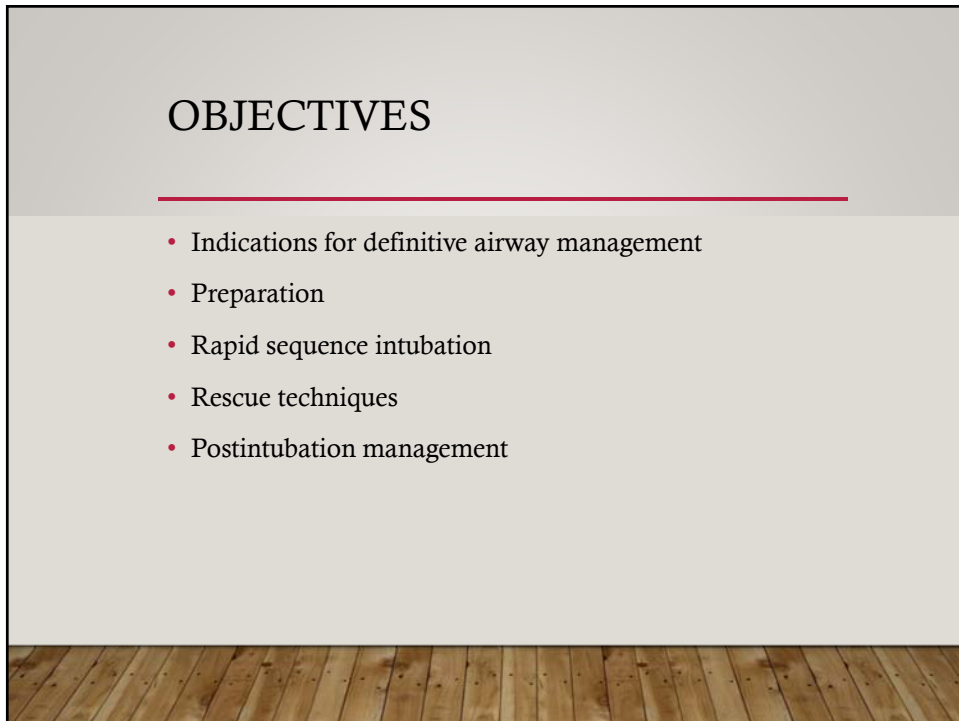


1



2

## THINK BACK TO YOUR LAST PATIENT WHO REQUIRED AIRWAY MANAGEMENT...

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What did you do? What worked? What problems did you encounter and how did you manage them?

3

## INDICATIONS FOR DEFINITIVE AIRWAY MANAGEMENT

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- Obtain or maintain the airway (obstruction)
- Protect the airway (gag reflex, ability to cough and swallow, GCS)
- Correct abnormalities of gas exchange – ventilation or oxygenation (clinical)
- Secure the airway in the face of predicted clinical decline

4

## PREPARATION

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- Your first shot is your best shot
- Prediction
- Personnel
- Equipment
- Position
- Preoxygenation
- IV access
- Drugs

5

## PREDICTING THE DIFFICULT AIRWAY

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“BOOTS” – predictor difficult BMV and potentially airway

- Beard – gel
- Obesity
- Older
- Toothless – “gather” cheek, 2 people
- Sounds – snoring, stridor
- Inability to maintain O2 saturations >90% with BMV

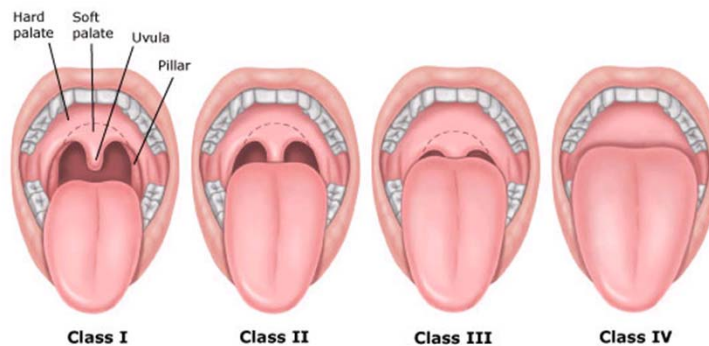
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## DIFFICULT INTUBATION

- LEMONS validated
- L- Look – abnormal face, trauma, unusual anatomy
- Evaluate – 3-3-2 rule (3 finger mouth opening, fingers along the floor of the mandible, 2 fingers between the space between the superior notch of the thyroid cartilage, and neck/mandible junction)
- Mallampati score – I-IV, relates mouth opening to size of tongue
- Obstruction/obesity – tumour, infection
- Neck mobility

7

### The Mallampati classification for difficult laryngoscopy and intubation



The Mallampati classification is a simple scoring system that relates the amount of mouth opening to the size of the tongue, and provides an estimate of space available for oral intubation by direct laryngoscopy. According to the Mallampati scale, class one is present when the soft palate, uvula, and pillars are visible, class two when the soft palate and base of the uvula are visible, class three when only the soft palate is visible, and class four when only the hard palate is visible.

UpToDate

8

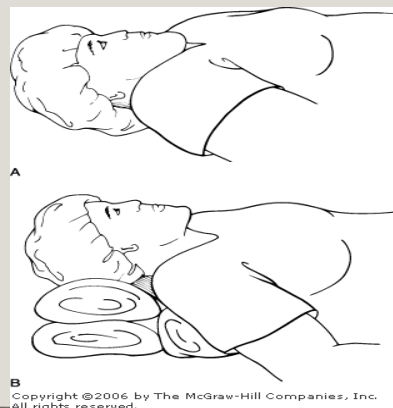
## EQUIPMENT

- STOP IC BARS
- Suction – rigid, close, on
- Tubes – female 7, male 8 with a size above and below, cuff
- Oxygen – and positive pressure
- Pharmacology – intubation, sedation and hypotension
- IV access – large, two
- Connect and confirm – to monitors and ETCO<sub>2</sub>
- Blades and Bougie - #3 and 4, (checking light) Bougie on chest
- Alternative intubation device – glideoscope,
- Rescue – LMA, Combitube
- Surgical

9

## POSITIONING

- North – close to end of bed
- Up-down – patient head at physician navel
- Sniff – ear to sternum



10

## RAPID SEQUENCE INTUBATION

---

- Technique used to minimize the risk of aspiration in patients assumed to have a full stomach
- Rapid administration of sedation followed by a neuromuscular blocking agent

- How to do it:
  - Preparation
  - Pre-oxygenation – 3-5 minutes of 100%
  - Induction and paralysis
  - Cricoid pressure – out of favor
  - Postintubation

11

### RAPID SEQUENCE INDUCTION CHECKLIST

PATIENT

➔

EQUIPMENT

➔

TEAM

➔

HAVE A PLAN

- **pre-oxygenate**
- 3min >15L/min O<sub>2</sub>
- NIV if obese/OSA or SpO<sub>2</sub> <95% despite O<sub>2</sub>
- **position**
- 'ear to sternal notch –'RAMP' if obese
- **IF DIFFICULT AIRWAY ANTICIPATED CALL ANAESTHETIST IN CHARGE (ext: \_\_\_\_\_)**
- upper airway obstruction/trauma
- morbidly obese/OSA
- c-spine immobilisation

- **"SOAPME"**
- Suction
- Oxygen
- Bag-Valve Mask
- Airway equipment
- 2 laryngoscopes
- 2 ETTs
- bougie +/- stylet
- Pharmacological agents
- pretreatment
- induction agent
- paralytic agent
- ongoing anaesthesia
- fluids
- vasoconstrictors
- Monitoring Equipment
- ETCO<sub>2</sub>
- SpO<sub>2</sub>
- ECG monitoring
- NIBP

- **team leader**
- consultant if available
- **airway doc**
- must have anaesthetic experience
- **airway nurse**
- **drugs**
- JMO/nurse
- **scribe & timer**
- nurse
- cricoid pressure
- optional JMO/nurse
- **IF DIFFICULT AIRWAY ANTICIPATED CALL ANAESTHETIST IN CHARGE (ext: \_\_\_\_\_)**

- If you fail
- see **default strategy for failed RSI algorithm** and let your team know if you are doing something different
- If you succeed
- see **Oxylog 3000 plus ventilator guideline**

modified from www.safetyintubation.com

12

**Rapid Sequence Intubation**

**Prepare equipment** (IV, ECG, oximeter, BVM, suction, ETT)

↓

**C-Spine Immobilization** p.r.n.

↓

**Preoxygenate with 100% O<sub>2</sub>**

↓

**Give Sedative:**

- Midazolam 0.1–0.3 mg/kg IV or
- Thiopental 1–3 mg/kg IV or
- Ketamine 1–2 mg/kg IV or
- Etomidate 0.3 mg/kg IV or
- Diazepam 0.2 mg/kg IV (max. 20 mg)

↓

If Pt. <2 y.o., give **Atropine 0.02 mg/kg IV** (blocks reflex bradycardia)

↓

**Give Succinylcholine 1–1.5 mg/kg IV, or: Rocuronium 0.6–1.2 mg/kg IV, or: Vecuronium 0.1 mg/kg IV**

↓

**Intubate** (apply cricoid pressure p.r.n.)

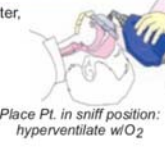
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NCLEXQuiz.com

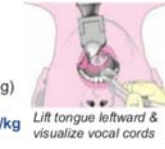
**Inflate Cuff;**

**Verify Tube Placement:**

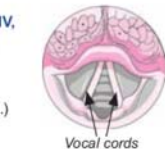
- Check Chest Expansion
- Check Lung Sounds
- Fogging of tube
- Apply CO<sub>2</sub> Detector
- Secure with ETT holder & C-collar




Place Pt. in sniff position: hyperventilate w/O<sub>2</sub>



Lift tongue leftward & visualize vocal cords



Vocal cords



Insert ETT; inflate cuff; check breath sounds

13

## DELAYED SEQUENCE INTUBATION

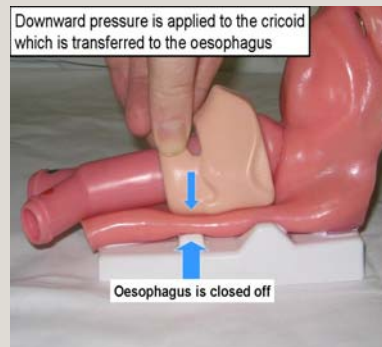
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- Essentially using procedural sedation where your procedure is pre-oxygenation
- Uses dissociative agent (ketamine) to preserve drive and airway reflexes
- Can be used with oxygen and PPV
- 3-5min and then intubation

14

## CRICOID PRESSURE

- To occlude the esophagus
- Locate prior to application of full pressure
- We may not be great at this



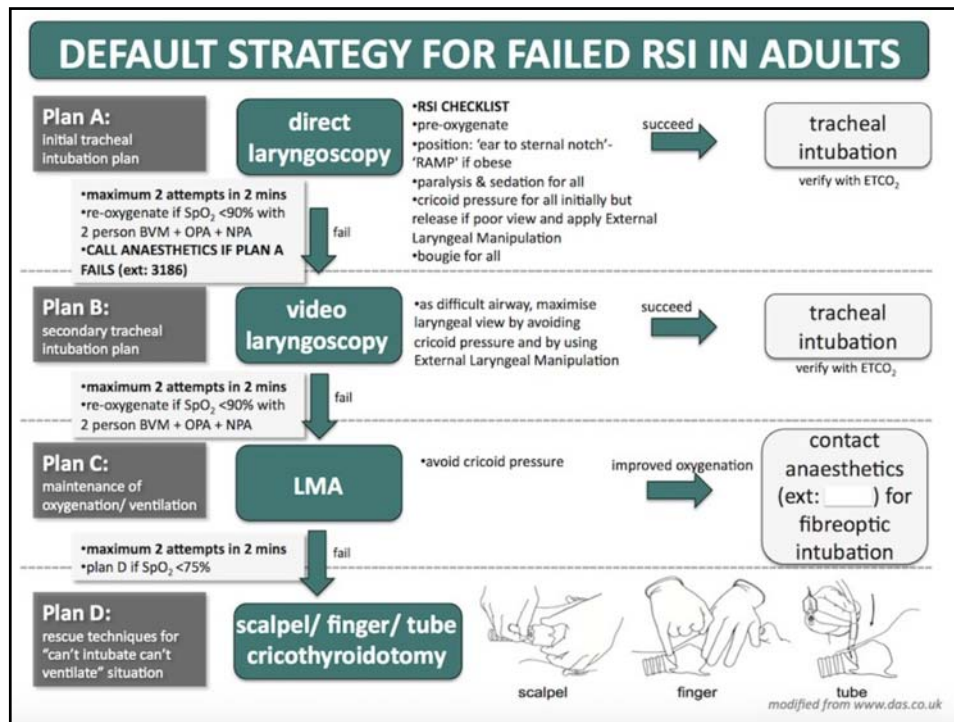
15

## MEDICATIONS

- Induction sedative hypnotics – propofol, ketamine, etomidate
- Use caution in the elderly, severe shock
- Paralytics
- Succinylcholine – 1-2mg/kg, onset less than 1 minute, lasts 3-4 min
- Contraindication – hyperkalemia, major crush, burns, spinal cord injuries, malignant hyperthermia
- Rocuronium - 1mg/kg, onset 1-1.5 min, lasts 45-80 minutes

16



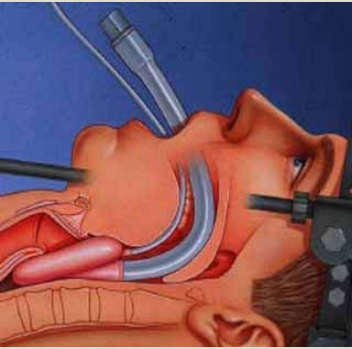


17

## RESCUE DEVICES

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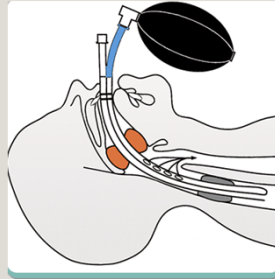
- LMA – head extended, forefinger on tip, along hard palate, inflate
- Trouble-shoot – partially inflated, side approach, laryngoscope guided
- Combitube – occludes esophagus, blind



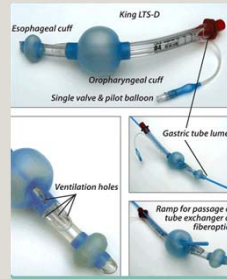
18

## MORE RESCUE DEVICES..

### COMBITUBE



### KING



19

## POST-INTUBATION

- Confirmation of placement (and documentation)
- ETT depth and secure tube
- Blood pressure recheck
- Post-intubation sedation – BZDs, propofol (no analgesia)
- Analgesia – Fentanyl (0.5-2.0mcg/kg q 20-30min or Morphine 0.25-0.1mg/kg q 20-30min)
- Most times control can be maintained without the use of paralytics
- However, you may also use rocuronium (0.6mg/kg load, 0.1-0.2mg/kg q20-30)
- No sedation, no analgesia, no amnestic properties

20

| MEDICATIONS FOR AIRWAY MANAGEMENT             |                          |   |                  |                                      |                       |   |
|---|--------------------------|---|------------------|--------------------------------------|-----------------------|---|
| Patient Weight = _____ Kg                     |                          |   |                  |                                      |                       |   |
| INTUBATION                                    |                          |   |                  | POST-INTUBATION                      |                       |   |
| MEDICATIONS                                   | Concentration            | Typical Dose                                | DOSE             | 70Kg                                 | UNDILUTED # mL needed |   |
| PREMEDICATION                                 |                          |   |                  |                                      |                       |   |
| Fentanyl                                      | 50 mcg/mL                | 0.5 - 2 mcg/Kg                              |                  | varies                               | 10mL                  |   |
| Midazolam                                     | 1 mg/mL                  | 0.025 - 0.05 mg/Kg                          |                  | varies                               | 10mL                  |   |
| Lidocaine                                     | 20 mg/mL                 | 1.5 mg/Kg                                   |                  | 100mg (10mL)                         | 20mL                  |   |
| Atropine                                      | 0.1 mg/mL                | 0.02 mg/Kg                                  |                  | n/a                                  | 10 mL                 |   |
| DELAYED SEQUENCE INTUBATION                   |                          |   |                  |                                      |                       |   |
| Ketamine                                      | 10mg/mL                  | 1 mg/Kg +/- 0.5mg/Kg q5min PRN slow IV push |                  | 70mg (7mL)                           | 20 mL                 |   |
| INDUCTION                                     |                          |   |                  |                                      |                       |   |
| Ketamine                                      | 10 mg/mL                 | 2 mg/Kg                                     |                  | 140mg (14mL)                         | 20 mL                 |   |
| Propofol                                      | 10 mg/mL                 | 1 - 2 mg/Kg                                 |                  | 100mg (10mL)                         | 20 mL                 |   |
| PARALYSIS                                     |                          |   |                  |                                      |                       |   |
| Rocuronium                                    | 10 mg/mL                 | 1.2 mg/Kg                                   |                  | 80mg (8mL)                           | 20 mL                 |   |
| ANALGESIA = the priority!                     |                          |   |                  |                                      |                       |   |
| Fentanyl                                      | 50 mcg/mL                | 1 mcg/kg                                    |                  | 0.5 - 1 mcg/kg/hr                    |                       | Repeat 1/2 bolus q5min PRN; if more than 2 boluses needed then increase infusion by 25% |
| Morphine                                      | 1 mg/mL                  | 0.07 mg/kg                                  |                  | 0.07 mg/kg/hr                        |                       |   |
| SEDATION                                      |                          |   |                  |                                      |                       |   |
| Ketamine                                      | 10 mg/mL                 | 0.5 - 1 mg/kg                               |                  | 0.1 - 0.5 mg/kg/hr                   |                       | Repeat 1/2 bolus q5min PRN; if more than 2 boluses needed then increase infusion by 25% |
| Propofol                                      | 10 mg/mL                 | 0.5 - 1 mg/kg                               |                  | start 20 mcg/Kg/min. (5 - 100 range) |                       |   |
| Midazolam                                     | 1 mg/mL                  | 0.05 - 0.1 mg/Kg                            |                  | 0.02 - 0.1 mg/Kg/hr                  |                       | Use sparingly as increases risk of delirium   |
| BLOOD PRESSURE MANAGEMENT (aim for MAP of 65) |                          |   |                  |                                      |                       |   |
| PUSH-DOSE PRESSOR                             |                          |   |                  |                                      |                       |   |
| Phenylephrine                                 | 10mg/mL                  | 1mL added to 100mL NS = 100mcg/mL           |                  | 50-200mcg (0.5-2mL) q1-2min          |                       |   |
| Epinephrine                                   | 1:10,000 (in crash cart) | 1mL added to 9mL NS shake well              |                  | 5 - 10ug (0.5-1 mL) q2-5 min         |                       |   |
| PRESSOR INFUSION                              |                          |   |                  |                                      |                       |   |
| Norepinephrine                                | 4 mcg/mL                 | start 2-4 mcg/min                           |                  | titrate by 1 ug/min q5min            |                       |   |
| Date: _____                                   | MD: _____                |   | Signature: _____ |                                      |                       |   |

21

QUESTIONS?

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22