AIRWAY MANAGEMENT AND VENTILATION
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- Basic airway management and ventilation
- The laryngeal mask airway and Combitube
- Advanced techniques of airway management
- Basic mechanical ventilation
Basic airway management and ventilation

Objectives

• Causes of airway obstruction
• Recognition of airway obstruction
• Basic techniques for airway management
• Simple airway adjuncts
• Simple devices to ventilate the patient’s lungs
Common causes of airway obstruction

• Upper Airway
  – tongue
  – soft tissue oedema, foreign material
  – blood, vomit

• Larynx
  – laryngospasm, foreign material

• Lower Airway
  – secretions, oedema, blood
  – bronchospasm
  – aspiration of gastric contents
Recognition of airway obstruction

• **LOOK** for chest/abdominal movement

• **LISTEN** at mouth and nose for breath sounds, snoring, gurgling

• **FEEL** at mouth and nose for expired air
Opening the airway

- Head tilt
- Chin lift
- Jaw thrust

- CAUTION! – cervical spine injury
  - But, death from hypoxia is more common than from injury to the cervical spinal cord
Head Tilt and Chin Lift
Jaw Thrust
Suction
Simple airway adjuncts
Sizing an oropharyngeal airway
Oropharyngeal airway insertion
Nasopharyngeal airway insertion
Mouth to mask ventilation

Advantages:
• Avoids direct person to person contact
• Decreases potential for cross infection
• Allows oxygen enrichment

Limitations:
• Maintenance of airtight seal
• Gastric inflation
Bag-valve-mask, 2-person ventilation
Ventilation using self inflating bag

**Advantages**
- Avoids direct person to person contact
- Allows oxygen supplementation – up to 85%
- Can be used with facemask, LMA, Combitube, tracheal tube

**Limitations**
*When used with a facemask:*
- Risk of inadequate ventilation
- Risk of gastric inflation
- Need two persons for optimal use
The Laryngeal Mask Airway and Combitube

Objectives

To understand:

• The role of the LMA and Combitube during CPR
Advantages
• Rapidly and easily inserted
• Variety of sizes
• More efficient ventilation than facemask
• Avoids the need for laryngoscopy

Limitations
• No absolute guarantee against aspiration
• Not suitable if very high inflation pressures needed
• Unable to aspirate airway
LMA Insertion
The Combitube

**Advantages**
- Rapidly and easily inserted
- Avoids need for laryngoscopy
- Protects against aspiration
- Can be used if inflation pressures high

**Limitations**
- Available in 2 sizes only
- Potential for ventilation via wrong lumen
- Damage to cuffs on insertion
- Trauma on insertion
- Single use
Ventilation with the Combitube
Advanced techniques of airway management

Objectives

To understand:

• The advantages and limitations of tracheal intubation during CPR
• The technique of tracheal intubation
• Methods for confirming correct placement of a tracheal tube
• The role of needle cricothyroidotomy
Tracheal Intubation

Advantages

• Allows ventilation with up to 100% O₂
• Isolates airway, preventing aspiration
• Allows aspiration of the airway
• Alternative route for drug administration

Limitations

• Training and experience essential
• Failed insertion, oesophageal placement
• Potential to worsen cervical cord or head injury
Tracheal Intubation

Attempting intubation:

• Pre-oxygenate the patient
• Allow 30 seconds for attempt
• Insert tube through larynx under direct vision
• If in doubt or difficulty, re-oxygenate before further attempts

*Patients are harmed by failure of oxygenation, not failure of intubation!*
Insertion of Tracheal Tube
Confirming correct placement of a tracheal tube

- Direct visualisation at laryngoscopy
- Auscultation:
  - Bilaterally, mid-axillary line
  - Over the epigastrium
- Symmetrical movement of the chest during ventilation
- Oesophageal detector device
- Capnometry
Cricoid Pressure

- Anteroposterior pressure on cricoid cartilage by an assistant to occlude the oesophagus against cervical vertebra
Cricoid Pressure

Advantages
• Reduces risk of regurgitation and aspiration
• Useful during intubation, ventilation with facemask or LMA

Limitations
• May make intubation more difficult
• May impair ventilation via facemask, LMA
• Avoid if active vomiting
Needle Cricothyroidotomy

Indication
- Failure to provide an airway by any other means

Complications
- Malposition of cannula
  - Emphysema
  - Haemorrhage
  - Oesophageal perforation
- Hypoventilation
- Barotrauma
Any Questions?