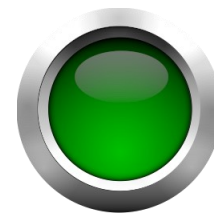


Paediatric PHEA SOP

QPI

Further reading

AAGBI - Safer Prehospital Anaesthesia 2017
Prehospital anaesthesia handbook 2016
PHEA checklist



Related SOPs

Prehospital emergency anaesthesia SOP Low output state in trauma SOP
Post intubation & ventilation SOP Front of neck access SOP Traumatic brain injury SOP

Prehospital emergency anaesthesia for children is an infrequently required procedure, and the decision to proceed should not be taken lightly. In general there is a higher threshold than in adults, and this threshold rises further in very young children.

The principles and practice of paediatric PHEA are essentially the same as in adults, and detailed in the Prehospital emergency anaesthesia SOP. Only the additional factors that need to be considered will be discussed here.

Indications for paediatric PHEA

1. Actual or impending airway compromise (NB can often be managed with simple techniques in children)
2. Respiratory failure
3. Unconscious or severely agitated/unmanageable patients
4. Humanitarian reasons to ease suffering, particularly in multiply injured patients

A risk:benefit analysis should be considered for every potential PHEA case

Paediatric PHEA SOP

Weight Estimation

Refer to Kidz Cardz. If unavailable, use the *simple* formula $(age + 4) \times 2$

Anatomical differences

Large head → Slight elevation of body or shoulder roll will prevent excessive neck flexion

Large tongue and floppy epiglottis

High anterior larynx

Short trachea → Increased risk of endobronchial intubation

Physiological differences

Rapid desaturation due to increased metabolic rate (worse when sick)

Atelectasis more common → may need PEEP and higher FiO_2

Hypovolaemia difficult to assess – BP is late to fall

Blood volume ~80ml/kg, therefore small losses can be significant

Rapid heat loss → high body surface area/weight ratio, anaesthesia exacerbates the problem

Dead space → Smaller tidal volumes in children mean that are particularly prone to re-breathing issues if there is excessive dead space in the breathing system. Always remove the catheter mount from the circuit, and use an age-appropriate HMEF.

Endotracheal tubes (ETTs)

GNAAS use cuffed endotracheal tubes for all age groups, as these are less likely to need changing for having too little or too much leak. Please refer to the Kidz Cardz for accurate size estimations based on age. Formula suggestions:

Internal cuffed ETT diameter (mm) = $(Age/4) + 3.5$

Oral tube length (cm at lips) = $12 + (Age/2)$

Blade sizes: > 8 years old → size 3 Macintosh

< 8 years old → size 2 Macintosh

Straight blade may be needed for infants/neonates

ETTs are prone to moving, kinking and obstructing. Therefore, close care must be taken when transporting an intubated child. Ideally, ETTs should be secured using the 'trousers' technique shown below:



Paediatric PHEA SOP

Preoxygenation

The Mapleson F circuit should preferentially be used for preoxygenation, as this allows the highest FiO₂ to be delivered. Oxygen should be on high flow.

Drugs

The drugs and doses used (in mg/kg) are the same as for adult PHEA. With young children, it is advisable to use smaller syringes when drawing up drugs to allow accuracy when administering a calculated dose. It is then even more important to ensure that syringes are labelled appropriately as syringe recognition will not be automatic.

Failed Intubation

Desaturation is more likely to occur during intubation in children compared to adults. Due to the speed of desaturation, rescue techniques should be started sooner than one would in an adult.

Gastric decompression

Where a young child has received positive pressure ventilations via BVM, always be aware of diaphragmatic splinting from gastric air and consider early nasogastric or orogastric tube insertion (or suction catheter). NG tubes are available in the paediatric bag.

Rescue techniques

Bag valve mask with guedel airway is the first-line rescue technique in failed intubation in children. Difficult facemask ventilation is rare in children.

Supraglottic airway devices

When facemask ventilation is difficult an iGel should be used. A range of paediatric sizes are available.

Front of neck access

- Infants up to 1 year of age will require direct visualisation of the tracheal wall using a surgical tracheostomy technique
- Between 1 and 5 years of age, if the cricothyroid membrane is palpable, a surgical cricothyroidotomy should be used. Otherwise, they will require a tracheostomy technique as above
- Over 5 years of age, a surgical cricothyroidotomy is appropriate

An appropriate sized endotracheal tube should be used in paediatric cases, and this may need to be a size smaller than the standard tube for that age group.

