

**NHS BLOOD AND TRANSPLANT**

**LIVER ADVISORY GROUP**

**LIVER TRANSPLANTATION - ACTIVITY, ORGAN UTILISATION  
AND OUTCOMES DASHBOARD**

**SUMMARY**

**BACKGROUND**

A proposal to introduce a centre-specific activity, organ utilisation and outcomes report was presented at the meeting of the Liver Advisory Group (LAG) in November 2013 (LAG(13)52) and follow up papers were presented in May 2014 (LAG(14)12) and November 2014 (LAG(14)39). The report captures the key metrics of transplant activity with respect to overall patterns and variation between centres on a single visualisation.

**DATA AND METHODS**

Data were obtained from the UK Transplant Registry (UKTR) with inclusion criteria as specified in Section 2 in this document. The methods are specific to each metric and are also defined in Section 2.

**RESULTS**

The reports for the most recent quarter for all liver transplant centres in the UK, for both adult and paediatric recipients, are shown in this document.

**LAG MEMBERS ARE ASKED TO NOTE**

In Figure 4, a distinction has been made between (a) patients suspended – known dead, (b) patients suspended – not known dead and (c) patients removed from the waiting list because of condition deteriorating. Only (a) and (c) are included in the figure.

Dublin data are included in six of the eight metrics presented (Figs. 5 and 6 are not generated for Dublin).

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**April 2015**

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**1. INTRODUCTION**

A proposal to introduce a centre-specific activity, organ utilisation and outcomes report was presented at the meeting of the Liver Advisory Group (LAG) in November 2013 (LAG(13)52) and follow up papers were presented in May 2014 (LAG(14)12) and November 2014 (LAG(14)39). The report captures the key metrics of transplant activity with respect to overall patterns and variation between centres on a single visualisation. The metrics agreed by the LAG are:

1. Overall transplant activity
2. Transplant activity normalised to waiting list
3. Waiting time to transplant, by blood group
4. Waiting list mortality
5. Primary offer acceptance rate of used whole organs
6. Utilisation of marginal donor livers
7. 30-day post-transplant survival, donor after brain death (DBD)
8. Re-transplantation rate

The reports for the most recent quarter for all liver transplant centres in the UK, for both adult and paediatric recipients, are shown in this document. A description of the eight metrics, including the inclusion criteria for cohort selection and time periods analysed, is presented in Section 2. Once introduced, the report will be updated and circulated to centres on a quarterly basis; a description of the metrics will accompany the report.

## 2. DESCRIPTION OF THE METRICS

The figures in the "Liver transplant - activity and organ utilisation" report give an overview of activity at all 7 adult transplant centres and 3 paediatric centres in the UK and Dublin.

Below are the details for each figure on what is being plotted, the inclusion criteria for transplants/patients and the time period reported on.

### Figure 1. Overall transplant activity

- Description: Total number of transplants.
- Inclusion criteria: Liver only, Group 1, elective and super urgent, deceased and living donors, re-transplants.
- Time period: Transplants in the reported period.

### Figure 2. Transplant activity normalised to waiting list

- Description: Total number of transplants divided by number actively waiting for a liver on the first day of the reported period.
- Inclusion criteria: Liver only, Group 1, elective and super urgent, deceased and living donors, re-transplants.
- Time period: Transplants in the reported period.

### Figure 3. Waiting time to transplant, by blood group

- Description: Median waiting time to transplant, by blood group, with log rank p-value comparing waiting time between centres.
- Inclusion criteria: Liver only, Group 1, elective only, deceased donors, re-transplants.
- Time period: Patients registered in the two years prior to the end of the reported period.

### Figure 4. Waiting list mortality

- Description: Number of patients who died on the liver only transplant list divided by number actively waiting for a liver on the first day of the reported period.
- We distinguish between the following cases: a) patient suspended->dead (treat as death), b) patient suspended->not known dead (do not treat as death), and c) patient removed because of condition deteriorating (treat as death). Cases (a) and (c) are included in the plot as deaths.

- Inclusion criteria: Liver only, Group 1, elective and super urgent, re-transplants.
- Time period: Patient deaths in the reported period.

#### **Figure 5. Primary offer acceptance rate of used whole organs**

- Description: Number of liver offers accepted divided by number of offers received, where livers were ultimately transplanted.
- Inclusion criteria: Liver only, Group 1, UK patients, elective and super urgent, proceeding deceased donors only, re-transplants, whole liver transplants.
- Exclusion criteria: Patients at the Dublin centre and split liver transplants.
- Time period: Transplants in the reported period.

#### **Figure 6. Utilisation of marginal donor livers**

- Description: Level of utilisation of marginal donor livers; a higher score indicates a higher level of utilisation (doi: 10.1111/j.1600-6143.2011.03789.x). Risk factors: donor age > 65 y.o., donor evidence of hepatitis B, donor evidence of hepatitis C, donor AST level > 500, DCD donor, organ CIT > 12 hrs, donor BMI > 40 and donor history of tumour.
- Inclusion criteria: Liver only, first transplant, Group 1, UK patients, elective, deceased donors only.
- Exclusion criteria: Patients at the Dublin centre are not included.
- Time period: Transplants in the six months prior to the end of the reported period

#### **Figure 7. 30-day post-transplant survival, DBD donor**

- Description: Risk adjusted 30 day post-transplant patient survival.  
The risk adjusted survival values have been standardised to give an estimate of what the survival rate at a centre would be if they had the same mix of patients as that seen nationally. This is calculated as  

$$100 - (O/E) \times \text{unadjusted national mortality}$$
 where O= observed number of deaths, and E=expected number of deaths.  
The expected number of deaths is estimated using a Cox model adjusted for year of transplant, recipient age, recipient sex, recipient creatinine, recipient sodium, organ appearance, type of graft (whole, segment), previous abdominal surgery, liver disease (primary biliary cirrhosis, primary sclerosing cholangitis, alcoholic liver

disease, autoimmune and cryptogenic disease, hep C, hep B, cancer, metabolic, other), cold ischaemia time, recipient albumin.

The Likelihood ratio test p-value is reported which tests for a significant difference in survival across all centres.

- Inclusion criteria: Liver only, Group 1, elective only, DBD only, first grafts only, orthotopic only.
- Time period: Transplants in the two years prior to the end of the reported period

**Figure 8. Re-transplantation rate**

- Description: Number of re-transplants divided by total number of transplants in time period.
- Inclusion criteria: Liver only, Group 1, elective and super urgent, deceased and living donors, re-transplants.
- Time period: Re-transplants in the reported period.

**3. LAG MEMBERS ARE ASKED TO NOTE**

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