

Management of Difficult Airway Scenarios

Difficult Bag and Mask Ventilation

- Optimise head position / chin lift / jaw thrust
- Try two person bag mask technique
- Use oral / nasal airway (avoid injuries / bleeding!)
- Insert NG/OG tube and use continuous gastric decompression with a 20 / 50 ml syringe
- If relaxant given: laryngoscopy to assess difficulty of intubation
- If cannot intubate and cannot ventilate go to **CICV scenario**
- See [APAGBI guideline for difficult mask ventilation](#) for more details

Anticipated Difficult Tracheal Intubation

- Abnormal anatomy: micrognathia / midface hypoplasia / macroglossia etc.
- History: difficult intubation / airway problems / stridor etc.
- Discuss with KIDS consultant / local paediatric anaesthetist / local ENT
- *Is intubation necessary?* (alternatives: high flow O₂, CPAP, NIV)
- Consider inhalational induction (discuss with KIDS consultant)
- Prepare team (ENT) / equipment / drugs (*sugammadex 16 mg/kg*)
- Prepare for rescue plan / **CICV scenario**
- See the [APAGBI guideline for difficult tracheal intubation](#) for more details

OXYGENATE first; use 100% O₂
CALL FOR HELP early
MOST EXPERIENCED operator
 No more than **4 ATTEMPTS** of laryngoscopy (airway oedema!)
 Prepare team / drugs / equipment for **WORST CASE SCENARIO**
 If intubation succeeds, follow the [routine process](#)

Unanticipated Difficult Tracheal Intubation

- Oxygenate first, use 100% O₂
- If unable to ventilate and SpO₂ < 90%, go to **CICV scenario**
- Call for help (local senior anaesthetist / local ENT / KIDS)
- NG/OG tube and use continuous gastric decompression
- Try alternative laryngoscope -blade / stylet / boogie / smaller ETT
- Try LMA (<3 attempts)
- Prepare team / equipment / drugs for **secondary intubation** (indirect laryngoscopy/fiberoscopy if equipment and expertise available)
- See the [APAGBI guideline for difficult intubation](#) for more details

Cannot Intubate Cannot Ventilate (CICV)

- Activate emergency airway call (including ENT) if available
- Use 100% O₂
- Try LMA / two person bag mask technique
- If SpO₂ > 80%: consider reversing muscle relaxation (*sugammadex 16 mg/kg if rocuronium / vecuronium used*)
- Prepare for surgical airway (ENT available) or
- Needle cricothyroidotomy (ENT not available)
- Prepare team / equipment / drugs to deliver CPR
- Follow the [APAGBI cannot intubate cannot ventilate guideline](#)

Difficult MV



Give 100% oxygen



Call for help

Step A Optimise head position

Consider:

- Adjusting chin lift/jaw thrust
- Inserting shoulder roll if <2 years
- Neutral head position if >2 years
- Adjusting cricoid pressure if used
- Ventilating using two person bag mask technique

Check equipment

Consider changing:

- Circuit
 - Mask
 - Connectors
- If equipment failure is suspected, change to self-inflating bag and isolate from anaesthetic machine promptly

Depth of anaesthesia

- Consider deepening anaesthesia
Use CPAP

Step B Insert oropharyngeal airway

Call for help again if not arrived

Assess for cause of difficult mask ventilation

- Light anaesthesia
- Laryngospasm
- Gastric distension – pass OG/NG tube

- Maintain anaesthesia/CPAP
Deepen anaesthesia (Propofol first line)
- If relaxant given – intubate
 - If intubation not successful, go to unanticipated difficult tracheal intubation algorithm

Step C Second-line: Insert SAD (e.g. LMA™)

- Insert SAD (e.g. LMA™) – **not > 3 attempts**
- Consider nasopharyngeal airway
- Release cricoid pressure

Good airway

Yes

Continue

SpO₂ >80%

- Consider:
- SAD (e.g. LMA™) malposition/blockage
 - Equipment malfunction
 - Bronchospasm
 - Pneumothorax

Wake up patient

No

SpO₂ <80%

- Attempt intubation
• Consider paralysis

Succeed

Proceed

Fail

Go to scenario cannot intubate cannot ventilate (CICV)

SAD = supraglottic airway device

Difficult direct laryngoscopy



Give 100% oxygen and maintain anaesthesia



Call for help

Step A Initial tracheal intubation plan when mask ventilation is satisfactory

Ensure: Oxygenation, anaesthesia, CPAP, management of gastric distension with OG/NG tube

Direct laryngoscopy – **not > 4 attempts**

Check:

- Neck flexion and head extension
- Laryngoscopy technique
- External laryngeal manipulation – remove or adjust
- Vocal cords open and immobile (adequate paralysis)

If poor view – consider bougie, straight blade laryngoscope* and/or smaller ETT

Succeed

Tracheal intubation

Verify ETT position

- Capnography
- Visual if possible
- Auscultation

If ETT too small consider using throat pack and tie to ETT

If in doubt, take ETT out

Failed intubation with good oxygenation

Step B Secondary tracheal intubation plan

Call for help again if not arrived

Insert SAD (e.g. LMA™) – **not > 3 attempts**

- Oxygenate and ventilate
- Consider increasing size of SAD (e.g. LMA™) once if ventilation inadequate

Succeed

- Consider modifying anaesthesia and surgery plan
- Assess safety of proceeding with surgery using a SAD (e.g. LMA™)

Unsafe

**Postpone surgery
Wake up patient**

Safe

Proceed with surgery

Safe

- Consider 1 attempt at FOI via SAD (e.g. LMA™)
- Verify intubation, leave SAD (e.g. LMA™) in place and proceed with surgery

Succeed

Failed oxygenation e.g. SpO₂ <90% with FiO₂ 1.0

Failed intubation via SAD (e.g. LMA™)

**Postpone surgery
Wake up patient**

- Convert to face mask
- Optimise head position
- Oxygenate and ventilate
- Ventilate using two person bag mask technique, CPAP and oro/nasopharyngeal airway
- Manage gastric distension with OG/NG tube
- Reverse non-depolarising relaxant

Succeed

Failed ventilation and oxygenation

Go to scenario cannot intubate cannot ventilate (CICV)

Following intubation attempts, consider • Trauma to the airway • Extubation in a controlled setting

*Consider using indirect laryngoscope if experienced in their use

SAD = supraglottic airway device

**Failed intubation
inadequate ventilation**



Give 100% oxygen



Call for help

Step A Continue to attempt oxygenation and ventilation

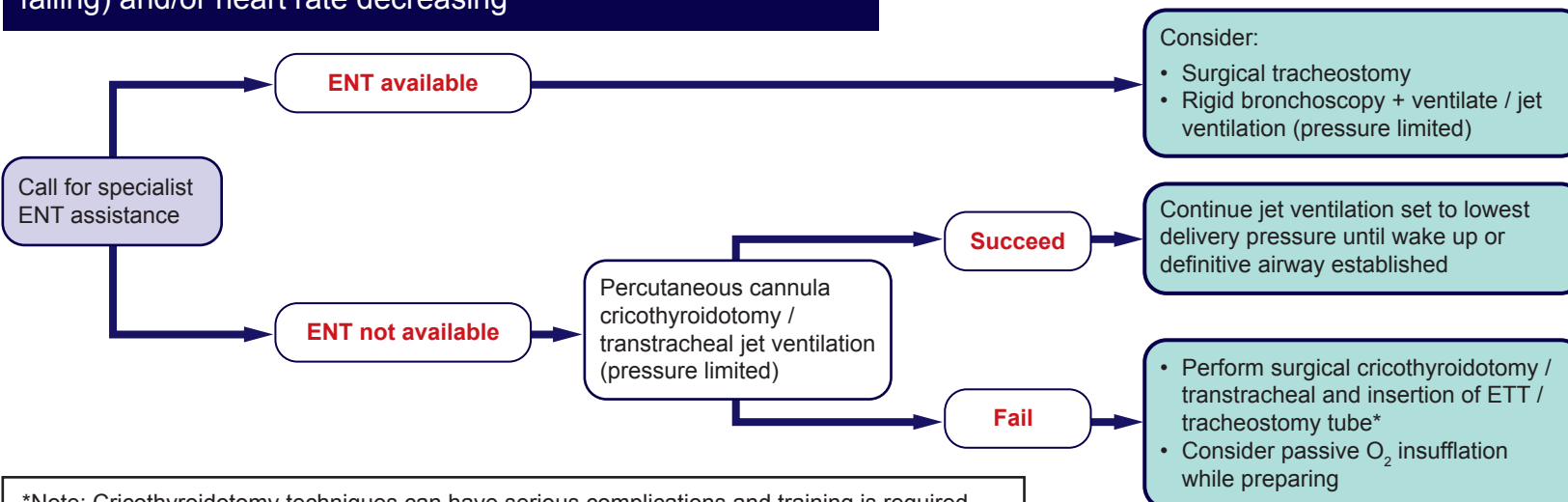
- FiO₂ 1.0
- Optimise head position and chin lift/jaw thrust
- Insert oropharyngeal airway or SAD (e.g. LMA™)
- Ventilate using two person bag mask technique
- Manage gastric distension with an OG/NG tube

Step B Attempt wake up if maintaining SpO₂ >80%

If rocuronium or vecuronium used, consider suggamadex (16mg/kg) for full reversal

Prepare for rescue techniques in case child deteriorates

Step C Airway rescue techniques for CICV (SpO₂ <80% and falling) and/or heart rate decreasing



Call for help again if not arrived

Cannula cricothyroidotomy

- Extend the neck (shoulder roll)
- Stabilise larynx with non-dominant hand
- Access the cricothyroidotomy membrane with a dedicated 14/16 gauge cannula
- Aim in a caudad direction
- Confirm position by air aspiration using a syringe with saline
- Connect to either:
 - adjustable pressure limiting device, set to lowest delivery pressure
- or
- 4Bar O₂ source with a flowmeter (match flow l/min to child's age) and Y connector
- Cautiously increase inflation pressure/flow rate to achieve adequate chest expansion. Wait for full expiration before next inflation
- Maintain upper airway patency to aid expiration

*Note: Cricothyroidotomy techniques can have serious complications and training is required – only use in life-threatening situations and convert to a definitive airway as soon as possible

SAD = supraglottic airway device