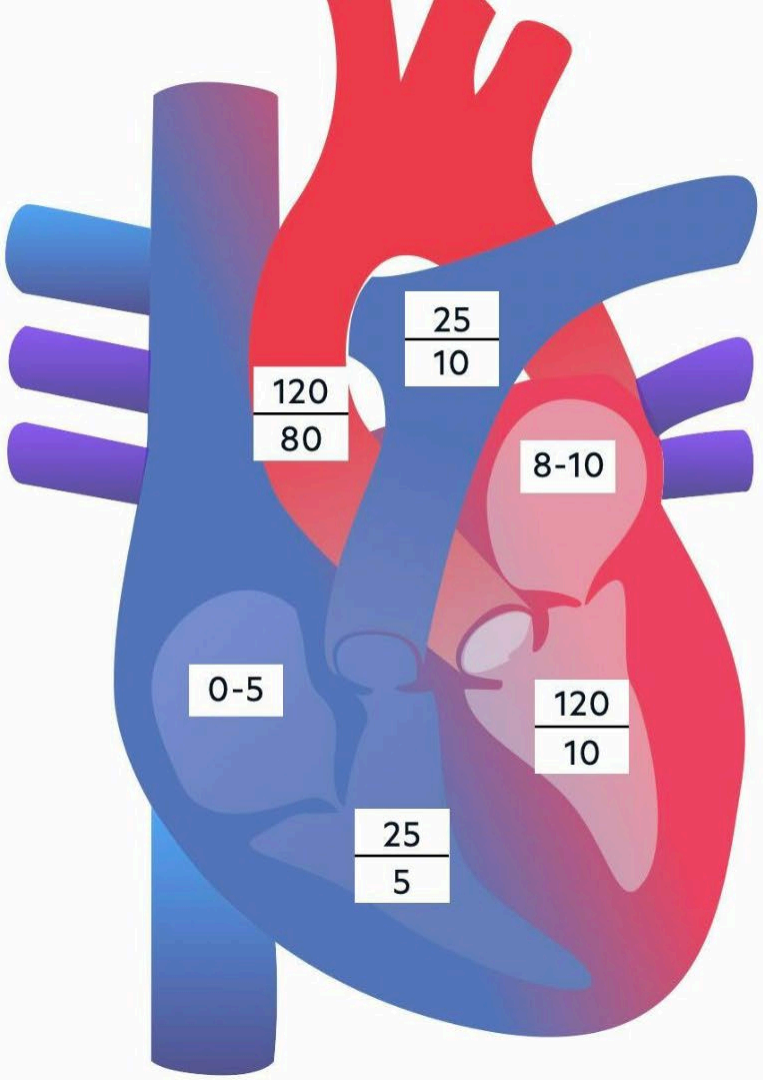
The goal is ALWAYS oxygenation and ventilation... NOT intubation

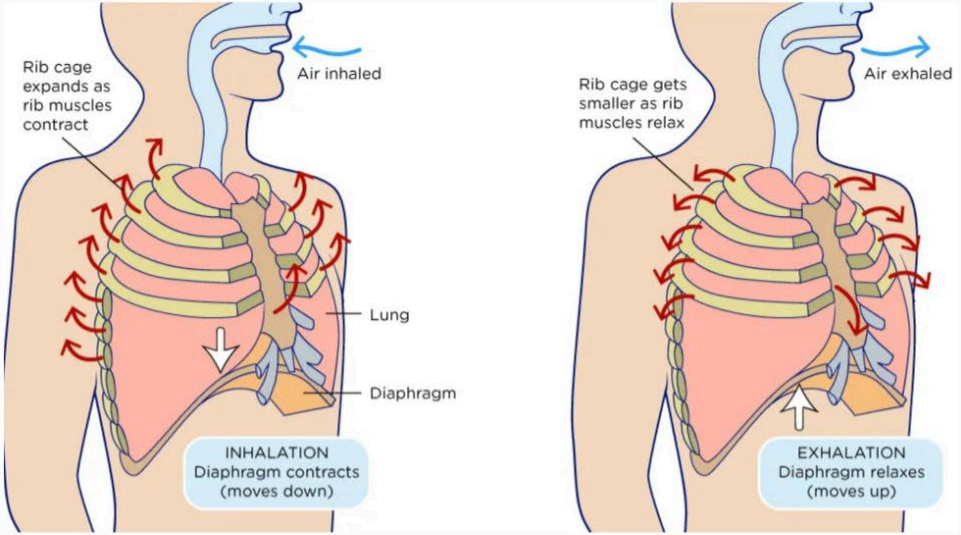
Protecting

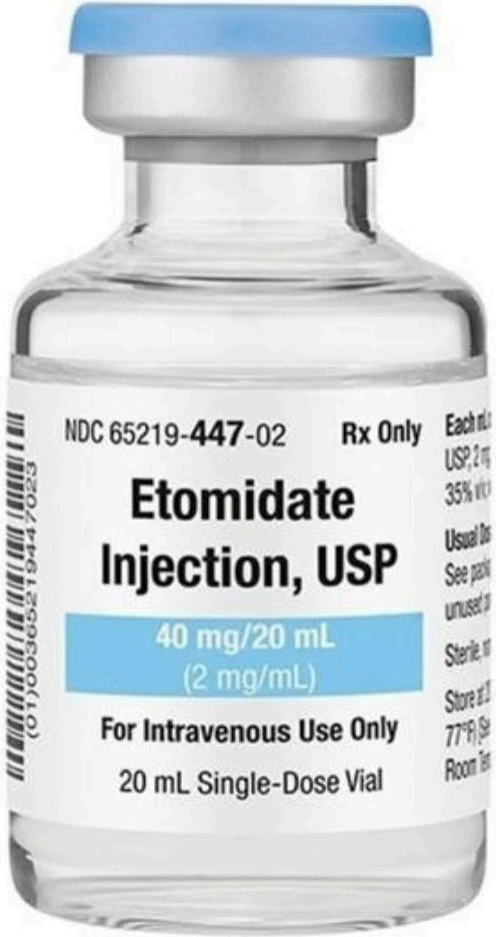
Safeguard against
hemodynamic mayhem

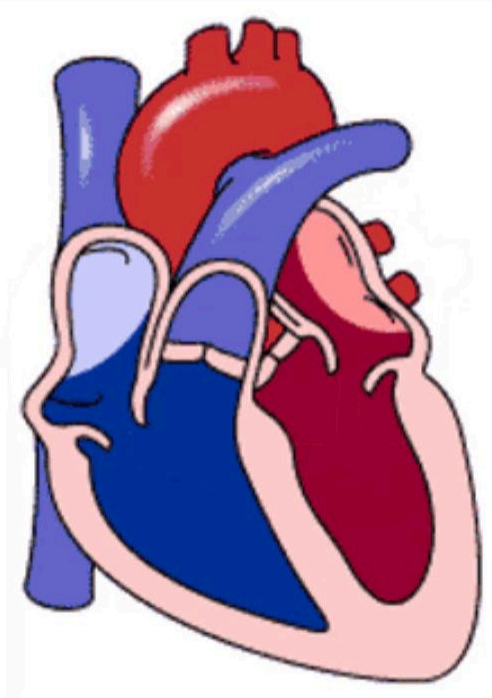





25
10
120
80
8-10
0-5
120
10
25
5


Rib cage expands as rib muscles contract
Air inhaled
Lung
Diaphragm
INHALATION
Diaphragm contracts (moves down)
Rib cage gets smaller as rib muscles relax
Air exhaled
EXHALATION
Diaphragm relaxes (moves up)


NDC 65219-447-02
Rx Only
Etomidate
Injection, USP
40 mg/20 mL
(2 mg/mL)
For Intravenous Use Only
20 mL Single-Dose Vial



EPINEPHRINE

Has alpha and beta1/2 effects so it is an inopressor
Do not give cardiac arrest doses (1 mg) to patients with a pulse

Mixing Instructions:

- Take a 10 ml syringe with 9 ml of normal saline
- Into this syringe, draw up 1 ml of epinephrine from the cardiac amp (Cardiac amp contains Epinephrine 100 mcg/ml)
- Now you have 10 mls of Epinephrine 10 mcg/ml

Onset-1 minute
Duration-5-10 minutes
Dose-0.5-2 ml every 2-5 minutes (5-20 mcg)

PHENYLEPHRINE

It is pure alpha, so no intrinsic inotropy, and *no increase in heart rate*, but increases in coronary perfusion can improve cardiac output.

Mixing Instructions:

- Take a 3 ml syringe and draw up 1 ml of phenylephrine from the vial (vial contains phenylephrine 10 mg/ml)
- Inject this into a 100 ml bag of NS
- Now you have 100 mls of phenylephrine 100 mcg/ml
- Draw up some into a syringe; each ml in the syringe is 100 mcg/ml

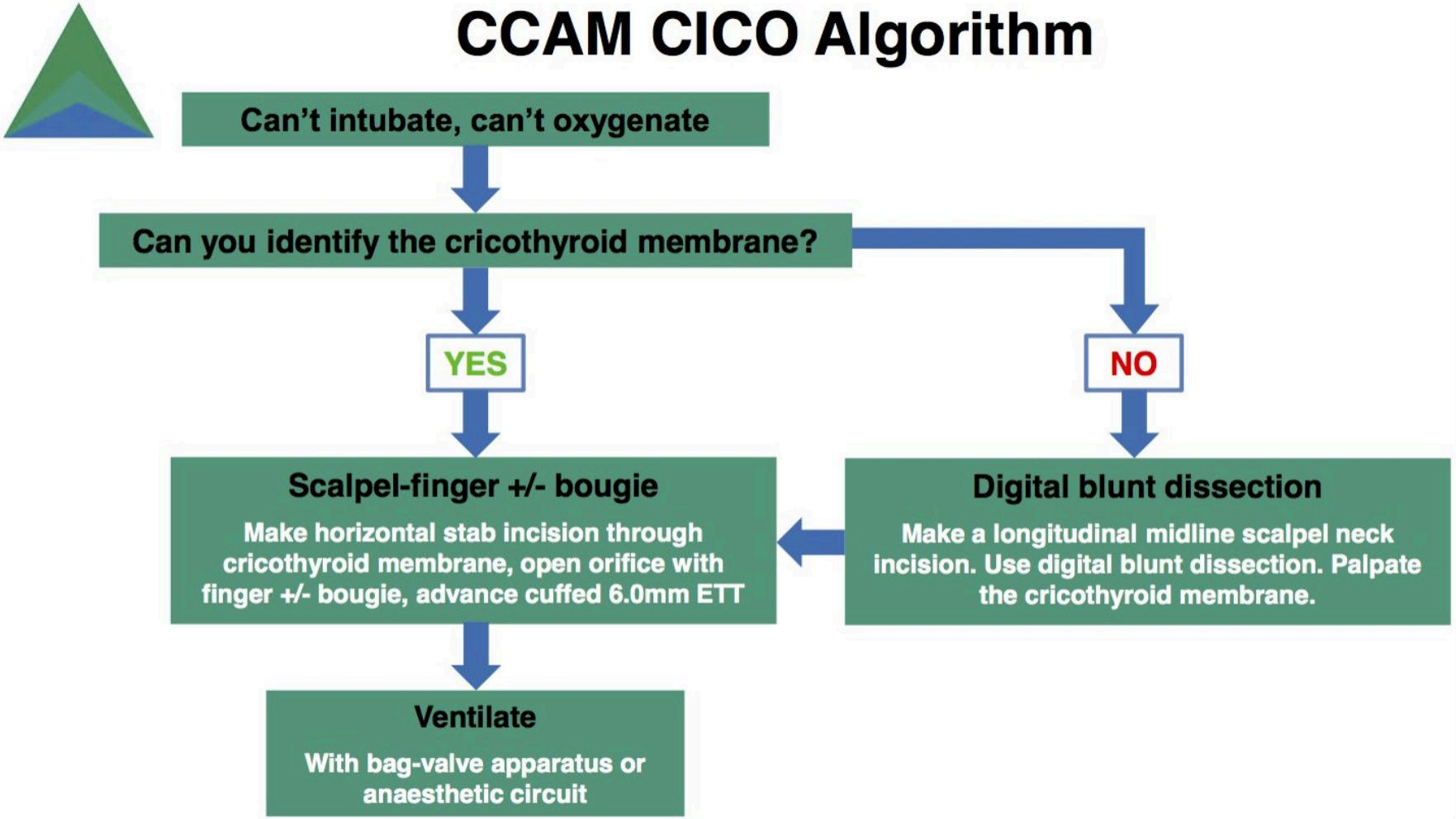
Onset-1 minute
Duration- 10-20 minutes
Dose-0.5-2 ml every 2-5 minutes (50-200 mcg)

At this point you need vasopressor, not volume!

Processing

Know when you're at the end of the algorithm

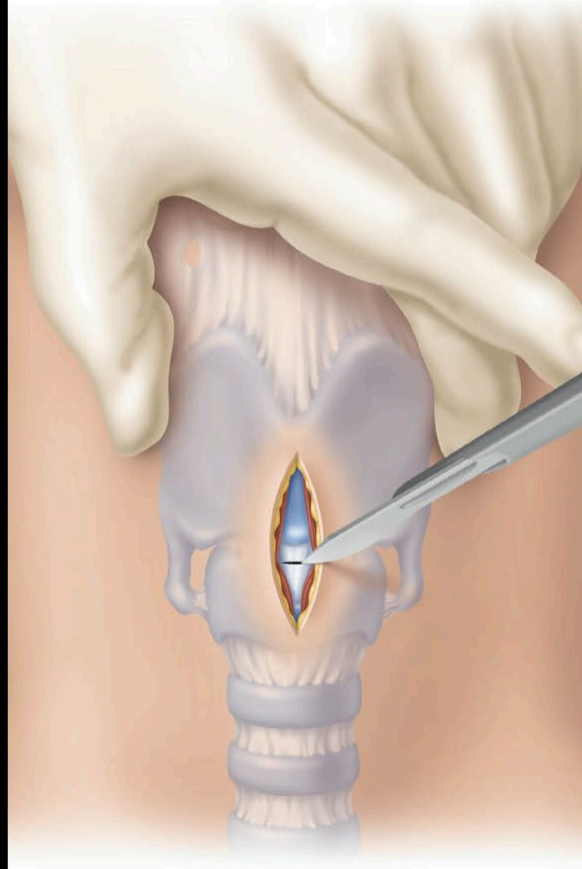
CCAM CICO Algorithm



Can't Intubate, Can't Oxygenate = Cricothyrotomy

There is no other option

This is the end of the algorithm



Summary

Be calm in the chaos, save a life

1. Predict difficulty with good assessment
2. Prevent difficulty with longer safe apnea time
3. Prepare for disaster by knowing the tools
4. Protect the patient from hemodynamic instability
5. Process the dynamic situation - know when it's time to speak up and hand them a knife

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