Paediatric Intensive Care Unit

Non-bronchoscopic bronchoalveolar lavage

Staff relevant to:	Medical staff, Nursing staff ,Clinical Specialist Physiotherapists and Senior Physiotherapists caring for children in the PICU
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Trust Ref:	C47/2016

Related Guidelines and Policies:	
C47/2016	Prevention of Ventilator Associated Pneumonia

1. Introduction

Non-bronchoscopic bronchoalveolar lavage (NBBAL) has developed a role in the evaluation of respiratory infections in ventilated patients. NBBAL is a minimally invasive and relatively inexpensive technique. NBBAL is becoming increasingly popular on paediatric intensive care units.

Guideline gives rationale and technique for NBBAL in ventilated patients for all nursing, medical and allied health professional staff on PICU. This guideline has been developed in conjunction and agreement with the paediatric physiotherapy team and should be viewed alongside the guideline UHL C47/2016 Prevention of Ventilator Associated Pneumonia Ventilator Associated Pneumonia UHL Childrens Intensive Care Guideline

2. Non-bronchoscopic bronchoalveolar lavage

Indications

- To obtain secretion samples to aid in diagnosis
- New admission onto PICU with an undiagnosed respiratory condition
- Suspected Community Acquired Pneumonia / Ventilator Acquired Pneumonia
- To enable the safe instillation of saline to assist in the treatment and clearance of secretions

Contraindications

- Profound hypoxia (PaO2 < 7KPa or < 4 KPa in cyanotic CHD)
- Severe pulmonary hypertension or risk of pulmonary hypertensive crisis
- Pneumothorax
- Raised ICP
- Acute pulmonary oedema
- Active seizures

Precautions

- Cardiovascular instability
- Deranged coagulation
- Pulmonary Haemorrhage
- Severe acute asthma
- High pressures on ventilator or risk of derecruitment

Complications

- Vaso vagal response
- Mucosal trauma
- Hypoxia
- Bronchospasm
- Pneumothorax
- Haemorrhage
- Haemodynamic instability
- Arrhythmias
- Altered ICP

PREPARATION OF EQUIPMENT

Good preparation helps to avoid the possible complications listed as well as reducing the amount of stress to the child and parents

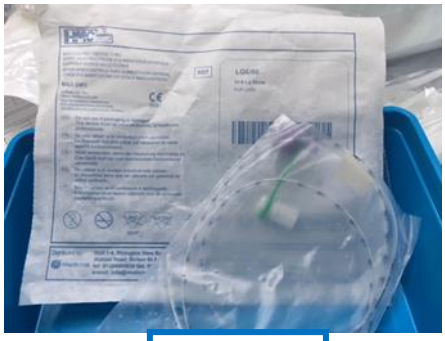
A senior physiotherapist (Band 6)/ Clinical Specialist Physiotherapist (Band 7) / nurse / medic competent in this technique should be performing this technique, with a second person to assist.

Fingertip adaptor

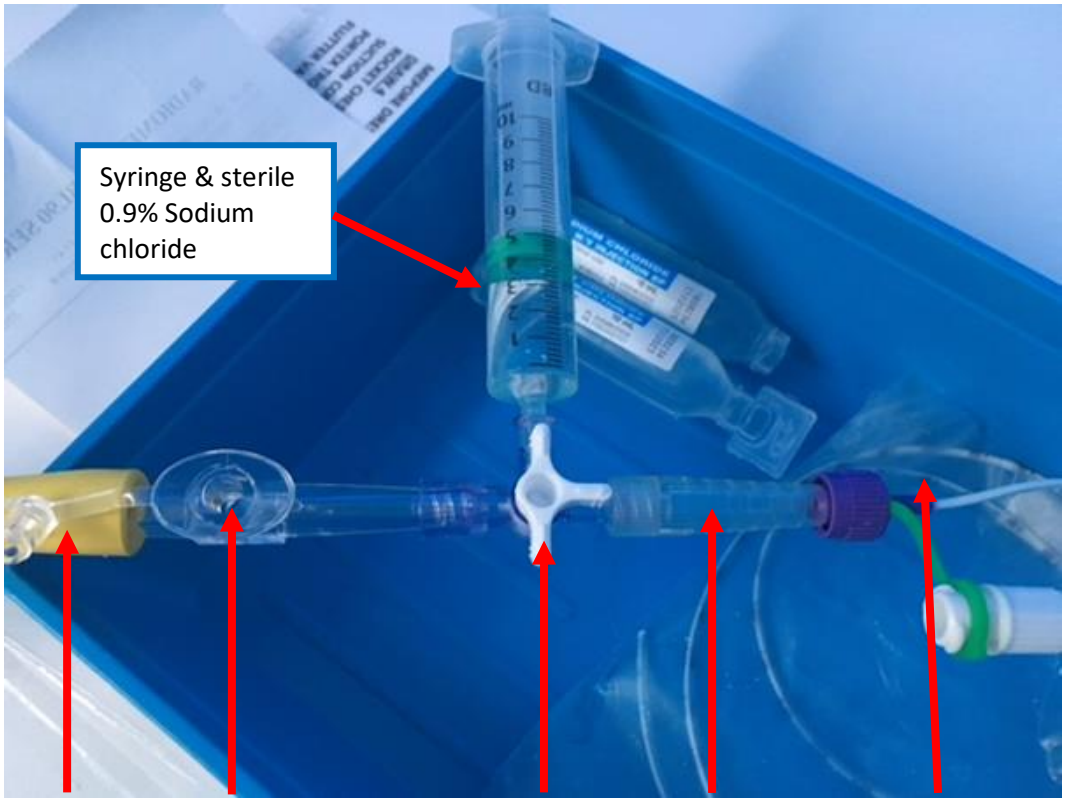
Seldinger connector

3 way tap

Sputum trap



NG tube



NBBAL PROCEDURE

1. Seek and document consent from the parents/carers, if possible. If parents/carers are not present consent must be documented 'in the patient's best interest'
2. Inform the nurse in charge and medical staff that you are doing the procedure.
3. Complete and document a respiratory assessment of the child. Document all observations including ventilator settings, saturations, BP, HR, $ETCO_2$
4. Wash hands and wear gloves
5. Set up all the equipment as shown above.
    - NG tube size is double the size of the ETT
    - Use 1 ml/kg of 0.9% sodium chloride (maximum 10ml).

6. Ensure the child is adequately sedated and paralysed so they will not cough/move during the procedure
7. Prime the NG tube (catheter) with the correct amount of 0.9% Sodium chloride adding 1ml of air (to push all the fluid through)
8. Position the child supine with the head in the midline if a multi-pathology or if unilateral pathology then position head to the contra-lateral side (e.g. if right side pathology then position head to the left).
9. Manually inflate the child's lungs during the procedure
10. Insert NG tube (catheter) down the ETT, via the valve connector opening on the bagging circuit
11. Stop manually inflating. Instill the 0.9% sodium chloride
12. Wait for 2 seconds then give two manual inflation breaths
13. Turn the 3 way tap to allow suction and gain the sample
14. Apply suction pressure as appropriate for child's age and collect sample. Suction should not be applied as the catheter is withdrawn. Ensure sputum trap is held the right way up or sample will be lost
15. Continue bagging. Repeat if more samples are required and the procedure is being tolerated by the patient. (maximum of 5 times)

3. Education and Training

Training and raising awareness are on-going processes. On-going awareness is promoted through the induction and continuous bedside teaching. Training is provided for medical staff during lunchtime teaching (Wednesdays) and other sessions, and at junior doctors' induction training. Nursing education is supported by the Practice Development teams, and nursing educators.
Senior Physiotherapists and Clinical Specialist Physiotherapists are expected to undertake initial training and then maintenance of competency training (see appendix 1 for example of assessment document)on an annual basis as per the Policy for Respiratory Physiotherapy On-Call and Respiratory Physiotherapy Weekend and Bank Holiday Service Trust reference C16/2017

4. Monitoring Compliance

None identified at present

5. Supporting References

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Flanagan, Findlay, Magee, Barnes, Smithies (2000) The diagnosis of ventilator-associated pneumonia using non-bronchospic, non-direct lung lavages

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6. Key Words

Non bronchoscopic bronchoalveolar lavage, BAL

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.
As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

CONTACT AND REVIEW DETAILS	
Guideline Lead (Name and Title) Kay Calvert – Clinical Specialist Physiotherapist	**Executive Lead** **Chief Nurse**
Details of Changes made during review: **Format update**	

Appendix 1: **Equipment competency**

Non-Bronchoscopic Bronchoalveolar Lavage (NBBL)					
NAME:		**GRADE:**		**SITE:**	

PERFORMANCE CRITERIA	**Signature Assessee**	**Signature Assessor**
Can identify indications for use of equipment		
Can identify contraindications for use of equipment		
Can undertake the necessary safety checks and precautions		
Can demonstrate appropriate preparation of the environment		
Can demonstrate appropriate setting up of the equipment		
Can demonstrate appropriate preparation of the dose(s)		
Can demonstrate the different treatment techniques for this equipment		
Knows information to be given to patient prior to, during and after treatment		
Can demonstrate making accurate treatment records		
Can demonstrate how to evaluate the effectiveness of the treatment		

Assessee: I am aware that I should only carry out the techniques that I have been taught and will seek further training/advice as required. It is my responsibility to maintain my own competence on an annual basis.

Signed……Print……..……
Designation…….…… Date……..

Assessor
Signed……Print……..……
Designation…….…… Date……...

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