Local Guideline

John Hunter Children's Hospital
CHILDREN, YOUNG PEOPLE AND FAMILIES

NSW GOVERNMENT Health
Hunter New England Local Health District

Inhalation Therapy with Hypertonic Saline in JHCH

Sites where Local Guideline applies	All clinical areas in JHCH
This Local Guideline applies to:	
1. Adults	No
2. Children up to 16 years	Yes
3. Neonates – less than 29 days	Yes
Target audience	Clinical staff who provide care to cystic fibrosis patients.
Description	This document outlines the criteria for use of Hypertonic Saline and the safe administration of this medication.
National Standard	1, 4

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Keywords	Children, cough, cystic fibrosis, mucus, sputum.
Document registration number	
Replaces existing document?	Yes
Registration number and dates of superseded documents	13.41 Inhalation Therapy with Hypertonic Saline in JHCH, August 2013

Related Legislation, Australian Standard, NSW Ministry of Health Policy Directive or Guideline, National Safety and Quality Health Service Standard (NSQHSS) and/or other, HNE Health Document, Professional Guideline, Code of Practice or Ethics:

- NSW Ministry of Health Policy Directive PD 2017_013 Infection Prevention and Control Policy

Local Guideline note	This document reflects what is currently regarded as safe and appropriate practice. The guideline section does not replace the need for the application of clinical judgment in respect to each individual patient but the procedure/s **require mandatory compliance**. If staff believe that the procedure/s should not apply in a particular clinical situation they must seek advice from their unit manager/delegate and document the variance in the patient's health record.
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This document contains advice on therapeutics	Yes Approval gained from Local Quality Use of Medicines Committee on 15/05/2018.
Issue date	July 2018
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Note: Over time links in this document may cease working. Where this occurs please source the document in the PPG Directory at: http://ppg.hne.health.nsw.gov.au/

PURPOSE AND RISKS

This procedure outlines the process for initiating treatment with Hypertonic Saline in the John Hunter Children's Paediatric Respiratory clinics.

Risks to patient: bronchospasm, incorrect prescription, incorrect equipment.

These risk will be minimised by:

1. safety test dose in the respiratory lab and use of bronchodilator prior to administration.
2. prescription and provision of equipment in the CF clinic/Respiratory clinic following safety test dose.

Risk Category*:* Clinical Care & Patient Safety

GLOSSARY

Acronym or Term	Definition
PFT	Pulmonary Function Test
HyperSal®	Hypertonic saline
FEV1	Forced expiratory volume

GUIDELINE

This Guideline does not replace the need for the application of clinical judgment in respect to each individual patient.

Staff Preparation

It is mandatory for staff to follow relevant: "Five moments of hand hygiene", infection control, moving safely/safe manual handling, documentation practices and to use HAIDET for patient/carer communication: **H**and hygiene **A**cknowledge, **I**ntroduce, **D**uration, **E**xplanation, **T**hank you or closing comment.

RATIONALE FOR TREATMENT

Hypertonic Saline (Hypersal) hydrates the airway and facilitates sputum clearance when added to a regimen of regular airway clearance techniques. Hypertonic saline can reduce the frequency of lung infections and decrease the need for hospital admissions.

PATIENT SELECTION CRITERIA (PBS REQUIREMENT)

People with cystic fibrosis (CF), cilia dyskinesia and bronchiectasis who have cough and sputum production, and are able to both comply with and tolerate treatment are appropriate for a one month trial. They must also perform regular airway clearance techniques for sputum clearance.

ASSESSMENT OF TOLERABILITY

If patient can perform reliable pulmonary function test (PFT): (Refer to Appendix 2)

- Perform baseline PFT in respiratory lab prior to commencing treatment.
- Administer salbutamol 200 microgram (2 puffs) via a metered dose inhaler and spacer
- Perform post bronchodilator PFT
- Administer 5ml of hypertonic saline 6% (HyperSal®) via a Pari Sprint nebuliser and jet pump with an output 10 L/m or air from wall outlet >6 L/m (Pari LC nebulisers are kept in Outpatients storeroom) or patient's own pump e.g. Eflow rapid.
- Perform repeat spirometry 15 minute post hypertonic saline
- Cease if signs of respiratory distress and administer inhaled salbutamol as required.

If patient is unable to perform reliable PFT:

Test dose to be supervised by a doctor, physiotherapist or nurse

- Monitor heart rate and SaO_2 throughout test dose
- Auscultate to assess for wheeze prior to test dose
- Administer salbutamol 200 microgram (2 puffs) via metered dose inhaler (MDI) and spacer
- Administer 5ml hypertonic saline 6% (HyperSal®) via Pari Sprint nebuliser and jet pump with an output 10 L/m or air from wall outlet >6 L/m
- Monitor HR, SaO_2, wheeze via auscultation, signs of respiratory distress both during nebulizer and for 15 minutes post completion
- Cease if signs of respiratory distress and administer inhaled salbutamol as required.

Patients who tolerate this trial without significant bronchospasm can continue with a one month trial of hypertonic saline and review with treating doctor.

Patients who develop significant bronchospasm; i.e. drop in FEV1 >15% from baseline OR drop in SaO_3 <90% OR intolerable symptoms of wheeze or cough, are not eligible for continuation of treatment. They may have retrial at a later date with either; increased pre-test salbutamol dose OR diluted hypertonic saline dose e.g. 3%.

ADMINISTRATION

ALERT

Before beginning: Contact engineering (extension 13110) to inform them a patient is using nebulized hypertonic saline. Engineering will disconnect the fire alarm to that room during the therapy. On completion of nebulized therapy, call engineering again to reconnect the alarm.

Dose

- The dose of hypertonic saline is usually 5 mL of sodium chloride, 6% strength. This is available in 10 mL Hypersal sachets, which are dispensed by pharmacy on prescription.
- A diluted strength may be given if patient is unable to tolerate 6% strength but has no significant bronchospasm. E.g. 3%= 2.5 mL of 6% Hypersal® + 2.5 mL of water for injection.

Frequency

- Hypertonic saline is routinely administered twice daily, but once a day and three times a day can be considered depending on severity of symptoms.

Delivery

- Via a Pari LC Plus/Star® or Aeroeclipse® nebulizer using a jet pump with an output 10 L/m or air from wall outlet >6 L/m or personal pump e.g. E flow rapid

Long term use

- Administer bronchodilator prior to treatment
- Salbutamol 200 microgram (2 puffs) via a metered dose inhaler (MDI) and spacer
- Hypertonic saline can be administered before airway clearance techniques or interspersed with airway clearance techniques.
- Nebuliser bowl should be replaced every 6 months in CF/Respiratory clinic
- Precautions: Patients should be reviewed by the Respiratory medical team if they experience acute haemoptysis, wheezing or shortness of breath. If frank haemoptysis is significant then hypertonic saline should be suspended until reviewed by the Respiratory medical team. Hypertonic saline can be recommenced after 48 hours of no haemoptysis. If chronic mild haemoptysis is persistent patients will be considered on an individual basis.

PRESCRIBING PROCEDURE

1. Arrange and complete safety test dose assessment in respiratory lab.
2. Prescribe treatment on a JHH discharge/outpatient script. Initial prescription should be for 1 month only until trial is finished.
3. Educate patient in administration procedure
4. Loan equipment- the respiratory clinic will loan a pump for the one month trial and will supply the nebuliser bowl
5. Book patient for lung function test and doctor review one month following the commencement of treatment to assess response
6. Ongoing supply of the drug will continue through pharmacy – provide prescription for 1 month and five repeats. Normal patient copayments apply to all dispensing.
7. Ongoing supply of the equipment
    - Nebuliser will be replaced every 6 months by the clinic. It is the patient's responsibility to clean and disinfect as per the manufacturer's guidelines.
    - The pump is the patient's responsibility if purchased by the family including ongoing maintenance, filter replacement and fault repairs. If the pump is on loan from the clinic, servicing will be attended by biomedical engineering upon return of the pump every six months.
8. Further review treatment after six month

If Hypersal® (hypertonic saline 6% 10 mL sachets) is unavailable, Pharmacy will source alternative. In rare cases parents/carers may be required to make a hypertonic saline solution from sodium chloride 23.4% vials. In this case a fact sheet will be provided by JHH Pharmacy.

IMPLEMENTATION, MONITORING COMPLIANCE AND AUDIT

Guideline will be accessible to all staff in Cystic Fibrosis/Respiratory Clinic and new staff orientated to correct process.

REFERENCES

Elkins et al (2006). A Controlled trial of long term inhaled hypertonic saline in patients with cystic fibrosis. The New England Journal of Medicine, Vol 354, No. 3

FEEDBACK

Any feedback on this document should be sent to the Contact Officer listed on the front page.