

Clinical Guideline

WATCH – INTUBATION OF THE CRITICALLY ILL CHILD

SETTING	Wales and West Acute Transport for Children (WATCH)
FOR STAFF	WATCH Team, South West and South Wales District General Hospital medical and nursing teams.
PATIENTS	Children requiring emergency induction of anaesthesia to secure their airway

GUIDANCE

There are significant risks of induction and intubation in critically ill children. Multiple studies have demonstrated a 20% risk of both significant hypoxaemia and hypotension in critically ill children and adults. This guidance aims to standardise the drugs and steps taken to perform modified rapid sequence induction in children that require emergency intubation in any setting. We advise the use of a standardised intubation checklist and a team briefing before the procedure is undertaken.

GLOSSARY:	ENT Ear Nose and Throat
	ETT Endotracheal tube
	TIVA Total Intravenous Anaesthesia

RELATED DOCUMENTS	WATCH Drug Sheet https://www.watch.nhs.uk/drug-sheet/
	WATCH Securing and Management of Endotracheal Tubes https://www.watch.nhs.uk/wp-content/uploads/2018/04/Securing-and-Management-of-Endotracheal-Tubes-v1.7.pdf
	WATCH Intubation Checklist https://www.watch.nhs.uk/wp-content/uploads/2019/08/WATCH-revised-intubation-checklist-v2.pdf

AUTHORISING BODY	WATCH Governance Group
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SAFETY	Call the WATCH team for advice and support.
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QUERIES	0300 0300 789
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INTUBATION OF THE CRITICALLY ILL CHILD

PREPARATION

We recommend the use of an [Intubation Checklist](#).

Ensure the whole team is aware of anticipated problems and the plan in case of difficulty.

We recommend the [WATCH Drug Sheet](#) for drug doses, endotracheal tube size and length.

AIRWAY / BREATHING

If known or suspected difficult airway: ensure the most experienced anaesthetist available is undertaking the procedure and consider having an ENT surgeon present for intubation.

Always plan for how to maintain oxygenation in case of unanticipated difficult intubation. We recommend the Vortex approach (<http://vortexapproach.org/>). Allow **up to three** attempts of each of the following:

Face-mask ventilation: two-handed technique, oropharyngeal/nasopharyngeal airway, muscle relaxation, decompress stomach

Intubation: alternative laryngoscope or videolaryngoscope, change position, cricoid pressure, stylet/bougie, muscle relaxation

Supraglottic airway device: muscle relaxation, decompress stomach

If oxygenation is not established, **do not delay front of neck access** to airway – ensure appropriate equipment is available.

CIRCULATION

Ensure optimal fluid resuscitation has been given and consider whether to start an inotrope infusion before giving induction drugs. The following should be available in case of difficulty:

Fluid bolus

Crystalloid fluid: Plasma-Lyte 148, Hartmann's Solution or 0.9% Sodium Chloride 20 mL/kg.

Adrenaline resuscitation dose

(10 micrograms/kg) = 0.1mL/kg of 1:10000 Adrenaline.

Adrenaline dilute dose

A resuscitation dose made up to 10 mL in 0.9% Sodium Chloride. Give 1mL **(1 microgram/kg)** for hypotension or reduction of pulse volume at induction.

INDUCTION AGENTS

PATIENT CONDITION	KETAMINE	FENTANYL	ROCURONIUM
Cardiovascularly stable	2.0 mg/kg	2 micrograms/kg	1 mg/kg
Cardiovascularly unstable	1.0 mg/kg	1 micrograms/kg	1 mg/kg
Peri-arrest	0.5 mg/kg		1 mg/kg
Status Epilepticus	Propofol 1-5 mg/kg or Thiopentone 5 mg/kg (substitute Ketamine 1-2 mg/kg if hypotensive)		1 mg/kg
Upper Airway Obstruction	Consider inhalational induction (Sevoflurane) or spontaneously breathing TIVA technique		

POST INTUBATION MANAGEMENT

- Chest X-Ray to confirm ETT between the clavicles and carina
- Secure ETT with Melbourne strapping: [guidance](#) is available on the WATCH website.
- Insert nasogastric tube and place on free drainage
- Sedate with Morphine 20 - 60micrograms/kg/hr (1-3mL/h) and Midazolam 50 - 200micrograms/kg/hr (1-2mL/h)
- Muscle relax with Rocuronium 600 - 1200 micrograms/kg/hr (1-2mL/h)

Load with Morphine (0.1 mg/kg = 5 mL) and Midazolam (0.1 mg/kg = 1 mL) before running these sedative medications. Give half the respective loading doses if there is mild hypotension and avoid loading doses if there is significant hypotension.