NETS WA
Newborn Emergency Transport Service

Respiratory Distress Syndrome (RDS)

Scope (Staff):	Nursing and Medical Staff
Scope (Area):	NETS WA

Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

This document should be read in conjunction with this disclaimer

This is a quick reference guide for transportation purposes only. For further information please refer to the ***CAHS Neonatology 'Respiratory Distress Syndrome'*** guideline located **here**

Aim

To outline the management of infants with respiratory distress syndrome.

Risk

Failure to follow this guideline may lead to adverse outcomes for the infant.

Definition

RDS or surfactant deficient lung disease or hyaline membrane disease (HMD) is respiratory distress persisting beyond 4 hours of age due to immaturity and surfactant deficiency of lungs. Pre-dominantly in preterm neonates with characteristic radiographic findings of bilateral air bronchograms with a ground glass or reticulo-granular appearance in the lung fields.

Clinical Presentation

Usually presents within the first few hours following birth. The diagnosis is made on the basis of the combination of clinical features including:

- Tachypnoea (respiratory rate >60)
- Grunting
- Subcostal / sternal recessions

- Nasal flaring
- Decreased air entry
- Cyanosis
- Respiratory acidosis on blood gas analysis

Investigations

- Chest X-ray: Typically gives diffuse ground glass lungs with low volumes and a bell-shaped thorax, often tends to be bilateral and symmetrical. Air bronchograms may be evident.
- Blood gas analysis.
- Septic screen (Full blood count, CRP, blood culture- prior to giving antibiotics).

Management

Depends on a number of factors e.g. gestation, oxygen requirements, current respiratory support and may include mechanical ventilation and surfactant administration. All babies with symptoms of RDS are likely to need respiratory support.

CPAP

Spontaneously breathing preterm infants should be stabilised using CPAP. It is recommended to commence on CPAP of 6-7cms H2O**.** CPAP improves lung volume, especially functional residual capacity. The increased positive distending airway pressure improves oxygenation and reduces the work of breathing**.** It is effective in reducing the need for intubation.

Discuss with the on-call co-ordinating neonatologist if needing escalation of CPAP pressures to 8 cms H2O or more.

Refer to Continuous Positive Airway Pressure (CPAP) guideline

Mechanical Ventilation

Some babies may need intubation and mechanical ventilation due to need for increased ventilation support or oxygenation despite CPAP pressures ≥ 7cms H2O:

- Increasing Fio2 requirement >0.40.
- Increasing work of breathing with worsening respiratory acidosis (pH<7.25 and pCO2>60)
- Recurrent episodes of apnoea and / or bradycardia.

Intubation and ventilation should be considered in such babies after consultation with on-call consultant neonatologist.

Always **consider pre-medications** with atropine, fentanyl and suxamethonium for all intubations. Refer to the Neonatal Medication Protocols for all medication doses.

Refer to the NETS WA Intubation and Ventilation guideline.

Equipment for intubation and surfactant administration can be found in **blue/red** respiratory pouch in the top blue bag.

Surfactant Administration

Surfactant is given to improve compliance, stabilise lung volumes and reduce work of breathing. Current recommendation includes pre-emptive treatment with surfactant based on clinical assessment of work of breathing and inspired oxygen requirement, to avoid worsening RDS. Refer to Surfactant Therapy for surfactant administration instructions.

Indications

- If intubation is required as part of stabilisation in a preterm infant with RDS, then surfactant should be given as soon as possible.
- FiO2 on CPAP is >0.4
- Worsening respiratory acidosis (pH<7.25 and pCO2>60).
- Consider in meconium aspiration syndrome (MAS) and pneumonia, after discussion with the on-call co-ordinating neonatologist due to limited benefits and potential worsening of the clinical condition.
- Consider in ventilated neonates with pulmonary haemorrhage.

If the referring centre has facilities to obtain a chest x-ray (with on-site radiographer) it is preferable to do so before surfactant administration. If not, clinical examination may suffice to determine tube placement. Make sure that air entry is equal, i.e. avoid right main stem bronchus intubation/unilateral surfactant administration.

If transportation of the infant is likely to be imminent the method of surfactant administration should be considered carefully e.g. INSURE (Intubate, Surfactant, Extubate to CPAP) is **not** currently recommended prior to transport.

It is important to note adverse reactions to surfactant administration include transient hypoxia, bradycardia and endotracheal tube blockage.

If there is significant desaturation or bradycardia, stop administration temporarily and make appropriate changes to the ventilator to ensure the surfactant fluid in the tracheal tube advances distally and flow is re-established.

PPV may be required with a T-Piece or bag and mask. Ensure all emergency equipment is readily available prior to administration.

Non-respiratory management

1. Temperature regulation: Avoid both hypothermia and hyperthermia, aim to maintain in the normal temperature range.
2. Intravenous Fluid therapy: Preferable to avoid enteral feeding in an infant with significant respiratory distress. Aim to prevent hypoglycaemia.
3. Consider antibiotics (benzylpenicillin and gentamicin) after initial septic screen and blood culture) if infant needing ongoing respiratory support beyond 4 hours of life.
4. Minimal handling of the infant.

Related CAHS internal policies, procedures and guidelines
Neonatology Guideline • Respiratory Distress (RDS) • Continuous Positive Airway Pressure (CPAP) • NETS WA Intubation and Ventilation • Surfactant Therapy • Neonatal Medication Protocols

This document can be made available in alternative formats on request.

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