Transport of the Critically Ill Patient

Subject:	As above
Policy Number	N/A
Ratified By:	Clinical Guidelines Committee
Date Ratified:	January 2013
Version:	4.0
Policy Executive Owner:	Dr Chris Hargreaves, Lead Consultant Intensive Care Unit
Designation of Author:	Dr Chris Hargreaves, Lead Consultant Intensive Care Unit
Name of Assurance Committee:	Clinical Guidelines Committee
Date Issued:	January 2013
Review Date:	Three years hence
Target Audience:	ICU medical & nursing staff, Anaesthetists, ODPs, Porters, Imaging, Physicians, Surgeons, Emergency Department, Theatres, Endoscopy
Key Words:	Patient Transport, Transfer, Portable Monitoring Equipment

Version Control Sheet

Version	Date	Author	Status	Comment
1.0	1996		Off-line	New guideline
2.0	2002		Off-line	ICS national guidelines
3.0	2007		Off-line	Assoc Anaes Guideline
4.0	2012		Current	Equipment changes

➢ Criteria for use

Any adult patient needing an anaesthetist escort during transport within the hospital or on an inter-hospital transfer as listed below:

- All intubated, ventilated adult patients
- Unconscious patients with Glasgow Coma Score 10 or less
- Patients in respiratory failure or at risk of respiratory arrest
- Haemodynamically unstable patients at risk of deterioration

NB: Unstable patients will need to be intubated, ventilated and stabilised before movement. This applies particularly to patients undergoing CT head who have depressed level of consciousness.

Most transfers within the hospital will be between:

- Emergency Department
- Theatres
- Intensive Care Unit (ICU)
- CT Scan [NB There are 2 scanners: one near ED on level 2.

  The other is on level 3 in the Imaging dept.

  Check where the patient is going!]
- Endoscopy [located in the Day Surgery/Ambulatory Care Unit]

NB. There are no monitoring facilities or other equipment for such patients in MRI and ***movement of any unstable or ventilated patient to the MRI scanner is absolutely forbidden.***

➢ Exclusions

Adult patients who are fully awake with stable cardio-respiratory parameters can safely be moved with a nurse escort or non-specialised doctor and do not need an anaesthetist.

Children: See separate guidelines - managed by the paediatrics team.

Paediatric ICU inter-hospital transfers involve the CATS retrieval service

➢ Immediate Help

- **Contact** **2nd On-Call Anaesthetist** **Bleep 3005**

  Outreach Nurse **Bleep 2837**

The ICU Middle Grade Doctor (**Bleep 2613**) may be available to help but may not necessarily possess the required anaesthetics skills

Please see Whittington Hospital Intranet Guidelines:

"Operational Policy for Intensive Care Admission & Discharge"

http://whittnet/document.ashx?id=3530

"Post Cardiac Arrest Management & Care Bundle"

http://whittnet/document.ashx?id=3869

"Trauma Management – Care of the injured patient"

http://whittnet/document.ashx?id=968

➢ General Considerations

Patients should only be moved after resuscitation and stabilisation with

- Adequate venous access
- Secure airway
- Adequate monitoring
- Appropriate supplies of drugs, fluids, back-up ambu-bag and oxygen

A charted record of relevant parameters and events must be kept and filed in the patient's notes whenever an anaesthetist is involved with a ventilated patient. An anaesthetic chart should be used for this purpose.

For existing ICU patients on a planned trip to CT or theatres, some support may need to be temporarily discontinued e.g. Renal Replacement Therapy.

Some drug infusions may need to be changed to syringe drivers.

For inter-hospital transfers, the North Central London Critical Care Network transfer form must be used. Copies: 1 receiving hospital, 2 Whittington notes, 3 Network transfer audit.

➢ Grade/ Experience of Medical Escort

This will usually be the 2nd On-Call anaesthetist but others may be delegated at the request of the Consultant on-call for Anaesthetics or Intensive Care.

'One attendant should be a medical practitioner with appropriate training in intensive care medicine, anaesthesia, or other acute specialty. They should be competent in resuscitation, airway care, ventilation and other organ support. They should have had previous experience of transport in a supernumerary capacity, have demonstrated competencies in transport medicine and be familiar with the transport equipment.' (1)

➢ Assistance for the Journey & Accompanying Personnel

Within the Hospital

- The anaesthetist will be accompanied by an Operating Department Practitioner (ODP) or Anaesthetics nurse.
- Patients moving from ICU will have an ICU nurse instead of ODP.
- A porter will also be present for all transports.
- For patients on wards, the critical care outreach nurse may also be available to assist: **Bleep 2837**.

NB: For ICU patients, not all ICU resident doctors are anaesthetics trained.

External transfers

- A nurse must accompany the anaesthetist on all transfers whenever possible. In extreme emergencies, a paramedic trained ambulance crew may suffice. '*In most cases, the second attendant will be a nurse with independent professional responsibility towards the patient.'* (1)
- The ODP or Outreach Nurse is not able to leave the hospital as this compromises hospital cover.

➢ Equipment

Transport monitors & ventilator are kept in the ICU Equipment Room with their batteries on charge and must be returned there after a transfer.

You are responsible for returning intact all equipment taken on a transfer. Remember not to leave any bits of equipment behind, as these are very expensive to replace.

All equipment is to be checked according to standard procedures before use. (including battery charge check for battery operated items).

Self inflating (ambu) bag and facemask always carried as a back-up

Draeger Oxylog 3000-Plus ventilator

- Disposable Single Use breathing circuit is now used
- Requires oxygen cylinder supply with Schrader-type probe socket

Settings: Rate, Tidal Volume (Volume control)

Insp time & Pressure (Pressure Control) I:E ratio, PEEP

Alarms: High & Low airway pressure, low expired minute volume

Display: Expired minute volume, peak airway pressure etc

Ensure that there is sufficient remaining capacity in gas cylinders for the anticipated journey time.

Portable monitor (Fukuda)

Has integral battery (over 2 hours use from full charge)

Displayed parameters:

- Electrocardiogram (ECG)
- Invasive Arterial Pressure waveform (single channel)
- Cuff blood pressure
- Oximetry
- Capnography

Transfer box

Additional equipment is kept in the transfer boxes in the Recovery Room and ICU

Contents:

- ✓ Laryngoscopes & intubation aids
- ✓ ET tubes
- ✓ Infusion sets
- ✓ Syringes & needles
- ✓ Chest drains etc

Drugs

Resuscitation drugs are kept in the resuscitation box, which should always be carried.

Sufficient sedation and muscle relaxant drugs will need to be obtained and drawn up. Other drugs and infusions will depend on the circumstances.

Infusion pumps

Drug infusions should be kept to the essential minimum. Where possible, syringe drivers should be used and mounted on the drip stand on the bed or trolley.

Chest Drains

Must not be clamped. Underwater seal bottle is transported below chest level.

Beds & trolleys

Equipment must be securely placed and heavy or sharp items must not be allowed to touch the patient.

Some ICU beds have a fold-over platform on which equipment can be placed.

Corridors are cold and draughty in winter, keep the patient well covered!

➢ Additional Procedures for Inter-hospital Transfers

Refer to ***Operational Policy for ICU Admission & Discharge*** for what to do when the ICU is full and to arrange tertiary or overflow transfers.

Refer to the accompanying checklists about transfer preparations from the Intensive Care Society (ICS) (Appendices 1 - 3)

Similar checklists are printed on the back of the network transfer forms

- The Consultant Anaesthetist On-Call must be informed whenever an anaesthetist is to leave the hospital on a transfer.
- Acceptance of the patient by the destination unit and details of where to go must be confirmed before you set off.
- The receiving ICU should be called again at the time of actual departure to give an estimated arrival time. For longer journeys, calls ahead can be made by mobile phone from the ambulance so make sure you have the contact number.
- Copies of notes, x-rays, scans, blood results and referral letter from the primary team must accompany the patient. (The original case-notes must remain on trust premises). CT Images can be sent electronically by Imaging to the receiving site.
- Cross-matched blood must be transported in accordance with recommendations for safe transfusion.
- Relatives must be informed regarding the patient's condition and destination but cannot travel in the ambulance.

Stabilisation and support – this must be initiated before moving the patient:

Cardiovascular
- Insertion of appropriate lines
- Fluid resuscitation to normovolaemia
- Vasoactive infusions set up preferably with syringe drivers
- Urinary catheter

Respiratory
- Intubation & ventilation with continuing sedation & muscle relaxation
- Insertion of chest drain etc if appropriate

Target parameters for neurosurgical patients [2]

- Mean Arterial Pressure $\geq$ 100mmHg
- PaO_2 $\geq$ 13 kPa
- $PaCO_2$ 4 - 4.5 kPa

Metabolic
- acid base and electrolyte disturbances corrected

➢ Problems En Route

As specified in the guidelines on arranging transfers, a nurse escort must accompany the patient on the transfer whenever possible.

- If there is no nurse, a paramedic crew **must** be provided or the patient will not be transferred.
- Monitors must be visible and alarms set appropriately to give early warning of deterioration.
- Carrying out any procedure in the back of a moving ambulance is very difficult and it may be safer to stop the vehicle to assess the situation.

➢ Handover & Documentation

On arrival at the receiving hospital, the paperwork and transfer form should supplement verbal hand-over to the accepting team. One copy of the transfer form is left at the receiving hospital, the original is for our patient notes and 2nd copy for network transport audit.

Make sure that all our monitoring equipment is brought back intact!

➢ Return Journey

Usually, the transporting ambulance will return the hospital staff to the base hospital. If diverted on an emergency call, staff may have to return by taxi. This will be paid for by the Trust.

It is best to carry a mobile phone, money and to wear appropriate clothing.

➢ References

1. Intensive Care Society: Guidelines for the transport of the critically ill adult 2011 www.ics.ac.uk/professional/standards_safety_quality/standards_and_guidelines/transport_of_the_critically_ill_adult

2. Association of Anaesthetists: Recommendations for the safe transfer of patients with brain injury 2006 (www.aagbi.org)

Pre-transfer checklists for inter hospital transfer (from [1])

Appendix 1

CHECK LIST 1: IS THE PATIENT STABLE FOR TRANSPORT?

Airway

- ☐ Airway safe or secured by intubation
- ☐ Tracheal tube position confirmed on chest X-ray

Ventilation

- ☐ Paralysed, sedated and ventilated
- ☐ Ventilation established on transport ventilator
- ☐ Adequate gas exchange confirmed by arterial blood gas

Circulation

- ☐ Heart rate, BP stable
- ☐ Tissue and organ perfusion adequate
- ☐ Any obvious blood loss controlled
- ☐ Circulating blood volume restored
- ☐ Haemoglobin adequate
- ☐ Minimum of two routes of venous access
- ☐ Arterial line and central venous access if appropriate

Neurology

- ☐ Seizures controlled, metabolic causes excluded
- ☐ Raised intracranial pressure appropriately managed

Trauma

- ☐ Cervical spine protected
- ☐ Pneumothoraces drained
- ☐ Intra-thoracic and intra- abdominal bleeding controlled
- ☐ Intra-abdominal injuries adequately investigated and appropriately managed
- ☐ Long bone/pelvic fractures stabilized

Metabolic

- ☐ Blood glucose >4 mmol/L
- ☐ Potassium <6 mmol/L
- ☐ Ionised calcium >1 mmol/L
- ☐ Acid–base balance acceptable
- ☐ Temperature maintained

Monitoring

- ☐ ECG
- ☐ Blood pressure
- ☐ Oxygen saturation
- ☐ End tidal carbon dioxide
- ☐ Temperature

Appendix 2

CHECKLIST 2. ARE YOU READY FOR DEPARTURE?

Patient

- ☐ Stable on transport trolley
- ☐ Appropriately monitored
- ☐ All infusions running and lines adequately secured
- ☐ Adequately sedated and paralysed
- ☐ Adequately secured to trolley
- ☐ Adequately wrapped to prevent heat loss

Staff

- ☐ Adequately trained and experienced
- ☐ Received appropriate handover
- ☐ Adequately clothed and insured

Equipment

- ☐ Appropriate equipment and drugs
- ☐ Batteries checked (spare batteries available)
- ☐ Sufficient oxygen supplies
- ☐ Portable phone charged and available
- ☐ Money/credit cards for emergencies

Organisation

- ☐ Case notes, X-rays, results, blood collected
- ☐ Transfer documentation prepared
- ☐ Location of bed and receiving doctor known
- ☐ Receiving unit advised of departure time and estimated time of arrival
- ☐ Telephone numbers of referring and receiving units available
- ☐ Relatives informed
- ☐ Return travel arrangements in place
- ☐ Ambulance crew briefed
- ☐ Police escort arranged if appropriate

Departure

- ☐ Patient trolley secured
- ☐ Electrical equipment plugged into ambulance power supply where available
- ☐ Ventilator transferred to ambulance oxygen supply
- ☐ All equipment safely mounted or stowed
- ☐ Staff seated and wearing seat belts

Appendix 3

TRANSPORT DOCUMENTATION

The following information should be recorded on the transfer form, which should be used for all inter-hospital transfers:

WE USE THE NORTH CENTRAL LONDON CRITICAL CARE NETWORK FORMS,

KEPT IN ICU, THEATRES & EMERGENCY DEPT

Transfer details

- ☐ Patient's name, address, date of birth
- ☐ Next of kin, what information they have been given and by whom
- ☐ Referring hospital, ward/unit, and contact telephone number
- ☐ Name of referring doctor and contact telephone number
- ☐ Receiving hospital, ward/unit and contact telephone number
- ☐ Name of receiving doctor and contact telephone number
- ☐ Names and status of the escorting personnel

A nursing summary

- ☐ Nursing care required with reference to the following
- ☐ Respiration, cardiovascular parameters, communication methods nutrition, pain and sedation, sleep patterns, elimination, skin condition, hygiene and social needs

Patient status during transfer

- ☐ Vital signs including ECG, blood blood pressure SaO_2, $EtCO_2$, temperature, respiratory rate, peak inspiratory pressure, PEEP
- ☐ Drugs given during transfer including infusions
- ☐ Fluids given during transfer
- ☐ Summary of patient's condition during transfer, signed by escorting doctor

A medical summary

- ☐ Primary reason for admission to the referring unit
- ☐ History and past history
- ☐ Dates of operations and procedures
- ☐ Number of days on intensive care
- ☐ Intubation history, ventilatory support and blood gases
- ☐ Cardiovascular status including inotrope and vasopressor requirements

Audit data including:

- ☐ Reason for the transfer
- ☐ Whether the transfer was within or outside the local network

- ☐ Other medication and fluids
- ☐ Type of lines inserted and dates of insertion
- ☐ Recent results and MRSA status

- ☐ The urgency of the transfer
- ☐ Time taken for transfer from time of ambulance request to return to base
- ☐ Adverse events/critical incidents

To be completed and attached to any procedural document when submitted to the appropriate committee for consideration and approval

		Yes/No	Comments
1.	**Does the procedural document affect one group less or more favourably than another on the basis of:**		
	• Race	No	
	• Ethnic origins (including gypsies and travellers)	No	
	• Nationality	No	
	• Gender	No	
	• Culture	No	
	• Religion or belief	No	
	• Sexual orientation including lesbian, gay and bisexual people	No	
	• Age	No	
	• Disability - learning disabilities, physical disability, sensory impairment and mental health problems	No	
2.	**Is there any evidence that some groups are affected differently?**	No	
3.	**If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?**	No	
4.	**Is the impact of the procedural document likely to be negative?**	No	
5.	**If so can the impact be avoided?**	N/A	
6.	**What alternatives are there to achieving the procedural document without the impact?**	N/A	
7.	**Can we reduce the impact by taking different action?**	N/A	

If you have identified a potential discriminatory impact of this procedural document, please refer it to the Director of Human Resources, together with any suggestions as to the action required to avoid/reduce this impact.

For advice in respect of answering the above questions, please contact the Director of Human Resources.

Checklist for the Review and Approval of Procedural Document

To be completed and attached to any procedural document when submitted to the relevant committee for consideration and approval.

	Title of document being reviewed:	Yes/No	Comments
1.	**Title**		
	Is the title clear and unambiguous?	Yes	
	Is it clear whether the document is a guideline, policy, protocol or standard?	Yes	
2.	**Rationale**		
	Are reasons for development of the document stated?	Yes	
3.	**Development Process**		
	Is it clear that the relevant people/groups have been involved in the development of the document?	Yes	
	Are people involved in the development?	Yes	
	Is there evidence of consultation with stakeholders and users?	Yes	
4.	**Content**		
	Is the objective of the document clear?	Yes	
	Is the target population clear and unambiguous?	Yes	
	Are the intended outcomes described?	Yes	
5.	**Evidence Base**		
	Are key references cited in full?	N/A	
	Are supporting documents referenced?	N/A	
6.	**Approval**		
	Does the document identify which committee/ group will approve it?	Yes	
7.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?	Yes	
8.	**Document Control**		
	Does the document identify where it will be held?	Yes	
9.	**Process to Monitor Compliance and Effectiveness**		
	Are there measurable standards or KPIs to support the monitoring of compliance with and effectiveness of the document?	Yes	

	Title of document being reviewed:	Yes/No	Comments
	Is there a plan to review or audit compliance with the document?	Yes	
10.	**Review Date**		
	Is the review date identified?	Yes	
	Is the frequency of review identified? If so is it acceptable?	Yes	
11.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for co-ordinating the dissemination, implementation and review of the document?	Yes	

Executive Sponsor Approval			
If you approve the document, please sign and date it and forward to the author. Procedural documents will not be forwarded for ratification without Executive Sponsor Approval			
Name		Date	
Signature			
Relevant Committee Approval			
The Director of Nursing and Patient Experience's signature below confirms that this procedural document was ratified by the appropriate Governance Committee.			
Name		Date	
Signature			
Responsible Committee Approval – only applies to reviewed procedural documents with minor changes			
The Committee Chair's signature below confirms that this procedural document was ratified by the responsible Committee			
Name		Date	
Name of Committee		Name & role of Committee Chair	
Signature			

Tool to Develop Monitoring Arrangements for Policies and guidelines

What key element(s) need(s) monitoring as per local approved policy or guidance?	Who will lead on this aspect of monitoring? Name the lead and what is the role of the multidisciplinary team or others if any.	What tool will be used to monitor/check/observe/Asses s/inspect/ authenticate that everything is working according to this key element from the approved policy?	How often is the need to monitor each element? How often is the need complete a report ? How often is the need to share the report?	What committee will the completed report go to?
Element to be monitored	**Lead**	**Tool**	**Frequency**	**Reporting arrangements**