NHS Lothian Critical Care Transfer Guideline

This document has been produced to align with the *Intensive Care Society* "Guidelines for the transport of the critically ill adult" (May 2019)[1] and the *Association of Anaesthetists* "Guidelines for the Safe Transfer of the Brain-injured Adult" (2019)[2].

For inter-hospital transfers, the decision to transfer and to accept a patient must be made by appropriate consultants in both the referring and receiving hospitals. Transfer for lifesaving interventions must not be delayed by lack of availability of a critical care bed.

Risk Assessment

Prior to the transfer of a critically ill patient, a risk assessment must be undertaken and documented by a senior clinician to determine the level of anticipated risk during transfer. This should be used to determine the competencies of the staff required to accompany the patient.

Risk	Example criteria	Staffing requirement
Low	Spontaneously ventilating without support Maintaining airway without adjuncts No vasoactive support No malignant arrhythmia Stable GCS No life-threatening electrolyte abnormalities Major deterioration during transfer considered unlikely *Typically ward level patients for repatriation*	ICU nurse
Medium	Most stable critically ill patients requiring respiratory and/or cardiovascular support	*Interhospital:* Airway trained intensive care or anaesthetic doctor (typically CT3+) plus ICU nurse or ODP *Intrahospital:* As above, or appropriately trained ACCP plus ICU nurse (see below)
High	High risk airway Refractory shock or haemodynamic instability despite vasoactive therapy (e.g. requiring IABP or multiple vasoactive agents) Critical hypoxaemia or difficult ventilation Other physiological instability Any other criteria considered by ICU consultant to make a transfer high risk *High risk transfers should only be undertaken when the risks of deterioration during transfer are outweighed by the potential benefits available as a result of the transfer*	Intensive care consultant, anaesthetic consultant, or senior registrar (typically post-fellowship) delegated by ICU consultant, plus ICU nurse or ODP
Very high	ECMO patient	ECMO consultant plus ECMO trained ICU nurse

If patients are being transferred to other hospitals for interventions (e.g. interventional radiology) but are otherwise physiologically stable, they do not necessarily require a medical escort. This decision should be shared between the specialty consultant and ICU/anaesthetic consultant and balance the risks of deterioration, interventions available during transfer and staffing requirements of the originating hospital.

Patients Suitable Intra-Hospital Transfer by an ACCP

Intra-hospital transfer of a level 3 critical care patient should only be undertaken by an Advanced Critical Care Practitioner (ACCP) within NHS Lothian when the following criteria are met:

- The decision for transfer is made by a **senior doctor** (Consultant, advanced trainee in Intensive Care Medicine, post-fellowship Anaesthetic trainee).
- There is an agreement from a senior doctor that the patient is suitable for transfer by an ACCP.
- There is an agreement from the ACCP that the patient is suitable for them to transfer.
- The ACCP has completed in-house training including supervised practice and has been signed off as having met basic competencies in intra-hospital transfer, and airway management.
- **The patient should be physiologically stable.**
- **The transfer should take place 'in hours' 0800-2030.**

Intra-hospital transfer by an ACCP is **not** appropriate in the following circumstances:

- The presence of **severe cardiovascular instability** (e.g. > 20 ml/hour single strength noradrenaline).
- **High oxygen requirement** (e.g. $F_iO_2 > 0.5$)
- Known or **anticipated difficult intubation**.
- Patients with **significant intracranial hypertension**.
- Any other **anticipated significant difficulty**.

Key Points When Undertaking Transfers

1. Resuscitate and stabilise patients prior to transfer
2. AAGBI minimum standards of monitoring should be adhered to including the use of continuous waveform capnography when a patient is invasively ventilated
3. A record of observations should be maintained using an NHS Lothian anaesthetic chart
4. Use the checklist in this guideline to safely prepare for transfer
5. Patients should be securely strapped to the transfer trolley by means of a 5-point harness (or similar).
6. Reassurance, sedation, analgesia and anti-emetics should be provided as required to reduce patient discomfort and distress
7. All portable equipment must be securely stowed to reduce the risk of injury in the event of an accident. Seatbelts should be worn in the ambulance.

Key Points for the Receiving Centre

1. Once a patient has been accepted by a receiving unit, the bed must be kept available to receive the patient until the patient arrives or until the transfer is stood down. This is particularly true of repatriations (including those from overseas) when the patient may be travelling long distances and there may be logistical delays in the transfer process.
2. Repatriation of patients from specialist centres back to their referring centres once they no longer require specialist care should occur within 48 hours of the patient being identified as suitable for repatriation.

Transfer Checklist

1. PREPARATION

- Identify destination, duration, timing
- Identify senior contact number for issues
- Ambulance request 30 mins prior to departure – phone 0845 6023999 and ensure ambulance can take CCT6 trolley

2. ASSESSMENT

Airway
- Patent or secured by intubation
- Intubation grade
- ETT size and length at teeth
- Stop feed
- Aspirate NG – cap off or bag
- C spine

Breathing
- Auscultation
- SpO2, ETCO2
- Ventilator settings: TV, RR FiO2, PEEP
- Ventilator mode SIMV/PSV/VC
- Chest drains
- Review ABG
- Tracheostomy box

Circulation
- Apply monitoring: HR, NIBP +/-IABP
- IV access x 2 (1 can be CVC)
- Ensure CVC/Arterial line secure
- Treat hypovolaemia prior to transfer
- Rationalise infusions
- Requirements for blood products
- Check Hb, Lactate, Coag

Neurology
- GCS + Pupils
- Appropriate sedation +/- paralysis
- Temperature
- Seizure control
- Review BM + electrolytes
- Pain assessment
- If brain-injured patient: head up 20-30° + neuroprotective ventilation

3. EQUIPMENT

Immediately available
- Airway: Ambu-bag, facemask, C-circuit, Laedal Suction Unit
- Transfer Bag
- Consider spare Oxylog battery for long transfers

Drugs
- Oxygen
- Neuromuscular blockers
- Infusions (twice anticipated need)
    - Hypnotics (propofol/opioids)
    - Vasopressors (change to syringe)

Emergency Drugs drawn up
- Ephedrine/metaraminol/adrenaline
- Atropine

Raised ICP?
- Mannitol 20%/Hypertonic NaCl

4. PACKAGING

- Transfer onto CCT6 Transfer Trolley
- Transfer to Oxylog3000 ventilator early
    - Ensure ventilation adequate with ABG
    - Ensure tubing secure
- Use vacuum mattress for long journeys
- Warm blanket
- Secure patient with 5-point harness

5. FINAL DEPARTURE CHECKS

- Check patient and airway secure
- Identify emergency IV access
- Check monitors visible
- Check infusions full
- Patient notes and transfer chart
- NOK aware
- Base team to call ahead as you leave

6. TRANSFER TO AMBULANCE

- Attach to ambulance oxygen supply
- Attach to ambulance power supply
- Recheck patient secure and airway secure
- Request smooth transfer if brain-injury or haemodynamic instability

Transfers from NHS Lothian Acute Hospitals

TRANSFERS FROM ROYAL INFIRMARY OF EDINBURGH

Destination Hospital	Distance (miles)	Duration (minutes)	Approximate O2 Requirement Litres*
St John's Hospital, Livingston ICU 01506 524063 ED 01506 523011	22	29	493
Borders General ICU 01896 826295 ED 01896 826981	33	53	901
Victoria Hospital, Kirkcaldy ICU 01592 729158 ED 01592 729791	42	48	816
Western General Hospital ICU 0131 537 1665	6	22	374
Ninewells Hospital, Dundee ICU 01382 633820 ED 01382 660111	71	73	1241
Aberdeen Royal Infirmary ICU 01224 559847 ED 01224 550506	139	148	2516
Raigmore Hospital, Inverness ICU 01463 705380 ED 01463 706240	166	177	3009 (more than ambulance carries as standard)
Queen Elizabeth, Glasgow ICU 0141 452 3038 ICU Doctors 0141 452 3081 ED 0141 452 2810	56	63	1071
Golden Jubilee, Glasgow ICU 2 (for external patients): 0141 951 5305 ICU on call doctor: 0141 452 3081 ICU doctors' office: 0141 951 5411	60	80	1360

*Assuming minute volume 8L/min, FiO2 1.0, Oxylog3000 driving gas 500ml/min. O2 requirement doubled to ensure safety as per Intensive Care
Oxygen Cylinder Sizes: Size D: 340L, Size CD: 460L, Size F: 1360L

TRANSFERS FROM WESTERN GENERAL HOSPITAL

Destination Hospital	Distance (miles)	Duration (minutes)	Approximate O2 Requirement Litres*
St John's Hospital, Livingston ICU 01506 524063 ED 01506 523011	18	27	459
Royal Infirmary of Edinburgh ICU 0131 2421181 ED 0131 242 1330	6	22	374

TRANSFERS FROM ST JOHNS HOSPITAL LIVINGSTON

Destination Hospital	Distance (miles)	Duration (minutes)	Approximate O2 Requirement Litres*
Royal Infirmary of Edinburgh ICU 0131 2421181 ED 0131 242 1330	22	29	493
Victoria Hospital, Kirkcaldy ICU 01592 729158 ED 01592 729791	35	39	663
Western General Hospital ICU 0131 537 1665	18	27	459
Ninewells Hospital, Dundee ICU 01382 633820 ED 01382 660111	64	64	1088
Aberdeen Royal Infirmary ICU 01224 559847 ED 01224 550506	131	139	2363
Raigmore Hospital, Inverness ICU 01463 705380 ED 01463 706240	159	166	2822

Equipment List

CCT6 Transfer Trolley Contents

Contents	Comments
CCT6 Transfer Trolley with 5 point harness	Located in Intensive Care Unit
Oxylog3000 ventilator	Disposable hose Pneumatically driven (0.5L/min)
Tempus Pro Monitor	ECG, NIBP, IBP, SPO2, EtCO2
BBraun syringe pumps	X 4
Laerdal Suction Unit	Spare Yankeur
Vacuum Mattress	
Oxygen cylinder	

Transfer Bags

These differ between NHS Lothian critical care units and transferring staff should familiarise themselves with the contents prior to a transfer.

References

1. Intensive Care Society and The Faculty of Intensive Care Medicine: Guidance on: The Transfer of the Critically Ill Adult. Published May 2019.
2. Nathanson M, Andrzejowski J et al: Guidelines for the safe transfer of the brain injured patient: trauma and stroke, 2019. Guidelines from the Association of Anaesthetists and the Neuro Anaesthesia and Critical Care Society. Published in Anaesthesia 2020.

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