

Surfactant

Summary

- The decision to give surfactant will usually be made following discussion with attending consultant.
- Infants <30 weeks or less than 1.5 Kg, see VON early respiratory care section
- In infants of 30-34 weeks gestation who require surfactant for clinically significant RDS aim to give surfactant early (within 2 hours)
- Surfactant may be given to infants of greater than 34 weeks gestation who have RDS, meconium aspiration syndrome, pulmonary haemorrhage or infection but only with consultant approval
- One repeat dose may be given. A third dose should only be given after an x-ray has been taken and the indication has been discussed with the consultant
- Surfactant may produce rapid improvement in respiratory function. Turn down rate and pressures early where possible. A blood gas should be obtained during the hour after surfactant administration.
- Avoid suctioning soon after surfactant for obvious reasons but there is no policy that suction should be avoided for 12 hours after administration.
- The surfactant presently in use in the unit is Curosurf. This comes in 120mg and 240mg vials. Use the most appropriate vial size is used to avoid expensive wastage.
- Surfactant is stored in the main drug fridge in the NNU and a small supply is kept in the transport drugs cool-box. **There is none kept routinely in the labour ward**

Infants < 30 weeks gestation or <1.5 Kg

- See VON early respiratory care section
- Dose is based on weight and is at least 100mg/Kg if given by ET tube or 200mg/Kg if MIST or LMA.
- Use the appropriate vial containing at least this dose but give the full vial.

Documentation

- Prescribe the surfactant that was given in the resuscitation room in the 'once only' section on the baby's drug sheet
- Document the inflation pressures used on the resuscitaire and when they were reduced following surfactant.

Repeat doses

- **Refer to Early Respiratory care for VON infants section on Badger**
- Infants who continue to have significant RDS after their first dose of surfactant ($FiO_2 > 30\%$) may be administered a second dose of **100mg/kg** (1.25ml/kg), usually during the next 12 hours. Do not wait 12 hours in critically ill infants
- In infants on HFOV a second dose should be considered if they require $>30\%$ oxygen **or** a MAP $>9\text{cmH}_2\text{O}$ to maintain normoxia.
- A third dose is seldom required and the question should be asked " Is this RDS?". An x-ray should be obtained and the situation should be discussed with the consultant.

Infants 30-34 weeks gestation

- Most of these infants do not require ventilation or surfactant treatment
- MIST is the preferred method of giving surfactant
- In ventilated infants with clinical RDS aim to give surfactant within 1 hour of intubation
- Consider CXR and ensure the tube length is appropriate
- The initial dose for these infants is 100mg/kg (1.25ml/kg) if given via ET or 200 mg/Kg if given by MIST or LMA. A repeat dose of 100mg/kg may be given if indicated.

Surfactant and CPAP

- Infants whose initial treatment is with CPAP rather than ventilation should be considered for early surfactant therapy if they develop RDS
- We see a significant incidence of pneumothorax in infants with moderate RDS treated with CPAP alone
- It is inappropriate to treat moderate-severe RDS with CPAP alone
- If there is radiological RDS and the FiO_2 is not less than 30% within 1-2 hours of birth, consider surfactant administration
- Take care to ensure that the lengths of the endotracheal tube and the catheter for surfactant instillation are correct before instilling the surfactant

Infants >34 weeks gestation

- It is uncommon for these infants to require surfactant
- After senior staff discussion surfactant may be administered to ventilated infants with typical x-ray appearances of RDS.
- These infants should be assumed to be infected and should also receive penicillin and gentamicin after a full infection screen has been performed
- Repeat doses may be given to those infants who responded to their initial dose as above (see repeat doses)

Surfactant in other conditions

Any condition associated with severe respiratory failure and the need for ventilation may result in lung injury and surfactant inhibition. This occurs in

- Meconium aspiration syndrome
- Pulmonary haemorrhage
- Infection
- Respiratory failure in term infants without a clear diagnosis.

Surfactant treatment may be given to these infants but only with Consultant approval.

- In the presence of inhibitors the surfactant dose may need to be higher and several doses may be required within a short time-scale to gain an optimal response
- The initial dose should still be **100mg/kg** (1.25ml/kg)
- There should be at least moderately severe respiratory failure (ventilated plus $FiO_2 > 50\%$) and an x-ray that suggests a problem with lung inflation
- Administering surfactant in the presence of clear lung fields is likely to worsen gas exchange.