TRANSFER OF A NEONATE TO OPERATING THEATRE AND OTHER HOSPITAL INVESTIGATIVE DEPARTMENTS - GCNIC - CHW

PRACTICE GUIDELINE ©

DOCUMENT SUMMARY/KEY POINTS

- Neonates are transferred to various departments throughout the hospital for surgery or investigative tests and procedures
- Whenever possible the investigative procedure should be attended within the unit
- At times it may be necessary for an infant to attend another department
- Thorough preparation of the neonate and equipment is required to avoid adverse events occurring during transfer and/or in the departments
- Oxygen cylinders need to be checked to ensure they have the required volume of gas available beyond the expected duration of the transfer
- Continuous monitoring is available in all departments through the multi measurement server

Key performance indicators:

- All infants being transferred have two identification bracelets on their limbs
- Transport kit is available for all transfers along with suction unit/Panda bed
- IV fluids and giving sets are taken to the operating theatre when no IV cannula is insitu.
- Infants are prepared on time and ready for transfer with no delay

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1st October 2023	**Review Period**: 3 years
Team Leader:	Clinical Nurse Educator	**Area/Dept**: GCNC

CHANGE SUMMARY

- Input from medical team
- Amendment to Omnibed heating during transport
- Pictures and References updated

READ ACKNOWLEDGEMENT

- Health Care Professional's in Grace Centre for Newborn Intensive Care caring for patients requiring transfer to another department for an investigative procedure are required to read and acknowledge this document.

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Introduction

Transfer of infants outside of the NICU setting for investigations can be associated with complications and where possible investigations should be performed in the NICU1. In the event the infant is transferred to another department the following components and pre-transport preparation need to be addressed[2]:

- Documentation
- Adequate supervision/personnel
- Facility for continuous monitoring
- Equipment relevant to the neonate's condition
- Concise communication

Effective preparation and planning are key to, successful, smooth transport of the unwell infant and these components should be incorporated by all health care professionals undertaking a transfer of an infant[2].

General Principles of Transfer

Staff	• Are familiar with the transfer equipment • Notify other staff they are leaving the clinical setting, the location of their transfer and hand over any relevant information[3] • Ventilated, NIV or medically unstable neonates are accompanied by an RMO/Anaesthetist/NP and an RN • Stable non-ventilated infants are accompanied by an RN • Infants receiving IV therapy, respiratory support or requiring neurological observations are accompanied by an RN
Work Health & Safety	• Ensure there are adequate personnel to manage the equipment during transfer • A porter is required to push infants in cribs, transport systems and those with an IV infusion in a cribette. The accompanying nurse is responsible for the infant's safety • Any infant transferred with continuous monitoring requires suction, oxygen and resuscitation equipment • Universal infection control principles are utilised during transfer • No infant is to be left unattended
Monitoring	• In unit continuous vital sign monitoring requirements are continued during transfer

	• Ensure leads are connected to monitors and the alarms set appropriately • Ventilated infants require continuous ETCO2 monitoring during transfer.
Thermoregulation	• For 'open care systems use of the Perspex lid is required • Pre-warm beds prior to transfer • Beds and mattresses should remain on charge and pre warmed while the neonate is attending their procedure/surgery
Equipment	• The red transport kits must be taken for all transfers • The infant is transferred on the bed appropriate for their clinical need. Ventilated infants remain on their open care system, preterm infants in their incubator using the shuttle and for patients requiring continuous monitoring; heating or respiratory support on a transport bed. • The nurse is required to check all equipment prior, during and after transfer to ensure a consistent delivery of care. • Continuous infusions and IV access is checked prior to transfer to ensure continuous delivery of medication. • Ensure infant has ID bands on two limbs when leaving the unit for transfer regardless of destination location. • In the event of equipment failure contact the unit requesting assistance and replacement equipment. After returning to the unit complete an IIMs.
Parents	• Parents are welcome to accompany their infant during transfers. • They are not to assist in the management of equipment (pushing/pulling). • The nurse is responsible for informing the parents where they can wait, or to identify how they will be contacted e.g. pager or text on their mobile.
Emergencies	• Outside of the unit in the event of a medical emergency staff dial 2222 requesting a 'mobile arrest team' for assistance. • If staff require additional assistance during the transfer, they should contact the Grace NUM/TL on 51177/51178 • In the event of a medical emergency during transfer contact the social work team to support the family during and post the event.

Safety Cavet

The battery on UPS systems **does not** support heating during transfer.

- For infants in an open care system – use the perpsex lid, turn heating off immediately prior to transfer and recommence at arrival destination.
- For incubators – Omnibed heating should be *left* on during transfer to ensure a stable body temperature is maintained. On arrival to the destination plug the omnibed into walls main power to recommence heating. Minimise opening of portholes during

Transfer Destination

In this document general principles are applied for neonatal transfers with specific recommendations indicated for the specific type of transfer. Transfers are either:

1. To the operating theatre or
2. To other investigative department

Other investigative departments include:

- Medical Imaging (MRI, CT, fluoroscopy)
- Cardiology (ECG, Echocardiography)
- Nuclear Medicine
- Cardiac Catheter laboratory
- EEG
- Outpatient Departments

Transfer of an Infant to Operating Theatre

All infants undergoing surgery in the Operating Theatres require meticulous preparation to ensure the safety of the transfer and that the transfer occurs calmly.

The allocated nurse accompanies the infant to the Operating Theatre and if possible, remains throughout the surgery. This practice ensures consistency and can assist the Anaesthetist with the equipment and monitoring during the operation.

Preparation	• Check nil by mouth orders and premedication time on Medication sheet /electronic medical record. • The operation site may be marked on the skin prior to surgery. • Check that blood gas has been attended for ventilated patients, and blood has been ordered and is available. • Ensure that pre-operative checklist is complete • NBST is collected prior to cardiac Bypass surgery • Apply two ID bands
Preoperative wash	• Where possible involve the parents • Perform a single pre-operative wash on the day of surgery using a pH neutral soap e.g. QV or Johnsons & Johnsons if the patient is greater than 24 hours old. • If a patient is colonised with a MRO (Multi resistant Organisms) perform 1 pre-operative wash on the day of surgery using Triclosan 1% • If the patient is unable to bathe moisten skin and apply pH neutral wash with a damp washer. • Ensure infant is in a warm environment and away from drafts throughout bathing.
Equipment	• A porter is required to assist in the movement of transport systems to the Operating Theatres or diagnostic departments. A medical officer must accompany all ventilated infants and seriously ill or unstable non-ventilated infants together with the allocated nurse. • The oxygen and air cylinders are checked and is above 10,000 kpa prior to transfer. • An appropriate resuscitation bag with correctly sized facemask is attached to flow meters. • A portable suction is required for all transfers

Monitoring	• Review the placement of ECG electrodes, SaO_2 and skin temp probes according to the operation site. • Collect transport monitor and set appropriate alarms. • Check the battery of portable monitors prior to leaving the NICU/HDU.
Intravenous Access and Fluid Delivery	• Ensure there is a patent IV cannula and appropriate IV fluids infusing at the correct rate. • Measure a blood sugar level prior to transfer.
Documentation	• Operation consent should accompany the infant to theatre along with all other paper notes and charts • A pre-operative checklist form completed by the transferring Nurse on Powerchart • Document fasting and transfer time in Powerchart.
Ventilated infants	• Ensure endo-tracheal tube is patent, securely taped and confirm measurement of the length of the tube • Check all oxygen cylinders are full, turn on when ready to leave the unit

During Transfer

1. Two (2) people are required to push/pull the transport bed and ensure adequate monitoring of the patient
2. Ensure the bed is fully lowered as it may not fit under all doorways and lifts.
3. Closely monitor patient during transfer. Stop if there is alarm sounds and check if any action is required
4. Be careful enroute of any hazards, bumps in floor, corners, obstructions etc
5. Ensure no cords/drains/cables from the patient/shuttle are dragging on the floor during transport
6. Ensure thermoneutral environment is maintained for the baby throughout the transfer.

On Arrival

After arrival to the operating theatre:

1. Change into perioperative attire if remaining in the operating theatre for the duration of the procedure.
2. Reassess the patient determining if any immediate actions need to occur i.e., suction, reposition, increase of support.
3. Plug the transport bed and equipment into mains power.
4. Connect air and oxygen hoses to all outlets/supply.
5. Set transport bed (incubator, George open care, HDU (High Dependency Units) transport bed) temperature to maintain environmental warmth.
6. Turn Ventilator to standby mode and close oxygen and air cylinder.
7. Monitor infants' temperature and determine if additional actions are required

Transfer of an infant to another investigative Department

Assessment of an infant's ability to transfer from the unit to investigative departments should be made by a NUM/TL, NP and medical officer. At times it will be appropriate to postpone the procedure until the infant's condition is stable or an appropriate staff member is available to assist in the transfer.

Preparation	• As per transport to other areas

Documentation	• When undergoing an MRI the following documents are completed by the nurse accompanying the infant;
	  ○ Pre-scan questionnaire
	  ○ MRI checklist
	• Ensure a procedural request form on 'Powerchart' for radiology and pathology or appropriate forms for other tests with consent signed if necessary

Intravenous access and fluid delivery	• Ensure neonate has a patent IV cannula and appropriate IV fluids infusing at the correct rate • Ensure tubing is MRI compatible
Ventilated infants	• Ensure endo-tracheal tube is patent, securely taped and confirm measurement of the length of the tube • The oxygen and air cylinders are checked and is above 10,000 kpa prior to transfer. • Turn on when ready to leave the unit

Monitoring	• All monitoring equipment required for the infant's care must be provided throughout the transfer and during the procedure. • Check the battery of portable monitors prior to leaving the NICU/HDU.
Equipment	• Select an appropriate transport bed to support the infant's medical needs during the transfer. • Check all equipment prior to transfer ensuring adequate gas and power is available for the transfer. • Disconnect gas and power from the mains wall supply immediately prior to transfer. • Collect red transport bag.

During Transfer

1. Ensure you have adequate personnel to manage safe movement of equipment and patient.
2. Ensure the bed is fully lowered as it may not fit under all doorways and lifts.
3. Closely monitor patient during transfer. Stop if there is alarm sounds and check if any action is required
4. Be careful enroute of any hazards, bumps in floor, corners, obstructions etc
5. Ensure no cords/drains/cables from the patient/shuttle are dragging on the floor during transport

On Arrival

After arrival to the investigative department:

1. Reassess the patient determining if any immediate actions need to occur i.e. suction, reposition, increase of support
2. Plug the transport bed and equipment into mains power.
3. Connect air and oxygen hoses to wall outlets/supply.
4. Monitor infants' temperature and determine if additional actions are required.

Transferring a patient back to the unit

After the neonate has had surgery or completed their investigation, staff are required to safely transfer the patient back to the unit.

Preparation	• Ensure adequate personnel to manage safe movement of equipment and patient • Ensure there is adequate gas and power supply to bed and all equipment prior to the transfer • Assess the patient prior to movement to enable identification of deterioration during transfer. • Implement strategies to support the infant's thermoregulation and reduce the incidence of heat loss. • Collect all equipment to return to the unit • Immediately prior to transfer disconnect equipment from mains wall power and gas supply
On arrival back in the unit	• Reassess the patient determining any immediate actions i.e. suction, reposition, increase of support • Plug any equipment into mains power or gas. Replace cylinders or equipment as necessary • Communicate any immediate actions required or information from the investigation/surgery • Review IV access, infusions and other equipment to ensure fluids/feeds are delivering at prescribed rates • If equipment needs cleaning notify relevant staff and remove from clinical area • Contact parents to notify of return to the unit • Document in patient electronic medical record • Blood gas is required to determine post procedure ventilation/status • Post-surgery x-ray needs to be attended to check ETT placement, chest, line placement, etc

Transfer Equipment

Red Transport Kits

Red Transport kits (backpacks) are in the medication room and are to be used for any patient transferred out of the unit. The purpose of the kits is to provide staff with ready access to equipment that may be required in the event of an emergency.

- Staff are encouraged to familiarise themselves with the contents of the kits.
- All the transport kits are sealed with a plastic tab. If the seal on the kit is broken the contents are considered incomplete and should be checked, equipment replaced, and the pack resealed.
- The transport kits are checked each month to monitor for expired equipment.
- Patients with specific medical needs may require specialised equipment that is not contained in the kit during transfer (i.e. different sized ETT, tracheostomy) the nurse transferring the patient is responsible for ensuring this equipment is available during the transfer.

A list of contents for the transport kits can be found in the Appendix of this document.

Transport Beds

There are several equipment transport systems available for use during transfer to other departments/operating theatre.

1. **George Open Care System:** ventilated infants/infants in NICU
2. **Giraffe Omnibed with "shuttle" system**: preterm infants
3. **"Panda" Warmer HDU Transport bed:** infants in HDU requiring continuous monitoring, heating, or respiratory support CPAP/HHFNC
4. **Transferring an infant on low flow oxygen**

Gas Cylinder Information

Approximate Oxygen Cylinder Duration in Hours and Minutes

	Litres per minute							
Cylinder size	1	2	3	4	5	6	7	8
C	8hrs 10min	4hrs 5min	2hrs 45min	2hrs	1hr 35mins	1hr 20mins	1hr 10mins	1hr
D	27hr 20mins	13hrs 40mins	9hrs 5mins	6hr 50mins	5hrs 30mins	4hrs 35mins	3hrs 55mins	3hrs 25mins

Biomedical Engineering Department – CHW – August 2007

Reference List

1. Sinha SK & Neogi S. (2013) Bedside Neonatal Intensive Care Unit Surgery – Myth or reality! Journal of neonatal Surgery. 2(2): 20-26
2. Royal College of Nursing. (2011) Transferring children to and from theatre: RCN position statement and guidance for good practice https://www2.rcn.org.uk/__data/assets/pdf_file/0003/395760/004127.pdf
3. Australian Commission on Safety and Quality in Health Care, National Safety and Quality Health Service Standards (September 2012). Sydney. ACSQHC, 2012.
4. GE Healthcare 2009 Giraffe Shuttle: Instruction manual. GE Company, Laurel, U.S.A.
5. Thermoregulation in Neonatal Care - CHW http://webapps.schn.health.nsw.gov.au/epolicy/policy/4354
6. Developmentally Supportive Care for Newborn Infants http://webapps.schn.health.nsw.gov.au/epolicy/policy/4815
7. Small Baby Protocol - GCNC CHW http://webapps.schn.health.nsw.gov.au/epolicy/policy/23745. Warming Mattresses for newborns: effectiveness and risks- https://biomedres.us/fulltexts/BJSTR.MS.ID.000608.php
8. Perioperative hypothermia in neonatal intensive care unit patients: effectiveness of a thermoregulation intervention and associated risk factors
9. Guideline for transferring children (0-16 years), Mid Essex Hospital Services NHS Trust 2018

Appendix: Red Transport Kit Content List

Section	Contents
Intubation Pack	• ETT 2.5/ 3/ 3.5/ 4 x2 • Pedi-cap • Introducer • Neonatal Magill forceps • Laryngoscope handle • Laryngoscope blades 0, 1 • Lubricant • Laryngeal mask airway x1
Needles and syringe pack	• 6x 1ml syringe • 2x 3ml syringe • 2x 5ml syringe • 2x 10ml syringe • 2x 50ml syringe • 6x blunt drawing up needles • 2x needles needle • 4x alcohol wipes • 4x IV extension sets • 4x red caps
IV access Pack	• Dressing pack • 4x 24g cannula • 2x arm board (1x small/ 1x large) • 2x IV T piece • 2x 10ml 0.9% sodium chloride ampoules • 2x tegaderm occlusive dressing • 2x leukoplast (1x small/ 1x large) • 2X 3ml syringes
Suction Pack	• 2x 6fg suction catheter • 2x 8fg suction catheter • 2x 8fg oral suction catheter

	• 2x 12fg short suction catheter • 2x sterile gloves • 1x suction pack
Breathing Pack	• Neonatal Laerdal bag • Masks 0/ 1
Fluids and Miscellaneous Pack	• 2x 50ml 0.9% sodium chloride ampoules • 10% dextrose 500m • Neuro torch • Comfeel dressing • sterile scissors • Goggles • ECG lead set