

 NEONATAL CLINICAL PRACTICE GUIDELINE	Title: Neonatal Intubation	
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	Approved by: Neonatal Patient Care Teams, HSC & SBH Child Health Standards Committee	Supercedes: HSC# 80.275.555

1.0 PURPOSE AND INTENT

- 1.1 To provide a process for safe and effective insertion and management of endotracheal tubes (ETT) in all neonates who require endotracheal intubation in neonatal areas or are cared for by the neonatal team.

2.0 PRACTICE OUTCOME

- 2.1 Minimize risk for development of chronic lung disease through appropriate intubation and ventilation.
- 2.2 To eliminate the discomfort and negative physiologic consequences associated with awake intubations.

3.0 DEFINITIONS:

- 3.1 **Elective intubation:** Any intubation which is of a non urgent nature such that there is sufficient time to prepare medications for performing the procedure.
- 3.2 **Emergent Intubation:** Any intubation which is required in such short time that it would be deemed unsafe to wait for medications to be prepared for the procedure. Intubations required at birth for the purposes of resuscitation or those needed due to an inability to ventilate via bag and mask ventilation or those with the requirement for an airway immediately would also fall in to this category.

4.0 GUIDELINES:

- 4.1 A Physician, Nurse Practitioner or a Registered Respiratory Therapist (RRT), who has demonstrated competency in neonatal intubation performs the intubation.
- 4.2 Allow each individual no more than two attempts at intubation except in circumstances where there is no other person available who is qualified to intubate. Use bag-mask ventilation until an alternate physician or qualified respiratory therapist is available. In some situations it may be appropriate to have the most experienced individual perform the intubation.
- 4.3 Use a CO₂ detector and waveform graphics if available, to indicate appropriate placement of the ETT.
- 4.4 Do a chest x-ray to confirm appropriate placement of the tube after every intubation and after the position of the ETT is changed. If there is uncertainty about ETT position, do a chest x-ray before it is repositioned.
- 4.5 The Anesthetist on call provides back-up for intubation as required at the Women's Hospital.
- 4.6 Notify the prescribing practitioner responsible for the patient when:
- 4.6.1 An intubation is required or anticipated.
 - 4.6.2 An endotracheal tube is retaped.
 - 4.6.3 An elective extubation is taking place.
- 4.7 Retape endotracheal tubes or perform elective extubation when physician or RRT who is competent to perform an intubation is present in the unit. Extubate on the written order of the physician/other prescriber.
- 4.8 Two individuals, nurses or RRTs, reposition an endotracheal tube on the written or verbal order of the

prescribing practitioner after they have confirmed the need for repositioning from the chest x-ray.

- 4.9 Provide premedication for all elective intubations. Provide the medications in the following order: Atropine, Fentanyl, and then Succinylcholine. Perform a blood gas in 30-45 minutes following the intubation. See APPENDIX A for details. When premedications used, set the ventilator rate at 60 and volume guarantee at 4.5 mL/kg until the effect has diminished and the baby is breathing adequately.
- 4.10 The patient who is going to be intubated for surfactant administration and then extubated shortly thereafter can still receive premedication but provide naloxone to reverse any effects of the fentanyl if the infant is still sedated.

5.0 REFERENCES:

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APPENDIX A
Premedication for Neonatal Intubation

Background

Tracheal intubation results in a significant increase in arterial pressure, increased intracranial pressure, hypoxia and bradycardia in the neonate. Pre-medicating with a vagolytic, sedative and paralytic agent has been shown to attenuate these adverse physiologic responses. The safety of this practice has also been shown in repeated studies and has further demonstrated no significant adverse events. Furthermore the use of premedication may decrease the number of attempts required for successful intubation. The Canadian Paediatric Society has recently endorsed this practice in a position statement. ***The listed doses have been approved for use for this procedure by the Neonatal Patient Care Team in accordance with the Canadian Pediatric Society position statement “[Premedication for Endotracheal Intubation in the Newborn Infant](#)”. Additional information is available in the [Pediatric Parenteral Drug Manual](#).***

Choice of Medications for Controlled Intubation

1. Atropine

Atropine is a competitive inhibitor of the action of acetylcholine. It will minimize bradycardia and prevent the bradycardia that some patients experience with administration of succinylcholine. It is also given to reduce oral secretions and should be given several minutes prior to intubation if possible.

Dose: 0.02 mg/kg IV. Onset of action is 12-16 minutes to decrease secretions, so this drug should be given first. Heart rate may be affected within 2-5 minutes.

2. Fentanyl

Fentanyl is an opioid analgesic with a rapid onset of action.

Dose: 3 mcg/kg IV or Intranasal if venous access is not available.

Bolus administration may cause chest wall rigidity, so it should be given over a few minutes. This side effect can be overcome with the administration of succinylcholine, so this drug should be ready to administer.

3. Succinylcholine

Succinylcholine is a neuromuscular blocker with a rapid onset and short duration of action (4-6 minutes). Bradycardia is a side effect, so it should never be administered unless Atropine has been given.

Dose: 2 mg/kg IV

Contraindication to Succinylcholine

Patients with known or suspected myopathies or a family history of malignant hyperthermia may develop myoglobinuria and severe hyperkalemia after receiving succinylcholine. In these instances an alternative paralytic agent should be administered. There are no short acting paralytics available so consideration may be given to avoiding the use of paralysis in these instances but an alternative should be available in the event of fentanyl induced chest wall rigidity. Rocuronium would be an acceptable alternative.

4. Rocuronium

Rocuronium is a non-depolarizing muscle relaxant with a rapid onset (1-2 min) but a duration of action of up to one hour.

Dose: 0.5 mg/kg IV

5. Naloxone

For full reversal of opioid-induced respiratory depression.

Dose: 0.1 mg/kg IV