Approach to Airway Management

April 28, 2022

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This session will be recorded

We are recording this Zoom session so that it can be watched again at your convenience, and so that we can share it with your colleagues who were not able to join us today.

If you would prefer that this recording **not** be shared with your EM colleagues, please email hgirdler@ghem.ca within 24 hours of the session.

We will share the presentation slides and other materials (journal articles, etc.) by email; you will have access to all materials regardless of whether the recording is shared.

Please also note:

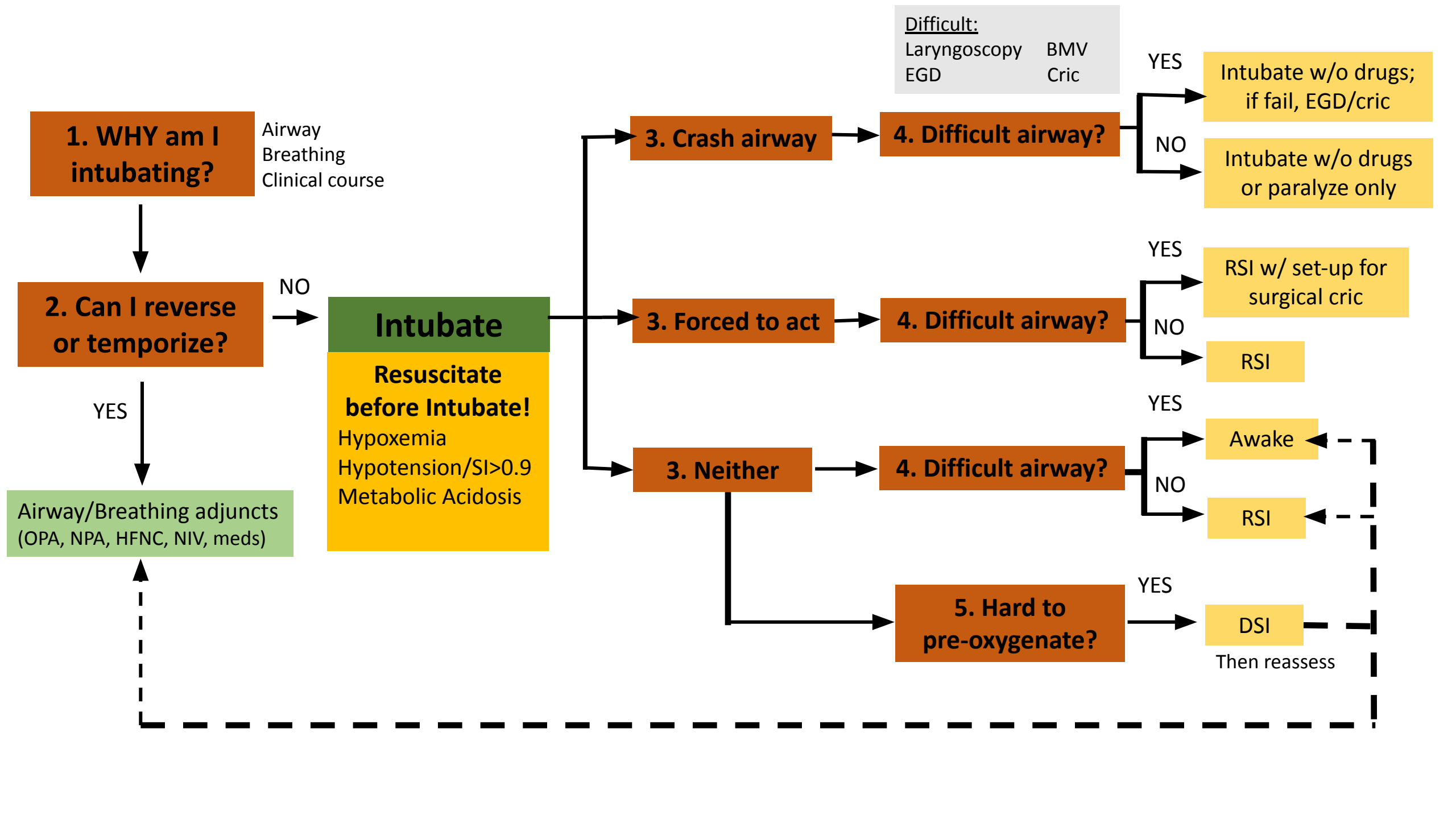
The information in this presentation and the video recording is up to date as of the date it was recorded May 4, 2022.

It has not been updated to include any subsequent advances in practice, and the information presented in this video does not replace hospital, health centre, or governmental guidelines.

Objectives

By the end of this session, the learner should be able to:

- Define “anatomically difficult airway” and recall how to assess for one
- Define “physiologically difficult airway” and recall its conditions
- Recall the procedural steps for alternatives to rapid sequence intubation (i.e., awake intubation, delayed sequence intubation)
- Use a structured approach to decide on an airway management strategy for a given patient based on their clinical status, reason for intubation, and whether an anticipated difficult airway is present


Difficult:
Laryngoscopy
BMV
EGD
Cric
1. WHY am I intubating?
Airway
Breathing
Clinical course
2. Can I reverse or temporize?
NO
YES
Airway/Breathing adjuncts
(OPA, NPA, HFNC, NIV, meds)
Intubate
Resuscitate before Intubate!
Hypoxemia
Hypotension/SI>0.9
Metabolic Acidosis
3. Crash airway
4. Difficult airway?
YES
NO
Intubate w/o drugs; if fail, EGD/cric
Intubate w/o drugs or paralyze only
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RSI w/ set-up for surgical cric
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3. Neither
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YES
NO
Awake
RSI
5. Hard to pre-oxygenate?
YES
DSI
Then reassess

Definitive airway

A tube placed in the trachea with the cuff inflated below the level of the vocal cords

=

INTUBATION

(or surgical airway)

Rapid Sequence Intubation/Induction (RSI)

The administration, after preoxygenation, of a[n]…induction agent followed immediately by a rapidly acting neuromuscular blocking agent to induce unconsciousness and motor paralysis for tracheal intubation (Walls and Murphy, 2012)

Pre-oxygenation = NO BAGGING

Predetermined doses of meds

Paralysis

Awake Intubation

EMCrit Awake Intubation

1. Dry out secretions
2. **Topical anesthetic**
3. +/- Light sedation/anxiolysis
4. Intubate (Bougie/DL/VL/fibreoptic)

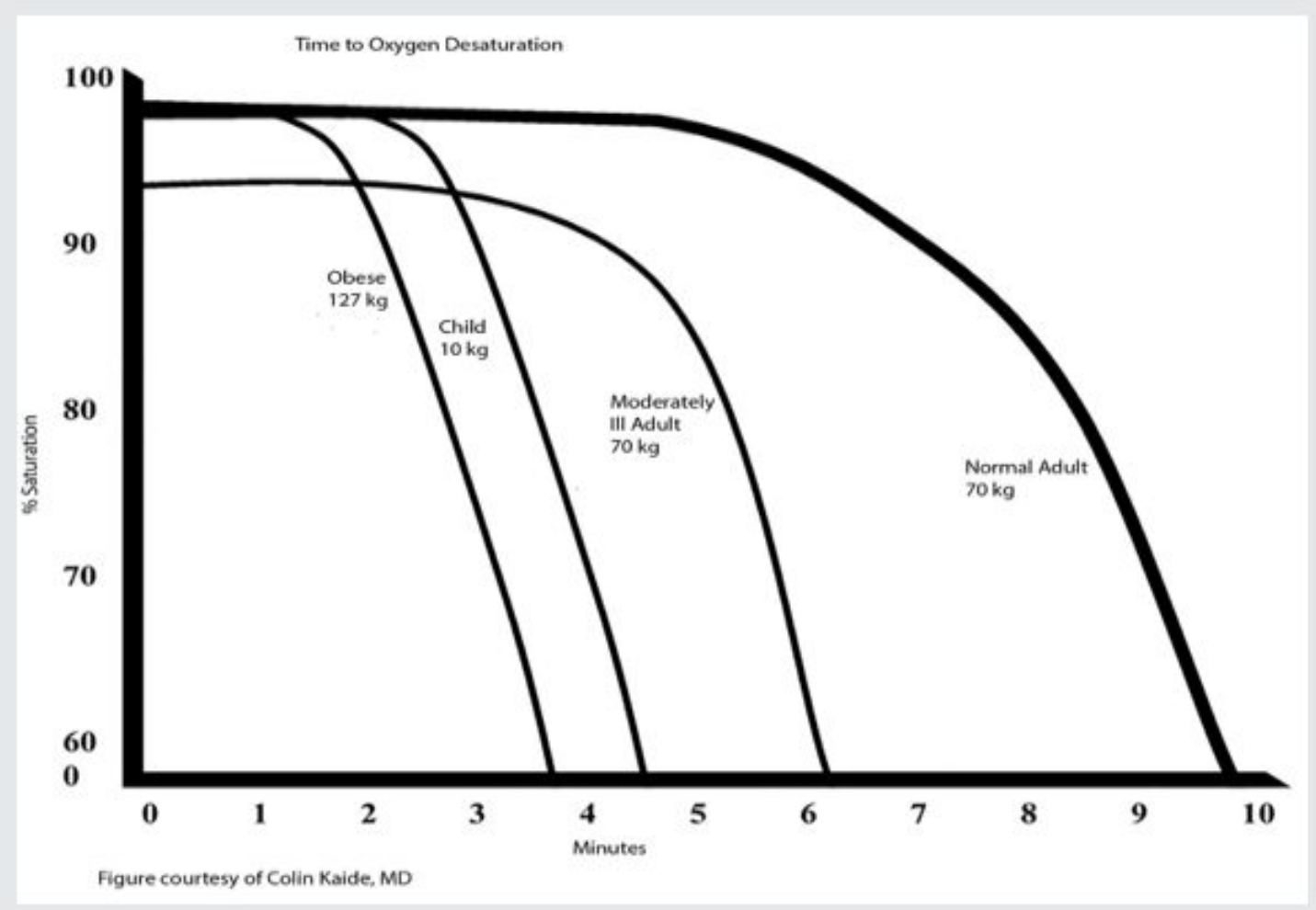
Delayed Sequence Intubation (DSI)

“Procedural sedation for pre-oxygenation”

Then reassess:

- Paralyze and intubate
- Awake intubation
- No need for intubation

Hypoxemia

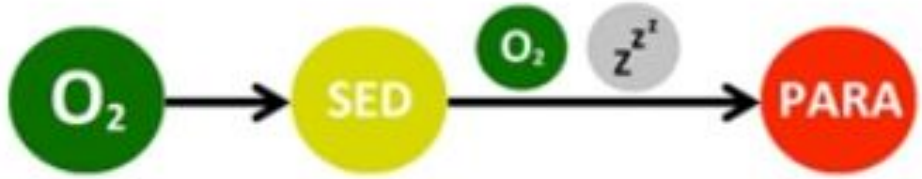


- Pre-oxygenate
- Positive Pressure
  - BM with tight seal
  - HFNC
  - NIV
- Positioning
- Apneic oxygenation

Figure from www.reliasmedia.com

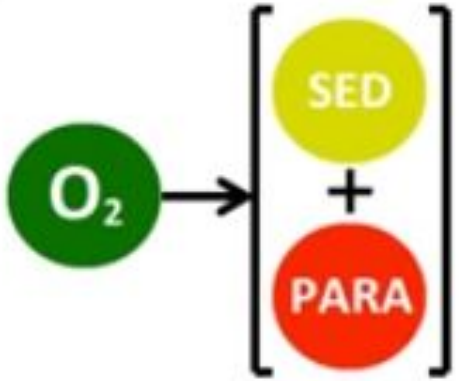
Traditional

Controlled



Rapid

Aspiration Risk

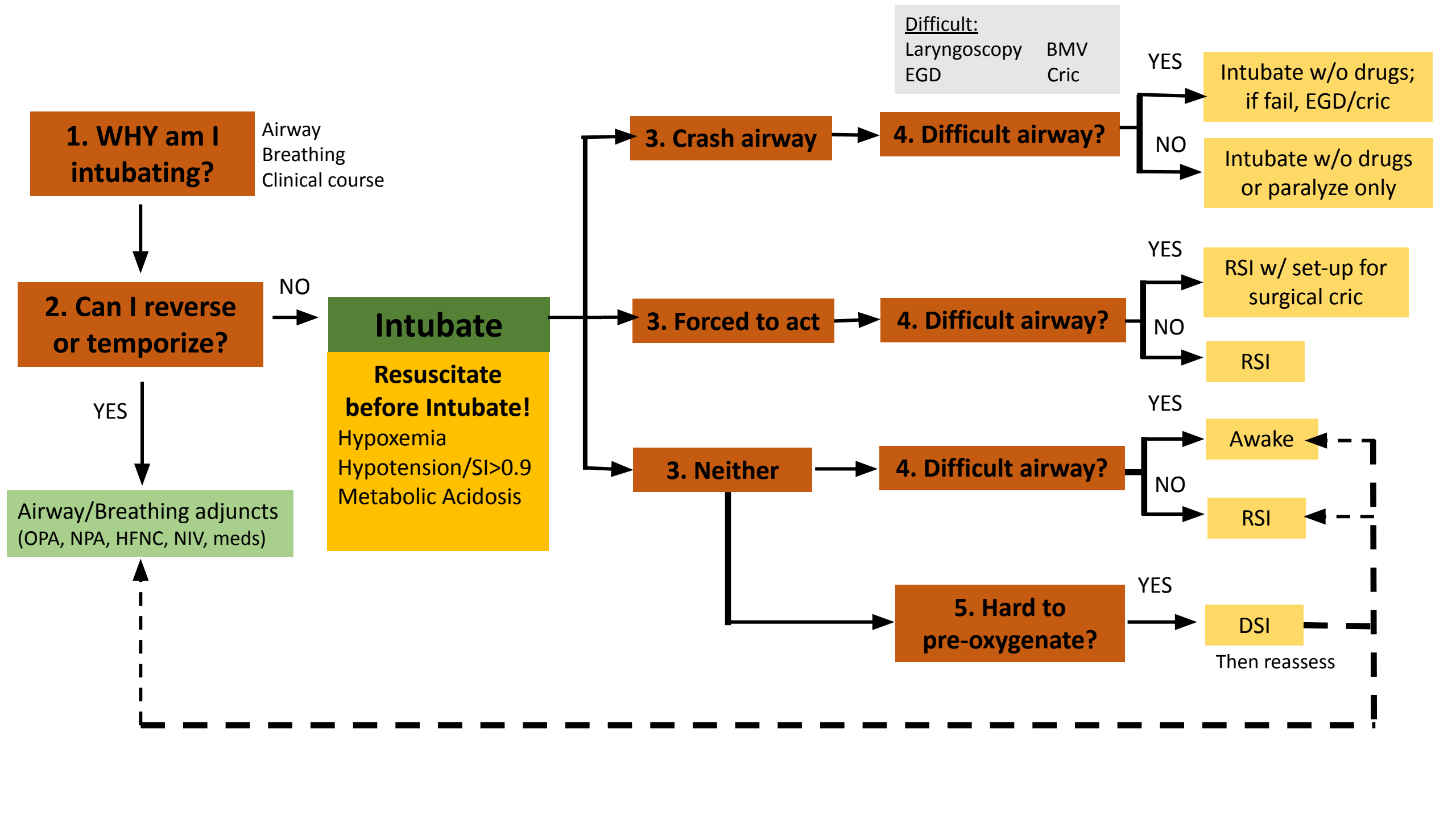


Delayed

Agitation

Awake

Difficult Airway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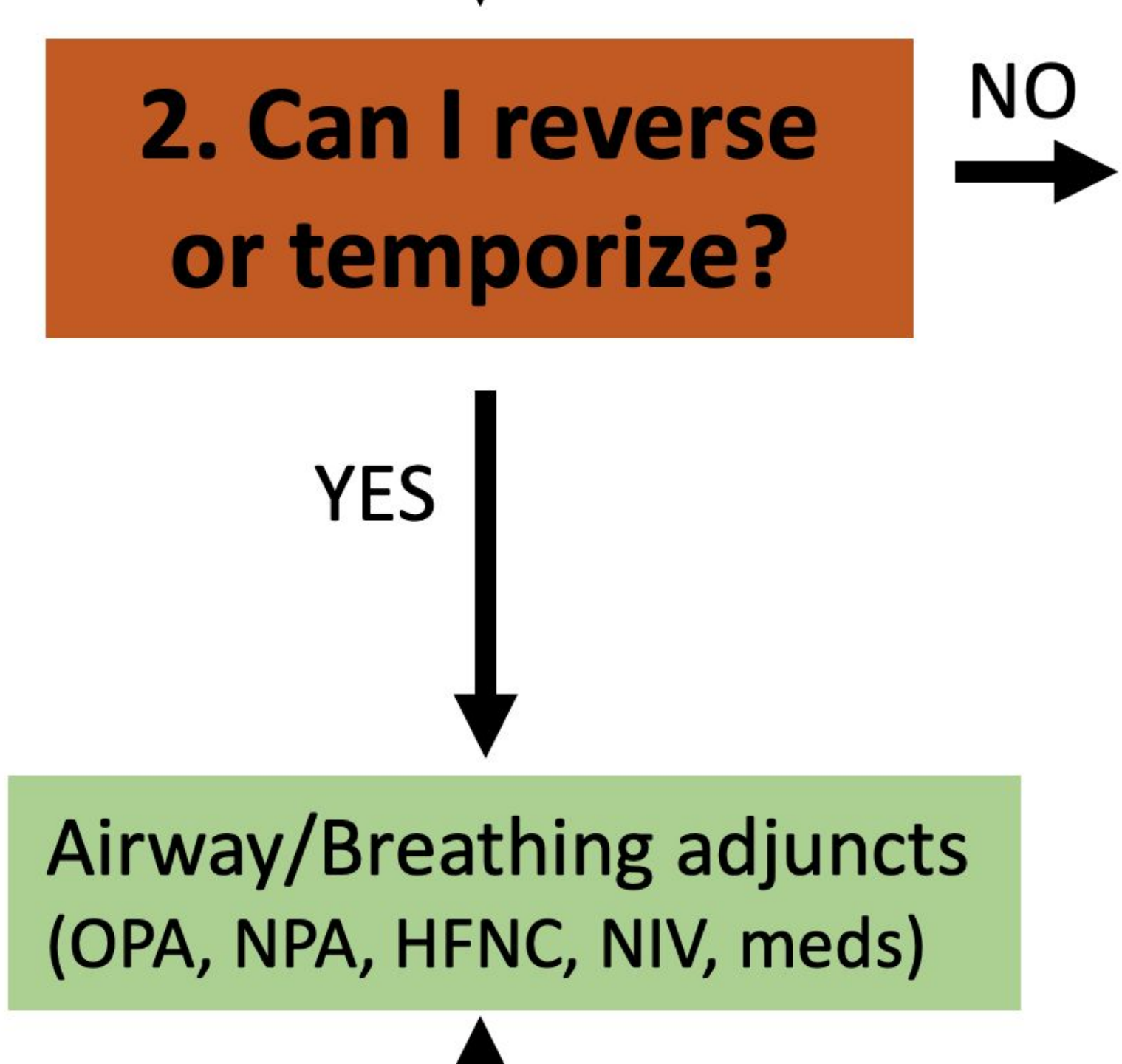
Then reassess

1. WHY am I intubating?

Airway
Breathing
Clinical course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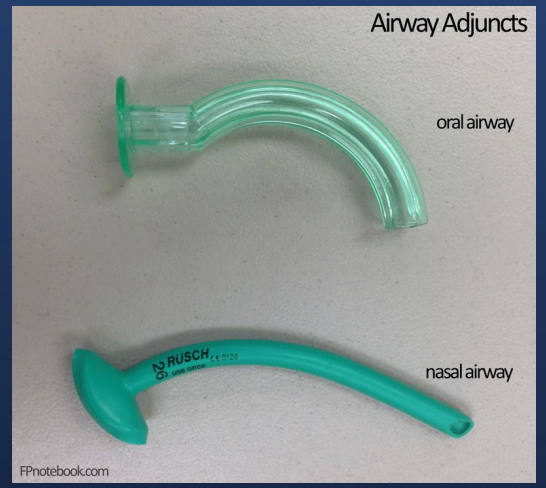
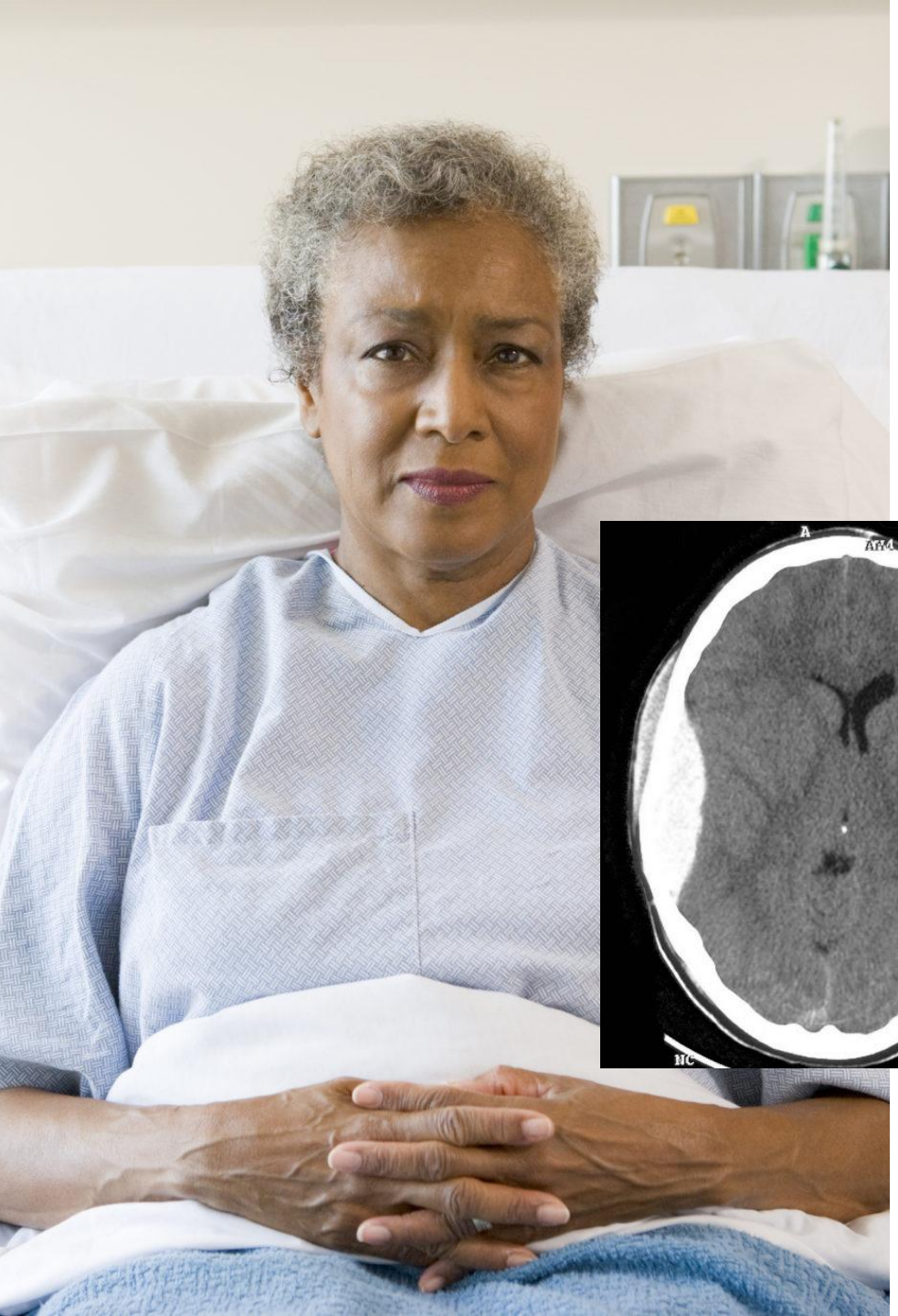

Airway Adjuncts
oral airway
nasal airway
RUSCH
FPnotebook.com



Case 1

GCS 15
BP 147/80
HR 90
SpO2 95% (room air)
RR 20

Case 2

68yo, Hx of CHF
Increasing SOB and confusion x 24h

BP 132/80
HR 86
SpO2 93% (4L, NP)
RR 20

VBG 7.14/ >146 / 70 /45
(pH / PO2 /PCO2/HCO3)

VBG 2h later 7.04/>146/75/48

Difficult Airway

…one for which a pre-intubation examination identifies attributes that are likely to make laryngoscopy, intubation, …BMV, the use of an extraglottic device or surgical airway management more difficult than would be the case in an ordinary patient without those attributes (Walls and Murphy, 2012)

= ANTICIPATED

Difficult Laryngoscopy
(Upper lip bite test)
(LEMONS)

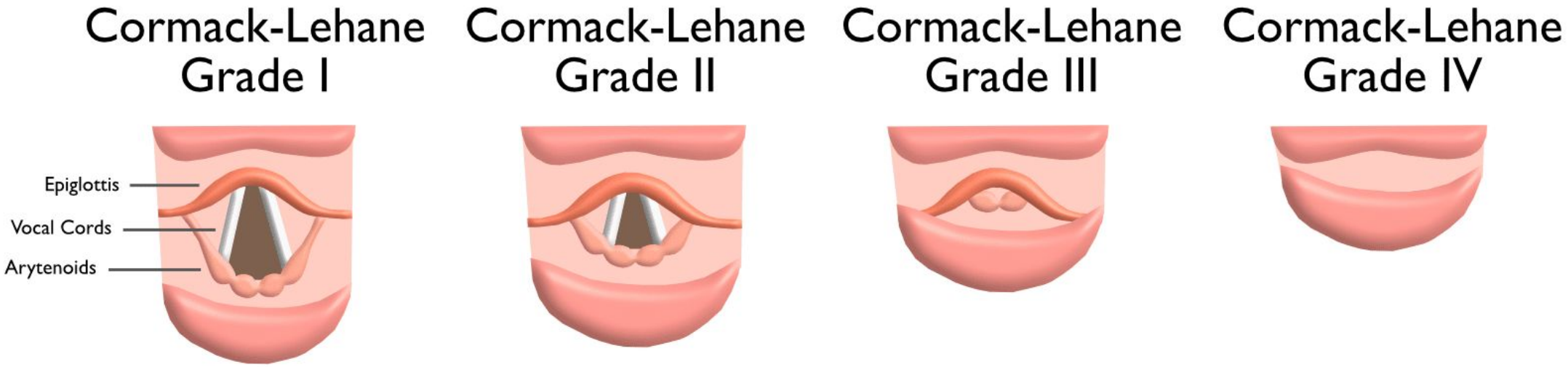
Difficult Bag Mask Ventilation
(MOANS)

Difficult Extraglottic Device
(RODS)

Difficult Surgical Airway
(SMART)

(Walls and Murphy, 2012)

Difficult laryngoscopy = poor view of glottis



RebelEM.com

Difficult Laryngoscopy - LEMONS

Look

Evaluate - 3-3-2

Mallampati

Obstruction/obesity

Neck mobility - cervical extension

Soiled - contaminated

Difficult laryngoscopy – Upper lip bite test

Difficult Bag-Mask Ventilation - MOANS

Mask Seal

Obstruction/Obesity

Age

No teeth

Stiff/snoring

Difficult Extraglottic Device - RODS

Restricted mouth opening

Obstruction/obesity

Disrupted/distorted airway

Stiff

Difficult Cricothyrotomy - SMART

Surgery

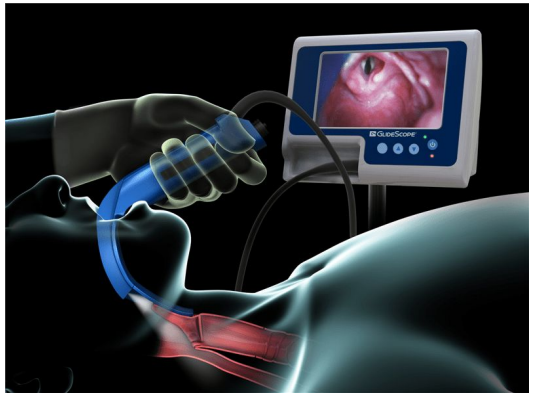
Mass

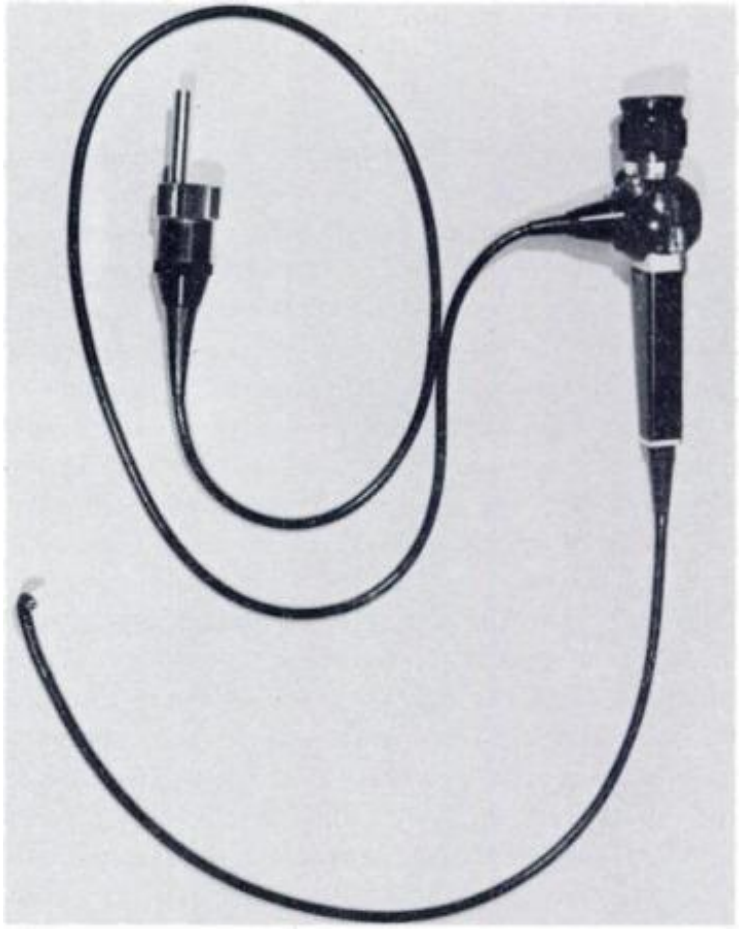
Access/anatomy

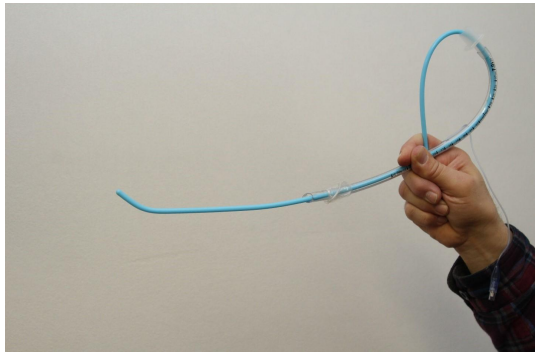
Radiation

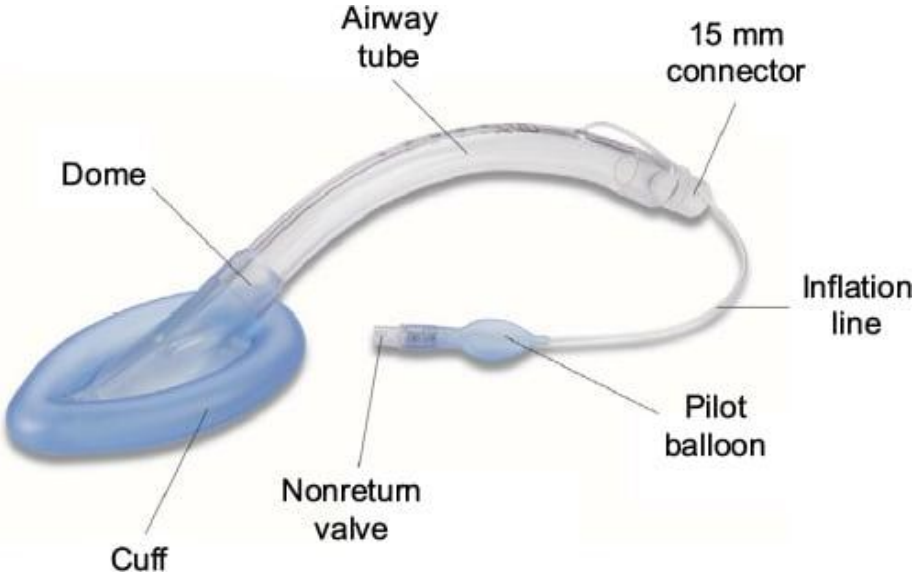
Tumour

Devices/back-ups for difficult airway

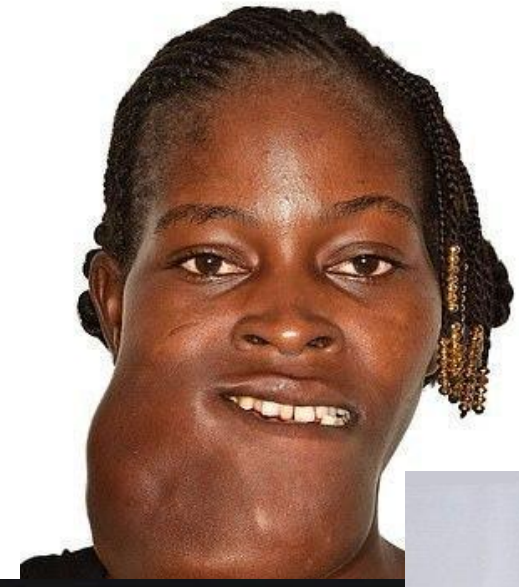
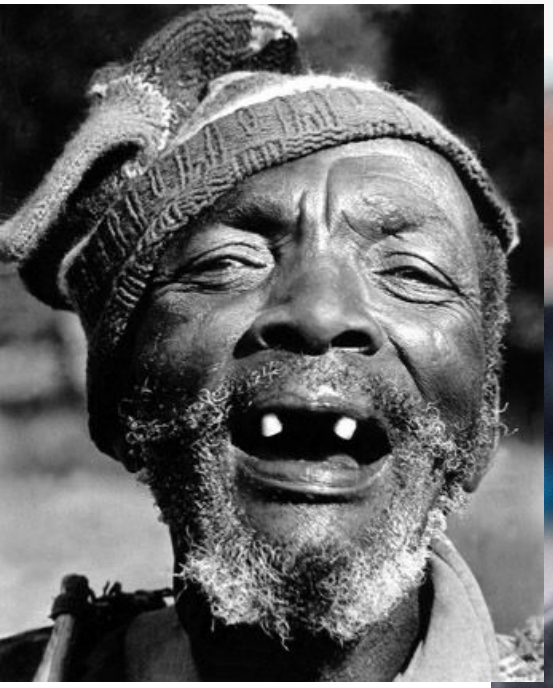











The Physiologically Difficult Airway

- Hypoxemia
- Hypotension / Shock Index ≥ 0.9
- Metabolic Acidosis

Resuscitate before you intubate!

Hypotension / Shock Index > 0.9

Why?

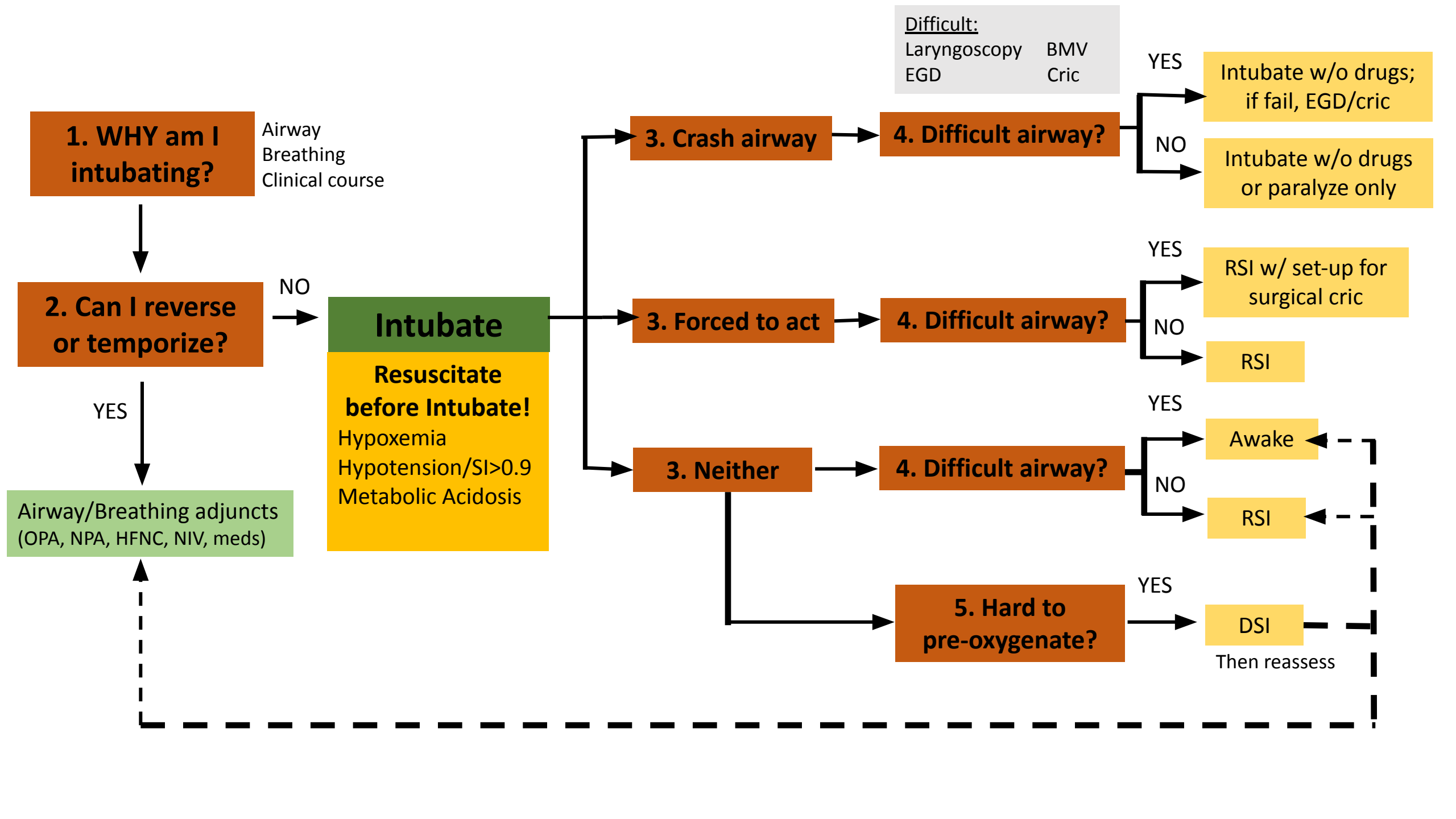
- Underlying disease
- Loss of catecholamine surge with resuscitation
- Direct effects of induction agents (vasodilation, myocardial depression)
- Decreased preload with positive pressure ventilation

•What to do?

- Fluids
- Blood
- Vasopressors
  - Early – esp in RV failure
  - Push-dose vs. infusion

Metabolic Acidosis

Avoid if at all possible!
Resuscitate first.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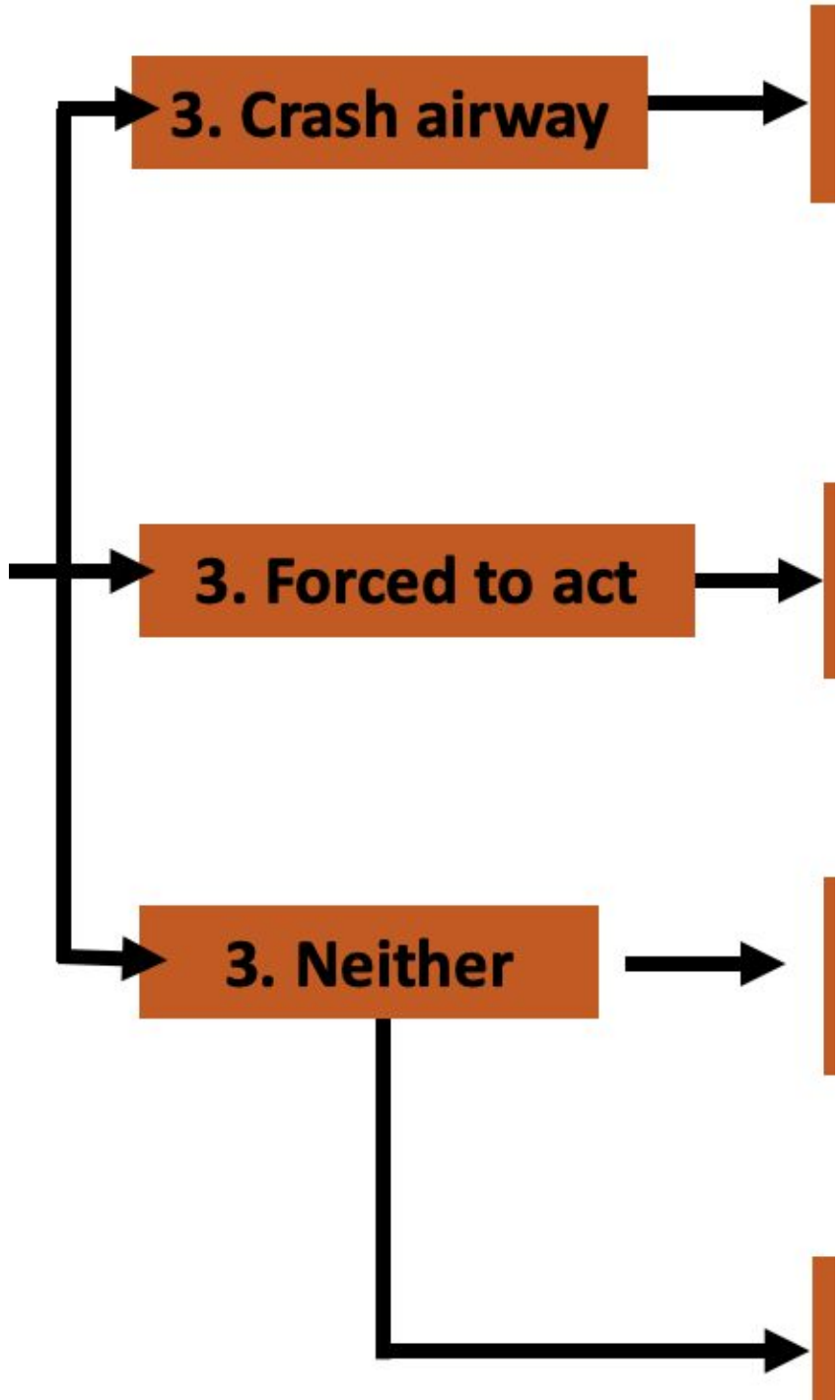
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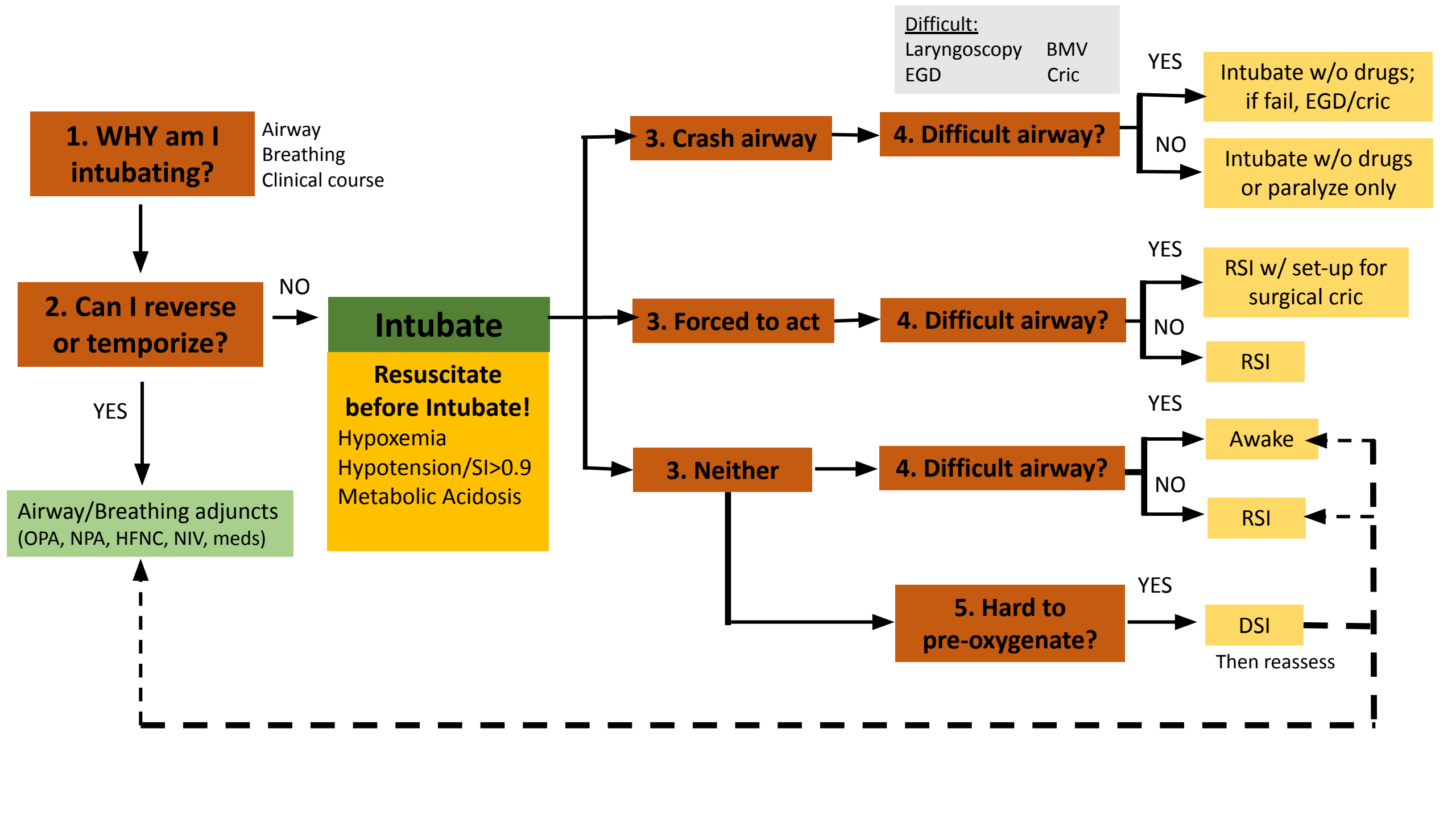
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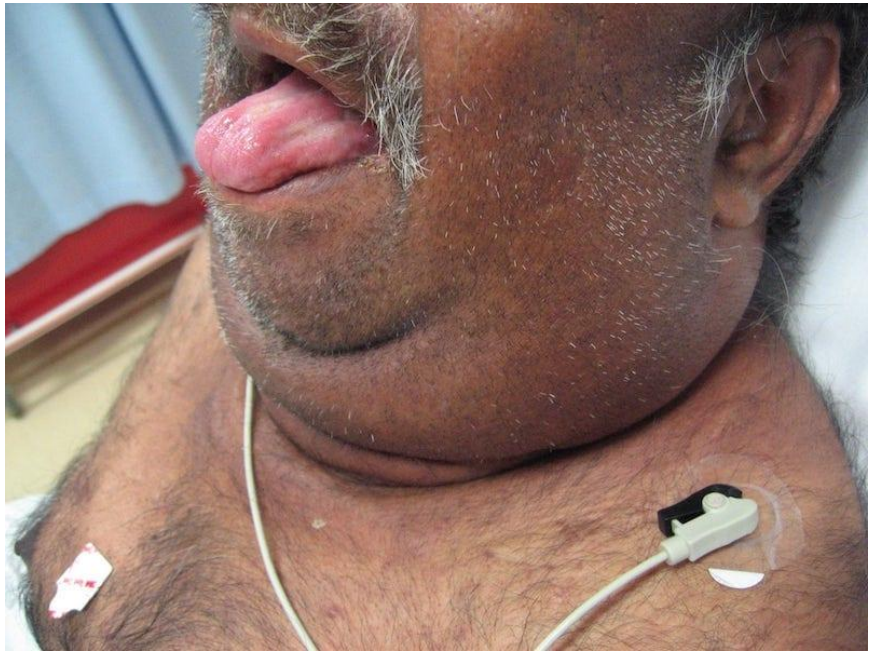


Case 3

62y/o, difficulty swallowing

Diagnosed with a ”tooth infection” 4 days ago and started on amoxicillin.

To ED due to progressive swelling of the chin and dysphagia x 1 day.

GCS 15

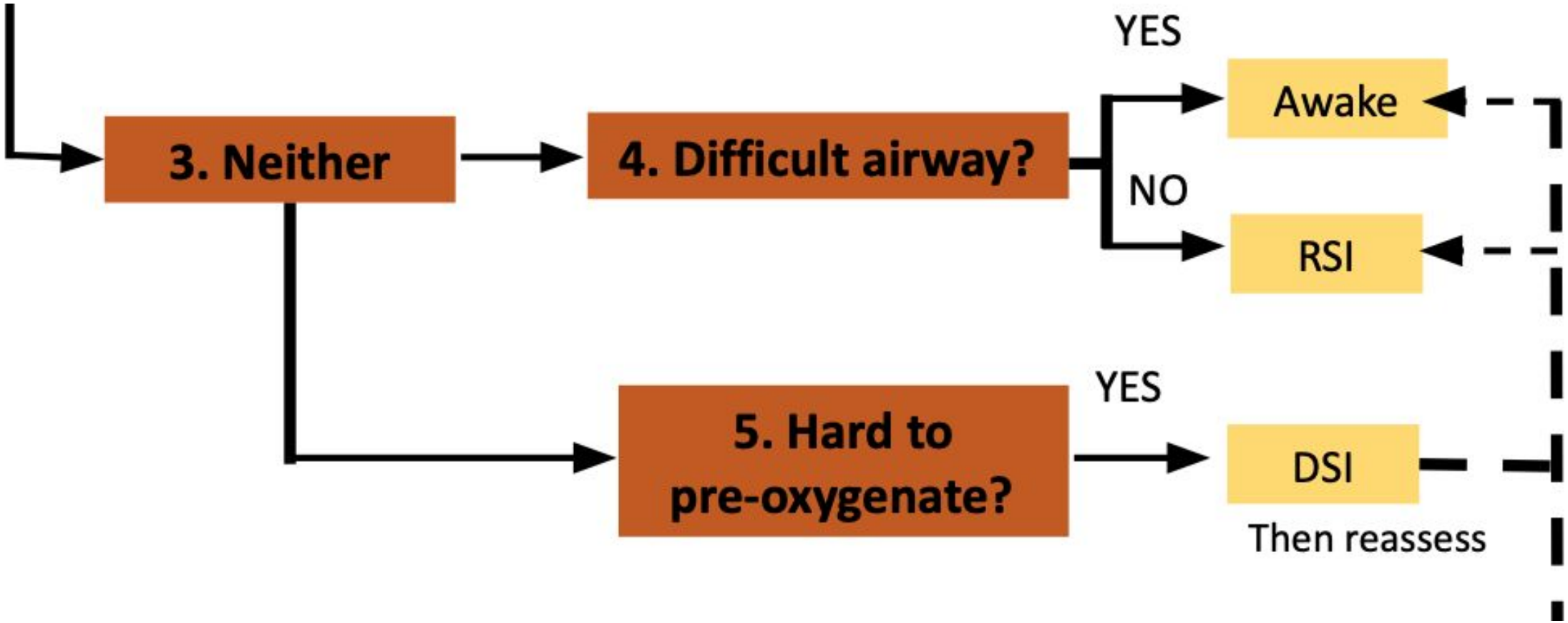
Spitting

T 38.2

HR 105

BP 150/75

SpO2 96% (room air)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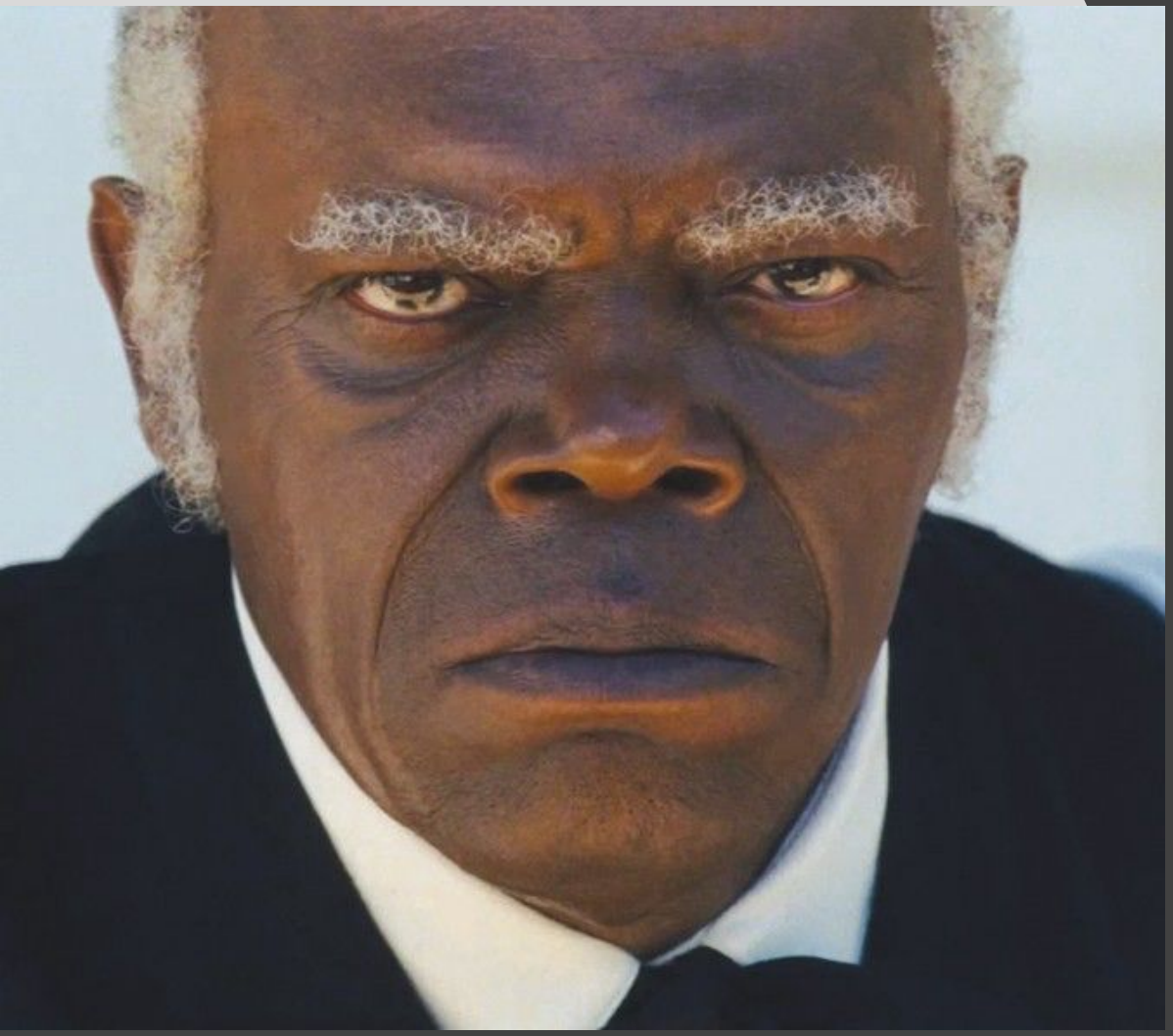


Case 4

72y/o with alcohol use disorder.

Fell down 2 flights of stairs after drinking lots of tej.

Hematoma to the right parietal scalp, multiple bruises to torso.

Combative in ED, ripping off nasal cannula and trying to pull out IV.

GCS 13

HR 145

BP 190/85

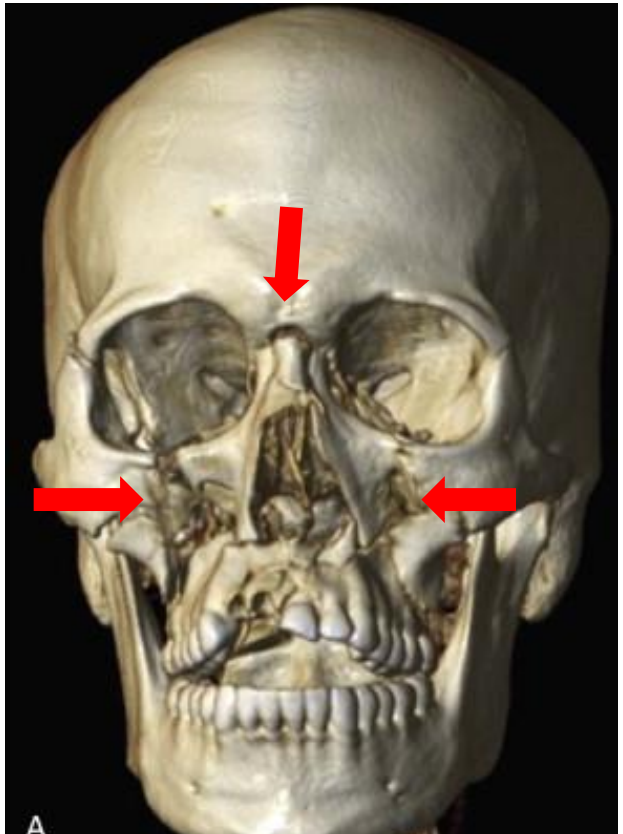
SpO2 - unable to obtain

Continued agitation 30 min after haloperidol 20mg IM and lorazepam 4mg IM

Case 5a

24y/o hit in the face with a club 30min ago

GCS 15, cooperative
BP 172/90
HR 120
SpO2 94% (room air)
RR 24
Speaking in full sentences



Case 5b

24y/o hit in the face with a club 30min ago

GCS 14, agitated
BP 172/90
HR 120
SpO2 92% (room air)
RR 28
Gurgling and spitting up blood

Case 6

45y/o w/ witnessed arrest at hospital entrance.

To ED, non-shockable rhythm, ongoing CPR.

Trouble with BMV.

Back to ABC's…

Plan A

Plan B

Plan C

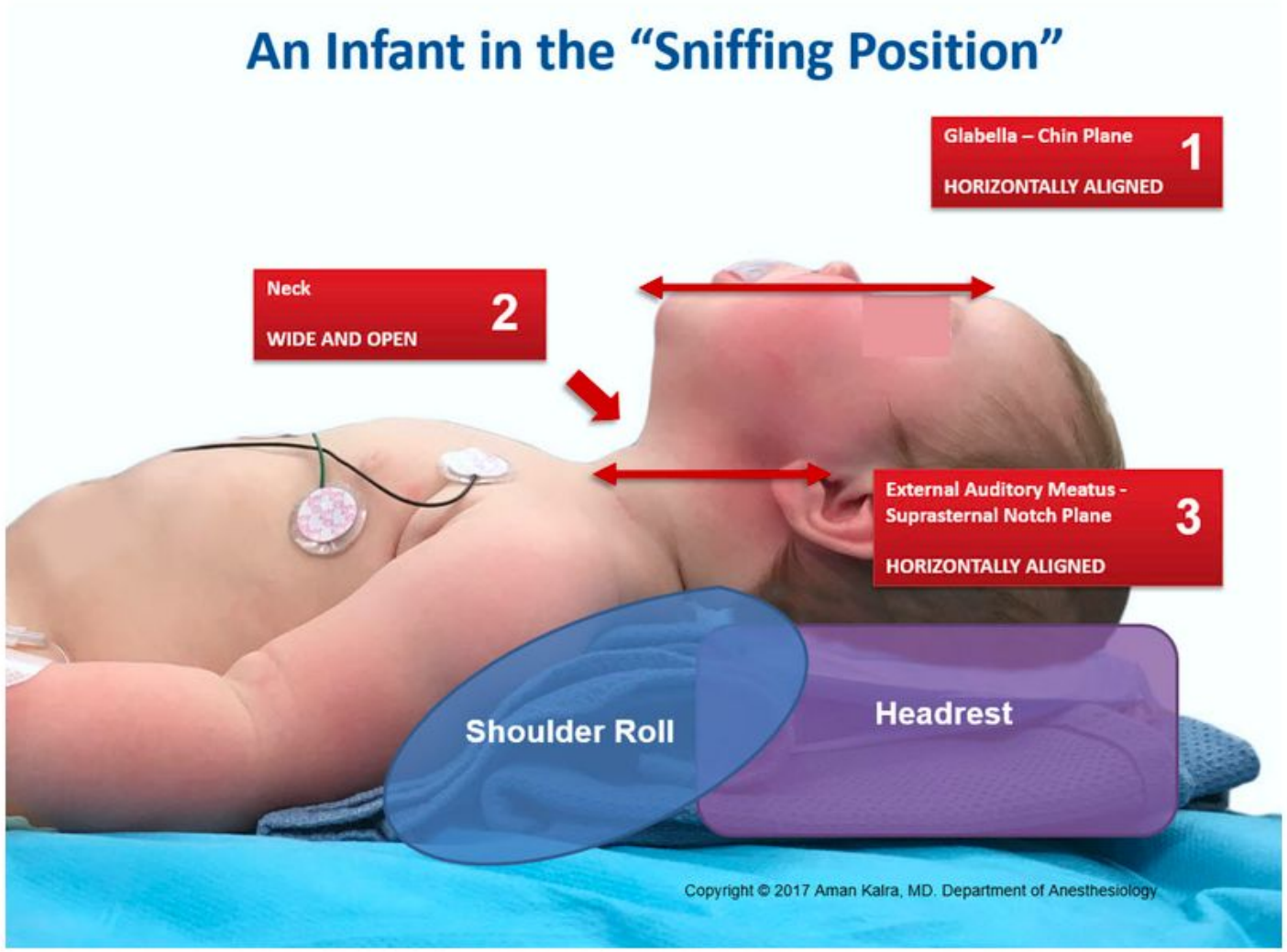
Pediatric Considerations

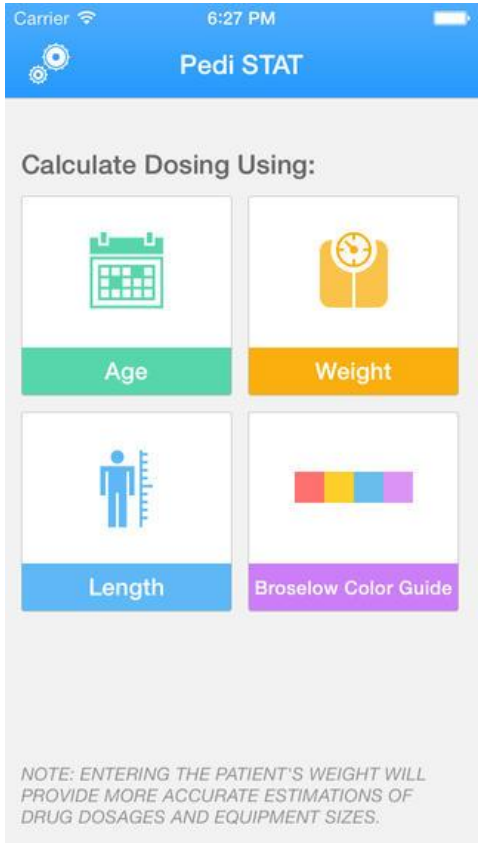
Positioning

Proportions

Pulse

Positioning





Proportions

Pulse

- Consider for <1y/o
- Atropine 0.02mg/kg IV (max 1mg)