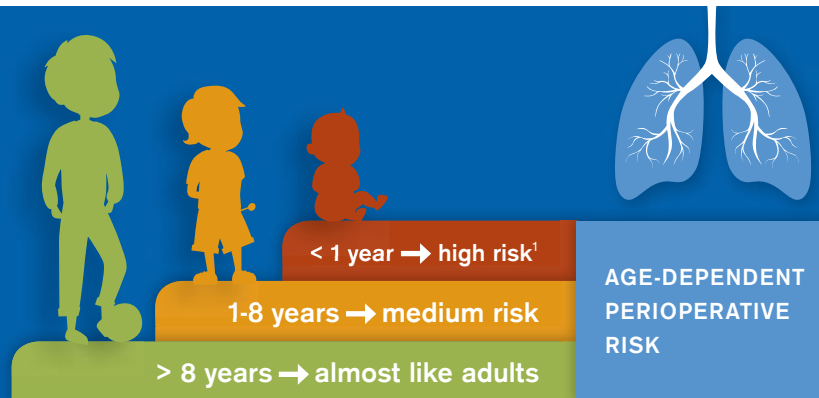


# Pitfalls to avoid in paediatric anaesthesia



## PRE-OPERATIVE STEPS

### → Planning

- Keep fasting time short (1h for clear fluids, 4-6h for light meals / breast milk and solids, respectively)<sup>2,3</sup>
- Do not delay the operation, children are prone to hypoglycaemia
- Precise calculation of drug dosage + tidal volume: even small errors have a large impact in small children (consider power of ten error)

### → Thermoregulation

- Preheat the OR (at least 21°C)<sup>4</sup>
- Use active warming, start prior to and continue during operation
- Check temperature: Children have a narrow range of thermoregulation

### → Intubation

- Check for the right equipment before the patient arrives (small tube sizes, breathing system hoses and filters according to patient's age)
- Have an experienced anaesthesiologist on call
- Be aware of the risk of tube displacement due to short airways
- Quick intubation (apnoea time should be < 60 sec in infants), children have a faster drop in SpO<sub>2</sub><sup>5</sup>

Good planning is crucial for children!

## DEVICE SET-UP

### → Deadspace

- Use tubes and filters adapted for age and avoid extension tubes
- Children are at risk of deadspace ventilation due to low tidal volumes

### → Filters

- Small electrostatic filters do not safely protect from microbial contamination
- Use mechanical filters close to anaesthesia machine and discard them with hoses after usage<sup>6</sup>

### → Lung protection

- Use age-adapted HME (filters) and low-flow ventilation to account for limited regulation of humidity/temperature in children

Optimise set-up to reduce deadspace as much as possible, use age-adapted filters/tubes!

## VENTILATION PARAMETERS

### → Tidal volume

- Use a compliance-corrected V<sub>t</sub> of 6(-8) ml / kg body weight to avoid ventilator induced lung injury (VILI)

### → I:E ratio

- To avoid air trapping, use an I:E ratio of 1:2 – 1:3<sup>7</sup>
- Expiration time (T<sub>e</sub>) should not drop below 0.4 seconds

### → CO<sub>2</sub>

- Adjust ventilation to CO<sub>2</sub> levels of 40-45 mmHG in healthy children (up to 80 mmHG in bronchopulmonary dysplasia), especially avoid hypocapnia as it may cause severe brain damage<sup>8</sup>
- High CO<sub>2</sub> + normal O<sub>2</sub> values? Check for obstruction or too much deadspace

### → Saturation

- Saturation should be 95% in healthy children ≥ 3 weeks of age (92-93% in children with reduced lung perfusion)
- In small children, check saturation on both arms to account for a persistent ductus arteriosus

### → Ventilation Pressures

- Use a PEEP of 3-5 cm H<sub>2</sub>O (8-10 cm H<sub>2</sub>O in compromised lungs)
- Measure pressures in real-time and precisely

Follow lung protective ventilation strategy! Keep in mind low tidal-volume, avoid hypocapnia, be precise!

# Reference list

The infographic “Pitfalls to avoid in paediatric anaesthesia” is based on the White Paper “Paediatric ventilation in the OR: In urgent need of improvement” ([https://www.draeger.com/en\\_aunz/Hospital/Acute-Care-Insights/Respiratory-Care/Protective-Ventilation/Paediatric-Ventilation](https://www.draeger.com/en_aunz/Hospital/Acute-Care-Insights/Respiratory-Care/Protective-Ventilation/Paediatric-Ventilation)). Supplemental references are listed below:

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