Elective extubation

Introduction
Neonates are ready for extubation when they are on minimal ventilation, display adequate respiratory drive, and have acceptable arterial blood gases. Elective extubation can be performed by staff specialists, fellows, registrars and clinical nurse specialists. A staff specialist, fellow or registrar must be informed of the procedure and remain in the unit until the infant is stabilised.

Infants who require minimal support after extubation may be given O₂ via head box, crib or nasal cannula. Infants needing extra respiratory support often receive nasal CPAP (nCPAP) as it has been demonstrated to facilitate successful extubation in preterm infants (Davis & Henderson-Smart 2003)

Equipment
1. Resuscitation trolley with intubation equipment checked and ready for use.
2. Anaesthetic bag, manometer with appropriately sized mask - connected to the O₂ /air blender.
3. Suction catheters 8Fg or 10Fg
4. Olive oil & cotton balls
5. Appropriate CPAP circuit with suitably sized nasal prongs & bonnet.

Preparation
• Morphine infusions are routinely ceased at least six hours prior to extubation.
• Withhold enteral feed for at least one hour prior to extubation to reduce the risk of aspiration or vomiting during the procedure
• Infants <30 weeks gestation are caffeine loaded prior to extubation (RPA Newborn Care Medication Protocols). Caffeine reduces the incidence and severity of central apnoea and facilitates extubation in very preterm infants (Henderson-Smart & Davis 2003)
• Ensure nCPAP equipment is ready for use – circuit to be checked by clinical nurse specialist.
• Ensure the resuscitation trolley is in vicinity, note the size and placement of the current endotracheal tube
• Notify parents as soon as practical – consider use of the words trial of extubation when discussing procedure with parents.

Procedure
• Ensure a staff specialist, fellow or registrar is nearby in case of severe apnoea and / or collapse
• Ensure appropriate monitoring (cardio respiratory and SpO₂ %) are in situ. When transcutaneous monitoring is used, ensure readings are stabilised and probe is secure.
• Position the infant supine.
• Aspirate stomach contents via an intra gastric tube
• Suction the endotracheal tube and oropharynx as appropriate.
• Ensure the infant has recovered from the suctioning procedure with good heart rate and SpO₂ % prior to extubation
• Ready the anaesthetic bag with appropriate mask and gas flow / concentration
• Remove endotracheal tapes using olive oil and cotton balls in order to maintain skin integrity.
• Withdraw the endotracheal tube with a single, smooth motion preferable on inspiration
• Observe the infant’s respiratory effort and assess need for further intervention

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Nursing care post-procedure

- Monitor the infant for apnoea, increasing FiO₂ requirements and respiratory effort.
- Consider positioning the infant prone if possible as this position is demonstrated to improve oxygenation in neonates requiring mechanical ventilation (Balaguer, Escribano & Roque, 2003)
- Place the infant on nCPAP, or administer supplemental O₂ (via head box, crib, or nasal cannula) as required to maintain adequate SpO₂ % levels - see policies: oxygen administration policy & alarm limits.
- nCPAP can be delivered using:
  o bubbly CPAP (Fisher & Paykel) for all infants
  o ventilator (Dräger or Stephanie) for infants >29 weeks or >1250gms
  o Infant Flow Driver® (EME, UK) for infants < 29 weeks or < 1250gms
- When the infant is stabilised turn off medical gas to the anaesthetic bag & mask to prevent unintentional O₂ administration. Turn off suction and remove tubing from the incubator.
- Obtain an arterial or capillary blood gas 30 minutes after extubation, or when clinically appropriate to determine if the infant’s respiratory effort is adequate.
- Ensure the parents are informed about their infant’s trial off mechanical ventilation and update them on progress.
- Recommence enteral feeds once the infant is stabilised.

Nursing documentation of procedure
Timing of extubation and other significant activities should be noted on the infant’s flow chart. In addition, the following need to be recorded in the infant’s progress notes.

- Report ventilator settings and infant’s condition prior to extubation and the neonatologist who ordered extubation.
- Record time of extubation and the clinician who performed the procedure
- Describe initial assessment of the infant’s respiratory efforts – including additional support such as nCPAP and supplemental O₂
- Document ABG results including nCPAP pressure; FiO₂ & mode of delivery; SpO₂% & MOs orders
- Update Respiratory Support and other relevant sections in the infant’s Powerchart.

References


