

ENDOTRACHEAL SURFACTANT - ADMINISTRATION - CICU - SCH

PRACTICE GUIDELINE[®]

DOCUMENT SUMMARY/KEY POINTS

- Pulmonary surfactant is a complex mixture of phospholipids and proteins that acts to reduce alveolar surface tension, this is done by creating a surface layer over the alveoli and maintaining alveolar stability.
- Deficiency in surfactant causes respiratory distress syndrome (RDS) in pre-term and term neonates (infants under 28 days of age).
- Surfactant is stored in the fridge, to maintain lower viscosity. Prior to administration, surfactant should be slowly warmed to room temperature over no longer than 30 minutes.
- Preparation and administration of surfactant should be undertaken by appropriately skilled clinicians.
- Endotracheal suction should NOT be performed for the first hour post administration of surfactant.
- SCH CICU uses Curosurf proactant alfa, dosing guidelines are as per Australasian Neonatal Medicines Formulary (ANMF, 2020).

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1 st November 2022	Review Period: 3 years
Team Leader:	Clinical Nurse Consultant	Area/Dept: CICU SCH

CHANGE SUMMARY

- New Document

READ ACKNOWLEDGEMENT

- Read Acknowledge Only – All medical and nursing staff in CICU

TABLE OF CONTENTS

Introduction	3
Indication	3
Dose	3
Procedure	4
Preparation.....	4
Positioning.....	4
Administration.....	4
<i>Intubated</i>	4
<i>Non-intubated</i>	5
Post administration management	5
Adverse reactions/potential complications	5
Bibliography	6

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Introduction

Pulmonary surfactant is a complex mixture of phospholipids and proteins that acts to reduce alveolar surface tension, this is done by creating a surface layer over the alveoli and maintaining alveolar stability.

Deficiency in surfactant causes respiratory distress syndrome (RDS) in pre-term and term neonates (infants under 28 days of age).

Preparations with lower viscosity are preferred for endotracheal administration as it enables rapid and more uniform distribution with less coating of the upper airways.

Poractant alfa (Curosurf) is available as 120mg/1.5mL and 240mg/3mL suspension. Surfactant is stored in the fridge, to maintain lower viscosity. Prior to administration, surfactant should be slowly warmed to room temperature over no more than 30 minutes and gently turned upside down in order to obtain a uniform suspension. Do not shake.

Indication

- Neonates with clinical and radiographic evidence of RDS.
- Pre-term neonates at risk of developing RDS (<32/40 weeks)
- Severe meconium aspiration syndrome (MAS)
- Neonatal pneumonia

Dose

Dosing as per [Australasian Neonatal Medicines Formulary \(ANMF 2020\)](#)

Respiratory Distress Syndrome (RDS)

Intra-tracheal, loading dose of 200mg/kg.

Subsequent doses of 100mg/kg when required every 6-12 hours.

Maximum of 3 doses.

Meconium Aspiration Syndrome (MAS)

Intra-tracheal, Initial dose 200mg/kg.

Further doses if required:

2nd dose 200mg/kg

3rd dose 100mg/kg

4th dose 100mg/kg

These doses can be given at 6 hourly intervals.

Procedure

Preparation

- Document baseline observations and suction Endotracheal tube (ETT) to ensure patency prior to the administration of surfactant.
- Ensure that surfactant is at room temperature, DO NOT shake.
- Cut a 5FG nasogastric tube (NGT) to 1 cm shorter than the length of the ETT with sterile scissors.
- Withdraw the required dose plus 0.5mL of surfactant with a needle in a 3mL or 5mL IV syringe, transfer surfactant to an ENFIT syringe to allow administration through the NGT.
- Prime NGT with surfactant and ensure only the required dose remains in the syringe.

Positioning

Ensure the bed is flat and the neonate is in the supine position. Supported in a nest to maintain positioning.

There is no evidence supporting position changes during or post administration of surfactant.

Administration

Intubated.

Surfactant should be rapidly administered, either in 1 or 2 aliquots, down the ETT over 10 to 20 seconds.

- Pre-oxygenation via the ventilator
- Recruitment techniques such as increased peak inspiratory pressures pre administration of surfactant
- Insert the NGT into the ETT and administer the dose of surfactant, this can be done in 1-2 aliquots as tolerated.
- Use self-inflating bag or other manual ventilation device (e.g. anaesthetic T piece) to assist ventilation and ensure surfactant has reached the lungs.
- Ventilation may deteriorate initially post administration, particularly within the first 15-30 minutes. Careful monitoring at the bedside and ventilation adjustment as required by the medical team, tailored to the patient's response to therapy.
- Return to original ventilation, If ventilation has changed, return to original ventilation as clinically able.

Non-intubated

INTubation SURfactant Extubate (INSURE) technique:

- Pre oxygenation
- Tracheal intubation
- Brief period of ventilation
- Insert the NGT into the ETT and administer the dose of surfactant, this can be done in 1-2 aliquots as tolerated.
- Use self-inflating bag or other manual ventilation device (e.g. anaesthetic T piece) to assist ventilation and ensure surfactant has reached the lungs
- Extubation onto CPAP once clinically able.

This is the preferred method for a neonate who is not intubated at birth.

There are other techniques for extubated neonates called Less Invasive Surfactant Administration (LISA) and Minimally Invasive Surfactant Treatment (MIST), this is the administration of surfactant via a thin catheter with or without using Magill forceps whilst the neonate remains on CPAP. These are not standard techniques used within CICU therefore will only be mentioned and not described.

Post administration management

Significant and prolonged decrease in tidal volumes resulting in increased peak inspiratory pressure (PIP) is likely.

Leave the baby supine.

DO NOT SUCTION ETT for at least 1 hour post surfactant administration.

Assess the need for retreatment, this will be at the discretion of the intensivist.

If the decision for re-treatment is made, this is usually performed 12 hours post initial instillation or 6 hours in the case of severe lung disease.

Adverse reactions/potential complications

- Transient bradycardia and hypotension during administration
- Endotracheal tube blockage
- Pulmonary Haemorrhage

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