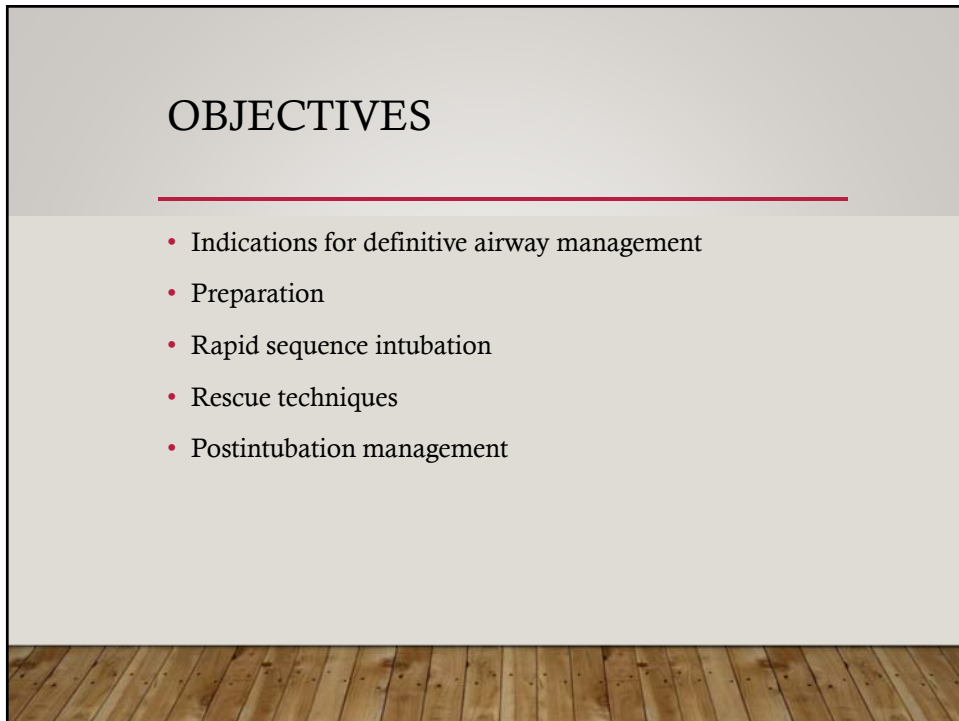


1



2

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

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

3

INDICATIONS FOR DEFINITIVE AIRWAY MANAGEMENT

- 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

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

5

PREDICTING THE DIFFICULT AIRWAY

“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

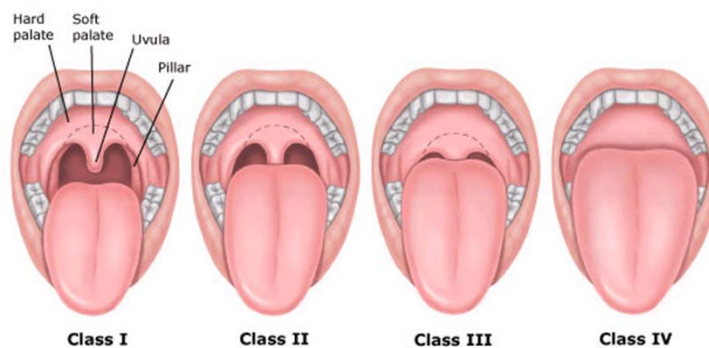
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DIFFICULT INTUBATION

- 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

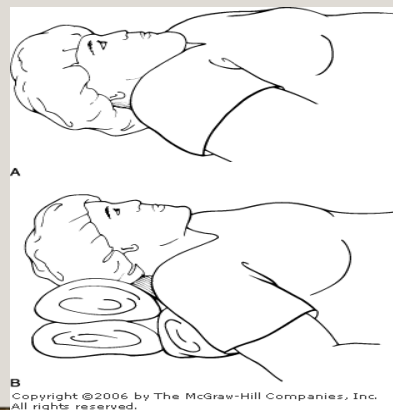
EQUIPMENT

- 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 ETCO₂
- Blades and Bougie - #3 and 4, (checking light) Bougie on chest
- Alternative intubation device – glidescope,
- 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

- pre-oxygenate
 - 3min >15L/min O₂
 - NIV if obese/OSA or SpO₂ <95% despite O₂
- 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

EQUIPMENT

- "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
 - ETCO₂
 - SpO₂
 - ECG monitoring
 - NIBP

TEAM

- 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:)

HAVE A PLAN

- 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

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Rapid Sequence Intubation

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

↓

C-Spine Immobilization p.r.n.

↓

Preoxygenate with 100% O₂

↓

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.)


↓

NCLEXQuiz.com


Inflate Cuff;

Verify Tube Placement:


- Check Chest Expansion
- Check Lung Sounds
- Fogging of tube
- Apply CO₂ Detector
- Secure with ETT holder & C-collar




Place Pt. in sniff position:
hyperventilate w/O₂



Lift tongue leftward &
visualize vocal cords



Vocal cords



Insert ETT; inflate cuff;
check breath sounds

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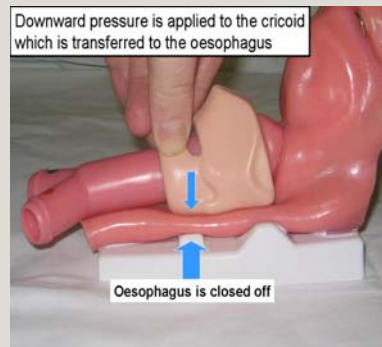
DELAYED SEQUENCE INTUBATION

- 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

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CRICOID PRESSURE

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

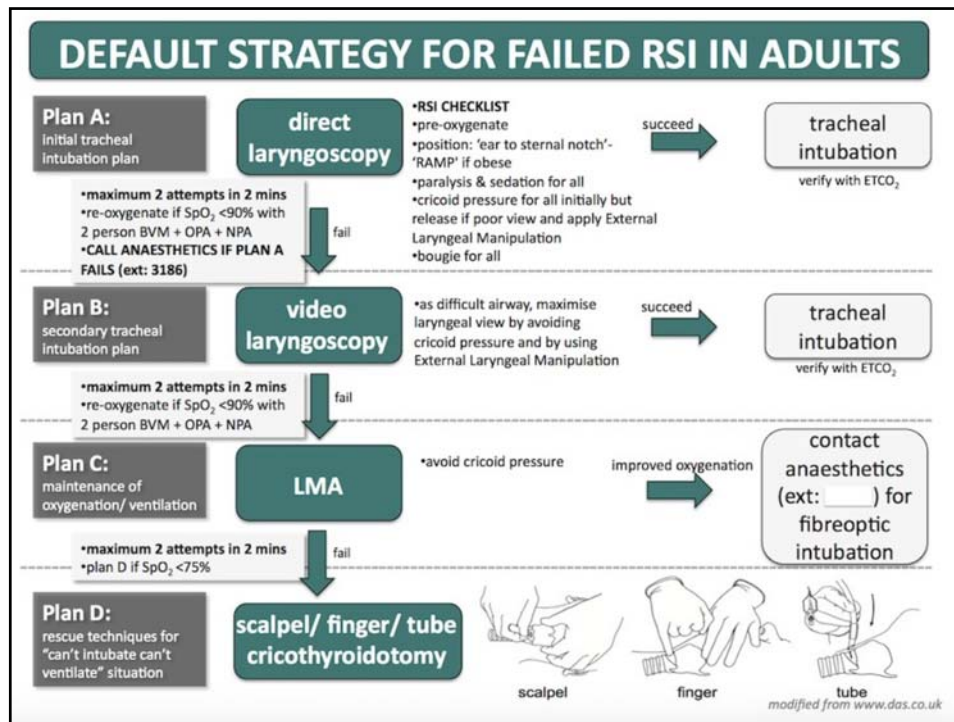


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MEDICATIONS

- 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

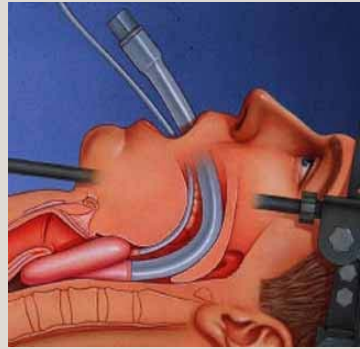
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RESCUE DEVICES

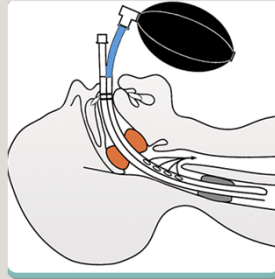
- LMA – head extended, forefinger on tip, along hard palate, inflate
- Trouble-shoot – partially inflated, side approach, laryngoscope guided
- Combitube – occludes esophagus, blind



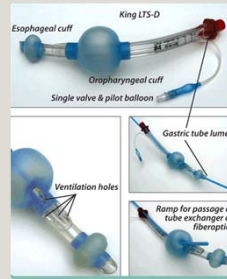
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MORE RESCUE DEVICES..

COMBITUBE



KING



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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 amnesic properties

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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: _____		

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QUESTIONS?

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