

Special Airway Challenges Paediatrics

Part of Airway Management Module
Airway Module: A4-1

This project was possible due to funding made available by Health Workforce Australia

Sponsor

This project was possible due to funding made available by



Projects within NSW are overseen by the NSW Ministry of Health on behalf of HWA



Introductions



General Aims

- Learn in a team setting
- Blend clinical skills with team skills
- Reflect critically on practice

Ground Rules

- Participation
- Privacy
- Confidentiality
- Disclaimer
- Debriefing
- Mobile phones

Session Objectives

- Preparation and planning in predicted difficult airway management
- To recognise potential airway compromise
- To co-ordinate team to manage potentially difficult
- To recognise need for senior specialist help early
- To management patients in the context of available resources

Patients don't die from failure to intubate.....they die from failure to oxygenate.



DON'T GET FIXATED ON THE PLASTIC

Emergency Department Airways

- Assessment

- History
- Examination
 - Look
 - Listen
 - Feel
- Difficulty
 - BOOTS
 - LEMON
- Available Skills

Management Options

- Simple airway maneuvers
- Nasal Prongs
- Oxygen Masks – variable and fixed
- Airway Adjuncts
- Bag Valve Masks
- Non-Invasive Ventilation
- Laryngeal Masks
- Intubation – 7 P's
- Surgical Airway

ED Intubation Checklist

Team

- ED Consultant aware of RSI?
- Out-of-hours, if difficulty anticipated, anaesthetics contacted?
- All members introduced by name & role and each briefed in turn by TL
- Difficult intubation plan briefed?
- Difficult airway trolley at hand?
- Anticipated problems – does anyone have questions or concerns?

Patient

- Pre-oxygenation optimal?
 - Add nasal prongs or NIV
- Patient position optimal?
- Patient haemodynamics optimal?
 - Fluid bolus?
 - Pressor?
- Does it look like it might be difficult:
 - Difficult BVM?
 - Difficult laryngoscopy?
 - Difficult cricothyroidotomy?

IVI/Drugs

- Fluids connected, runs easily?
- Spare IVC?
- Monitor: ECG, BP, SaO₂.
- RSI drugs drawn up, doses chosen?
- Post-intubation anaesthesia plan - drugs drawn up?

Equipment

- Suction working?
- BVM with ETCO₂ connected
- OPA and NPA available?
- 2 x laryngoscopes working? Correct blade size?
- Tubes chosen, cuff tested
- Bougie or stylet in tube?
- Tube tie or tapes ready?
- Ventilator circuit available?
- LMA sized & available?

Version 1.2

Developed by T Fogg, J Kennedy and J Vassiliadis, RNSH ED 20/04/2012

The Paediatric Airway

A4.1 Special Airway Challenges

This project was possible due to funding made available by Health Workforce Australia

The Paediatric Airway

- Spectrum of infancy, child to adulthood
- Anatomical and physiological differences
- Increased clinician anxiety in management of the child
- Difficulty secondary to acute insults or congenital abnormalities
- Failed airway situations are very rare

Infants

Anatomy & physiology

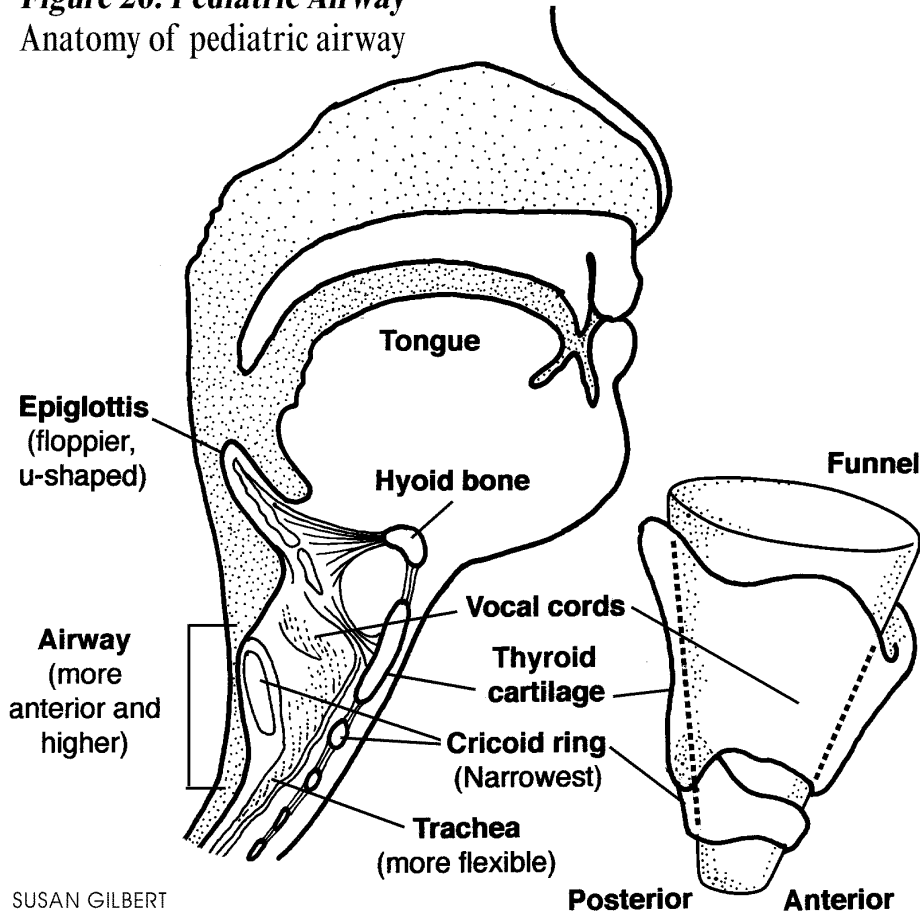
- Large head, short neck & big tongue
- Large U shaped floppy epiglottis
- Cricoid narrowest at C3-4
- Carina at T4 with main bronchi at equal angles
- Lower FRC & higher VO₂

Clinical consequence

- Need stabilisation & prone to obstruction under GA
- Straight blade scope over epiglottis
- ET with leak – cuff or uncuff
- Care to avoid endobronchial intubation
- Desaturate quickly

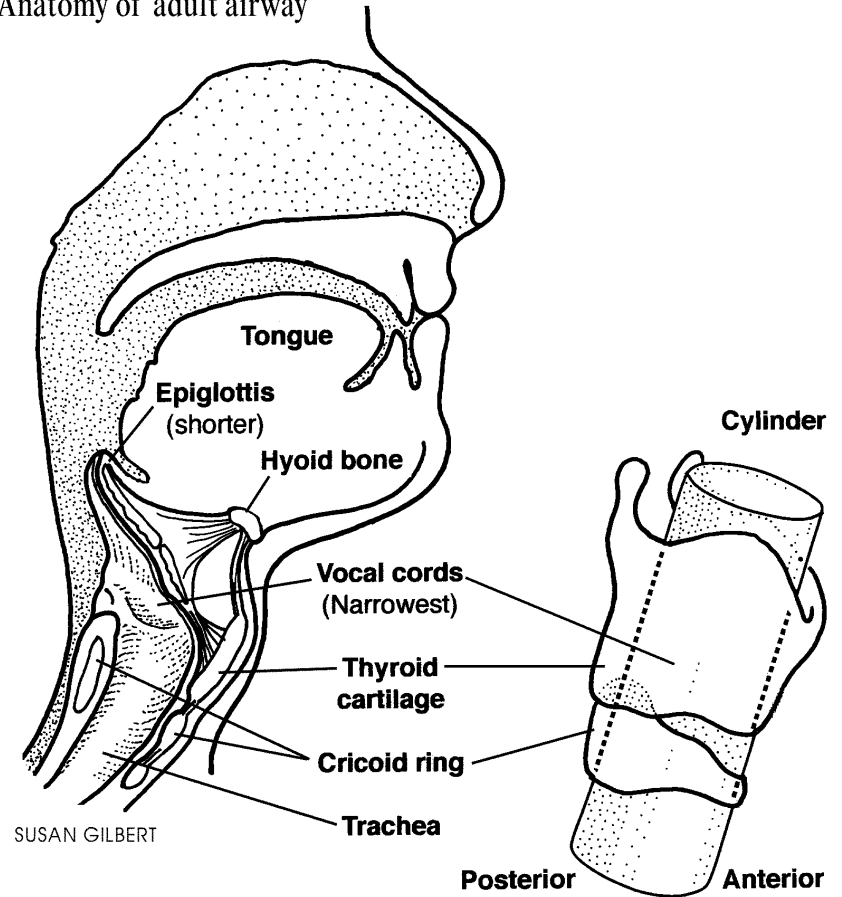
Airway Differences

Figure 26: Pediatric Airway
Anatomy of pediatric airway



SUSAN GILBERT

Figure 27: Adult Airway
Anatomy of adult airway



SUSAN GILBERT

Equipment



- Sizes are age specific
- Consider using formula to calculate or aids
- Broselow charts and trolley increase speed of preparing equipment

The Paediatric Airway

- Preparation and Planning
 - Appropriate Staff available
 - Articulate Plan A, B and C
- Pre-oxygenate and Position
 - Consider the anatomical variations
- Paralyse and Place ETT
- Post Intubation Care
- Don't forget the PARENTS!
- Disposition – early NETS involvement

Airway Algorithm

PLAN A

- Bag Valve Mask Ventilation +/- adjuncts
- Intubation

PLAN B

- Bag Valve Mask Ventilation + adjuncts
- Laryngeal Mask

PLAN C

- IF CAN'T INTUBATE, CAN'T OXYGENATE
- Needle Cricothyroidotomy
- Seldinger Cricothyroidotomy
- Surgical Airway/ENT assistance

**CALL FOR
HELP
EARLY**

Summary

- Paediatric Airway management should be rehearsed regularly
- Weight based sizes and doses can be quickly found in charts and tables
- Oxygenation can be achieved through adequate positioning and adjuncts
- Preparation and Planning are paramount to rapid sequence induction

References

- Australian and New Zealand College of Anaesthetists (ANZCA) Guidelines on Equipment to manage a difficult airway during anaesthesia. 2011
- Advanced Paediatric Life Support Manual, 5th Edition
- Emergency Airway Management, 4th Edition, Published by Lippincott Williams and Wilkins, Ron M Walls and Michael F. Murphy editors 2012
- The Difficult Airway Society Guidelines on Difficult Paediatric Airway, 2012

Acknowledgments

Topic expert author: Jag Grewal

Simulation session author: Nadia Sawkins, Jag Grewal

Module Expert Working Party and Peer Review Team:

Alan Giles FACEM

John MacKenzie FACEM Prince of Wales Hospital

John Kennedy FACEM Royal North Shore Hospital

Michael Bastick FACEM Wyong Hospital

Educational consultants:

Stephanie O'Regan Nurse Educator SCSSC

Leonie Watterson Director Simulation Division SCSSC

John Vassiliadis Deputy Director SCSSC

Clare Richmond FACEM

Morgan Sherwood Simulation Fellow SCSSC

Disclaimer

Care has been taken to confirm the accuracy of the information presented and to describe generally accepted practices. However the authors, editor and publisher are not responsible for errors or omissions or for any consequences from the application of the information in this presentation and make no warranty, express or implied, with respect to the contents of the presentation.

Copyright and Permission to Reproduce

This work is copyright. It may be reproduced for study or training purposes subject to the inclusion of an acknowledgement of the source: Health Workforce Australia EdWISE program. It may not be reproduced for commercial usage or sale.