NHS BLOOD AND TRANSPLANT

CARDIOTHORACIC ADVISORY GROUP

URGENT HEART ALLOCATION SCHEMES – 2014/2015 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) in their fifteenth year of operation.

DATA

2 Data on 223 urgent heart registrations for 213 patients registered between 1 April 2014 and 31 March 2015 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 176 adult urgent heart registrations during the 2014/2015 financial year, an increase of 4% compared with registrations in 2013/2014. There were 26 adult urgent patients on the list at the end of August, 27 at the end of July and 22 at the end of June 2015. 70% of adult urgent registrations resulted in transplant. Sadly, 5 adult patients died awaiting an urgent heart transplant.

4 There were 47 paediatric urgent heart registrations, an increase of 9% compared with registrations last year. There were 18 paediatric urgent patients on the list at the end of June and 19 at the end of July 2014 and 15 at the end of August 2015. 62% of the paediatric patients listed urgently were transplanted. Sadly, 7 paediatric patients died awaiting an urgent heart transplant.

5 There were statistically significant differences in adult post-transplant patient survival, by urgency status ($p=0.06$ for 30-day survival and $p=0.03$ for 1 year survival). There were no statistically significant differences in either 30-day or one year post-transplant survival for paediatrics ($p>0.6$).

Esther Wong
Statistics and Clinical Studies **September 2015**

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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 223 urgent heart registrations for 213 patients registered between 1 April 2014 and 31 March 2015 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.

4 Thirty day survival rates were based on data from 618 adult and 145 paediatric transplants performed between 1 April 2010 and 31 March 2015; one year survival rates were based on data from 480 adult and 122 paediatric transplants performed between 1 April 2010 and 31 March 2014.

RESULTS

Patient registration and allocation

5 A total of 176 adult urgent heart registrations and 47 paediatric urgent heart registrations were made between 1 April 2014 and 31 March 2015. This represented 57% and 73%, respectively, of all adult and paediatric registrations for heart only transplants. Compared with 2013/2014 activity, the number of adult urgent heart registrations increased by 4%, whilst the number of non-urgent registrations decreased by 27%.

6 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 and Newcastle has decreased compared with 2013/14 activity. The number of adult urgent registrations at Birmingham and Manchester has increased while the number at Papworth has remained the same. Manchester registered one 15-year old on the PUHAS in 2013/2014, and Papworth registered one 15 year old on the PUHAS in 2014/15.

Table 1 Heart registrations, by age-group, 1 April 2014 – 31 March 2015 (1 April 2013 – 31 March 2014)

Transplant centre	Number of heart registrations		% urgent of all registrations
	Urgent	Non-urgent	
Adult			
Birmingham	41 (21)	27 (24)	60 (47%)
Glasgow	18 (21)	7 (15)	72 (58%)
Great Ormond St	0 (2)	0 (3)	0 (40%)
Harefield	29 (33)	23 (39)	56 (46%)
Manchester	32 (30)	16 (25)	67 (55%)
Newcastle	23 (30)	26 (39)	47 (43%)
Papworth	33 (33)	36 (40)	48 (45%)
Total	**176 (170)**	**135 (185)**	**57 (48%)**
Paediatric			
Great Ormond St	22 (17)	11 (15)	67 (53%)
Newcastle	24 (25)	6 (4)	80 (86%)
Glasgow	0 (0)	0 (0)	0 (0%)
Manchester	0 (1)	0 (0)	0 (100%)
Papworth	1 (0)	0 (0)	100% (0%)
Total	**47 (43)**	**17 (19)**	**73 (69%)**
TOTAL	**223 (213)**	**152 (204)**	**59 (51%)**

7 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

8 Outcomes of urgent heart registrations are shown in **Table 2**. Of the 176 adult urgent registrations, 123 received a transplant (18 within 7 days). Waiting time for adult patients on the urgent list ranged between 1 and 212 days, with 6 patients waiting over 100 days. On average, 19.7 adult patients were on the urgent list at any one time, compared with 14.1 in 2013/2014. There were 26 adult urgent patients on the list at the end of August, 27 at the end of July and 22 at the end of June 2015.

9 Five adult patients died on the urgent list post-registration. The number of heart offers for these patients ranged between 2 and 10. Adult patients were removed from the list on 43 occasions. Seven of these were removed once implanted with a ventricular assist device (VAD), 12 were removed from the list as they were too ill and 3 were removed because their condition improved and 21 were removed for unknown reasons. Of the 43 patients who were

removed from the list, 13 received a VAD at any point post removal from the urgent list.

10 Of the 47 paediatric urgent registrations, 29 received a transplant (5 within 7 days), as shown in **Table 2**. 11 of the 29 transplanted paediatric patients received hearts from adult donors; 7 patients were registered at Great Ormond Street, 3 at Newcastle and 1 in Papworth. Waiting time for paediatric patients ranged between 2 and 272 days, with 7 paediatric patients waiting over 100 days. On average, 7.5 paediatric patients were on the list at any one time compared with 6.4 in 2013/2014. There were 18 paediatric urgent patients on the list at the end of June and 19 at the end of July 2014 and 15 at the end of August 2015.

11 Seven paediatric patients died on the urgent list after waiting between 6 and 36 days. Two of these patients did not receive any offers of a donor heart while the remaining 5 received between 1 and 8 offers. Paediatric patients were removed from the list on 7 occasions: 4 as their condition improved, 3 were removed due to unknown reasons.

Table 2 Registration outcome, as at 1 September 2015, by age-group, 1 April 2014 to 31 March 2015

Registration outcome	Adult		Paediatric		**Total**	
	N	%	N	%	**N**	**%**
Transplanted	123	70	29	62	**152**	**68**
Died	5	3	7	15	**12**	**5**
Removed	43	24	7	15	**50**	**22**
Still active	5	3	4	9	**9**	**4**
TOTAL	**176**	**100**	**47**	**100**	**223**	**100**

12 The outcome of those 43 adult registrations and 7 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 2015, 1 April 2014 to 31 March 2015

Registration outcome	VAD		**Total**
	No	Yes	
Returned to non-urgent list	1	1	**2**
Returned to urgent list	2	2	**4**
Still removed from list	22	10	**32**
Died	5	0	**5**
Transplanted	0	0	**0**
TOTAL	**30**	**13**	**43**

Table 4 **Registration outcome for paediatrics removed from the list, as at 1 September 2015, 1 April 2014 to 31 March 2015**

Registration outcome	VAD		**Total**
	No	Yes	
Returned to non-urgent list	0	0	**0**
Returned to urgent list	0	0	**0**
Still removed from list	7	0	**7**
Died	0	0	**0**
Transplanted	0	0	**0**
TOTAL	**7**	**0**	**7**

Urgent and non-urgent patient survival

13 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.

14 There were statistically significant differences in adult post-transplant patient survival, by urgency status (p=0.06 for 30-day survival and p=0.03 for 1 year survival). There was no statistically significant difference in either 30-day or one year post-transplant survival for paediatrics (p>0.6).

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	430	89	86 - 92	317	85	80 - 88
Non-urgent	188	84	77 - 88	163	77	70 - 83
Log-rank p-value		0.06			0.03	
Paediatric						
Urgent	125	97	92 - 99	104	91	84 - 95
Non-urgent	20	95	69 - 99	18	89	62 - 97
Log-rank p-value		0.69			0.74	

[1] Transplants between 1 April 2010 and 31 March 2015
[2] Transplants between 1 April 2010 and 31 March 2014

CONCLUSIONS

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