

# FACEM Exam - Airway Approach

## Emergency Department Airway Scenarios

### Approach to an Airway Question

- What are the Key Issues? Establish and state clearly at an early stage whether the Airway Emergency is Critical (Urgent, Semi-urgent) or Immediately Life Threatening
- Use the following Memory Aids for Airway Assessment:

#### Difficult BVM (MOANS)

- Mask Seal (Especially Facial Hair and Trauma)
- Obese
- Advanced Age
- No Teeth
- Stiff

#### Difficult Tube (LEMONS)

- Look
- Evaluate "3,3,2"
- Mallampati
- Obstruction
- Neck
- Situation

#### Difficult Cricothyroidotomy (SHORT)

- Surgery
- Haematoma
- Obesity
- Radiation
- Trauma

- In the Exam it is rarely safe to do an RSI. You need to consider the other options such as 'awake' intubation in theatre. In these circumstances ENT support should always be seen as a key priority.
- What are the alternate plans for a failed airway (algorithmic approach)?
- State your plan for a failed airway.

### RSI – The Airway Template

- Prepare and Planning (RSI is often NOT the preferred option in Scenarios presented in the exam)
  - Identify Difficulty, Prepare, People (Staff), Equipment, Area, Department (rest of Dept.)
  - Send for assistance
  - Attach full non-invasive monitoring
  - Draw up Drugs and justify choice (i.e. Ketamine, Thiopentone etc)
- Pre-oxygenate
  - A key phase – 6 Tidal Breaths on Non Re-breather or 3-5 minutes breathing High Flow O<sub>2</sub>
- Position the Patient (e.g. Ramping and Reverse Trendelenberg for Obese Patients)
- Pre-medication
- Paralysis and Induction Agent
- Placement
- Proof of Placement
- Post-intubation Care

## The Obese Airway

- High Risk patients (high risk of failure and complications)
- Needs optimum positioning
- Consider the use a 'Ramping' Technique to Improve Position
- Place the Patient in Reverse Trendelenberg
- Optimise Pre-oxygenation
  - >3mins O<sub>2</sub> by tight fitting mask with Non Re-breather Reservoir
  - Nasal Prongs (High Flow), CPAP, BVM with PEEP Valve
  - Position
- Drugs
  - Use the IDEAL body weight for most drugs (exceptions include Suxamethonium and Fentanyl for both of which Total Body Weight should be used in calculating dose)
- Ventilator Settings – in the post intubation management Tidal Volume should be based on the patients ideal body weight (i.e. 6-8ml/kg), lung protective strategy and plateau pressure.

## The Pregnant Airway

- High Risk
  - Pregnancy confers a ten times increased risk of a failed airway
- Needs optimum positioning and preparation for ETT placement where intubation is required
- Anatomical Changes
  - Large Breasts, Engorged/Friable Tissues around the Airway (increased bleeding). Typically higher Cormack-Lehane views due to increased airway Oedema.
  - Difficult Bag Valve Mask Ventilation
- Physiological Changes
  - Marked Desaturation can occur rapidly
  - Increased Oxygen Consumption, Increased Minute Volume, Decreased FRC and TV.
  - Reduced LOS Tone, Increased Aspiration Risk, Reduced Gastric Emptying, GORD
  - Increased Circulating Volume/Plasma Volume, Anaemia, Reduced BP and Peripheral Resistance. Pre-medication drugs that reduced BP should be avoided due to decreased perfusion of the Placenta in low flow states
- Always need to be placed (in the third trimester) in the left lateral position to avoid Aorto-caval Compression Syndrome.

## The Paediatric Airway

- Generally able to Intubate most children in the ED but significant differences in anatomy and physiology make the Paediatric airway challenging
- Physiology
  - Increase in chest wall compliance and reduction in lung compliance due to smaller numbers of alveoli. This promotes collapse and lower residual volumes. This combination of factors leads to rapid desaturation and a reduced FRC
  - Increased vagal tone makes bradycardia and hypotension common post induction. Cardiovascular stability is dependent on heart rate (LV stroke volume is fixed)
- Anatomy
  - Cricothyroidotomy is not indicated in children less than 10
  - The narrowest part of the airway is at the cricoid cartilage in children less than 5
  - Large Occiput, Large Tongue and Large Epiglottis (generally they are nose breathers)
  - Larynx is often Anterior and 'BURP' application may help
- Cuffed Tubes are probably okay in most children and are increasingly used

## The Difficult Intubation

- Predictors include the 'LEMONS' law (see page 12)
- RSI may be necessary but semi-urgent patients should be considered for awake intubation, transfer to theatre and referrals to ENT and Anaesthetics.
- Recent literature from the NAP4 Study (<http://www.rcoa.ac.uk/nap4>) has shown familiar patterns in the Management of the Difficult Airway:
- This large audit showed evidence of:
  - Failed Airway rates in the ICU and ED are higher than in the Theatre setting
  - The mortality in these failures is higher
  - ETCO<sub>2</sub> with Waveform Capnography is essential to avoid unrecognised Oesophageal Intubation and recognise ETT displacement
  - Where surgical airway is required then an open technique is more reliable and a decision to proceed must be made quickly
  - There is often a failure to plan for failure and juniors are often involved or called when there is a failed airway
  - Obesity is a major risk factor for a failed airway situation
- As in clinical practice, in the FACEM Exam it is pertinent to have a secondary plan and document or state this clearly in answering questions in the exam

# Airway Checklist

## AIRWAY ALGORITHM

- Is this intubation necessary?
- Is this a difficult airway?
- Is ED the most appropriate setting?
- Is external help needed?

ED SS: 58222  
 Anaes Pg: 8460  
 ICU Pg: 8620



## Intubation PLAN

### Prepare TEAM:

- Role delineation
- Extra staff (e.g. in-line immobilisation, laryngeal manipulation)
- Team Briefing

### Plan A:

Laryngoscopy:

- Direct
- Video
- Bougie

Other: (e.g. BURP)

Induction agent(s):

\_\_\_\_\_

Paralysis agent:

\_\_\_\_\_

**Plan B:** (e.g. LMA, rescue ventilation)

**Plan C:** (e.g. surgical airway)

## Intubation TIMEOUT

### PREPARE PATIENT

- Are intubation conditions optimal?
  - Position (pillow/towels, RAMPing)
  - Pre-oxygenation (airway adjuncts, NIV, apnoeic oxygenation)
  - Haemodynamics (fluids / vasopressors)
- Has the patient and/or family been informed?

### PREPARE DRUGS & EQUIPMENT

- Monitoring: NIBP (cycled), ECG, Sats, ETCO<sub>2</sub>
- Airway: ETTx2 (cuff checked), laryngoscope (lights checked), suction, bougie
- Alternative airways: Video laryngoscope turned on and checked, LMA available (size?)
- Ventilation: BVM, O<sub>2</sub> source (apnoeic oxygenation), ventilator settings
- Drugs:
  - Pre-intubation drugs (induction & paralysis) - selected, labeled and doses checked
  - Post-Intubation drugs (sedation & analgesia) - selected, labeled and doses checked
- Access: 2 patent lines, pump set runs freely

## Post-intubation CARE

- Post-intubation Checklist
- Airway Registry
- Medical Documentation