National Pulmonary Hypertension Service Royal Brompton Hospital

Clinical protocol for inter-hospital transfers

Introduction

A systematic and safe approach must be adopted for all inter-hospital transfers, with respect to the initial referral, prior stabilisation and subsequent management of the transfer. This requires proper clinical assessment and management, as well as clear communication, documentation and handover.

Patients should be transferred by appropriately trained staff and all transfers should occur during normal working occurs (9am-5pm Monday to Friday) to ensure they are received by the Pulmonary Hypertension team, unless emergency transfer is deemed necessary. Such cases must be discussed with the Critical Care team at the Royal Brompton Hospital and the patient transferred to either the High Dependency (HDU) or Intensive Care Unit according to clinical need.

We accept referrals of adults with Pulmonary Hypertension where the following diagnoses are suspected or proven:

- Pulmonary Arterial Hypertension
- Pulmonary Hypertension due to chronic heart & lung disease
- Pulmonary hypertension due to chronic thrombo-embolic disease
- Miscellaneous causes (e.g. Sarcoidosis, Thyroid disease)

In addition, we will also see patients where the cause of pulmonary hypertension is uncertain. For more information on underlying diagnoses, see the current WHO Classification System on the NPHS website.

1. Referral Protocol

A consultant or specialist registrar from the referring hospital must discuss the clinical case and its degree of urgency with one of the **National Pulmonary Hypertension Service (NPHS) consultants or specialist registrars at the Royal Brompton Hospital (RBH)** (For contact details, see Appendix 1). The referring team should then also complete and send the following form:

- Transfer form (PDF, requires Adobe Acrobat Reader, free download on NPHS website)

Once the referral has been formally accepted and the transfer form received by NPHS staff, arrangements to transfer the patient will be made through the RBH Bed Manager (bleep 7072). Ideally this should happen **Monday to Friday between 8am and 5pm** to ensure that the pulmonary hypertension team will be available to receive the patient and initiate appropriate management. Please note the RBH Bed Manager will use the contact details (i.e. referring medical and nursing staff plus bed manager) provided on the transfer form to expedite transport, so please ensure that they are accurate.

Out of hours referrals (6pm-9am weekdays & weekends) must be made to the on-call Cardiology Specialist Registrar who will then discuss the case with the PH Consultant on-call. Elective transfer can then be arranged as above or emergency admission agreed after appropriate discussion with the Critical Care team at the Royal Brompton (**See Section 2**).

1.1 Essential investigations

Before a patient is referred to the NPHS, the referring medical team must ensure they have completed the following tests:

- Routine blood tests (e.g. biochemistry, haematology, clotting, liver & thyroid function)
- Electrocardiogram (ECG)
- Chest radiograph
- Lung function tests (i.e. spirometry, lung volumes, gas transfer)
- Echocardiogram

We acknowledge that some patients with pulmonary hypertension may deteriorate rapidly, so referral and transfer need not be delayed in order to complete more extensive investigations (e.g. lung function, CT, MRI).

1.2 Transfer Documentation

The referring medical team must provide a full written clinical summary that accompanies the patient outlining the following:

- Reason for hospital admission (detailing presenting symptoms)
- Past Medical History
- Relevant risk factors
- Medications (including allergies)
- Clinical examination
- Results of all relevant investigations
- Medical management prior to transfer

In addition, they must also provide:

- Copies of all relevant previous imaging investigations (e.g. echo, CT, MRI), preferably on CD
- Copies of any other procedures or investigations already performed (e.g. cardiac catheterisation)

The patient cannot be assessed or managed properly unless we receive all these details. The urgency of the transfer will be assessed on the clinical data provided. Failure to provide may delay transfer and/or compromise patient care.

2. Critical Care & Emergency Transfers

***All critical care and emergency referrals should be discussed with the PH Consultant on-call who can liaise with the appropriate Critical Care Consultant*.** Any patient that requires intensive monitoring or has significant organ (single or multiple) failure needing critical care intervention must be discussed by the NPHS team (consultant and/or specialist registrar) with the Critical Care Consultant responsible for the Adult HDU or ICU, depending on the level of support required (appendix 2). The NPHS and Critical Care teams at the RBH can then make appropriate transfer arrangements with the referring medical team.

Patients that are not clinically stable at the referring hospital must be first reviewed by the local critical care team to optimise management (i.e. resuscitation, inotropes, non-invasive or mechanical ventilation) prior to transfer and then expedite admission to HDU or ICU at the Royal Brompton. The NPHS and Royal Brompton Critical Care teams may also provide specialist advice on the immediate management if appropriate. In certain cases (e.g. patients with significant cardio-respiratory failure) it may be necessary to intubate and mechanically ventilate the patient to prevent further deterioration or compromise in transit. A period on the portable ventilator is advised (e.g. 20 minutes), provided the patient is sufficiently stable, to ensure adequate ventilation before they are moved.

All medical and nursing staff undertaking transfer should have the appropriate clinical experience (e.g. anaesthetist, critical care nurse), competencies and training, as well as ensuring that they possess suitable transfer equipment, for example:

- Portable monitoring (e.g. ECG, non invasive blood pressure, oximetry and capnography if mechanically ventilated)
- Oxygen supply (cylinders)
- Adequate venous access
- Arterial line with continuous blood pressure monitoring (if deemed appropriate)
- Emergency drugs (e.g. epinephrine, atropine, inotropes, sedatives, analgesics)
- Infusion pumps/syringe drivers (pre-filled syringes advised)
- Suction and intubation equipment
- Non-invasive or portable mechanical ventilator if indicated
- Additional battery supply for all electrical equipment

An ambulance with paramedic support will be required if the patient has single or multi-organ dysfunction, or needs intensive monitoring. The transferring team must check that all the equipment is functioning normally prior to transfer and appropriate back-up provision (e.g. spare battery, extra oxygen cylinder, pumps) is made to cover any potential equipment failure. Hospitals must ensure that personnel have adequate insurance cover and are made aware of the terms and conditions. Arrangements must also be in place to ensure that medical personnel and equipment are returned safely and promptly to the referring hospital after transfer.

Details of every transfer must be fully recorded for audit and clinical review purposes (it is a legal requirement). A formal handover must occur between the transport and receiving medical teams which should include a verbal and written clinical summary of the patient's condition. The transport team is relieved of the duty care after handover but feedback will be provided to the referring medical team if any specific issues are identified to prevent future complications

3. Discharge following inter-hospital transfer
All patients that have been successfully treated and do not have any other continuing care needs will be discharged home with appropriate clinical follow-up. In cases where patients may have on-going health and/or social care needs likely to affect their safe discharge home, our policy is to transfer the patient back to the care of their referring consultant and hospital as soon as the diagnosis and treatment plan are completed. A typical inpatient admission takes between 5 to 10 days after arrival at the Royal Brompton Hospital.

The NPHS will contact the referring team prior to discharge to inform them of the patient's clinical progress and any continuing health and/or social care needs. In addition to providing a comprehensive, discharge summary. Any additional test appropriate outpatient follow up will also be arranged prior to transfer.

Appendix

1. Contact Details - Royal Brompton NPHS
(a) Consultants:
- Dr J Wort(Clinical Lead)
- Prof M Gatzoulis (Academic Lead)
- Dr K Dimopoulos
- Dr G Diller
- Dr P Marino

Tel No: 0207 352 8121 Ext 2156/2776/8362

(b) Specialist Registrar
Bleep 1433 or 1107 (Monday to Friday 9am-6pm)

(c) On-call Cardiology Specialist Registrar
Bleep 1188 (after 6pm weekdays & all weekend)

(d) PH Clinical Nurse Specialists
- Mr C Harries **Bleep 1165**
- Ms L Parfitt **Bleep 1170**

Tel No: 0207 351 2156 (Monday to Friday 9am-5pm)

(e) PH Administrators
- Ms S Dhakan

Tel No: 0207 351 8362 (Monday to Friday 9am-5pm)

(f) RBH Bed Manager
Bleep 7072 (Monday to Friday 9am-5pm)

2. Levels of Patient Care

Level 0:
Patients whose needs can be met through normal ward care in an acute hospital should not usually need to be accompanied by a doctor, nurse or paramedic.

Level 1:
At risk of their condition deteriorating, or those recently relocated from higher levels of care and whose needs can be met on an acute ward with additional advice and support from the critical care team will require a paramedic ambulance crew and may require a nurse, paramedic and/or medical escort.

Level 2:
Requiring more detailed observation or intervention including support for a single failing organ system or post-operative care and those stepping down from higher levels of care must be escorted by competent, trained and experienced personnel, usually a doctor and a nurse or paramedic.

Level 3:
Patients requiring advanced respiratory support alone; or basic respiratory support together with support of at least two organ systems. This level includes all complex patients requiring support for multi-organ failure. These patients must be escorted by competent, trained and experienced personnel, usually a doctor and a nurse or paramedic.