



Blood and Transplant

ANNUAL REPORT ON LIVING DONOR KIDNEY TRANSPLANTATION

**REPORT FOR 2025/2026
(1 APRIL 2011 – 31 MARCH 2026)**

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Executive Summary

This report presents key figures about living donor kidney transplantation in the UK. The period reported covers 15 years of transplant data, from 1 April 2011. The report presents information on the number of transplants, follow-up data and survival analysis on a national and centre-specific basis.

Key findings

- There were 983 living donor kidney transplants performed in the UK in 2025/26. Of these, 84 were performed in paediatric recipients and 899 were performed in adult recipients. This is an increase of 7 paediatric transplants and 24 adult transplants compared to 2024/25. Of the adult transplants, 436 (406 in 2024/25) were genetically related, 227 (222 in 2024/25) were unrelated, 2 (2 in 2024/25) were HLAi, 19 (22 in 2024/25) were ABOi, 157 (164 in 2024/25) were paired/pooled and 58 (59 in 2024/25) were non-directed altruistic donor transplants.
- The proportion of living donors across the UK being prescribed anti-hypertensive drugs since the last reported follow-up is 6% at five years and 10% at ten years post donation.
- Serum creatinine for living donors in the UK is 98 (84-112) at five years and 92 (79-107) at ten years post donation.
- The UK rate of graft survival five years after adult living donor kidney transplant by type is; unrelated 96%, genetically related 94%, non-directed altruistic 87%, paired exchange 92%, ABOi 98% and HLAi 74%.
- 47% of registered recipients in the UK Living Kidney Sharing Scheme have been transplanted and 71% of identified transplants proceed.

Use of the contents of this report should be acknowledged as follows:
Annual Report on Living Donor Kidney Transplantation 2025/26, NHS Blood and Transplant

Introduction

This report presents information on transplant activity between 1 April 2011 and 31 March 2026, for all 24 centres performing living donor kidney transplantation in the UK. Data were obtained from the UK Transplant Registry, at NHS Blood & Transplant, that holds information relating to donors, recipients and outcomes for all kidney transplants performed in the UK. All private hospital data for living donor kidney transplantation is excluded from this report.

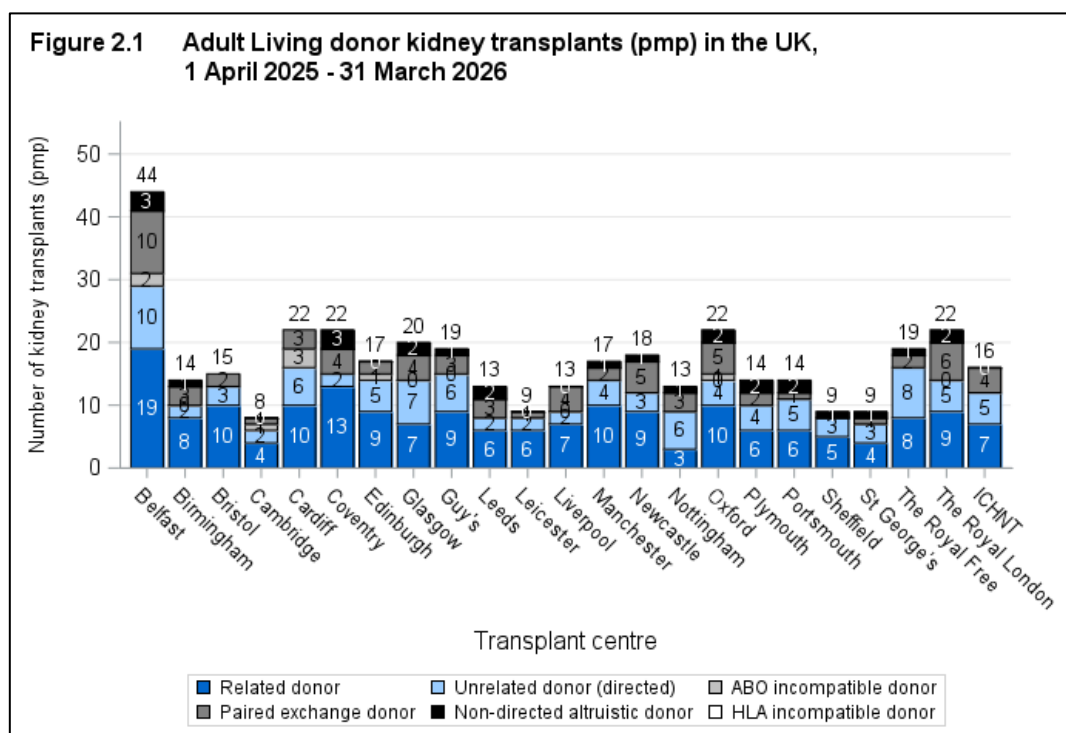
Graft and patient survival estimates are reported at one-year post transplant for the period 1 April 2021 to 31 March 2025 and five-year post-transplant for the period 1 April 2017 to 31 March 2021. Results are described separately according to the type of donor. Transplants from 'domino' donors (as defined in the policy for Living Donor Kidney Transplantation POL274), are excluded from this report as numbers are generally very small and this group is distinct from each of the other donor groups presented.

NHSBT Statistics Team are registered with the Office for Statistics Regulation TQV Voluntary Application scheme which demonstrates our commitment to applying the principles of Trustworthiness, Quality and Value from the Code of Practice for Statistics in all our analyses and reports.

Throughout this report Imperial College Healthcare NHS Trust is labelled as ICHNT and Great Ormond Street Hospital is labelled as GOSH. Guy's team assess donors and perform transplants for GOSH recipients.

The COVID-19 pandemic has led to unprecedented challenges for UK transplantation. Concerns about the ability to care safely for living donor transplant recipients, lack of access to resources (e.g. access to theatre), and the risk versus benefit for immunosuppressed transplant recipients, have resulted in a major reduction in the number of organ transplants undertaken.

Figure 2.1 shows the number of adult living donor kidney transplants per million population (pmp) that were performed in 2025/26 in each transplant centre.



ADULT

Figure 2.2 shows the number of adult living donor kidney transplants performed in the UK between 1 April 2011 and 31 March 2026.

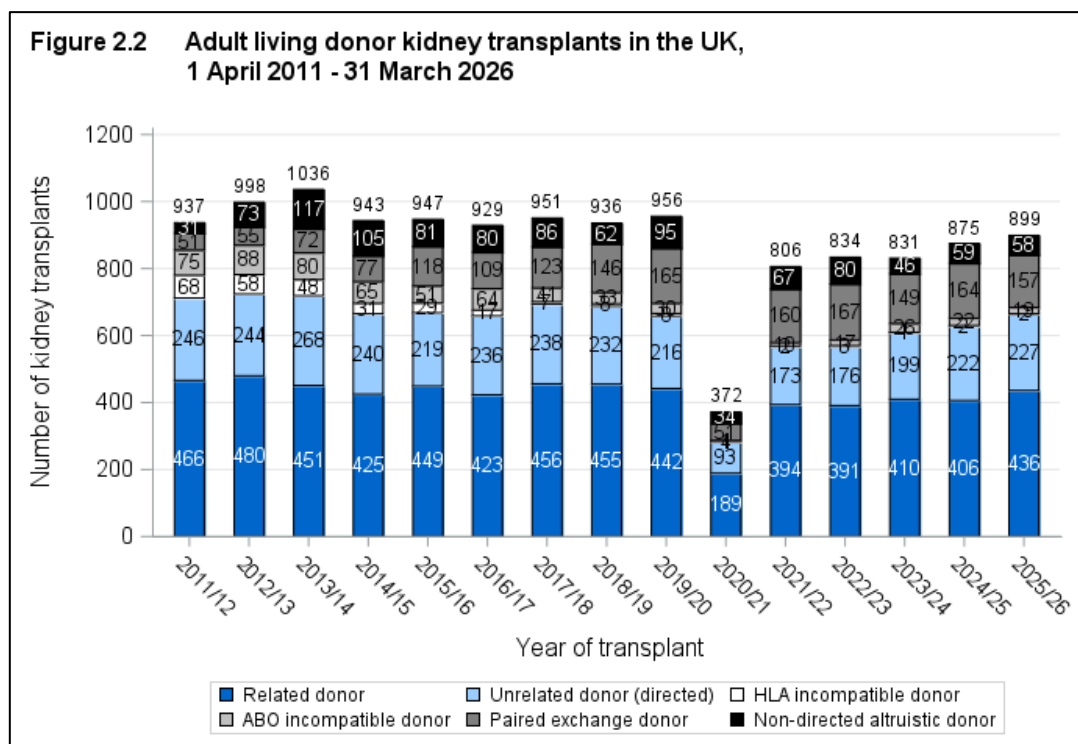


Figure 2.3 and **Table 2.1** show the number of adult living donor kidney transplants performed in 2025/26 in each transplant centre.

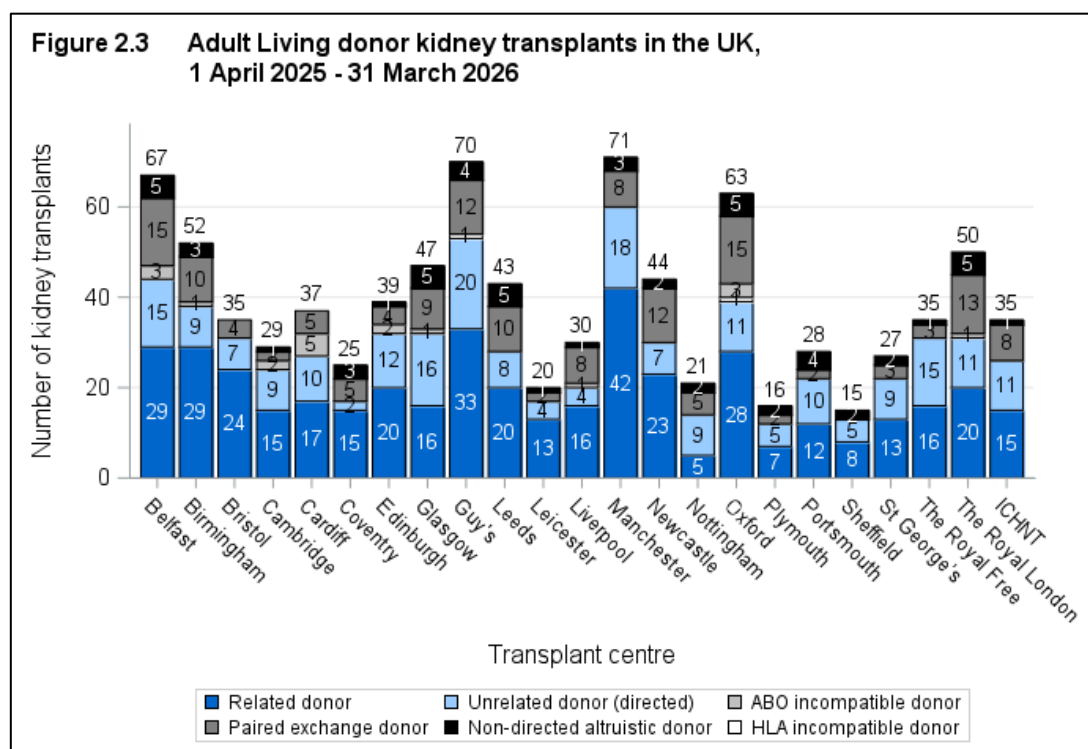


Table 2.1 Adult living donor kidney transplants in the UK, 1 April 2025 - 31 March 2026

Transplant Centre	Donor type					
	Related donor	Unrelated donor (directed)	HLA incompatible donor	ABO incompatible donor	Paired exchange donor	Non-directed altruistic donor
Belfast	29	15	0	3	15	5
Birmingham	29	9	0	1	10	3
Bristol	24	7	0	0	4	0
Cambridge	15	9	0	2	2	1
Cardiff	17	10	0	5	5	0
Coventry	15	2	0	0	5	3
Edinburgh	20	12	0	2	4	1
Glasgow	16	16	0	1	9	5
Guy's	33	20	1	0	12	4
Leeds	20	8	0	0	10	5
Leicester	13	4	0	0	2	1
Liverpool	16	4	0	1	8	1
Manchester	42	18	0	0	8	3
Newcastle	23	7	0	0	12	2
Nottingham	5	9	0	0	5	2
Oxford	28	11	1	3	15	5
Plymouth	7	5	0	0	2	2
Portsmouth	12	10	0	0	2	4
Sheffield	8	5	0	0	0	2
St George's	13	9	0	0	3	2
The Royal Free	16	15	0	0	3	1
The Royal London	20	11	0	1	13	5
ICHNT	15	11	0	0	8	1

Figure 2.4 shows the proportion of adult living donor kidney transplants by donor type and centre in 2025/2026.

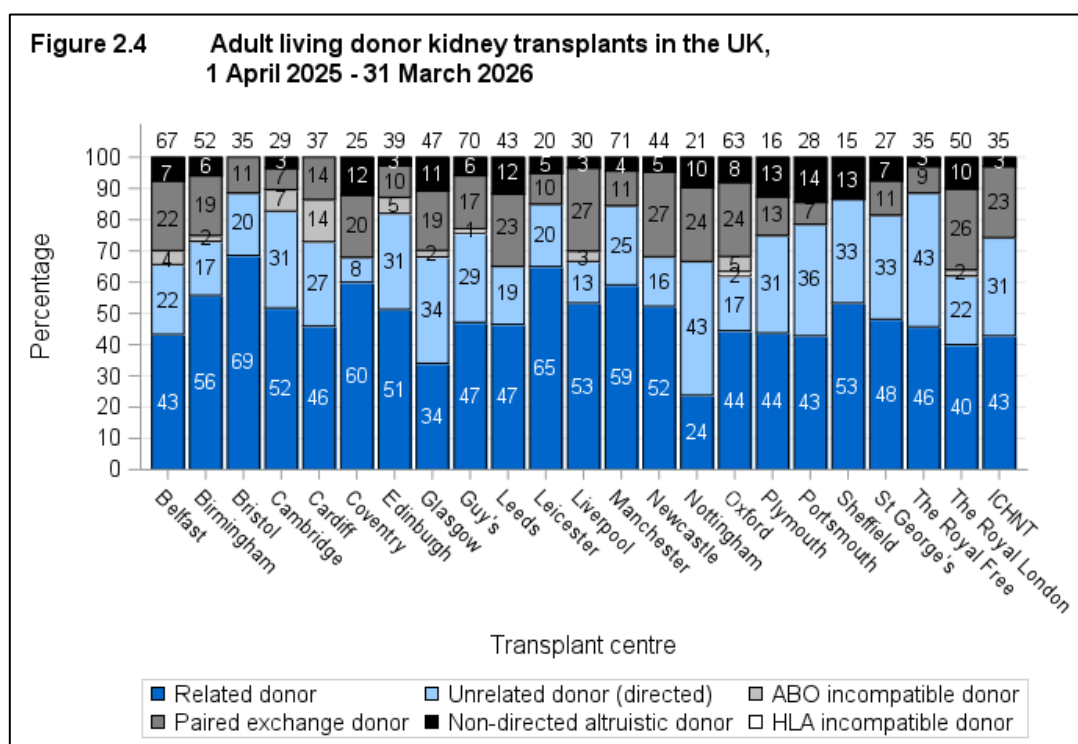
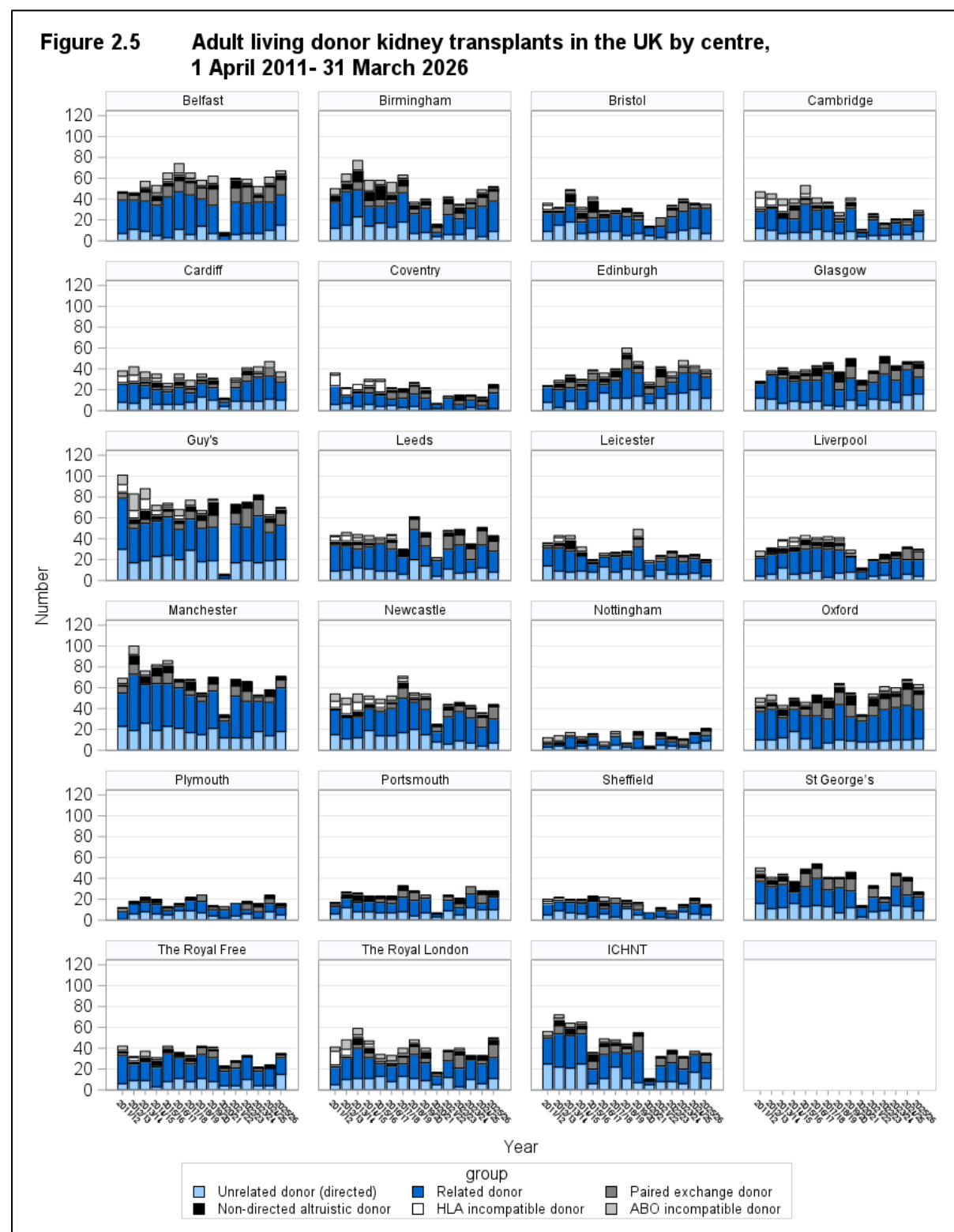


Figure 2.5 shows the number of adult living donor kidney transplants by donor type and centre between 1 April 2011 and 31 March 2026.



PAEDIATRIC

Figure 2.6 shows the number of paediatric living donor kidney transplants performed in the UK between 1 April 2011 and 31 March 2026.

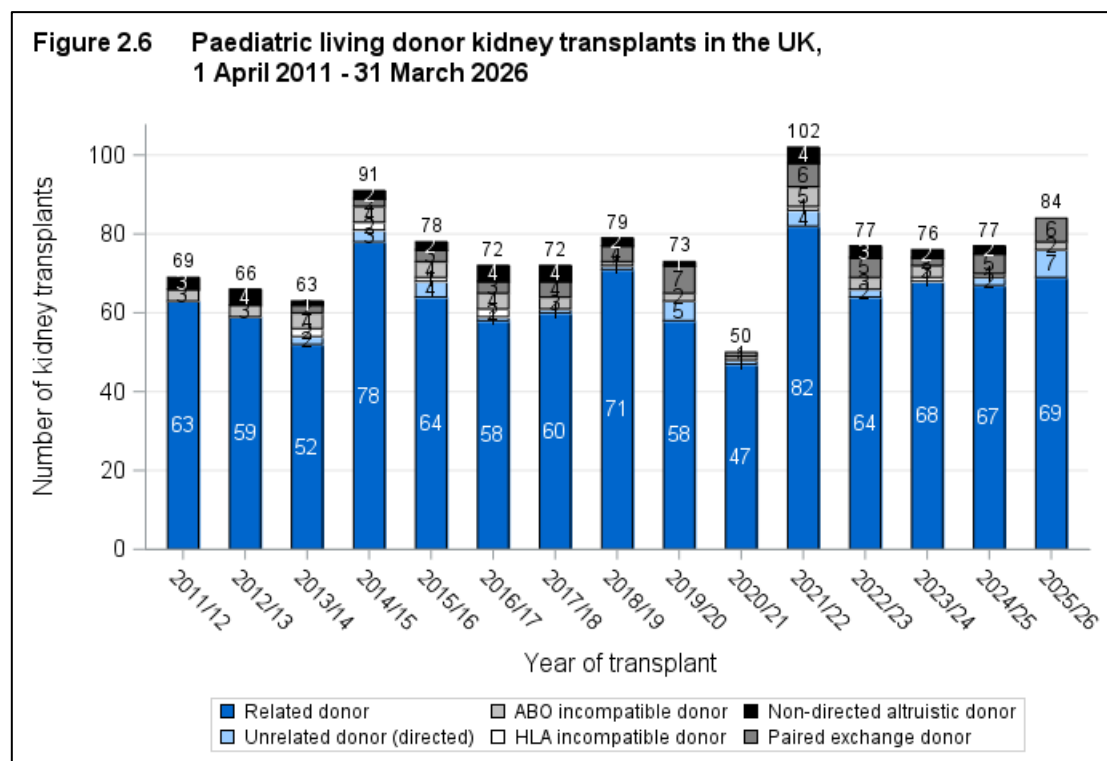


Figure 2.7 and **Table 2.2** show the number of paediatric living donor kidney transplants performed in 2025/26 in each transplant centre.

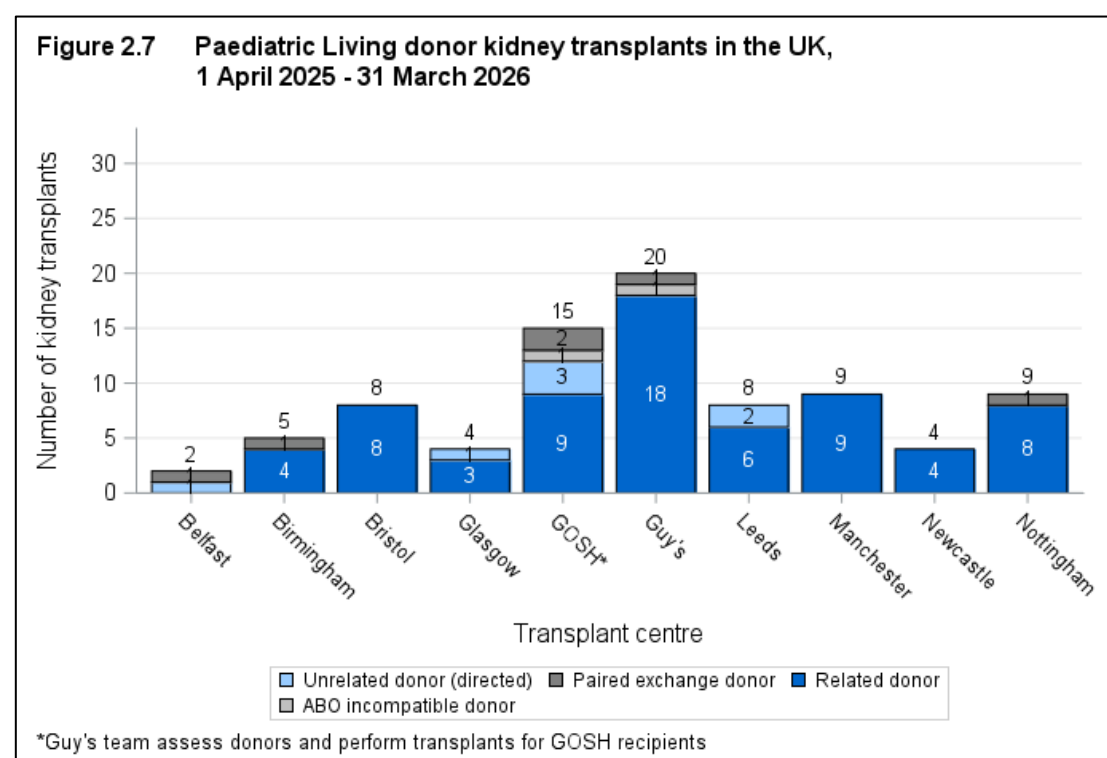


Table 2.2 Paediatric living donor kidney transplants in the UK, 1 April 2025 - 31 March 2026

Transplant Centre	Donor type					
	Related donor	Unrelated donor (directed)	HLA incompatible donor	ABO incompatible donor	Paired exchange donor	Non-directed altruistic donor
Belfast	0	1	0	0	1	0
Birmingham	4	0	0	0	1	0
Bristol	8	0	0	0	0	0
GOSH*	9	3	0	1	2	0
Glasgow	3	1	0	0	0	0
Guy's	18	0	0	1	1	0
Leeds	6	2	0	0	0	0
Manchester	9	0	0	0	0	0
Newcastle	4	0	0	0	0	0
Nottingham	8	0	0	0	1	0

*Guy's team assess donors and perform transplants for GOSH recipients

Figure 2.8 shows the proportion of paediatric living donor kidney transplants by donor type and centre in 2025/26.

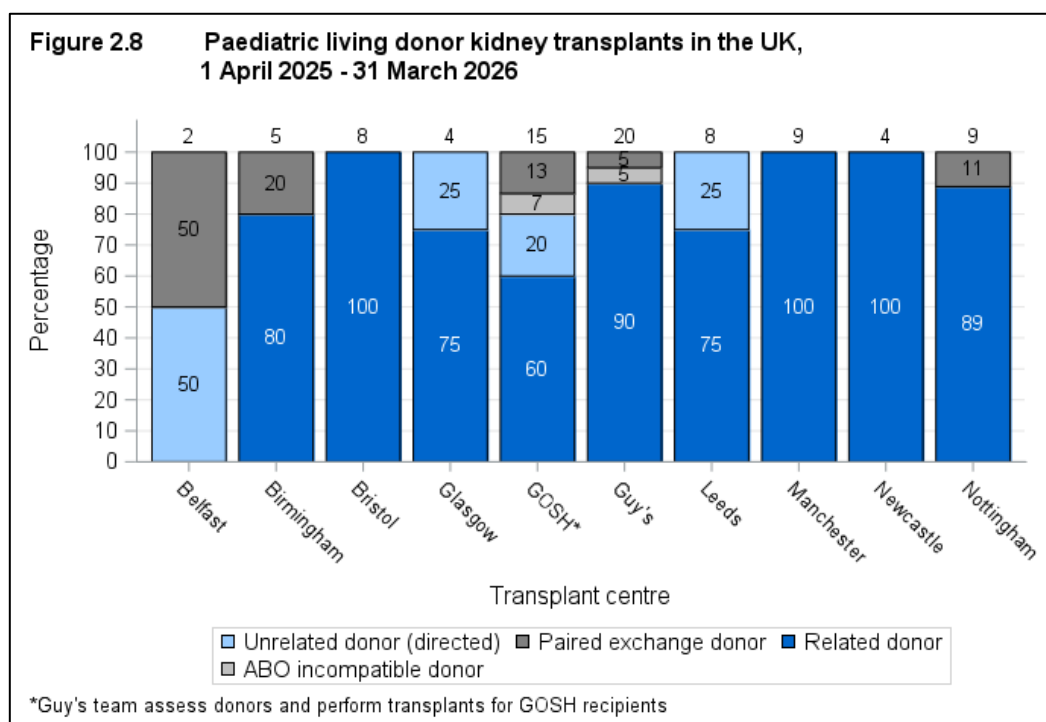
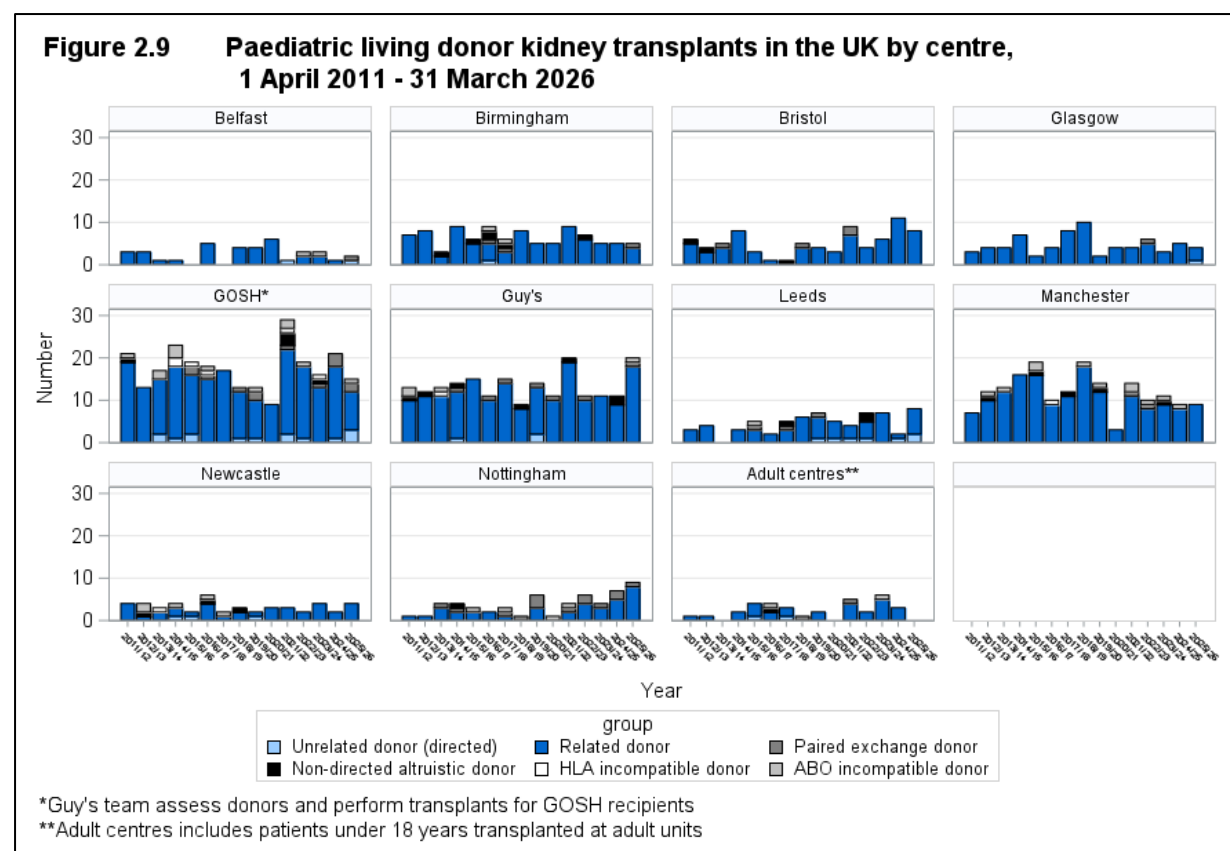


Figure 2.9 shows the number of paediatric living donor kidney transplants by donor type and centre between 1 April 2011 and 31 March 2026.



Demographic Characteristics

ADULT

The sex, ethnicity, age group, sensitisation (cRF), cRF by transplant type for HSP, blood group, dialysis status of donors and recipients of adult living donor kidney transplants and pre-emptive transplant rates are shown by centre in **Figures 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7** and **3.8** respectively. Living related/unrelated transplants are 'directed' transplants and paired donation transplants include end of chain to waiting list recipients. Note that all percentages quoted are based only on data where relevant information was available.

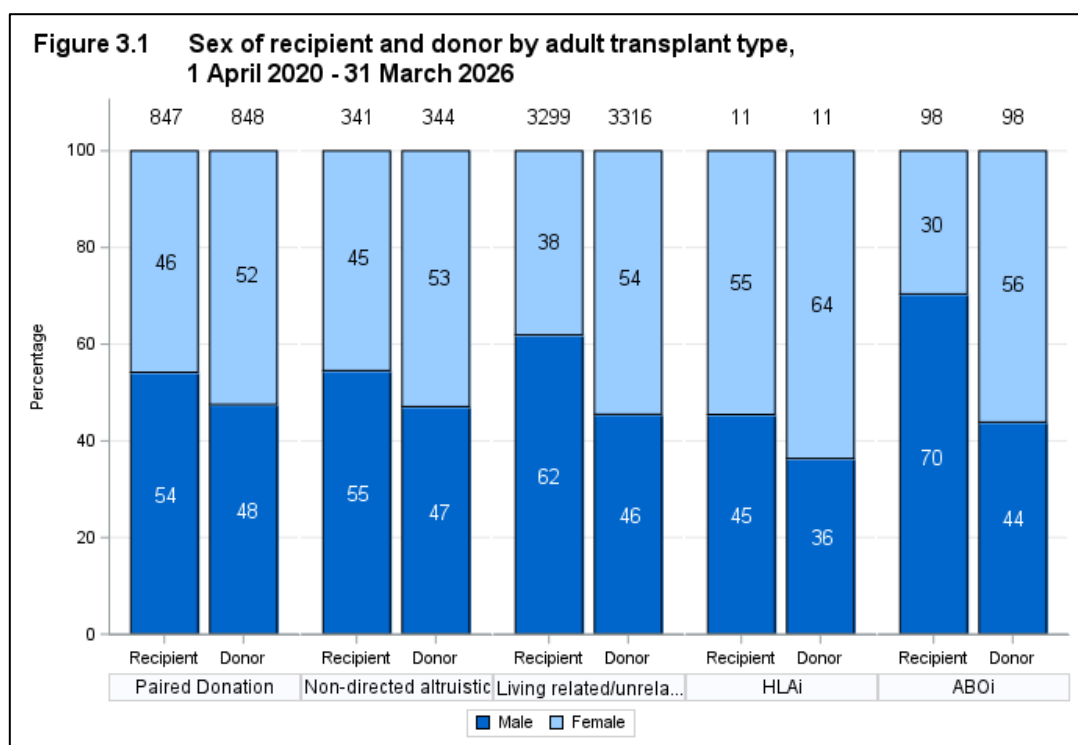


Figure 3.2 Ethnicity of recipient and donor by adult transplant type, 1 April 2020 - 31 March 2026

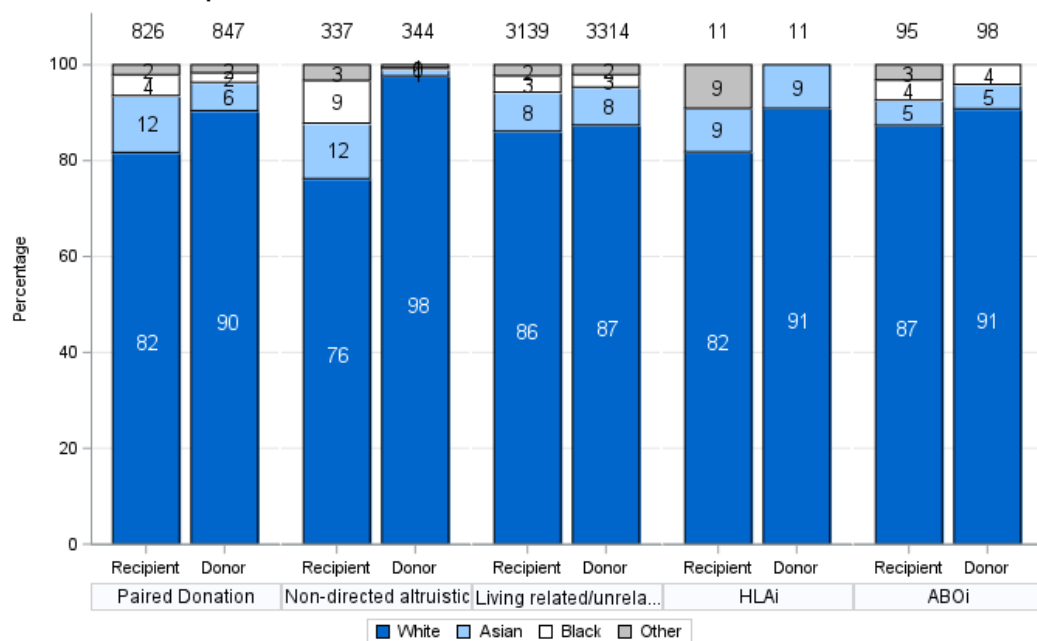


Figure 3.3 Age of recipient and donor by adult transplant type, 1 April 2020 - 31 March 2026

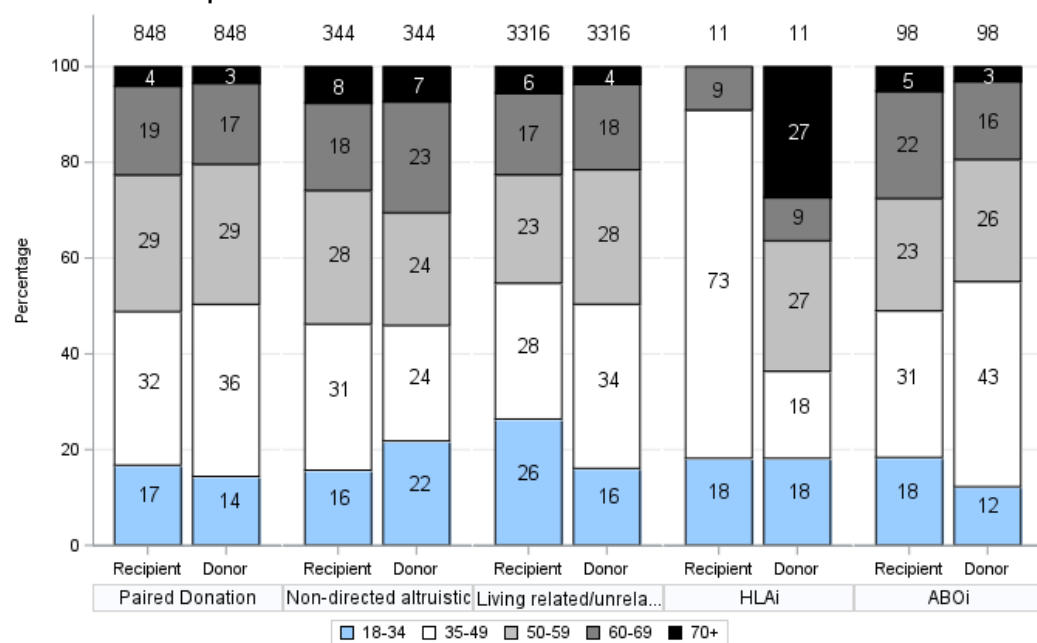


Figure 3.4 Recipient Calculated Reaction Frequency by adult transplant type
1 April 2020 - 31 March 2026

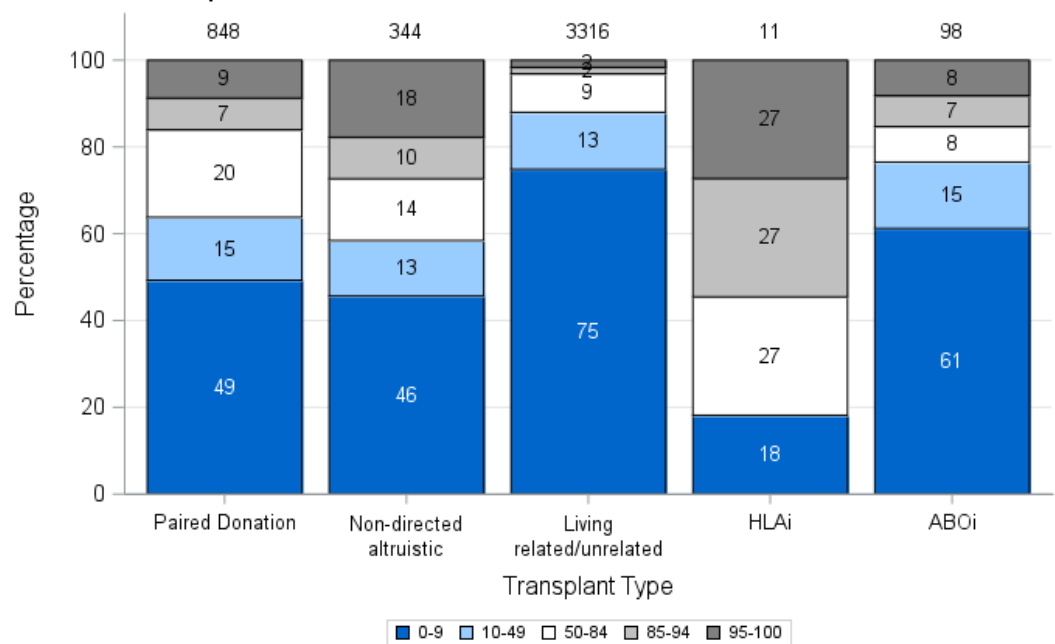


Figure 3.5 Adult HSP by transplant type and year of transplant, 1 April 2020 - 31 March 2026

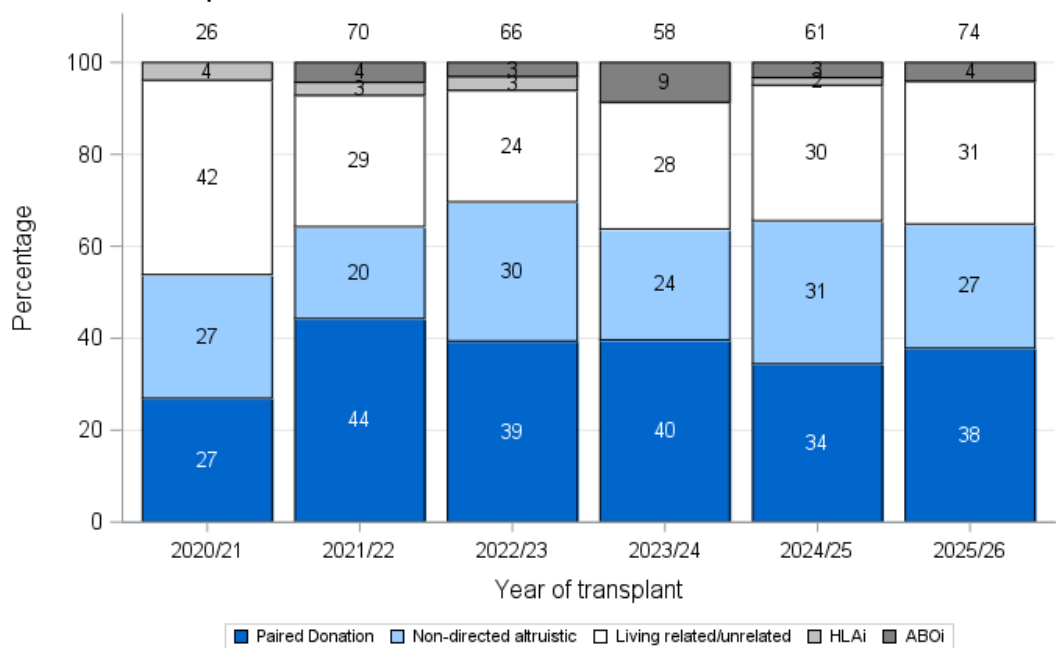


Figure 3.6 Recipient and donor blood group by adult transplant type, 1 April 2020 - 31 March 2026

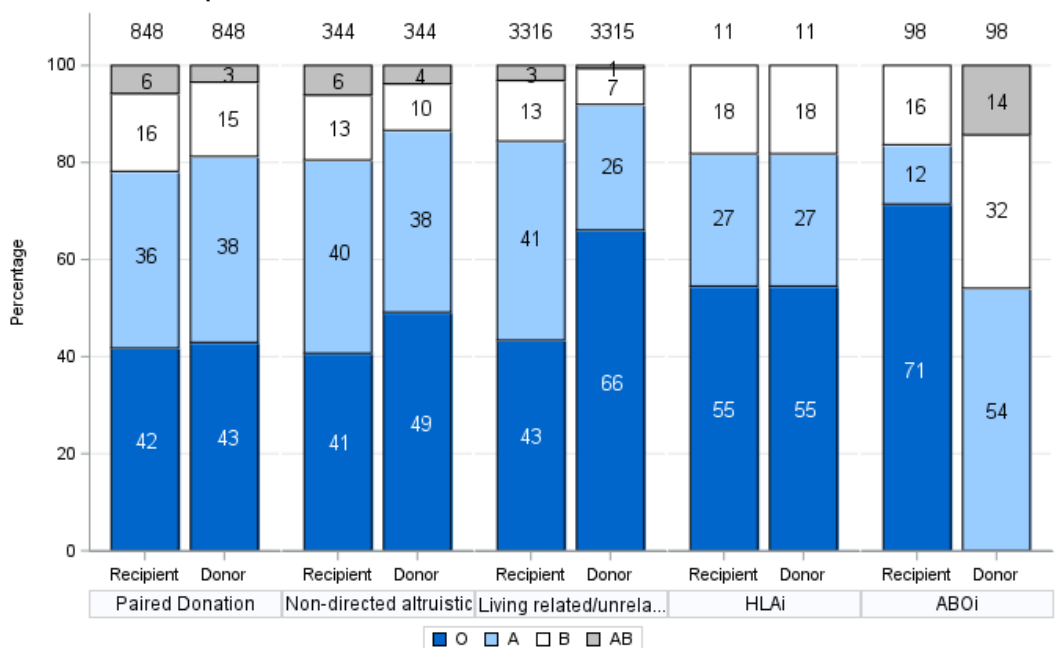


Figure 3.7 Dialysis status at transplant by adult transplant type, 1 April 2020 - 31 March 2026

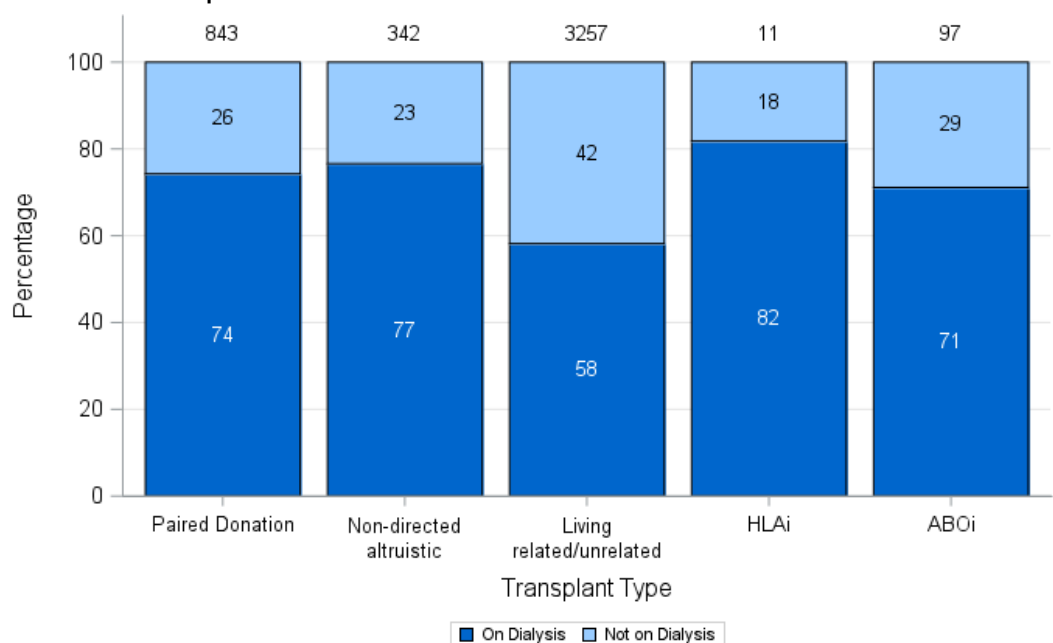
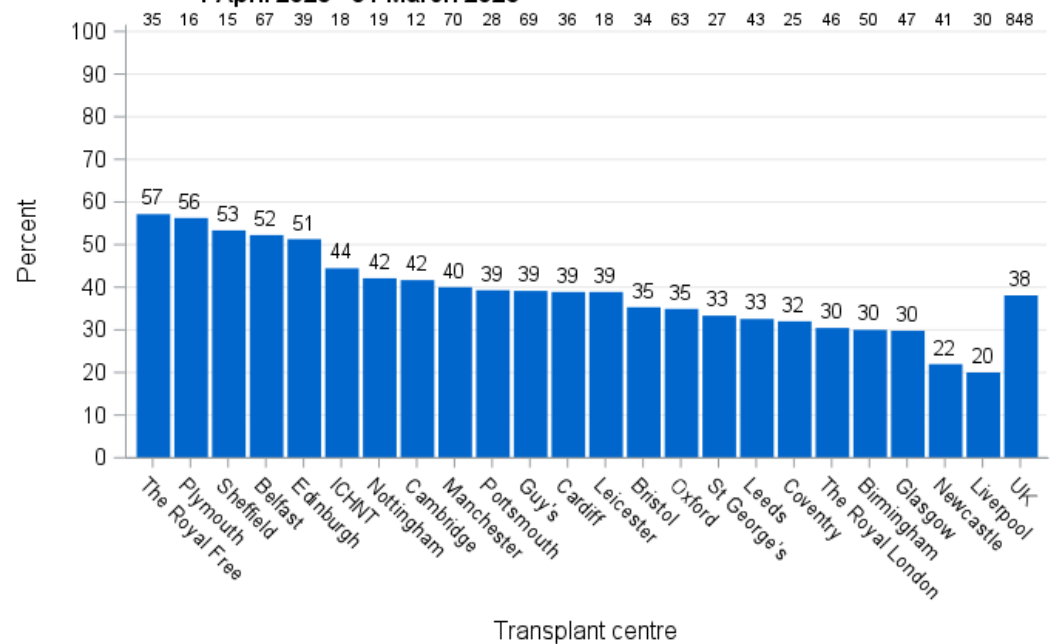


Figure 3.8 Adult living donor pre-emptive transplant rates by centre, 1 April 2025 - 31 March 2026



PAEDIATRIC

The sex, ethnicity, age group, sensitisation (cRF), cRF by transplant type for HSP, blood group and dialysis status of donors and recipients of paediatric living donor kidney transplants and pre-emptive transplant rates are shown by centre in **Figures 3.9, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15 and 3.16** respectively. Living related/unrelated transplants are 'directed' transplants and paired donation transplants include end of chain to waiting list recipients. Note that all percentages quoted are based only on data where relevant information was available. Percentages are omitted where there is a low number of recipients and donors.

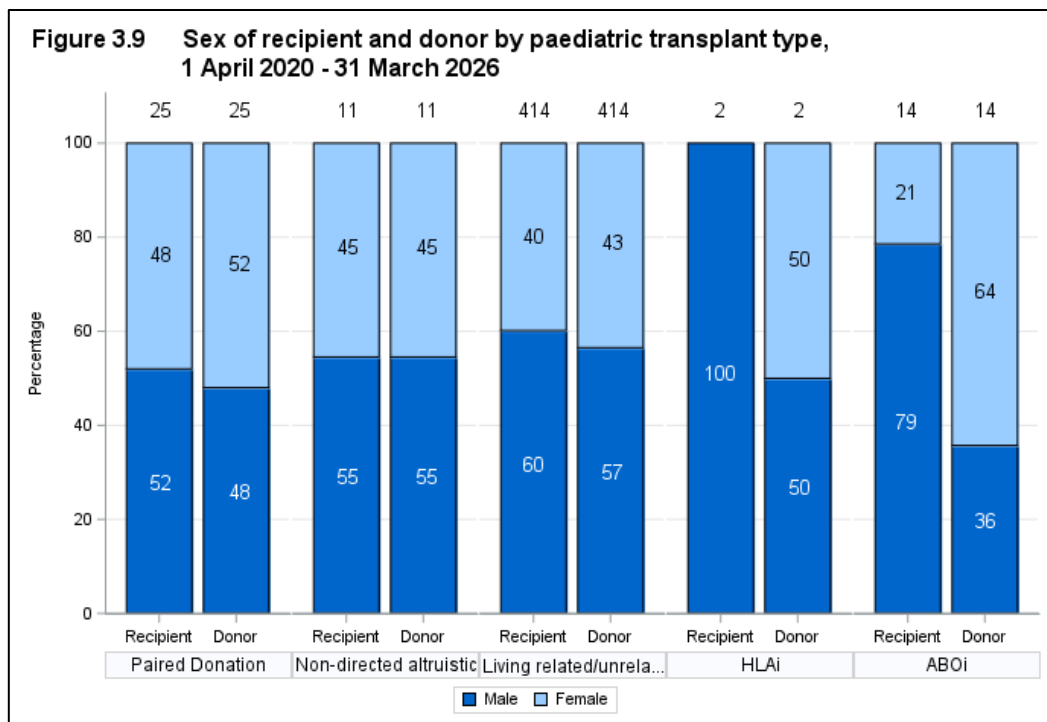


Figure 3.10 Ethnicity of recipient and donor by paediatric transplant type, 1 April 2020 - 31 March 2026

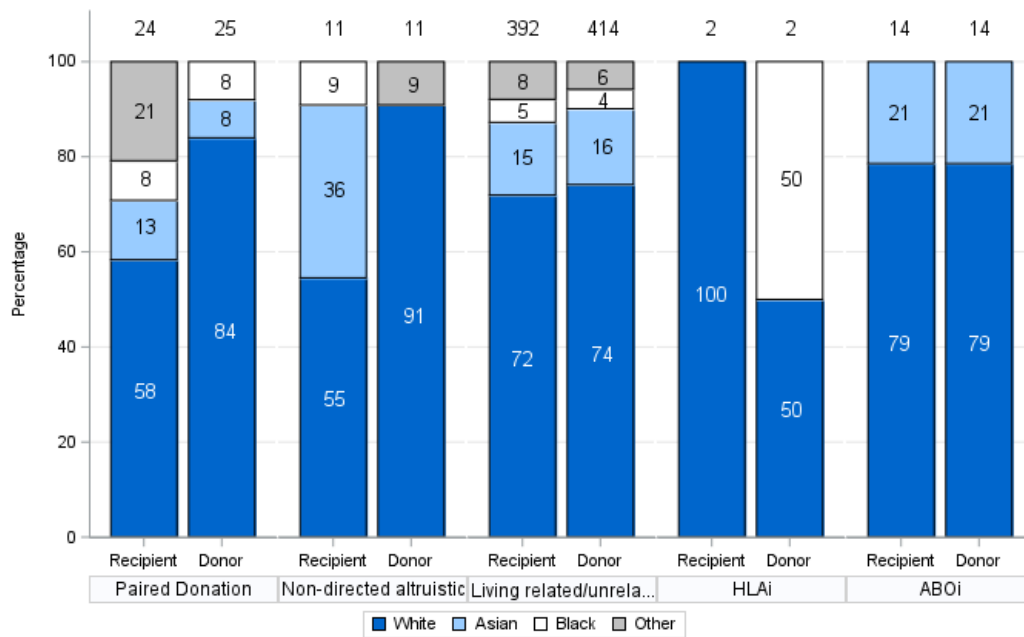
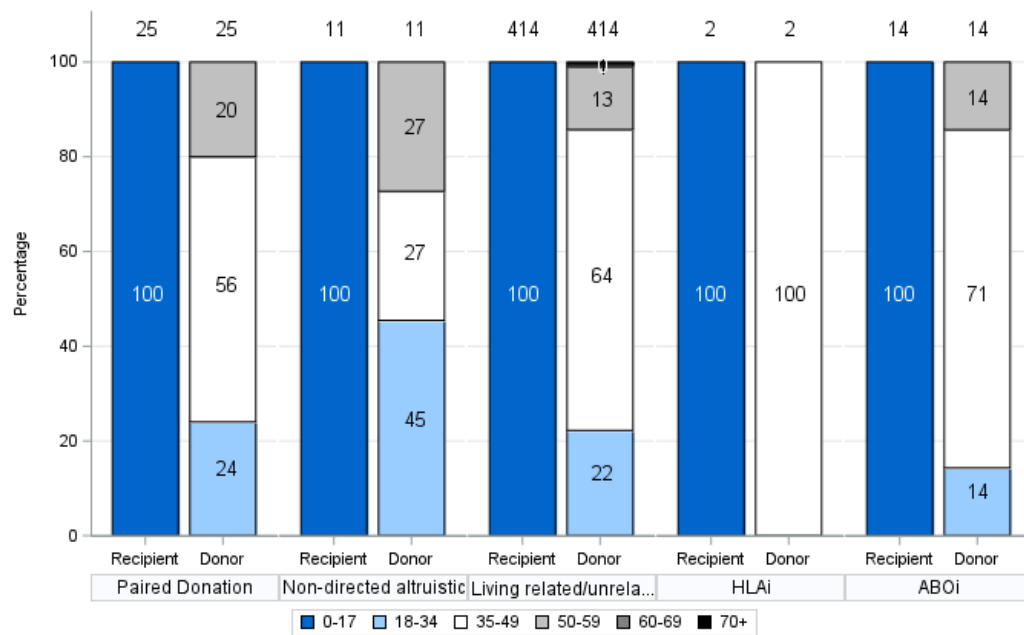
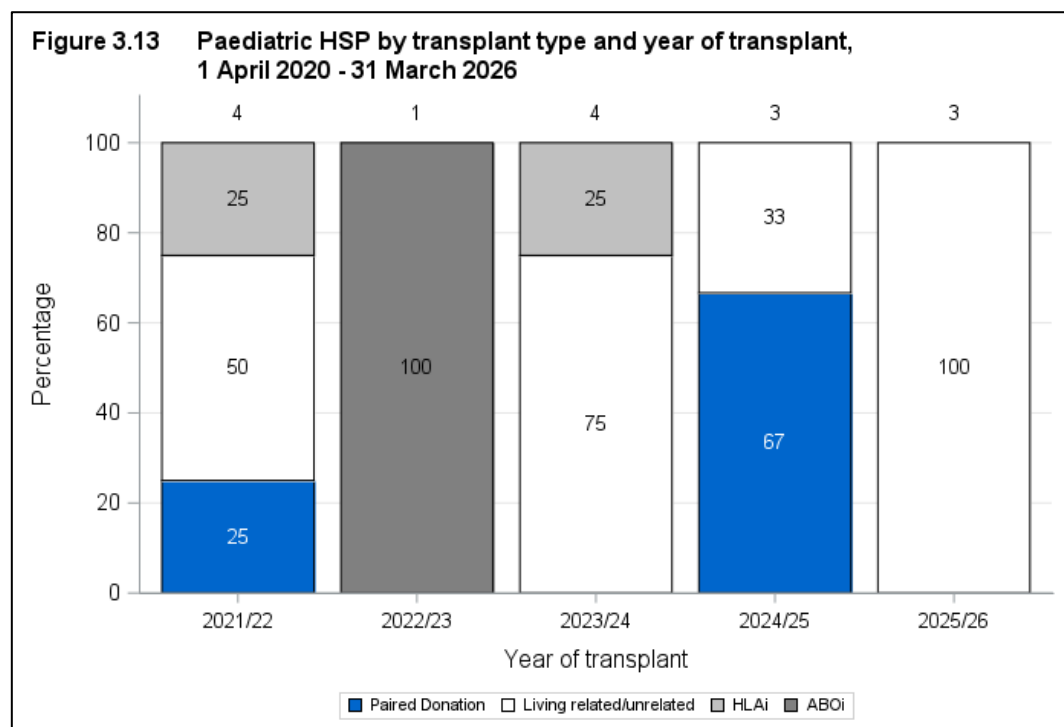
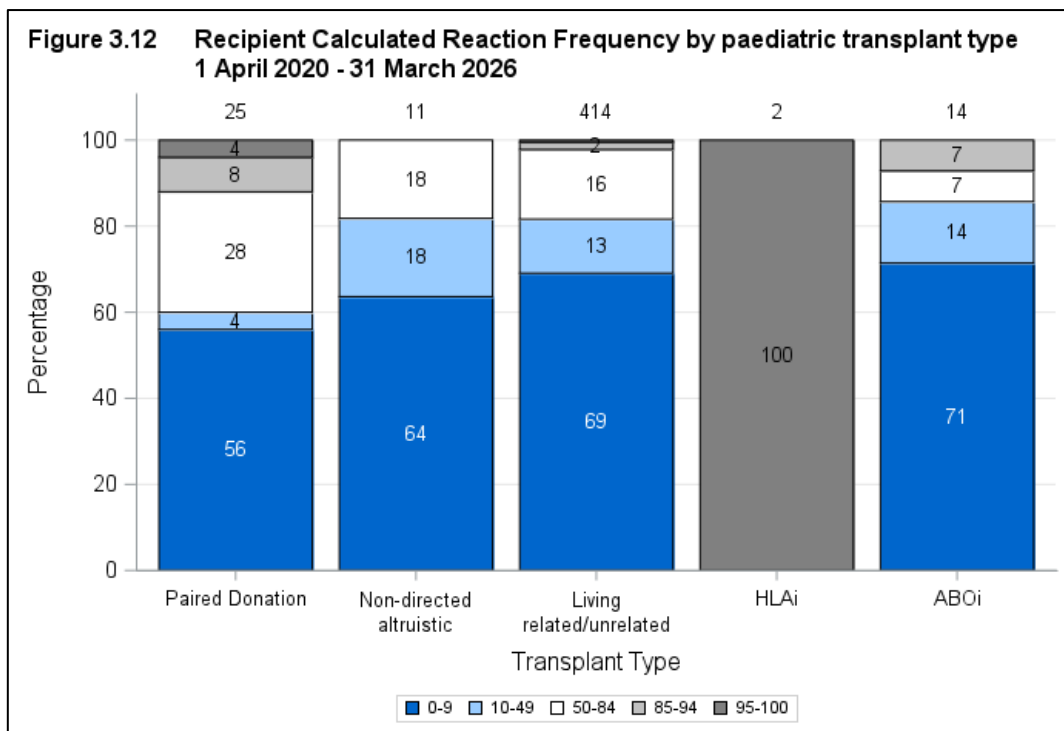


Figure 3.11 Age of recipient and donor by paediatric transplant type, 1 April 2020 - 31 March 2026





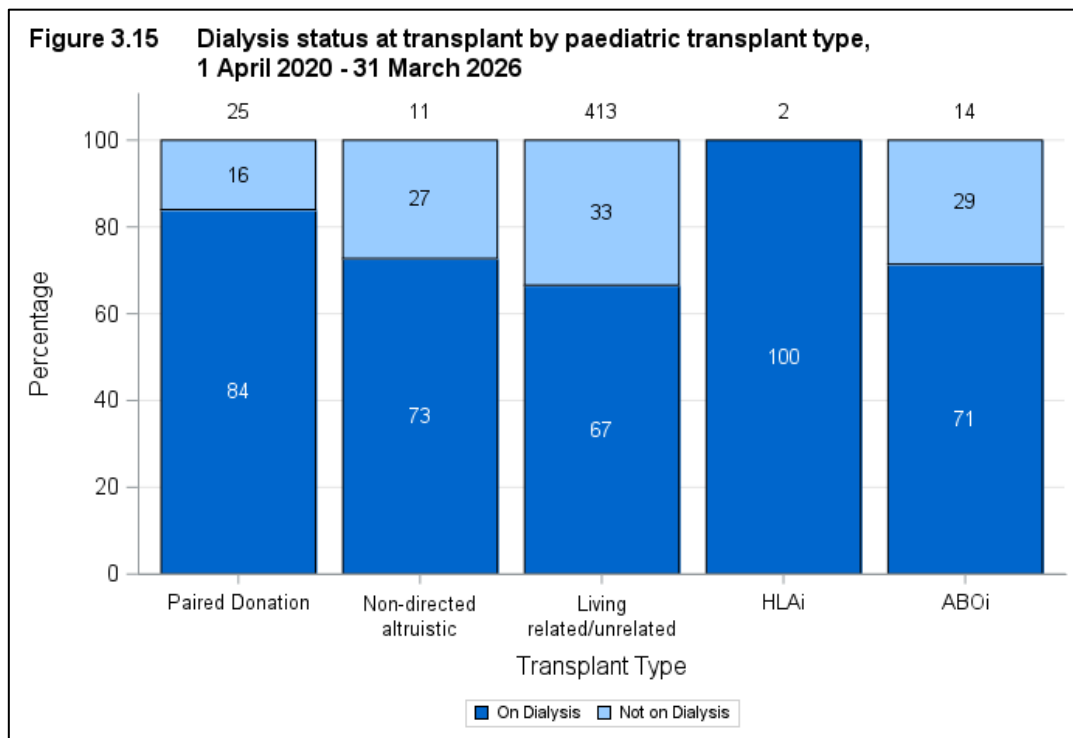
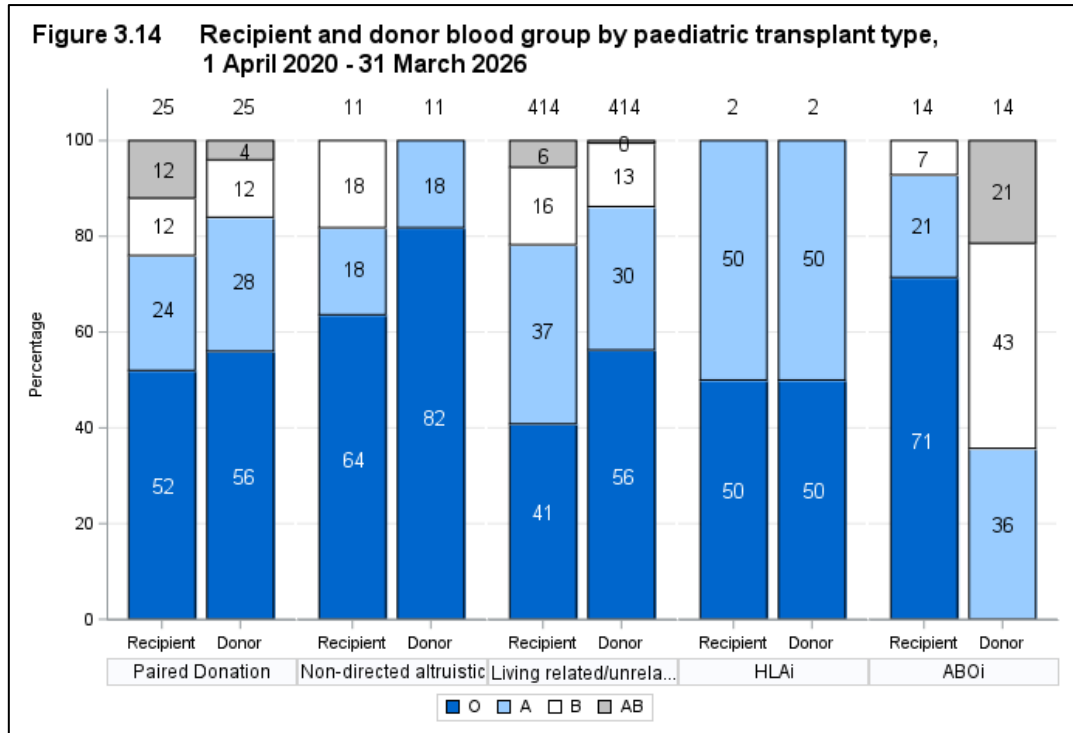
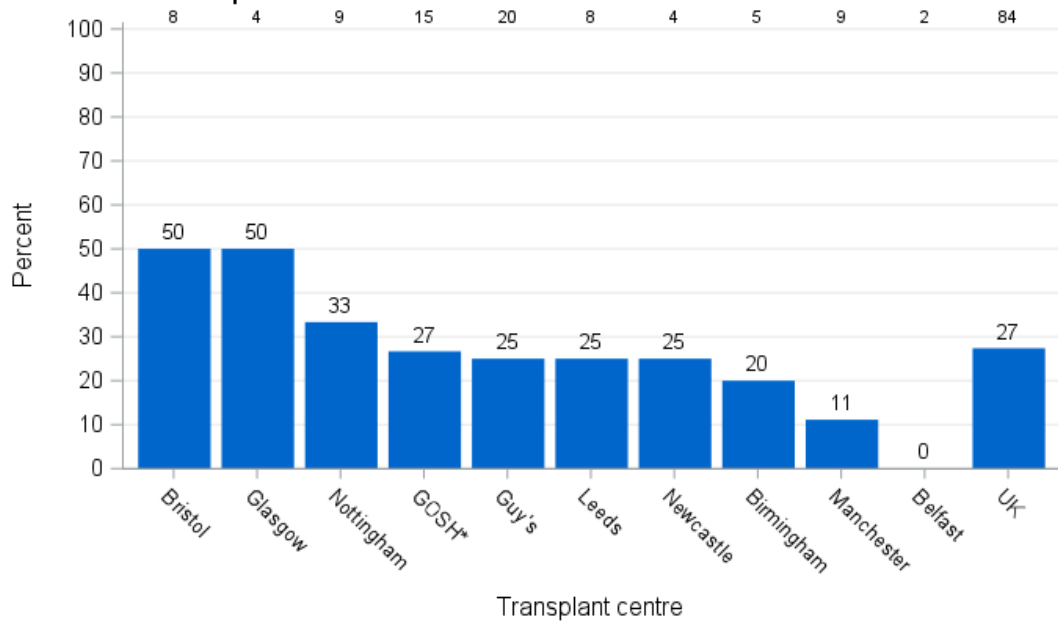


Figure 3.16 Paediatric living donor pre-emptive transplant rates by centre, 1 April 2025 - 31 March 2026



*Guy's team assess donors and perform transplants for GOSH recipients

UK Living Kidney Sharing Scheme

4.1 UKLKSS Matching Runs

4.1.1 Registrations: Matching Runs, 1 April 2020 – 31 March 2026

Figure 4.1 shows the number of recipients included in matching runs from 1 April 2020 to 31 March 2026. Overall, there were 1,720 recipients included in matching runs over this period. **Figure 4.2** shows the number of pairs included in each matching run, split by pair incompatibility.

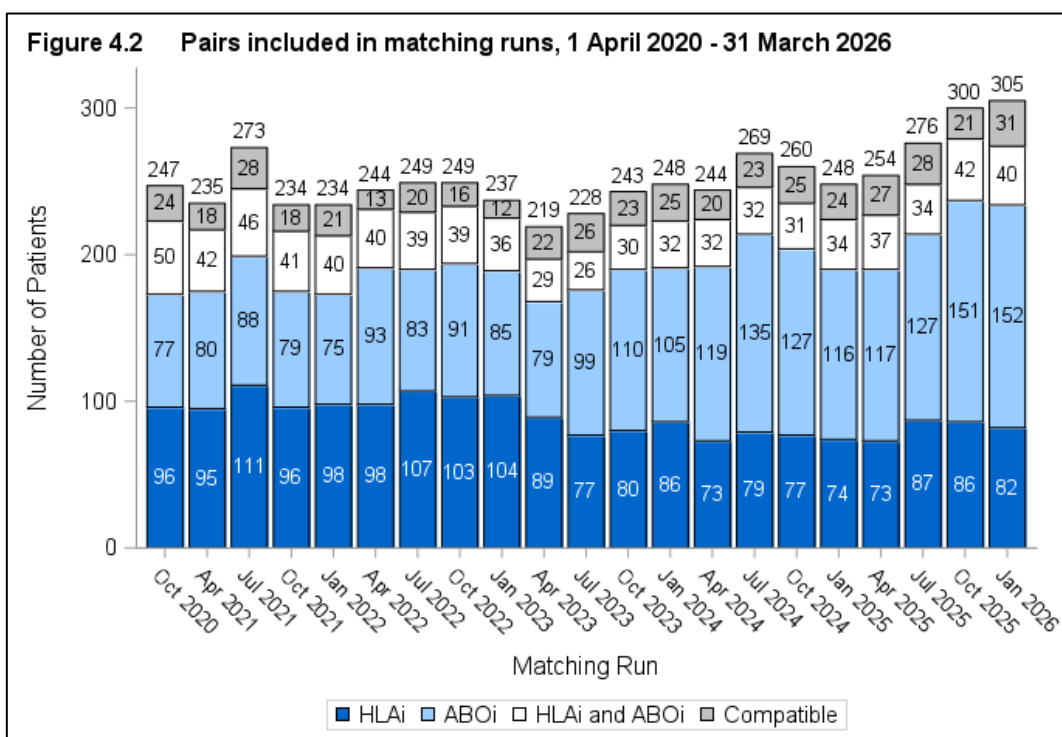
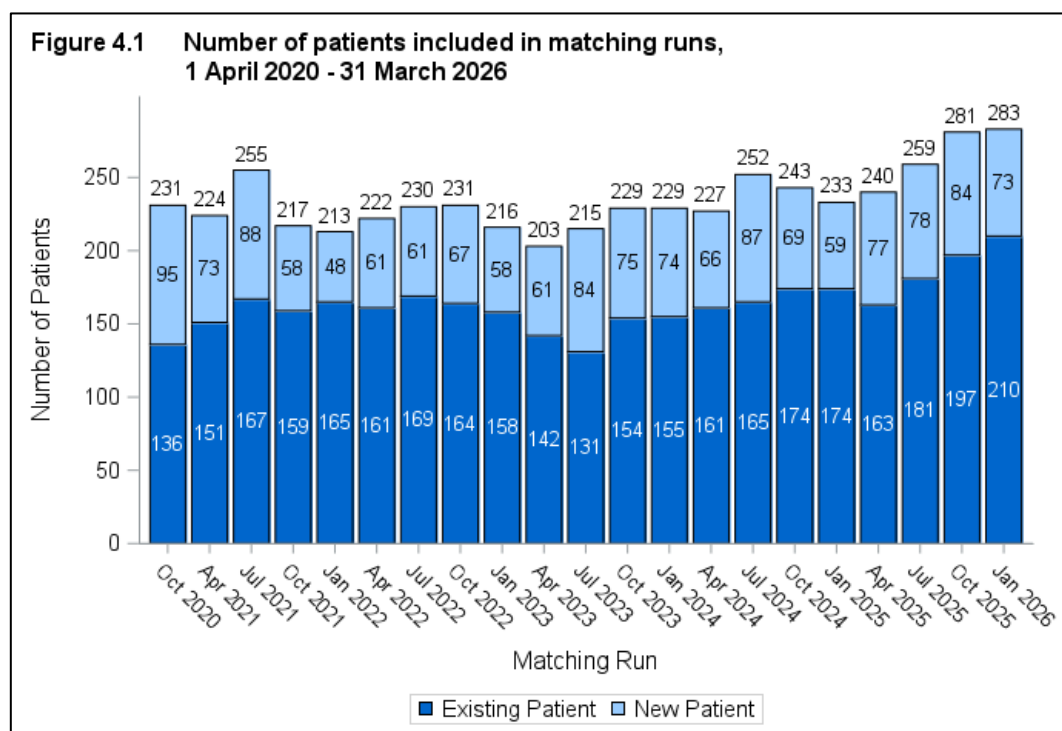


Figure 4.3 shows the number of pairs included in matching runs from 1 April 2020 to 31 March 2026 by centre. This is broken down further by the nature of the incompatibility between the pair. Most pairs registered over this period were ABOi incompatible (42%). This information is also shown in **Table 4.1**.

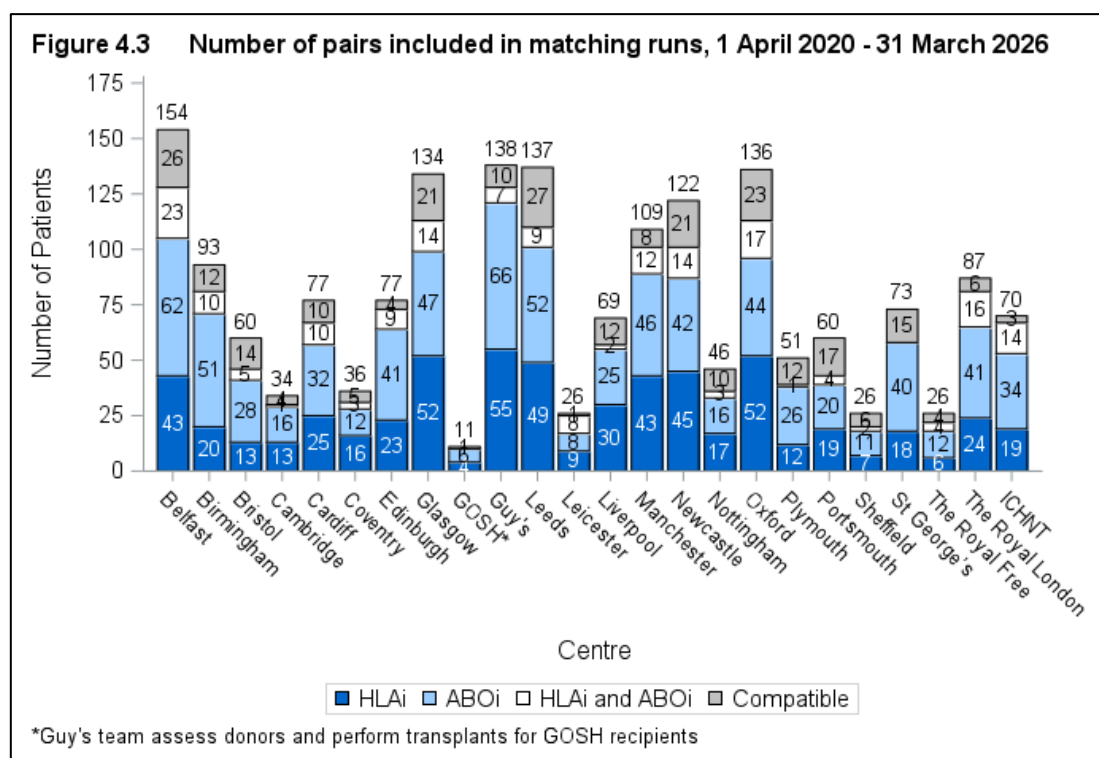


Table 4.1 Pairs included in matching runs by compatibility and centre, April 2020 - March 2026					
Centre	Number of pairs	HLAi	ABOi	HLAi and ABOi	Compatible
Belfast	154	43	62	23	26
Birmingham	93	20	51	10	12
Bristol	60	13	28	5	14
Cambridge	34	13	16	1	4
Cardiff	77	25	32	10	10
Coventry	36	16	12	3	5
Edinburgh	77	23	41	9	4
Glasgow	134	52	47	14	21
GOSH*	11	4	6	0	1
Guy's	138	55	66	7	10
Leeds	137	49	52	9	27
Leicester	26	9	8	8	1
Liverpool	69	30	25	2	12
Manchester	109	43	46	12	8
Newcastle	122	45	42	14	21
Nottingham	46	17	16	3	10
Oxford	136	52	44	17	23
Plymouth	51	12	26	1	12
Portsmouth	60	19	20	4	17
Sheffield	26	7	11	2	6
St George's	73	18	40	0	15
The Royal Free	26	6	12	4	4
The Royal London	87	24	41	16	6
ICHNT	70	19	34	14	3
UK	1852	614	778	188	272
*Guy's team assess donors and perform transplants for GOSH recipients					

Table 4.2 Recipients registered with different blood groups or unacceptable antigens, 1 April 2020 - 31 March 2026					
Year	Registered with different blood groups		Registered with unacceptable antigens		Total number of patients entered
	N	%	N	%	
20/21	0	0	6	6.1	99
21/22	9	3.2	7	2.5	283
22/23	5	2	0	0	252
23/24	9	3	14	4.7	298
24/25	5	1.7	14	4.9	286
25/26	2	0.6	15	4.7	317

4.1.2 Outcomes: Matching Runs, 1 April 2022 – 31 March 2026

Figure 4.4 shows the outcomes of recipients included in matching runs from 1 April 2022 to 31 March 2026, split by centre. Overall, 47% of recipients registered have had a transplant through UKLKSS matching runs.

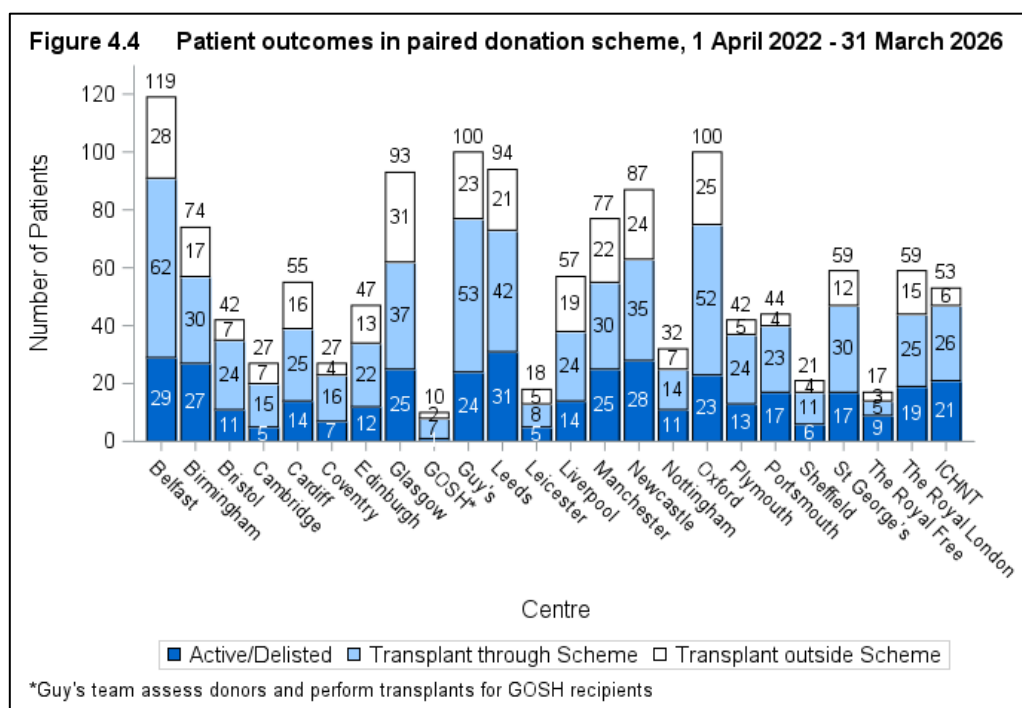
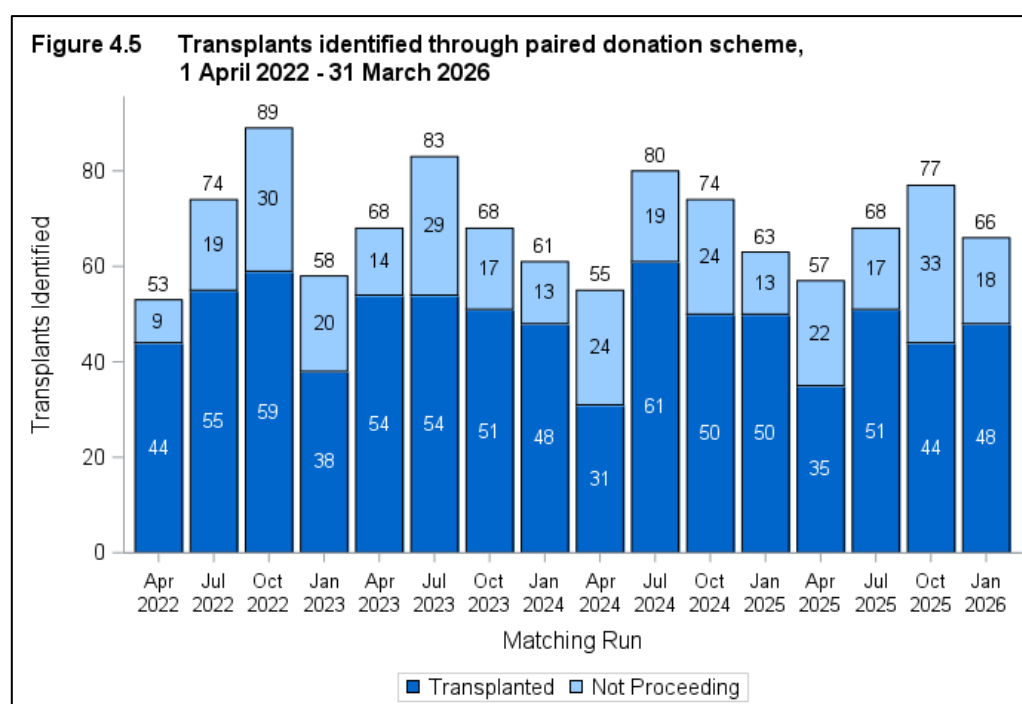


Figure 4.5 shows the transplants identified in each matching run from 1 April 2022 to 31 March 2026. The number of those that proceeded to transplant is also shown. Overall, 71% of transplants identified through UKLKSS matching runs have proceeded to transplant over this period, this includes end of chain to waiting list transplants.



Tables 4.3 and **4.4** show the number of transplants split by recipient calculated reaction frequency and recipient and donor blood group respectively.

Table 4.3 Transplants as a proportion of registered patients by calculated reaction frequency, 1 April 2022 - 31 March 2026			
Calculated Reaction Frequency	Patients Registered	Patients Transplanted	
		N	(%)
0-9%	558	295	(53)
10-84%	418	238	(57)
85-94%	106	61	(58)
95-99%	159	44	(28)
100%	107	2	(2)

Table 4.4 Transplants as a proportion of registered pairs by blood group, 1 April 2022 - 31 March 2026									
Donor Blood Group	Patient Blood Group (Patients Transplanted/Pairs Registered (%))								
	O			A			B		
									AB
O	154/	319	(48%)	90/	128	(70%)	29/	45	(67%)
A	121/	454	(27%)	66/	132	(50%)	49/	79	(50%)
B	44/	120	(37%)	41/	56	(73%)	13/	36	(50%)
AB	5/	25	(20%)	8/	21	(38%)	7/	20	(50%)

Figure 4.6 shows the number of recipients transplanted from matching runs between 1 April 2022 and 31 March 2026. This is split by centre and exchange type.

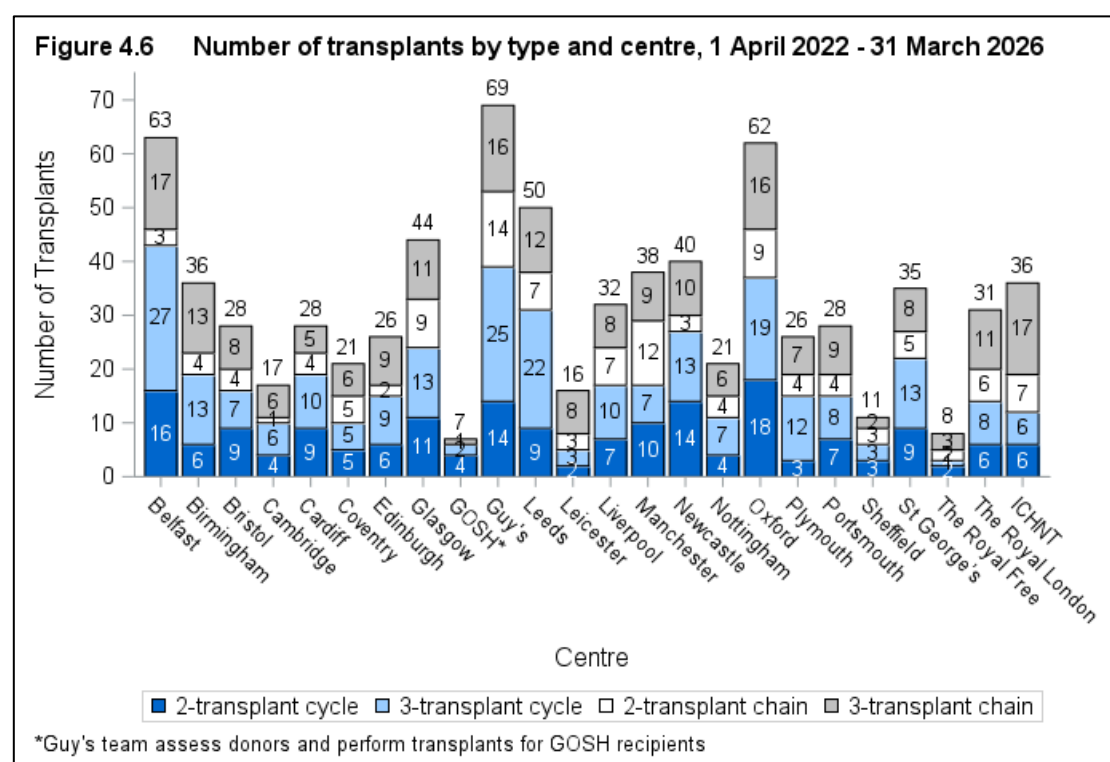


Figure 4.7 shows the recipients transplanted from matching runs between 1 April 2022 and 31 March 2026. This is split by centre and the incompatibility of the recipient with their registered donor. **Table 4.5** shows the number of transplants by exchange type and centre. **Table 4.6** shows the number of transplants by compatibility and centre. **Table 4.7** shows the average waiting time for kidney transplant via UKLKSS matching runs. Data is censored if the recipient received a transplant outside the scheme.

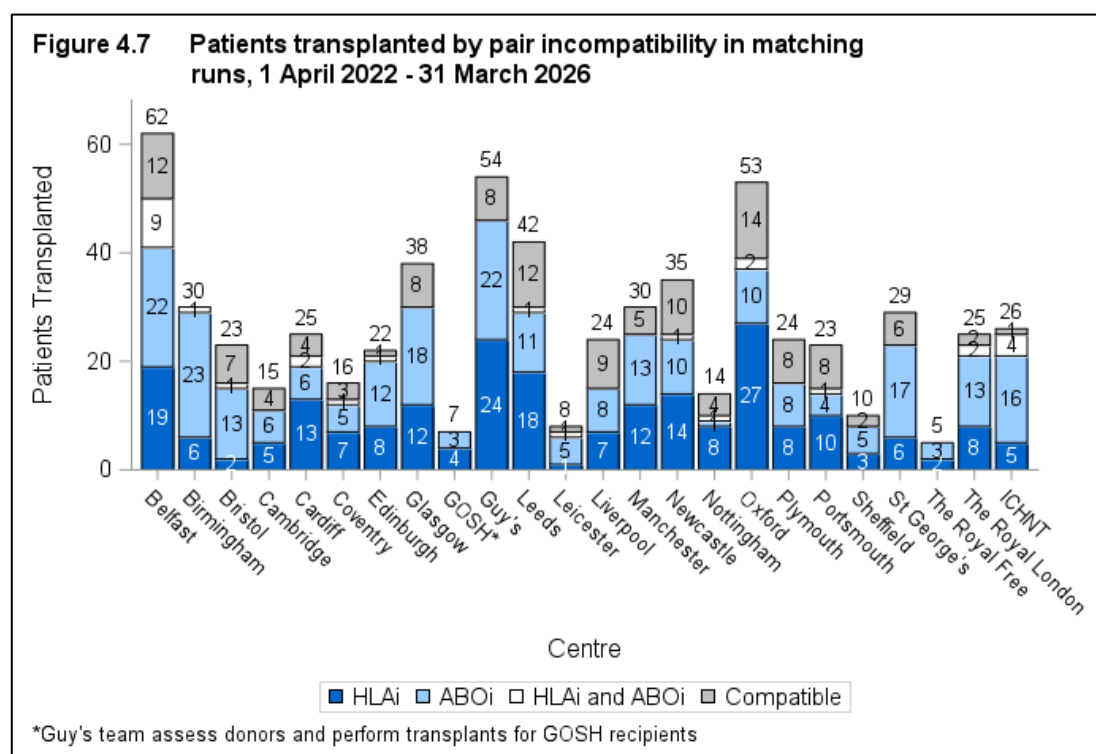


Table 4.5 Transplants by group type and centre, 1 April 2022 - 31 March 2026

Centre	Number of Transplants	2-transplant cycle	3-transplant cycle	2-transplant chain	3-transplant chain
Belfast	63	3	16	17	27
Birmingham	36	4	6	13	13
Bristol	28	4	9	8	7
Cambridge	17	1	4	6	6
Cardiff	28	4	9	5	10
Coventry	21	5	5	6	5
Edinburgh	26	2	6	9	9
Glasgow	44	9	11	11	13
GOSH*	7	0	4	1	2
Guy's	69	14	14	16	25
Leeds	50	7	9	12	22
Leicester	16	3	2	8	3
Liverpool	32	7	7	8	10
Manchester	38	12	10	9	7
Newcastle	40	3	14	10	13
Nottingham	21	4	4	6	7
Oxford	62	9	18	16	19
Plymouth	26	4	3	7	12
Portsmouth	28	4	7	9	8
Sheffield	11	3	3	2	3
St George's	35	5	9	8	13
The Royal Free	8	2	2	3	1
The Royal London	31	6	6	11	8
ICHNT	36	7	6	17	6
UK	773	122	184	218	249

*Guy's team assess donors and perform transplants for GOSH recipients

Table 4.6 Transplants by compatibility and centre, 1 April 2022 - 31 March 2026					
Centre	Number of Transplants	HLAi	ABOi	HLA and ABOi	Compatible
Belfast	63	2	12	0	49
Birmingham	36	2	0	0	34
Bristol	28	1	0	0	27
Cambridge	17	0	0	0	17
Cardiff	28	0	0	0	28
Coventry	21	4	0	0	17
Edinburgh	26	2	0	0	24
Glasgow	44	0	0	0	44
GOSH*	7	0	0	0	7
Guy's	69	0	0	0	69
Leeds	50	1	0	0	49
Leicester	16	0	0	0	16
Liverpool	32	1	0	0	31
Manchester	38	1	0	0	37
Newcastle	40	0	1	0	39
Nottingham	21	0	0	0	21
Oxford	62	1	0	1	60
Plymouth	26	0	0	0	26
Portsmouth	28	0	0	0	28
Sheffield	11	0	0	0	11
St George's	35	0	0	0	35
The Royal Free	8	0	0	0	8
The Royal London	31	0	0	0	31
ICHNT	36	1	0	0	35
UK	773	16	13	1	743
*Guy's team assess donors and perform transplants for GOSH recipients					

Table 4.7 Median waiting time from first matching run to kidney transplant via the UKLKSS in the UK, for patients entered into their first matching run 1 April 2016 - 31 March 2022			
Pair Incompatibility	Number of patients entered	Waiting time (days)	
		Median	95% Confidence interval
HLAi	551	274	198 - 350
ABOi	549	343	279 - 407
All Pairs	1512	303	268 - 338

4.2 Non-directed Altruistic Donation

4.2.1 Transplants, 1 April 2017 – 31 March 2026

Figure 4.8 shows the number of non-directed altruistic donor kidney transplants from 1 April 2017 to 31 March 2026. This is split by whether the donation was to the deceased donor waiting list or the donation initiated a transplant chain.

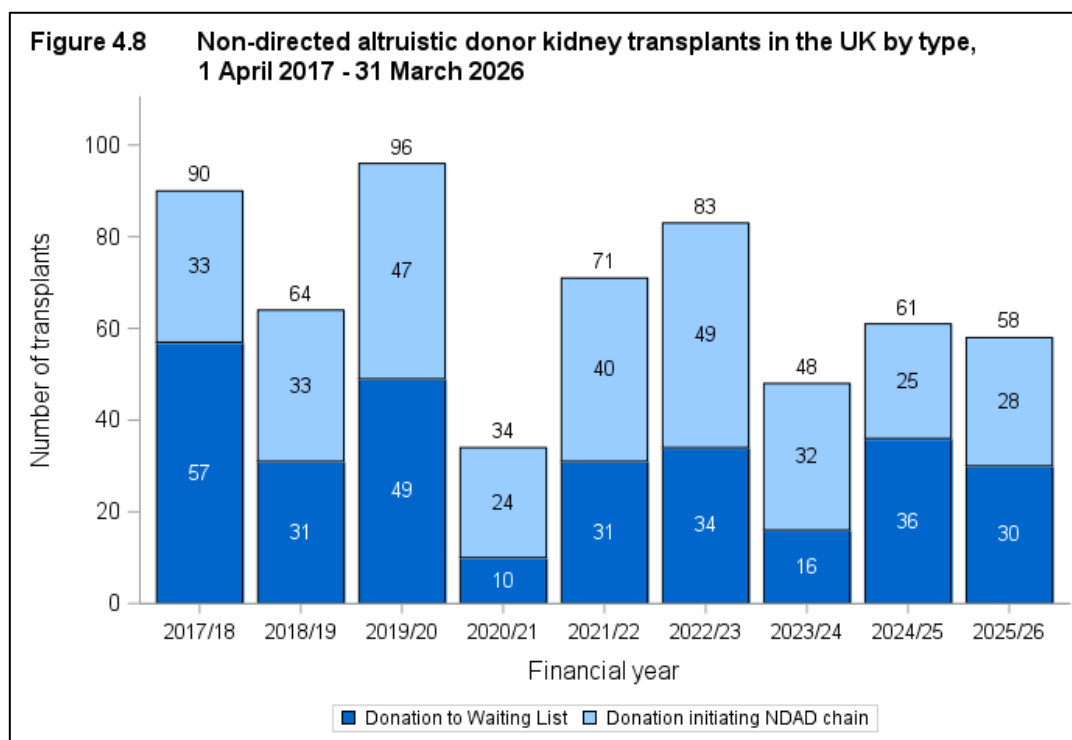
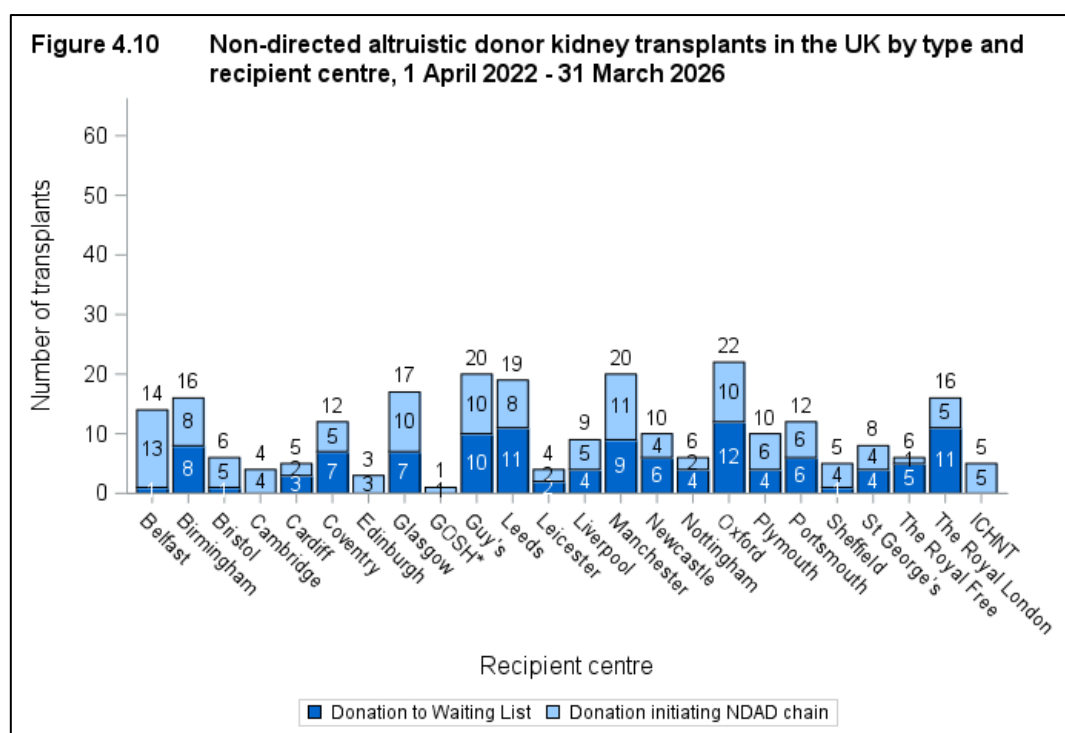
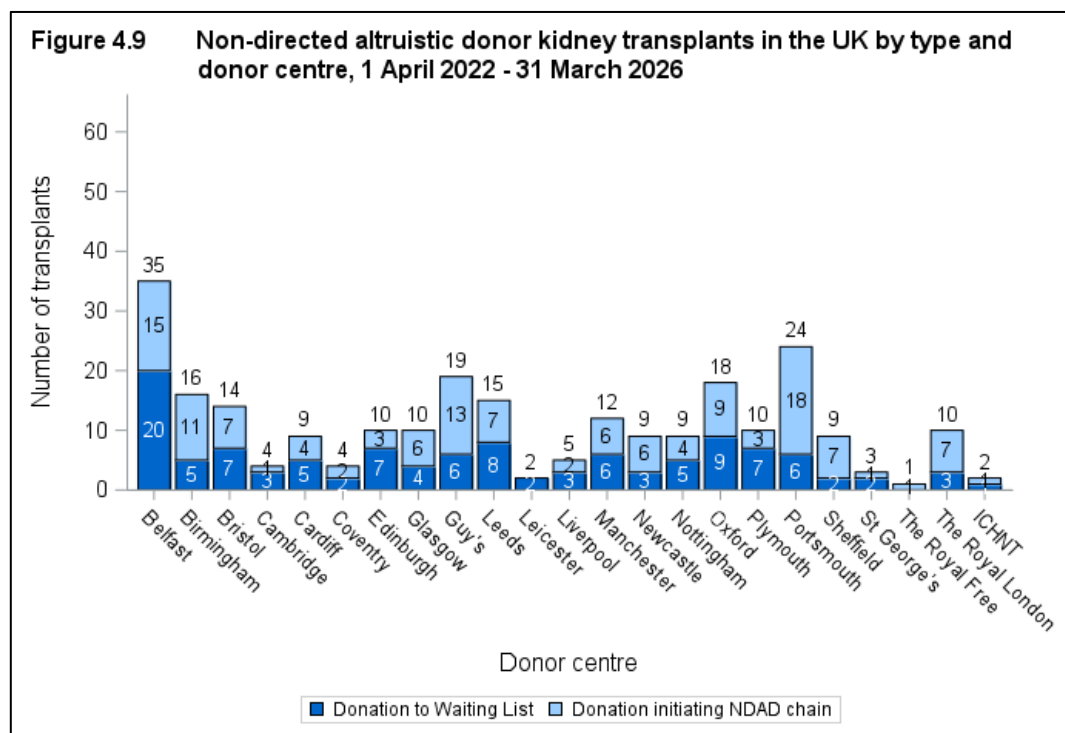


Table 4.8 shows the number of additional transplants performed through non-directed altruistic donor kidney transplant chains from 1 April 2017 to 31 March 2026.

Table 4.8 Additional transplants occurred from non-directed altruistic donor kidney transplant in the UK, April 2017 - March 2026				
Financial Year	Donation to Waiting List Transplants	Donation initiating NDAD chain	Additional transplants through NDAD chains	Number of Transplants
2017/18	57	33	49	139
2018/19	31	33	50	114
2019/20	49	47	76	172
2020/21	10	24	30	64
2021/22	31	40	67	138
2022/23	34	49	70	153
2023/24	16	32	54	102
2024/25	36	25	41	102
2025/26	30	28	46	104
Total	294	311	483	1088

Figure 4.9 shows the number of non-directed altruistic donor kidney transplants from 1 April 2022 to 31 March 2026 by donor centre. **Figure 4.10** shows the number of non-directed altruistic donor kidney transplants from 1 April 2022 to 31 March 2026 by recipient centre.



4.2.2 Time to donation, 1 April 2022 – 31 March 2026

Figure 4.11 shows the median time in months from notification to donation from 1 April 2022 to 31 March 2026, by centre. This data is shown further in **Table 4.9**. The boxplot shows the minimum, lower quartile, median, upper quartile and maximum values. The boxplots are used to show the variation in the data and indicate any outlying values, which are shown by the circles on the plot. The box itself shows the interquartile range and the line inside the box indicates the median value.

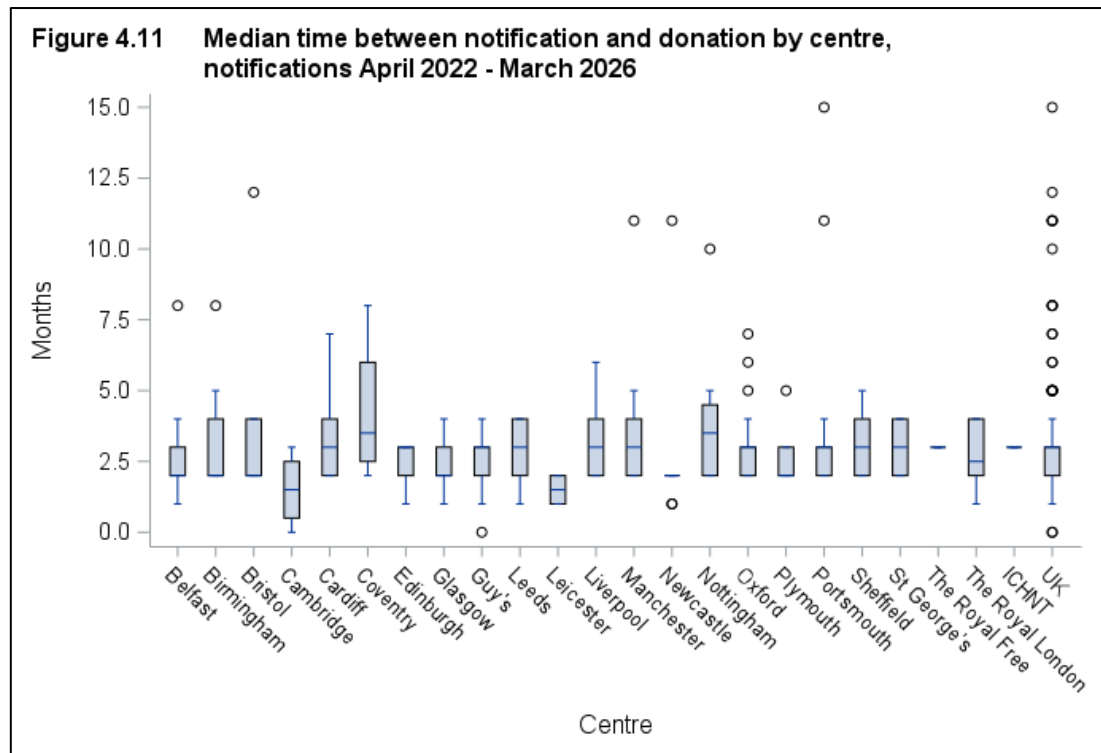


Table 4.9 Median time between notification and donation by centre, donations April 2022 - March 2026				
Centre	Number of donors	Median	Lower quartile	Upper quartile
Belfast	33	2	2	3
Birmingham	15	2	2	4
Bristol	14	2	2	4
Cambridge	4	2	1	3
Cardiff	9	3	2	4
Coventry	4	3	2	6
Edinburgh	10	3	2	3
Glasgow	10	2	2	3
Guy's	17	3	2	3
Leeds	15	3	2	4
Leicester	2	1	1	2
Liverpool	5	3	2	4
Manchester	11	3	2	4
Newcastle	9	2	2	2
Nottingham	8	4	2	4
Oxford	18	3	2	3
Plymouth	9	2	2	3
Portsmouth	22	3	2	3
Sheffield	9	3	2	4
St George's	3	3	2	4
The Royal Free	1	3	3	3
The Royal London	10	2	2	4
ICHNT	2	3	3	3
UK	240	3	2	3

Antibody Incompatible Transplants

This section includes living donor antibody incompatible kidney only transplants.

Antibody Incompatible transplant data is collected on the Antibody Incompatible Transplant Details form. **Figure 5.1** and **Table 5.1** show the form return rates by centre and include data on forms relating to antibody incompatible transplants from direct living donation and via the UKLKSS. The remainder of the section contains data on direct transplants only.

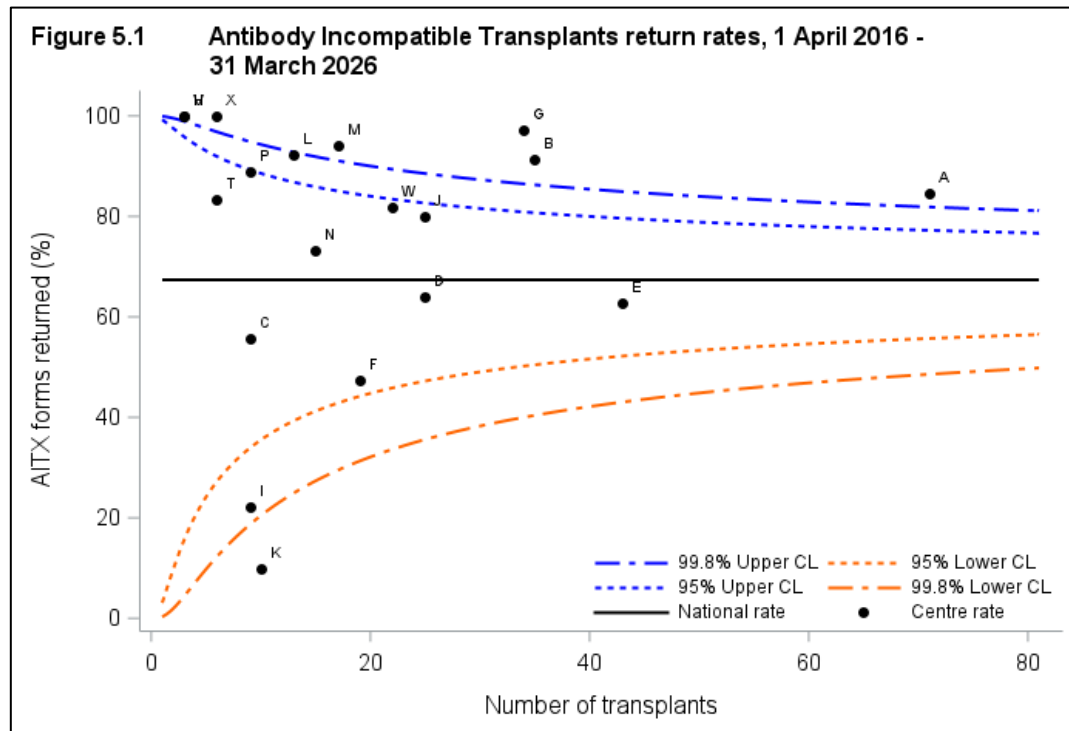


Table 5.1 Antibody incompatible transplant form return rates, 1 April 2016 – 31 March 2026					
Transplant Centre	Code	Number of transplants	AITX forms returned		
			N	%	
Belfast	A	71	60	85	
Birmingham	B	35	32	91	
Bristol	C	9	5	56	
Cambridge	D	25	16	64	
Cardiff	E	43	27	63	
Coventry	F	19	9	47	
Edinburgh	G	34	33	97	
Glasgow	H	3	3	100	
GOSH*	I	9	2	22	
Guy's	J	25	20	80	
Leeds	K	10	1	10	
Leicester	L	13	12	92	
Liverpool	M	17	16	94	
Manchester	N	15	11	73	
Newcastle	O	23	0	0	
Nottingham	P	9	8	89	
Oxford	Q	29	0	0	
Plymouth	R	0	-	-	
Portsmouth	S	0	-	-	
Sheffield	T	6	5	83	
St George's	U	0	-	-	
The Royal Free	V	3	3	100	
The Royal London	W	22	18	82	
ICHNT	X	6	6	100	
UK		426	287	67	
*Guy's team assess donors and perform transplants for GOSH recipients					

ADULT

Figures 5.2 and 5.3 show the number of living donor antibody incompatible kidney transplants by financial year and centre respectively.

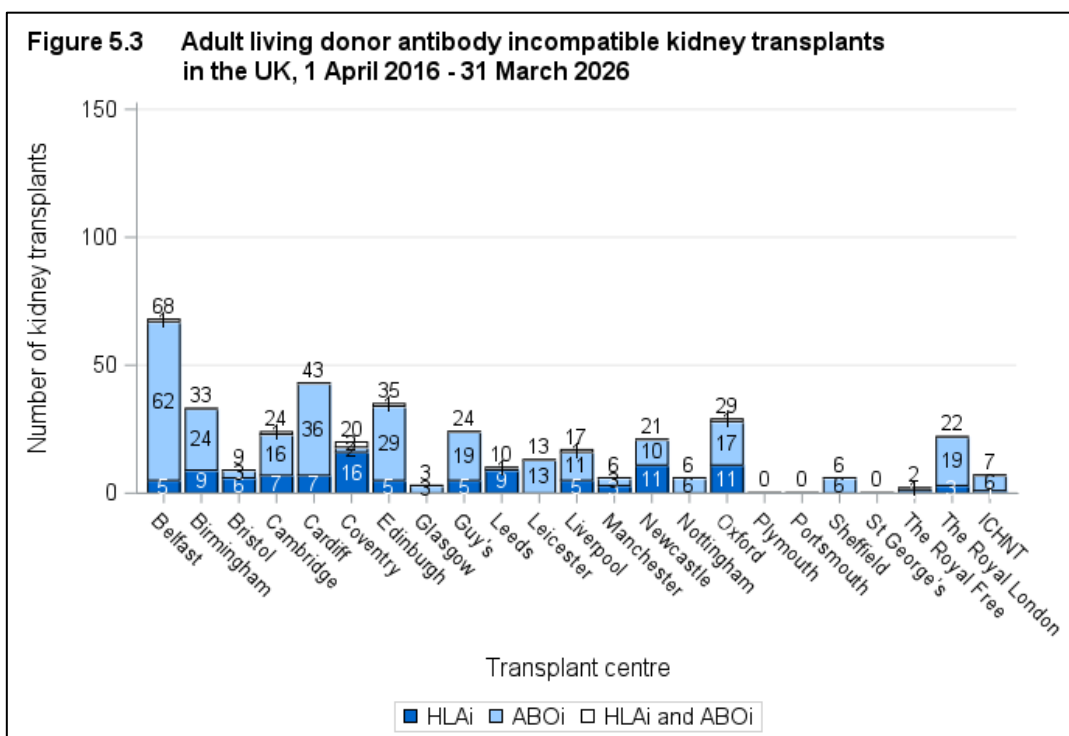
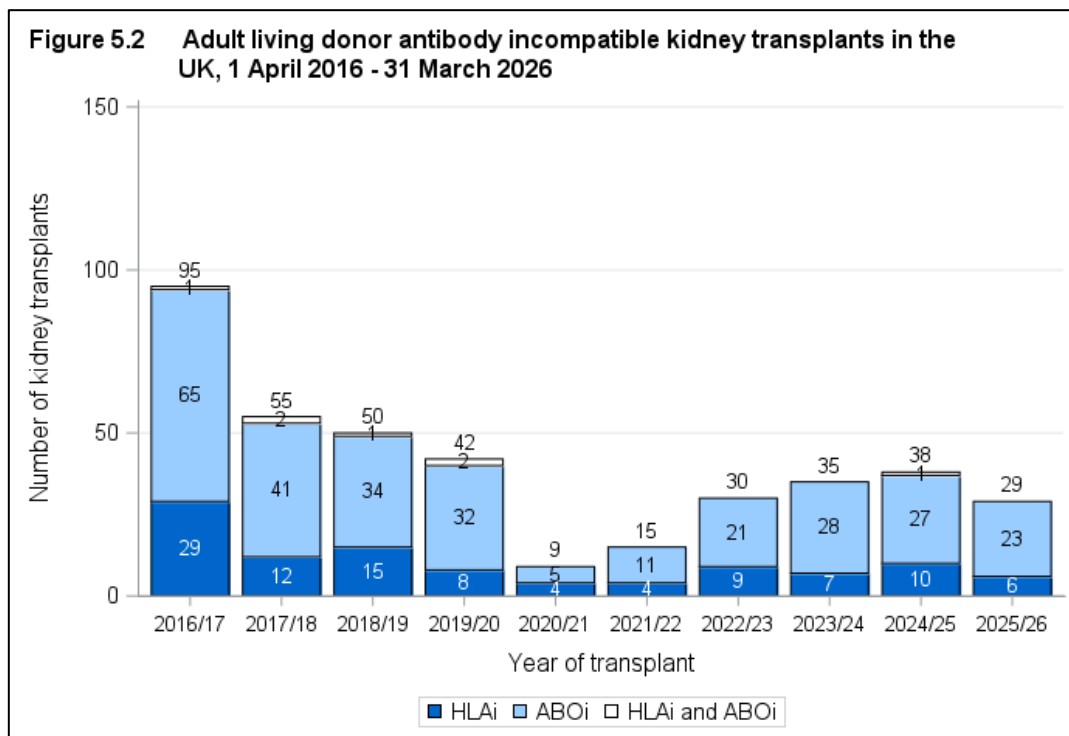


Table 5.2 shows the donor and recipient blood group for all ABOi transplants.

Table 5.2 Donor and recipient blood group for all adult ABOi transplants, 1 April 2016 - 31 March 2026						
Recipient blood group	Donor blood group					
	A		B		AB	
	N	(%)	N	(%)	N	(%)
A	1	(0.3)	21	(7.1)	13	(4.4)
B	33	(11.2)	-		17	(5.8)
O	141	(48.0)	62	(21.1)	4	(1.4)

Table 5.3 shows the donor and recipient ABO by recipient CRF at transplant.

Table 5.3 Donor and recipient ABO by recipient CRF at transplant, 1 April 2016 - 31 March 2026								
Donor-Recipient ABO	Recipient CRF at transplant							
	0-9		10-84		85-94		95-100	
	N	(%)	N	(%)	N	(%)	N	(%)
A-A	2	(0.5)	10	(2.5)	10	(2.5)	15	(3.8)
A-AB	-		2	(0.5)	-		1	(0.3)
A-B	23	(5.8)	4	(1.0)	4	(1.0)	2	(0.5)
A-O	92	(23.1)	36	(9.0)	7	(1.8)	7	(1.8)
AB-A	9	(2.3)	2	(0.5)	-		2	(0.5)
AB-AB	1	(0.3)	-		-		1	(0.3)
AB-B	14	(3.5)	2	(0.5)	-		1	(0.3)
AB-O	2	(0.5)	1	(0.3)	1	(0.3)	-	
B-A	12	(3.0)	6	(1.5)	2	(0.5)	1	(0.3)
B-B	3	(0.8)	3	(0.8)	2	(0.5)	1	(0.3)
B-O	36	(9.0)	17	(4.3)	4	(1.0)	5	(1.3)
O-A	4	(1.0)	-		1	(0.3)	4	(1.0)
O-AB	-		1	(0.3)	-		-	
O-B	-		-		1	(0.3)	1	(0.3)
O-O	11	(2.8)	14	(3.5)	6	(1.5)	12	(3.0)

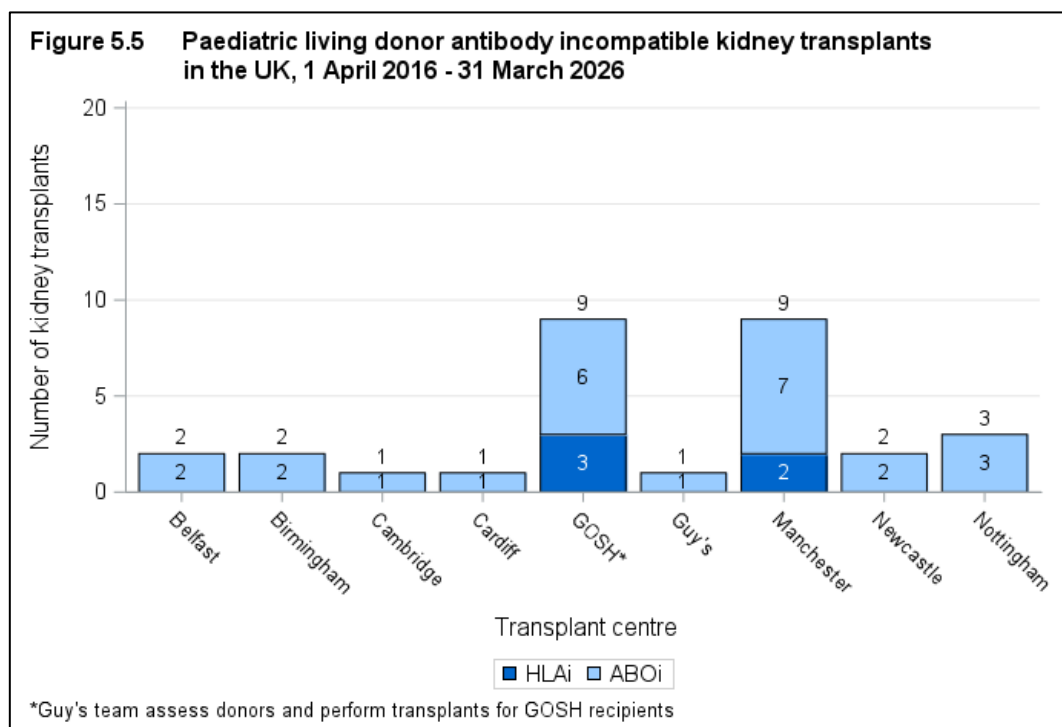
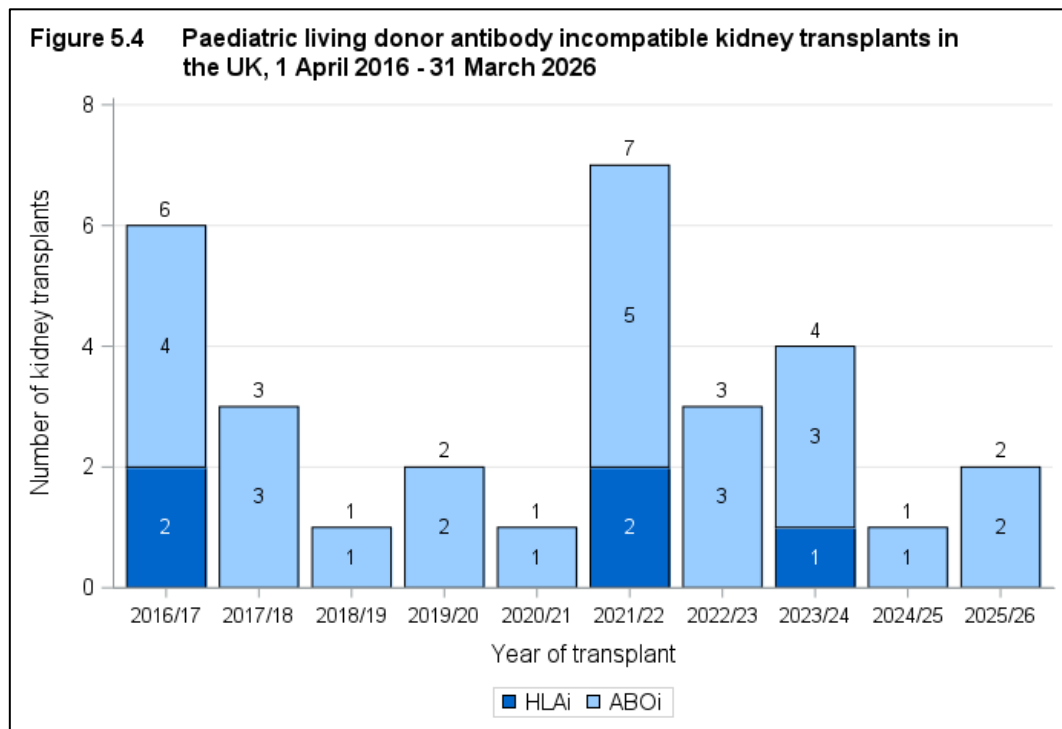
Table 5.4 shows the pre and at transplant level group for all HLAi transplants. Data are only presented for cases where an antibody incompatible form has been completed and returned. **Table 5.5** shows the calculated reaction frequency by incompatibility type.

Table 5.4 Pre and at transplant antibody level group for all adult HLAi transplants, 1 April 2016 - 31 March 2026							
Pre treatment antibody level group	At Transplant antibody level group						
	CDC pos, Flow pos, DSA SPA pos N (%)	CDC neg, Flow pos, DSA SPA pos N (%)	CDC neg, Flow neg, DSA SPA pos N (%)	CDC neg, Flow neg, DSA SPA neg N (%)	CDC NT, Flow pos, DSA SPA pos N (%)	Unknown N (%)	
CDC NT, Flow pos, DSA SPA pos	-	-	1 (1.9)	-	6 (11.1)	1	(1.9)
CDC neg, Flow neg, DSA SPA pos	-	-	16 (29.6)	1 (1.9)	-	1	(1.9)
CDC neg, Flow pos, DSA SPA pos	-	9 (16.7)	1 (1.9)	4 (7.4)	-	1	(1.9)
Unknown	-	-	-	2 (3.7)	-	11	(20.4)

Table 5.5 At transplant calculated reaction frequency by incompatibility type, 1 April 2016 - 31 March 2026						
Calculated Reaction Frequency	ABOi		HLAi		HLAi and ABOi	
	N	%	N	%	N	%
0-9	188	(65.5)	21	(20.2)	-	(0.0)
10-84	66	(23.0)	31	(29.8)	1	(14.3)
85-94	17	(5.9)	19	(18.3)	2	(28.6)
95-100	16	(5.6)	33	(31.7)	4	(57.1)

PAEDIATRIC

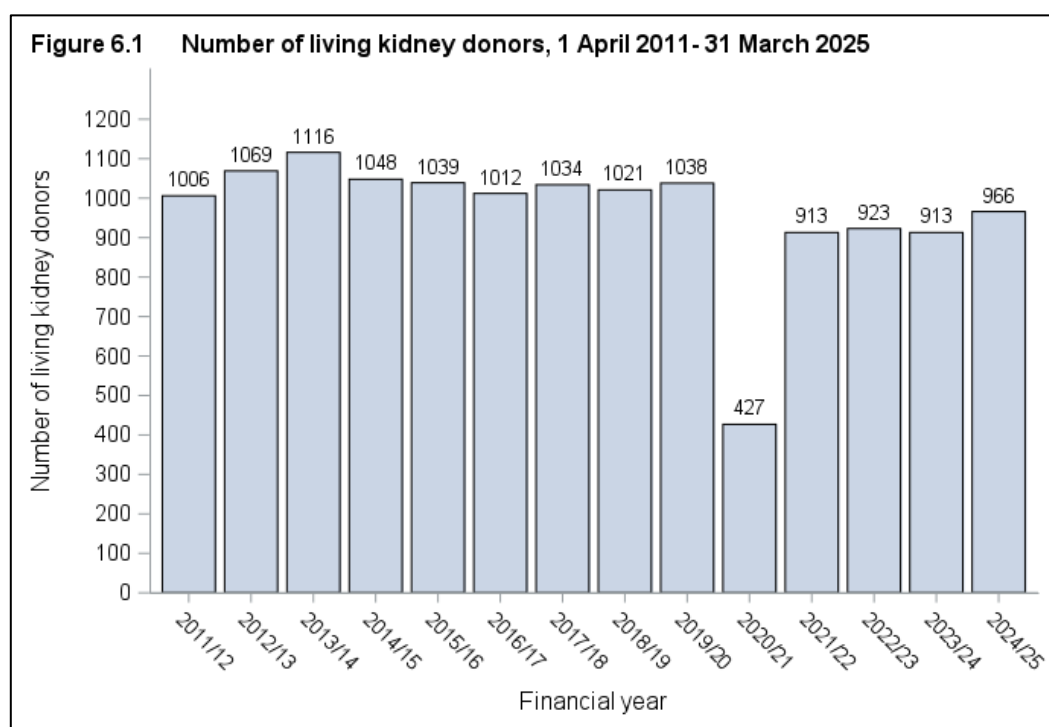
Figures 5.4 and 5.5 show the number of living donor antibody incompatible kidney transplants by financial year and centre respectively.



Living Donor Follow-Up

This section contains information on all living donors who have donated to both adult and paediatric recipients from 2011/12 to 2024/25. Percentages are omitted if the reported proportion of the data item at 1 year is less than 75%, at 5 years is less than 50% or at 10 years is less than 35% at each centre. Missing data may be due to follow-up outside the transplant centres and renal units such as GP follow ups.

Figure 6.1 shows the number of living donor kidney donors by financial year from 2011/12 to 2024/25.



Of the living donors over this period, 110 deaths have been recorded. The causes of death are shown in **Table 6.1**. One donor joined the kidney waiting list and received a kidney from a deceased donor and one has received two separate kidney transplants from deceased donors.

Table 6.1 Cause of death for living donors 1 April 2011 – 31 March 2025		
Cause of death	N	%
Cancer	33	30
Bowel	2	2
Breast	1	1
Colonic	2	2
Liver	2	2
Lung	6	5
Oesophagus	1	1
Pancreatic	5	5
Prostate	2	2
Testicular	1	1
Other	11	10
Brain tumor	1	1
Intracranial hemorrhage	2	2
Seizure	3	3
RTA	1	1
Suicide	6	5
Bronchopneumonia	2	2
Other	21	19
Unknown	41	37
TOTAL	110	100

6.1 Prescription of Antihypertensive drugs, 1 April 2011 – 31 March 2025

Figures 6.2, 6.3 and 6.4 show the proportion of living donor kidney donors where the donor has been prescribed antihypertensive drugs since the last reported follow-up at 1, 5 and 10 year follow-up by centre, respectively. The same information is summarised in Table 6.2.

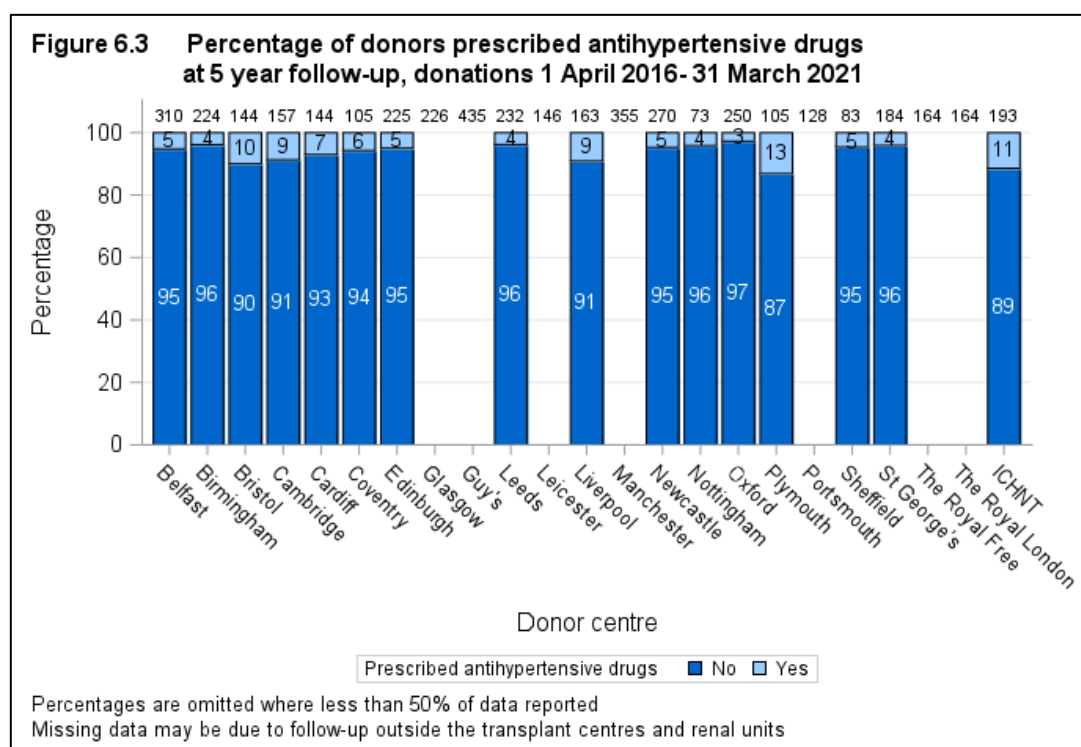
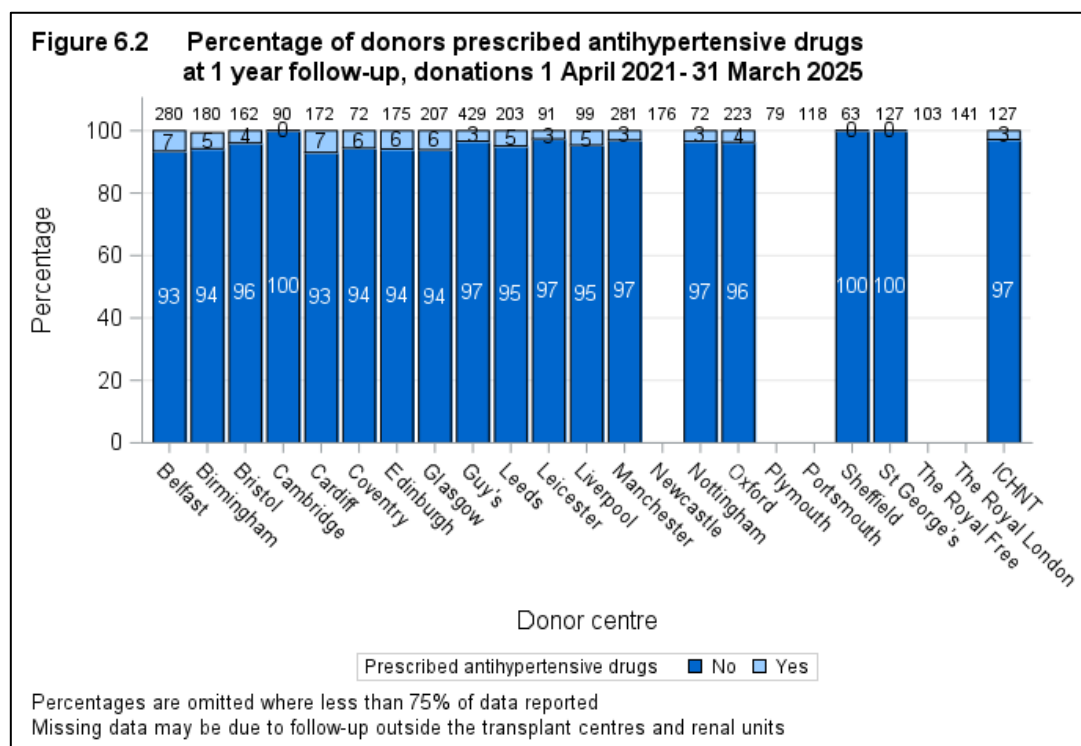
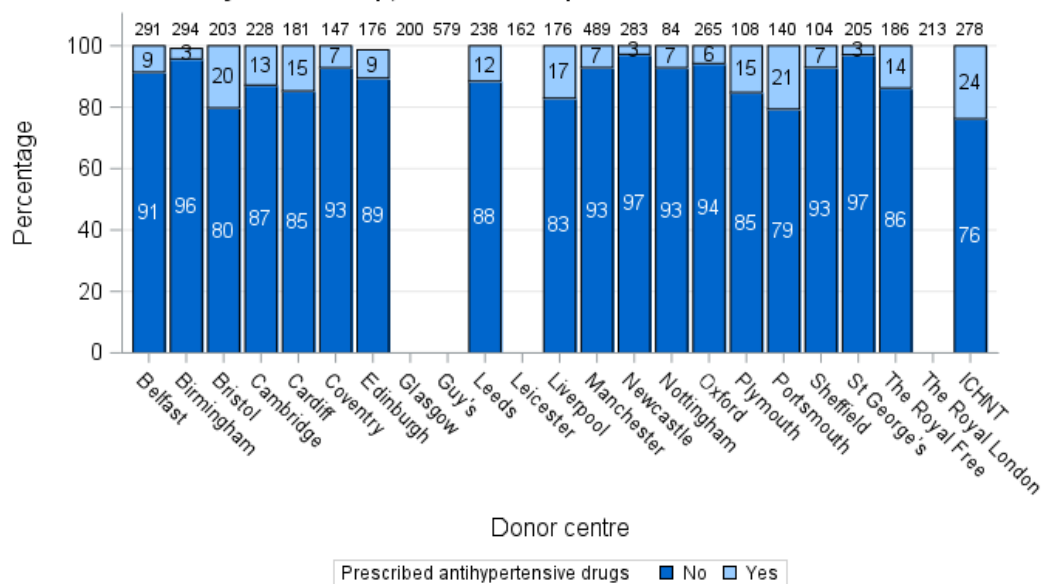


Figure 6.4 Percentage of donors prescribed antihypertensive drugs at 10 year follow-up, donations 1 April 2011- 31 March 2016



Percentages are omitted where less than 35% of data reported

Missing data may be due to follow-up outside the transplant centres and renal units

Table 6.2 Percentage of donors prescribed antihypertensive drugs by centre, donations April 2011 - March 2025

Centre	1 year			5 year			10 year		
	N	% ¹	% ²	N	% ¹	% ²	N	% ¹	% ²
Belfast	280	93	7	310	74	5	291	52	9
Birmingham	180	86	5	224	70	4	294	39	3
Bristol	162	78	4	144	63	10	203	44	20
Cambridge	90	77	0	157	59	9	228	55	13
Cardiff	172	92	7	144	79	7	181	75	15
Coventry	72	75	6	105	67	6	147	48	7
Edinburgh	175	88	6	225	63	5	176	43	9
Glasgow	207	95	6	226	46	-	200	25	-
Guy's	429	84	3	435	33	-	579	27	-
Leeds	203	91	5	232	80	4	238	55	12
Leicester	91	84	3	146	46	-	162	30	-
Liverpool	99	88	5	163	67	9	176	47	17
Manchester	281	83	3	355	48	-	489	35	7
Newcastle	176	73	-	270	71	5	283	51	3
Nottingham	72	82	3	73	66	4	84	50	7
Oxford	223	85	4	250	58	3	265	39	6
Plymouth	79	70	-	105	58	13	108	43	15
Portsmouth	118	52	-	128	35	-	140	45	21
Sheffield	63	81	0	83	78	5	104	68	7
St George's	127	83	0	184	66	4	205	50	3
The Royal Free	103	55	-	164	47	-	186	43	14
The Royal London	141	22	-	164	32	-	213	24	-
ICHNT	127	83	3	193	59	11	278	36	24
UK	3670	80	4	4480	58	6	5230	42	10

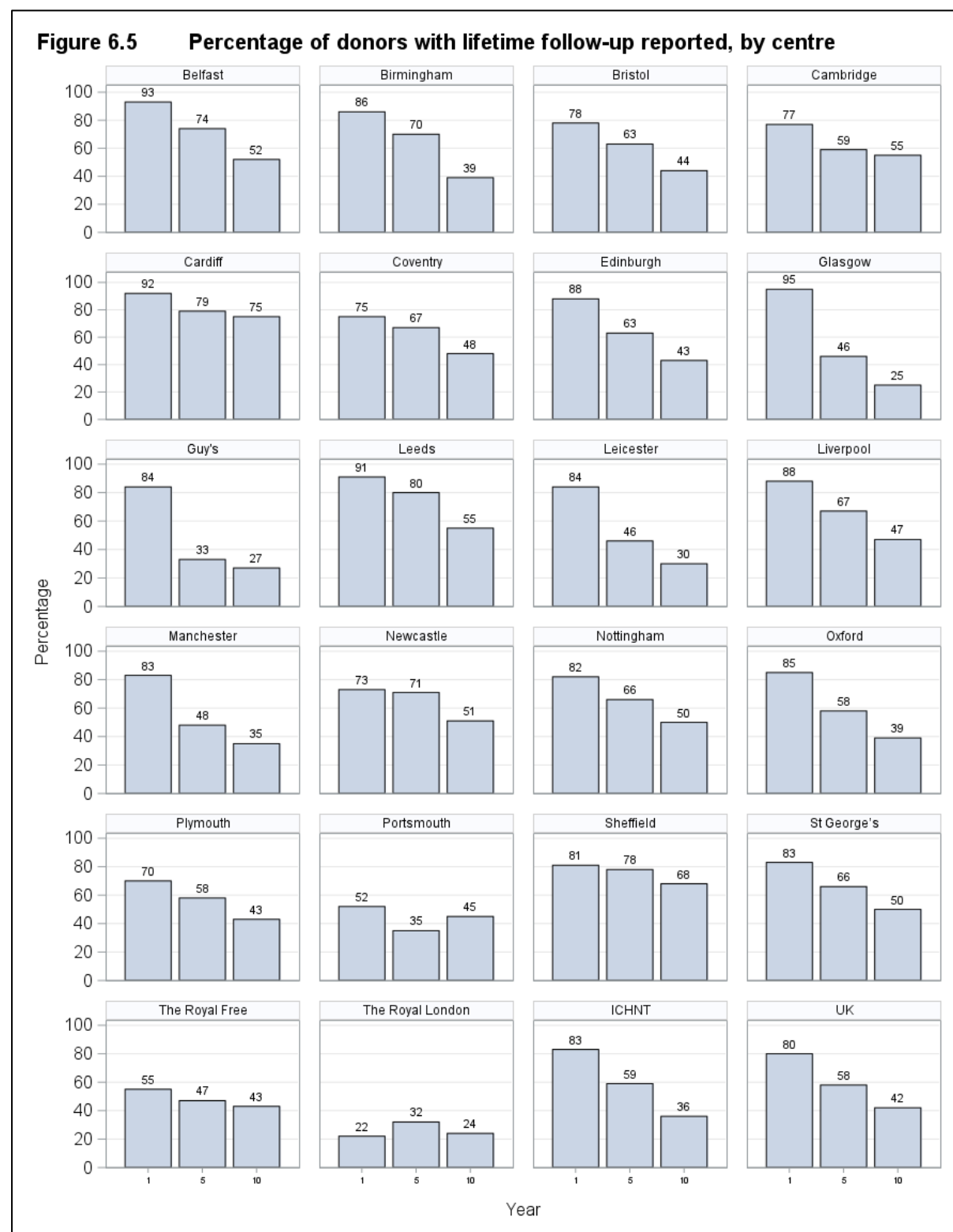
¹% of donors with follow-up reported

²% of donors that have been prescribed antihypertensive drugs (where follow-up returned)

- Percentages are omitted where less than 75%, 50% or 35% of data reported at 1yr, 5yrs or 10yrs

- Missing data may be due to follow-up outside the transplant centres and renal units

Figure 6.5 shows the percentage of donors with follow-up reported by centre, for donations between April 2011 - March 2025.



6.2 Serum creatinine, 1 April 2011 – 31 March 2025

Figures 6.6, 6.7 and 6.8 show the median serum creatinine at 1, 5 and 10 year follow-up by centre, respectively. The same information is summarised in Table 6.3.

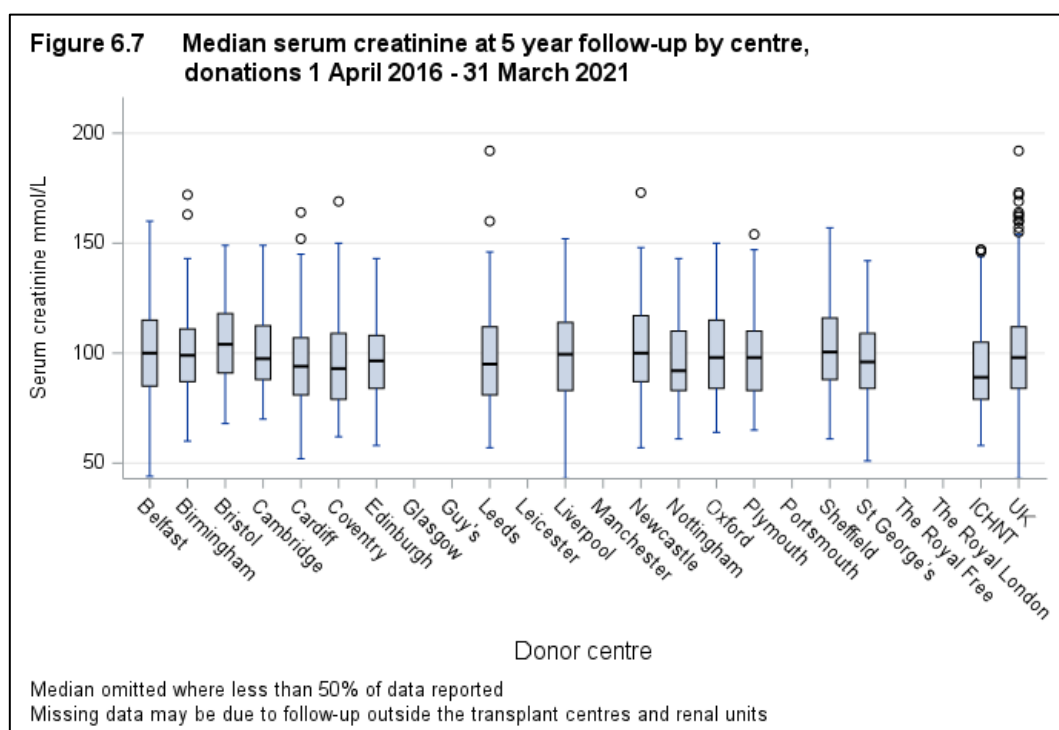
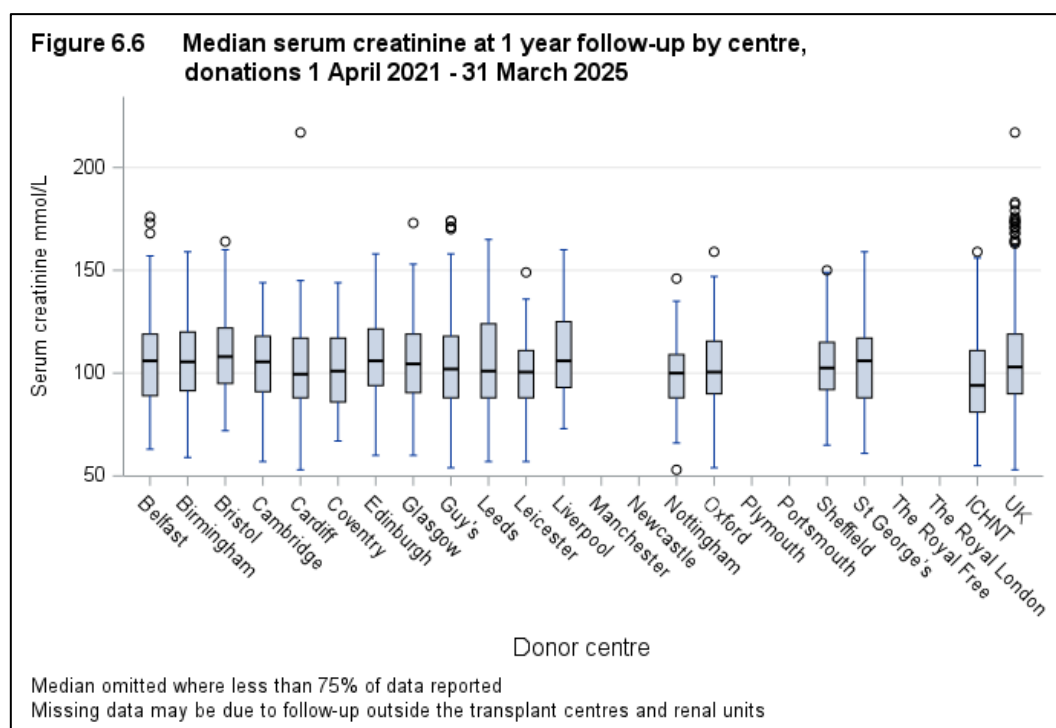
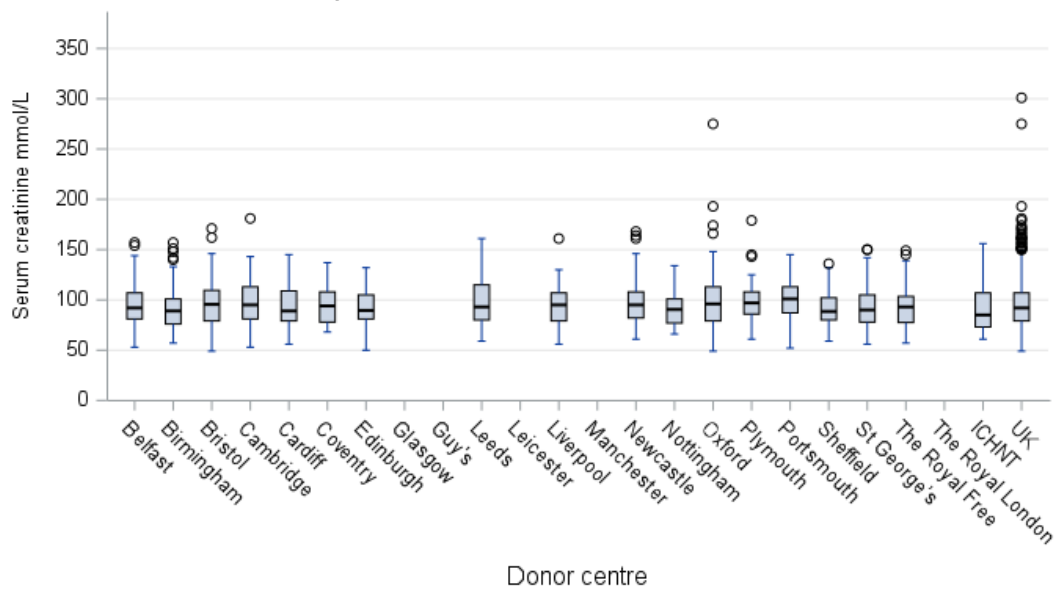


Figure 6.8 Median serum creatinine at 10 year follow-up by centre, donations 1 April 2011 - 31 March 2016



Median omitted where less than 35% of data reported

Missing data may be due to follow-up outside the transplant centres and renal units

Table 6.3 Median serum creatinine at 1, 5 and 10 year follow up by centre, donations 1 April 2011 - 31 March 2025									
Centre	1 year			5 year			10 year		
	N	% ¹	Median (IQ range)	N	% ¹	Median (IQ range)	N	% ¹	Median (IQ range)
Belfast	280	92	106 (89-119)	310	74	100 (85-115)	291	52	92 (81-107)
Birmingham	180	87	105.5 (91.5-120)	224	70	99 (87-111)	294	39	89 (76-101)
Bristol	162	78	108 (95-122)	144	62	104 (91-118)	203	43	95.5 (79-109.5)
Cambridge	90	76	105.5 (91-118)	157	59	97.5 (88-112.5)	228	55	95 (81-113)
Cardiff	172	92	99.5 (88-117)	144	79	94 (81-107)	181	75	89 (79-109)
Coventry	72	75	101 (86-117)	105	64	93 (79-109)	147	48	94 (78-108)
Edinburgh	175	87	106 (94-121.5)	225	61	96.5 (84-108)	176	43	89.5 (81-105)
Glasgow	207	95	104.5 (90.5-119)	226	46	-	200	25	-
Guy's	429	83	102 (88-118)	435	33	-	579	27	-
Leeds	203	90	101 (88-124)	232	80	95 (81-112)	238	55	93 (80-115)
Leicester	91	84	100.5 (88-111)	146	45	-	162	29	-
Liverpool	99	80	106 (93-125)	163	60	99.5 (83-114)	176	46	95 (79-107)
Manchester	281	75	102 (89-115)	355	47	-	489	34	-
Newcastle	176	72	-	270	69	100 (87-117)	283	51	95 (82-108)
Nottingham	72	81	100 (88-109)	73	64	92 (83-110)	84	50	90.5 (77-101)
Oxford	223	83	100.5 (90-115.5)	250	57	98 (84-115)	265	37	96 (79-113)
Plymouth	79	70	-	105	58	98 (83-110)	108	43	97 (86-108)
Portsmouth	118	52	-	128	34	-	140	41	101 (87-113)
Sheffield	63	79	102.5 (92-115)	83	77	100.5 (88-116)	104	63	88.5 (80-102)
St George's	127	82	106 (88-117)	184	66	96 (84-109)	205	50	90 (78-105)
The Royal Free	103	55	-	164	47	-	186	43	93 (77.5-103.5)
The Royal London	141	22	-	164	32	-	213	24	-
ICHNT	127	83	94 (81-111)	193	59	89 (79-105)	278	36	85 (73-107)
UK	3670	79	103 (90-119)	4480	57	98 (84-112)	5230	41	92 (79-107)
1% of donors with follow-up reported									
- Medians are omitted where less than 75%, 50% or 35% of data reported at 1yr, 5yrs or 10yrs									
- Missing data may be due to follow-up outside the transplant centres and renal units									

6.3 Return to normal activity, 1 April 2011 – 31 March 2025

Figure 6.9 shows the median time (in months) to return to normal activity after donation, by centre. The median ranged from 1 to 3 months post-transplant.

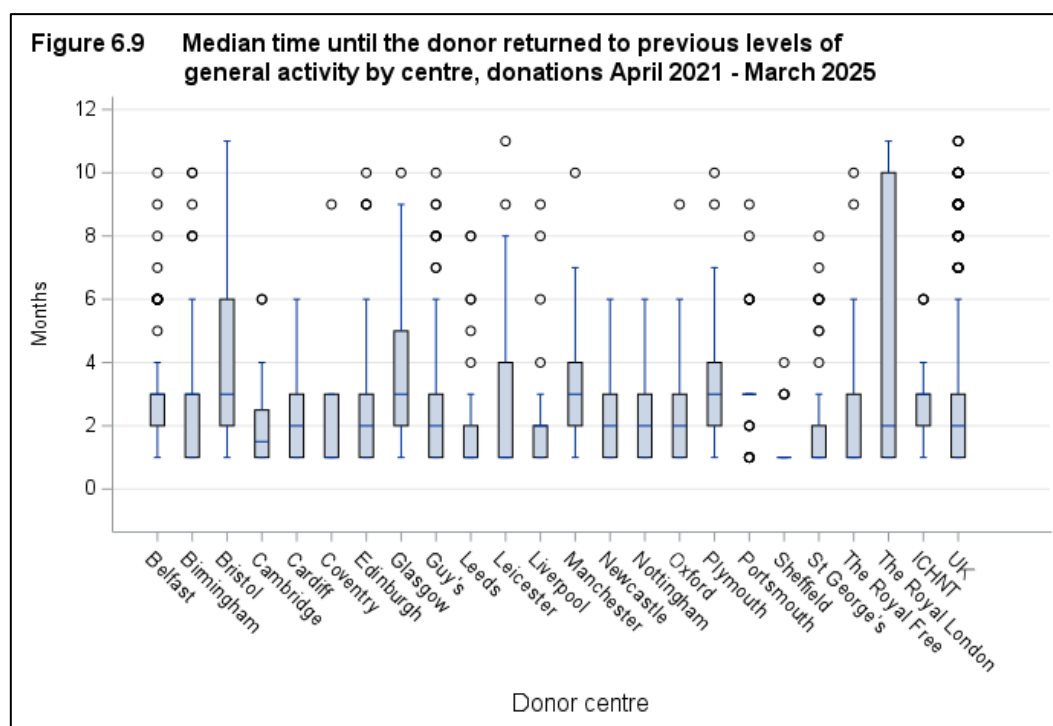


Figure 6.10 shows the median time (in months) to return to normal activity after donation in the UK, by financial year.



6.4 Donor Reported Outcome Measures (DROMS) survey

Throughout the DROMS section, results are reported by the centre at which the kidney donation occurred.

Table 6.4 shows the number of living donors that returned a DROMS form 1 April 2020 - 31 March 2026 and the corresponding proportion of all living donors eligible to return a DROMS form by centre and response timepoint.

Table 6.4 Number of donors that returned a DROMS form¹ and proportion returned of all eligible living donors, by centre 1 April 2020 - 31 March 2026				
Centre	Pre-donation responses		1 year post-donation responses	
	N	%	N	%
Belfast	1	0	134	36
Birmingham	58	22	16	6
Bristol	11	5	70	33
Cambridge	39	30	51	35
Cardiff	11	5	13	6
Coventry	22	21	6	6
Edinburgh	8	3	59	24
Glasgow	92	33	154	54
GOSH*	-	-	-	-
Guy's	349	64	212	38
Leeds	105	37	45	16
Leicester	0	0	2	1
Liverpool	32	23	54	39
Manchester	1	0	23	6
Newcastle	11	4	37	14
Nottingham	27	26	5	5
Oxford	141	45	15	5
Plymouth	7	7	11	11
Portsmouth	85	52	13	8
Sheffield	47	53	34	41
St George's	2	1	22	12
The Royal Free	9	6	5	3
The Royal London	2	1	0	0
ICHNT	0	0	11	6
UK	1060	21	992	19
¹ with enough information to determine it was at the correct time point (and within 1 year of timepoint) *Guy's team assess donors and perform transplants for GOSH recipients Note that response rates for the 5 years post-donation timepoint have not been reported due to low numbers, the UK total number of 5 year responses was 111 which is 2% of all eligible donors				

Data is presented for three questions on the DROMS form that have been selected as being representative of wider themes in the survey. The three questions are:

- How would you rate your health on a scale of 1-10 where 1 is "poor" and 10 is "excellent"? (DROMS question 1).
- How would you rate your ability to work on a scale of 1-10 where 1 is "poor" and 10 is "excellent"? (DROMS question 15).
- Based on your experience with living organ donation, would you recommend it to others on a scale of 1-10 where 1 is "certainly not" and 10 is "certainly yes"? (DROMS question 17).

Table 6.5 shows the median and number of numeric responses for three representative questions on the DROMS form. Data is presented for DROMS forms returned 1 April 2020 - 31 March 2026, by centre and response timepoint. Data is not reported where centres have fewer than five responses.

Table 6.5 Median and number of DROMS numeric responses, by centre 1 April 2020 - 31 March 2026												
Centre	How would you rate your health?		Pre-donation How would you rate your ability to work?		Would you recommend to others?		1 year post-donation					
							How would you rate your health?		How would you rate your ability to work?		Would you recommend to others?	
	N	Median	N	Median	N	Median	N	Median	N	Median	N	Median
Belfast (A)	-	-	-	-	-	-	134	9	127	10	132	10
Birmingham (A)	58	9	57	10	52	10	16	8	13	6	16	10
Bristol (C)	11	9	11	9	10	9	70	9	61	10	70	10
Cambridge (D)	39	9	35	10	36	10	51	9	44	10	49	10
Cardiff (E)	11	9	10	10	10	10	13	8	12	10	12	10
Coventry (F)	22	9	21	10	20	10	6	9	6	10	6	10
Edinburgh (G)	8	10	8	10	8	10	59	9	55	10	59	10
Glasgow (H)	92	9	90	10	89	10	154	9	143	10	151	10
GOSH* (I)	-	-	-	-	-	-	-	-	-	-	-	-
Guy's (J)	346	9	323	10	323	10	211	9	203	10	209	10
Leeds (K)	105	9	97	10	96	10	45	9	39	10	43	10
Leicester (L)	-	-	-	-	-	-	-	-	-	-	-	-
Liverpool (M)	32	9	31	10	28	10	54	9	50	10	52	10
Manchester (N)	-	-	-	-	-	-	23	8	23	10	23	10
Newcastle (O)	11	9	9	10	8	9.5	37	8	32	10	37	10
Nottingham (P)	27	9	24	10	23	10	5	9	4	10	5	10
Oxford (Q)	140	9	127	10	134	10	15	9	10	9	15	10
Plymouth (R)	7	9	6	10	5	10	11	8	9	9	11	10
Portsmouth (S)	85	9	79	10	81	10	13	10	11	10	13	10
Sheffield (T)	47	9	46	10	44	10	34	9	33	10	33	10
St George's (U)	-	-	-	-	-	-	20	9	20	10	22	10
The Royal Free (V)	9	9	8	10	8	10	5	9	4	10	5	10
The Royal London (W)	-	-	-	-	-	-	-	-	-	-	-	-
ICHNT (X)	-	-	-	-	-	-	11	9	11	10	11	10
UK	1056	9	988	10	980	10	989	9	912	10	976	10
*Guy's team assess donors and perform transplants for GOSH recipients												

Figure 6.11 shows the proportions and number of numeric responses for three representative questions on the DROMS form. Data is presented by centre for DROMS forms returned 1 April 2020 - 31 March 2026, at the pre-donation timepoint. Data is not reported where centres have fewer than five responses.

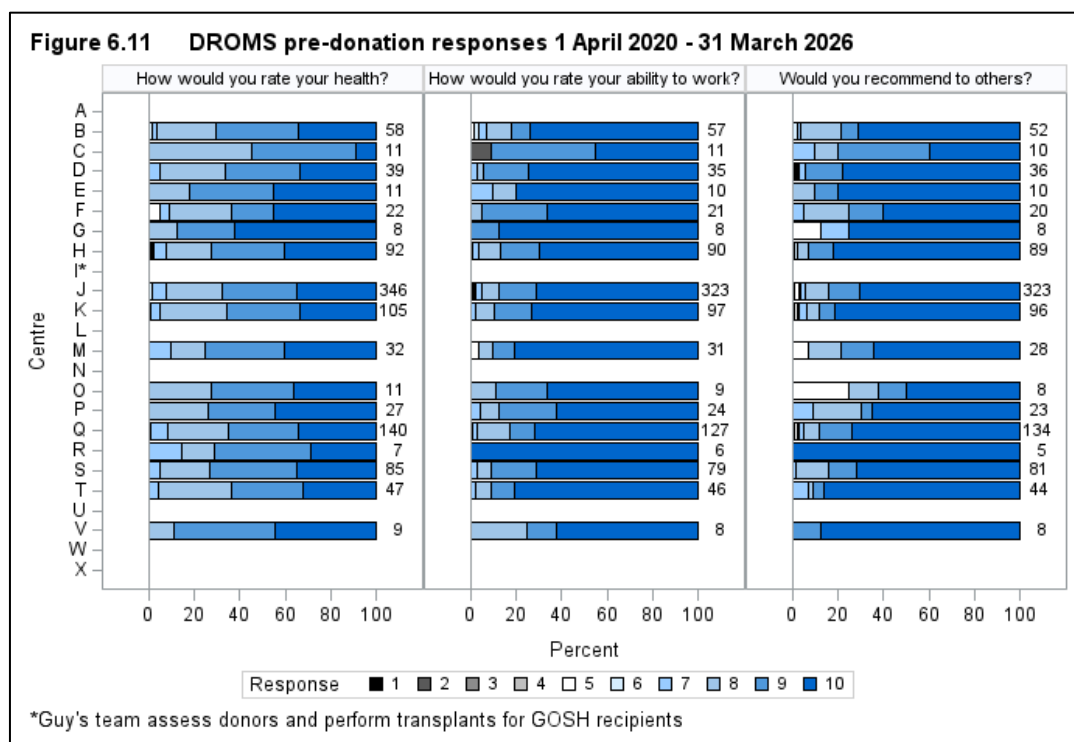
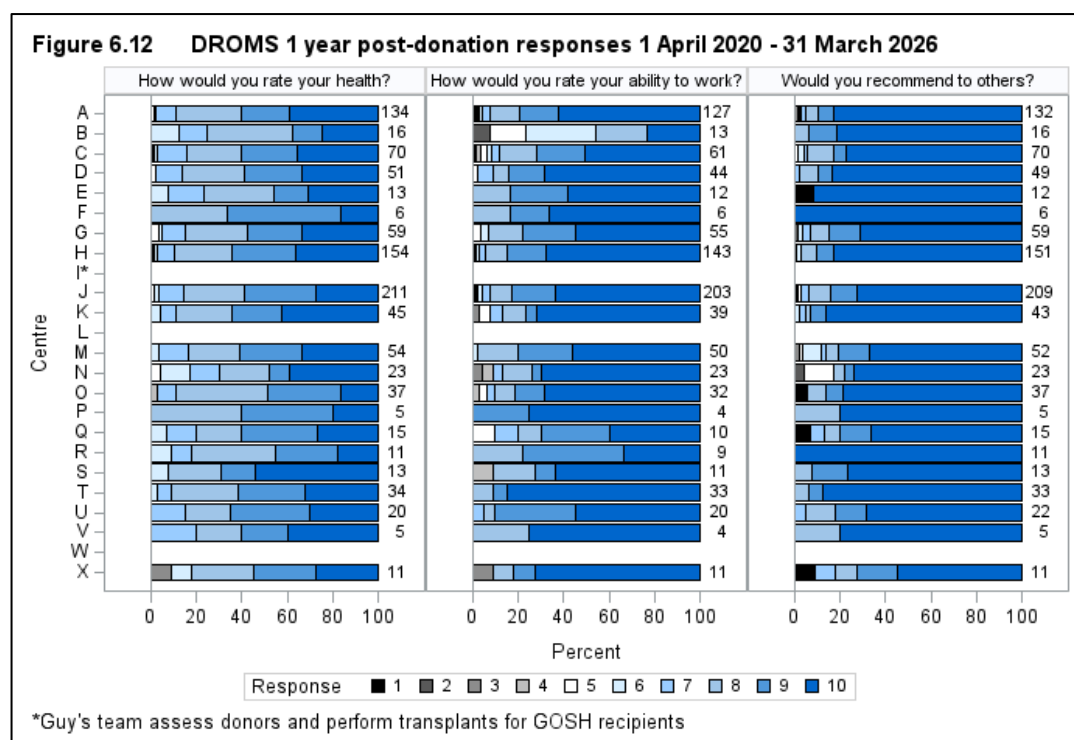


Figure 6.12 shows the proportions and number of numeric responses for three representative questions on the DROMS form. Data is presented by centre for DROMS forms returned 1 April 2020 - 31 March 2026, at the 1 year post-donation timepoint. Data is not reported where centres have fewer than five responses.



6.5 Donor Reported Experience Measures (DREMS) survey

Throughout the DREMS section, results are reported by the centre at which the kidney donation occurred.

Table 6.6 shows the number of living donors that returned a DREMS form 1 April 2020 – 31 March 2026 and the corresponding proportion of all living donors eligible to return a DREMS form by centre.

Table 6.6 Number of donors that returned a DREMS form¹ and proportion returned of all eligible living donors, by centre 1 April 2020 - 31 March 2026		
Centre	N	%
Belfast	129	35
Birmingham	13	5
Bristol	76	35
Cambridge	42	29
Cardiff	14	7
Coventry	14	13
Edinburgh	52	21
Glasgow	171	60
GOSH*	-	-
Guy's	188	34
Leeds	41	14
Leicester	2	1
Liverpool	51	36
Manchester	25	6
Newcastle	39	15
Nottingham	8	8
Oxford	59	19
Plymouth	13	13
Portsmouth	8	5
Sheffield	31	37
St George's	24	13
The Royal Free	10	6
The Royal London	3	2
ICHNT	14	7
UK	1027	20
¹ with enough information to determine it was at the correct time point (and within 1 year of timepoint) *Guy's team assess donors and perform transplants for GOSH recipients		

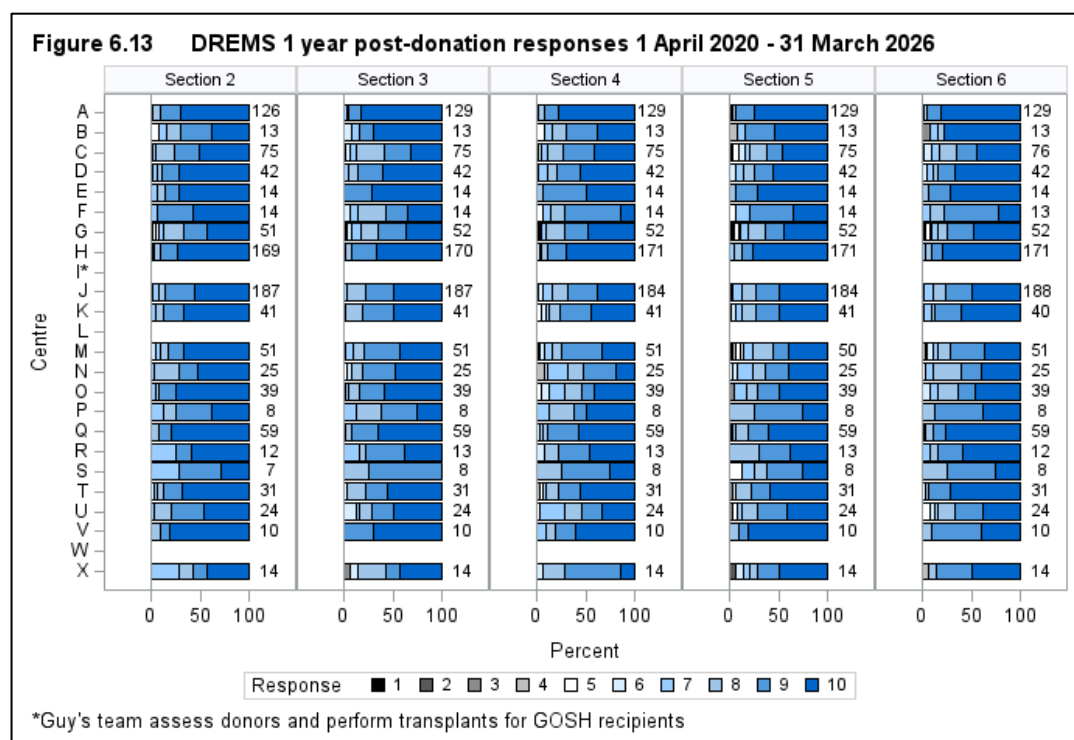
Data is presented for five sections on the DREMS form. Respondent's mean scores for the five sections are reported (only questions with numerical responses have been included in this calculation). The sections are as follows:

- Section 2: accessing the living donor programme.
- Section 3: donor assessment.
- Section 4: hospital stay.
- Section 5: after donation.
- Section 6: general feedback.

Table 6.7 shows median of the aggregated (mean) section scores and the number of aggregated responses for five sections on the DREMS form. Data is presented for DREMS forms returned 1 April 2020 – 31 March 2026, by centre. Data is not reported where centres have fewer than five responses.

Table 6.7 Median and number of DREMS numeric responses, by centre 1 April 2020 - 31 March 2026										
Centre	Section 2		Section 3		Section 4		Section 5		Section 6	
	N	Median	N	Median	N	Median	N	Median	N	Median
Belfast (A)	126	10	129	10	129	10	129	10	129	10
Birmingham (A)	13	9	13	10	13	9	13	10	13	10
Bristol (C)	75	10	75	9	75	9	75	9	76	9
Cambridge (D)	42	10	42	10	42	10	42	10	42	10
Cardiff (E)	14	10	14	10	14	9.5	14	10	14	10
Coventry (F)	14	10	14	9	14	9	14	9	13	9
Edinburgh (G)	51	9	52	9	52	9	52	9	52	9
Glasgow (H)	169	10	170	10	171	10	171	10	171	10
GOSH* (I)	-	-	-	-	-	-	-	-	-	-
Guy's (J)	187	10	187	9	184	9	184	9.5	188	9
Leeds (K)	41	10	41	9	41	9	41	9	40	10
Leicester (L)	-	-	-	-	-	-	-	-	-	-
Liverpool (M)	51	10	51	9	51	9	50	9	51	9
Manchester (N)	25	10	25	9	25	9	25	9	25	9
Newcastle (O)	39	10	39	10	39	9	39	9	39	9
Nottingham (P)	8	9	8	9	8	9.5	8	9	8	9
Oxford (Q)	59	10	59	10	59	10	59	10	59	10
Plymouth (R)	12	10	13	9	13	9	13	9	12	10
Portsmouth (S)	7	9	8	9	8	9	8	9	8	9
Sheffield (T)	31	10	31	10	31	10	31	10	31	10
St George's (U)	24	9	24	9.5	24	9	24	9	24	9
The Royal Free (V)	10	10	10	10	10	10	10	10	10	9
The Royal London (W)	-	-	-	-	-	-	-	-	-	-
ICHNT (X)	14	9	14	9	14	9	14	9.5	14	9.5
UK	1017	10	1024	10	1022	10	1021	10	1024	10
*Guy's team assess donors and perform transplants for GOSH recipients										

Figure 6.13 shows the proportions and number of aggregated (mean) section scores for five sections on the DREMS form. Data is presented by centre for DREMS forms returned 1 April 2020 – 31 March 2026. Data is not reported where centres have fewer than five responses.



Graft and Patient Survival

ADULT

One and five year graft and patient survival are shown in **Figures 7.1 to 7.4** following adult living donor kidney transplants by donor type. **Tables 7.1 to 7.4** show the survival rates and 95% confidence limits. Living related/unrelated transplants are 'directed' transplants and paired donation transplants include end of chain to waiting list recipients.

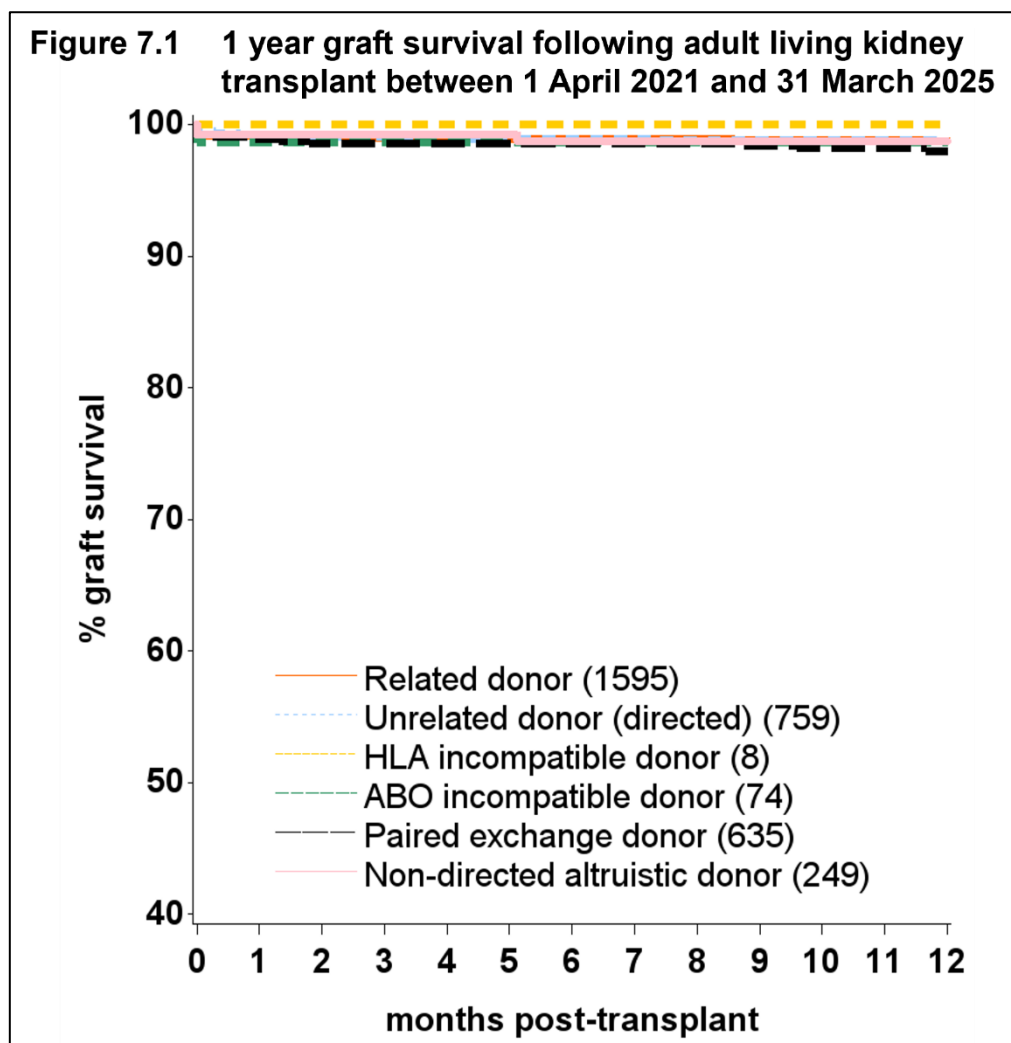


Table 7.1 1 year graft survival following living kidney transplant between 1 April 2021 and 31 March 2025 (p=0.8427)			
Living Donors	No. at risk on day 0	% Graft survival	(95% confidence interval)
Related donor	1595	98.8	(98-99)
Unrelated donor (directed)	759	98.8	(98-99)
HLA incompatible donor	8	100	-
ABO incompatible donor	74	98.6	(91-100)
Paired exchange donor	635	98.0	(96-99)
Non-directed altruistic donor	249	98.7	(96-100)

Figure 7.2 5 year graft survival following adult living kidney transplant between 1 April 2017 and 31 March 2021

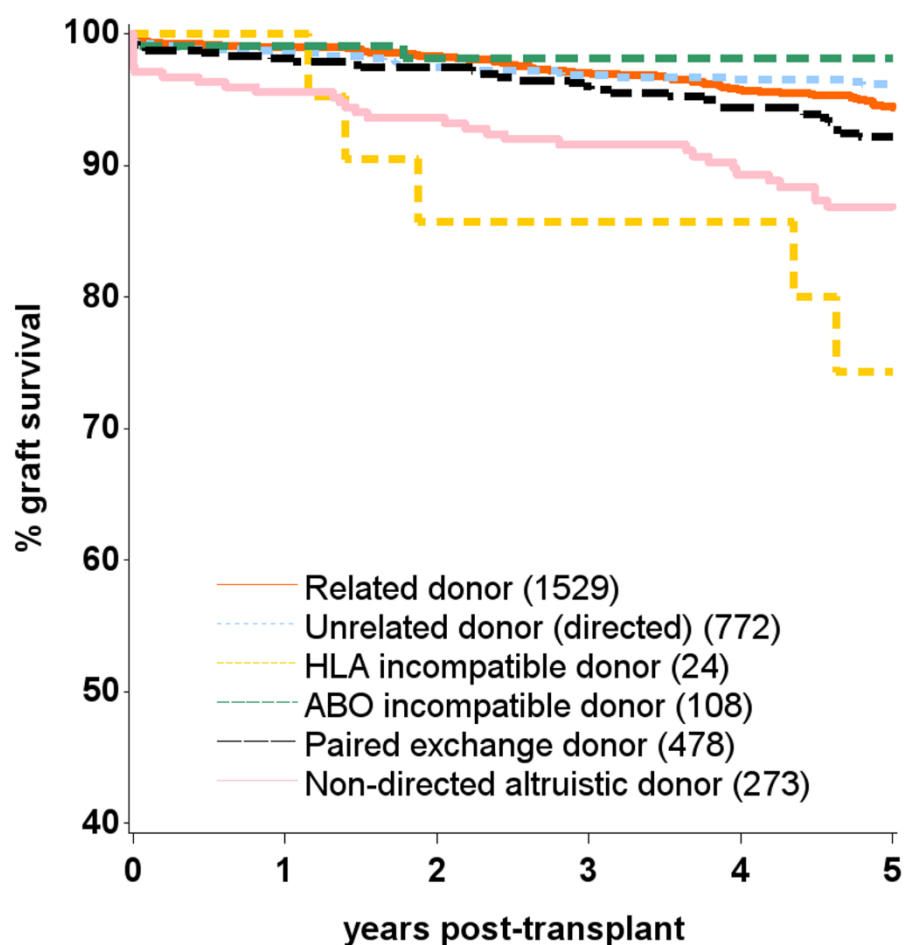


Table 7.2 5 year graft survival following living kidney transplant between 1 April 2017 and 31 March 2021 (p<0.0001)

Living Donors	No. at risk on day 0	% Graft survival (95% confidence interval)	
Related donor	1529	94.4	(93-96)
Unrelated donor (directed)	772	96.0	(94-97)
HLA incompatible donor	24	74.3	(49-89)
ABO incompatible donor	108	98.1	(93-100)
Paired exchange donor	478	92.1	(89-94)
Non-directed altruistic donor	273	86.9	(82-91)

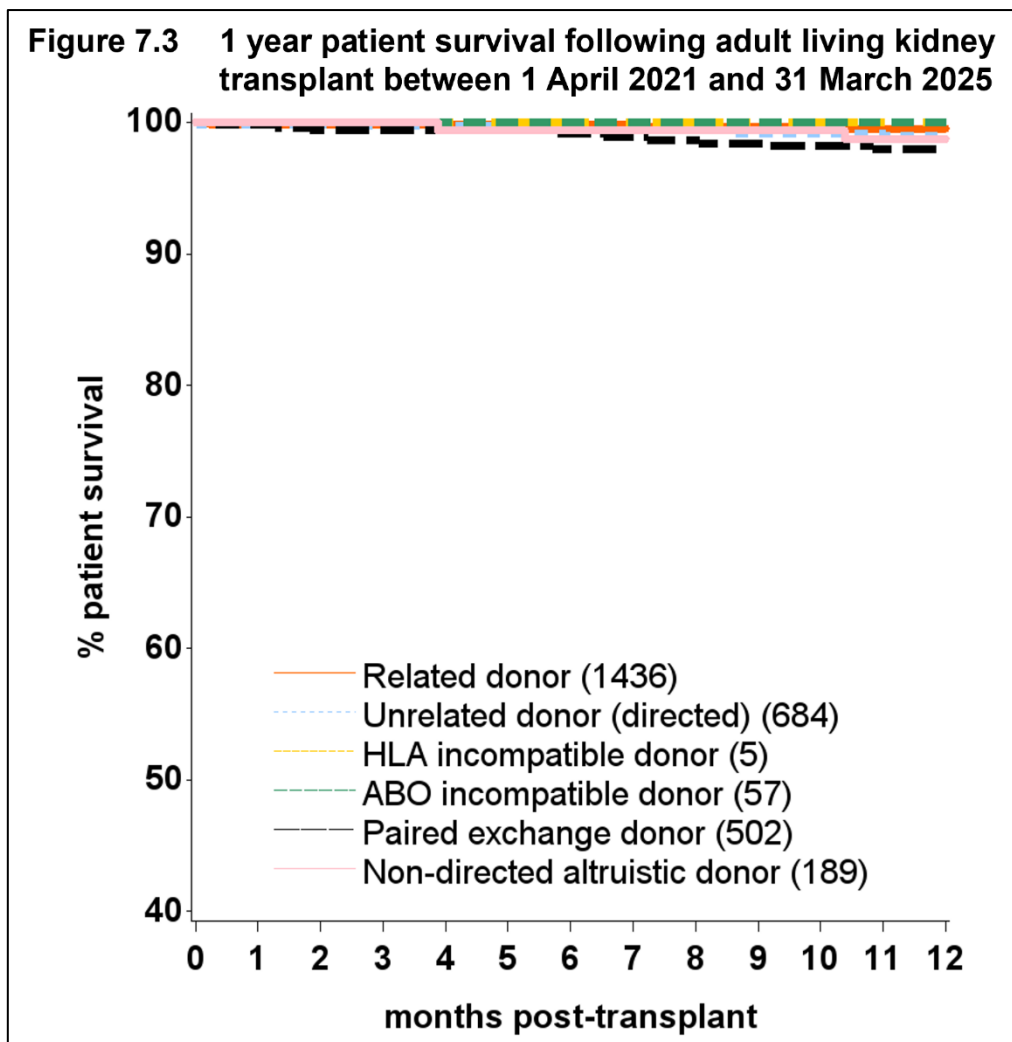


Table 7.3 1 year patient survival following living kidney transplant between 1 April 2021 and 31 March 2025 (p=0.0915)			
Living Donors	No. at risk on day 0	% Graft survival (95% confidence interval)	
Related donor	1436	99.5	(99-100)
Unrelated donor (directed)	684	99.0	(98-100)
HLA incompatible donor	5	100	-
ABO incompatible donor	57	100	-
Paired exchange donor	502	97.9	(96-99)
Non-directed altruistic donor	189	98.7	(95-100)

Figure 7.4 5 year patient survival following adult living kidney transplant between 1 April 2017 and 31 March 2021

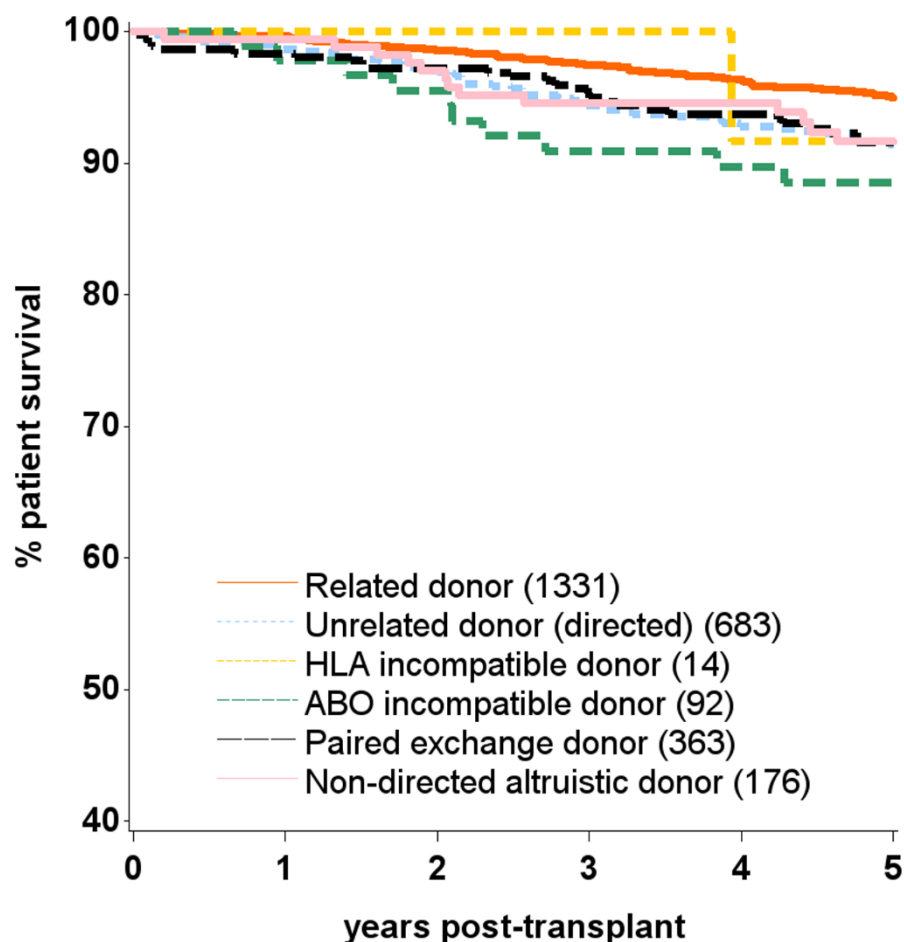


Table 7.4 5 year patient survival following living kidney transplant between 1 April 2017 and 31 March 2021 (p=0.0116)

Living Donors	No. at risk on day 0	% Graft survival	(95% confidence interval)
Related donor	1331	95.0	(94-96)
Unrelated donor (directed)	683	91.4	(89-93)
HLA incompatible donor	14	91.7	(54-99)
ABO incompatible donor	92	88.5	(80-94)
Paired exchange donor	363	91.5	(88-94)
Non-directed altruistic donor	176	91.6	(86-95)

We present a visual comparison of survival rates among centres that is based on a graphical display known as a funnel plot (1, 2). This display is used to show how consistent the rates of the different transplant units are with the national rate. Funnel plots show the survival rate plotted against the number of transplants for each centre, with the overall national survival rate (solid line), and its 95% (thin dotted lines) and 99.8% (thick dotted lines) confidence limits superimposed. Each dot in the plot represents one of the centres. Note that many recipients return to local renal units for follow-up care after their transplant and although we report survival according to transplant unit, recipients may in fact be followed up quite distantly from their transplant centre.

Interpreting the funnel plots

If a centre lies within all the limits, then that centre has a survival rate that is statistically consistent with the national rate. If a centre lies outside the 95% confidence limits, this serves as an alert that the centre may have a rate that is significantly different from the national rate. If a centre lies outside the 99.8% limits, then further investigations may be carried out to determine the reasons for the possible difference. When a centre lies above the upper limits, this indicates a survival rate that is higher than the national rate, while a centre that lies below the lower limits has a survival rate that is lower than the national rate.

References

1. Tekkis PP, McCulloch P, Steger AC, Benjamin IS, Poloniecki JD. Mortality control charts for comparing performance of surgical units: validation study using hospital mortality data. *British Medical Journal* 2003; 326: 786 – 788.
2. Stark J, Gallivan S, Lovegrove J, Hamilton JRL, Monro JL, Pollock JCS, Watterson KG. Mortality rates after surgery for congenital heart defects in children and surgeons' performance. *Lancet* 2000; 355: 1004 – 1007.

Figures 7.5 to 7.9 show one year unadjusted survival rates following adult living donor kidney transplants by centre for each donor type. **Table 7.5** shows the survival rates by centre and donor type. There were no events within 1 year of an adult living HLAi donor kidney transplant so the figure for this group has not been included in this report.

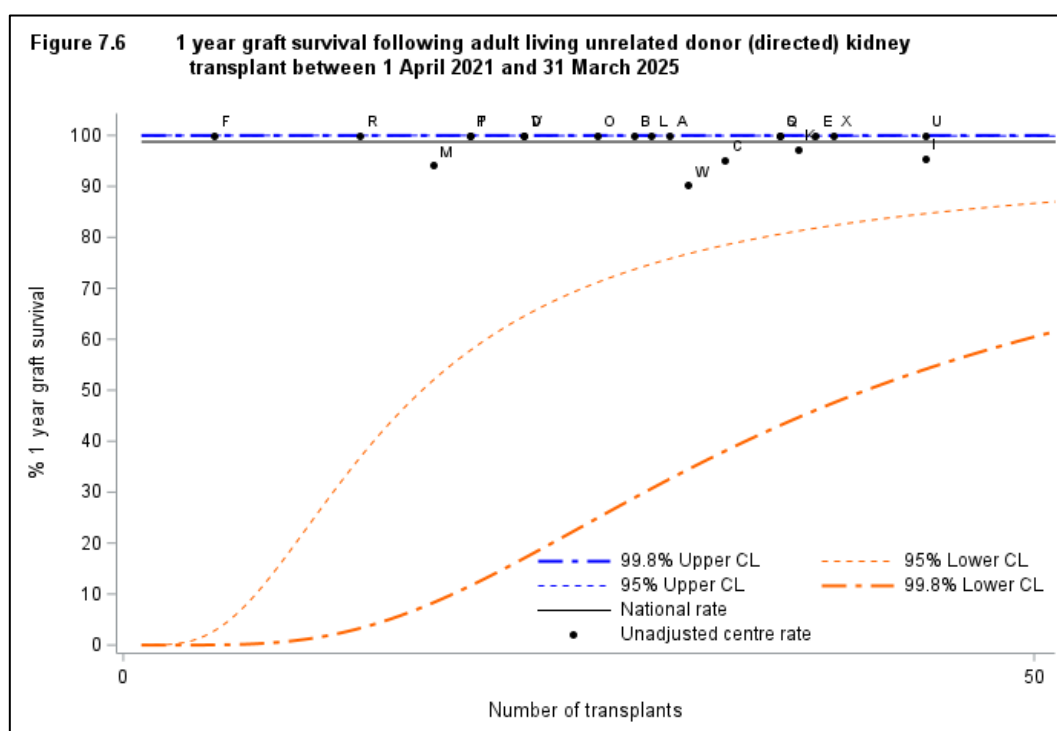
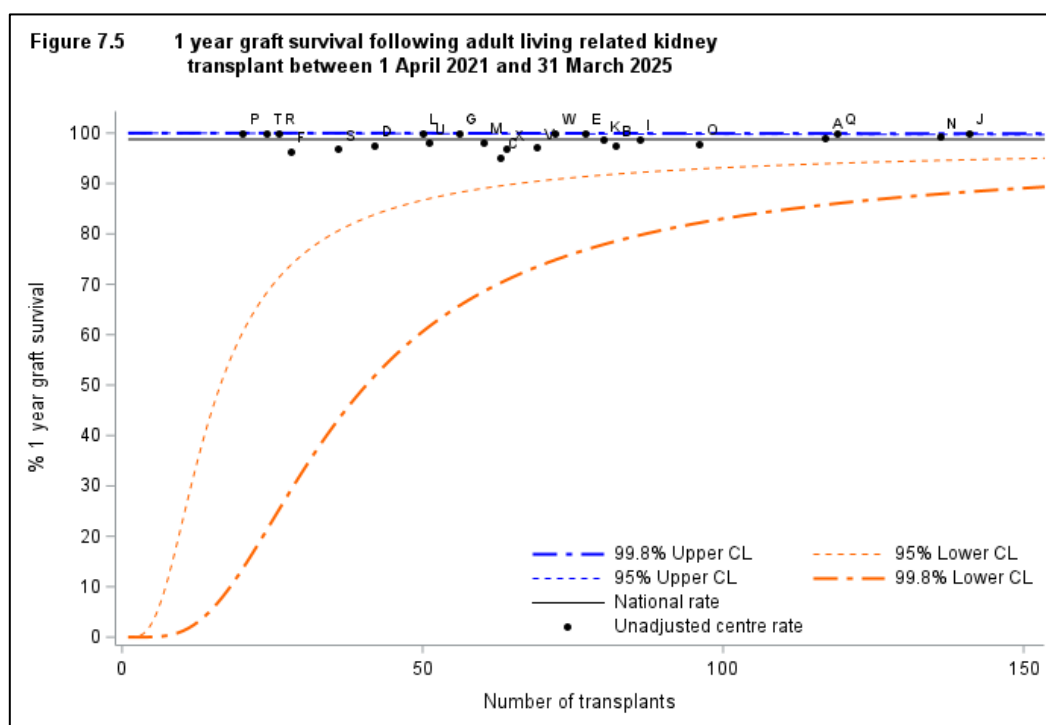


Figure 7.9 1 year graft survival following adult living ABOi donor kidney transplant between 1 April 2021 and 31 March 2025

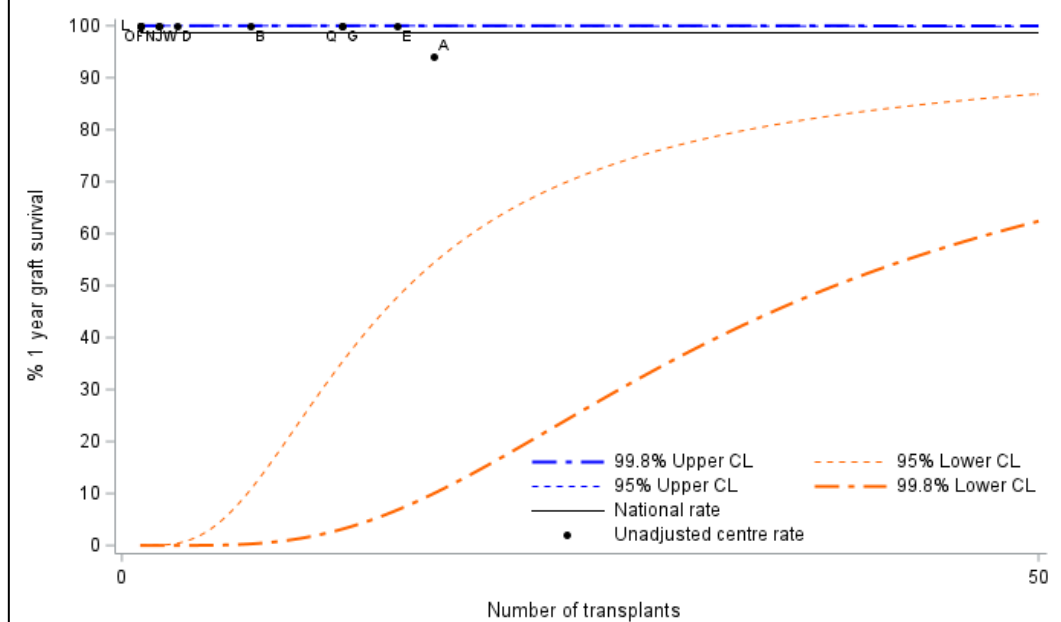


Table 7.5 **1 year graft survival following adult living donor kidney transplant between 1 April 2021 and 31 March 2025, by donor type and centre**

Centre	Code	Related		Unrelated		HLAi		ABOi		Paired		Non-directed altruistic	
		N	% ¹	N	% ¹	N	% ¹	N	% ¹	N	% ¹	N	% ¹
Belfast	A	117	99.1	30	100.0			17	94.1	47	100.0	17	100.0
Birmingham	B	82	97.6	28	100.0	1	100.0	7	100.0	31	95.8	17	94.1
Bristol	C	63	95.2	33	95.2	2	100.0			28	100.0	6	83.3
Cambridge	D	42	97.6	22	100.0			3	100.0	13	100.0	5	100.0
Cardiff	E	77	100.0	38	100.0			15	100.0	25	100.0	6	100.0
Coventry	F	28	96.4	5	100.0			1	100.0	14	85.7	9	100.0
Edinburgh	G	56	100.0	65	100.0			12	100.0	26	100.0	10	100.0
Glasgow	I	86	98.8	44	95.5					36	97.2	14	100.0
Guy's	J	141	100.0	70	100.0			2	100.0	55	98.2	21	93.8
Leeds	K	80	98.8	37	97.3	1	100.0			48	100.0	16	100.0
Leicester	L	50	100.0	29	100.0			1	100.0	17	100.0	4	100.0
Liverpool	M	60	98.3	17	94.1					19	100.0	8	100.0
Manchester	N	136	99.3	56	98.2			1	100.0	30	96.7	22	100.0
Newcastle	O	96	97.9	26	100.0	2	100.0	1	100.0	32	96.9	12	100.0
Nottingham	P	20	100.0	19	100.0					12	90.0	7	100.0
Oxford	Q	119	100.0	36	100.0	2	100.0	12	100.0	48	100.0	25	100.0
Plymouth	R	26	100.0	13	100.0					15	86.7	6	100.0
Portsmouth	S	36	96.9	36	100.0					24	95.8	9	100.0
Sheffield	T	24	100.0	19	100.0					10	100.0	4	100.0
St George's	U	51	98.0	44	100.0					38	100.0	8	100.0
The Royal Free	V	69	97.1	22	100.0					9	100.0	6	100.0
The Royal London	W	72	100.0	31	90.3			2	100.0	27	96.3	12	100.0
ICHNT	X	64	96.9	39	100.0					31	96.8	5	100.0
UK		1595	98.8	759	98.8	8	100.0	74	98.6	635	98.0	249	98.7

¹ % 1 year graft survival

PAEDIATRIC

Numbers are too small to present paediatric graft and patient survival broken down by living donor transplant type. Overall survival following living donor kidney transplant is presented in the Annual report on kidney transplantation.

Appendix

A1 Glossary of terms

ABO

The most important human blood group system for transplantation is the ABO system. Every human being is of blood group O, A, B or AB, or of one of the minor variants of these four groups. ABO blood groups are present on other tissues and, unless special precautions are taken, a group A kidney transplanted to a group O recipient will be rapidly rejected.

Active transplant list

When a recipient is registered for a transplant, they are registered on what is called the 'active' transplant list. This means that when a donor kidney becomes available, the recipient is included among those who are matched against the donor to determine whether or not the kidney is suitable for them. It may sometimes be necessary to take a recipient off the transplant list, either temporarily or permanently. This may be done, for example, if someone becomes too ill to receive a transplant. The recipient is told about the decision to suspend them from the list and is informed whether the suspension is temporary or permanent. If a recipient is suspended from the list, they are not included in the matching of any donor kidneys that become available.

Case mix

The types of recipients treated at a unit for a common condition. This can vary across units depending on the facilities available at the unit as well as the types of people in the catchment area of the unit. The definition of what type of recipient a person is depends on the recipient characteristics that influence the outcome of the treatment. For example the case mix for recipients registered for a kidney transplant is defined in terms of various factors such as the blood group, tissue type and age of the recipient. These factors have an influence on the chance of a recipient receiving a transplant.

Confidence interval (CI)

When an estimate of a quantity such as a survival rate is obtained from data, the value of the estimate depends on the set of recipients whose data were used. If, by chance, data from a different set of recipients had been used, the value of the estimate may have been different. There is therefore some uncertainty linked with any estimate. A confidence interval is a range of values whose width gives an indication of the uncertainty or precision of an estimate. The number of transplants or recipients analysed influences the width of a confidence interval. Smaller data sets tend to lead to wider confidence intervals compared to larger data sets. Estimates from larger data sets are therefore more precise than those from smaller data sets. Confidence intervals are calculated with a stated probability, usually 95%. We then say that there is a 95% chance that the confidence interval includes the true value of the quantity we wish to estimate.

Confidence limit

The upper and lower bounds of a confidence interval.

Cox Proportional Hazards model

A statistical model that relates the instantaneous risk (hazard) of an event occurring at a given time point to the risk factors that influence the length of time it takes for the event to occur. This model can be used to compare the hazard of an event of interest, such as graft failure or recipient death, across different groups of recipients.

Cross-match

A cross-match is a test for recipient antibodies against donor antigens. A positive cross-match shows that the donor and recipient are incompatible. A negative cross-match means there is no reaction between donor and recipient and that the transplant may proceed.

Funnel plot

A graphical method that shows how consistent the survival rates of the different transplant units are compared to the national rate. The graph shows for each unit, a survival rate plotted against the number of transplants undertaken, with the national rate and confidence limits around this national rate superimposed. In this report, 95% and 99.8% confidence limits were used. Units that lie within the confidence limits have survival rates that are statistically consistent with the national rate. When a unit is close to or outside the limits, this is an indication that the centre may have a rate that is considerably different from the national rate.

Graft survival rate

The percentage of recipients whose grafts are still functioning. This is usually specified for a given time period after transplant. For example, a five-year transplant survival rate is the percentage of transplants still functioning five years after transplant.

HLA mismatch

Human Leucocyte Antigen (HLA) antigens are carried on many cells in the body and the immune system can distinguish between those that can be recognised as 'self' (belonging to you or identical to your own) and those that can be recognised as 'nonself'. The normal response of the immune system is to attack foreign/non-self material by producing antibodies against the foreign material. This is one of the mechanisms that provide protection against infection. This is unfortunate from the point of view of transplantation as the immune system will see the graft as just another 'infection' to be destroyed, produce antibodies against the graft and rejection of the grafted organ will take place. To help overcome this response, it is recognised that 'matching' the recipient and donor on the basis of HLA (and blood group) reduces the chances of acute rejection and, with the added use of immunosuppressive drugs, very much improves the chances of graft survival. 'Matching' refers to the similarity of the recipient HLA type and donor HLA type. HLA mismatch refers to the number of mismatches between the donor and the recipient at the A, B and DR (HLA) loci. There can only be a total of two mismatches at each locus. For example, an HLA mismatch value of 000, means that the donor and recipient are identical at all three loci, while an HLA mismatch value of 210 means that the donor and recipient differ completely at the A locus, are partly the same at the B locus and are identical at the DR locus.

Inter-quartile range

The values between which the middle 50% of the data fall. The lower boundary is the lower quartile, the upper boundary the upper quartile.

Kaplan-Meier method

A method that allows patients with incomplete follow-up information to be included in estimating survival rates. For example, in a cohort for estimating one year patient survival rates, a recipient was followed up for only nine months before they relocated. If we calculated a crude survival estimate using the number of recipients who survived for at least a year, this recipient would have to be excluded as it is not known whether or not the recipient was still alive at one year after transplant. The Kaplan-Meier method allows information about such recipients to be used for the length of time that they are followed-up, when this information would otherwise be discarded. Such instances of incomplete follow-up are not uncommon and the Kaplan-Meier method allows the computation of estimates that are more meaningful in these cases.

Living donor

A donor who is a living person and who is usually, but not always, a relative of the transplant recipient. For example, a parent may donate one of their kidneys to their child.

Median

The midpoint in a series of numbers, so that half the data values are larger than the median, and half are smaller.

Multi-organ transplant

A transplant in which the recipient receives more than one organ. For example, a recipient may undergo a transplant of a kidney and liver.

National Kidney Allocation Scheme

A nationally agreed set of rules for sharing and allocating kidneys for transplant between transplant centres in the UK. The scheme is administered by NHS Blood and Transplant.

Patient survival rate

The percentage of recipients who are still alive (whether the graft is still functioning or not). This is usually specified for a given time period after transplant. For example, a five-year patient survival rate is the percentage of recipients who are still alive five years after their first transplant.

p value

In the context of comparing survival rates across centres, the p value is the probability that the differences observed in the rates across centres occurred by chance. As this is a probability, it takes values between 0 and 1. If the p value is small, say less than 0.05, this implies that the differences are unlikely to be due to chance and there may be some identifiable cause for these differences. If the p value is large, say greater than 0.1, then it is quite likely that any differences seen are due to chance.

Pre-emptive

Recipients that are placed on the kidney transplant list or receive a transplant prior to the need for dialysis are termed as pre-emptive. Recipients listed pre-emptively will usually require dialysis within six months of being placed on the transplant list.

Risk-adjusted survival rate

Some transplants have a higher chance than others of failing at any given time. The differences in expected survival times arise due to differences in certain factors, the risk factors, among recipients. A risk-adjusted survival rate for a centre is the expected survival rate for that centre given the case mix of their recipients. Adjusting for case mix in estimating centre-specific survival rates allows valid comparison of these rates across centres and to the national rate.

Risk factors

These are the characteristics of a recipient, transplant or donor that influence the length of time that a graft is likely to function or a recipient is likely to survive following a transplant. For example, when all else is equal, a transplant from a younger donor is expected to survive longer than that from an older donor and so donor age is a risk factor.

Unadjusted survival rate

Unadjusted survival rates do not take account of risk factors and are based only on the number of transplants at a given centre and the number and timing of those that fail within the post-transplant period of interest. In this case, unlike for risk-adjusted rates, all transplants are assumed to be equally likely to fail at any given time. However, some centres may have lower unadjusted survival rates than others simply because they tend to undertake transplants that have increased risks of failure. Comparison of unadjusted survival rates across centres and to the national rate is therefore inappropriate.

A2 Statistical methodology for survival rate estimation

Unadjusted estimates of patient and graft survival are given for each centre. Unadjusted rates give an estimate of what the survival rate at a centre is, assuming that all recipients at the centre have the same chance of surviving a given length of time after transplant.

Computing unadjusted survival rates

Unadjusted survival rates were calculated using the Kaplan-Meier method, which allows recipients with incomplete follow-up information to be included in the computation. For example, in a cohort for estimating one-year patient survival rates, a recipient was followed up for only nine months before they relocated. If we calculated a crude survival estimate using the number of recipients who survived for at least a year, this recipient would have to be excluded, as it is not known whether or not the recipient was still alive one year after transplant. The Kaplan-Meier method allows information about such recipients to be used for the length of time that they are followed-up, when this information would otherwise be discarded. Such instances of incomplete follow-up are not uncommon in the analysis of survival data and the Kaplan-Meier method therefore allows the computation of survival estimates that are more meaningful.

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