



**CLINICAL GUIDELINE**

**Pulmonary Haemorrhage**

<b>Scope (Staff):</b>	Nursing and Medical Staff
<b>Scope (Area):</b>	NICU KEMH, NICU PCH, NETS WA

This document should be read in conjunction with this [DISCLAIMER](#)

This is better termed “haemorrhagic pulmonary oedema” and is dependent on the primary cause. It is a form of fulminant lung oedema with leakage of red cells and capillary filtrate into the lungs. It must be differentiated from occurrence of a small amount of blood being aspirated from the end of an ETT secondary to trauma. It represents the extreme end of the spectrum of pulmonary oedema in the neonate.

### Associated Clinical Conditions

- Severe birth asphyxia.
- Rhesus haemolytic disease with hydrops/near hydrops.
- Left heart failure.
- Congenital heart disease.
- Sepsis.
- Hypothermia.
- Fluid overload.
- Oxygen toxicity.
- Haemostasis failure.
- Any pre-existing lung disease will worsen, as protein-rich fluid in the alveoli will inhibit surfactant function.

### Clinical Presentation

The commonest clinical presentation is in an infant with severe RDS on IPPV in high oxygen and heart failure secondary to a large pulmonary blood flow from a PDA. It is also associated with surfactant therapy.

### Symptoms

- Sudden deterioration.
- Copious bloody secretions from the infant’s airway either up the ETT or from the larynx and mouth if not already intubated.
- Usually there is hypotension.
- The infant may be pale and unresponsive.
- The outcome is dependent on the cause of the oedema. At the time of collapse, infants are susceptible to neurological damage and GMH/IVH. The mortality is significant, can be as high as 50% unless managed well.



## Investigations

- Check Hb, coagulation screen.
- Check ABG, biochemistry.
- CXR: often shows a white-out.
- Look for sepsis.

## Management

- Maintain blood pressure.
- Correct acidosis by ventilation or drug therapy.
- Fluid balance - consider fluid restriction, administer **Furosemide** 1-1.5 mg/kg.
- Sedate as needed.
- Use high PEEP - 6-7 cms (redistributes lung water back into the interstitial space, improving oxygenation and ventilation-perfusion balance). Consider alternative modes of ventilation; HFOV or HFJV which may enable the use of higher PEEP or MAP.
- Surfactant - may help to overcome protein inhibition of endogenous surfactant.
- Check for PDA - opening of symptomatic PDA. Consider medical treatment for PDA if neonate not requiring inhaled nitric oxide.
- Suction - be careful as may aggravate bleed.
- Manage coagulopathy.
- Sepsis - use or review antibiotics.

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