NHS BLOOD AND TRANSPLANT

CARDIOTHORACIC ADVISORY GROUP

CARDIOTHORACIC AND LIVER REGISTRATIONS

BACKGROUND

1 A paper was presented at the Spring 2018 Cardiothoracic Advisory Group meeting showing activity on combined cardiothoracic and liver registrations between 1 January 2000 and 31 December 2017. Following this, it was agreed that heart-liver patients will continue to be required to go through the adjudication panel if they do not qualify for urgent heart. It was initially agreed that lung-liver patients were entitled to automatic urgent listing, but this has since been changed to be requiring approval from the adjudication panel if they do not meet urgent criteria. Following these agreements, there has been a steady increase in the number of patients registered for a cardiothoracic and liver transplant.

2 This paper presents activity on combined cardiothoracic and liver registrations and outcomes from 1 January 2018 to 29 February 2020. Details of any patients submitted to the heart or lung adjudication panels for combined cardiothoracic and liver transplant listing are also presented.

RESULTS

3 In the paper presented in 2018, there were a total of 16 patients registered for a cardiothoracic and liver transplant (6 heart, lung and liver, 6 lung and liver, 4 heart and liver). Of these, 8 died on the list and 8 received a transplant, with 4 patients still alive post-transplant as at last report.

4 Since 1 January 2018, there have been 8 patients registered for a cardiothoracic and liver transplant (4 heart and liver, 4 lung and liver). As at 3 March 2020, five of these patients are currently active on the list, two have received transplants and one died on the list. **Table 1 (removed as contains patient identifiable information)** shows the details of the 4 heart-liver patients and their outcomes, with **Table 2 (removed as contains patient identifiable information)** showing the same information for the 4 lung-liver patients. Seven of the eight patients were registered on the urgent heart/lung list whilst one is registered as non-urgent, as at 3 March 2020.

5 The four heart-liver patients generated offers from 140 donors up to 29 February 2020, with one acceptance. The most common reasons for decline were HLA/ABO type, poor function, and both organs not being available. The four lung-liver patients generated offers from 80 donors up to 29 February 2020, with one acceptance. The most common reasons for decline were donor type, poor function, and donor history.

6 Of the 4 heart-liver patients, all were registered onto the urgent heart scheme, with one registered with a category requiring panel approval. None of the lung-liver patients required panel approval. Details of these applications to the respective panels are in **Table 3 (removed as contains patient identifiable information)**.

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Statistics and Clinical Studies **March 2020**

Appendix I – super-urgent and urgent heart categories

SUPER-URGENT ADULT PATIENTS

11 - Category 11 - Adult patient on temporary ventricular assist device (VAD) or extra-corporeal membrane oxygenation (ECMO) support.

12 - Category 12 - Agreed by CTAG (Heart) Adjudication Panel and evidence of agreement emailed to NHSBT, and either:
a) on intra-aortic balloon pump (IABP) support
b) at imminent risk of dying or irreversible complications. Meets criteria for urgent listing but is not suitable for long-term VAD and/or other exceptional circumstances.

URGENT ADULT PATIENTS

21 - Category 21 - Adult inpatient dependent on intravenous inotropes and/or IABP which cannot be weaned.

22 - Category 22 - Adult long-term VAD or total artificial heart (TAH) patient, agreed by CTAG (Heart) Adjudication Panel and evidence of agreement emailed to NHSBT, with one of the following complications:
a) right ventricular failure dependent on inotropes
b) recurrent systemic infection related to VAD/TAH
c) other VAD/TAH issues including recurrent or refractory VAD/TAH thrombosis.

23 - Category 23 - Exceptionally sick adult patient - high risk of dying or having an irreversible complication but does not meet urgent listing criteria. Agreed by CTAG (Heart) Adjudication Panel and evidence of agreement emailed to NHSBT.

31 - Category 31 - Adult congenital heart disease (ACHD) arrhythmia patients - Refractory arrhythmia (>1 hospital admission over last 3 months with haemodynamic instability or associated with kidney or liver dysfunction).

32 - Category 32 - ACHD patients with no option for conventional escalation of therapy - Inpatients unsuitable for inotropes and/or VAD with one of the following:
a) bilirubin and transaminases >2x normal
b) deteriorating renal function (eGFR <50ml/min/1.73m^2, or 20% reduction from baseline)
c) requirement for dialysis/CVVH for fluid or electrolyte management
d) recurrent admissions (>3 in preceding 3 months) with episodes of right heart failure or protein losing enteropathy requiring ascites drainage.

URGENT PAEDIATRIC PATIENTS

For any urgent listing there must be agreement between the two paediatric centres. This should involve the clinical leads or in their absence an appointed deputy. If there is disagreement this should be noted at the time of discussion with the chair of CTAG.

51 - Category 51 - Paediatric with short-term mechanical circulatory support device (MCSD): Mechanical circulatory support for acute haemodynamic decompensation using a short-term right, left or bi-ventricular device (including Berlin Heart), implanted as a specific bridge-to-transplantation.

52 - Category 52 - Paediatric with MCSD with device-related complications: Mechanical circulatory support with objective medical evidence of significant device-related complications such as thrombo-embolism, device infection, mechanical failure and/or life-threatening ventricular arrhythmias. Panel reactive antibody sensitisation does not qualify for urgent registration in this criterion.

54 - Category 54 - Paediatric with venoarterial ECMO: Mechanical circulatory support using extra-corporeal membrane oxygenation as a specific bridge-to-transplantation.

55 - Category 55 - Paediatric >15kg on high-dose inotropes: Patients >15kg on continuous central infusion of a high dose intravenous inotrope.

56 - Category 56 - Paediatric ≤15kg on ventilation and inotropes: Patients ≤15kg who are ventilated and on inotropes.

59 - Category 59 - Paediatric, Other: Paediatric patients outside the criteria listed above, but for whom the patient's transplant physicians believe urgent listing is justified using acceptable medical criteria not included above. Approval for listing under this category is as follows:
a) For paediatric patients whereby a maximum acceptable donor size has been specified to be <160 cm in height and <60kg in weight, their eligibility for registering under this category must be discussed and agreed by the other paediatric transplant centre and the CTAG Chair or deputy and evidence of agreement emailed to NHSBT.
b) For paediatric patients whereby a maximum acceptable donor size has been specified to be ≥160 cm in height or ≥60kg in weight, their eligibility for registering under this category must be discussed and agreed by the other paediatric transplant centre and the CTAG (Heart) Adjudication panel via the Chair or deputy and evidence of agreement emailed to NHSBT.

Appendix II – super-urgent and urgent lung categories

INDICATION FOR SUPER-URGENT LUNG REGISTRATION

91 - Category 91 - Patient supported with VV-ECMO as a bridge to transplant and previously registered on the Urgent Lung Allocation Scheme or the Non-urgent Lung Allocation Scheme.

92 - Category 92 - Patient supported with iLA as a bridge to transplant and previously registered on the Urgent Lung Allocation Scheme or the Non-urgent Lung Allocation Scheme.

INDICATION FOR URGENT LUNG REGISTRATION

A patient who is suitable for acceptance on the transplant waiting list and displays or develops any one of the following characteristics. Many transplant candidates fulfilling the criteria listed below will likely require ongoing inpatient treatment. In principle, urgent candidates *may remain ambulant* at home but will require close monitoring as deemed necessary by the local transplant team.

1. COPD Patients

10 - Category 10 - Worsening hypoxia (PaO_2<7.5 kPa) and hypercapnia ($PaCO_2$>6.5 kPa) requiring increasing oxygen demand of >10 L/min despite continuous NIV.

11 - Category 11 - pH persistently <7.30 despite optimal continuous NIV.

12 - Category 12 - Refractory right heart failure despite all pharmacological interventions to support the right ventricle.

2. CF Patients

21 - Category 21 - Worsening hypoxia (PaO_2<7.5 kPa) and hypercapnia ($PaCO_2$>6.5 kPa) requiring increasing oxygen demand of > 10L/min despite continuous NIV.

22 - Category 22 - pH persistently <7.30 despite optimal continuous NIV.

23 - Category 23 - Refractory right heart failure despite all pharmacological interventions to support the right ventricle.

24 - Category 24 - Ongoing episodes of massive haemoptysis despite bronchial embolisation.

3. IPF Patients

31 - Category 31 - Persisting hypoxia (PO_2<8 kPa) despite continuous O_2 at 10 L/min.

32 - Category 32 - Refractory right heart failure despite all pharmacological interventions to support the right ventricle.

4. PAH patients

41 - Category 41 - Worsening refractory right heart failure as defined by increasing fluid retention despite optimal medical management with disease modifying therapy and diuretics.

42 - Category 42 - Requirement for continuous IV inotropic support.

43 - Category 43 - Recent RHC RAP>20mmHg and CI<2.0 L/min/m^2 despite optimisation of therapy. RHC data need to be recent, within 3 months of request to add to urgent list.

INDICATION FOR URGENT LUNG REGISTRATION (continued)

5. Other Adult Patients

59 - Category 59 - Adult, Other: Adult patients outside the criteria listed above, but for whom the patient's transplant physicians believe urgent listing is justified using acceptable medical criteria not included above. Documentation of the reasons justifying assigning urgent status should be detailed and agreed by the Cardiothoracic Advisory Group (CTAG) Adjudication Panel.

6. Other Paediatric Patients

69 - Category 69 - Paediatric, Other: Paediatric patients outside the criteria listed above, but for whom the patient's transplant physicians believe urgent listing is justified using acceptable medical criteria not included above. Documentation of the reasons justifying assigning urgent status should be detailed and agreed by the Chair of CTAG and a representative from each of the two paediatric centres.