Royal Hospital for Women (RHW)
NEONATAL BUSINESS RULE
COVER SHEET

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SUMMARY	Timely and safe removal of an endotracheal tube (ETT) [extubation]

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NEONATAL BUSINESS RULE

Extubation RHW CLIN022

This Clinical Business Rule is developed to guide safe clinical practice in Newborn Care Centre (NCC) at The Royal Hospital for Women. Individual patient circumstances may mean that practice diverges from this Clinical Business Rule. Using this document outside the Royal Hospital for Women or its reproduction in whole or part, is subject to acknowledgement that it is the property of NCC and is valid and applicable for use at the time of publication. NCC is not responsible for consequences that may develop from the use of this document outside NCC.

1. BACKGROUND

The timely and safe removal of an endotracheal tube (ETT) is an important component of neonatal intensive care.

2. RESPONSIBILITIES

Medical and Nursing Staff

3. PROCEDURE

3.1 Equipment

- Resuscitation trolley with intubation equipment
- Resuscitation equipment (Neopuff or self-inflating bag with mask)
- Oxygen blender
- Suction equipment
- Adhesive remover
- Scissors
- Non-invasive respiratory support equipment e.g. nCPAP or nasal cannula set-up
- Cardio-respiratory monitor and pulse oximetry

NOTE: Endotracheal extubation is a two person procedure where at least one person is a senior nurse. The medical team must be aware that the extubation is occurring.

3.2 Clinical Practice

Planned extubation

1. Check with the medical consultant/fellow that the infant is ready for extubation with consideration to:
   - Infant's oxygen requirement
   - Infant's ventilation pressure requirements
   - Infant's ability to breathe spontaneously
   - Need for caffeine prior to extubation
   - Need to withhold feeds prior to extubation
2. Inform the infant's parents of the procedure.
3. Check that resuscitation equipment and intubation trolley is prepared and ready for use before proceeding with extubation.
4. Ensure that medical staff are in the unit while the infant is being extubated.
5. Position the infant supine with the head in the midline for the procedure.
6. Check cardio-respiratory monitoring and pulse oximetry is attached to infant and functioning.
7. Suction the infant's airway prior to extubation if required.
8. Allow the infant to recover post-suctioning before performing extubation.

9. Use adhesive remover to loosen tapes on skin.
10. Remove the ETT.
11. Apply the non-invasive respiratory support equipment including oxygen promptly if required post-extubation.
12. Inform parents on the outcome of the procedure.
13. Document the procedure in eRIC using the online form.
14. Consider nursing the infant prone to maximise lung expansion until the next set of cares.
15. Observe the infant for:
    - Increased work of breathing
    - Apnoeas
    - Desaturations
    - Bradycardia
16. Consult with medical staff whether a blood gas is required.
17. Consult with medical staff about re-commencing enteral feeds.

Unplanned extubation

1. Consider possible unplanned extubation when:
    - Presence of an audible cry
    - Increased leak on ventilator
    - Loss of synchrony of chest wall movement with ventilator
    - No air entry on auscultation
    - No end tidal CO2 detection
    - Sudden clinical deterioration – decrease in heart rate and oxygen saturation
2. Immediately call for assistance.
3. Provide immediate airway support.
4. Consider using Pedicap to check for CO2.
5. Consider visual inspection with a laryngoscope.
6. Remove the ETT tapes on the face with adhesive remover.
7. Remove the ETT (the gastric tube may or may not be removed at the same time).
8. Assess the infant's respiratory status.
9. Check the infant's vital signs.
10. Re-intubate the infant if required and secure ETT.
11. Confirm ETT location and position with a chest x-ray.
12. Replace the infant's gastric tube (if removed).
13. Position the infant in a comfortable posture.
14. Inform and update parents of the event.
15. Document incident in eRIC, IMS+ and complete NCC KPI form.

4. ABORIGINAL HEALTH IMPACT STATEMENT DOCUMENTATION

Considerations for culturally safe and appropriate care provision have been made in the development of this Business Rule and will be accounted for in its implementation.

5. ABBREVIATIONS

ETT	Endotracheal tube	eRIC	Electronic Record for Intensive Care
NCC	Newborn Care Centre	IMS	Incident Management System
nCPAP	Nasal Continuous Positive Airway Pressure	KPI	Key Performance Indicator
CO2	Carbon dioxide		

6. REFERENCES

1. Rivas-Fernandez M, Roqué I Figuls M, et al. Infant position in neonates receiving mechanical ventilation. Cochrane Database Syst Rev. 2016;11:CD003668.
2. Shalish W, Sant' Anna, GM, Natarajan G, et al. When and How to Extubate Premature Infants from Mechanical Ventilation. Curr Pediatr Rep. 2014;2:18–25.

7. REVISION AND APPROVAL HISTORY

Date	Revision No.	Author and Approval
15/12/2022 21/09/2023	1	KB Lindrea (CNC); Primary document approved NCC CBR Committee Endorsed by RHW SQC