NHS BLOOD AND TRANSPLANT

CARDIOTHORACIC ADVISORY GROUP

URGENT HEART ALLOCATION SCHEMES – 2015/2016 ACTIVITY

SUMMARY

INTRODUCTION

1 This paper is a review of the usage of the Adult Urgent Heart Allocation Scheme (AUHAS) and the Paediatric Urgent Heart Allocation Scheme (PUHAS).

DATA

2 Data on 216 urgent heart registrations for 209 patients registered between 1 April 2015 and 31 March 2016 were obtained from the UK Transplant Registry and also from manual records kept by the Organ Donation and Transplantation Duty Office.

CONCLUSIONS

3 There were 165 adult urgent heart registrations during the 2015/2016 financial year, a decrease of 8% compared with registrations in 2014/2015. There were 30 adult urgent patients on the list at the end of August, 23 at the end of July and 17 at the end of June 2016. 77% of adult urgent registrations resulted in transplant. Sadly, 6 adult patients died awaiting an urgent heart transplant.

4 There were 51 paediatric urgent heart registrations, an increase of 9% compared with registrations last year. There were 10 paediatric urgent patients on the list at the end of June and 10 at the end of July and 6 at the end of August 2016. 69% of the paediatric patients listed urgently were transplanted. Sadly, 3 paediatric patients died awaiting an urgent heart transplant.

5 There was no statistically significant difference in either 30-day or one year post-transplant survival by urgency status, for adult or paediatrics ($p>0.7$).

Esther Wong
Statistics and Clinical Studies **September 2016**

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INTRODUCTION

1 This paper is a review of the usage of the Adult Urgent Heart Allocation Scheme (AUHAS) and the Paediatric Urgent Heart Allocation Scheme (PUHAS) in their fifteenth year of operation.

METHODS

2 Data on 216 urgent heart registrations for 209 patients registered between 1 April 2015 and 31 March 2016 were obtained from the UK Transplant Registry and also from manual records kept by the Organ Donation and Transplantation Duty Office.

3 Unadjusted 30 day and one year patient survival estimates for first heart only transplants were calculated using the Kaplan-Meier estimation method and compared for urgent and non-urgent transplants. Patient death was regarded as the outcome event and recipients alive with a functioning graft, at time of analysis, were censored at last known follow-up date.

6 Thirty day survival rates were based on data from 688 adult and 152 paediatric transplants performed between 1 April 2011 and 31 March 2016; one year survival rates were based on data from 530 adult and 121 paediatric transplants performed between 1 April 2011 and 31 March 2015.

RESULTS

Patient registration and allocation

7 A total of 165 adult urgent heart registrations and 51 paediatric urgent heart registrations were made between 1 April 2015 and 31 March 2016. This represented 61% and 73%, respectively, of all adult and paediatric registrations for heart only transplants. Compared with 2014/2015 activity, the number of adult urgent heart registrations decreased by 8%, and the number of non-urgent registrations decreased by 21%.

8 AUHAS and PUHAS usage varied between centres and is summarised in **Table 1.** The number of adult urgent registrations at Glasgow, Great Ormond Street, Harefield, Papworth, Manchester and Birmingham has decreased compared with 2014/15 activity, while the number of adult urgent registrations at Newcastle has increased. Papworth registered one 15 year old on the PUHAS in 2014/15, and Harefield registered one 12 year old on the PUHAS in 2015/16.

Table 1 Heart registrations, by age-group, 1 April 2015 – 31 March 2016 (1 April 2014 – 31 March 2015)

Transplant centre	Number of heart registrations		% urgent of all registrations
	Urgent	Non-urgent	
Adult			
Birmingham	30 (41)	19 (27)	61% (60%)
Glasgow	16 (18)	12 (7)	57% (72%)
Harefield	26 (29)	16 (23)	62% (56%)
Manchester	28 (32)	6 (16)	82% (67%)
Newcastle	32 (23)	16 (27)	67% (46%)
Papworth	33 (33)	38 (36)	46% (48%)
Total	**165 (176)**	**107 (136)**	**61% (56%)**
Paediatric			
Great Ormond Street	19 (22)	12 (13)	61% (63%)
Newcastle	31 (24)	6 (6)	84% (80%)
Harefield	1 (0)	1 (0)	50% (0%)
Papworth	0 (1)	0 (0)	0% (100%)
Total	**51 (47)**	**19 (19)**	**73% (71%)**
TOTAL	**216(223)**	**126 (155)**	**63% (59%)**

9 Instances where two or more urgent patients from the same centre were registered at the same time had to be agreed in advance with the Chair of CTAG or the Associate Medical Director for Organ Donation and Transplantation.

Patient outcome

10 Outcomes of urgent heart registrations are shown in **Table 2**. Of the 165 adult urgent registrations, 126 received a transplant (30 within 7 days). Waiting time for adult patients on the urgent list ranged between 1 and 334 days, with 11 patients waiting over 100 days. On average, 19.5 adult patients were on the urgent list at any one time, compared with 19.7 in 2014/2015. There were 30 adult urgent patients on the list at the end of August, 23 at the end of July and 17 at the end of June 2016.

11 Six adult patients died on the urgent list post-registration. The number of heart offers for these patients ranged between 3 and 26. Adult patients were removed from the list on 28 occasions. Five of these were removed once implanted with a ventricular assist device (VAD), 6 were removed from the list as they were too ill and 17 were removed for unknown reasons. Of the 30 patients who were removed from the list, 9 received a VAD at any point post removal from the urgent list.

12 Of the 51 paediatric urgent registrations, 36 received a transplant (7 within 7 days), as shown in **Table 2**. 16 of the 36 transplanted paediatric patients received hearts from adult donors; 5 patients were registered at Great Ormond Street, 10 at Newcastle and 1 in Harefield. Waiting time for paediatric patients ranged between 2 and 433 days, with 16 paediatric patients waiting over 100 days. On average, 13.2 paediatric patients were on the list at any one time compared with 7.5 in 2014/2015. There were 10 paediatric urgent patients on the list at the end of June and 10 at the end of July 2015 and 6 at the end of August 2016.

13 Three paediatric patients died on the urgent list after waiting between 110 and 145 days. They received between 21 and 198 offers of a donor heart. Paediatric patients were removed from the list on 12 occasions: 6 as they were too ill, 6 were removed due to unknown reasons.

Table 2 Registration outcome, as at 1 September 2016, by age-group, 1 April 2015 to 31 March 2016

Registration outcome	Adult		Paediatric		**Total**	
	N	%	N	%	**N**	**%**
Transplanted	126	76	36	71	**162**	**75**
Died	6	4	3	6	**9**	**4**
Removed	30	18	12	24	**42**	**19**
Still active	3	2	0	0	**3**	**1**
TOTAL	**165**	**100**	**51**	**100**	**216**	**100**

14 The outcome of those 30 adult registrations and 12 paediatric registrations which were removed from the list are provided in **Tables 3 and 4** respectively. They are further separated depending on whether the patient had received a VAD either upon removal from the list or after.

Table 3 Registration outcome for Adults removed from the list, as at 1 September 2016, 1 April 2015 to 31 March 2016

Registration outcome	VAD		**Total**
	No	Yes	
Returned to non-urgent list	2	2	**4**
Returned to urgent list	4	0	**4**
Still removed from list	9	9	**18**
Died	4	0	**4**
Transplanted	0	0	**0**
TOTAL	**19**	**11**	**30**

Table 4 **Registration outcome for paediatrics removed from the list, as at 1 September 2016, 1 April 2015 to 31 March 2016**

Registration outcome	VAD		**Total**
	No	Yes	
Returned to non-urgent list	0	0	**0**
Returned to urgent list	2	0	**2**
Still removed from list	10	0	**10**
Died	0	0	**0**
Transplanted	0	0	**0**
TOTAL	**12**	**0**	**12**

Urgent and non-urgent patient survival

15 Thirty day and one year patient survival estimates are provided in **Table 5** with associated 95% confidence intervals. Also given are p-values for log rank tests to compare the survival times of urgent and non-urgent transplants.

16 There was no statistically significant difference in either 30-day or one year post-transplant survival by urgency status, for adult or paediatrics (p>0.7).

Table 5 **Kaplan-Meier patient survival after first heart only transplant in the UK**

	30 day[1]			**One year**[2]		
	Number analysed	Patient survival estimate (%)	95% Confidence interval	Number analysed	Patient survival estimate (%)	95% Confidence interval
Adult						
Urgent	508	90	87 - 92	383	83	79 - 87
Non-urgent	180	89	84 - 93	147	82	75 - 88
Log-rank p-value	0.99			0.77		
Paediatric						
Urgent	132	95	90 - 98	105	90	82 - 94
Non-urgent	20	95	69 - 99	16	88	59 - 97
Log-rank p-value	0.93			0.79		

[1] Transplants between 1 April 2011 and 31 March 2016
[2] Transplants between 1 April 2011 and 31 March 2015

CONCLUSIONS

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