

NHS BLOOD AND TRANSPLANT

CARDIOTHORACIC ADVISORY GROUP

SUPER-URGENT HEART ALLOCATION SCHEME AUDIT

SUMMARY

- 1 For the 27 July 2017 CTAG Core Group teleconference the Statistics and Clinical Studies team were asked to look into the number of patients who have been registered onto the new Super-Urgent Heart Allocation Scheme (SUHAS) since its inception in October 2016, overall and by centre.
- 2 The data presented to the Core Group are presented again here for the CTAG wider group, with the addition of data on transplant outcomes.
- 3 The key findings are as follows:
 - The number of super-urgent heart registrations has increased from 5 in the first full month (November 2016) to 11 in the latest full month (June 2017).
 - In total, between 26th October 2016 and 18th July 2017, there were 45 patients registered onto the SUHAS; 42 of which were registered under category 11 (50% on a short-term VAD, 40% on an intra-aortic balloon pump (IABP) and 10% on ECMO).
 - Harefield registered the highest number of super-urgent patients, followed by Papworth, however Glasgow had the highest proportion when considering each centre's urgent and non-urgent registrations also. Newcastle had both the smallest number and proportion.
 - Median waiting time to super-urgent heart transplant was 10 days, which compares with 41 days for urgent heart patients in the same period.
 - 30 of the 45 (67%) super-urgent patients had received a transplant by 18th July.
 - 22 of the 30 (73%) super-urgent transplants used hearts imported from outside the transplant centre's heart allocation zone.
 - 3 of the 30 transplanted patients are known not to have survived to 30 days post-transplant and 13 had some kind of mechanical assistance, or had to be re-transplanted, within 30 days of transplant. These findings were consistent with urgent and non-urgent transplants performed during the period.
- 4 As a consequence of the high numbers of patients registered onto the super-urgent scheme under category 11 the following decisions have been made with immediate effect, as communicated to centres on 4th August 2017:
 1. Patients on IABP will automatically qualify for the Urgent Heart Allocation Scheme (UHAS).
 2. Patients on IABP require CTAG Adjudication Panel approval to be listed on the Super-Urgent Heart Allocation Scheme (SUHAS).
 3. Approval for SUHAS for IABP patients will be time limited to 1 week – these patients should revert to the UHAS unless further updated information is submitted to Panel and the Panel approve a further week on the SUHAS.

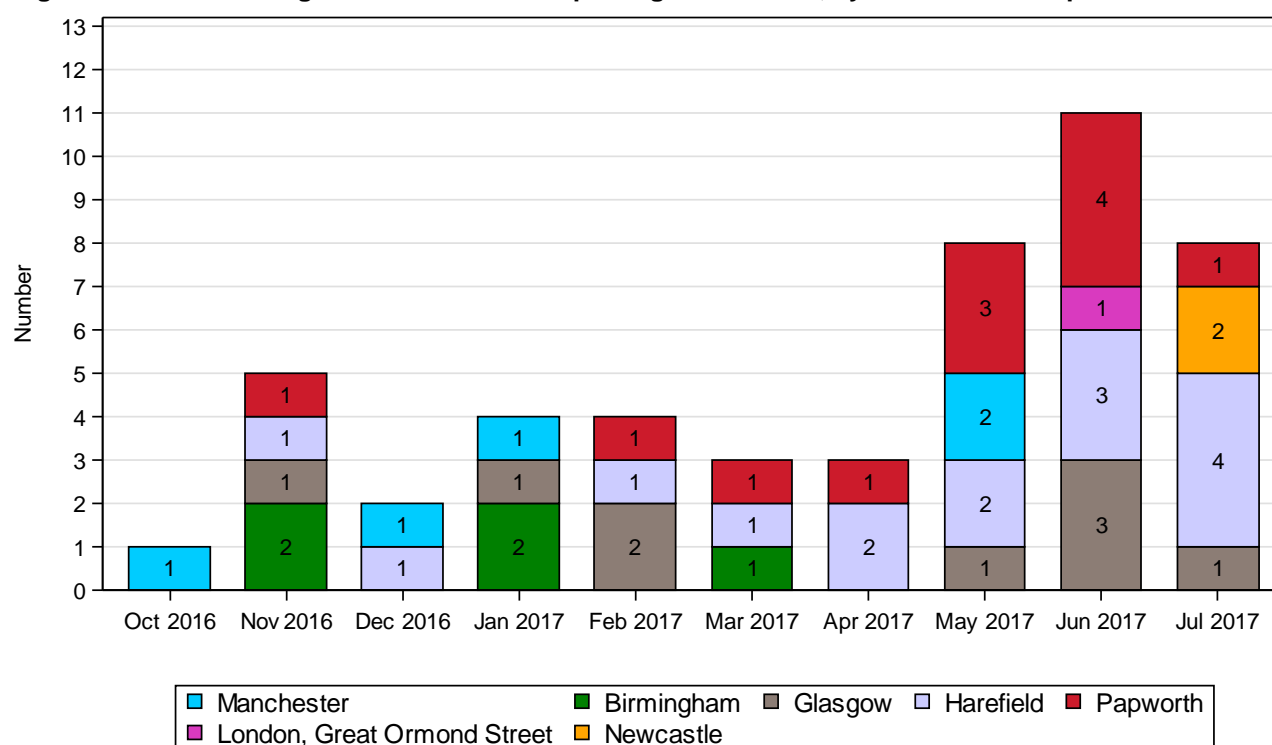
CTAG Core Group

Super-Urgent Heart Allocation Scheme Audit 26th October 2016 – 18th July 2017

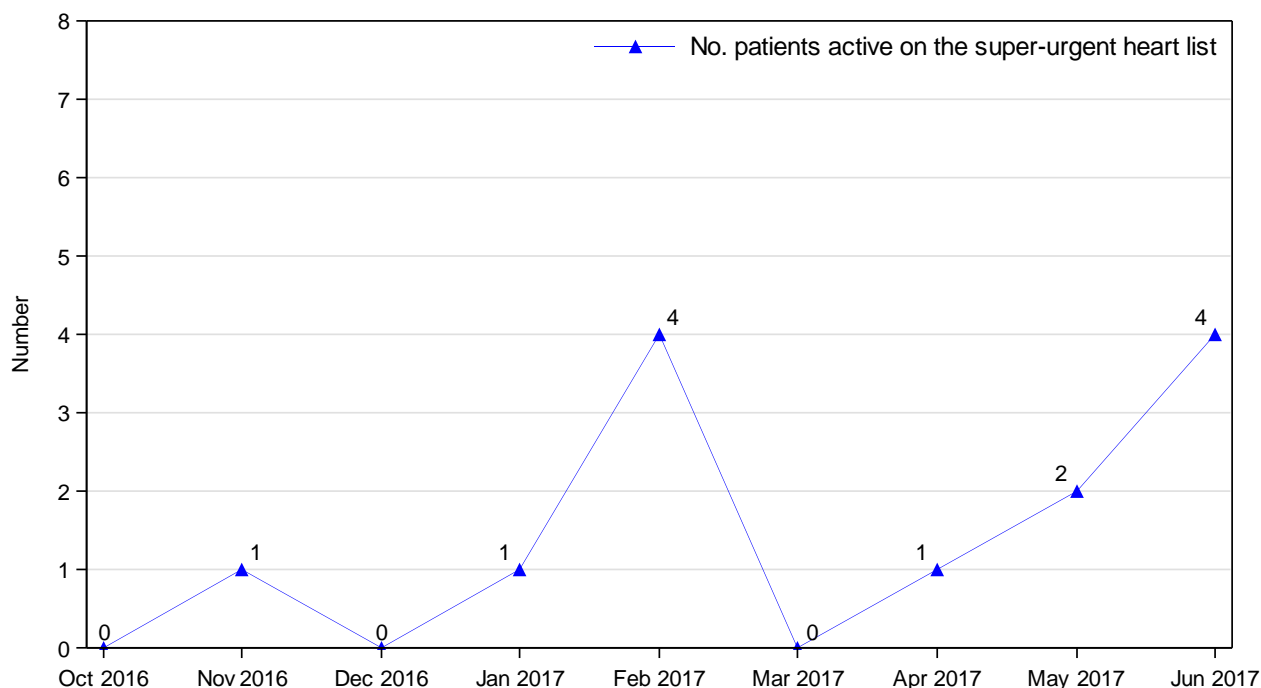
Registrations

- 1 Between 26th October 2016, when the Super-Urgent Heart Allocation Scheme (SUHAS) was introduced, and 18th July 2017, when data were extracted from the UK Transplant Registry, there were **49 registrations** onto the super-urgent scheme for **45 patients** (4 patients were registered, then removed, and then re-registered). These are split by month of registration and centre in **Figure 1**. The number of registrations per month ranged from 1 to 11, peaking in June 2017. Note that October 2016 and July 2017 are not full months.

Figure 1 Number of registrations onto the super-urgent heart list, by month and transplant centre



- Notes: 1. A paediatric patient at London, Great Ormond Street was incorrectly registered onto the SUHAS in June (form specified SUHAS, no category given, validation rule overruled) and spent 15 days on the scheme before being moved to the urgent scheme.
2. An adult patient at Harefield was registered in July for a super-urgent heart-lung block transplant and received a heart-lung block three days later. The patient met category 11 for super-urgent heart listing but should not have been registered as super-urgent if they required lungs also.
- 2 **Figure 2** shows the number of patients who were active on the super-urgent heart list at the end of each month between October 2016 and June 2017. Since waiting times are very short (as seen in **Table 3** below) there are usually fewer than 3 patients on the super-urgent heart list at any given time.

Figure 2 Number of patients active on the super-urgent heart list at the end of each month

- 3 **Table 1** shows the categories under which super-urgent heart patients have been registered; which in the majority of cases is *category 11: Adult patient on short-term mechanical circulatory support (MCSD)*. For category 11 patients, the Super-Urgent/Urgent Heart Recipient Registration form asks for the type of MCSD, categorised into short-term VAD, ECMO or intra-aortic balloon pump (IABP). Of the 42 MCSD patients, 50% had a short-term VAD, 40% had an IABP and 10% had ECMO.

Table 1 Super-urgent heart patients, by transplant centre and category

Transplant centre	Category							Total
	11	ST VAD	ECMO	IABP	12	21	88	
Birmingham	5	3	0	2	0	0	0	5
Glasgow	9	1	0	8	0	0	0	9
Harefield	13	9	2	2	0	0	0	13
London, Great Ormond Street	0	0	0	0	0	0	1 ²	1
Manchester	5	4	0	1	0	0	0	5
Newcastle	0	0	0	0	1 ¹	1 ¹	0	2
Papworth	10	4	2	4	0	0	0	10
Total	42	21	4	17	1	1	1	45

¹ Agreed by CTAG Adjudication Panel

² Incorrectly registered on SUHAS

Registration outcomes

- 4 **Table 2** shows the number of super-urgent patients in comparison to the number of urgent and non-urgent patients put on the list in the same time period. Although Harefield had the highest number of super-urgent patients, this is not especially high when considered as a proportion of all patients registered, which is 24%. Glasgow had the highest proportion of super-urgent patients, at 50% of all patients. The number and proportion of patients transplanted by 18th July 2017, in each registration group, is also shown in this table. Overall, 68% of the super-urgent patients had been transplanted by the end of the analysis period, compared with 65% of urgent patients and 5% of non-urgent patients.

Transplant centre		Registration group						Total	
		Super-urgent		Urgent		Non-urgent		N	%
		N	%	N	%	N	%		
Birmingham	No. patients	5	12	21	51	15	37	41	100
	No. transplanted, % of reg group	5	100	11	52	0	0	16	39
Glasgow	No. patients	9	50	1	6	8	44	18	100
	No. transplanted, % of reg group	7	78	0	0	0	0	7	39
Harefield	No. patients	13	24	21	39	20	37	54	100
	No. transplanted, % of reg group	4	31	12	57	1	5	17	31
Manchester	No. patients	5	17	7	23	18	60	30	100
	No. transplanted, % of reg group	5	100	6	86	1	6	12	40
Newcastle	No. patients	2	4	20	36	33	60	55	100
	No. transplanted, % of reg group	0	0	11	55	1	3	12	22
Papworth	No. patients	10	22	19	42	16	36	45	100
	No. transplanted, % of reg group	9	90	18	95	3	19	30	67
Total	No. patients	44	18	89	37	110	45	243	100
	No. transplanted, % of reg group	30	68	58	65	6	5	94	39

- 5 **Table 3** shows the registrations outcomes of the 45 super-urgent patients. In total, 30 (67%) had been transplanted, 8 (18%) had been removed and 7 (16%) were still waiting or suspended as at 18th July. Median waiting time to super-urgent heart transplantation in this period was 10 days (95% CI: 5, 15). This compares with 41 days (95% CI: 26, 56) for urgent heart patients in the same period.

Transplant centre	No. patients	Registration outcome as at 18 th July				Waiting time to transplant (days)
		Removed	Still waiting	Suspended	Transplanted	
Birmingham	5	0	0	0	5	1, 2, 2, 6, 17
Glasgow	9	0	1	1	7	3, 14, 17, 17, 19, 30, 39
Harefield	13	8	1	0	4	3, 8, 10, 17
London, Great Ormond Street	1	0	1	0	0	-
Manchester	5	0	0	0	5	1, 2, 2, 4, 8
Newcastle	2	0	2	0	0	-
Papworth	10	0	1	0	9	1, 1, 4, 4, 5, 7, 9, 12, 13
Total	45	8	6	1	30	10 (5, 15)²

¹ Four patients were registered twice onto the SUHAS (registered, removed then re-registered); their latest registration outcome was considered here

² Overall median (95% confidence interval) calculated using Kaplan-Meier method where not transplanted patients are censored at date of removal, suspension or time of analysis

- 6 Eight patients were removed from the super-urgent heart list, all at Harefield. Further details of these patients are shown in **Table 4 (removed as patient identifiable)**.

Transplants

- 7 **Table 5** shows the zonal origin of the donors used in the 30 super-urgent heart transplants. In total, 22 (73%) transplants were performed from out of zone donors, and, for example, of the 9 hearts from Harefield's allocation zone that were used for super-urgent transplants, 8 were exported. Note that 2 transplants utilised DCD hearts.

Transplant centre	Heart allocation zone of donor						Donor in zone	Donor out of zone	Total
	Birmingham	Glasgow	Harefield	Manchester	Newcastle	Papworth			
Birmingham	1	0	2	1	0	1	1	4	5
Glasgow	0	2	1	2	0	2	2	5	7
Harefield	1	0	1	1	0	1	1	3	4
Manchester	1	0	2	1	1	0	1	4	5
Newcastle	0	0	0	0	0	0	0	0	0
Papworth	1	0	3	0	2	3	3	6	9
Total	4	2	9	5	3	7	8	22	30
No. exported for SU	3	0	8	4	3	4			22

Transplant outcomes

- 8 Data were extracted from the UK Transplant Registry (UKTR) on 24th August 2017 in order to analyse the post-transplant outcomes of the 30 super-urgent heart patients that received a transplant. **Table 6** shows the number of patients who were alive at 30 days post-transplant at each centre. Overall, 17 patients were alive; however 30 day outcome data were missing for a third of transplants.

Transplant centre	Alive at 30 days			Total
	Yes	No	Unknown ¹	
Birmingham	3	1	1	5
Glasgow	5	0	2	7
Harefield	1	1	2	4
Manchester	5	0	0	5
Newcastle	0	0	0	0
Papworth	3	1	5	9
Total	17	3	10	30

¹ 30 day follow-up information not yet reported to the UKTR

- 9 **Table 7** shows the number of patients at each centre who had some kind of mechanical assistance, or had to be re-transplanted, within 30 days of super-urgent heart transplant. In total, this was 13 patients, mostly with IABP or other mechanical assistance reported on the transplant record form.

centre	VAD, ECMO, IABP, other mechanical assistance or re-transplant within 30 days							Total
	No	Yes	VAD	IABP	Other mechanical assistance	Re-transplant	Unknown ¹	
Birmingham	1	1	1 ²	0	0	0	3	5
Glasgow	3	4	0	4	0	0	0	7
Harefield	3	1	0	0	1	0	0	4
Manchester	1	4	0	1	3	0	0	5
Newcastle	0	0	0	0	0	0	0	0
Papworth	2	3	0	1	1	1	4	9
Total	10	13	1	6	5	1	7	30

¹ Transplant record form not completed or completed with missing data
² Reported on the VAD Database as a BiVAD Centrimag

- 10 **Table 8** compares the 30 day survival rate estimates obtained using the Kaplan-Meier method (which means all survival times are included) across urgency status, where all first time adult heart transplants performed during the analysis period 26th October 2016 to 18th July 2017 were included (including a total of 9 DCD transplants and 4 heart-lung block transplants). There was no statistically significant difference in 30 day survival rates (log-rank: p=0.9). The rate of possible Primary Graft Dysfunction (some kind of mechanical assistance, or had to be re-transplanted, within 30 days) is also compared. Again there was no statistically significant difference (chi-squared: p=0.2).

Urgency of transplant	No. patients with a survival time reported	30 day survival rate (%)	95% confidence interval	No. patients where "PGD" ¹ status known	"PGD" ¹ rate (%)
Super-urgent	25	88.0	67.3-96.0	23	56.5
Urgent	53	87.9	75.0-94.4	54	35.2
Non-urgent	25	91.8	71.1-97.9	25	36.0
All	103	88.9	80.8-93.7	102	40.2

¹ VAD, ECMO, IABP, other mechanical assistance or re-transplant within 30 days