Local Guideline

MRI - Preparation and transfer of infant in NICU

Sites where Local Guideline applies
- Neonatal Intensive Care Unit JHCH

This Local Guideline applies to:
1. Adults
   - No
2. Children up to 16 years
   - No
3. Neonates – less than 29 days
   - Yes

Target audience
- Clinical staff in NICU and technical staff accompanying infants to MRI

Description
- Provides guidance for staff to ensure MRI’s attended to in a safe manner for infants and staff

National Standard
- Standard 5- Patient Identification & Procedure Matching

Keywords
- transfer, neonate, MRI, imaging, NICU, JHCH

Document registration number
- JHCH_NICU_05.01

Replaces existing document?
- Yes

Registration number and dates of superseded documents
- JHCH_NICU_05.01
- June 2011

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 Health Policy Directive PD2017_032 Clinical Procedure Safety
- Medication Safety in HNE Health PD2013_043:PCP31

Prerequisites
- All clinicians accompanying infants for MRI to have done online MRI safety training

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 patients’ health record.

Position responsible for the Local Guideline and authorised by
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Contact details
- Date authorised
  - 25th May 2018

This document contains advice on therapeutics
- No

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- 30th May 2018

Review date
- 30th May 2021
Purpose and risks

This local clinical procedure has been developed to provide instruction to the health clinician and to ensure that the risks of harm to the child receiving a MRI scan are prevented, identified and managed.

The risks are:
- Incorrect equipment for MRI environment
- Poor sedation of neonate

The risks are minimised by:
- Nurses accompanying patients to MRI to have completed online training
- Clinicians having knowledge of MRI environment
- Clinicians seeking assistance if the therapy is outside their scope of practice
- Following the instructions set out in the clinical procedure

Ensuring appropriate sedation administered to the neonate prior to procedure

Risk Category: Clinical Care & Patient Safety

Glossary

<table>
<thead>
<tr>
<th>Acronym or Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>CXR</td>
<td>Chest X-Ray</td>
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<tr>
<td>ECG</td>
<td>Electro-carodiogram</td>
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<tr>
<td>ETT</td>
<td>Endo tracheal tube</td>
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<tr>
<td>GA</td>
<td>General Anaesthetic</td>
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<tr>
<td>MRI</td>
<td>Medical Resonance Imaging</td>
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</table>

Rationale

All infants requiring transfer to Medical Imaging for Medical Resonance Imaging (MRI) investigations will be assessed in terms of anaesthetic requirements, sedation for the procedure, requirement of intubation and general anaesthetic, and nutritional status. This assessment will then determine the preparation of the infant in the NICU prior to transfer to Medical Imaging. Once assessed and appropriately prepared, the infant will be safely transported and escorted to Medical Imaging.

Outcomes

- The infant will be assessed for the need for appropriate anaesthetic /sedation for the procedure, to optimize the quality of the investigation. The need for contrast and
intravenous access should be discussed between the Neonatologists and MRI staff prior to transfer.

- Following discussion with the Neonatologist the infant will be prepared for the correct procedure, either MRI under General Anaesthetic (GA) requiring ventilation or non-ventilated.
- The infant will be safely transported to and from Medical Imaging for the procedure and the staff accompanying the infant will be aware of MRI Safety.
- The infant will be monitored during transfer to and from Medical Imaging and during the procedure.
- Resuscitation equipment is set up ready to be used during transport on the giraffe or open care bed.
- Appropriate paperwork will accompany the infant to MRI

Staff Safety

- Entry into the MRI scanning rooms is at the discretion of the MRI Radiographers. Only staff required for patient care will be allowed entry into the scanner rooms after the appropriate safety checks have been undertaken.

- It is essential to complete the MRI Safety Screening Questionnaire - any staff member accompanying an infant will be required to take the completed form to Medical Imaging. This form identifies possible implants/prosthesis or health issues for staff that may result in serious injury in a strong magnetic field.

- Before entering the scan room all metallic objects must be removed including watches, jewelry, hearing aids, wallet, credit cards, coins, keys, pencils/pens, scissors, mobile phones, hair pins, clips, piercings, clothing with metal e.g. bra, jeans, zips, studs. There are lockers available.

- It is desirable for all staff transferring infants to MRI to undertake the ‘on-line MRI Safety Training’ - see following link

  http://mylink.hnehealth.nsw.gov.au/........ then click on ‘clinical’.

Procedure: Ventilated Infant

1. Ensure parents/guardians have given informed consent and appropriate documentation is completed and signed.

2. Ensure the infant is wearing two (2) correct identification bands that correlate with the request form.

3. Assess temperature pre/post transfer and apply warmed blankets/clothing if necessary. Also have on hand a space blanket and Velband.

4. The infant is transferred to a Giraffe bed, which is fitted with full air and oxygen cylinders, Neopuff and mask and portable suction equipment. A Laerdal bag
should always be available. Ensure this is done with appropriate time to intubate and stabilize the infant prior transfer if required.

5. Monitoring is maintained by the portable monitor which is linked to the Philips monitoring at the bedside.

6. Ensure extra equipment is available in the incubator draw. E.g. ETT, laryngoscope, introducer, Neobar, suction catheters, OGT Size 8FG and a dummy to settle.

7. The infant is intubated in NICU by Neonatal staff, unless other arrangements made (if not already intubated and ventilated). Provide sedation as ordered.

8. Ensure the infant has had a blood gas and is stable on the ventilator before transfer to Medical Imaging. A CXR should be performed in all recently intubated infants to ensure correct tube placement.

9. Intravenous (IV) fluids are changed to a syringe driver or temporarily ceased (after discussion with Medical Officer).

10. Ensure the infant does not have ANY metal on their body (ECG leads, clothing).

11. Ensure the patient’s notes, bedside chart and request form are taken with the patient (underneath bed) for the procedure, including the emergency phone number for NICU (DECT ph: 23171), should assistance be required.

12. Transfer the infant from the Fabian ventilator to the BabyPac MRI compatible ventilator ensuring the oxygen and air is disconnected from the wall and attached to portable cylinders. The infant will be transferred to Medical Imaging attached to the BabyPac MRI compatible ventilator (see Appendix 1).

13. Call the Technical Assistant (TA) or wardsmen for assistance in transferring the Giraffe bed to Medical Imaging. The neonatal nurse caring for baby will accompany the baby to Medical Imaging. Ensure the NUM 2/In-charge nurse is aware of the transfer. A medical team member must accompany the infant also.

14. **Remember to take both Air and Oxygen Hose MRI adapters from the BabyPac Bag with the patient**

15. The Infant is safely transferred to Medical Imaging for the procedure **via the theatre lifts**

16. Attach the open care/Giraffe to power and gas supplies when in MRI. and turn OFF cylinders

17. Once in the MRI department, a check and review by the MRI Radiographer is carried out. The infant is switched over to MRI safe monitoring equipment.

18. The pump is not allowed in the MRI room so removal of syringe from pump is required. Attach a long extension tubing to a **30ml syringe** (only a 30ml syringe
will pass through the hole into the scan room) and connect to the pump outside the room. **This is done by adding 1 set of extension tubing to 1 x 6m extension tubing.**

19. Ensure blood results and the blood sugar level is normal before transporting to MRI.

20. Assist the radiographer to swaddle/wrap the infant as this is very important for optimizing the quality of the images. Under guidance from the MRI Radiographer, the infant is transferred to the MRI room, and placed into the “bean bag” by MRI Radiographer and is settled/immobilized for the procedure. MRI safe monitoring equipment is connected and checked.

21. Continue to run power to open care/Giraffe but ensure gas cylinders are turned OFF following infant transfer to MRI table.

22. MRI undertaken

23. Turn cylinders back on prior to infant moving to open care bed.

24. The infant is transferred from the MRI room to the open care bed/Giraffe in the MRI department. MRI safe monitoring equipment is removed and the transport monitoring recommenced. Disconnect the BabyPak ventilator from the wall gas supply via the extension hoses and re-connect to the transport cylinders.

25. Call for assistance to transfer Giraffe bed back to NICU.

| If difficulty or concerns during procedure or transport, **contact NICU directly** for assistance (NICU DECT ph. 23171) **NOT** the MET Team. |

**Procedure: Non-Ventilated Infant**

1. Ensure parents/guardian has given informed consent and appropriate documentation is completed and signed.

2. Ensure the infant is wearing two (2) correct identification bands.

3. Infant is transferred to an open care bed or Giraffe, which is fitted with full air and oxygen cylinders (ensure key available), Neopuff and portable suction equipment. A Laerdal bag should always be available.

4. Assess temperature pre/post transfer and apply warmed blankets/clothing if necessary

5. Include intubation equipment in case of an emergency.

6. Monitoring will be in the form of the Philips monitoring at the beds space which has a portable attachment.

7. Ensure infant does not have ANY metal on their body (i.e. ECG leads, clothing)
8. Give infant feed, either enteral or sucking feed just prior to transfer to Medical Imaging. May require a dummy if restless. Request permission from parents as they may need to supply.


10. Ensure all patient notes, bedside chart and request form are taken with the patient (underneath bed) for procedure, including the emergency phone number for NICU (DECT ph. 23171) should assistance be required.

11. Call for assistance of TA or wardsmen in transferring open care bed to Medical Imaging. The neonatal nurse caring for infant will accompany the baby to Medical Imaging. Ensure neonatologist on service and NUM2/In-charge nurse are aware of infant's transfer to Medical Imaging.

12. Infant is safely transferred to Medical Imaging for procedure via theatre lifts.

13. In the MRI department, attach the infant to the MRI safe monitoring equipment and re-wrap securely in the blanket.

14. Assist the radiographer to swaddle/wrap the infant as this is very important for optimizing the quality of the images. Following check by the Radiographer, the infant is transferred to the MRI room, placed and swaddled into the “bean bag” by the MRI Radiographer and immobilized for the procedure. MRI safe monitoring equipment is connected and checked.

15. MRI undertaken

16. The infant is transferred from MRI room to the open care bed in the MRI department. The MRI safe monitoring is removed and the transport monitoring is set up. The infant is transferred back to NICU.

If difficulty or concerns during procedure or transport, contact NICU directly for assistance (NICU DECT ph. 23171) NOT the MET Team.

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NICU Operational, Planning & Management Committee 9/05/18
JHCH CQ&PCC 22/05/18
References


Appendix

1. MRI Safety Screening Questionnaire Hunter New England Imaging
2. Pneupac BabyPAC 100 Ventilator –Basic Instruction

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: Hand hygiene Acknowledge, Introduce, Duration, Explanation, Thank you or closing comment.

Implementation, monitoring compliance

1. Approved clinical guideline will be uploaded to the PPG and communication of updated ‘MRI- Preparation and transfer of infant in NICU’ clinical guideline to NICU staff will be via email and message on the HUB.
2. Incident investigations associated with this Guideline and Procedure will include a review of process.
3. The Guideline and Procedure will be amended in line with the recommendations.
4. The person or leadership team who has approved the Guideline and Procedure is responsible for ensuring timely and effective review of the Guideline and Procedure.
5. Evaluation will include a review of the most current evidence as well as a consideration of the experience of Neonatal staff at JHCH in the implementation of the Guideline and Procedure.

Feedback

Any feedback on this document should be sent to the Contact Officer listed on the front page.
Appendix 2

Pneupac® BabyPAC™ 100 ventilator

Basic Instructions

1. Connect to gas supply and select function CMV + peep.

   Check pressure indicators:
   - indicates low supply-O2 or Air (will operate on one supply gas only)

2. Set \( V_{\text{del}} \) by means of \( T_{\text{insp}} \) and \( P \)

3. Set frequency or I:E by means of \( T_{\text{exp}} \) and \( T_{\text{insp}} \)

4. Set alarm below \( p \) and test by occluding patient connection. Test low press/disconnect alarm by opening patient connection

5. Set alarm to safe level, but above \( p \)

6. Set \( O_2 \) concentration as required

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### Frequency (L/min)

<table>
<thead>
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<th>( T_{\text{exp}} )</th>
<th>0.25</th>
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### Controls:

- \( T_{\text{insp}} \) inspiratory time (sec)
- \( T_{\text{exp}} \) expiratory time (sec)
- \( P \) inspiratory pressure (cmH\(_2\)O)
- CMV controlled ventilation
- IMV \( T_{\text{exp}} \) expanded x10

### Alarm

High pressure alarm setting with pressure relief (cmH\(_2\)O)

Please note: Alarm legend appears at the side of the Ventilator.

Refer to User’s manual before use and/or for guidance/further instructions.