

NHS BLOOD AND TRANSPLANT

CARDIOTHORACIC ADVISORY GROUP - HEART

REVIEW OF ALLOCATION ZONES

LAY SUMMARY

Allocation zones are used in the policy for offering donor hearts to prioritise local patients and keep travel distances for the donor heart as short as possible. This means, for example, that if a donor heart becomes available in Bristol, it will first be offered to a patient in Birmingham, as this is the zonal transplant hospital, before being offered to patients at other transplant hospitals. This zonal rule applies to all adult allocation tiers; super-urgent, urgent and non-urgent. Every year the zones are reviewed by comparing the number of heart donors in each zone with the number of patients registered for a transplant in each transplant hospital. If differences are found in the share of these numbers then the zones may need to be adjusted. This report presents the latest donor numbers for each zone and the number of patients registered for a transplant at each transplant hospital.

BACKGROUND

- 1 In all adult tiers of the DBD and DCD heart offering sequences, priority is given to the zonal centre. Each adult transplant centre is assigned an allocation zone which is proportional to the number of patient registrations that centre has made to the transplant waiting list. Donors that arise within each centre's zone are offered preferentially to their patients, within each urgency tier, before being offered to other patients nationally.
- 2 The size of each allocation zone is reviewed annually by CTAG, and adjustments are made to the zonal boundaries if required, to reflect the demand for transplantation at each centre. The heart allocation zones were last adjusted in July 2024. The current list of hospitals in each heart allocation zone can be found online at <https://www.odt.nhs.uk/transplantation/tools-policies-and-guidance/allocation-zones>
- 3 It was agreed by CTAG in October 2017 that any review of allocation zones should use the most up to date period of registration and donor data. The time period covers 2 years for registrations and 3 years for donors, therefore this report analyses:
 - Registrations: 1 February 2024 to 31 January 2026
 - Donors: 1 February 2023 to 31 January 2026
- 4 This report also covers activity data since 1 February 2023, for donors and transplants, including the number and utilisation of donors in each zone, and the number of zonal/imported transplants per centre.
- 5 Please see POL228: NHSBT Heart Allocation Policy (online here <https://www.odt.nhs.uk/transplantation/tools-policies-and-guidance/policies-and-guidance/>) for details of how the allocation zones are used in the offering sequences.

DATA AND METHODS

- 6 Changes to the heart allocation zones are based on a statistically significant difference being observed between the percentage share of registrations and the percentage share of donors for any one centre/allocation zone (at the 5% significant level). It was agreed by CTAG in 2021 that the previously applied Bonferroni correction would be removed in future, in order to increase the sensitivity of the tests.

- 7 Registrations are defined as:

The total number of UK Group 1 heart registrations in the latest two year period at adult centres, excluding any registrations made by Newcastle of patients aged < 16 years. Multi-organ registrations, and non-urgent, urgent and super-urgent heart registrations are all included. Registrations for heart-lung transplantation are included in the number of heart registrations as such patients are offered to according to the heart allocation sequence. VAD patients listed for transplant are also included.

For patients registered more than once in the registration period, the following rules apply:

- If a patient was registered, removed then reregistered, only the first registration is included.
- If a patient was registered, transplanted then reregistered, both registrations are included.
- If a patient was active, suspended then reactivated, only the first activation is included.
- If a patient moved between the non-urgent, urgent or super-urgent lists (without transplantation in between) they are only counted once.

- 8 Donors are defined as:

The total number of UK adult (≥ 16 years at time of death) deceased heart donors over the latest three year period. Donors whose heart was retrieved but not transplanted are excluded. Paediatric donors who donated to adult patients are included, along with adult donors who donated to paediatric patients. Following agreement from CTAG in May 2022, DCD heart donors are now included in the analysis.

RESULTS

Comparison of registrations and donors

- 9 **Table 1** summarises the proportion of heart registrations made by each centre over the two year period and compares these with the number of heart donors that arose under each allocation zone over the three year period. If a hospital moved zones within the analysis period, donors at that hospital are assigned to the most recent (current) zone. The table shows that the proportion of heart registrations and heart donors are reasonably balanced across centres and there is no evidence of a need to adjust the zonal boundaries as all p-values are greater than 0.05.

Table 1 Number of heart registrations (1 February 2024 – 31 January 2026) and donors (1 February 2023 – 31 January 2026), by registering centre/current allocation zone (since 24 July 2024)

Centre/zone	Heart registrations		Heart donors in current zone		p-value ¹
	N	%	N	%	
Birmingham	92	17	126	20	0.18
Glasgow	80	15	92	15	0.95
Harefield	105	20	113	18	0.54
Manchester	67	12	82	13	0.73
Newcastle	101	19	100	16	0.21
Papworth	92	17	110	18	0.81
UK	537	100	627	100	-

¹ Chi-squared test comparisons of proportion of registrations with proportion of donors, please note that the p-value has not been adjusted for multiple comparisons

Donor Activity

- 10 In the period from 1 February 2023 to 31 January 2026, there were 2,055 adult DBD donors who donated at least one organ. **Table 2** shows the breakdown of these donors by heart allocation zone, with the number of hearts offered, accepted, retrieved, and transplanted. In total, 1,132 (55%) hearts were offered, 848 were accepted (75% of those offered), 430 were retrieved (51% of those accepted) and 425 were transplanted (99% of those retrieved). The utilisation rate (transplanted out of offered) was 38% nationally.

Table 2 Adult DBD heart organ donation and retrieval rates in the UK by allocation zone, 1 February 2023 - 31 January 2026

Zone	Number of DBD donors	Offered		Accepted		Retrieved		Transplanted	
		N	(% of donors)	N	(% of offered)	N	(% of accepted)	N	(% of retrieved)
Birmingham	361	202	(56)	161	(80)	85	(53)	85	(100)
Glasgow	230	140	(61)	107	(76)	58	(54)	57	(98)
Harefield	480	246	(51)	166	(67)	73	(44)	72	(99)
Manchester	242	126	(52)	99	(79)	49	(49)	49	(100)
Newcastle	367	204	(56)	156	(76)	87	(56)	86	(99)
Papworth	375	214	(57)	159	(74)	78	(49)	76	(97)
UK	2055	1132	(55)	848	(75)	430	(51)	425	(99)

- 11 **Table 3** shows similar information but for the 2,221 DCD donors in the period. A lower proportion of DCD hearts were offered out of the total number of DCD donors compared with DBD donors (21% vs 55%). The national DCD utilisation rate (transplanted out of offered) was 42%.

Table 3 Adult DCD heart organ donation and retrieval rates in the UK by allocation zone, 1 February 2023 - 31 January 2026

	Number of DCD donors	Offered (% of donors)	Accepted (% of offered)	Retrieved (% of accepted)	Transplanted (% of retrieved)	(% of offered)				
Zone	N	N	N	N	N					
Birmingham	360	78	(22)	63	(81)	39	(62)	38	(97)	(49)
Glasgow	267	73	(27)	58	(79)	33	(57)	28	(85)	(38)
Harefield	546	85	(16)	65	(76)	35	(54)	31	(89)	(36)
Manchester	258	53	(21)	36	(68)	28	(78)	25	(89)	(47)
Newcastle	339	75	(22)	64	(85)	40	(63)	39	(98)	(52)
Papworth	451	98	(22)	67	(68)	34	(51)	32	(94)	(33)
UK	2221	462	(21)	353	(76)	209	(59)	193	(92)	(42)

Transplant Activity

12 **Table 4** shows the number of adult heart transplants performed in the period using UK adult donors, by transplanting centre, broken down by whether the heart was from a zonal donor or imported from outside the zone. Overall, 59% of transplants in the time period were performed using imported hearts.

Table 4 Adult heart transplants performed in the UK from UK adult deceased donors, by transplanting centre and zonal status of the donor, 1 February 2023 - 31 January 2026

Centre	Transplants		Zonal	Imported	
	N	N		(%)	N
Birmingham	98	39	(40)	59	(60)
Glasgow	103	48	(47)	55	(53)
Harefield	110	36	(33)	74	(67)
Manchester	63	25	(40)	38	(60)
Newcastle	92	46	(50)	46	(50)
Papworth	105	39	(37)	66	(63)
UK	571	233	(41)	338	(59)

CONCLUSIONS

13 There were no significant differences observed in the percentage share of heart registrations and donors across centres/zones, therefore no changes will be made to zonal boundaries at present.