

YOU are an important component of the algorithm



- **The airway manager's assessment and choice of techniques should be based on:**
 - Previous Experience
 - Available Resources (including equipment availability)
 - Competency of help
 - Context in which the airway management will occur
 - If possible move to the OR
- **If you don't perform a lot of pediatric airway management, you should not be managing the ANTICIPATED difficult pediatric airway.**
 - Refer the patient to a tertiary care center

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Risk Assessment



Approximately 80% of pediatric difficult intubations can be identified preoperatively². However, this leaves 20% unanticipated.

Neonates and infants³ are more likely to present with difficulty in airway management compared to older children.

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Risk Assessment



Look for characteristics that can indicate the possibility of a difficult airway:

- **Indicators on the standard facial/airway exam**
- **Certain congenital anomalies are associated with difficult laryngoscopy – Treacher Collins, Klippel-Feil, cleft palate, mucopolysaccharidoses and airway masses.**
- **Comorbidities which are associated with difficult ventilation such as OSA and obesity – this holds for children as well as adults**

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Preparation of Environment:



- **Formulate your plan, backup plan, and backup backup plan.**
- **Have your equipment in the room and checked**
- **Identify your (skilled) helper(s)**
- **Ensure everyone in the room is aware of your sequence of strategy**

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Early considerations



- **Surgeon trained in pediatric invasive airway techniques**
 1. A neonatal trach is a lot more difficult than an adult trach
 - **ECMO**
 1. You need perfusionists, a primed ECMO circuit, and a surgeon.
- Both of these require lead time and cannot be instituted instantaneously**

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Preparation of Patient - Oxygen Supplementation



- **Properly position the patient**
- **Administer supplemental oxygen before initiating management**
- **Continue to deliver supplemental oxygen (whenever feasible) throughout the process of difficult airway management, including extubation.**

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Continuous Oxygen Supplementation

- *Can be via any number of modalities:*

- Nasal Cannula
- High flow nasal cannula
- Nasal PAP
- Continuous insufflation via modified nasal airway
- Via auxiliary port on laryngoscope

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Pediatric Algorithm – Tools Highlighted

- *Supraglottic Airway*
- *Flexible Intubation Scope*
- *Video Laryngoscopy*
- *These can be used alone *or* in combination*

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Intubation : 3 + 1

- *Don't start with DL!!*
- *For pediatric patients, data shows advanced airway management techniques are more effective at securing a difficult airway.*
- *Meta - analyses of randomized trials⁴ have demonstrated that video assisted laryngoscopy in pediatric patients with predicted difficult airways:*
 1. IMPROVES LARYNGEAL VIEWS
 2. IMPROVES FIRST-ATTEMPT INTUBATION SUCCESS
- *Combination techniques MAY improve intubation success in patients with anticipated difficult airways⁵.*

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Be aware of the passage of time, the number of attempts, and oxygen saturation

- This amounts to an emphasis on situational awareness, which avoids TASK FIXATION.

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Functional versus anatomic obstruction

- *Laryngospasm is much more common in pediatric patients*
- *The pediatric guidelines highlight ensuring adequate anesthetic depth throughout secure airway acquisition.*
- *Postintubation bronchospasm is also incredibly common in neonates and infants and can be so severe as to not have any etCO₂ at first.*

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Attempt to ventilate after each unsuccessful attempt.

- *The ability/inability to ventilate is not set in stone – i.e. one attempt and that's it.*
- *If you were unable to ventilate when the patient was paralyzed, maybe you will be better able to ventilate when the paralysis begins to wear off*
- *You won't know unless you try (again)*

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Extubation should be planned as carefully as intubation



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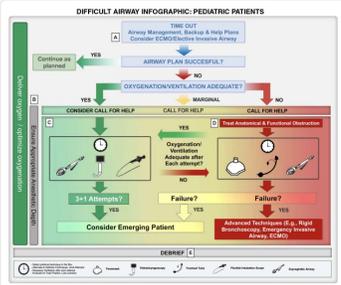
Pediatric specific suggestions

- *Get an IV up front in cases of suspected difficult airway. If you don't do a lot of inhalational inductions, now is not the time to practice.*
 - *That being said, you can still perform an inhalational induction to maintain spontaneous ventilation, with the added benefit of already having IV access.*
- *Don't attempt airway manipulation beyond the insertion of an OPA without IV access*
- *In premature children and infants, sometimes it is helpful to leave the feeding tube or repleg in situ, so long as it doesn't interfere with BMV.*
 - *It is a great indicator of which orifice to NOT place the ETT in.*



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DIFFICULT AIRWAY INFOGRAPHIC: PEDIATRIC PATIENTS



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Recommendations

- *Ask for help before you start (Surgeon, ECMO, assistant)*
- *Use supplemental oxygen*
- *Use advanced airway techniques for your first attempt (not DL)*
- *Avoid task fixation*
- *Check ability to ventilate after each attempt*
- *After 3+1 failed attempts don't delay waking up or an invasive airway*
- *Have an extubation plan*



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• **Thank you!**



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