Don't Forget The Bubbles

RSI AND THE DIFFICULT AIRWAY

Facilitators Guide

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Duration **Up to 2 hrs**
Equipment required **Can be done without equipment, however for interactivity it would be useful to have different laryngoscopes/ETT/bougie/stylet etc for demonstration purposes.**

OUTLINE

- Basics - including airway plans and assessment (30 mins)
- Main session: (2 x 15 minute) case discussions
- Advanced session: (2 x 20 minutes) case discussions covering more controversial settings
- Sim scenario - optional (30-60 mins)
- Quiz (10 mins)
- Infographic sharing (5 mins): 5 take home learning points

We also recommend printing/sharing a copy of your local guideline for sharing admission criteria.

PRE-READING FOR LEARNERS

Adventures in RSI **PEM Playbook**	Listen
Paediatric Formulae **- LITFL**	Read it
Paediatric Rapid Sequence Intubation SID **LITFL**	Read it
Traumatic brain injury	Read it

KEY LEARNING POINTS

1. The Paediatric Airway - to understand the differences between the adult and paediatric airway
2. The choice of equipment for paediatric RSI and how this differs depending on the age of the child
3. Airway Checklist and the airway plan - the importance of having a clear airway plan and use of the checklist. Including the difficult airway algorithm
4. Paediatric RSI medications and understanding of indications and controversies surrounding them
5. Indication for RSI and the 12 P's of RSI

Background
Paediatric airway compromise requiring emergency management by rapid sequence induction (RSI) is a rare event in the Emergency Department. However, despite it being rare, it is associated with high mortality and morbidity with an overall death rate of 3.8%, the highest for a critically unwell child.
Airway securement is a procedure that every critical care physician should be competent in performing.

So what do we mean when we say RSI?

RSI is an airway management technique that produces unconsciousness and muscular relaxation for the purposes of intubating and taking control of the emergency airway. The airway is usually intubated and controlled within 3 minutes of paralysis.

What are the indications for an RSI?

Don't forget ABC...

A - Airway protection, this can be due to numerous reasons such as burns, penetrating neck injury

B - Respiratory failure - hypoventilation, severe asthma, hypercarbia

C - Circulatory collapse - severe sepsis

D - Neurological problems - termination of seizures, need for neuroprotection, GCS <8, C Spine trauma, diaphragmatic paralysis

E - Everything else! Transportation or facilitation of procedure, for patient safety (e.g. combative patient)

Once you have decided that you need to intubate the child, you should prepare to intubate the child using a local cognitive aid. The Twelve P's of RSI are a useful way to intubate the child safely and successfully, however please refer to your local guidance.

The Twelve P's of RSI

1. Preparation

To ensure you are correctly prepared, we would advocate the use of an airway checklist. This is a checklist to ensure that all aspects of the RSI have been thought about to mitigate any omissions during the procedure. This is an example airway checklist from Liverpool Hospital, Sydney **(Airway Checklist)** recommended by the Emergency Care Institute in Australia.
Please check your hospital for your airway checklist - if you don't have one, then check the ECI website for a blank version to create your own!
They are a great aide memoire for a safe intubation.

Preparation includes:

Roles allocated

Team Leader
Airway Doctor
Airway Nurse
Procedure Nurse x2 for drug checking
Procedure doctor - usually the drug giver
Scribe
This is the minimum set up - you may have more but ensure your roles are clearly allocated

Labels on the front of scrubs can help the team know who is responsible for each role. Have you considered calling for help? The definition of help will depend on your setting but could include Emergency Consultant, Anaesthetics or ICU.

Equipment required - remember the mnemonic **SOAP ME**

Suction - large bore suction (x2 if soiled airway) under the pillow and turned on
Oxygen (mask and BVM ventilation)
Airway equipment:
- Bag valve mask with PEEP valve, oxygen on. (Neopuff for infants <10kg may be more effective than BVM)
- Nasal prongs for apnoeic oxygenation
- Adjuncts available - specifically Oropharyngeal and nasopharyngeal airway devices (x2). A correctly sized LMA (Laryngeal mask airway) should also be available.
- Laryngoscope - direct and video -(direct - light checked, video - plugged in and tested)
- ETT - size up and down also available, cuff tested and lubricated
- 10ml syringe
- Tube tie or tape avaliable
- Ventilator (checked) with a paediatric circuit
- Bougie/stylet - (size selected)

Pharmacy:

Patent IV line with fluids available - from bag or flushes drawn up
Specific RSI medications: Correct doses drawn up, labelled correctly as per local guidelines, order of medications to be given decided before administration

Monitoring Equipment:
ECG
NIBP on 2 minutely cycles (or arterial line if already inserted)
SpO2 probe with good trace
ETCO2 - attached to the circuit, if ETCO2 is unavailable alternative capnography such as colour capnography should be used.

How do I size my equipment?
ETT
ETT = age / 4 + 4 (for uncuffed tube)
Age / 4 + 3.5 (for cuffed tube)

Depth of insertion
<1 year insert to 10cm
>1 year Age/2 + 12cm

Laryngoscope
Miller blades are straight blades which are designed to directly lift the epiglottis MAC blades are curved to sit in the vallecula to lift the epiglottis indirectly but putting pressure on the glossoepiglottic ligament.

Miller blades are better for neonates and young infants - up to 1 year then MAC blades are better. Miller are used in this age group due to their large floppy epiglottis and laxity of the ligament.

< 1 year Miller 00, 0 and 1
>1 year MAC size 2 and 3 (size 3 usually 5 years upwards)

Please see your local policy for what is available in the area in which you work.

Royal Children's Hospital Melbourne Airway Recommendations

Remember - you can intubate with a larger blade, but not a smaller one! If in doubt go for the bigger one!

2. Position

Anatomical differences in paediatric vs adult airways
1. The airways are smaller! This might sound very obvious, however, this means that there is a lot less room for other things such as secretions, oedema and foreign bodies. Also, external compression can lead to rapid increase in airway resistance
2. Larger tongue and adenoids - increases the difficulty in advancing the laryngoscope and visualizing the cords on laryngoscopy. Think of Macroglossia seen in conditions such as Trisomy 21 and Beckwith-Wiedemann syndrome
3. Large, floppy epiglottis
4. Short trachea (high risk of endobronchial intubation)
5. Soft structures are at higher risk of airway trauma with repeated attempts causing oedema and further airway narrowing
6. Large occiputs - neck flexed causes obstruction

7. Young children have higher and more anterior tracheal openings than adults (C1 in infants, C7 in adults), therefore visualisation of the glottis is difficult
8. There is a small cricothyroid membrane so landmarks for surgical airways are more difficult to locate

Positioning in an RSI
- Infant should be a neutral position
- Younger child consider a shoulder roll
- Older child use an occipital pad

What are the differences in physiology in intubating children?
The two most important things to consider are:
1. Oxygen consumption - this is much greater than in an adult counterpart especially when unwell. There is a lower functional reserve capacity and it can cause rapid desaturation during laryngoscopy and intubation despite adequate preoxygenation.
2. Horizontal ribs limit the ability to increase tidal volume and ventilation is predominantly diaphragmatic, any air in the stomach may splint the diaphragm and make ventilation difficult. Prompt decompression of the stomach post intubation via NGT or OGT will reduce this splinting and improve ventilation.
In the <12 month old the NGT can be inserted during the preoxygenation phase of intubation.

3. Pre-oxygenation

Pre-oxygenation should be done for all patients requiring an RSI. The aim is to wash out all of the nitrogen from the lungs and replace it with oxygen, thereby creating a reservoir of oxygen within the lungs.This is especially critical in children due to their propensity to desaturate quickly.

Pre-oxygenation can be done in a number of ways and will largely depend on the patient's physiology. All patients (except trauma with suspected base of skull fracture) should have nasal prong oxygen delivering 15L min on in addition to preoxygenation aids.
- If the patient is awake and spontaneously ventilating well consider 15L oxygen via non- rebreathe mask that it fitted well. Otherwise bag-valve-mask with PEEP valve at 15L oxygen
- In the obtunded patient use bag-valve-mask with PEEP valve at 15L oxygen with assisted ventilations for 5 minutes prior to induction.

4. Perform airway assessment

Use a LEMON!

L - Look Externally

- Body habitus
- Head and neck anatomy
- Small mouth
- Teeth - overcrowding? Loose?
- Jaw abnormalities- micrognathia?
- Tongue - Macroglossia?

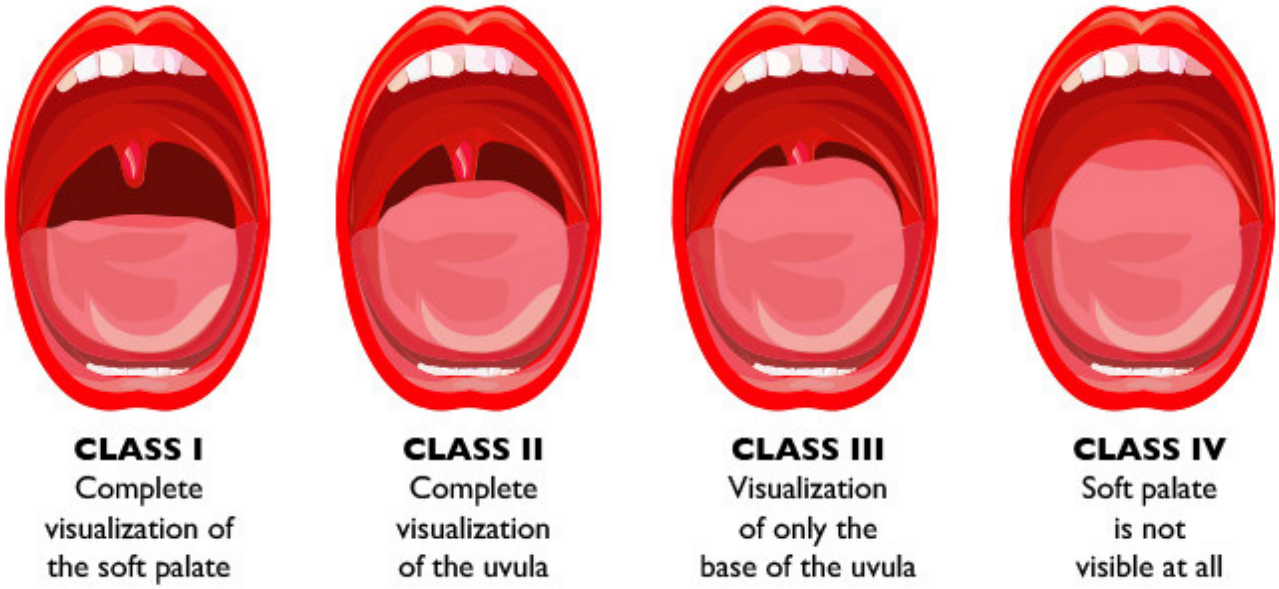
E - Evaluate

- Mouth opening
- Thyromental distance

M - Mallampati

- Ability to view may be easier in older children who are cooperative
- Difficult to do in an emergency situation
- The higher the number the more difficult the airway is predicted to be

NB This should be done ideally in an upright patient without vocalisation.



https://www.clinicaladvisor.com/home/the-waiting-room/understanding-the-mallampati-score/

O- Obstruction

- Head and neck abnormalities i.e. cancer, surgeries, laryngectomy
- Foreign body
- Burns
- Epiglottitis

N - Neck mobility

- Remember in children to have a more neutral neck position
- May have immobilised due to trauma (C Spine collar)

5. Predict physiological difficulties

Respiratory

- This goes with what we had predicted earlier that desaturation occurs quickly in children
- Those with underlying respiratory disease, or acutely unwell with respiratory distress will desaturate quickly
- Ensure preoxygenation is given well and that apnoeic oxygenation is maintained
- Ensure laryngoscopy time is limited

Cardiovascular

- Children are sensitive to changes in circulatory volume, they can compensate up to a point by increasing their heart rate but not their stroke volume. They decompensate very quickly
- Ensure they are adequately fluid resuscitated prior to intubation. Consider concurrent inotropes if there are concerns over pre induction haemodynamic instability.

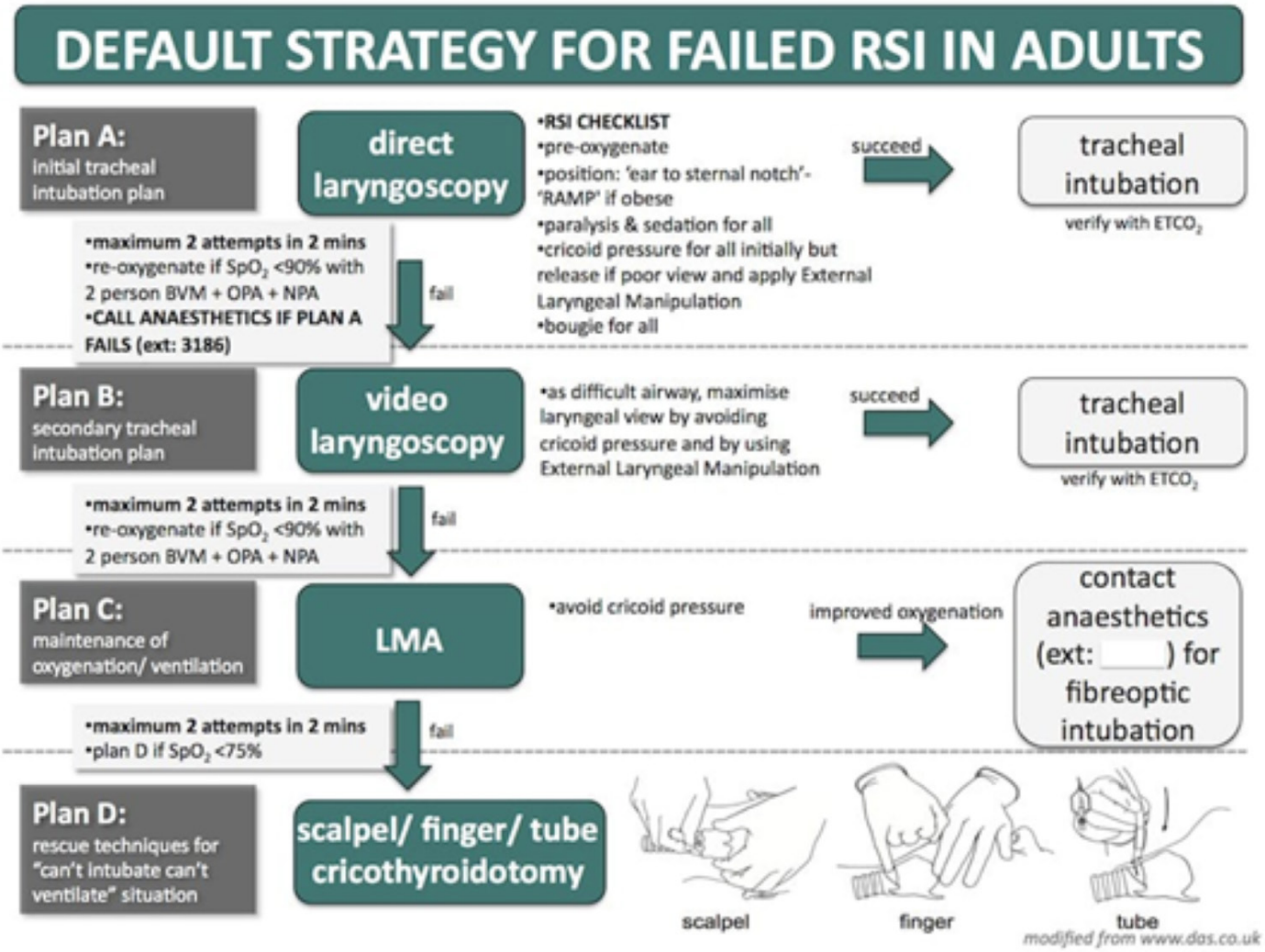
Disability

- This is a metabolically stressful situation and children are prone to hypoglycaemia due to their lower glycogen stores in the liver. Ensure BSL checks are done regularly, hypoglycaemia is promptly corrected and that maintenance fluids contain 5% dextrose.

6. Plan (Airway plan ABCD)

So, you have everything ready and the team leader asks you for your airway plan, “what is an airway plan?” you ask....

As the airway doctor you should have an airway plan which is verbalised to the entire team so everyone is aware of the expected sequence of events.



This is an example of an airway plan from Life In the Fast Lane.
At each plan everyone is aware of the expected outcome and the triggers for moving on to each section. Although this is written for adults, the same is true of paediatrics.

IF YOU PREDICT A DIFFICULT AIRWAY, VERBALISE THAT TO THE TEAM AND HAVE THE DIFFICULT AIRWAY TROLLEY WITH YOU AND THE AIRWAY NURSE TO BE CLEAR ABOUT WHAT YOU WILL NEED!

Difficult airways will be covered in more detail later - however signposting the Vortex website to learners now is helpful. **Vortex approach** is an approach where there are set triggers meaning you move further down the vortex mental model to prepare for front of neck access. The website has invaluable information regarding CICO packs and an instructional video of paediatric front of neck access.

7. Pre-treatment

Consider atropine - this will be discussed in detail later

8. Paralysis and induction

Induction agent of choice - i.e. ketamine, propofol, thiopentone
This will differ with institutions, clinical picture, availability and personal preference
The majority of emergency environments will now prefer ketamine as the induction agent of choice, except for status epilepticus where thiopentone is preferred, however this is site specific.
In a neonate an induction agent is often not required and it is an opiate based induction using either fentanyl or morphine, remembering that morphine has a longer time of onset.

Muscle relaxant -

Depolarising - e.g. suxamethonium
Non- depolarising e.g Rocuronium, Atracurium etc

Other medications indicated by presentation e.g. mannitol, adrenaline, midazolam etc

Post intubation sedation - usually morphine and midazolam, check with the team leader

9. Perform laryngoscopy

Perform laryngoscopy
Insert ETT past the vocal cords
Inflate cuff

10. Placement with proof

- Attach capnography, end tidal CO2 is gold standard (colourimetry can also be used)
- Check for misting of the tube
- Check for equal air entry and movement of the chest (to ensure not Right main bronchus intubation)
- Secure the airway with tape in children, or tie in older children
- Confirmatory post intubation chest x ray

11. Post intubation care

Post intubation care is a large topic on its own and beyond the scope of this session. The main considerations post RSI are:

1. Ensure tube is secured correctly

2. NG or OG tube inserted for decompression of the stomach

3. Ensure IDC is inserted for drainage of the bladder

4. Ensure nutrition is addressed (usually ongoing IV fluids in the acute phase)

5. Post intubation sedation is running

6. Further investigations/procedures/treatments are coordinated with as little disruption to the patient as possible

7. Disposition is decided upon

12. Package and transfer

Again, transportation of the critically unwell child is beyond the scope of this teaching session. There are numerous specialist retrieval services that facilitate interhospital transfers. For any staff member doing transfers within the hospital they should have specialist training.

CASE SCENARIO 1

Robert is a 7 year old boy seen in ED with a cough for 5 days, increasing shortness of breath and fevers. Mum brought him to ED as he was lethargic and breathing quickly. On examination he is lethargic with dry mucous membranes, in respiratory distress with a rate of 45, saturations of 92% on 15L oxygen. He is persistently hypotensive despite 40ml/kg fluids. He is becoming bradycardic and his GCS is now 9. You are worried he is in septic shock with impending respiratory failure and circulatory collapse. You decide to proceed to an emergent RSI.

How can he be optimized physiologically before RSI? Would you start inotropes?

First thing's first here, this is a very, very sick child - have you called for help? Depending on your setting you will require help from ICU, senior Emergency and Paediatric staff and if not in a tertiary centre from specialist paediatric retrieval services.

In this setting this child has a high risk of mortality associated with the RSI. Ensure you have optimised and resuscitated as much as possible before the RSI.
Hypotension before intubation is associated with a higher mortality. This child has been fluid resuscitated, therefore you will need pressors to maintain the blood pressure prior to intubation.
In this situation you need to optimize the blood pressure prior to intubation, therefore an adrenaline infusion is the treatment of choice to support the blood pressure during the induction process.

What is your induction agent of choice for RSI in these haemodynamically compromised children?

Ketamine is the drug of choice. It exhibits a stimulatory effect on the cardiovascular system and is the least cardiac depressive induction drug available, therefore has the least chance of inducing hypotension. That being said, it is not only the drug that is important but the dose. Smaller amounts of induction agent will be required than a "typical" RSI.
Dosing is usually 1 - 2 mg/kg, doses of 0.5mg - 1mg / kg would be more appropriate in this setting.

Intubation, Hypotension and Shock • LITFL • CCC Airway
Additional reading - please look at the powerpoint from Dr Chris Nickson

CASE SCENARIO 2

Jeremy is a 10 year old boy brought in by ambulance after falling off his BMX at a skate park doing a jump without a helmet on. He had a fall from approximately 2 metres onto his head. He had an initial LOC for 2 minutes then was ok, but since then he has had multiple vomits and become drowsy. The ambulance have issued a pre arrival phone call as they are concerned he has a reduced GCS of 8 but no evidence of raised ICP at this stage. The ambulance crew have immobilised his C Spine.
You decide to prepare for an RSI before the child arrives as it seems he will need a secure airway.

How do you change an RSI with a C spine collar on?

The reason the C Spine collar is on is because of suspected cervical spine trauma, therefore the cervical spine must be protected and avoid hyperextension of the neck during laryngoscopy and intubation. The C Spine collar in children has been contested, with the latest APLS update stating that C spine manual in line stabilisation (MILS) is the preferred option in the conscious patient and that C spine collars can potentially be very distressing for children, fit poorly and therefore a risk/benefit discussion should take place before routinely applying them in children.
In this case the child has a reduced GCS and a properly fitted, well tolerated collar. Prior to intubation the C spine collar should be removed, however immobilisation should remain in place at all times via MILS.
The current recommendations of when MILS should be used in general (when C Spine should be thought of) are:

- Neck pain or neurological symptoms
- Altered level of consciousness
- Blunt injury above the level of the clavicles (significant)

This is aimed to keep the head in a neutral alignment whilst laryngoscopy occurs, to avoid hyperextending the neck. MILS involves a secondary person being tasked with holding the head in neutral alignment, this can either be done facing the intubator and having the hands placed over the side of the head from below, or can be done by crouching beside and underneath the intubator and holding still from above.
Once the airway is intubated the C Spine should be protected with a Philadelphia Collar and sandbags/rolls to ensure ongoing stability is maintained.

His friend tells you they went to McDonalds 2 hours prior to this happening. Would you alter your approach knowing this information? Would you ask for cricoid pressure?

He is likely to have a full stomach or at least food in his stomach which would make him more likely to aspirate, however in an Emergency Situation, not protecting the airway is a larger risk than aspiration. RSI is designed to be a quick induction and reduce the chance of emesis.
Cricoid pressure was initially thought to help reduce aspiration by blocking the oesophagus, however in children it has been widely contested and not thought to be of benefit.
The forces to do Cricoid pressure in children is a lot less than in adults, a less trained assistant may cause damage by improperly applied cricoid pressure. It can worsen the view at laryngoscopy and studies have shown that it may only displace the oesophagus laterally and not help with passive aspiration. It can also cause full occlusion of the trachea making intubation impossible.
The short answer is no, you would not change your approach and you would not have routine cricoid pressure.

What is your choice of induction agent and why?

Ketamine was previously contraindicated for use in isolated head injury due to the concerns that it raises ICP, however now it is the drug of choice for the head injured child (with the exception of globe injury as ketamine can raise intraocular pressure).
Evidence that it raises ICP was weak. It is advocated for this use now due to its maintenance of haemodynamic stability.
Haemodynamic stability is very important in traumatic brain injury as hypotension is a major predictor of poor outcomes in TBI, even a single hypotensive event can have deleterious consequences in terms of secondary brain injury.
This is a situation where an opiate adjunct would be helpful in ensuring that haemodynamic stability is maintained but so that laryngoscopy does not provoke a hypertensive response. Ketamine activates the sympathetic nervous system, therefore it can result in maintaining cerebral perfusion pressure. Doses should be titrated according to the haemodynamic parameters of the child in front of you, the dosing range is 1 - 2 mg/kg.

ADVANCED CASE SCENARIO 3

Ashleigh is a 2 year old female brought in to you on New Year's Eve after her sister accidentally let off a firework that exploded in her face.
Ashleigh has obvious burns to her face/neck/chest/upper limbs. When you perform an airway assessment you can hear soft stridor and see burns inside her mouth. You decide that she has a threatened airway and decide to intubate her.

Your consultant decides to use suxamethonium as the muscle relaxant of choice, you ask why because you heard it was contraindicated in burns. What is the evidence surrounding use of suxamethonium in burns?

This is an area that is easy to get confused about. The evidence regarding suxamethonium and burns is that it is safe within the first 24 hours of injury (some evidence states 48 hours) but not for use after 24 hours of injury. After this time it is contraindicated, is this due to hyperkalaemia (thought to be due to release of potassium from extrajunctional acetylcholine receptors). This potassium release can cause severe hyperkalaemia and lead to cardiac arrest. The important thing to remember is it is contraindicated for 1 year after a burn injury.

You find yourself in a CICO situation after failed intubation and LMA placement, what is your difficult plan for this 2 year old?

NB The ideal situation for this child is that they are intubated in theatre by an experienced anaesthetist with ENT on standby where there is an option of fibreoptic intubation. This is not available in all institutions.

Can't intubate, can't oxygenate is the worst thing an airway team can hear - but they MUST hear it. The first thing to do is ensure you have said loudly to the team that they are in can't intubate, can't oxygenate situation.
1. If anaesthetics were not involved earlier, they need to be involved and called now
2. Consider waking the child up - in this case with airway burns it is prudent to establish access otherwise the airway will be lost later
3. Front of neck access - the question here is how to puncture the neck - needle or knife?

DAS UK guidelines suggest that children over 8 should be a "scalpel, finger, bougie" technique, under 8 the cricothyroid membrane is so small that needle jet insufflation should be utilised. Early involvement of ENT and anaesthetics is a must.

The technique for this as described by DFTB:

Extend the neck (making the target as big as possible)
Stabilize the larynx with the non-dominant hand
Access the cricothyroid membrane with a dedicate 14/16g cannula
Aim in a caudal direction
Confirm position with aspiration of air into a syringe containing saline
Connect to oxygen source
Adjustable, pressure limiting device - some departments will have a specific jet insufflation device, other institutions may have to create their own. This can be done by attaching IV tubing to a 3 way tap directly onto the cannula and occluding the 3 way tap to be the breath, proximal end of the tubing can be attached to the oxygen source. Please check your department to see what is available.
4bar O2 source (hospital oxygen wall meter delivering 10-15L) – matching l/min with age
Slowly increase inflation pressure/flow rate to achieve maximal chest rise
Maintain upper airway patency to aid expiration

Front of neck access is rarely done, however it is a lifesaving skill that all critical care physicians looking after both adults and children should be able to do. Practice on mannequins and watch videos so that you are able to call upon your knowledge should you ever have to use it!

Why is expectant airway management in burns so important?

Airway swelling rapidly increases after the burn and is at risk of airway closure and difficulty intubating the airway later.
Signs of airway burns:
- History of burn in enclosed space
- Upper airway oedema (swollen tongue and lips)
- Sooty sputum (may not be able to assess in a young child that cannot expectorate)
- Facial burns, singed nasal hair, soot in the mouth
- Respiratory distress (Dyspnoea, stridor, wheeze, hoarse voice)

If any of those are present the airway is at risk and consider intubation of the airway earlier rather than later!

ADVANCED CASE SCENARIO 4

Lily is a 2 month old infant being brought into ED by her mum as she is not feeding well and she has noticed her breathing is abnormal. She has an unremarkable birth history, born at term via NVD, GBS negative, Apgars 9 +9.
She has an older brother Isaac who attends daycare and has a runny nose recently.
Lily is in respiratory distress with grunting, nasal flaring, recession and head bobbing. You have tried HFNP and CPAP to little avail over the past 3 hours. She is now tiring and is becoming bradypnoeic and bradycardic. To prevent cardiac arrest you decide to intubate this child so proceed to an RSI.

Does this child need atropine preloading? Do all children need atropine?

There is much debate regarding premedication with atropine prior to RSI.
The idea behind atropine as a pre RSI agent is that it increases the heart rate prior to induction to reduce the chance of bradycardia on induction.
There have been multiple studies which have suggested that atropine is not routinely required for premedication for an RSI and that uncontrolled hypoxia is the largest determinant in bradycardia when compared to the use or not of atropine.
In this case you could consider atropine given that the patient already has a bradycardia secondary to her respiratory failure, however you could also argue that adrenaline would be a better choice to reverse her bradycardia and improved general perfusion prior to induction.
This decision would be made with senior decision makers as an RSI in this situation would be high risk due to her already deranged physiological parameters.

Atropine is not a drug to be given “just in case”, careful consideration needs to be given as it is not without important side effects such as:
Increased temperature with a risk of malignant hyperthermia, at too high a dose can induce ventricular arrhythmias, at too low a dose can cause bradycardia.
It lowers seizure threshold and increases risk of aspiration by relaxing the lower oesophageal sphincter.

The general rule is no, it is not needed for every RSI, however it should be drawn up and available in the event of a bradycardia, however if you start out bradycardic prior to induction then this needs treatment otherwise there is significant risk of clinical deterioration or cardiac arrest during induction.

Would you use a cuffed or uncuffed ETT?

First of all why are we asking this question? In an adult circumstance the answer is always a cuffed ETT, so why is there a choice in paediatrics?
The issue comes from neonates, cuffed ETTs are thought to cause cuff-related trauma and subglottic stenosis, despite the benefits of a cuffed ETT (better aspiration protection, more accurate ETCO2 detection and lung recruitment). These rates however are much lower than previously thought and the evidence suggests that cuffed tubes are more advantageous.
The current APLS guidance is that cuffed ET tubes are advantageous however it requires meticulous attention to size, cuff pressure, and to exact placement to ensure it is in the correct position.

This will be determined by what is available in the correct size in your department, the correct size is more important than cuffed vs uncuffed. Remember, if you are not in a tertiary centre the tube can always be exchanged if there is an issue. Please check in your department what is the accepted practice and be aware of the availability of these tubes.

Would you use a bougie?

A bougie is a plastic stick which is used to help instrument the airway, it acts as a rigid placeholder for the ETT to be railroaded over the top. In many emergency airways the bougie is the first thing to be called for, however, be aware that it is not small enough for paediatric airways especially neonatal ones.
Check and see what your department has - most may have an adult and paediatric bougie with the paediatric bougie being compatible until approximately a size 5 ETT. You do not want to intubate the airway with a bougie and then realise your ETT does not fit!
With the smaller airway especially the neonatal airway then you use a stylet which is small enough for the ETT to fit over the top.

SIM OPTIONS

Difficult airway leading to cricothyroidotomy **Paediatric Difficult Airway Simulation**
More Airway learning material **Optimus Bonus**

QUIZ

Question 1.

The airway assessment mnemonic is named after which fruit?

MANGO - Mallampati/Airway Diameter/Neck/Gnashers/Obstruction
APPLE - Airway diameter/Positioning/Palate/Look/Evaluate
LEMON - Look/Evaluate/Mallampati/Obstruction/Neck
LIME - Look/Incisor distance/Mallampati/Evaluate

Don't forget it is a LEMON! Look first, then evaluate, check the mallampati, check for obstructions and lastly look at the neck!

Question 2.

What can you use to help optimise airway anatomy when intubating a small child?

1. Philly collar
2. Neck/shoulder Roll
3. Head of the bed sloping downwards
4. Put the child in the recovery position

Neck/shoulder roll should be used to due to the large occiput in a child to ensure appropriate position for laryngoscopy.

Question 3.

Which of these is an indication for an RSI in the Emergency Department?

1. Elective surgery for inguinal hernia repair
2. Suspected airway burns
3. Child with GCS 14
4. Trauma - isolated leg injury but going to theatre in a few hours position

Airway burns need to be managed promptly. If possible this should be done in theatre by anaesthetics, but not all centres have this availability therefore it may have to be done in an Emergency Department setting.

Take home tips

1. Understand how to perform an airway assessment
2. Know indications for an RSI
3. Recognise and be able to choose the correct equipment and be able to size them
4. Be able to formulate an airway plan
5. Difficult airway plan and front of neck access

REFERENCES

Intubation, hypotension and shock LITFL

Paediatric Difficult Airway Guidelines

Paediatric RSI LITFL

Adventures in RSI

Clinical Practice Guidelines : Emergency airway management

Size compatibility of airway equipment in children, ETT and LMA

Atropine Not Needed for RSI

VORTEX approach

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