Surfactant Administration

Purpose: To administer exogenous surfactant to neonates for the prevention and treatment (rescue) of respiratory distress syndrome.

Description: Survanta® and Infasurf® intratracheal suspensions are sterile, non-pyrogenic pulmonary surfactants intended for intra-tracheal use only. They are natural bovine lung extracts, which contain phospholipids, neutral lipids, fatty acids and other surfactant associated proteins. Surfactant is to be administered aseptically, in two aliquots. Initial dosing should be done as soon as possible after birth, up to 48 hours of age. Re-dosing criteria is as follows:

- Infants with birth weights ≤ 1100 grams may receive up to 2 additional doses in the first 48 hours, as often as every 6 hours if the FiO2 is > 35% or the a/A ratio is < 22%. Four or more doses require the attending physician’s approval.
- Infants with birth weights > 1100 grams may receive 1 additional dose in the first 48 hours at a minimum of 6 hours if the FiO2 is > 35% or the a/A ratio is < 22%. Any additional doses require the attending physician’s approval.

Indications:
1. Prevention – Infants with a birth weight of < 1100 grams, or with evidence of surfactant deficiency.
2. Rescue – Infants with respiratory distress syndrome confirmed by chest x-ray and requiring mechanical ventilation.
3. Infants with pulmonary bleeding may benefit.
4. Infants with meconium aspiration may benefit.

Hazards:
During Dosing Procedure –
1. Bradycardia
2. Desaturation

After Dosing Procedure –
1. Hyperinflation
2. Apnea
3. Infection

Personnel:
1. Respiratory Therapists and Technicians
2. Physicians
3. Neonatal Nurse Practitioners

Equipment:
1. Sterile gloves
2. Sterile syringe with needle
3. Sterile 5 fr feeding tube or, Ballard Multi-Access Catheter®
4. Surfactant
5. Suction catheter kit
6. Self-inflating resuscitation bag with PEEP valve

Procedure:
Note: This is a two person procedure!
1. Check chest x-ray for proper ET tube placement.
2. Turn patient prone.
3. Suction patient per Proc 17.8 or 17.9.
4. Aseptically, draw up surfactant. If using Survanta®, draw up 4 ml/Kg. If using Infasurf®, draw up 3 ml/Kg. (Draw up an extra .5 ml to “prime” the catheter.)
Delivery with Feeding Tube –
1. Turn patient so that the right side is down and ventilate with self-inflating resuscitation bag with PEEP valve attached.
2. Match up the numbers on the feeding tube with the numbers on the ET tube so that the end of the feeding tube is just past the end of the ET tube.
3. Quickly deliver one-half of the dose and withdraw the feeding tube.
4. Ventilate with the resuscitation bag for 30 – 60 seconds, until there is no visible surfactant in the ET tube.
5. Turn the patient so that the left side is down and repeat the procedure.

Delivery with a Ballard Multi-Access Catheter® -
1. Turn the patient so that the right side is down.
2. Match the numbers on the catheter up with the numbers on the ET tube so that the catheter tip is just past the end of the ET tube.
3. Quickly deliver one half of the dose and withdraw the catheter.
4. Ventilate with the ventilator for 30 – 60 seconds, until there is no visible surfactant in the ET tube.
5. Turn the patient so that the left side is down and repeat the procedure.

Warning:
1. Bradycardia may result if oxygenation is inadequate during the procedure. Adjust the FiO2 as needed to ensure adequate oxygenation.
2. Ventilation pressures may need to be increased during instillation of the surfactant to maintain ventilation.
3. Care should be taken after instillation to monitor tidal volumes and/or chest excursion and aggressively wean inspiratory pressures to prevent volutrauma.
4. A blood gas should be obtained within 30 minutes of instillation.

Infection Control:
1. Aseptic technique is to be maintained throughout the procedure.
2. Universal precautions are to be followed.

References:
1. LSUHSC NICU Physician’s Handbook
2. Survanta® package insert
3. Infasurf® package insert

Written: September 2000