NHS BLOOD AND TRANSPLANT

CARDIOTHORACIC ADVISORY GROUP – HEART

REVIEW OF HEART TRANSPLANT ALLOCATION DATA

SUMMARY

INTRODUCTION

1. The super-urgent heart allocation scheme was introduced in October 2016 and more recently, in March 2023, changes were made to the most common urgent registration category (category 21). This report presents outcomes of adult patients on the heart transplant list, survival from listing and post-transplant survival, by centre and urgency group.

DATA ANALYSIS

2. The cohorts of registrations and transplants both cover three years, from 1 April 2022 to 31 March 2025. The analysis considers adult patients only (age≥16) and includes heart-lung block registrations/transplants. For survival from listing, survival time from first registration was considered, and for post-transplant analysis, re-grafts were excluded.

RESULTS

3. There were 401 non-urgent registrations, 409 urgent registrations and 187 super-urgent registrations in the time period. Super-urgent registrations represented 19% of all registrations. At time of analysis, 84% of super-urgent registrations ended in transplant, compared with 68% for urgent registrations and 25% for non-urgent registrations. The mortality rate was similar across the three urgency lists; 8-9%. Note that in this year's report, patients removed from the list due to deteriorating condition are classified as having died. This differs from the previous report, so the figures are not directly comparable.

4. The median waiting times to transplant were 16 days for super-urgent and 56 days for urgent. The median could not be estimated for non-urgent registrations due to the low transplant rate. Although the estimated two-year rate of patient survival from first heart listing was lower for super-urgent patients (77%) than both urgent (82%) and non-urgent patients (80%), this difference was not statistically significant (p=0.19).

5. In the urgent group, 76% of patients were registered under category 21 between 1 April 2022 and 31 March 2025. In the period before the policy change (up to 31 March 2023), 79% of patients were registered under category 21, reducing slightly to 74% in the proceeding period (after 1 April 2023). Analysis of the subgroups of category 21 was limited due to poor data.

6. In the transplant cohort, there were 123 (22%) non-urgent transplants, 288 (51%) urgent transplants and 155 (27%) super-urgent transplants. Survival rates up to two years post-transplant were similar across urgency groups. There was also no difference between urgency groups in the proportion of patients requiring renal support or VA-ECMO within 30 days of transplant.

ACTION

7. Paediatric data have been provided as an appendix but will be incorporated properly into future versions of this report. Reasons for removal from the list will be audited in more detail in order to understand the true waiting list mortality rate.

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Statistics and Clinical Research **September 2025**

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INTRODUCTION

8. The super-urgent heart allocation scheme was introduced on 26 October 2016 alongside several changes to the urgent heart allocation policy. More recently, on 29 March 2023, changes were made to the most common urgent registration category (category 21), to improve consistency across centres in patients registered for urgent heart transplant. This report presents outcomes of adult patients on the heart transplant list by urgency and centre. For urgent patients, it examines numbers of registrations under each urgent category. It also presents post-transplant outcomes by urgency group.

DATA AND METHODS

9. Data were extracted from the UK Transplant Registry on 26 August 2025 on all adult (age≥16) patients registered for a heart or heart-lung block transplant between 1 April 2022 and 31 March 2025. The reason for including heart-lung registrations was because these patients are allocated according to the heart urgency tiers. Multiple registrations for the same patient were allowed (so the same patient may appear in different urgency categories if they changed urgency within the time period). Registration outcomes were analysed across urgency groups and by centre, where patients removed due to deteriorating condition were classed as deaths.

10. Median waiting time to transplant was analysed by urgency group using the Kaplan-Meier method. Patients were censored if they died on the list, were removed from the list without transplant, moved to a different urgency tier, or were still waiting at time of analysis.

11. Unadjusted patient survival from time of *first* heart listing was analysed across urgency groups, using the Kaplan-Meier method. Survival time was defined as the time from first joining the transplant list to death, considering both time on the transplant list and post-transplant survival time if the patient received a transplant. Survival times were censored if the patient was removed from the list without death, was alive post-transplant, or was still waiting on the list at time of analysis. If a patient was removed from the list due to deteriorating condition, they were classed as having died. If a patient was registered more than once or changed urgency within a registration, they were classified by their initial urgency, thus these groups were mutually exclusive.

12. The number of adult heart transplants performed in each urgency group by centre was extracted for the analysis period. Unadjusted short-term post-transplant survival was analysed as well as requirement for renal support or VA-ECMO within the first 30 days post-transplant. Requirement for VA-ECMO was defined by reporting of a post-transplant episode of VA-ECMO support on the Mechanical Circulatory Support Database. Heart-lung transplants were included in this analysis, but re-grafts were excluded from post-transplant analysis.

13. Paediatric data are shown separately in **Appendix II.**

RESULTS

Registration data

14. **Table 1** shows a breakdown of the non-urgent, urgent and super-urgent heart registrations in the three-year analysis period, by centre and whether the patient was listed for a heart-only transplant or a heart-lung block. There was a total of 31 heart-lung block registrations, 3% of all heart registrations in the period. The highest number of registrations were made by Harefield, followed by Newcastle and Papworth. Considering both heart and heart-lung registration combined, for most centres the percentage of super-urgent registrations was 18-23%, except for Newcastle where it was 10%. The percentage of non-urgent registrations varied from 25% for Glasgow to 53% for Papworth.

Table 1 **Heart registrations by centre, urgency and whether lungs were also required, 1 April 2022 – 31 March 2025**

Centre	Non-urgent		Urgent		Super-urgent		Total
	Heart-only	Heart-lung	Heart-only	Heart-lung	Heart-only	Heart-lung	
Birmingham	57	2	63	3	33	1	**159**
Glasgow	32	0	66	0	29	0	**127**
Harefield	67	1	88	1	47	0	**204**
Manchester	50	2	40	1	23	0	**116**
Newcastle	82	5	88	2	18	1	**196**
Papworth	96	7	55	2	32	3	**195**
Total	**384**	**17**	**400**	**9**	**182**	**5**	**997**

15. **Appendix I** shows a breakdown of registrations by centre, urgency and primary disease.

16. **Tables 2-4** present the outcomes of non-urgent, urgent and super-urgent registrations during the analysis period, by centre. Note that those patients registered towards the end of the time period are more likely to be “still waiting”. There were 401 non-urgent registrations (for 398 patients), 409 urgent registrations (for 401 patients), and 187 super-urgent registrations (for 176 patients). Twenty-five percent of non-urgent registrations ended in transplant compared with 68% for urgent registrations and 84% for super-urgent registrations. The mortality rate (including patients ‘removed due to deteriorating condition’) was similar across the three urgency lists; 8-9%.

Table 2 **Outcomes of NON-URGENT heart registrations, 1 April 2022 – 31 March 2025, as at 26 August 2025, by centre**

Centre	Still waiting		Died[1]		Removed		Became S-U		Transplanted		Became U		Total
	N	%	N	%	N	%	N	%	N	%	N	%	N
Birmingham	22	37	5	8	5	8	4	7	15	25	8	14	**59**
Glasgow	8	25	1	3	3	9	0	-	18	56	2	6	**32**
Harefield	23	34	7	10	8	12	1	1	15	22	14	21	**68**
Manchester	26	50	7	13	2	4	2	4	12	23	3	6	**52**
Newcastle	44	51	8	9	1	1	4	5	9	10	21	24	**87**
Papworth	31	30	4	4	6	6	4	4	33	32	25	24	**103**
Total	**154**	**38**	**32**	**8**	**25**	**6**	**15**	**4**	**102**	**25**	**73**	**18**	**401**

[1]Includes removals due to deteriorating condition

Table 3 **Outcomes of URGENT heart registrations, 1 April 2022 – 31 March 2025, as at 26 August 2025, by centre**

Centre	Still waiting		Died[1]		Became N-U		Removed		Became S-U		Transplanted		Total
	N	%	N	%	N	%	N	%	N	%	N	%	N
Birmingham	1	2	6	9	0	-	3	5	15	23	41	62	**66**
Glasgow	0	-	1	2	0	-	2	3	9	14	54	82	**66**
Harefield	1	1	7	8	0	-	8	9	13	15	60	67	**89**
Manchester	0	-	3	7	0	-	5	12	5	12	28	68	**41**
Newcastle	8	9	8	9	0	-	15	17	4	4	55	61	**90**
Papworth	0	-	10	18	0	-	3	5	4	7	40	70	**57**
Total	**10**	**2**	**35**	**9**	**0**	**-**	**36**	**9**	**50**	**12**	**278**	**68**	**409**

[1]Includes removals due to deteriorating condition

Table 4 **Outcomes of SUPER-URGENT heart registrations, 1 April 2022 – 31 March 2025, as at 26 August 2025, by centre**

Centre	Still waiting		Died[1]		Became N-U		Removed		Became U		Transplanted		Total
	N	%	N	%	N	%	N	%	N	%	N	%	N
Birmingham	0	-	2	6	0	-	3	9	0	-	29	85	**34**
Glasgow	0	-	2	7	0	-			0	-	27	93	**29**
Harefield	0	-	3	6	1	2	4	9	0	-	39	83	**47**
Manchester	0	-	3	13	0	-	2	9	0	-	18	78	**23**
Newcastle	0	-	2	11	0	-	2	11	0	-	15	79	**19**
Papworth	0	-	3	9	0	-	3	9	0	-	29	83	**35**
Total	**0**	**-**	**15**	**8**	**1**	**1**	**14**	**7**	**0**	**-**	**157**	**84**	**187**

[1]Includes removals due to deteriorating condition

17. **Table 5** presents median waiting time to transplant estimates across urgency groups, including 95% confidence intervals (CI) for the median. The median waiting time to non-urgent transplant could not be calculated due to low transplant rate.

Table 5 Median waiting time to transplant by urgency

Urgency	Number of registrations	Number transplanted by 26 August 2025	Waiting time (days) Median	95% CI
Non-urgent[1]	401	102 (25%)	-	-
Urgent	409	278 (68%)	56	49 – 63
Super-urgent	187	157 (84%)	16	13 - 19

[1]Medians and 95% confidence interval could not be calculated due to low transplant rate

18. **Table 6** presents a breakdown of urgent heart registrations during the analysis period by centre, category of registration and time period (split into the latest financial year versus the previous two due to the change in definition of category 21 in March 2023). Across the full time period (1 April 2022 – 31 March 2025), the most common registration category was 21, representing 76% of all urgent registrations. This reduced slightly between the two time periods, from 79% (1 April 2022 – 31 March 2023) to 74% (1 April 2023 – 31 March 2025).

Table 6 URGENT heart registrations by category, centre, and financial year, 1 April 2022 – 31 March 2025

Centre	Urgent category						
	21	22	23	31	32	Unknown	Total
April 2022 - March 2023							
Birmingham	20 (87%)	1 (4%)	1 (4%)	0 (-)	1 (4%)	0 (-)	23
Glasgow	23 (92%)	1 (4%)	0 (-)	0 (-)	0 (-)	1 (4%)	25
Harefield	26 (72%)	5 (14%)	4 (11%)	0 (-)	0 (-)	1 (3%)	36
Manchester	14 (78%)	2 (11%)	2 (11%)	0 (-)	0 (-)	0 (-)	18
Newcastle	25 (74%)	5 (15%)	1 (3%)	1 (3%)	0 (-)	2 (6%)	34
Papworth	13 (76%)	2 (12%)	2 (12%)	0 (-)	0 (-)	0 (-)	17
Total	**121 (79%)**	**16 (10%)**	**10 (7%)**	**1 (1%)**	**1 (1%)**	**4 (3%)**	**153**
April 2023 - March 2025							
Birmingham	34 (79%)	3 (7%)	1 (2%)	0 (-)	1 (2%)	4 (9%)	43
Glasgow	39 (95%)	0 (-)	1 (2%)	0 (-)	0 (-)	1 (2%)	41
Harefield	39 (71%)	3 (5%)	8 (15%)	0 (-)	1 (2%)	2 (4%)	55
Manchester	17 (74%)	4 (17%)	2 (9%)	0 (-)	0 (-)	0 (-)	23
Newcastle	28 (50%)	1 (2%)	7 (13%)	10 (18%)	10 (18%)	0 (-)	56
Papworth	32 (80%)	3 (8%)	3 (8%)	1 (3%)	0 (-)	1 (3%)	40
Total	**189 (74%)**	**14 (5%)**	**22 (9%)**	**11 (4%)**	**12 (5%)**	**8 (3%)**	**256**
TOTAL	**310 (76%)**	**30 (7%)**	**32 (8%)**	**12 (3%)**	**13 (3%)**	**12 (3%)**	**409**

Category definitions:
21=Adult inpatient with advanced heart failure requiring continuous inotrope therapy and/or IABP meeting one of three sub-categories
22=Adult long-term VAD or TAH patient agreed by CTAG Adjudication Panel
23=Exceptionally sick adult patient agreed by CTAG Adjudication Panel
31=Adult congenital heart disease (ACHD) arrhythmia patient
32=ACHD patient with no option for conventional escalation of therapy

19. For the 189 patients registered under category 21 since March 2023, **Table 7** shows a breakdown by sub-category and centre. Note however that sub-category information was missing for a high proportion of registrations. Where reported, Adverse Pulmonary Haemodynamics only was most common. The 'None' column records the number of registrations under category 21 where all the sub-categories were marked as 'No'.

Table 7 **Category 21 registrations by sub-category and centre, 1 April 2023 – 31 March 2025**

Centre	Category 21 sub-category								
	CS only	CHI only	APH only	CS and APH	CS and CHI	CHI and APH	Unknown	None	**Total**
Birmingham	3	7	9	2	0	2	9	2	**34**
Glasgow	6	5	11	5	1	3	8	0	**39**
Harefield	2	7	7	2	0	1	16	4	**39**
Manchester	0	0	1	0	0	0	12	4	**17**
Newcastle	5	10	5	0	0	2	6	0	**28**
Papworth	0	3	4	0	0	0	22	3	**32**
Total	**16**	**32**	**37**	**9**	**1**	**8**	**73**	**13**	**189**

CS=Cardiogenic Shock, CHI=Cardiorenal or Hepatic Indication, APH=Adverse Pulmonary Haemodynamics

Survival from listing

20. **Figure 1** and **Table 8** present patient survival from *first* heart or heart-lung transplant listing by urgency, up to two years. Survival time was defined as the time from first joining the transplant list to death, considering both time on the transplant list and post-transplant survival time if the patient received a transplant. There was no significant difference in the two year survival rates by urgency (p=0.19).

Figure 1 **Two year Kaplan-Meier patient survival from listing curves for adult patients listed on the heart transplant list, 1 April 2022 – 31 March 2025, by urgency**

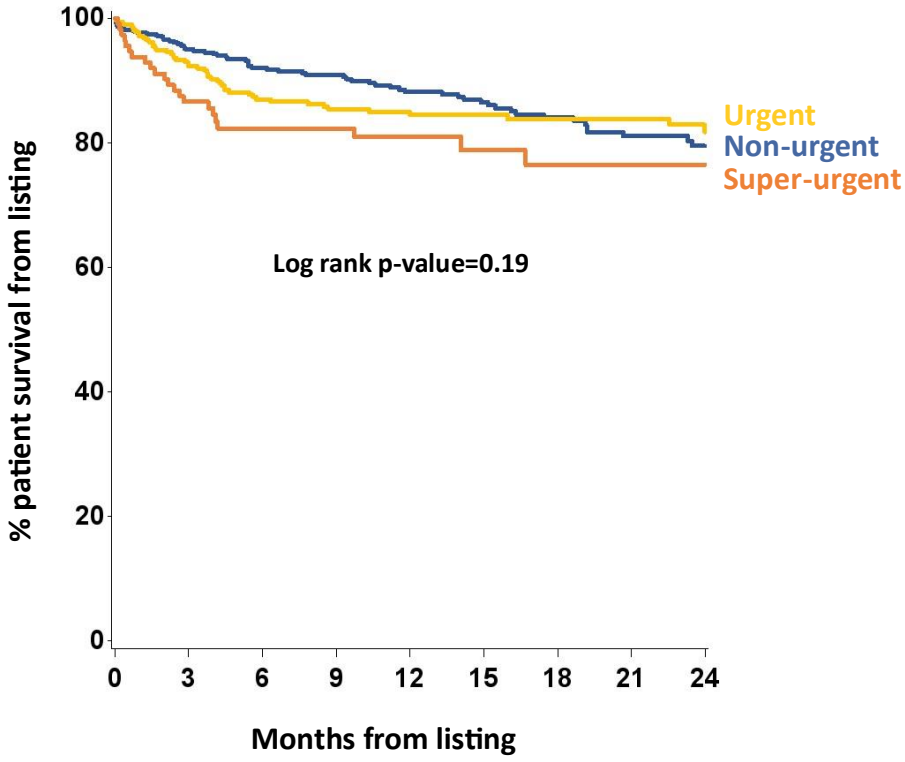

Table 8 **Patient survival from heart listing by urgency for adult patients first listed 1 April 2022 – 31 March 2025**

Urgency	Number of patients	Number of deaths as at 26 Aug 2025[1]	90 days		1 year		2 years	
			Survival (%)	95% CI	Survival (%)	95% CI	Survival (%)	95% CI
Non-urgent	386	58	95	92 – 97	88	84 – 91	80	74 – 84
Urgent	323	48	92	89 – 95	84	80 – 88	82	76 – 86
Super-urgent	114	22	87	79 – 92	81	72 – 87	77	65 – 84
Overall	**823**	**128**	**93**	**91 – 94**	**86**	**83 – 88**	**80**	**76 – 83**

[1]or within 2 years

Transplant data

21. **Table 9** presents the number of transplants performed by each centre in each urgency category between 1 April 2022 and 31 March 2025. Note that these numbers will not match those transplanted in the previous section because some of the patients transplanted would have been registered prior to 1 April 2022. Newcastle performed the lowest number of super-urgent transplants, while Papworth performed the highest number of non-urgent transplants.

Table 9 **Adult heart transplants performed in the UK, 1 April 2022 – 31 March 2025, by centre and urgency**

Centre	Non-urgent		Urgent		Super-urgent		Total
	N	%	N	%	N	%	N
Birmingham	21	23	43	47	28	30	**92**
Glasgow	21	21	53	52	27	27	**101**
Harefield	18	15	61	51	40	34	**119**
Manchester	15	24	29	47	18	29	**62**
Newcastle	11	13	61	71	14	16	**86**
Papworth	37	35	41	39	28	26	**106**
Total	**123**	**22**	**288**	**51**	**155**	**27**	**566**

22. **Figure 2** and **Table 10** present patient survival by urgency, up to two years, where 5 re-grafts and one transplant with missing survival were excluded. There was no difference in the patient survival rates by urgency group at two years post-transplant (p=0.2).

Figure 2 **Two year Kaplan-Meier patient survival curves for adult patients transplanted 1 April 2022 – 31 March 2025, by urgency**

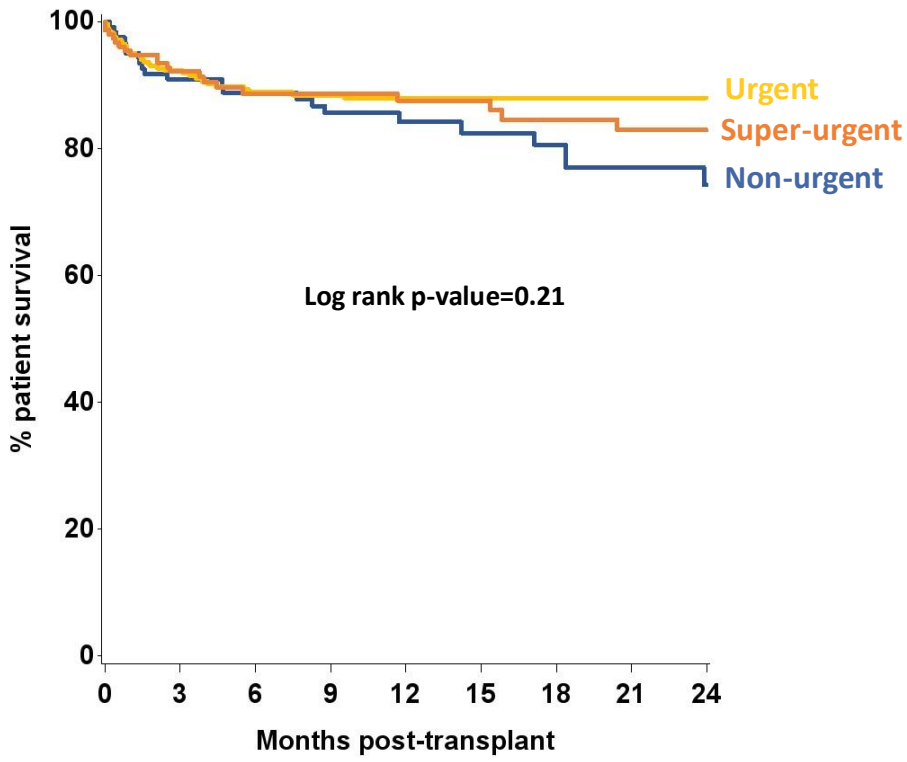

Table 10 **Patient survival post-heart transplant by urgency for adult patients first transplanted 1 April 2022 – 31 March 2025**

Urgency	Number of transplants	Number of deaths as at 14 Aug 2025[1]	90 days		1 year		2 years	
			Survival (%)	95% CI	Survival (%)	95% CI	Survival (%)	95% CI
Non-urgent	122	22	91	84 – 95	84	76 – 90	74	62 – 83
Urgent	285[2]	32	92	89 – 95	88	83 – 91	88	83 – 91
Super-urgent	153	20	92	87 – 95	88	81 – 92	83	74 – 89
Overall	**560**	**74**	**92**	**89 – 94**	**87**	**84 – 90**	**83**	**79 – 87**

[1] or within 2 years
[2] 1 transplant removed due to missing survival data

23. **Table 11** shows the numbers of patients requiring renal support within 30 days of first heart transplant, by urgency. There was no significant difference in the proportion of transplants requiring renal support between the different urgency groups (p=0.46).

Table 11 **Requirement for renal support within 30 days post-heart transplant by urgency for adult patients first transplanted 1 April 2022 – 31 March 2025**

Urgency	Number of transplants[1]	Haemofiltration/Haemodialysis required		Chi-square p-value
		Number	%	
Non-urgent	121	60	50	0.46
Urgent	278	126	45	
Super-urgent	150	63	42	
Overall	**549**	**249**	**45**	

[1]12 transplants excluded due to missing renal support data

24. **Table 12** shows the numbers of patients requiring VA-ECMO support within 30 days of first heart transplant, by urgency, as reported on the MCS database. There was no significant difference in the proportion of patients requiring VA-ECMO support between the different urgency groups (p=0.2)

Table 12 **Requirement for VA-ECMO support within 30 days post-heart transplant by urgency for adult patients first transplanted 1 April 2022 – 31 March 2025**

Urgency	Number of transplants	VA-ECMO support required		Chi-square p-value
		Number	%	
Non-urgent	122	35	28	0.21
Urgent	286	67	23	
Super-urgent	153	47	31	
Overall	**561**	**149**	**27**	

Appendix I – Disease breakdown

Appendix 1 **Heart registrations by centre, urgency and primary disease, 1 April 2022 – 31 March 2025**

Centre		Coronary heart disease		Cardiomyopathy		Congenital heart disease		Other		Total	
		N	%	N	%	N	%	N	%	N	%
Birmingham	Non-urgent	16	27	30	51	7	12	6	10	59	100
	Urgent	13	20	43	65	3	5	7	11	66	100
	Super-urgent	10	29	23	68	0	0	1	3	34	100
Glasgow	Non-urgent	3	9	27	84	0	0	2	6	32	100
	Urgent	11	17	54	82	0	0	1	2	66	100
	Super-urgent	9	31	20	69	0	0	0	0	29	100
Harefield	Non-urgent	22	32	36	53	6	9	4	6	68	100
	Urgent	18	20	61	69	6	7	4	4	89	100
	Super-urgent	8	17	32	68	1	2	6	13	47	100
Manchester	Non-urgent	8	15	38	73	1	2	5	10	52	100
	Urgent	3	7	36	88	0	0	2	5	41	100
	Super-urgent	2	9	19	83	0	0	2	9	23	100
Newcastle	Non-urgent	17	20	36	41	27	31	7	8	87	100
	Urgent	7	8	34	38	45	50	4	4	90	100
	Super-urgent	0	0	11	58	4	21	4	21	19	100
Papworth	Non-urgent	13	13	75	73	5	5	10	10	103	100
	Urgent	7	12	45	79	2	4	3	5	57	100
	Super-urgent	5	14	29	83	0	0	1	3	35	100
Total		**172**	**17**	**649**	**65**	**107**	**11**	**69**	**7**	**997**	**100**

Appendix II – Paediatric data

Appendix 2 **Paediatric heart registrations by centre, urgency and whether lungs were also required, 1 April 2022 – 31 March 2025**

Centre	Non-urgent		Urgent		Super-urgent		Total
	Heart-only	Heart-lung	Heart-only	Heart-lung	Heart-only	Heart-lung	
Great Ormond Street	19	1	55	0	16	0	**91**
Newcastle	21	1	47	0	12	0	**81**
Total	**40**	**2**	**102**	**0**	**28**	**0**	**172**

Appendix 3 **Outcomes of paediatric heart registrations, 1 April 2022 – 31 March 2025, as at 26 August 2025, by centre**

Centre	Still waiting		Died[1]		Removed		Became S-U		Transplanted		Became U		Became N-U		Total
	N	%	N	%	N	%	N	%	N	%	N	%			N
Non-urgent															
Great Ormond Street	6	30	0	-	2	10	0	-	6	30	6	30	-	-	**20**
Newcastle	9	41	1	5	2	9	1	5	2	9	7	32	-	-	**22**
Total	15	36	1	2	4	10	1	2	8	19	13	31	-	-	**42**
Urgent															
Great Ormond Street	4	7	7	13	7	13	7	13	29	53	-	-	1	2	**55**
Newcastle	3	6	4	9	10	21	6	13	22	47	-	-	2	4	**47**
Total	7	7	11	11	17	17	13	13	51	50	-	-	3	3	**102**
Super-urgent															
Great Ormond Street	0	-	1	6	1	6	-	-	13	81	1	6	0	-	**16**
Newcastle	0	-	2	17	1	8	-	-	7	58	1	8	1	8	**12**
Total	0	-	3	11	2	7	-	-	20	71	2	7	1	4	**28**

[1]Includes removals due to deteriorating condition

Appendix 4 **Median waiting time to transplant, for paediatric patients, by urgency**

Urgency	Number of registrations	Number transplanted by 26 August 2025	Waiting time (days) Median	95% CI
Non-urgent[1]	42	8 (19%)	-	-
Urgent	102	51 (50%)	239	194 - 284
Super-urgent	28	20 (71%)	9	4 - 14

[1]Medians and 95% confidence interval could not be calculated due to low transplant rate

Appendix 5 **Paediatric heart transplants performed in the UK, 1 April 2022 – 31 March 2025, by centre and urgency**

Centre	Non-urgent		Urgent		Super-urgent		Total
	N	%	N	%	N	%	N
Great Ormond Street	12	22	30	55	13	24	**55**
Newcastle	4	11	27	73	6	16	**37**
Total	**16**	**17**	**57**	**62**	**19**	**21**	**92**

Appendix 6 **Two year Kaplan-Meier patient survival curves for paediatric patients transplanted 1 April 2022 – 31 March 2025, by urgency**