

LESS INVASIVE SURFACTANT ADMINISTRATION (LISA)

Indications

- Infants \geq 1200 g birthweight (and \geq 27 weeks) managed on primary HHFNC or NCPAP (see Non-Invasive Respiratory Support Guidance) and requiring $\text{FiO}_2 > 0.3$ and rising or > 0.4 at any time to maintain saturations appropriate for gestation

Contraindications

Absolute Contraindications

- Maxillo-facial, tracheal or known pulmonary malformations
- Imminent need for intubation as judged clinically by the attending senior clinician
- No experienced personnel available to perform LISA

Relative Contraindications

- Infants $<$ 1200 g birthweight and $<$ 27 weeks gestation
- Severe RDS with high oxygen requirements, severe respiratory acidosis and/or widespread atelectasis on chest x-ray.
- Pneumothorax requiring drainage
- Prominent apnoea, periodic or irregular breathing pattern, despite adequate caffeine citrate administration

Equipment

- Temperature control
- Continuous heart rate and saturation monitoring
- Neopuff/self-inflating bag and appropriate size mask
- Intubation equipment prepared and available
- LISA catheter
- Surfactant 200 mg/kg to nearest vial drawn up into a 5 ml syringe (note enteral syringes do not fit onto LISA catheter)
- Laryngoscope with appropriate sized blade
- OGT with stomach aspirated
- IV access

Premedication

- Infants $<$ 34 weeks caffeine citrate loaded at least 30 minutes prior to LISA
- Most infants can be managed with sucrose and non-pharmacological methods
- Administer Atropine 15 microgram/kg
- More mature infants may need further premedication (discuss with Consultant)

Preparation

- Rule out pneumothorax prior to the procedure by chest x-ray or, if competent to do so, by lung ultrasound
- LISA should be performed by someone trained in the process and competent at intubation
- Prepare equipment
- Draw up surfactant, at least 0.5 ml air should also be drawn into syringe
- Wrap and position baby as for intubation
- High flow therapy can remain in place. Infants on bubble NCPAP should have their mask moved to one side for the insertion of the catheter and then put back on before instilling the surfactant

Procedure

1. Please perform STEPP card prior to administration
2. LISA is a two person technique (one to position LISA catheter and one to administer surfactant)
3. Check observations stable and monitoring visible
4. Give premedications
5. Leave nasal cannula in situ if on High Flow Therapy, move NCPAP mask to the side if on NCPAP
6. Gently insert laryngoscope and visualise cords
7. Using LISA catheter insert tip into trachea 1.5 - 2 cm below cords
8. Remove the laryngoscope
9. Hold catheter in position and close mouth
10. Reposition NCPAP mask if on NCPAP
11. Reassess condition of baby
12. Administer surfactant slowly over 1.5 - 3 minutes flushing with surplus air – give oxygen as required throughout
13. Aspirate stomach via gastric tube to ensure surfactant is delivered into the airways
14. Remove the catheter
15. Document procedure and complete safety pause

Post-procedure care

- Following surfactant administration baby should be nursed prone on High Flow Therapy or NCPAP
- If the procedure has been successful the oxygen requirement should reduce within minutes/hours
- If oxygen requirement is increasing consider pneumothorax
- If further surfactant needed this can be via LISA if no contraindications but if deterioration of clinical condition, gases or worsening CXR consider intubation