**LISA (Less Invasive Surfactant Administration)**

Guideline updated Sept 2018

LISA appears to reduce BPD and other adverse outcomes compared to the Insure technique and it is our first line approach to giving surfactant for RDS in non-invasively ventilated babies.

The LISA procedure is to give intratracheal surfactant to a spontaneously breathing baby. If the baby is “working hard” or has an FiO2 of 0.3 or more, then perform a LISA asap. The lower threshold for surfactant should be noted.

We have stopped routinely giving premedication / sedation for LISA, as the procedure is easy and the side-effects of fentanyl are not insignificant. We do not routinely use atropine. Failure of procedure (2 attempts) will be followed by a re-evaluation of who is best placed to achieve a successful procedure, and if the use of atropine and/or fentanyl is needed.

We aim to place the LISA catheter in the trachea (1.5-2cm past the vocal cords) and very slowly (over 5 minutes) give surfactant without the need for IPPV

The dose of Curosurf is the same as for intubated babies prescribed to the nearest vial, aiming to be as close to 200mg/kg as possible.

**Diagnosis of RDS (Surfactant Deficiency / Hyaline Membrane Disease)**

1. **Does the baby need more intensive monitoring and/or treatment?**
   - a. For concerns about respiratory failure, transcutaneous pCO2 monitoring should be used
   - b. Does the baby require arterial access for accurate blood gas monitoring?
   - c. Should intensive care be escalated to start mechanical ventilation, or is it anticipated that the administration of intratracheal surfactant will stabilise the baby?

2. **Does the baby have RDS?**
   - a. Do you need to exclude a pneumothorax by careful transillumination?
   - b. Check that RDS is clinically likely (consider prematurity, antenatal steroids, sepsis likelihood, infant of mother with diabetes)
   - c. Will a CXR add information? – not mandatory

3. **Does the baby need surfactant? Think about O2 need and WOB**
   - a. Increased work of breathing (WOB) due to RDS – evidence of recession and tachypnoea, apnoea and/or shallow breathing, grunting, prolonged expiratory phase
   - b. Oxygen requirement FiO2 ≥0.3 - for surfactant
   - c. The rate of rise in oxygen requirement should be considered
   - d. Persistent respiratory acidosis despite optimal non-invasive ventilation
Intratracheal Administration of Surfactant

**Preparation:**
Intravenous access
LISA Catheter
Atropine – available - use 15 micrograms / kg
Fentanyl – available - use 0.7 micrograms / kg
Suxamethonium - available
Naloxone - available
Videolaryngoscope and/or suitable sized laryngoscope
Curosurf (whole vial dosing aim approx. 200mg/kg)

**Have available (not opened):**
Suitable mask to deliver IPPV
Suitable sized ET tube with introducer and pedicap (Not opened)

**Preparation**

1. Draw up Curosurf into a Luer lock syringe with flexible connector (preferred for connection to LISA cath)

2. Ensure baby will not get cold – follow guideline before starting to prevent hypothermia – increase incubator temperature, blankets, swaddled effectively, consider transwarmer

3. Ensure comfort of baby – swaddling, sucrose, holding

4. Baby is likely to be on High Flow (Vapotherm) – this should be continued through the procedure

5. Consider if atropine and/or fentanyl are to be given. The latter takes 5 minutes to work fully.

6. Ensure baby can be positioned to facilitate easy laryngoscopy (no obstructions from incubator, suitable height for operator, good swaddling etc.)

7. Monitor for apnoea and be prepared to give IPPV

8. Gently visualise the cords with the laryngoscope. Excessive pressure on the cords or vallecula will induce a bradycardia even with atropine present. If a bradycardia occurs, pause to see if it quickly resolves spontaneously; if not then stop and treat with oxygen if the oxygen saturations fall.

9. As soon as the cords are visible, pass the LISA catheter forwards through the cords 1.5-2cm into the larynx/trachea.

10. Secure the LISA catheter using a finger in the midline (not side) of the mouth and then remove the laryngoscope. Do not leave the laryngoscope in place for any longer than necessary.

11. Keep your baby warm! The incubator should be closed during surfactant administration.

12. Check the baby is stable and breathing. An assistant will be needed to help attach the syringe and give the surfactant slowly over 5 minutes.
Unsuccessful procedure

If the procedure fails then prepare for re-evaluation of decisions about personnel, sedation and intubation.

Documentation

Ensure that documentation of type of procedure as well as dose/time of surfactant is recorded in notes and on Badger.

Guideline prepared and checked by Dr Peter Reynolds

Latest update Sept 2018