

NHS BLOOD AND TRANSPLANT

LIVER ADVISORY GROUP

LIVER ALLOCATION ZONES - ANNUAL REVIEW

SUMMARY

INTRODUCTION

- 1 At the Liver Advisory Group (LAG) meeting on 6 May 2009, it was agreed that future changes to the current liver allocation zones would be based on a statistically significant difference being observed between the percentage share of registrations and the percentage share of donors for any one liver transplant centre and that the liver allocation zones would be reviewed on an annual basis.
- 2 This paper gives the results from an analysis that has been carried out on adult Group 1 elective registrations between 1 October 2015 and 30 September 2016, and donors after brain death between 1 October 2013 and 30 September 2016, to determine if any changes to the current liver allocation zones introduced on 8 January 2013 are required to be made.
- 3 For the purposes of this analysis, registrations and donors are specifically defined and the definitions are included in the main paper.

RESULTS

- 4 The difference between the percentage share of registrations in the 12 month period and donors in the three year period ranges from -1.9 at King's College to +2.1 at Royal Free. A positive difference means the registration percentage share is greater than the donor percentage share hence an allocation zone may require more donors for their recipient pool whereas a negative difference means the converse. The larger the magnitude of the value the greater the difference.
- 5 There was no statistically significant difference observed between the proportion of patient registrations and the proportion of donors after brain death at any one of the liver allocation zones.

CONCLUSION

- 6 As there was no statistically significant difference between the donor and registration percentage share at any one of the liver allocation zones, no changes will be made to the current liver allocation zones.

NHS BLOOD AND TRANSPLANT

LIVER ADVISORY GROUP

LIVER ALLOCATION ZONES - ANNUAL REVIEW

INTRODUCTION

- 1 At the Liver Advisory Group (LAG) meeting on 6 May 2009, it was agreed that future changes to the current liver allocation zones would be based on a statistically significant difference being observed between the percentage share of registrations and the percentage share of donors for any one liver transplant centre (at the 5% significance level adjusted to account for the largest difference in percentage share being tested for significance). It was also agreed that a) the liver allocation zones would be reviewed on an annual basis and b) any necessary changes to the allocation zones did not need to be ratified by the LAG before they could be introduced.
- 2 This paper gives the results from an analysis that has been carried out on adult Group 1 elective registrations between 1 October 2015 and 30 September 2016, and donors after brain death between 1 October 2013 and 30 September 2016, to determine if any changes to the current liver allocation zones introduced on 8 January 2013 are required to be made.

DATA AND METHODS

- 3 For the purposes of the analysis, registrations and donors are defined as follows:

Registrations: The total number of adult (≥ 17 years at time of registration) Group 1 elective liver registrations in the UK between 1 October 2015 and 30 September 2016 including non-UK resident EU patients, but excluding a) any registrations with a UKELD score of less than 49 and 'chronic liver disease' as their only indication (of which there were none), b) patient registrations for an intestinal transplant and c) registrations to the 'Severe Acute Alcoholic Hepatitis' service evaluation. Registrations that ended in a living donor transplant and multi-organ registrations are included.

For patients registered twice in the registration period, the following rules apply:

- If a patient was registered, removed then re-registered, only the first registration is included.
- If a patient was registered, transplanted then re-registered, both registrations are included.
- If a patient was active, suspended then re-activated, only the first activation is included.

Donors: The total number of adult (≥ 16 years at time of death) donors after brain death in the UK over the three year period; from 1 October 2013 to 30 September 2016. Donors whose livers were not transplanted are excluded, so too are livers transplanted into super-urgent patients. If a donor liver is split and transplanted into two elective patients, this counts as one donor

liver. If a donor liver is split and part transplanted into a super-urgent patient and part into an elective patient then this too is counted as one donor liver. Paediatric donors who donated whole livers to adult patients are included as are adult donors whose livers were transplanted into paediatric patients only.

- 4 Donors during the three year period 1 October 2013 to 30 September 2016, are allocated to a zone based on the current zonal arrangements introduced on 8 January 2013. Due to the closure of Bristol's Frenchay Hospital due to the relocation and merger with Southmead Hospital during this time period, any potential donors from Frenchay have been reassigned to Southmead Hospital. Consequently, any donors from Frenchay (which was in Birmingham's allocation zone), have been allocated to King's College (whose allocation zone includes Southmead Hospital) in our analysis.

RESULTS

- 5 **Table 1** details the number and percentage share of liver donors (over the three year period) and the number and percentage share of registrations (in the 12 month period), by liver allocation zone.
- 6 The difference between the percentage share of registrations and donors is also presented in this table. A positive difference means the registration percentage share is greater than the donor percentage share hence an allocation zone may require more donors for their recipient pool whereas a negative difference means the converse. This difference ranges from -1.9 at King's College to +2.1 at Royal Free and equates to a required change in the number of liver donors per year of a decrease of 10 donors at King's College to an increase of 11 donors at Royal Free. However, there was no statistically significant difference observed between the proportion of patient registrations and the proportion of donors after brain death at any one of the liver allocation zones.

CONCLUSION

- 7 Given that the information in **Table 1** shows that there is no statistically significant difference between the donor and registration percentage for any one of the liver allocation zones, no changes will be made to the current liver allocation zones at this time.

Agne Zarankaite and Elisa Allen
Statistics and Clinical Studies

October 2016

Table 1 Adult Group 1 elective liver registrations in the UK between 1 October 2015 and 30 September 2016, and adult liver donors after brain death in the UK between 1 October 2013 and 30 September 2016, by liver allocation zone, based on allocation zones designated from 8 January 2013

	No. of registrations over 12 months	Registration percentage share	No. and % of livers in local zone that were subsequently transplanted over three years		Difference between registration and donor percentage share	p-value	Adjusted p-value*
	N	%	N	%	%		
Birmingham	219	23.1	350	21.8	1.3	0.445	>0.99
Cambridge	95	10.0	151	9.4	0.6	0.610	>0.99
Edinburgh	105	11.1	195	12.1	-1.0	0.418	>0.99
King's College	211	22.2	387	24.1	-1.9	0.287	>0.99
Leeds	154	16.2	266	16.5	-0.3	0.832	>0.99
Newcastle	47	4.9	93	5.8	-0.9	0.371	>0.99
Royal Free	119	12.5	167	10.4	2.1	0.096	0.67
Total	950	100.0	1609	100.0			

* Adjusted p-values take account of the fact that the centre with the largest difference between registration and donor percentage share will be of interest. The adjustment made is the Bonferroni correction, so that each p-value is multiplied by the total number of centres (7) to produce the adjusted values.