

Awake Tracheal Intubation

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Awake Tracheal intubation

Airway Topicalisation

Endoscopy skills

Awake Airway Management

- **Fibreoptic bronchoscope**
- **Videolaryngoscope**
- Direct Laryngoscope
- Fibreoptic Stylets
- Supraglottic airway
- Tracheostomy

Why airway complications?

- Poor assessment of risk
- Failure to plan for Failure
- Lack of institutional preparedness
- Failure to use awake tracheal intubation when indicated
- Multiple attempts at intubation leading can't intubate can't oxygenate

Awake Fibreoptic intubation (AFOI)

- 18 patients in whom AFOI might have offered advantages over intubation under general anaesthesia
- 15 reports where AFOI was attempted but unsuccessful due to associated complications
- Fibreoptic intubation was omitted when indicated

NAP4 recommendations

- Where Fibreoptic intubation is considered the optimal method of securing the airway, an awake technique should be considered unless contraindicated.

Guidelines

Difficult Airway Society guidelines for awake tracheal intubation (ATI) in adults

**I. Ahmad^{1,2} K. El-Boghdadly,^{1,2} R. Bhagrath,³ I. Hodzovic,^{4,5} A. F. McNarry,⁶ F. Mir,⁷
E. P. O'Sullivan,⁸ A. Patel,⁹ M. Stacey¹⁰ and D. Vaughan¹¹**

2011 → 2022

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Original Article

Analysis of a national difficult airway database

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Over 5 years 675 patients were reported

Table 3 Primary airway plan in anticipated difficult airway
(n = 391). Values are number (proportion).

391/675
= 58%

Primary airway plan

Direct laryngoscopy	171 (43.7%)
Videolaryngoscopy	136 (34.8%)
<u>Awake tracheal intubation</u>	<u>39 (9.9%)</u>
Supraglottic airway	25 (6.4%)
Flexible bronchoscopic intubation under anaesthesia	9 (2.3%)
Aintree exchange catheter	3 (0.8%)
Jet ventilation/apnoeic airway surgery	2 (0.5%)
Awake videolaryngoscopy	1 (0.3%)
Not clear	5 (1.3%)

Advantages of awake technique

- Maintains airway patency
- Spontaneous breathing
- Airway protection
- Easier intubation
- Cardiovascular stability
- Neurological monitoring

Awake Tracheal Intubation

- Awake FOI
- Awake Videolaryngoscopy
- Combined FOS & VL

Awake Tracheal Intubation

- Device selection/ skills
- Topicalisation

Advantages of flexible Fibrescope

- Flexibility
- Continuous visualization
- Less traumatic
- Can be used for oral and nasal intubation
- Can be used with other devices- via SAD or in combination with videolaryngoscope

Awake Videolaryngoscopy compared to FOI

	VL	FOS
Technical skill	Easy	Manual dexterity
Equipment set up	Easy	Complex
Procedure time	Shorter	Longer
Tube passage	Under vision	Blind
Tube size	Any	6 to 6.5

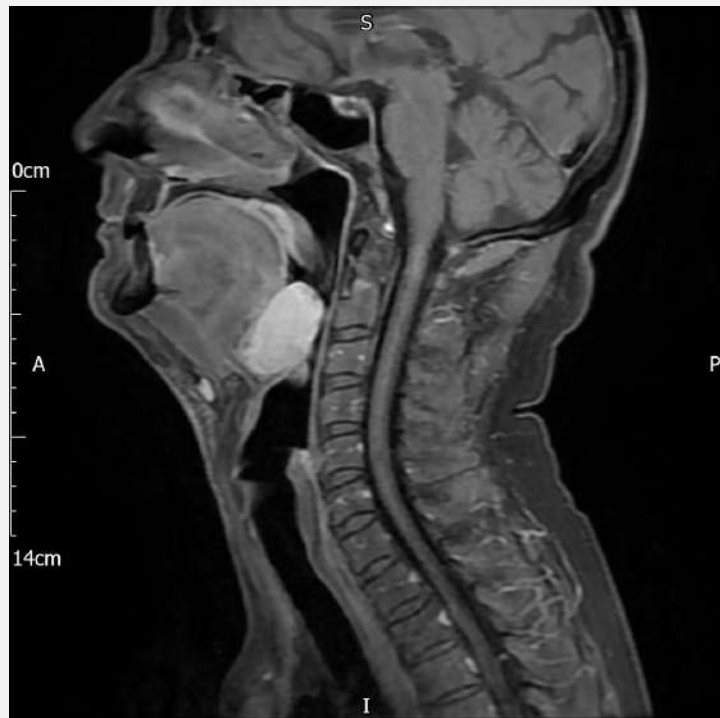
Airway devices for awake tracheal intubation in adults: a systematic review and network meta-analysis

Neel Desai^{1,2,*}, Gamunu Ratnayake¹, Desire N. Onwochei^{1,2}, Kariem El-Boghdadly^{1,2} and Imran Ahmad^{1,2}

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- 12 RCTs
- Intubation Time: Videostylets < Videolaryngoscopes < FOS
- No difference in first pass success rate
- They were clinically comparable for ATI



This is a clear indication for awake nasal fibreoptic

Causes of difficult airway

- Boney features

Endoscopy - easy

- Soft tissue pathology with no airway obstruction

Endoscopy- mild difficulty

- Soft tissue pathology with airway obstruction

Endoscopy moderate to severe difficulty

Awake Fibreoptic Intubation

- Patient preparation
- Equipment/ drugs preparation
- Oxygenation/ monitoring
- Local anaesthesia to upper airway & sedation
- Endoscopy and local anaesthesia to lower airway
- Railroad the tube
- Check the tube position: Two point confirmation
- Secure the tube
- Induce anaesthesia

Patient Preparation

- Airway assessment
- Explanation / leaflet
- Reason for awake technique, Safety aspects, sedation, local anaesthesia & complete sleep once tube position is confirmed

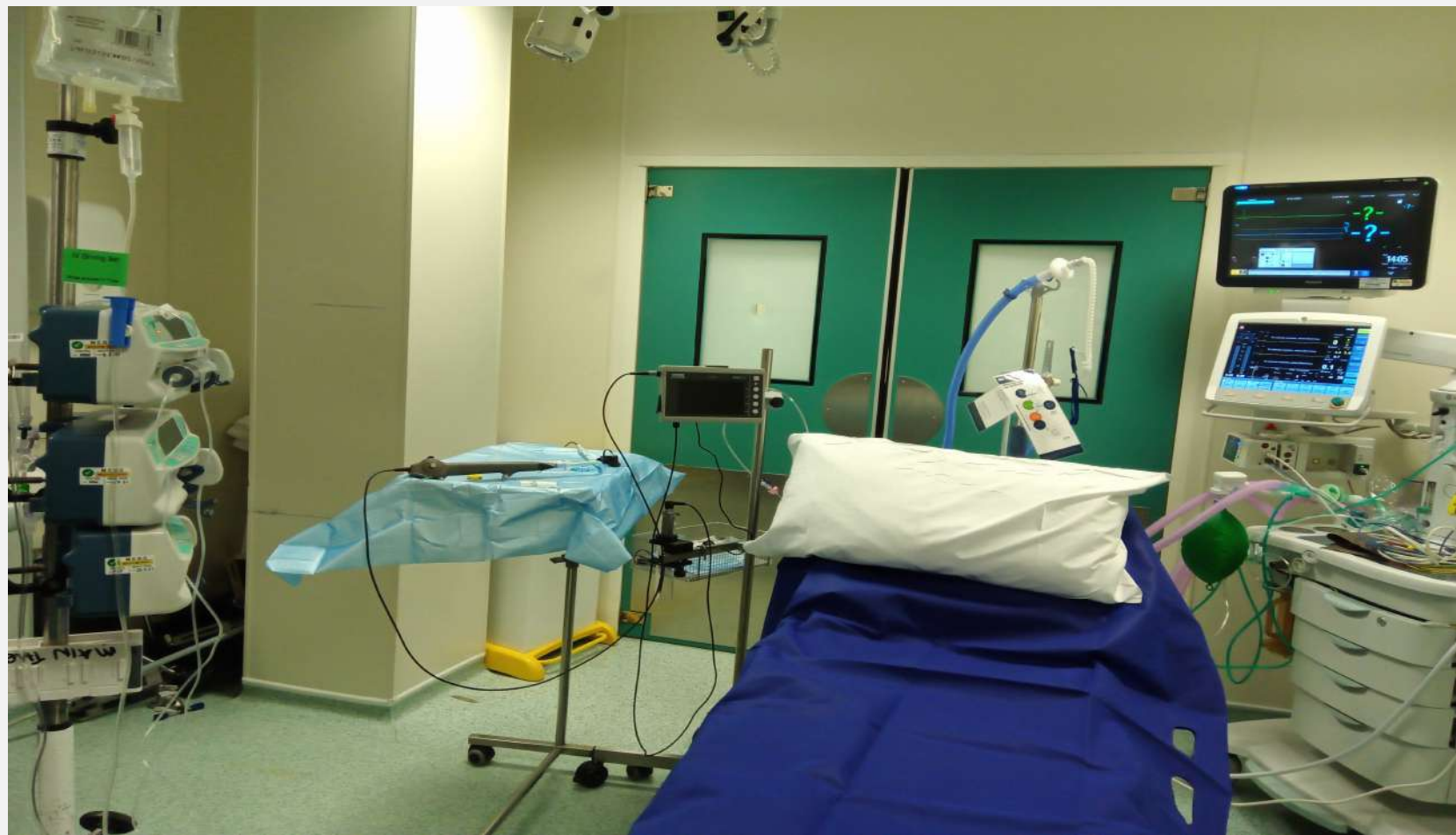
Awake FOI

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graph TD; A[Awake FOI] --> B[Oral route]; A --> C[Nasal route]; B --> D[Awake Videolaryngoscopy]; C --> D;
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Oral route

Nasal route

Awake Videolaryngoscopy





Awake Tracheal Intubation

Cognitive Aid

Drs T Davies & U Ansari



University Hospitals
Coventry and Warwickshire
NHS Trust

Lean Body Weight:

(<https://tinyurl.com/LBWUHCW>)

_____ Kg

Lidocaine **MAXIMUM**
total dose (9mg/Kg LBW)

_____ mg

Co-Phenylcaine 2.5mls contain
125mg lidocaine

PATIENT PREPARATION

- ☐ Early oxygen delivery (consider HFNO)
- ☐ Allocation of roles
- ☐ Reliable IV access
- ☐ Optimised patient position
- ☐ Identify CTM

PREPERATION FOR FAILURE

- ☐ Second anaesthetist required?
- ☐ Who & how to contact if help required _____
- ☐ Verbalise Plan (ABCD)
 - Maximum attempts (3+1)

EQUIPMENT

- ☐ Optimised ergonomics
- ☐ Monitoring applied
- ☐ Scope/ETT/Suction/FONA Kit
- ☐ Sedation (if required)
- ☐ Emergency Drugs
- ☐ Plan for maintenance of anaesthesia

PROCEDURE

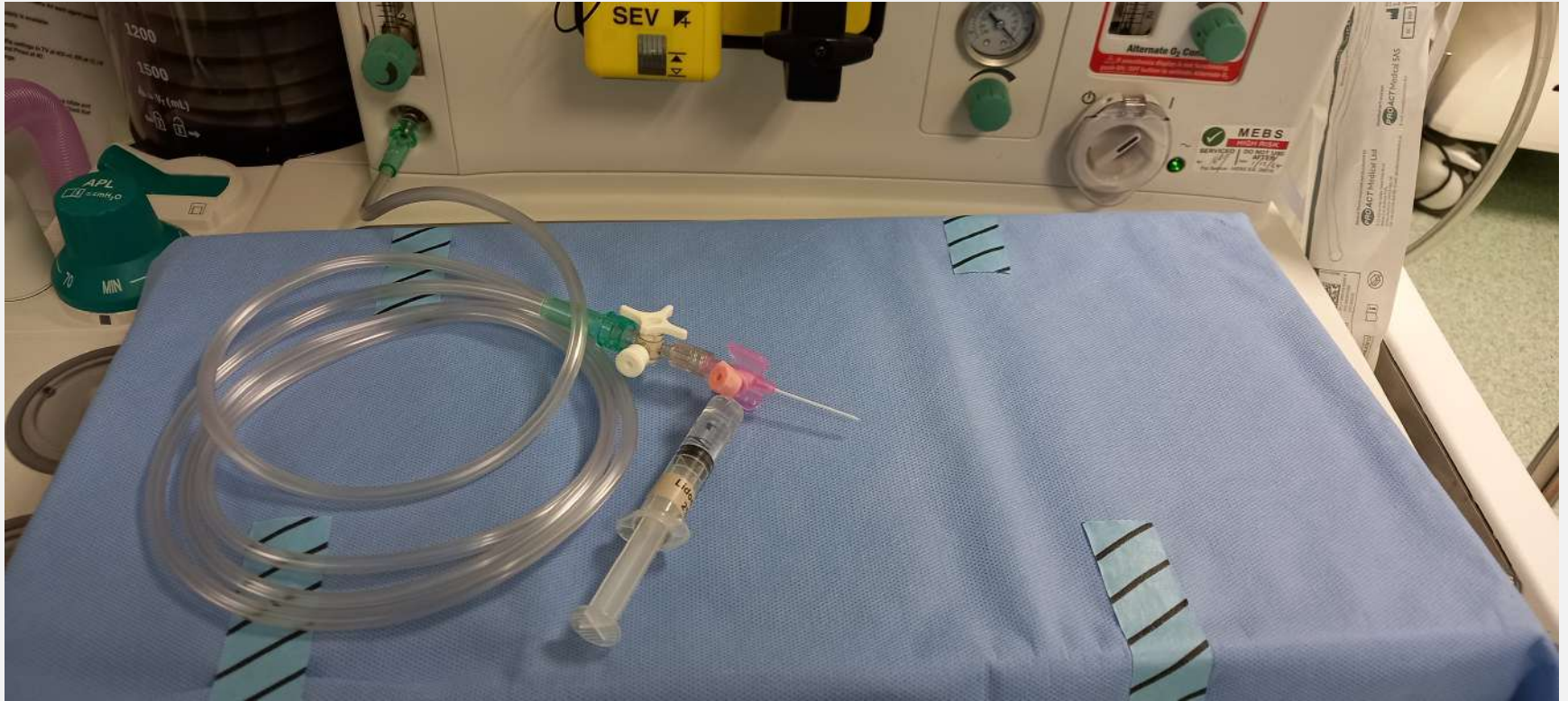
- ☐ Sedation check at
 - Pre topicalisation
 - Pre scope insertion
 - Pre ETT insertion
- ☐ Pre induction: Visualise tracheal lumen **AND** check capnography

Local Anaesthesia

- Nose-nasopharynx
- Pharyngeal wall
- Base of the tongue
- Vallecula / Epiglottis (VL)
- Above the vocal Cords
- Below the vocal cords

Mackenzie technique





Mackenzie I. A new method of drug application to the nasal passage. *Anaesthesia* 1998; **53**: 309-10.

Lean body weight

- <https://tinyurl.com/LBWUHCW>

The Boer Formula:¹

For males:

$$\text{eLBM} = 0.407W + 0.267H - 19.2$$

For females:

$$\text{eLBM} = 0.252W + 0.473H - 48.3$$

Maximum lidocaine dose: 9mg/kg of LBW

Conscious sedation

Aim :

Patient comfortable, sedated but obeys verbal commands and has amnesia for events

sTOP

OXYGENATE

- Apply HFNO early
- Titrate HFNO from 30–70 L.min⁻¹
- Continue HFNO throughout procedure

TOPICALISE

- Lidocaine 10% spray to oropharynx, tonsillar pillars, base of tongue
- 20 – 30 sprays (during inspiration, over 5 min)
- If nasal route: co-phenylcaine spray
- Test topicalisation atraumatically
- If inadequate, re-apply LA up to maximum dose:
 - Further 5 sprays of lidocaine 10% to tongue base
 - 2 ml lidocaine 2% (x 3) spray above, at and below vocal cords via epidural catheter/working channel of FB or using MAD

Lidocaine

- 1 spray (0.1 ml) of 10% = 10 mg
- 1 ml of 2% = 20 mg

Co-phenylcaine

- 2.5 ml = 125 mg lidocaine + 12.5 mg phenylephrine

PERFORM

- Select appropriate tracheal tube
- Patient sitting up
- Ensure operator can readily see patient monitor, infusion pumps and video screen
- Clear secretions
- For ATI:FB
 - Operator positioned facing patient
 - Consider bronchoscope airway if oral route
 - Bevel facing posteriorly
- For ATI:VL
 - Operator positioned behind patient
 - Consider bougie
- Before induction of anaesthesia: two-point check



SEDATE

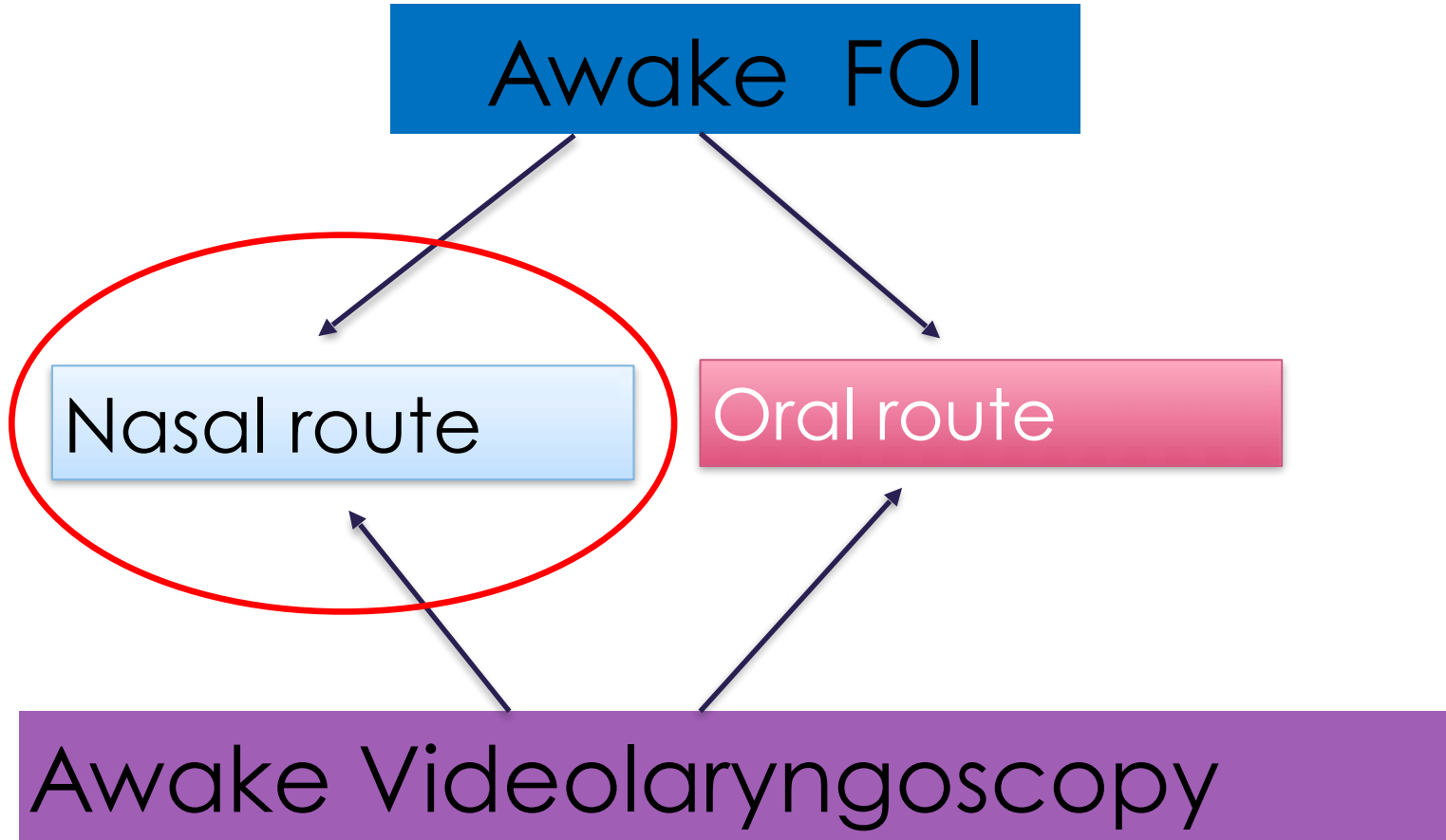
- Sedate if required
- Remifentanyl TCI (Minto) Ce 1.0–3.0 ng.ml⁻¹
- If second anaesthetist present, consider adding midazolam 0.5–1 mg

Awake FOI

Nasal route

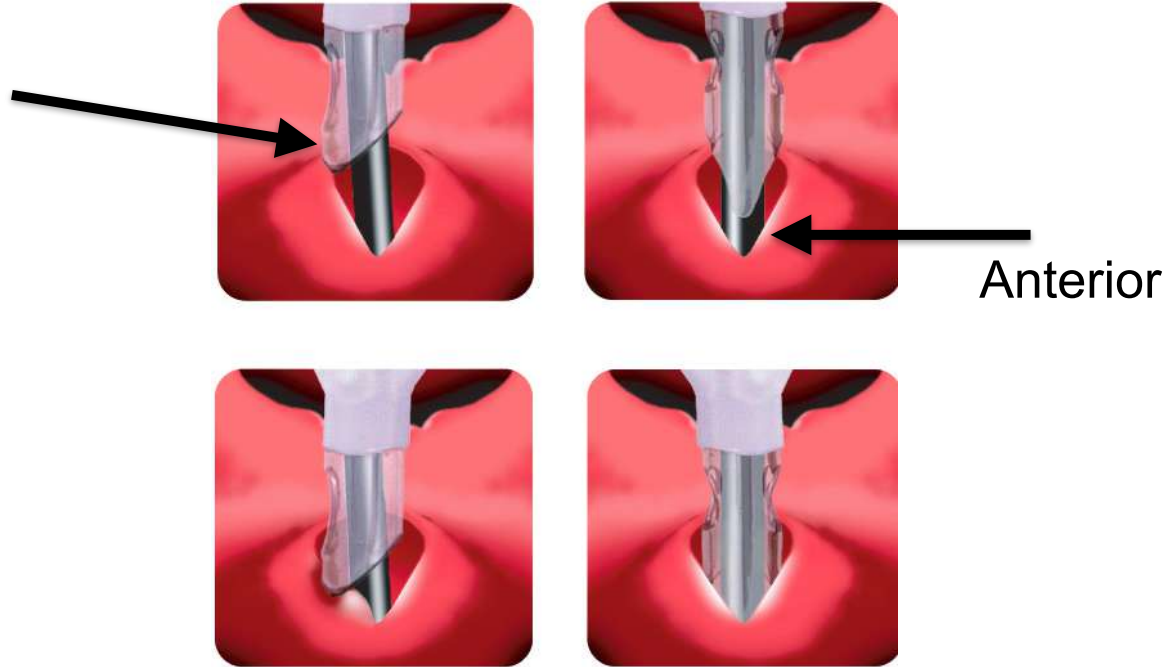
Oral route

Awake Videolaryngoscopy





Bevel facing posteriorly reduces impingement



Difficulty in railroading the tube



Awake FOI

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graph TD; A[Awake FOI] --> B[Oral route]; A --> C[Nasal route]; D[Awake Videolaryngoscopy] --> B; D --> C;
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A flowchart with four nodes. At the top is a blue box labeled 'Awake FOI'. Below it are two boxes: a pink box on the left labeled 'Oral route' and a light blue box on the right labeled 'Nasal route'. At the bottom is a purple box labeled 'Awake Videolaryngoscopy'. Arrows point from 'Awake FOI' to both 'Oral route' and 'Nasal route'. Arrows also point from 'Awake Videolaryngoscopy' to both 'Oral route' and 'Nasal route'. The 'Oral route' box is circled in red.

Oral route

Nasal route

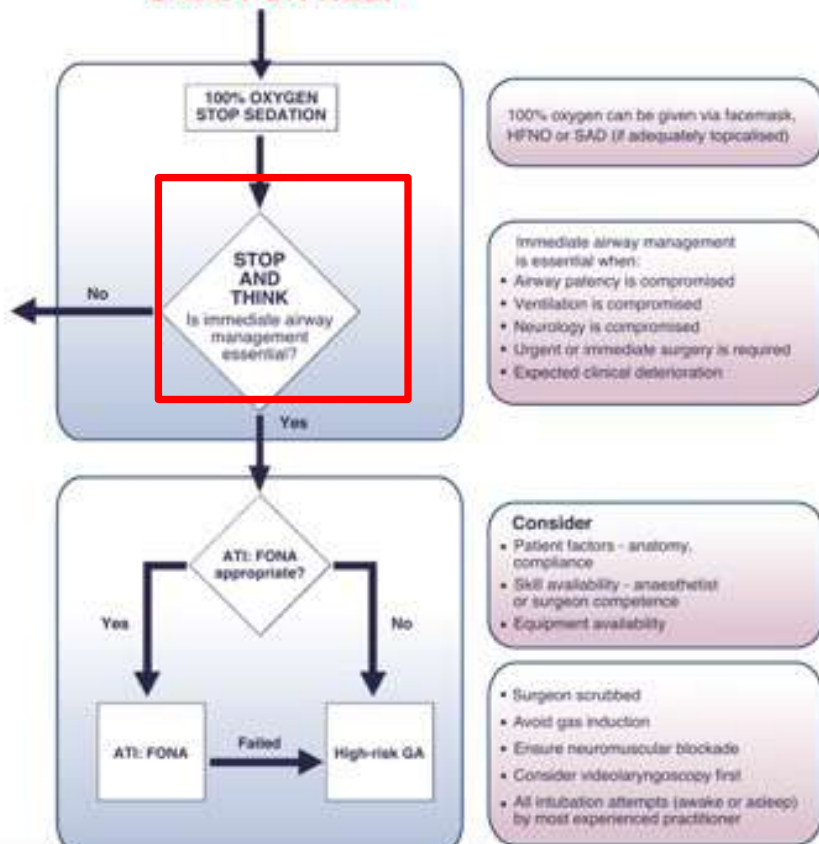
Awake Videolaryngoscopy



CALL FOR HELP

Prepare for emergency FONA
If life-threatening airway obstruction at any time
proceed to emergency FONA

POSTPONE

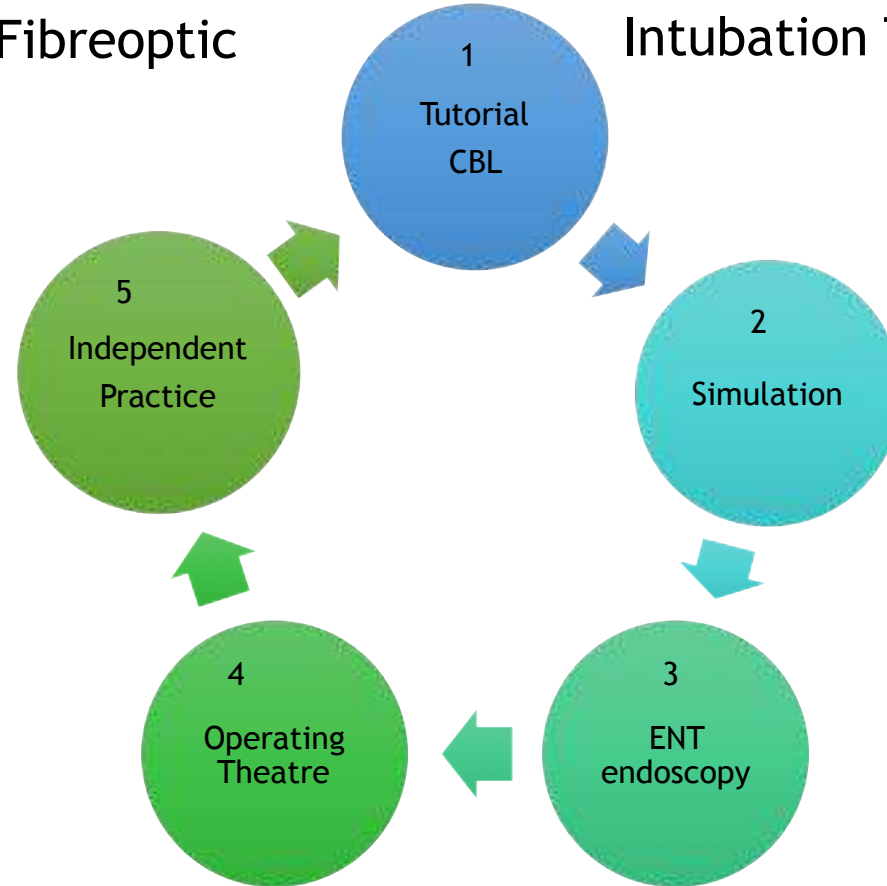


Successful awake intubation

- Airway Assessment and planning
- Back up plan
- Explanation and consent
- Oxygenation/monitoring
- Good topicalisation
- Conscious sedation
- Good endoscopy technique
- Choice of tracheal tube and railroading

Awake Fibreoptic

Intubation Training



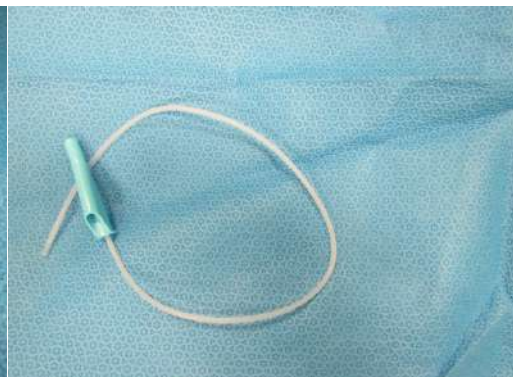
Awake FOI

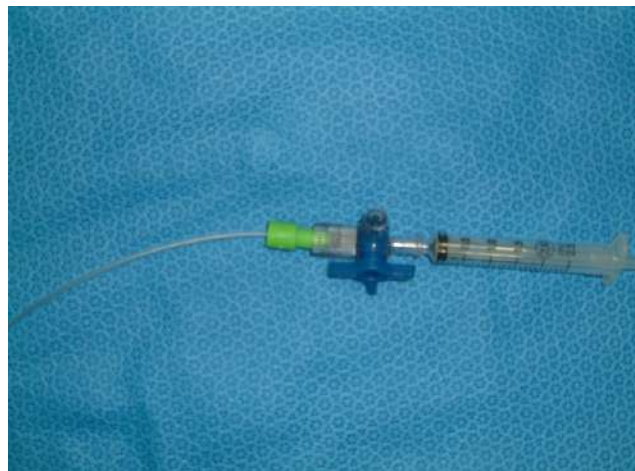
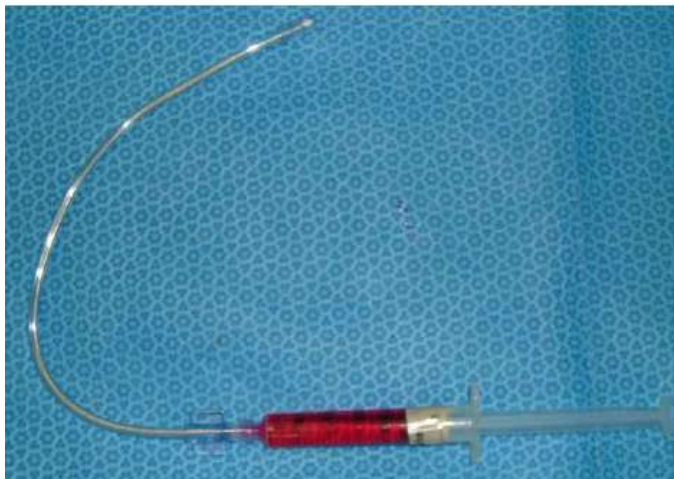
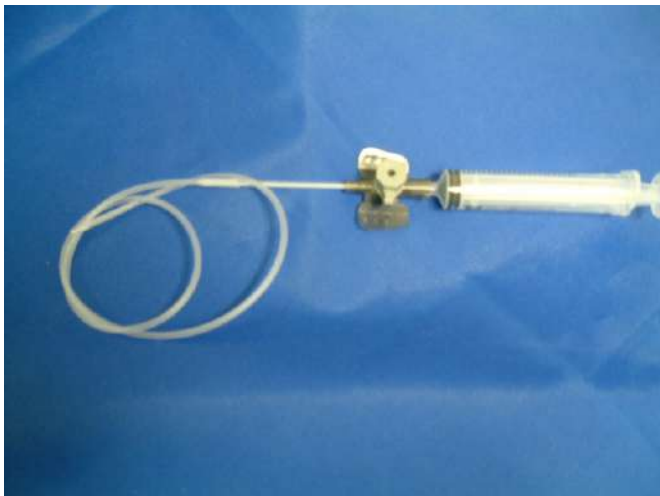
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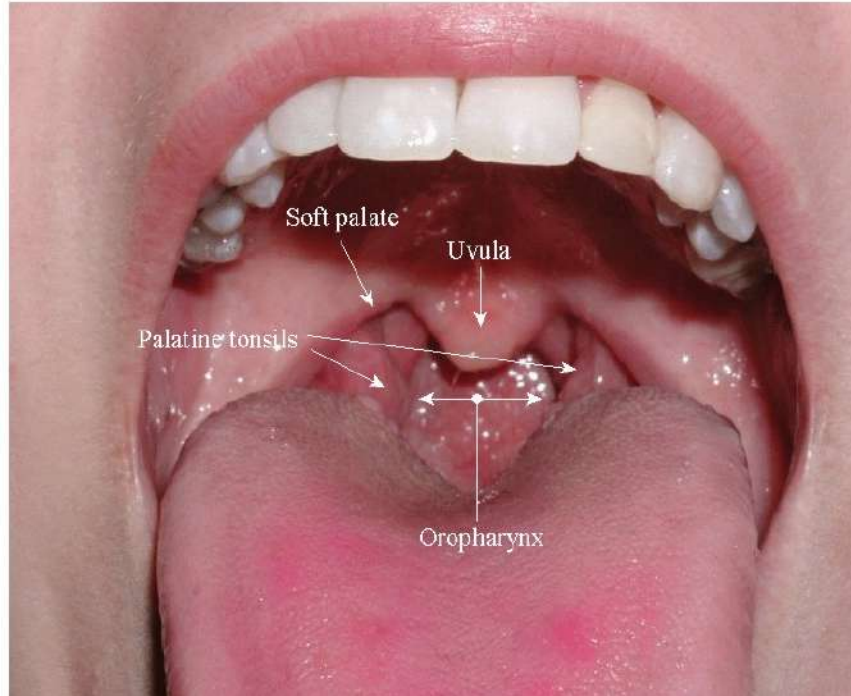
Oral route

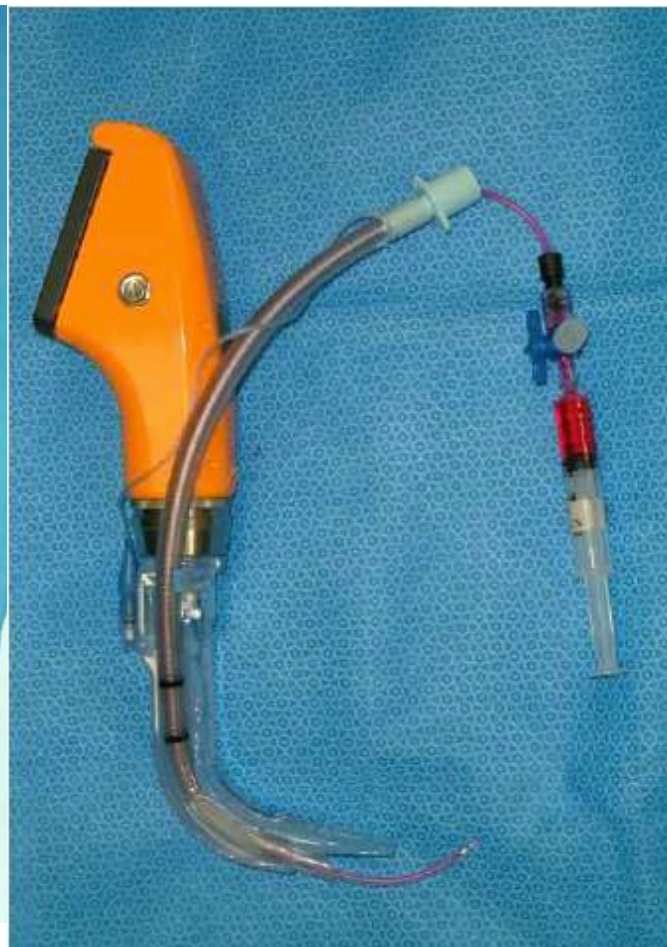
Nasal route

Awake Videolaryngoscopy











Sequence of events- Videolaryngoscopy

- Sign in & Monitoring
- IV access & Midazolam 0.5 to 1 mg
- *(Glycopyrolate 200 mcg is optional)*
- Remifentanyl TCI: 2-4 ng/ml
- 1st stage Mackenzie: 4 ml 4% lignocaine (to base of tongue, soft plate, tonsillar pillars)
- 2nd stage Mackenzie: 4 -5 ml 4% lignocaine (0.5 ml spray with each breath synchronised with inspiration)
- Laryngoscopy
- Vocal cords & Tracheal LA=1-2 ml of 4% lignocaine (catheter through tube or MADgic device if required, with good 2nd stage Mackenzie, this may not be required)
- Advance the VL & tracheal tube
- Capnography to confirm the position

Key takeaways

- In an anticipated difficult airway awake tracheal intubation has highest safety profile
- Fibreoptic bronchoscope and videolaryngoscopes can be used in isolation or in combination.

Resources

To download course materials and for free
airway lab sessions

www.mededcoventry.com

[Coventry Airway Lab Course Resources](http://www.mededcoventry.com)
 [\(mededcoventry.com\)](http://www.mededcoventry.com)

References and further reading

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