

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

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 NICU or HDU. 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 must be checked and the required volume of gas is available for the expected duration of the transfer
- Continuous monitoring is available in all departments (except MRI) through the multi measurement server

Key performance indicators:

- All infants being transferred out of Grace Centre for Newborn Care have two identification bracelets on their limbs
- Transport kit is available for all transfers
- IV fluids and giving sets must be taken to the operating theatre when no IV cannula is insitu.
- Infants are prepared on time and ready for transfer with no delay

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	Director, Clinical Governance	
Date Effective:	1 st April 2017	Review Period: 3 years
Team Leader:	Nurse Manager	Area/Dept: GCNC

CHANGE SUMMARY

Addition of information relating to new and updated equipment and process including:

- Transport kits
- Giraffe shuttle
- HDU transport bed

READ ACKNOWLEDGEMENT

Health Care Professionals caring for patients requiring transfer to another department for an investigative procedure are required to read and acknowledge this document.

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	Director, Clinical Governance	
Date Effective:	1 st April 2017	Review Period: 3 years
Team Leader:	Nurse Manager	Area/Dept: GCNC

TABLE OF CONTENTS

Introduction	4
General Principles of Transfer	4
Personnel	4
Monitoring	5
Thermoregulation	5
Equipment	5
Parents.....	5
In an Emergency	6
Transfer Destination	6
Transfer of Infant to Operating Theatre	6
Preparation.....	6
<i>Preoperative wash</i>	7
<i>Equipment</i>	7
<i>Monitoring</i>	8
<i>Intravenous Access and Fluid Delivery</i>	8
<i>Documentation</i>	8
<i>Ventilated Infants</i>	8
During Transfer	9
On Arrival	9
Transfer of an infant to other investigative Department	9
Preparation.....	9
<i>Documentation</i>	10
<i>Monitoring</i>	10
<i>Equipment</i>	10
During Transfer	11
On Arrival	11
Transferring a patient back to the unit	11
Preparation.....	11
On arrival back in the unit.....	11
Transfer Equipment	12
Red Transport Kits	12
Transport Beds.....	12
<i>George Open Care Transport Systems</i>	12
<i>Giraffe Omnibed with shuttle system</i>	13
<i>Patient Safety Caveat</i>	17
<i>Panda HDU Transport bed</i>	17
Gas Cylinder Information.....	19
Appendix	Error! Bookmark not defined.
Red Transport Kit Content List	20
Reference List	21

Introduction

Transfer of neonates 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 neonate is transferred to another department the following components are considered best practice to ensure a safe transfer²:

- Documentation
- Adequate supervision/personnel
- Ongoing assessment
- Equipment relevant to the neonate's condition
- Concise communication

These components should be incorporated by any health care professional undertaking a transfer of a neonate. To ensure these practices are consistently applied it is recommended that out of unit transfers are regularly audited, reviewed and updated².

General Principles of Transfer

Personnel

- Staff allocated to transfer the neonate are required to be familiar with the equipment utilised during transfer including transfer beds, monitors, oxygen, suction, the transport bag and resuscitation equipment.
- It is the staff undertaking the transfer's responsibility to notify other staff they are leaving the clinical setting, the location of their transfer and hand over any relevant information³.
- Are required to consider Work Health & Safety prior, during and post transfer ensuring 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.
- Ventilated or medically unstable neonates are accompanied by a RMO or Anaesthetist and RN. Stable non-ventilated infants are accompanied by a RN, or parent. AIN's can be used for non-monitored patient transfers at the discretion of the nurse in charge.
- A nurse who is deemed competent in caring for sick neonates remains with the neonate throughout the procedure and must accompany infants receiving IV therapy or requiring neurological observations.
- No neonate is to be left unattended for any reason. Neonates must be constantly attended by a parent or a registered nurse either from the ward or department at all times.
- Universal infection control principles should be utilised during patient transfer.

Monitoring

- Neonates that require continuous vital sign monitoring in the unit are required to be transferred by a registered nurse using transfer equipment that facilitates the same level of continuous vital sign monitoring.
- Any neonate transferred with monitoring requires suction, oxygen and resuscitation equipment available during the transfer in the event of an emergency.
- Ensure leads are connected to monitors and the alarms set appropriately.
- Ventilated neonates require continuous ETCO₂ monitoring during transfer.

Thermoregulation

- Neonates requiring heating in the unit to maintain their temperature require heating or other thermoregulation strategies to be implemented during transfer.
- For 'George' open care systems use of the Perspex lid is recommended
- Pre-warm beds prior to the neonate being placed in them for transfer
- For neonates transferred to the operating theatre remove all clothing from the infant. Wrap limbs in "webrill", leaving all leads exposed and hands and feet free. A bonnet or "webrill" cap is used to cover the head. Do not wrap the area at site of the proposed operation or cover IV infusion sites.
- For other neonates not requiring surgery consider the use of a bonnet to support thermoregulation

Equipment

- The red transport kits must be taken for all transfers
- The neonate is transferred on the bed most relevant to their ongoing medical needs. For ventilated neonates they remain on their open care system, preterm infants are transferred in their incubator using the shuttle and for patients in HDU requiring continuous monitoring; heating or respiratory support is transferred on the HDU transport system.
- 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 outside of the unit contact 51178 requesting assistance and replacement equipment. After returning to the unit complete an iMMs.

Parents

- Parents are welcome to accompany their infant during transfers.
- Parents are not to assist in the management of equipment (pushing/pulling).

- The nurse is responsible to inform parents upon arrival to the transfer destination where they can wait if required and identify how they will be contacted.
- In the event of a medical emergency outside of the unit with parents present, contact the unit and request additional staff i.e. social work to support the family during and post the event.

In an Emergency

- Outside of the unit in the event of a medical emergency staff are required to dial 444 requesting a 'mobile arrest team' for assistance.
- In the event staff require additional assistance during the transfer contact the NUM/TL.

Transfer Destination

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

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

Other investigative departments include:

- Medical Imaging
- 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 stress of the transfer is kept to a minimum.

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

For any infant transferred to the operating theatre for surgery the following components are reviewed:

- 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 has been ordered and is available.
- Ensure that pre-operative checklist is fully complete, especially NBST if patient requires cardiac bypass surgery.
- Apply two ID bands correctly labelled over “webrill” after pre-operative wash.

Preoperative wash

- Where possible involve the family in the preoperative wash.
- Use Triclosan wash of the potential operative site and in the creases on the infant's body the evening before and the morning of the operation.
- If the infant is able to have a bath use Triclosan 1% on the wash cloth and apply directly to the skin, if unable to bathe moisten skin and apply Triclosan 1% with a damp sponge. Leave for one minute and wash or wipe off.
- Ensure infant is in a warm environment and away from drafts throughout.
- Take temperature following procedure to monitor thermoregulation.
- Avoid contact with the eyes and observe infant for any skin reaction to the wash, inform medical team and document in the progress notes.
- After second surgical wash apply webril to help assist in the maintenance of temperature. Wrap limbs in “webrill”, leaving all leads exposed and hands and feet free. A bonnet or “webrill” cap is used to cover the head. Do not wrap the area at site of the proposed operation or cover IV infusion sites.
- Place a clean nappy on the neonate.

Equipment

Ventilated infants and those in the NICU are admitted onto an open-care transport system when available and are then transferred to the operating theatre on the same system. For additional information on the available transport systems refer to the Equipment section of this policy.

Regardless of the type of transport system utilised the following is to be observed:

- 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 on all the transport incubators must be checked, and be full and functional prior to transfer out of the unit.

- An appropriate resuscitation bag with correctly sized facemask must be attached to flow meters and blender for the transport. If an infant is being transferred in a cribette use the single patient use self-inflating bag located in the treatment room.
- A portable suction is required for all transfers. Most transport systems have an integrated suction unit in the event they do not ensure the portable unit is plugged into mains power prior to transfer and upon arrival at your destination and checked for working order. Select an appropriate sized suction catheter usually sizes Fg 6 and 8.

Monitoring

- Review the placement of ECG electrodes, SaO₂ 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.
- If bedside aEEG monitoring or NIRS monitoring is in use evaluate if monitoring is to continue during surgery. If monitoring is to remain insitu a nurse competent in the use of the equipment accompanies the neonate to the theatre. If aEEG monitoring is to be stopped during the procedure or theatre place the equipment in 'standby' mode.

Intravenous Access and Fluid Delivery

- Ensure neonate has a patent IV cannula and appropriate IV fluids infusing at the correct rate.
- If no IV cannula is present prior to theatres, the IV bag may be loaded as ordered on IV order sheet and sent with the infusion pump and giving set.
- Measure a blood sugar level prior to transfer.

Documentation

- Operation notes should be labelled and accompany the neonate to theatre including;
 - Completed pre-operative checklist
 - Documentation of premedication administration signed on the medication chart and the checklist.
 - Ensure the consent for operation is complete and stored in notes.
 - Document the time of the last enteral feed.
- Print a copy of the patient's previous 24 hours of progress notes from the electronic medical record.
- Obtain a mobile number from the parents and clarify waiting areas so they can be contacted if necessary.

Ventilated Infants

In addition to above preparation;

- 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
- Ensure ventilator to set appropriately for transport / or hand ventilate using a T-piece circuit
- Take the patient's stethoscope (this is to be returned to GCNC)

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

On Arrival

After arrival to the operating theatre:

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. Set transport bed (incubator, George open care, HDU transport bed) temperature to maintain environmental warmth
4. Turn Ventilator to standby mode and close oxygen and air cylinder.
5. 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 NICU/HDU 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.

Refer to the Clinical Guideline "[Medical Imaging Procedure Information](#)" for specific patient preparation and management details.

Preparation

As with patients transferred to the operating theatre patients transferred to other departments require adequate preparation to ensure a safe efficient transfer.

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 has been completed on 'Powerchart' for radiology and pathology or appropriate paper forms for other tests with consent signed if necessary.
- Notes may need to be taken with the neonate to the department.

Intravenous Access and Fluid Delivery

- Ensure neonate has a patent IV cannula and appropriate IV fluids infusing at the correct rate.

Ventilated Infants

In addition to above preparation;

- 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
- Ensure ventilator to set appropriately for transport / or hand ventilate using a T-piece circuit
- Take the patient's stethoscope (this is to be returned to GCNC)

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.
- If relevant ensure neonate has a patent IV cannula and appropriate IV fluids infusing at the correct rate.

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 any equipment into mains power or gas as soon as possible
3. 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

Returning to the unit requires staff to ensure:

- You have adequate personnel to manage safe movement of equipment and patient.
- There is adequate gas and power supply available for 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 (notes etc.) to return back 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 if any immediate actions need to occur i.e. suction, reposition, increase of support
- Plug any equipment into mains power or gas as soon as possible

- If gas cylinders or equipment requires replacing contact relevant department
- Communicate with other team members 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 if relevant
- Document in patient electronic medical record return to the unit and any relevant information

Transfer Equipment

Red Transport Kits

Red Transport kits (backpacks) are located 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 of the transport kits are sealed with a plastic tab. If the 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” HDU Transport bed:** infants in HDU requiring continuous monitoring, heating or respiratory support CPAP/HHFNC

George Open Care Transport Systems

Typically the George Open Care Transport Systems are utilised to transfer ventilated or critically ill neonates. Nursing staff are orientation to the use of the George Open Care Transport Systems by members of the education team during their transition to NICU.

In addition to the components outlined in the rest of the document , staff when using the George Open Care Transport Systems should be familiar with the following steps:

1. Turn off bed heating using on/off button at the back of the bed
2. Turn on gas cylinders
3. Review oxygen cylinders, pumps, drains and other equipment (i.e. IV lines) prior to departure.
4. Unplug George System from mains power and gas supply and unlock brakes
5. The porter is to push the George Transport System rather than pull.
6. When moving the transport system over building joins (strips of metal and rubber on the floor) the system is required to slow down and be slowly pushed at a 45 Degree angle over the join to prevent jarring of the patient and equipment
7. Upon arrival at the destination, ensure the system is plugged into wall mains power and wall gas with all brakes applied.
8. Follow steps one to five for the return transfer to the unit
9. On arrival back in the unit ensure mains power and wall gas are used and brakes are applied.
10. Check the gas cylinders and contact inhalation to replace cylinders if less than 10,000KPa

Additional information on the use of the George Open Care Transport System can be found on the safe work practice document attached to each system.

Giraffe Omnibed with shuttle system

The Giraffe Shuttle is a transportable power source that is an accessory to Giraffe and Panda beds⁴. It connects to the Omnibed and provides electrical power to the bed and other auxiliary equipment, as well as provisions for medical gas management, required for patient care during intra-hospital transfer.

The Giraffe Shuttle facilitates the mobility of these beds within a hospital building. Reducing the potential for clinical problems associated with intra-hospital transfer that result from interrupted patient thermal regulation. It also eliminates the need to transfer the infant to and from a transport incubator, reducing the potential for clinical problems associated with patient touch, handling and movement within a hospital building⁴. The Giraffe shuttle is equipped with a Drager Babylog Ventilator.

In GCNC the Omnibed and shuttle are utilised to transfer preterm neonates nursed in an incubator. Nursing staff are orientation to the use of the Omnibed and shuttle by members of the education team during their transition to NICU. Staff when using the Omnibed and shuttle Systems should be familiar with the following steps:

1. Check oxygen, air cylinders and power (battery) prior to collecting equipment from the storeroom. Change cylinders if necessary.
 - o 5 LED's denote battery runtime available for use
 - o Bottom light flashes yellow or green when charging



Picture 1. Lights on shuttle indicating battery charge

Table1. **Trouble Shooting Shuttle Battery Life Indicator table**

While Charging	During use
<ul style="list-style-type: none"> • All LED's green: battery fully charged • Bottom LED yellow or flashing: battery empty/ no runtime available • Top LED yellow, all other LED's green: battery charged/ charging 	<ul style="list-style-type: none"> • Bottom light, yellow: low battery, double beep every 20 seconds. • Action required – recharge battery • Bottom light, flashing red: critically low battery, continuous tone alarm • Action required – recharge battery, do not transport patient • Bottom light, continuous red: no battery power, continuous tone alarm • Action required - recharge battery • All lights flashing red: shuttle overload, beeping alarm • Action required – unplug unnecessary devices, turn shuttle off, then on.

2. The Giraffe shuttle should always be plugged-in to a power source to prevent draining of battery
3. Perform a ventilator check, ensure all tubing is properly connected and the ventilator passes system checks.
4. Set ventilator based on patient's current settings.

5. Position Giraffe shuttle at the bottom end of the Giraffe Omni Bed. Make sure the brakes of the Omnibed are locked, then push the Giraffe shuttle in between the wheels of the Omnibed



Picture Two. Shuttle attached to Omnibed side view.



Picture Three. Shuttle attached to Omnibed view from the end of the bed.

6. Check the indicator light. When the red STOP light is illuminated, the shuttle is still UNLOCKED and is NOT CONNECTED to Omnibed. Do Not move/pull shuttle



Picture Four: Demonstrating red light on shuttle – indicating to not move or pull bed

7. Step down on the lock pedal. The green GO light will be illuminated. It is now safe to move the shuttle as it is now fully connected to the Omnibed



Picture Five: green light on shuttle indicating the system is connected to the omnibed and ready for use

8. Connect the shuttle into the wall mains power whilst preparing the patient for transfer

9. Connect the oxygen and air cylinder hoses to wall mains outlet
10. Connect patient to Shuttle ventilator. Reassess the patient determining if any immediate actions need to occur i.e. suction, reposition, increase of support
11. Transfer patient monitoring to portable Phillips X2 monitor ensuring adequate battery for transfer
12. Transfer all intravenous fluids and pumps to pole connected to omnibed
13. Ensure all lines and tubing are secured.
14. Collect red transport kit and portable suction. Ensure both are ready for use and secure to the shuttle.



Picture Six. Shuttle ready for use with all equipment attached.

15. Immediately prior to leaving the unit with all personnel available for transfer turn on the air and oxygen cylinder on the shuttle and disconnect hoses from wall outlet.
16. Assess patient's ventilation.
17. Disconnect the shuttle from wall mains power. Slowly pull omnibed/shuttle away from the wall and carefully transport patient.
18. Closely monitor patient during transport. Stop if there is alarm sounds and check if any action is required.
19. Be careful en route of any hazards, bumps in floor, corners, obstructions etc
20. Make sure no cords/drains/cables from the patient/shuttle are dragging on the floor during transport.
21. On arrival at the transfer destination connect both the shuttle and omnibed to mains wall power and wall gas.
22. Set Omnibed temperature to keep incubator environment warm – ensuring the omnibed is connected to the wall mains power not the shuttle.
23. For return transfer of the neonate back to the unit follow steps 5 – 15. Ensuring there is adequate power and gas supply before attempting the transfer.

24. Upon return to the unit reconnect the shuttle and omnibed to wall mains power and wall gas.
25. Disconnect the shuttle following transfer of the patient back to the beside ventilator and other equipment. Notify relevant staff of the requirement to clean the shuttle and replace the ventilator circuit.
26. Ensure the shuttle is plugged into mains power whilst waiting cleaning.
27. Notify inhalation to change gas cylinders.

Patient Safety Caveat

- The Giraffe Shuttle and its ventilator is considered a transport system it should not be used for greater than 12 hours at the bedside to ensure patient safety and ready access to the ventilator.
- Nursing staff are required to direct porters in the use of the shuttle including what levers to be released during transfer to prevent accidental disconnection.
- Plugging the omnibed into the shuttle's power source causes the battery to drain faster. Currently the Omnibed heating is turned off during transfer using an incubator cover and blankets to ensure a stable body temperature. On arrival to the destination plug the omnibed into walls main power to recommence heating.

Additional information on the safe use of the Giraffe Omnibed with shuttle system Transport System can be found on the safe work practice document attached to each system.

Panda HDU Transport bed

The Panda HDU Transport bed is utilised to transfer neonates from HDU or NICU with heating, monitoring or respiratory support requirements. Nursing staff are orientated to the use of the by Panda HDU Transport bed members of the education team during their orientation to HDU.

In addition to the components outlined in the rest of the document , staff when using the Panda HDU Transport bed should be familiar with the following steps:

1. Check the Panda HDU Transport bed gas cylinders prior to moving the system into the unit for use.
2. Disconnect the HDU Transport bed from wall main power, unlocking the brakes and move to patient's bedspace
3. Reapply the brakes when in position and turn on the heating to warm the bed. Ensuring the Giraffe Warmer is connected to wall mains power and wall gas supply
4. Pre-warm the bed. Turn the bed and screen on set to 'pre-warm mode' at 100% heat. To pre-warm the bed will take 7 minutes. Do not place the neonate on the bed with this level of heat.

5. If you are time limited press 'admit baby' which defaults to manual heating of 50%, confirm the % of heating by pressing the up and down keys, not confirming the % will result in a continuous alarm.
6. When the bed is warmed select 'baby' mode for transport. Apply the temperature probe. The default temperature is set at 36.5°C which can be adjusted. An alarm will sound when the temperature is above or below the set temperature by 1 degree.
7. Collect transport monitor (X2) and attach to system, check you have adequate battery prior to transport
8. Identify Respiratory support requirement for transfer and check set up is in working order.
9. For patients on home CPAP connect the home CPAP into the back of the UPS box and secure CPAP to the shelf, ensuring the CPAP is fastened securely to the shelf with the strap. Move the CPAP shelf to ensure the machine is positioned under the bed and will not be knocked or damaged during transfer. Ensure CPAP is functioning on the HDU Transport bed prior to transfer. *Do not store other equipment on the CPAP shelf.*
10. For patients on Humidified High Flow Nasal Cannula (HHFNC), check the system is clean. Turn on the humidifier base and connect bag of Water. When the humidifier base and the bed are both warm and transfer is imminent disconnect the patients nasal cannula from their HHFNC set and attach them to the transport system HHFNC set. Ensure the gas flow and inspired oxygen is set to the same settings as the bedside system.
11. Immediately prior to departure transfer the patient to the Giraffe Warmer ensure the patient is securely positioned in the transport system with cot sides up. Transfer any additional equipment IV pumps onto transport system.
12. Transfer the patients Emergency Anaesthetic Resuscitation Bag and Mask to the transport bed and check equipment is functioning prior to departure.
13. Check gas cylinders, respiratory support equipment and all other pumps before departure.
14. Disconnect from wall mains power and wall gas supply, release brakes.
15. The porter is to push rather than pull the HDU Transport system.
16. Check the gas cylinders, heating and respiratory support equipment at least every five minutes during transfer.
17. Upon arrival at destination plug the HDU Transport system into mains power at the wall and connect the gas supply to the wall. Apply the brakes.
18. When ready to return to the unit repeat the pre departure procedure - check gas cylinders, check equipment, check patient, disconnect from mains gas and power, release breaks.
19. On arrival back in the unit connect to wall main power and wall gas supply transfer the patient back to local equipment. Transfer resuscitation equipment back to patient's bedside

20. If the HHFNC set up has been used discard the set up from the HDU Transport System including the humidifier base. Notify inhalation that a new HHFNC is required on the transfer system check gas supplies on transport system and notify inhalation if new cylinders are required.
21. Remove Home CPAP machine from shelf and plug into main power.
22. The transport bed is to be left to cool for 30minutes before cleaning occurs.
23. Remove any bedding or linen from the bed and notify the cleaner the system requires cleaning.
24. Ensure the system is placed back in the storage area or when waiting for cleaning is plugged into mains power

Patient Safety Caveat

- Adequate personnel are required to move the HDU transport system. Porters are required to push rather than pull the system.
- When moving the transport system over building joins (strips of metal and rubber on the floor) the system is required to slow down and be slowly pushed at a 45 Degree angle over the join to prevent jarring of the patient and equipment
- If the HDU transport system is not beeping every few minutes during transfer you do not have battery power and should reconnect to mains power as soon as possible.

Additional information on the safe use of the HDU Transport System can be found on the safe work practice document attached to each system.

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								

Appendix

Red Transport Kit Content List

Section	Contents
Intubation Pack	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 2x 6fg suction catheter

	<ul style="list-style-type: none"> • 2x 8fg suction catheter • 2x 8fg oral suction catheter • 2x 12fg short suction catheter • 2x sterile gloves • 1x suction pack
Breathing Pack	<ul style="list-style-type: none"> • Neonatal Laerdal bag • Masks 0/ 1
Fluids and Miscellaneous Pack	<ul style="list-style-type: none"> • 2x 50ml 0.9% sodium chloride ampoules • 10% dextrose 500m • Neuro torch • Comfeel dressing • sterile scissors • Goggles • ECG lead set

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.

Copyright notice and disclaimer:

The use of this document outside Sydney Children's Hospitals Network (SCHN), or its reproduction in whole or in part, is subject to acknowledgement that it is the property of SCHN. SCHN has done everything practicable to make this document accurate, up-to-date and in accordance with accepted legislation and standards at the date of publication. SCHN is not responsible for consequences arising from the use of this document outside SCHN. A current version of this document is only available electronically from the Hospitals. If this document is printed, it is only valid to the date of printing.