Clinical Guideline

Pneumothorax Management

Sites where Clinical Guideline applies	All Newborn Service sites in HNELHD
This Clinical Guideline applies to:	
1. Adults	No
2. Children up to 16 years	No
3. Neonates – less than 29 days	Yes
Target audience	Clinicians in NICU, SCU and Newborn sites in HNELHD
Description	Provides guidance for clinicians in the care of emergency procedures for pneumothoraces, placement of intercostal catheters and management of infants with a pneumothorax

Hyperlink to Guideline

Keywords	Neonate, Newborn, pneumothorax, air leak, chest drain, emergency aspiration, ICC, catheter, RDS, respiratory distress, JHCH, NICU, SCU.
Document registration number	HNELHD CG 19_43
Replaces existing document?	Yes
Registration number and dates of superseded documents	Pneumothorax in NICU, JHCH_NICU_12.01

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:

- HNELHD Policy Compliance Procedure PD 2013_043:PCP 31 Medication Safety in HNE Health
- NSW Health Policy Directive PD 2017_013 Infection Prevention & Control Policy
- NSW Health Policy PD 2005_406 Consent to Medical Treatment – Patient Information
- HNELHD Policy Compliance Procedure PD 2017_032:PCP2 Clinical Procedure Safety (Levels 1, 2 and 3)

Position responsible for Clinical Guideline Governance and authorised by	Dr Paul Craven, Executive Director, Children, Young People and Families Services
Clinical Guideline contact officer	Jo Davis, CNC, Newborn Services, NICU JHCH
Contact details	Jo.davis1@health.nsw.gov.au
Date authorised	26 November 2019
This document contains advice on therapeutics	Yes Approval gained from HNE Quality Use of Medicines Committee on 10 September 2019
Issue date	6 December 2019
Review date	6 December 2022

PURPOSE AND RISK

This document has been developed to provide guidance to clinical staff in Maternity and Newborn Services in HNELHD in the recognition, investigation and management of pneumothorax in the neonate.

The risks are:

- *Missed diagnosis of pneumothorax*
- *Respiratory compromise*
- *Neurovascular and skin damage*

The risks are minimised by:

- *Clinicians having knowledge of signs and symptoms of a pneumothorax*
- *Clinicians seeking assistance if the therapy is outside their scope of practice*
- *Following the instructions set out in the clinical procedure*

The Hunter New England Local Health District operates within a tiered network of maternity and newborn services which helps to ensure that women and their babies have the appropriate access to higher levels of maternity and newborn care when risk factors are identified beyond the designated role delineation of the local service. Clinicians should make the decision as to the most appropriate facility for care based on the baby's individual needs.

Any unplanned event resulting in, or with the potential for injury, damage or other loss to infants/staff/family as a result of this procedure must be reported through the Incident Information management system and managed in accordance with the Ministry of Health Policy Directive: Incident management PD2019_034. This would include unintended injury that results in disability, death or prolonged hospital stay.

Risk Category: *Clinical Care & Patient Safety*

CLINICAL PROCEDURE SAFETY LEVEL

Every clinician involved in the procedure is responsible for ensuring the processes for clinical procedure safety are followed. The following level applies to this procedure (click on the link for more information):

Level 2 procedure

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.

OUTCOMES

1	Air will be evacuated from the pleural space and negative pressure will be restored to enable the lung to re-expand.
2	Pain relief will be provided to ensure the infant recovers as quickly as possible with minimal discomfort.
3	The "5 moments of hand hygiene" will be observed to minimise contamination.
4	Insertion of a chest drain will be under surgical asepsis.

5	The infant will maintain heart rate, oxygen saturation and respiratory rate within normal limits.
6	Parents will be informed, consented, educated and supported throughout procedures.
7	Infant's respiratory compromise will be supported appropriately.

CONTENT

GUIDELINE

While not requiring mandatory compliance, staff must have sound reasons for not implementing standards or practices set out within guidelines issued by HNE Health, or for measuring consistent variance in practice.

Introduction

A pneumothorax is an accumulation of gas in the pleural cavity that is usually associated with deterioration in the infant's condition. This is a potentially life threatening emergency. Rapid recognition and effective management of the infant suffering a pneumothorax may significantly reduce mortality and morbidity rates. The long-term sequelae of hypoxia and ischaemia may be reduced with appropriate treatment. A pneumothorax can be an isolated finding in an infant with respiratory distress or may be associated with other forms of lung disease e.g. respiratory distress syndrome (RDS), lung hypoplasia or meconium aspiration syndrome. Pneumothorax is also a risk factor for those infants requiring CPAP, high PEEP or mechanical ventilation.

Air Leaks

Top

Pulmonary air leak occurs more frequently in the newborn period than at any other time of life. It occurs when air escapes from the lung into extra-alveolar spaces where it is not normally present.

Air leak begins with the rupture of an over-distended alveolus. Over-distention may be due to generalised air trapping or uneven distribution of gas. The air dissects along the perivascular connective tissue sheath toward the hilum, resulting in a pneumomediastinum or into the pleural space, producing a pneumothorax. Less commonly, air may dissect into the pericardial space, subcutaneous tissue or peritoneal space, causing pneumopericardium, subcutaneous emphysema and pneumoperitoneum respectively.

Clinical Presentation

Top

The infant may display one or more of the following:

- Sudden or unexplained deterioration with desaturation
- Sudden or unexplained increase in oxygen requirement
- Increase in respiratory distress/WOB
- Diminished or asymmetrical chest movements
- Unequal or decreased air entry
- Unexplained increase in heart rate (from baseline)
- Circulatory compromise e.g. drop in blood pressure, bradycardia
- Displaced apex/heart beat
- Blood gas may demonstrate hypoxia, respiratory and/or metabolic acidosis
- Occasionally some infants do not have a sudden deterioration and may only be picked up on X-ray

Confirmation of Pneumothorax

Top

Cold light trans-illumination can demonstrate accumulated air, often more effective for diagnosis in small preterm infants (see Figure 1). These signs are, however, unreliable in:

- Infants with increased thickness of the chest wall, for example, term infants and infants with chest wall oedema.
- Infants with pulmonary interstitial emphysema, who may show a 'false positive' result.
- A CXR will confirm diagnosis and/or effectiveness of treatment (see Figure 2) but can take time to perform.

TENSION PNEUMOTHORAX IS AN EMERGENCY AND IS POTENTIALLY LIFE THREATENING

If a tension pneumothorax is suspected clinically, immediate aspiration should not be delayed to obtain an X-ray

Figure 1: Transillumination of preterm infant with pneumothorax (*Picture from Google images*)

Figure 2: X-Ray confirmation of pneumothorax (*Picture from Google images*)

Lung ultrasound has gained much attention around the world as a new method of diagnosis of pneumothorax, the technique is quick, safe and simple. Being a new practice to neonatal care, this is currently not a primary pathway to diagnosis and more experience with this as a diagnostic pathway is required.

Following clinical presentation and confirmation by cold light source and/or CXR, steps are taken to evacuate the air and re-expand the lung. Depending upon infant's condition, there are two ways of achieving this:

1. Emergency needle aspiration, and/or,
2. Insertion of an intercostal catheter.

Consent

Top

Insertion of a pleural drain is a Level 2 procedure.
Written consent **must** be obtained prior to the procedure, and should be completed on the Level 2 procedure checklist (see Appendix 2) and filed into the baby's medical record.

Consent exemption may apply in the event of a tension pneumothorax. A tension pneumothorax is life threatening and management is a time critical procedure, therefore there may not be sufficient time to conduct a comprehensive pre-procedural safety check. In clinical emergencies such as this, whenever possible, the clinical team should address the following minimum elements of pre-procedure safety including:

- Patient identification.
- Identify the proposed procedure.
- Identify the site of procedure.

Document this process accordingly on the Level 2 procedure checklist following completion of the procedure and stabilisation of the infant. Select the N/A life threatening emergency box next to the written consent section on the form (see Appendix 2).

Emergency Needle Aspiration

Top

This procedure may be the only requirement to treat a tension pneumothorax and more importantly will provide temporary alleviation of a pneumothorax. The procedure will be performed by a Medical Officer (MO) or in NICU by a Neonatal Nurse Practitioner (NNP) in consultation with the Neonatologist/Neonatal Fellow. The infant will then be assessed to determine if an insertion of an intercostal catheter (ICC) is required.

Equipment Required

- 1 x 22G or 24G intravenous cannula (preferred) or a 23G or 25G butterfly needle (blue)
- 1 x alcohol swab
- 1 x 3-way tap
- 1 x 10 ml syringe
- Sterile gloves

Procedure

- Preferred site selection is, anteriorly through the second or third intercostal space, above the rib, in the mid-clavicular line, avoiding the nipple (see Figure 3).
- *If needle aspiration unsuccessful, an alternative site to drain is the 4th to 5th intercostal space in the anterior axillary line.*
- Raise head of bed, if able, and increase oxygen as needed.
- Position infant supine and identify puncture site.
- Clean area of puncture site with alcohol swab.
- Insert cannula (or butterfly needle) into the pleural space, above the rib, at a 90° angle.
- Remove the sharp from cannula and dispose safely.

- Connect the 3-way tap and syringe. The 3-way tap allows for aspiration of free air into the syringe and emptying the syringe while maintaining a closed system (see Figure 4).
- Aspirate air into the syringe, then expel air through the 3-way tap, keep track of volume expelled.
- When free air is obtained, stabilise the cannula and continue aspiration until preparations for insertion of an ICC are complete or until the air leak is evacuated.
- Monitor infant's condition, including heart rate, oxygen saturation & temperature.
- Document procedure in patient notes including total amount of air aspirated.

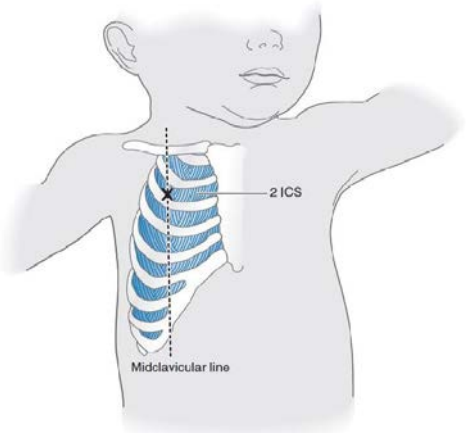


Figure 3: Mid Clavicular insertion site
(*Picture from Google images*)

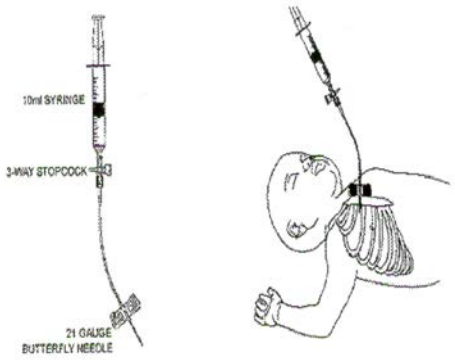


Figure 4: Emergency needle aspiration
(*Picture from Google images*)

Intercostal Catheter Placement and Management

Top

Site Selection

Laterally through the fourth or fifth intercostal space, above the rib to avoid injury to the intercostal vessels which run under the rib, known as the VAN bundle, vein, artery and nerve (see Figure 5). Maintain the insertion landmark in the mid to anterior axillary line. This should be well lateral to the nipple to avoid the breast/nipple area.

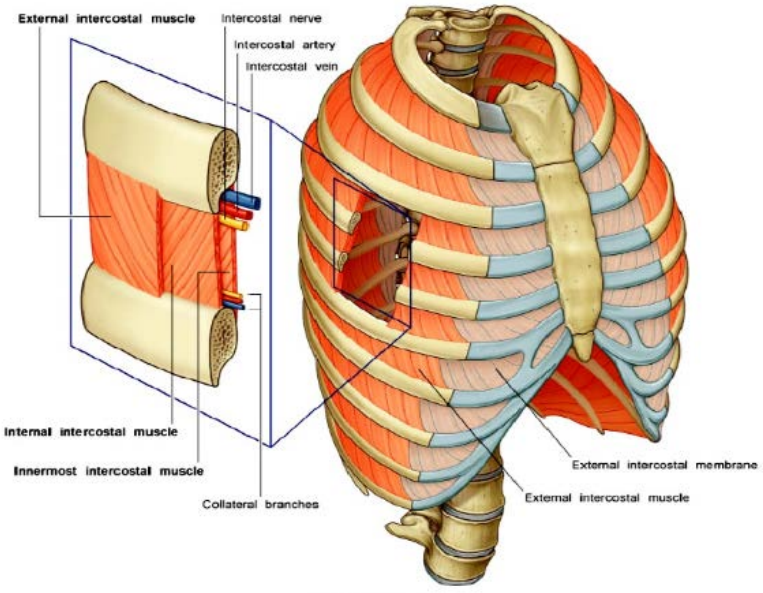


Figure 5: Intercostal vascular bundle
(*Picture from Google images*)

Catheter Selection

The intercostal catheters are the Cook's Catheter, size selection is based on infant size.

- 6.0 Fr (<1000gms)
- 7.0 Fr (<1500gms)
- 8.5 Fr (>1500gms)
- 10.2 Fr (>2500gms)

Preparing the Chest Drain System

Top

This procedure is for NICU ONLY

The water seal drainage system is comprised of a one piece, 3 chamber set-up, which separates the functions of fluid collection, water seal (which serves as a simple one way valve) and suction control.

Equipment Required

- Sterile Dry Seal chest drain pack
- Clean suction tubing and low suction unit
- Cook's multipurpose tubing adaptor (spigot) with Luer lock
- Sterile scissors

Procedure

- Open Dry Seal chest drain pack (see Figure 6).
- Deliver all the sterile water into back port of chamber (C).
- Attach suction tubing to suction port on drainage system and attach other end to the wall suction.
- Leave clear adaptor intact until required to maintain sterility.

Once ICC inserted and drain connected;

- Set drain suction to -10cm water by moving the rotary dial located behind (A) on left side of drain. Please note this pressure may be required to be increased to draw out bellows.
- Maximum settings are:
  - o - 15cm for preterm infant and,
  - o - 20cm for term infant.
- Set wall suction at required setting to draw out bellows balloon (E) out to white arrow.
- Observe (C) for active bubbling.
- Monitor drainage at drainage chamber on side (D).

*__NOTE__ wall suction __MUST NOT__ exceed -10 kPa (-80 mmHg)

Figure 6: ATRIUM express dry seal drain system (*Picture from getinge [https://www.getinge.com/us/product-catalog/express-dry-seal-chest-drain/]*)

Insertion of an Intercostal Catheter

Top

Equipment Required

- Procedure trolley
- Large sterile plastic drape
- Mask, sterile gown, sterile gloves and disposable hat
- Dressing pack
- Paediatric instrument kit
- Fenestrated drape and/or sterile plastic drape
- Cook's Intercostal Catheter (including fixing device and clear dressing)
- Disposable drainage system (Atrium Express Dry Seal Chest Drain see instructions for setting up below)
- Cook Multipurpose Adaptor with Luer lock
- 3-way tap
- Curved scalpel blade with handle
- Local anaesthetic lidocaine (lignocaine) 1%, needle and small syringe
- Chlorhexidine solution 2%

Procedure

- Observe universal precautions.
- Explain the procedure to parents ensuring they are fully informed and document written consent on the Level 2 procedure checklist (see Appendix 2).
- Complete the consent for medical procedure/treatment (minors) form and place in patient file (see Appendix 3).
- Complete patient identification pathways.
- Give sucrose orally (as per protocol) prior to local anaesthetic. Morphine may be given for ongoing pain relief.
- Assess the infant's pain score pre pre-procedure, during procedure and post-procedure using the N-PASS tool (see Appendix 4).
- Gather all necessary equipment.
- Insertion of an ICC is a sterile procedure. Staff must wear sterile mask, gown, hat and gloves after completing a surgical hand wash.

- Monitor infant's temperature, heart rate and oxygen saturation during the procedure.
- Raise head of bed by 15-20°.
- Assisting nurse to position the baby with the affected side elevated to 30-40° and extend the arm above the head.
- Infiltrate the insertion site with 1% lidocaine (lignocaine) (dose depending on size of infant).

LIDOCAINE (LIGNOCAINE) DOSING FOR NEONATES – Infiltration anaesthesia

Up to 3 mg/kg, (equivalent to 0.3 mL/kg of 1% solution), dose to be given according to patient's weight and nature of procedure. The dose may be repeated, but not more often than every 4 hours.

- Clean with appropriate skin cleansing solution (Chlorhexidine irrigation solution 0.2% recommended) and allow minimum 30 seconds to dry prior to insertion.
- Place sterile fenestrated drape or clear plastic drape in position.
- The intercostal catheter is inserted in the 4th or 5th intercostal space in the anterior axillary line. This corresponds to a point at least 2cm lateral to and below the nipple. The incision must be well clear of the nipple.
- Use the scalpel blade to make a small incision in the skin. Position blade parallel to rib and avoid multiple 'slashing' movements.
- Site the cutting trocar (sharp stylet) into the introducer.
- Optionally, mark off 1cm to 1.5cm on the catheter with artery forceps to act as safety measure to prevent inserting drain too deep.
- At a right angle to the chest wall, insert the drain through the chest wall into the pleural space.
- Remove the cutting trocar as soon as the tip of the catheter is inserted into the pleural space.
- Advance the catheter off the introducer into the pleural space by 3-5cm and use the 1-3cm marking on the catheter to direct the tip anteriorly as well as superomedially so that the tip lies beneath the anterior chest wall.
- Connect the ICC to the dry seal drainage system and note whether the fluid in drain is swinging and/or bubbling.
- The position of the ICC should be maintained to ensure adequate drainage of the pleural space. Should the catheter become dislodged, drainage may be interrupted, the closed nature of the drainage system is rendered ineffective and the patient may be compromised.
- The ICC is stabilised by securing it to the chest with the catheter fixation device from the ICC pack. It should be trimmed to accommodate the size of the infant's chest.

Purse string sutures are not used due to poor long-term cosmetic result. Sutures should only be used to shorten the incision. Tubing may be loosely attached to the bed linen with the use of tapes and safety pins to limit mobility and prevent dislodgement of the tube.

- The disposal of sharps is the responsibility of the practitioner performing the procedure using appropriate sharps container.
- Details of the ICC insertion should be noted on the observation sheet and documented in the progress notes.
- Observation of the closed system should be documented hourly, noting drainage and bubbling in drain tubing and chamber.

Connecting the ICC to the Drain System

Top

- With sterile scissors cut end of drainage tubing to remove clear adaptor and discard.
- Insert Cook multipurpose adaptor (blue) into drainage tubing (with white end facing out).
- When ICC inserted connect the white end of the multipurpose adaptor (blue) to the 3-way tap that has been connected to the Cook catheter as shown in Figure 7.

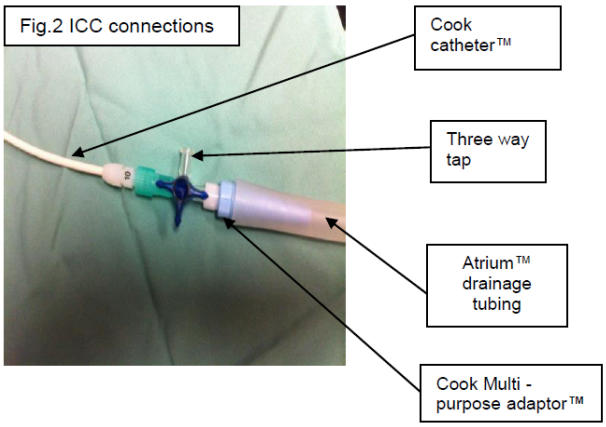


Figure 7: ICC & Atrium drain set-up (*Picture from NICU, JHCH*)

ICC set-up for Transport

Top

This procedure is for HNE District sites and JHCH NETS team only

During retrieval and transport of unwell babies requiring insertion of a chest drain, the Atrium system cannot be used, and a Heimlich valve is required to maintain the negative pressure system (see Figure 8). The internal rubber valve acts as a one way valve and allows accumulated air to escape through the rubber tunnel during expiration. Once the breath is completed the valve collapses, ensuring the air cannot return to the pleural space. Once arriving at the tertiary centre, the chest drain should be clamped and placed onto the Atrium system for ongoing management and observation.

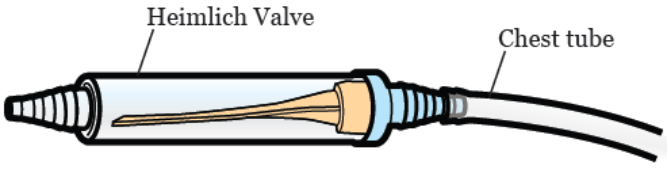


Figure 8: Heimlich valve (*Picture from Google images*)

Equipment Required

- Chest drain (cook catheter)
- 3-way tap
- Luer-Lock connector with tube
- Heimlich valve

Procedure

- Connect the luer lock connector with tubing to the 3-way tap.
- Insert Heimlich valve (blue end) into remaining end of sterile silicone tubing.

- Maintain sterility throughout procedure.
- Once ICC inserted connect Cook catheter to three way tap set-up (see Figure 9).

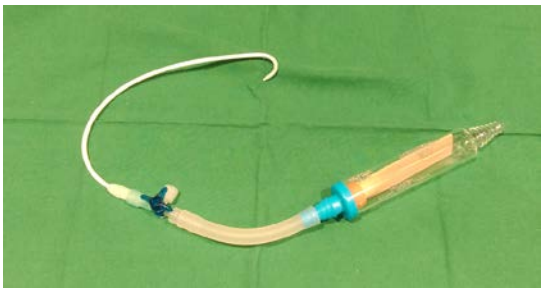


Figure 9: Heimlich valve set-up for transport (*Picture from NICU, JHCH*)

Ongoing Monitoring of ICC

Top

- Leave infant clean, dry and comfortable.
- Record procedure on observation flow chart and in progress notes.
- Post insertion a CXR **must** be completed to ensure ICC placement is correct and effective.
- Inform and reassure parents as soon as possible.
- Observe ICC site, activity and drainage hourly and document.
- Use clamp provided on tubing to anchor line to patient's bed to avoid tension on the ICC.
- The requirement for ongoing pain management is based on an assessment using the N-PASS score (see Appendix 4).
- **NEVER** position the baby lying on the affected side &/or on chest drain.

Complications of a Chest Drain

Top

- Malpositioned chest drain
- Localised trauma
- Infection

Removal of ICC

Top

When the ICC is no longer active for a significant period of time the need for the chest drain will be assessed. Often this is assessed by clamping the ICC system and assessing for re-accumulation 4 to 6 hours post clamping. A chest X-ray may be performed to assist this assessment. If no re-accumulation has occurred the chest drain may be requested to be removed by the on-service Neonatologist/Neonatal Fellow.

Equipment Required

- Clean trolley
- Dressing pack
- Sterile gloves
- Steri strips

Procedure

- May be undertaken by an MO, NNP, and TNP or experienced RN.
- Inform parents of procedure, explain and reassure.

- Observe aseptic technique.
- Position infant with affected side uppermost.
- Remove all dressings and steri-strips gently and clean area.
- If catheter tip is to be saved and sent to pathology, have sterile container ready.
- Remove catheter carefully and gently.
- Apply steri-strips to wound site as needed. If site is gaping, have medical officer or NNP review and suture as necessary.
- Leave infant clean, dry and comfortable.
- Dispose of used drainage system as indicated.
- Document removal procedure on observation flow chart and in the progress notes.

IMPLEMENTATION PLAN

The clinical guideline will be:

- Circulated to General Managers and Sector Managers.
- Circulated to the clinicians via Tiered Neonatal Network/Newborn Services and Children Young People and Families Services, and the Women's Health and Maternity Network.
- Made available on the intranet (PPG) and HNEKidshealth website.
- Presented at facility units meetings and tabled for staff to action.

MONITORING AND AUDITING PLAN

- The person or leadership team who has approved the clinical guideline is responsible for ensuring timely and effective review of the guideline.
- Evaluation will require a review of the most current evidence as well as consideration of the experience of HNELHD staff in the implementation of the clinical guideline.
- Data derived from monitoring and evaluation should inform the review of the clinical guideline either as required or scheduled.
- Implementation, education support and monitoring compliance be completed by local Clinical Educators and Managers.
- Amendments to the guideline will be ratified by the Manager and Head of Newborn Services and WHaM Networks prior to final sign off by the Children Young People and Families Services Network.

CONSULTATION WITH KEY STAKEHOLDERS

AUTHOR:	**Jo Davis, CNC Newborn Services, NICU JHCH**
REVIEWERS:	Dr Larissa Korostenski, Acting Head of Newborn Services, NICU JHCH Dr Anil Lakkundi, Neonatologist, NICU JHCH Cathy Vickery, Neonatal Nurse Practitioner , NICU JHCH Dr Jo McIntosh, Neonatologist, NICU JHCH Dr Koert DeWaal, Neonatologist, NICU JHCH Michelle Jenkins, Senior Paediatric Pharmacist, JHCH Dr Javeed Travadi, Neonatologist, NICU JHCH Kate McKenna, Neonatal Nurse Practitioner, NICU JHCH Siubhan McCaffrey, Clinical Midwifery Consultant, Northern HNELHD
CONSULTATION:	HNELHD Maternity and Newborn Services Steering Committee HNELHD Tiered Neonatal/Newborn Services Network Women's Health and Maternity Services Network Children, Young People and Family Services Network District Quality use of Medicines Committee
APPROVED BY:	District Quality use of Medicines Committee Sinead Redman, Manager Newborn Services, NICU JHCH Dr Larissa Korostenski, Acting Head of Newborn Services, NICU JHCH Dr Paul Craven, Executive Director, CYPFS

OTHER USEFUL LINKS

1. Level 2 Procedure Checklist forms
2. NSW Health Policy Directive PD 2014_024 Patient Identification Bands

APPENDICES

1. Abbreviations & Glossary
2. Level 2 Procedure Checklist
3. Consent to Medical Treatment form
4. N-PASS tool

REFERENCES

1. Cloherty J, Eichenwald E, Hansen A. & Stark A. (2012) Manual of Neonatal care. Lippincott, Williams & Wilkins (7th Edition)
2. Gleason, C and Devaskar, S. (2012) Avery's Diseases of The Newborn Elsevier, Saunders (9th Ed)
3. Merenstein, G and Gardiner, S. (2011) Handbook of Neonatal Intensive Care St. Louis, CV Mosby Co, (7th Ed)
4. NETS Victoria Handbook (2015) Pneumothorax drainage. Available at https://www2.health.vic.gov.au/hospitals-and-health-services/patient-care/perinatal-reproductive/neonatal-ehandbook/procedures/pneumothorax-drainage
5. ATRIUM EXPRESS Dry Seal Chest Drain System Product Information leaflet.
6. Parekh, U.R. et al (2016) Pneumothorax in neonates: complication during endotracheal intubation, diagnosis and management. Journal of Anaesthesiology & Clinical Pharmacology. 32 (3): 397-399.
7. Silva, I.S. et al (2016) Pneumothorax in neonates: a level 3 Neonatal Intensive Care Unit experience. Journal of Paediatric and Neonatal Individualised Medicine. 5 (2): 1-8.
8. Gogakos et al (2015) Heimlich valve and Pneumothorax. Annals of translational medicine. 3 (4): 54.
9. British National Formulary; https://www.medicinescomplete.com.acs.hcn.com.au/#/content/bnfc/_772587537?hspl=lignocaine#content%2Fbnfc%2F_772587537%23pot-indicationsDose
10. Liu, J et al (2017) Lung ultrasonography to diagnose pneumothorax of the newborn, American Journal of Emergency Medicine. 35: 1298-1302.
11. Migliaro, F et al (2014) Lung ultrasound-guided emergency pneumothorax needle aspiration in a very preterm infant, BMJ. 1-3.

FEEDBACK

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

APPENDIX ONE

ABBREVIATIONS & GLOSSARY

Acronym or Term	Definition
CPAP	Continuous Positive Airway Pressure
CXR	Chest X-Ray
HNELHD	Hunter New England Local Health District
ICC	Inter-costal Catheter
JHCH	John Hunter Children's Hospital
MO	Medical Officer
N/A	Not applicable
NICU	Neonatal Intensive Care Unit
NNP	Neonatal Nurse Practitioner
N-PASS	Neonatal Pain and Sedation Score
PEEP	Positive End Expiratory Pressure
RDS	Respiratory Distress Syndrome
RN	Registered Nurse
SCU	Special Care Unit
TNP	Transitional Nurse Practitioner
VAN Bundle	Venous-Arterial-Nerve Bundle
WOB	Work of Breathing

APPENDIX TWO

LEVEL 2 PROCEDURE CHECKLIST

HUNTER NEW ENGLAND LOCAL HEALTH DISTRICT

Facility: _____

PROCEDURAL SAFETY CHECKLISTS

FAMILY NAME	MRN
GIVEN NAME	☐ MALE ☐ FEMALE
D.O.B. ___/___/___	M.O.
ADDRESS	
LOCATION / WARD	
COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE	

HNE033280

HNEMR223

BINDING MARGIN – DO NOT WRITE

PROCEDURAL SAFETY CHECKLISTS

Worksheet

LEVEL 2 PROCEDURE CHECKLIST

Level 2 procedure definition (Reference: PD2017_032 Clinical Procedure Safety)
- Proceduralist often supported by an assisting proceduralist/s
- Requires written consent in HNE LHD
- Usually performed in wards, emergency departments, clinics, imaging departments, interventional suites
- e.g. lumbar puncture, insertion of chest tube, ascitic tap, stress test, Nuclear Medicine therapies, biopsies, IV or IT administration of chemotherapy, centrally inserted line
- Does NOT involve procedural sedation or general/regional anaesthesia

Date: ____/____/_____ Time: _____

Procedure performed: _____

If procedure requires sedation or general/regional anaesthesia use Level 3 checklist over page

Immediately pre-procedure		
Proceduralist / team introductions	☐ Yes	
Written consent	☐ Yes	☐ N/A Life threatening emergency
Patient identification verified (Name, DOB, MRN) against health record, ID band for inpatients and verbally if patient able	☐ Yes	
Procedure verified (against health record)	☐ Yes	
Site verified with patient and/or health record including side/level where appropriate	☐ Yes	
Patient/site/side/level matches consent	☐ Yes	
Allergy/adverse reaction checked and documented	☐ Yes	
Antibiotics prescribed and/or administered	☐ Yes	☐ N/A
Special medication/s administered	☐ Yes	☐ N/A
Essential imaging reviewed and correct for patient/procedure	☐ Yes	☐ N/A
Patient position correct for procedure	☐ Yes	☐ N/A
Implants and special equipment	☐ Yes	☐ N/A
Planned procedure, critical steps and anticipated events considered	☐ Yes	

Post procedure:		
Advice for clinical handover (ISBAR) *Provide verbal clinical handover (management plan, +/- altered calling criteria)*	☐ Yes	
Name of procedure and Proceduralist documented in health record	☐ Yes	
Clinical management plan documented in health record (including post procedure investigations, altered calling criteria)	☐ Yes	
Equipment problems/issues documented/manager advised	☐ Yes	☐ N/A
Post procedure tests ordered	☐ Yes	☐ N/A
Specimen/images labelled correctly	☐ Yes	☐ N/A

Proceduralist Signature: _____

Print name: _____ **Designation:** _____

Assistant Signature (if applicable): _____

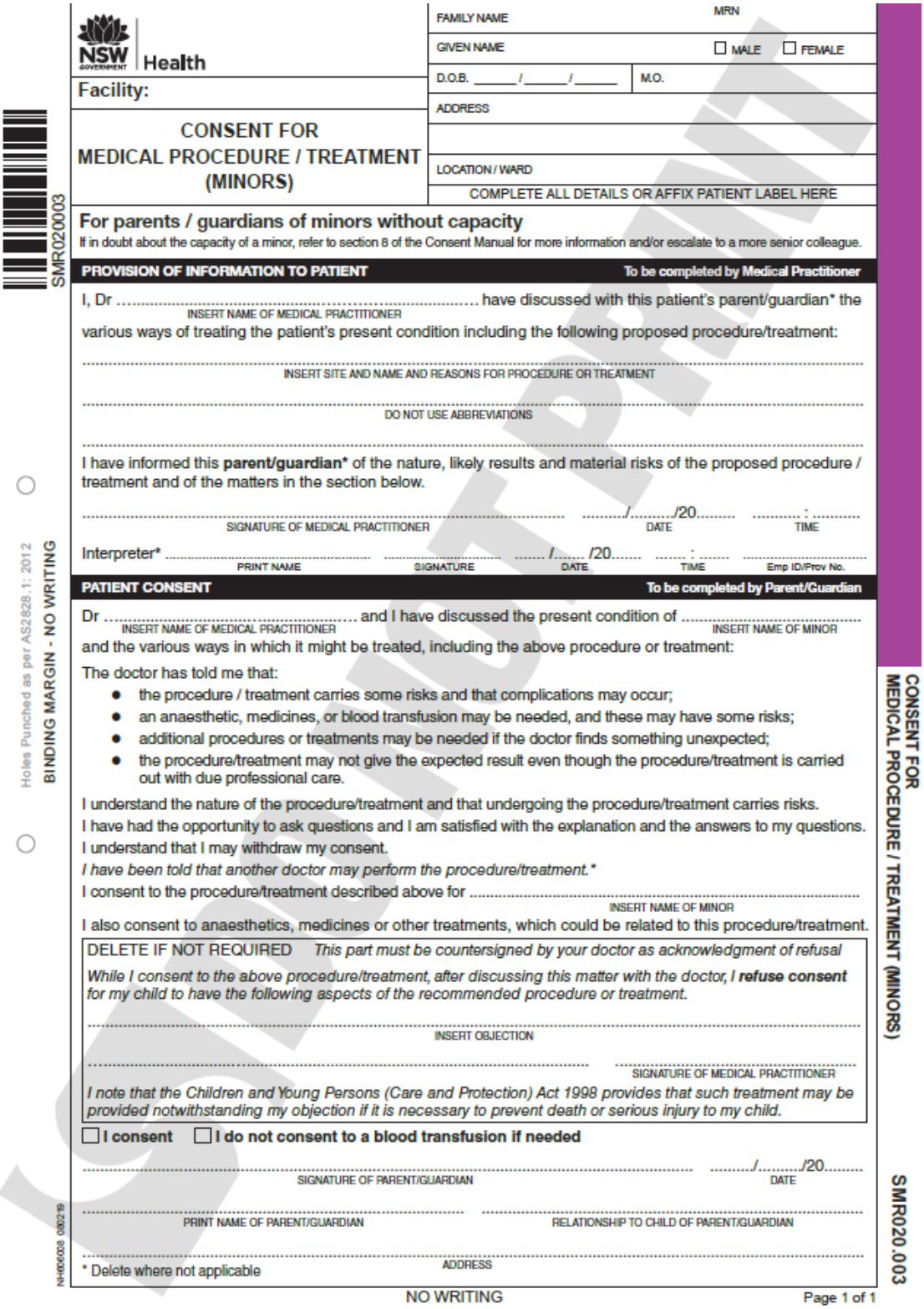
Print name: _____ **Designation:** _____

010219

Page 1 of 2

APPENDIX THREE

PROCEDURAL CONSENT FORM



NSW GOVERNMENT Health

Facility:

CONSENT FOR MEDICAL PROCEDURE / TREATMENT (MINORS)

FAMILY NAME MRN

GIVEN NAME ☐ MALE ☐ FEMALE

D.O.B. _____/_____/_____ M.O.

ADDRESS

LOCATION / WARD

COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

SMR020003

For parents / guardians of minors without capacity

If in doubt about the capacity of a minor, refer to section 8 of the Consent Manual for more information and/or escalate to a more senior colleague.

PROVISION OF INFORMATION TO PATIENT — To be completed by Medical Practitioner

I, Dr ..... (INSERT NAME OF MEDICAL PRACTITIONER) have discussed with this patient's parent/guardian* the various ways of treating the patient's present condition including the following proposed procedure/treatment:

..... (INSERT SITE AND NAME AND REASONS FOR PROCEDURE OR TREATMENT)

..... (DO NOT USE ABBREVIATIONS)

.....

I have informed this **parent/guardian*** of the nature, likely results and material risks of the proposed procedure / treatment and of the matters in the section below.

..... (SIGNATURE OF MEDICAL PRACTITIONER) ...../...../20..... (DATE) ..... : ..... (TIME)

Interpreter* ..... (PRINT NAME) ..... (SIGNATURE) ...../...../20..... (DATE) ..... : ..... (TIME) ..... (Emp ID/Prov No.)

PATIENT CONSENT — To be completed by Parent/Guardian

Dr ..... (INSERT NAME OF MEDICAL PRACTITIONER) and I have discussed the present condition of ..... (INSERT NAME OF MINOR) and the various ways in which it might be treated, including the above procedure or treatment:

The doctor has told me that:

- the procedure / treatment carries some risks and that complications may occur;
- an anaesthetic, medicines, or blood transfusion may be needed, and these may have some risks;
- additional procedures or treatments may be needed if the doctor finds something unexpected;
- the procedure/treatment may not give the expected result even though the procedure/treatment is carried out with due professional care.

I understand the nature of the procedure/treatment and that undergoing the procedure/treatment carries risks.
I have had the opportunity to ask questions and I am satisfied with the explanation and the answers to my questions.
I understand that I may withdraw my consent.
*I have been told that another doctor may perform the procedure/treatment.**
I consent to the procedure/treatment described above for ..... (INSERT NAME OF MINOR)

I also consent to anaesthetics, medicines or other treatments, which could be related to this procedure/treatment.

DELETE IF NOT REQUIRED *This part must be countersigned by your doctor as acknowledgment of refusal*

*While I consent to the above procedure/treatment, after discussing this matter with the doctor, I **refuse consent** for my child to have the following aspects of the recommended procedure or treatment.*

..... (INSERT OBJECTION)

..... (SIGNATURE OF MEDICAL PRACTITIONER)

I note that the Children and Young Persons (Care and Protection) Act 1998 provides that such treatment may be provided notwithstanding my objection if it is necessary to prevent death or serious injury to my child.

☐ **I consent** ☐ **I do not consent to a blood transfusion if needed**

..... (SIGNATURE OF PARENT/GUARDIAN) ...../...../20..... (DATE)

..... (PRINT NAME OF PARENT/GUARDIAN) ..... (RELATIONSHIP TO CHILD OF PARENT/GUARDIAN)

..... (ADDRESS)

* Delete where not applicable

NO WRITING

Page 1 of 1

CONSENT FOR MEDICAL PROCEDURE / TREATMENT (MINORS)

SMR020.003

BINDING MARGIN - NO WRITING

Holes Punched as per AS2828.1: 2012

NH-060608 0802-19

DO NOT PRINT

APPENDIX FOUR

N-PASS TOOL

The Neonatal Pain and Sedation Score (N-PASS)

Assessment Criteria	Sedation		Normal	Pain / Agitation	
	-2	-1	0	1	2
Crying Irritability	No cry with painful stimuli	Moans or cries minimally with painful stimuli	Appropriate crying Not irritable	Irritable or crying at intervals Consolable	High-pitched or silent-continuous cry Inconsolable
Behavior State	No arousal to any stimuli No spontaneous movement	Arouses minimally to stimuli Little spontaneous movement	Appropriate for gestational age	Restless, squirming Awakens frequently	Arching, kicking Constantly awake or Arouses minimally / no movement (not sedated)
Facial Expression	Mouth is lax No expression	Minimal expression with stimuli	Relaxed Appropriate	Any pain expression intermittent	Any pain expression continual
Extremities Tone	No grasp reflex Flaccid tone	Weak grasp reflex ↓ muscle tone	Relaxed hands and feet Normal tone	Intermittent clenched toes, fists or finger splay Body is not tense	Continual clenched toes, fists, or finger splay Body is tense
Vital Signs HR, RR, BP, SaO_2	No variability with stimuli Hypoventilation or apnea	< 10% variability from baseline with stimuli	Within baseline or normal for gestational age	10-20% from baseline SaO_2 76-85% with stimulation – quick	> 20% from baseline $SaO_2 \leq 75\%$ with stimulation – slow Out of sync with vent

Premature Pain Assessment

+ 3 if < 28 weeks gestation / corrected age
+ 2 if 28-31 weeks gestation / corrected age
+ 1 if 32-35 weeks gestation / corrected age