


Title: Endotracheal Intubation		Policy No: WC/NP/46N Version No: 7
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Dr D Muogbo Consultant Paediatrician	All Paediatric Medical Staff All Paediatric Nursing Staff	-
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	WC Business Unit Group All Paediatric Medical Staff All Paediatric Nursing Staff All Senior Nursing/Midwifery Managers	Directorate of Women and Children's Guidelines Intranet Server
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Clinical Director for Women and Children		

**Burton Hospitals NHS Foundation Trust
Directorate of Women & Children's Services
Department of Paediatrics**

Endotracheal Intubation

This procedure should only be undertaken or supervised by an experienced person.

Preparation:

- Ensure working cannula in place.
- Ensure monitoring equipment (SpO₂, ECG) is attached and working.
- If NGT in place, aspirate stomach.

May not be needed
in emergency, e.g.
on labour ward

1 Equipment

The equipment required are: suction, oxygen with a pressure-limiting device and bag, appropriate size mask, hat to secure tube, ETT fixing device, forceps, scissors, laryngoscopes x 2, stethoscope, ETT x 2 (see below for sizes).

2 Pre-intubation medications

The aims of administering medications prior to intubation are to reduce pain and the physiological disturbances during the procedure. This will increase the chances of a successful intubation as well as reduce complications.

- **Morphine 100 micrograms/kg** (analgesic to control pain)
- **Suxamethonium 2 mg/kg** (muscle relaxant to improve intubation conditions)
- **Atropine 10 micrograms/kg** (vagolytic to prevent reflex bradycardia)

2.1 MORPHINE

Bolus:

Dose required = 100 micrograms/kg

Formulation available = Morphine Sulphate 10 mg/mL vial

Preparation:

1. Add one vial (1 mL) of Morphine to 9 mL 0.9% Sodium Chloride. (Total 10 mL)
2. This gives a 1000 micrograms/mL solution.
3. Use 0.1 mL/kg of this diluted solution to give a dose of 100 micrograms/kg.

Infusion:

Infusion concentration required = 2.5 mg/kg Morphine Sulphate in 50 mL

Formulation available = Morphine Sulphate 10 mg/mL vial

Preparation:

1. Add the required volume of Morphine Sulphate to 0.9% Sodium Chloride and make up into a total of 50 mL.
2. This gives a 2.5 mg/kg Morphine Sulphate in 50 mL solution.
3. Adjust the rate of infusion.
 - 10 micrograms/kg/hr = 0.2 mL/hr
 - 20 micrograms/kg/hr = 0.4 mL/hr
 - 50 micrograms/kg/hr = 1 mL/hr

2.2 SUXAMETHONUM

Dose required = 2 mg/kg

Formulation available = 100mg/2mL

Preparation:

1. Dilution not required.
2. Use 0.04 mL/kg of Suxamethonium to give a dose of 2 mg/kg.

Only administer muscle relaxant if you are confident the team are ready to intubate the baby quickly. Also DO NOT administer muscle relaxant unless adequate analgesia has been given.

2.3 ATROPINE

Dose required = 10 micrograms/kg

Formulation available = Atropine 600 microgram/mL vial

Preparation:

1. Add one vial (1 mL) of Atropine into 5 mL 0.9% Sodium Chloride. (Total 6 mL)
2. This gives a 100 micrograms/mL solution.
3. Use 0.1 mL/kg of this diluted solution to give a dose of 10 micrograms/kg.

2.4 SURFACTANT

Dose required: 200 mg/kg

Formulation available = 240mg/3mL (1 mL = 80 mg)

3 Procedure

Neonates are orally intubated.

1. Pre-oxygenate for 2 minutes with 100% oxygen via bag-valve mask or facial oxygen.
2. Decompress stomach with NG tube aspiration.
3. Administer pre-intubation medication.
4. Place laryngoscope into the right side of the mouth, then lift up the tongue and jaw to visualize vocal cords and larynx.

5. Apply cricoid pressure (by assistant).
6. Insert endotracheal tube (ETT) with an introducer. Introducer tip should not protrude beyond end of ETT.
7. Advance ETT until black mark at end of tube is just beyond vocal cords. Check length of the tube at the lips.
8. Remove the introducer.
9. Confirm position of ETT. If there is a significant air leak, a larger diameter tube may be required.
 - a. Auscultate for equal air entry on both sides of the chest.
 - b. Observe for equal chest expansion with ventilation breaths.
 - c. Assess exhaled CO₂ with CO₂ detector.
10. Secure tube with hat and tie.
11. Record tube length on nursing ventilation chart and in notes. Update parents.
12. Request Chest X-Ray to determine position (tip of ETT at vertebra T2, between the clavicular heads).

WEIGHT (kg)	DIAMETER (mm)	LENGTH (cm) at the lips
< 1.0	2.5	5.5
1 – 1.5	2.5	6.0
1.5 – 2.0	3.0	6.5 – 7.0
2.0 – 2.5	3.0	7.0
2.5 – 3.0	3.0 / 3.5	8.0 – 8.5
3.0 – 3.5	3.5	8.5 – 9.0
>3.5	3.5 / 4.0	9.5

4 Intubation Checklist

See Intubation Safety Checklist below.

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INTUBATION SAFETY CHECKLIST

PREPARE: PROCEDURE
<input type="checkbox"/> What is the indication for intubation?
<input type="checkbox"/> Is difficult airway anticipated?
<input type="checkbox"/> Additional equipment (NP, OP, LMA) required?
<input type="checkbox"/> Have drugs been prescribed? Is surfactant required?
<input type="checkbox"/> Ventilator set up?

PREPARE: TEAM
<input type="checkbox"/> Role allocation clarified? <ul style="list-style-type: none"> • Intubator • Assistant • Drug nurse • Scribe
<input type="checkbox"/> Is senior help required?

PREPARE: PATIENT
<input type="checkbox"/> Patient position optimized?
<input type="checkbox"/> Incubator / resuscitaire height optimized?
<input type="checkbox"/> Working IV access?
<input type="checkbox"/> Monitoring attached? (SpO ₂ , ECG)
<input type="checkbox"/> NG aspirated?
<input type="checkbox"/> Is cricoid pressure considered?
<input type="checkbox"/> Temperature control aids prepared?



Time out for...
EQUIPMENT CHECK
<input type="checkbox"/> Monitoring
<input type="checkbox"/> Suction
<input type="checkbox"/> Oxygen supply
<input type="checkbox"/> Bag-valve
<input type="checkbox"/> Neopuff / T-piece
<input type="checkbox"/> Mask
<input type="checkbox"/> Ventilator connected + working
<input type="checkbox"/> Laryngoscopes x2
<input type="checkbox"/> ET tubes (sized) x2
<input type="checkbox"/> Stilette / introducer
<input type="checkbox"/> Airway adjuncts
<input type="checkbox"/> Stethoscope
<input type="checkbox"/> CO ₂ detector
<input type="checkbox"/> Hat & tie
<input type="checkbox"/> Forceps
<input type="checkbox"/> Scissors
DRUG CHECK
<input type="checkbox"/> Morphine bolus
<input type="checkbox"/> Atropine
<input type="checkbox"/> Suxamethonium bolus
<input type="checkbox"/> Saline flush
PATIENT CHECK
<input type="checkbox"/> Preoxygenated?
<input type="checkbox"/> NG aspirated?

"Procedure start" + time in

SUCCESSFUL INTUBATION
<input type="checkbox"/> Confirmed placement? <ul style="list-style-type: none"> • Auscultation • Chest expansion • CO₂ detector
<input type="checkbox"/> Confirm ET tube size/depth + secure
<input type="checkbox"/> Ventilator settings confirmed + connected
<input type="checkbox"/> Post-intubation drugs (infusions) started?
<input type="checkbox"/> Chest X-ray ordered?
<input type="checkbox"/> Documentation + update parents
<input type="checkbox"/> Blood gas early, or within 1 hour?
<input type="checkbox"/> Oxygen prescribed?

No. of attempts	
ET Tube SIZE (mm)	
ET Tube LENGTH at lips (cm)	
Ventilator settings	PIP: PEEP: Resp Rate: FiO ₂ :
Time start	
Time finish	