The muscle relaxed infant

Muscle relaxation is administered to infants receiving assisted ventilation to improve pulmonary compliance and ventilation.

**Pancuronium** is the current muscle relaxing agent used in the neonatal unit. Pancuronium is a non-depolarising neuromuscular blocking agent, which causes muscle paralysis by competing with acetylcholine for cholinoreceptive sites at the post junctional membrane. (See *pancuronium*)

**Indications**
- Ventilated infants who remain poorly oxygenated due to their own struggling breathing efforts
  - Severe respiratory distress syndrome
  - Persistent pulmonary hypertension of the newborn.
  - Diaphragmatic hernia
- To give effective fast rate ventilation.

The use of muscle relaxing agent can be used to:
- Increase lung compliance
- Improve oxygenation
- Decrease barotrauma
- Decrease cerebral blood flow fluctuations

**Nursing Management**

**Prior to administration**
Observe all preliminary standards appropriate to this procedure as detailed in the nursing preface of this manual

**Ensure infant intubated and ventilated**
Auscultate the chest for breath sounds and to ensure patency of the ETT
- Resuscitation equipment available and functional
- Check air entry clear and equal
- Continuous cardiopulmonary, SaO2 and arterial blood pressure monitoring for infants <27 weeks,
  - For infants > 27 weeks, as above and establish transcutaneous monitoring
- Patent intravenous cannula
- Assess the baby's response to touch and handling prior to administration
- Ensure pancuronium reversal drugs (Atropine & Neostigmine) are available (see *pancuronium*)

**Administration**
Observe all preliminary standards appropriate to this procedure as detailed in the nursing preface of this manual
- 1st dose to be administered by a medical officer familiar with and competent in neonatal respiratory management
2nd and subsequent doses can be administered by an accredited registered nurse who has completed the relevant worksheets

Post administration
Observe all post procedural standards appropriate to this procedure as detailed in the nursing preface of this manual
Infant should not be left unattended, infant requires 1:1 supervision at all times
The medical officer may need to increase ventilator support after muscle relaxation with the loss of respiratory effort and chest wall stability
Continual observation and assessment of infants for spontaneous muscle activity (i.e triggering ventilatory breaths when infant on SIPPV, hiccoughs, spontaneous respiratory efforts or movement of digits / limbs)
Ensure the eyes are closed and lubricating eye drops are instilled 4th hourly to prevent corneal drying.
Protect the infant from excessive noise- use ear muffs to protect from hyperacousia
Frequent oral suction may be required, as muscle relaxed infants have increased oral secretions and an inability to swallow.
Implement an individualised care plan for the muscle relaxed infant incorporating comfort measures such as nesting, pressure area care and minimal handling,
Gentle passive movements of limbs, position to provide correct anatomical alignment.
Strict fluid balance
Assess bladder function and tone –express bladder as necessary, by applying gentle pressure to the lower abdomen when the bladder is visible/palpable.
Appropriate analgesia and sedation with a narcotic infusion as ordered
Reassure and explain the infant’s condition openly with parents and involve them in their child’s care. Parents should still be encouraged to touch and speak to their infants gently
Infants who are muscle relaxed are not routinely weighed
Administer the second and subsequent dosages as ordered

Cessation of Muscle Relaxation
The effects of muscle relaxation are generally allowed to wear off, reversal is a rarely utilised.
Observe the infant’s response to “waking” as some infants will require the recommencement of treatment
Continue to provide individualised care - see nursing management of the ventilated infant