

Less Invasive Surfactant Administration Therapy (LISA) Neonatal Clinical Guideline

V4.2

February 2026

1. Aim/Purpose of this Guideline

1.1. This guideline aims to provide guidance for treating babies admitted to the neonatal unit where surfactant deficiency is suspected and mechanical ventilation is not an absolute indication. LISA has been shown to reduce the need for intubation and reduce oxygen requirement ^{1,2}.

1.2. This version supersedes any previous versions of this document.

Data Protection Act 2018 (UK General Data Protection Regulation – GDPR) Legislation.

The Trust has a duty under the Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed, and documented. We cannot rely on opt out, it must be opt in.

Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 please see the Information Use Framework Policy or contact the Information Governance Team.

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2. The Guidance

2.1. LISA is indicated when surfactant therapy is considered in a baby with Respiratory Distress Syndrome (RDS) on non-invasive ventilation when intubation and ventilation is not thought imminent and other causes of deterioration have been excluded.

2.2. LISA should only be undertaken following discussion with the Neonatal Consultant.

2.3. Infants should meet **all of** the following criteria:

- $\leq 36+6$ weeks gestation.
- $FiO_2 \geq 0.3$.
- RDS confirmed on chest x-ray.
- CO_2 on blood gas <10 .

2.4. LISA can be considered in infants $\geq 37+0$ weeks gestation if RDS (Respiratory Distress Syndrome) is confirmed on chest x-ray and alternative causes of respiratory distress (including infection) are excluded. Surfactant therapy and intubation may be more appropriate for term babies.

- 2.5. Surfactant can be administered via LISA or supraglottic laryngeal mask (see separate protocol).
- 2.6. Parents should wherever possible be briefed regarding the procedure.
- 2.7. LISA should be performed by a person experienced in intubation.
- 2.8. Pneumothorax should be excluded by chest x-ray or transillumination.
- 2.9. When an infant has been identified for LISA treatment the surfactant dose should be prescribed and removed from the fridge to warm to room temperature (note, this route of administration is off-label for Curosurf). Suggested dose is 200mg/kg as initial dose or 100 mg/kg if has had previous surfactant.

2.10. Equipment required

- LISA kit dump board.
- Atropine +/- fentanyl.
- A dedicated catheter designed for LISA must be used (either LISACath or Surfcath).
- Extension set.
- Red blunt fill needle.
- 10ml luer lock syringe.
- Working Neopuff.
- Working suction with 8 -10Fg catheter.
- High flow or CPAP (Continuous Positive Airway Pressure) should be continued during the procedure.
- Intubation equipment and drugs ready should infant deteriorate.
- Suxamethonium, only to be used in the emergency situation of laryngospasm.

2.11. Preparation

- Clean LISA kit dump and prepare equipment.
- Wash hands and wear sterile gloves.
- Draw up surfactant with extra air in syringe using luer lock syringe and red blunt fill needle.
- Attach catheter to extension set.
- Wrap baby and position on incubator tray so door can be lowered and laryngoscope used (or lift lid of incubator if using BabyLeo).

- HFNC or nCPAP prongs and NG (Nasogastric)/OG (Orogastric) tube should be left in situ.

2.12. Premedication

- Atropine (20mcg/kg) - for all infants.
- Fentanyl (1mcg/kg) - may be beneficial in some infants, especially those above 32 weeks.

2.13. Procedure: Two person technique

2.13.1. Check baseline observations and ensure baby is stable with oxygen saturation over 90%, heart rate over 100 bpm.

2.13.2. Administer atropine.

2.13.3. Administer sucrose analgesia or fentanyl.

2.13.4. Gently insert the laryngoscope and visualise cords.

2.13.5. Insert the catheter, pass it through the cords until ~1.5cm-2cm. Note the length of the catheter at the lips.

2.13.6. Remove the laryngoscope gently, holding the catheter carefully in place at the side of the lips. Attach the luer lock syringe to the end of the cannula extension set.

2.13.7. Reassess the baby's condition.

2.13.8. Inject the surfactant in small aliquots aiming to complete administration in three to five minutes, flushing the tube with the surplus air. During this time hold the babies mouth shut to optimise CPAP, and continually aspirate NG/OG tube. If surfactant is aspirated from the stomach, consider whether catheter has become displaced.

2.13.9. Remove the catheter.

2.13.10. Record procedure in baby's notes, including the Lot number of the surfactant used.

3. Monitoring compliance and effectiveness

Information Category	Detail of process and methodology for monitoring compliance
Element to be monitored	Compliance with policy.
Lead	Neonatal Guidelines Lead.
Tool	Audit and review tool.
Frequency	As dictated by audit findings.

Information Category	Detail of process and methodology for monitoring compliance
Reporting arrangements	Neonatal Audit and Guidelines meeting.
Acting on recommendations and Lead(s)	Neonatal Guidelines Lead.
Change in practice and lessons to be shared	Required changes to practice will be identified and actioned within three months, immediately if required. A lead member of the team will be identified to take each change forward where appropriate. Lessons will be shared with all the relevant staff/ stakeholders.

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the [Equality Diversity And Inclusion Policy](#) or the [Equality and Diversity website](#).

4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	Less Invasive Surfactant Administration Therapy (LISA) Neonatal Clinical Guideline V4.2
This document replaces (exact title of previous version):	Less Invasive Surfactant Administration Therapy (LISA) Neonatal Clinical Guideline V4.1
Date Issued/Approved:	February 2026
Date Valid From:	February 2026
Date Valid To:	February 2028
Directorate / Department responsible (author/owner):	Dr. Charlotte Lea; Neonatal Consultant
Contact details:	01872 252667
Brief summary of contents:	This guideline applies to paediatric and neonatal staff caring for babies requiring surfactant without need for endotracheal ventilation.
Suggested Keywords:	Neonate, neonatal, MIST, LISA surfactant.
Target Audience:	RCHT: Yes CFT: No CIOS ICB: No
Executive Director responsible for Policy:	Chief Medical Officer
Approval route for consultation and ratification:	Neonatal Audit and Guidelines Group
Manager confirming approval processes:	Caroline Chappell
Name of Governance Lead confirming consultation and ratification:	Michael Cross
Links to key external standards:	None required
Related Documents:	1. Dargaville et al (2011) preliminary evaluation of a new technique of MIST. Archives of Disease in Childhood, Fetal Neonatal Edition. 96:f243-8. 2. Göpel,W. et al (2011) Avoidance of mechanical ventilation by surfactant treatment of spontaneously breathing preterm infants:an open

Information Category	Detailed Information
	label, RCT. Lancet, Nov.5;378 (9803):1627-34. 3. Reynolds, P. (2014) Mist Guideline Ashford and St. Peter's Hospitals NHS Trust. 4. Less invasive surfactant administration versus intubation for surfactant delivery in preterm infants with respiratory distress syndrome: a systematic review and meta-analysis ADC Fetal & Neonatal Edition. 5. Surfactant administration via a thin endotracheal catheter during spontaneous breathing in preterm infants - Wu - 2017 - Pediatric Pulmonology - Wiley Online Library. 6. European Consensus Guidelines on the Management of Respiratory Distress Syndrome - 2016 Update Neonatology Karger Publishers.
Training Need Identified?	No
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet and Intranet
Document Library Folder/Sub Folder:	Clinical/Neonatal

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
October 2015	V1.0	Initial Issue.	Judith Clegg, Advanced Neonatal Nurse Practitioner.
March 2019	V2.0	Title changed from MIST to LISA. Section on premedication added. Evidence section added.	Paul Munyard; Consultant.
May 2022	V3.0	Technique updated. Requirement for specific catheter added in line with BAPM recommendation.	Dr. Chris Bell; Neonatal Consultant.
January 2025	V4.0	Addition of atropine for all infants and use of supraglottic mask as alternative. Clarification of eligible infants.	Dr Charlotte Lea; Neonatal Consultant.

Date	Version Number	Summary of Changes	Changes Made by
July 2025	V4.1	Atropine dose updated to be 20mcg/kg. Indication to discuss with Consultant added at section 2.2. Suxamethonium guidance included in section 2.10. Wording in 2.7 amended.	Rachel Bailey; ANNP.
February 2027	V4.2	Section 2.7 amended. Suxamethonium guidance added to section 2.10.	Neonatal Audit and Guidelines Group.

All or part of this document can be released under the Freedom of Information Act 2000.

All Policies, Strategies and Operating Procedures, including Business Plans, are to be kept for the lifetime of the organisation plus 6 years.

This document is only valid on the day of printing.

Controlled Document.

This document has been created following the Royal Cornwall Hospitals NHS Trust [The Policy on Policies \(Development and Management of Knowledge Procedural and Web Documents Policy\)](#). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form

The EIA process allows the Trust to identify where a policy or service may have a negative impact on an individual or particular group of people.

For guidance please refer to the Equality Impact Assessment Policy (available from the document library) or contact the Equality, Diversity, and Inclusion Team
richt.inclusion@nhs.net

Information Category	Detailed Information
Name of the strategy / policy / proposal / service function to be assessed:	Less Invasive Surfactant Administration Therapy (LISA) Neonatal Clinical Guideline V4.2
Directorate and service area:	Neonatal
Is this a new or existing Policy?	Existing
Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):	Neonatal Audit and Guidelines Group
Contact details:	01872 252667

Information Category	Detailed Information
1. Policy Aim - Who is the Policy aimed at? (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)	To guide neonatal staff in the technique of LISA.
2. Policy Objectives	Safe administration of surfactant using minimally invasive technique.
3. Policy Intended Outcomes	Best possible outcome for a sick new-born baby with RDS.
4. How will you measure each outcome?	Compliance Monitoring Tool.
5. Who is intended to benefit from the policy?	All sick babies and their parents.

Information Category	Detailed Information
6a. Who did you consult with? (Please select Yes or No for each category)	- Workforce: Yes - Patients/ visitors: No - Local groups/ system partners: No - External organisations: No - Other: No
6b. Please list the individuals/groups who have been consulted about this policy.	Please record specific names of individuals/ groups: Neonatal Audit and Guidelines meeting.
6c. What was the outcome of the consultation?	Approved.
6d. Have you used any of the following to assist your assessment?	National or local statistics, audits, activity reports, process maps, complaints, staff, or patient surveys: No.

7. The Impact

Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

Protected Characteristic	(Yes or No)	Rationale
Age	No	
Sex (male or female)	No	
Gender reassignment (Transgender, non-binary, gender fluid etc.)	No	
Race	No	Any information provided should be in an accessible format for the parent/carer needs- i.e., available in different languages if required/ access to an interpreter if required.

Protected Characteristic	(Yes or No)	Rationale
Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)	No	Those parent/ carer with any identified additional needs will be referred for additional support as appropriate- i.e., to the Liaison Team or for specialised equipment. Written information will be provided in a format to meet the family's needs e.g., easy read, audio etc
Religion or belief	No	
Marriage and civil partnership	No	
Pregnancy and maternity	No	
Sexual orientation (e.g. gay, straight, bisexual, lesbian etc.)	No	

A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment: Neonatal Audit and Guidelines Group.

If a negative impact has been identified above OR this is a major service change, you will need to complete section 2 of the EIA form available here:

[Section 2. Full Equality Analysis](#)

Appendix 3. LISA Checklist and Documentation

[CHA4866: LISA Checklist and Documentation.](#)