



Blood and Transplant

**ANNUAL REPORT ON
THE NATIONAL ORGAN RETRIEVAL SERVICE
(NORS)**

**REPORT FOR 2023/2024
(1 APRIL 2023 - 31 MARCH 2024)**

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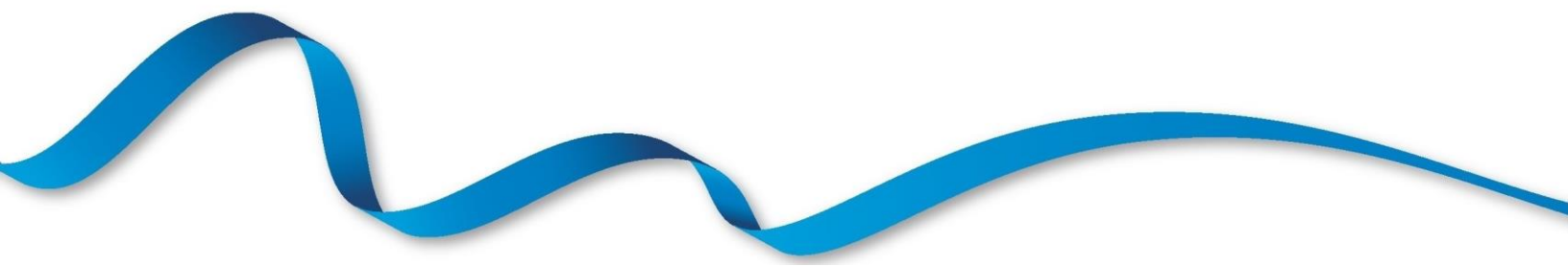
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EXECUTIVE SUMMARY



Executive summary

The National Organ Retrieval Service (NORS) was introduced on 1 April 2010, comprised of 16 NORS teams; 10 abdominal and 6 cardiothoracic surgical teams available to retrieve organs for transplantation from deceased donors in the UK.

This report presents organ retrieval data from the most recent financial year, 1 April 2023 to 31 March 2024. Data were extracted from the UK Transplant Registry on 4 July 2024.

Key findings:

- From 1 April 2023 to 31 March 2024, 1,761 potential organ donors were attended by a retrieval team. 1,507 (86%) of these proceeded to abdominal organ donation and 328 (59% of the 559 attended by a cardiothoracic team) proceeded to cardiothoracic organ donation.
- There was a 4% increase in the number of donors attended in this financial year compared to the previous year (from 1,688 to 1,761).
- On average, 4.9 potential donors were attended by a retrieval team per day, which is an increase from the previous year (4.7).
- On average, abdominal teams attended at least one donor on 51% of on-call days in the year (49% the previous year), while cardiothoracic teams attended at least one donor on 40% of on-call days (35% the previous year).
- There were statistically significant differences in the mean number of DBD and DCD abdominal organs retrieved and subsequently transplanted across abdominal NORS teams.
- The transplantation rates for retrieved organs were variable across organs, from 50% for DBD pancreases, up to 99% for DBD hearts. Additionally, 74 DCD hearts were retrieved, 65 of which were transplanted in that period.
- There were 193 A-NRP attendances, with 161 proceeding to organ donation.

Use of the contents of this report should be acknowledged as follows: *Annual Report on The National Organ Retrieval Service 2023/2024, NHS Blood and Transplant*

INTRODUCTION



Introduction

The National Organ Retrieval Service (NORS) was introduced on 1 April 2010, comprised of 16 NORS teams; 10 abdominal and 6 cardiothoracic surgical teams available to retrieve organs for transplantation from deceased donors in the UK.

This report presents organ retrieval activity from the latest full financial year, 1 April 2023 to 31 March 2024. Data were provided by retrieval teams and Specialist Nurses for Organ Donation (SN-ODs) via the Retrieval Team Information (RTI) and Organ Retrieval Information (ORI) forms. A small proportion (0.5% and 0% for RTI and ORI, respectively) of forms were missing at time of data extraction, 4 July 2024.

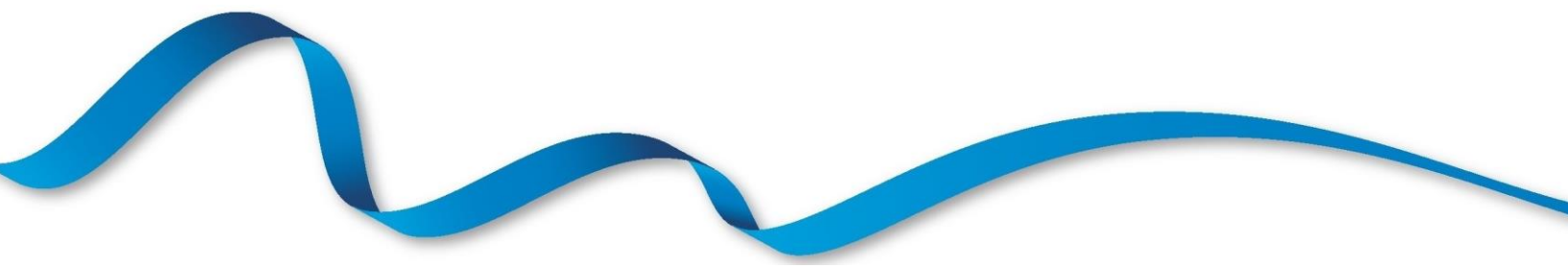
The abdominal service is made up of four full-time teams (52 weeks on-call per annum) and six part-time teams (varying between 15 and 38 weeks on-call per annum). Since 6 January 2020, there have been eight abdominal teams on-call at any time, previously this was seven. Since April 2016, following the NORS Review, all six teams in the cardiothoracic service are part-time (26 weeks on-call per annum) making three teams on-call at any time. Prior to the NORS Review all six cardiothoracic teams were on-call full-time.

Some potential donors are attended by both an abdominal retrieval team and a cardiothoracic retrieval team, but many are only attended by an abdominal retrieval team. Statistics in this report are often presented separately for abdominal and cardiothoracic organ retrieval teams and also for donors after brain death (DBD) and donors after circulatory death (DCD).

Some potential donors are attended by a retrieval team but do not proceed to donation, i.e. no organs are retrieved. Non-proceeding donors are more common in the pool of potential DCD donors as prolonged time to circulatory arrest and death after treatment withdrawal can cause unsuitability of organs for transplantation. Note that a donor may be a non-proceeding cardiothoracic donor but proceed to abdominal organ donation, or vice-versa. Some of the information presented in this report is not relevant for non-proceeding donors and related only to actual donors. We cannot be sure that we have full reporting on all non-proceeding donors attended by retrieval teams as it is only possible to identify these through receipt of an RTI or ORI form.

Since February 2019 NORS teams have been mobilised using a sequence, the first and second teams in the sequence are defined for each UK hospital (largely based on travel times but adjusted to give a more even workload across NORS teams), while subsequent teams in the sequence are ordered based on travel time and availability, known as 'closest available'. If a team is first in sequence for a particular donor hospital, they are required to attend possible donors at that hospital within an agreed timescale if at least one organ has been accepted for transplantation. If the team is already retrieving when they are called to attend, then a second team is called in to retrieve and so on.

ACTIVITY



Donor Attendances

The number of DBD and DCD donors that were attended by each retrieval team between 1 April 2023 and 31 March 2024 is shown in **Table 1a**. The number of donors attended varies due to the geographical distribution of donors and the on-call arrangements, where on-call arrangements for part-time NORS teams are always in a block of seven consecutive days (Monday to Monday), however, handover times vary.

Table 1a Number of donor attendances (proceeding and non-proceeding) per retrieval team, 1 April 2023 - 31 March 2024, by donor type (DBD/DCD)							
Attending retrieval team (Weeks on-call per annum)	DBD		DCD		Total	% of all donors attended	(% attended in 2022/23)
	N	%	N	%			
Abdominal							
Birmingham (38w)	89	43.8	114	56.2	203	11.5	(11.6)
Cambridge (52w)	89	37.7	147	62.3	236	13.4	(13.9)
Cardiff (15w)	22	37.3	37	62.7	59	3.4	(3.6)
Edinburgh (52w)	67	40.6	98	59.4	165	9.4	(9.1)
King's College (52w)	137	51.9	127	48.1	264	15.0	(14.7)
Leeds (38w)	80	46.8	91	53.2	171	9.7	(9.6)
Manchester (38w)	75	48.1	81	51.9	156	8.9	(9.8)
Newcastle (52w)	81	49.4	83	50.6	164	9.3	(8.7)
Oxford (38w)	86	48.3	92	51.7	178	10.1	(9.7)
Royal Free (38w)	67	41.4	95	58.6	162	9.2	(9.4)
Abdominal total	793	45.1	965	54.9	1758	-	(-)
Cardiothoracic							
Birmingham (26w)	81	84.4	15	15.6	96	17.2	(18.1)
Glasgow (26w)	32	48.5	34	51.5	66	11.8	(9.6)
Harefield (26w)	72	67.3	35	32.7	107	19.1	(23.6)
Manchester (26w)	66	80.5	16	19.5	82	14.7	(13.2)
Newcastle (26w)	78	88.6	10	11.4	88	15.7	(11.4)
Papworth (26w)	44	36.7	76	63.3	120	21.5	(24.0)
Cardiothoracic total	373	66.7	186	33.3	559	-	(-)
Total no. attendances	1166	50.3	1151	49.7	2317	100	(100)
Total no. donors attended	794	45.1	967	54.9	1761	100	(100)

There were 6 abdominal retrievals reported as attended by more than one retrieval team. These donors have been allocated to the team which was highest in the attendance sequence.

There were 6 potential donors attended by an off-duty abdominal NORS team (3 from Birmingham, 2 from Oxford and 1 from Leeds) and 17 by an off-duty cardiothoracic NORS team (7 from Papworth, 6 from Harefield and 2 each from Glasgow and Newcastle).

These figures are broken down by whether the donor proceeded to organ donation (actual donors) or not in **Table 1b**. In total in the last financial year there were 1,761 donors attended by a retrieval team. Of these 794 (45%) were potential DBD donors and 967 (55%) were potential DCD donors. 771 of the potential DBD donors attended by an abdominal retrieval team (97%) proceeded to abdominal organ donation, while 227 (61%) of the potential DBD donors attended by a cardiothoracic team proceeded to cardiothoracic donation. For potential DCD donors, 736 (76%) of those attended by an abdominal team proceeded to abdominal donation, while 101 (54%) of those attended by a cardiothoracic team proceeded to cardiothoracic organ donation.

Table 1b Number of donor attendances per retrieval team, 1 April 2023 - 31 March 2024 by donor type (DBD/DCD) and proceeding/non-proceeding						
Attending retrieval team (Weeks on-call per annum)	DBD			DCD		
	Actual	Non-proceeding	% non-proc	Actual	Non-proceeding	% non-proc
Abdominal						
Birmingham (38w)	87	2	2.2	90	24	21.1
Cambridge (52w)	86	3	3.4	113	34	23.1
Cardiff (15w)	22	0	0.0	26	11	29.7
Edinburgh (52w)	66	1	1.5	81	17	17.3
King's College (52w)	132	5	3.6	105	22	17.3
Leeds (38w)	77	3	3.8	73	18	19.8
Manchester (38w)	73	2	2.7	44	37	45.7
Newcastle (52w)	79	2	2.5	60	23	27.7
Oxford (38w)	85	1	1.2	67	25	27.2
Royal Free (38w)	64	3	4.5	77	18	18.9
Abdominal total	771	22	2.8	736	229	23.7
Cardiothoracic						
Birmingham (26w)	46	35	43.2	4	11	73.3
Glasgow (26w)	23	9	28.1	22	12	35.3
Harefield (26w)	38	34	47.2	16	19	54.3
Manchester (26w)	38	28	42.4	3	13	81.3
Newcastle (26w)	52	26	33.3	6	4	40.0
Papworth (26w)	30	14	31.8	50	26	34.2
Cardiothoracic total	227	146	39.1	101	85	45.7
Total donors (abdominal and/or cardiothoracic)	772	22	2.8	738	229	23.7
<p>There were 6 abdominal retrievals reported as attended by more than one retrieval team. These donors have been allocated to the team which was highest in the attendance sequence.</p> <p>There were 6 potential donors attended by an off-duty abdominal NORS team (3 from Birmingham, 2 from Oxford and 1 from Leeds) and 17 by an off-duty cardiothoracic NORS team (7 from Papworth, 6 from Harefield and 2 each from Glasgow and Newcastle).</p>						

Figure 1a shows the proportion of donors attended by any abdominal retrieval team. In the last financial year, King's College attended the highest proportion of abdominal donors (15%) and Cardiff attended the lowest proportion (3%), as teams on call for less than 52 weeks a year will naturally attend fewer donors. **Figure 3b** reflects donors per day when on call, which gives a more balanced metric.

Figure 1a Proportion of donors attended by an abdominal team between 1 April 2019 - 31 March 2024

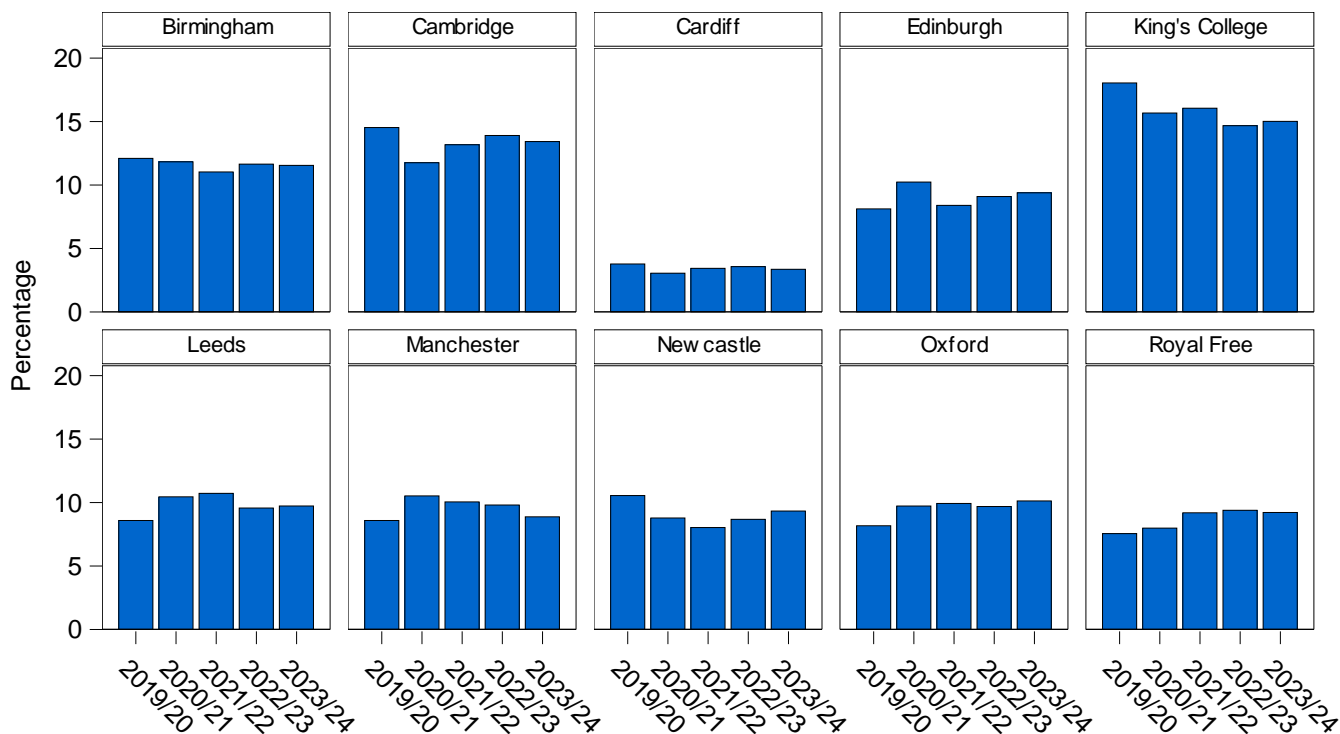


Figure 1b shows the proportion of donors attended by any cardiothoracic retrieval team. In the last financial year, Papworth attended the highest proportion of cardiothoracic donors (21%) and Glasgow attended the lowest proportion (12%).

Figure 1b Proportion of donors attended by an cardiothoracic team between 1 April 2019 - 31 March 2024

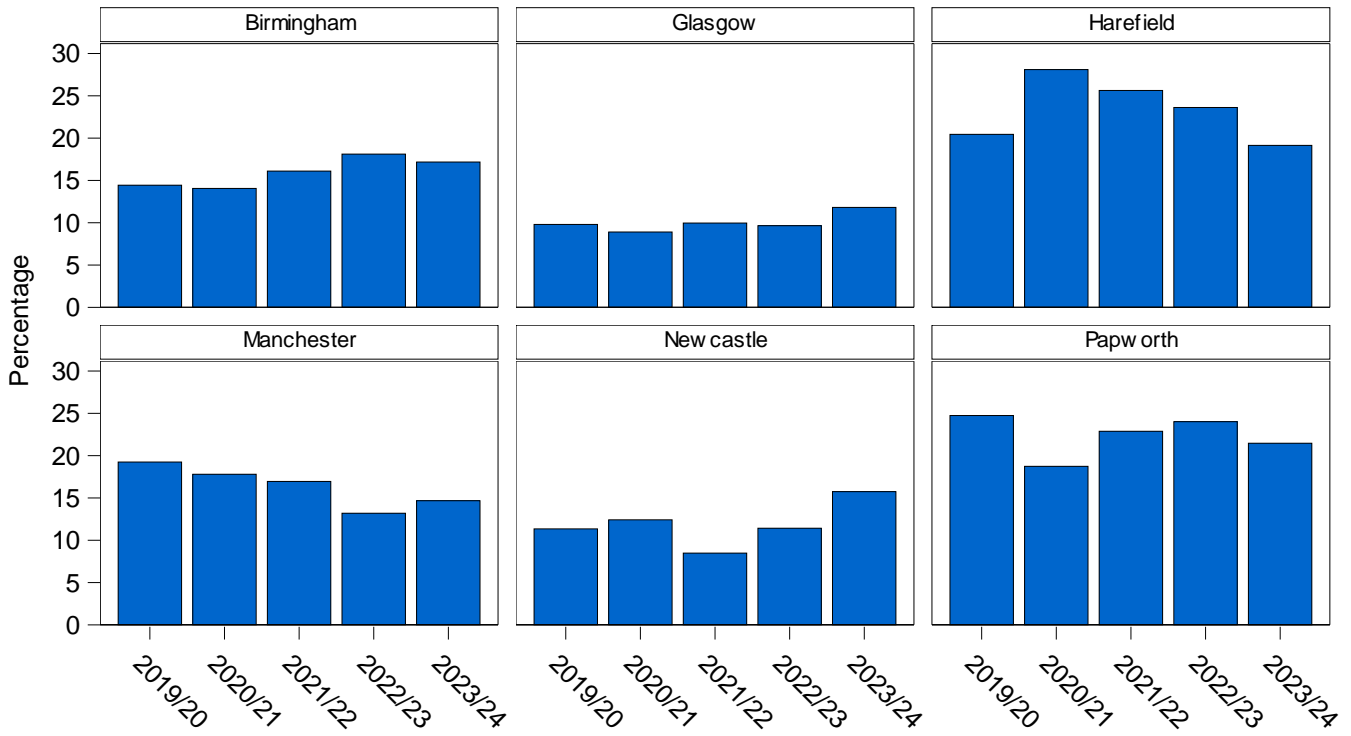


Figure 2 shows the distribution of the number of actual and non-proceeding donors attended by at least one retrieval team (abdominal and cardiothoracic), per day in 2023/24. For example, there were 49 days in the 12-month period (13% of days) where four potential donors were attended by at least one team. The number of donors per day ranged from 0 (3 days) to 11 (1 days). The mean number of donors per day was 4.9.

Figure 2 Distribution of the number of actual and non-proceeding donors attended by at least one retrieval team on any one day during 1 April 2023 - 31 March 2024

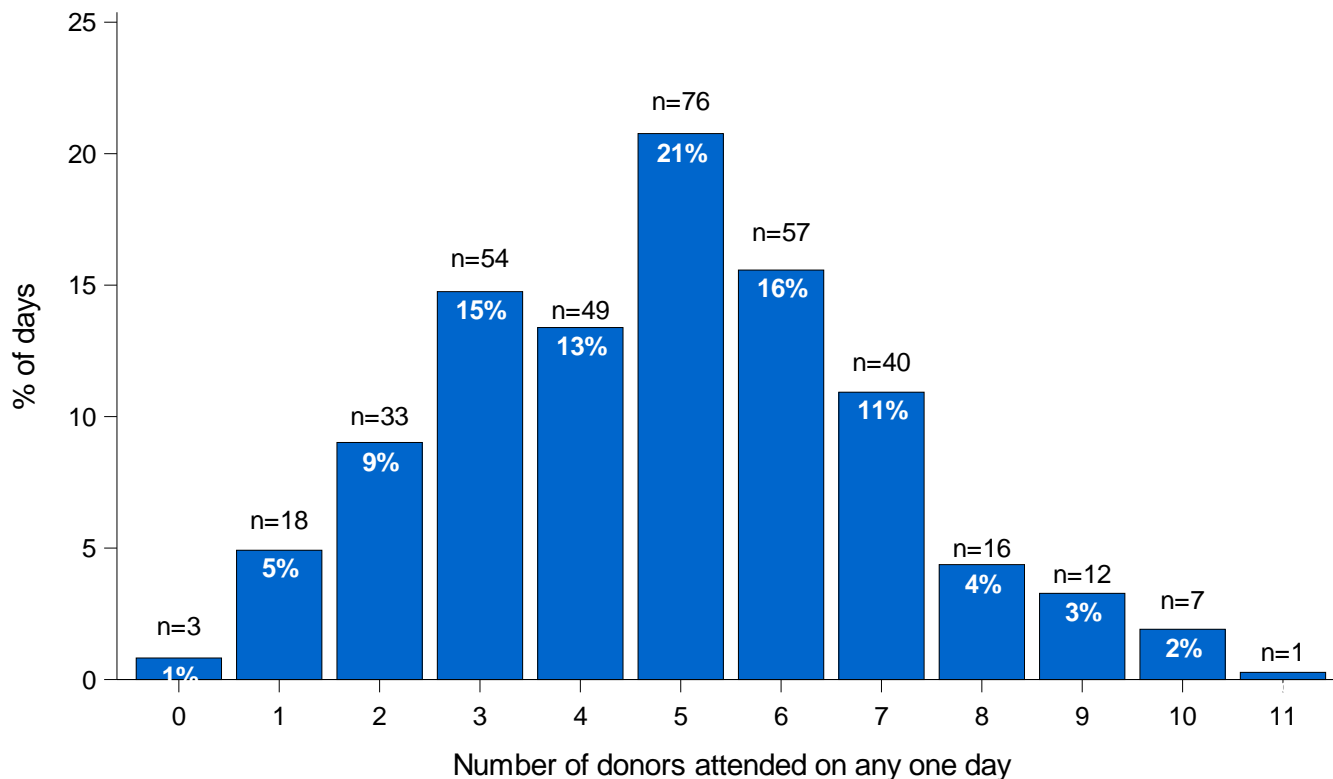


Figure 3a shows the distribution of the number of abdominal teams out on any one day during 2023/24. For example, there were 32 days in the 12-month period (9% of days) where two abdominal teams were out attending donors.

Figure 3a Distribution of the number of abdominal retrieval teams out on any one day, between 1 April 2023 - 31 March 2024

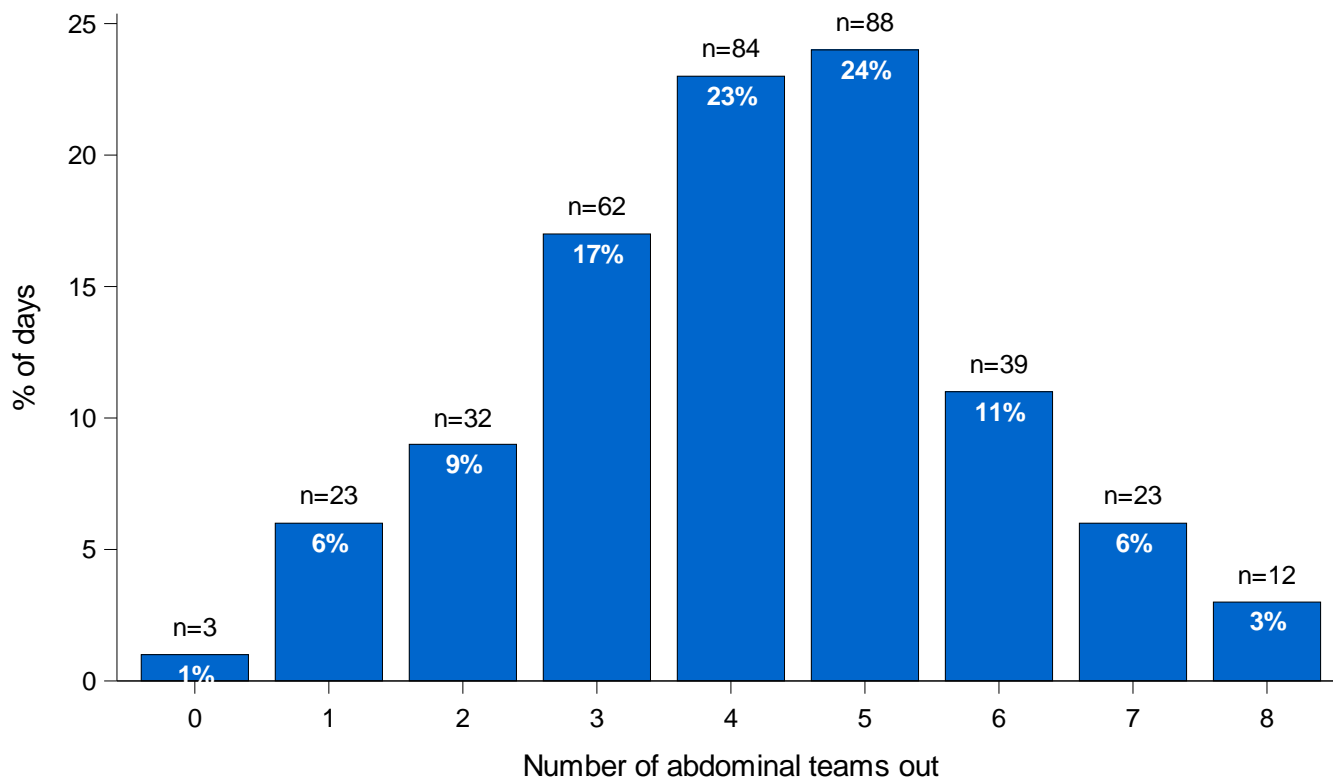


Figure 3b shows the distribution of donors attended by each abdominal team on any one day (that they were on call) during the year. On average abdominal teams did not attend any donors on 49% of the days in the year, attended one donor 44% of days, attended two donors 7% of days, and attended three donors 1% of days. The 'busiest' team in 2023/24 in terms of days active was Birmingham (when on call).

Figure 3b Distribution of donors attended by each abdominal team on any one day, 1 April 2023 - 31 March 2024

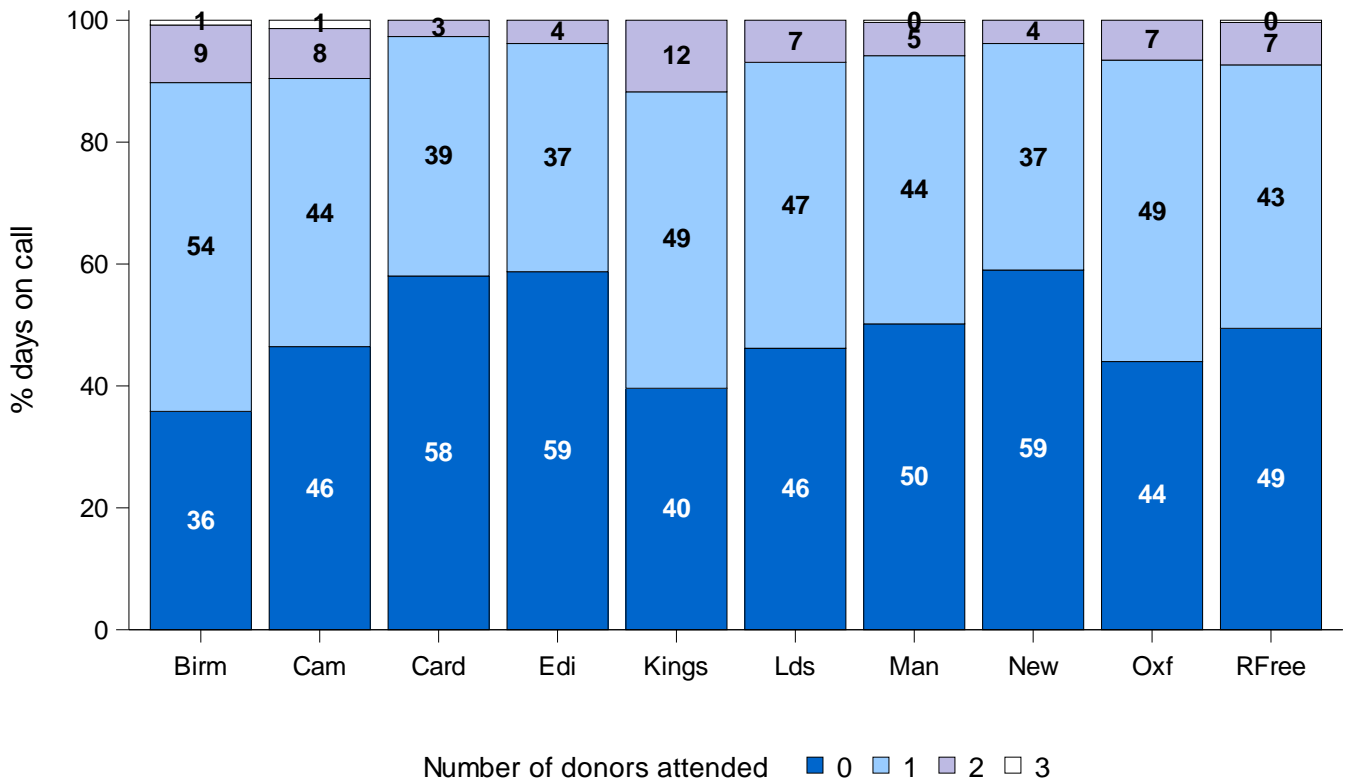


Figure 4a shows the distribution of the number of cardiothoracic teams out on any one day during 2023/24. It is most common for one cardiothoracic team to be out on any given day.

Figure 4a Distribution of the number of cardiothoracic retrieval teams out on any one day, between 1 April 2023 - 31 March 2024

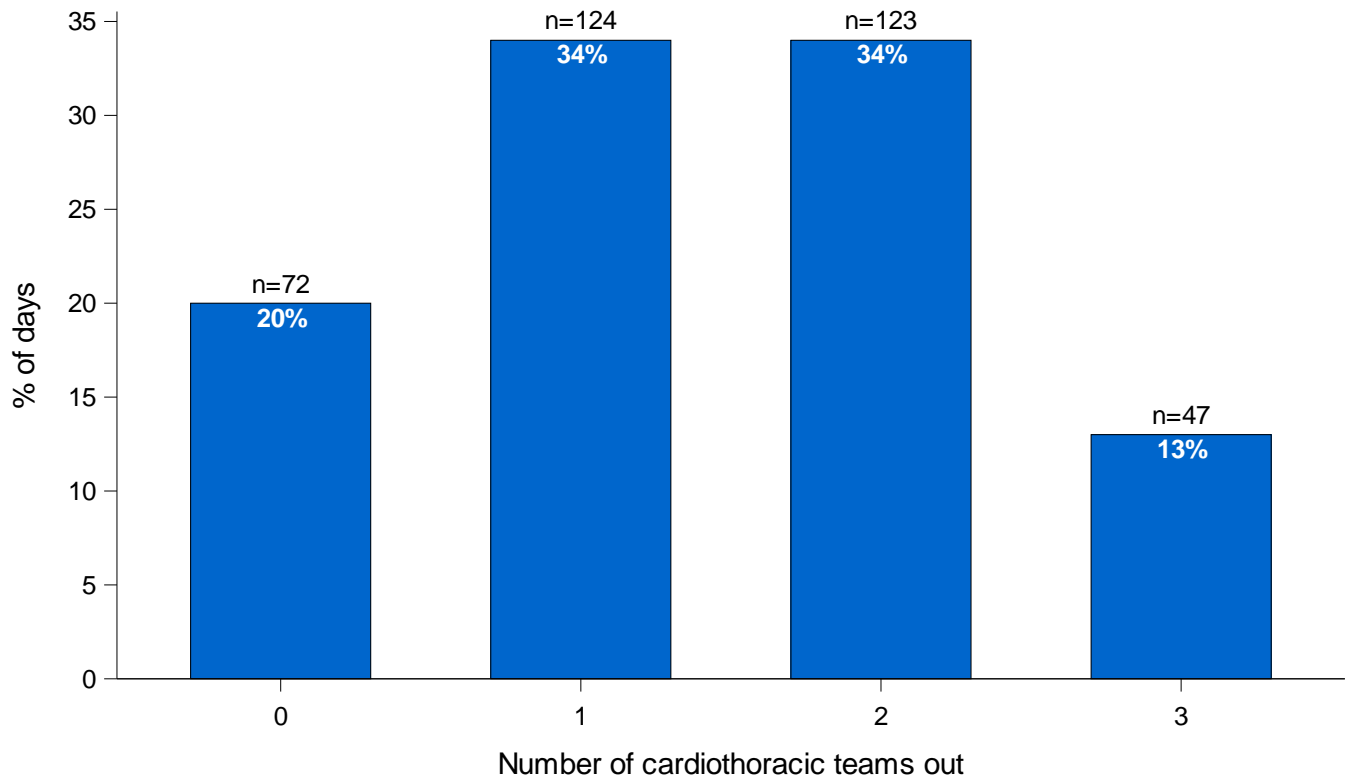
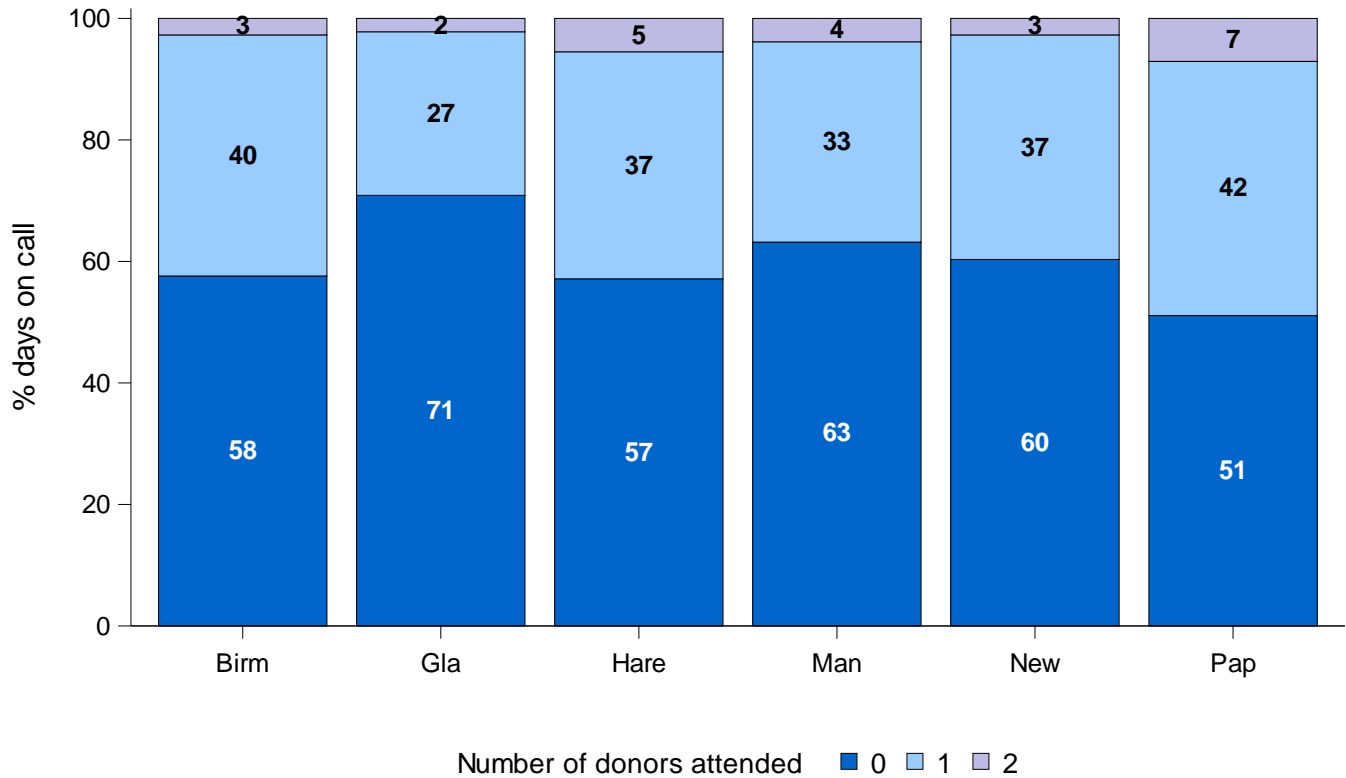


Figure 4b shows the distribution of donors attended by each cardiothoracic team on any one day (that they were on call) during the year. On average cardiothoracic teams did not attend any donors on 60% of the days in the year, attended one donor 36% of days, and attended two donors 4% of days. The 'busiest' team in 2023/24 in terms of days active was Papworth (when on call).

Figure 4b Distribution of donors attended by each cardiothoracic team on any one day, 1 April 2023 - 31 March 2024



The time taken for teams to attend a donor is shown by team for the most recent five financial years in **Figures 5a and 5b**. The time shown is the time from the beginning of muster time (one hour prior to departure from base for attendances pre August 2021, 90 minutes for attendances August 2021 onwards) to return to base, which is estimated from theatre departure times and travel times. The median is the horizontal line in the box, and the box shows the interquartile range, with the whiskers showing the range of the data. Cases where retrieval took more than 48 hours have been removed along with cases where not all date/time points required were reported.

Figure 5a Median (IQR) time an abdominal team is out attending a donor from departure to return to base, between 1 April 2019 - 31 March 2024

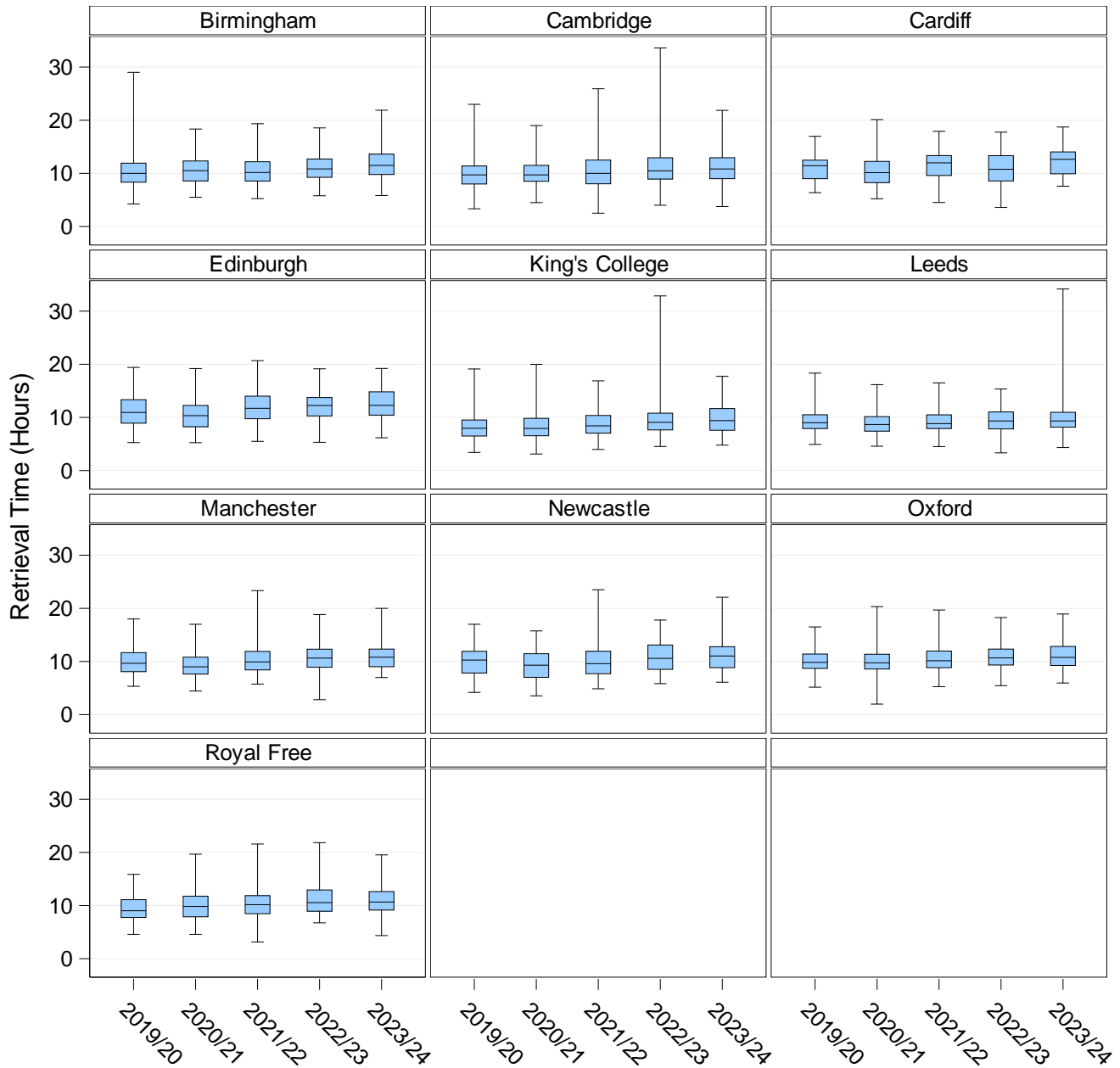
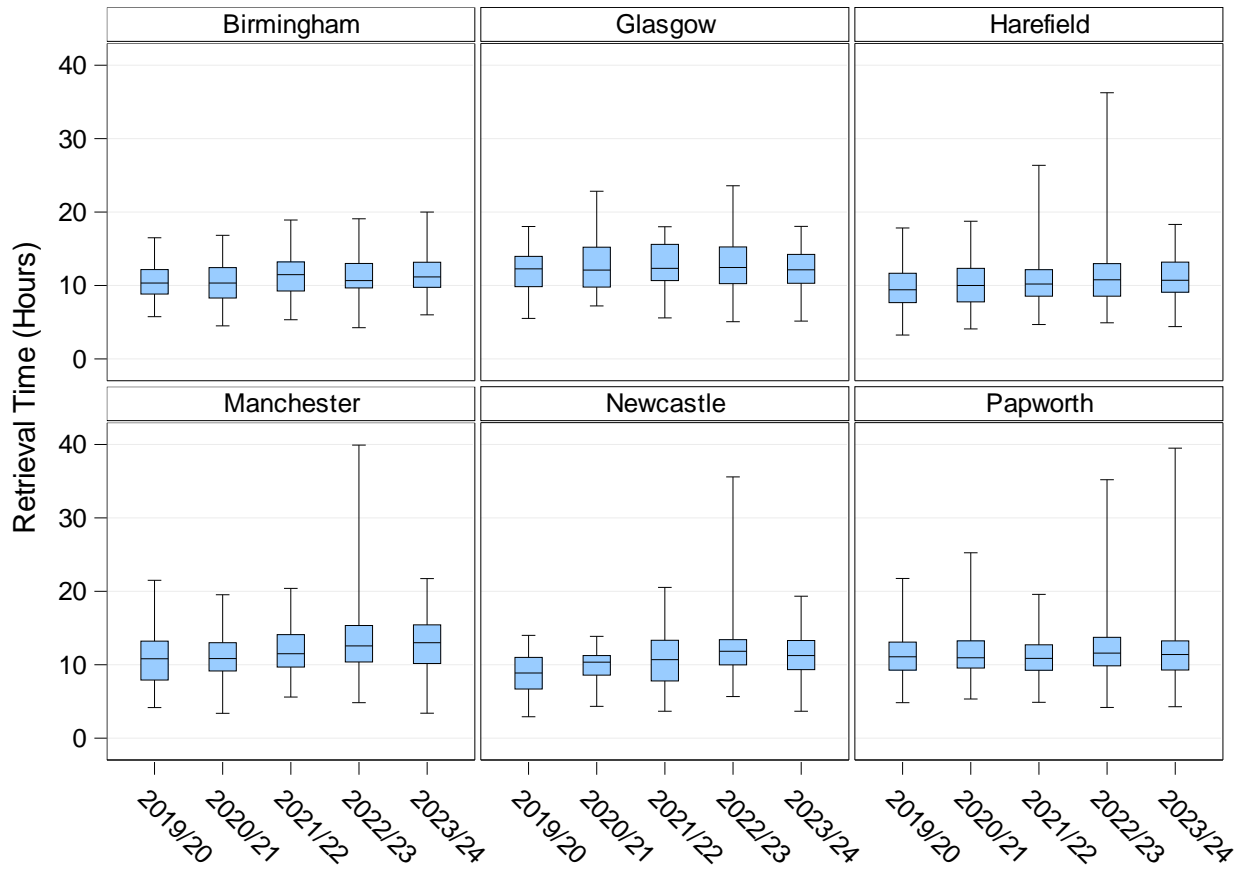


Figure 5b Median (IQR) time a cardiothoracic team is out attending a donor from departure to return to base, between 1 April 2019 - 31 March 2024



The day of week and time of day at which mobilisation of NORS teams occurred throughout the year, and for the previous year are presented as heat maps in **Figures 6a and 6b**, for abdominal and cardiothoracic teams, respectively. Mobilisation time is the time that the team actually departed from their base. Note that time of departure from base is not available for all cases. Heat maps are used here to indicate the level of activity, darker shades are used to indicate higher activity.

Figure 6a Mobilisation time of abdominal teams, 1 April 2022 - 31 March 2024

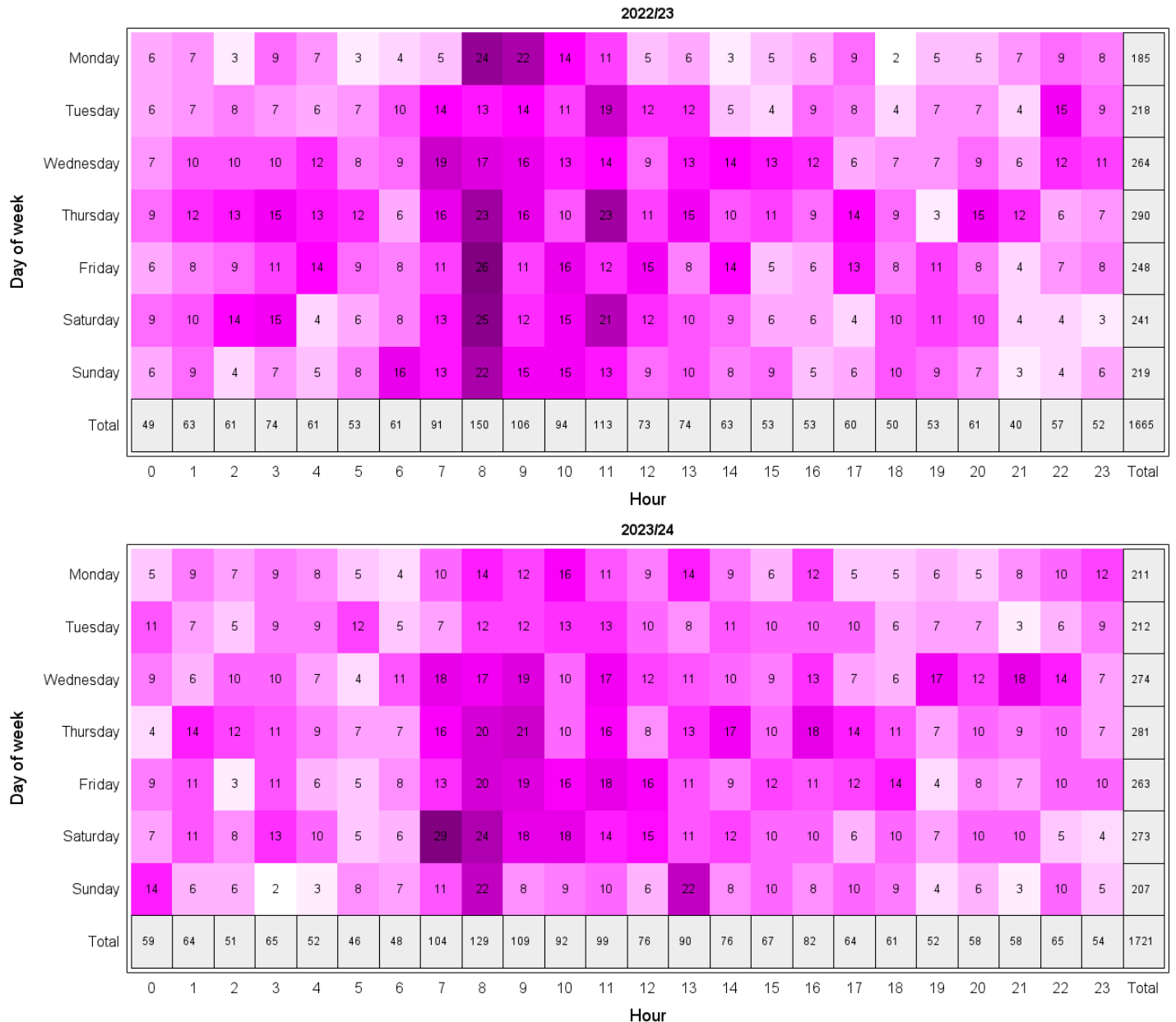
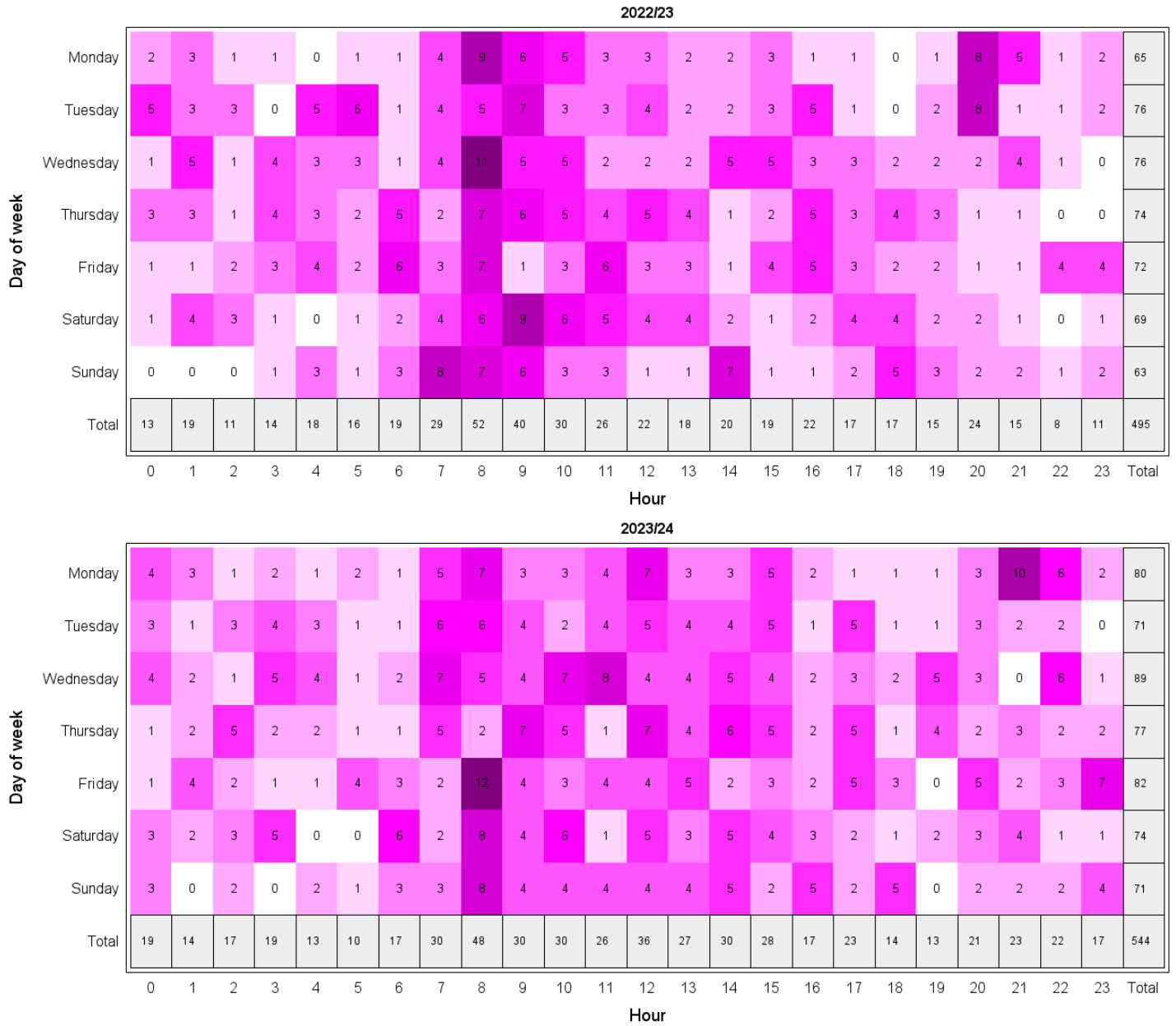


Figure 6b Mobilisation time of cardiothoracic teams, 1 April 2022 - 31 March 2024



The day of week and time of day at which donor cross-clamp occurred throughout the year, and for the previous year are presented as heat maps in **Figures 7a and 7b**, for abdominal only and joint abdominal and cardiothoracic donors, respectively. Note that time of cross-clamp is not available for all cases. Heat maps are used here to indicate the level of activity, darker shades are used to indicate higher activity.

Figure 7a Cross-clamp time of abdominal only donors, 1 April 2022 - 31 March 2024

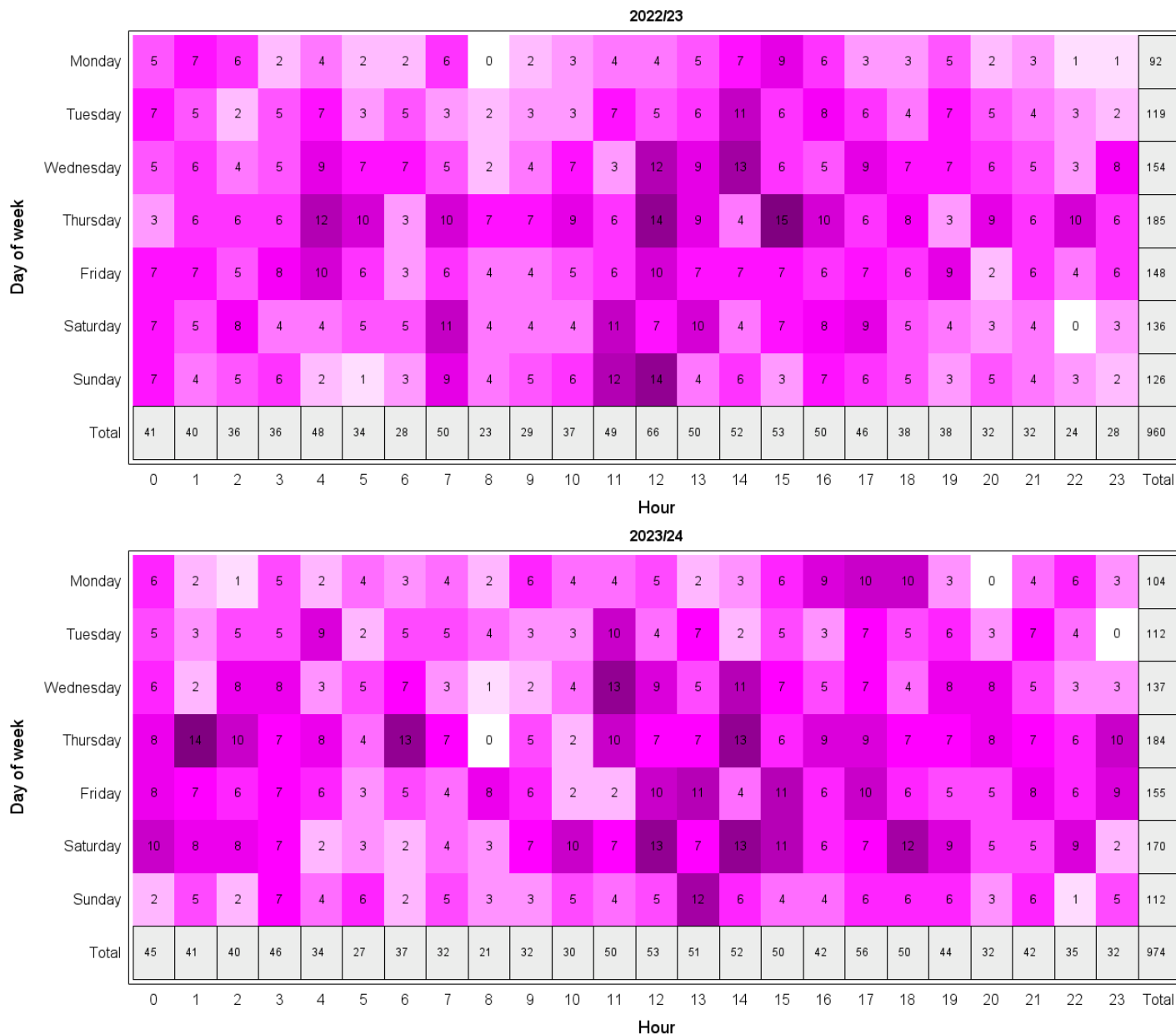
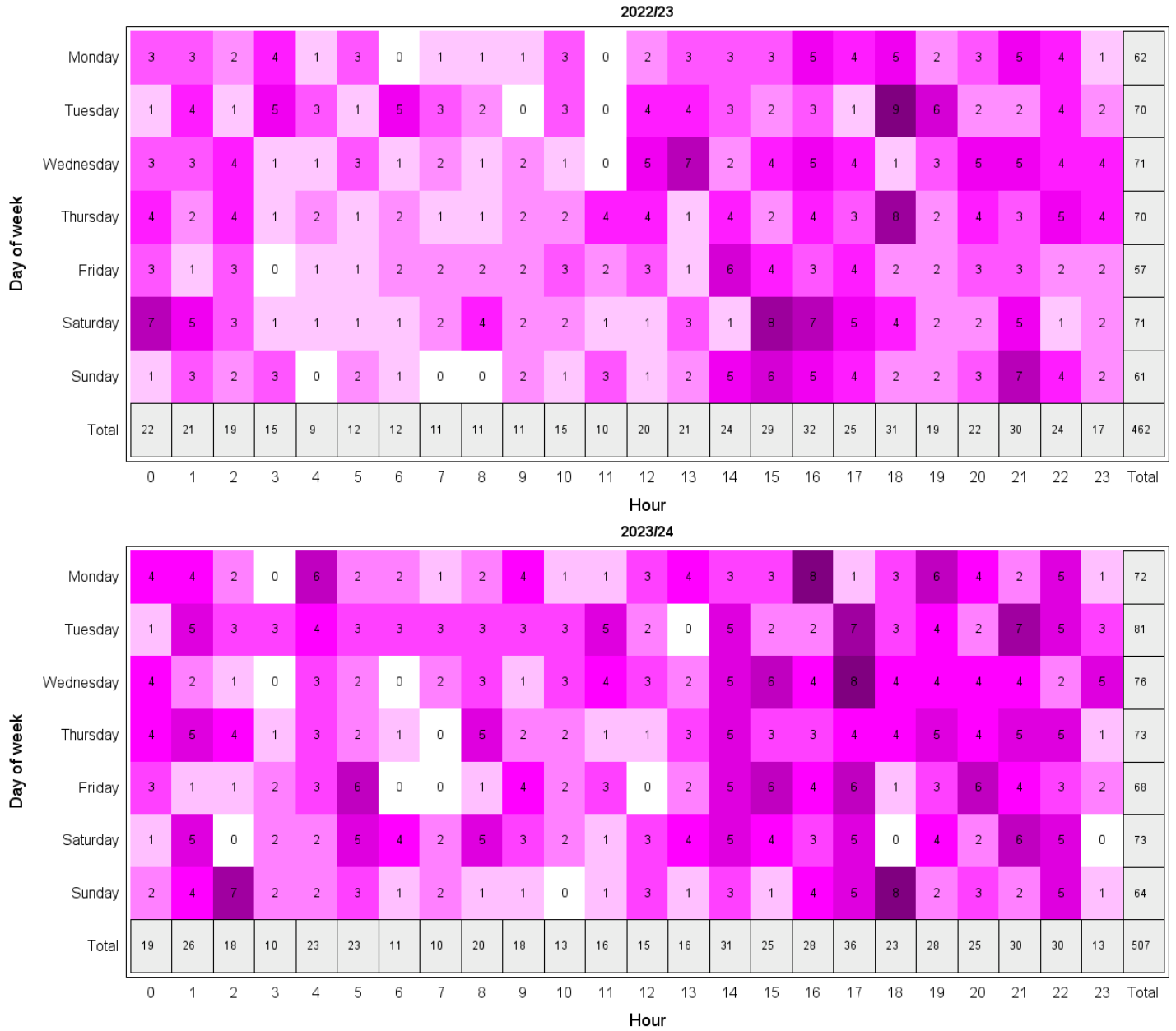


Figure 7b Cross-clamp time of abdominal and cardiothoracic donors, 1 April 2022 - 31 March 2024



The proportion of occasions where the travel time to a donor hospital is greater than three hours is shown in **Figures 8a and 8b**, for abdominal and cardiothoracic teams, respectively. Both figures include donor attendances where flights were used.

Figure 8a Proportion of donor attendances (actual and non-proceeding) outside of 3 hours travel time for each abdominal team, between 1 April 2023 - 31 March 2024

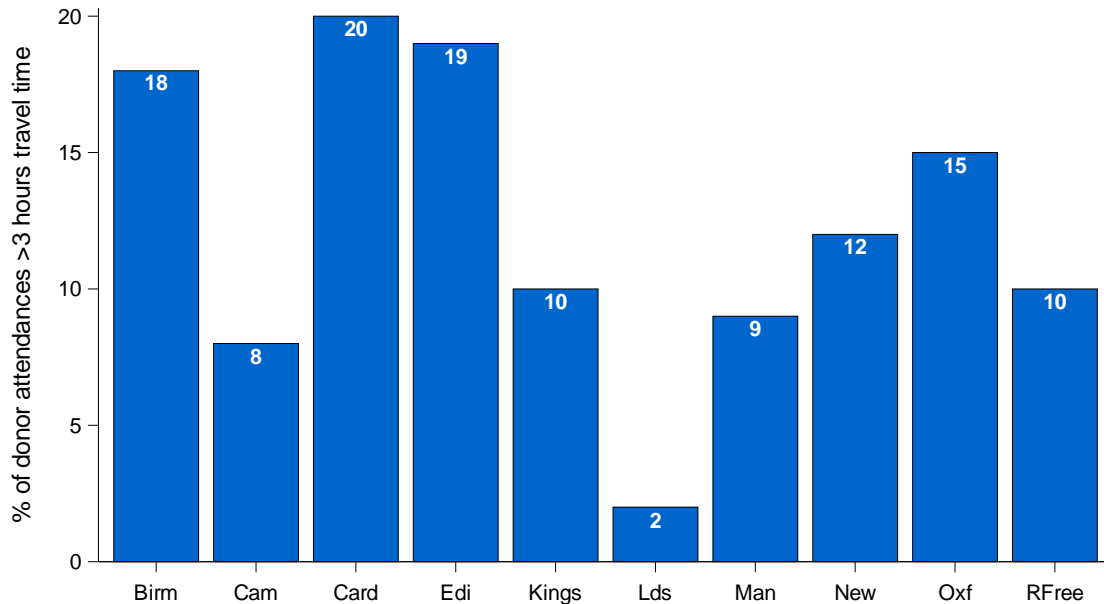
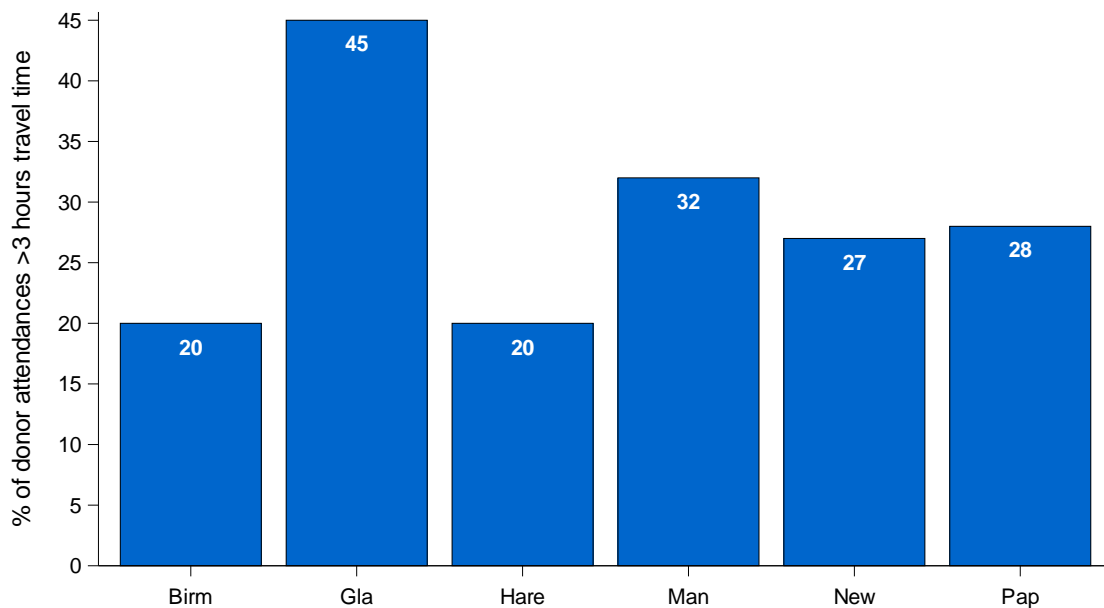


Figure 8b Proportion of donor attendances (actual and non-proceeding) outside of 3 hours travel time for each cardiothoracic team, between 1 April 2023 - 31 March 2024



The travel time to a donor hospital is shown in **Figures 9a and 9b**, for abdominal and cardiothoracic teams, respectively. Both figures include donor attendances where flights were used and are to the nearest hour.

Figure 9a Travel time to donor hospital for each abdominal team, between 1 April 2023 - 31 March 2024

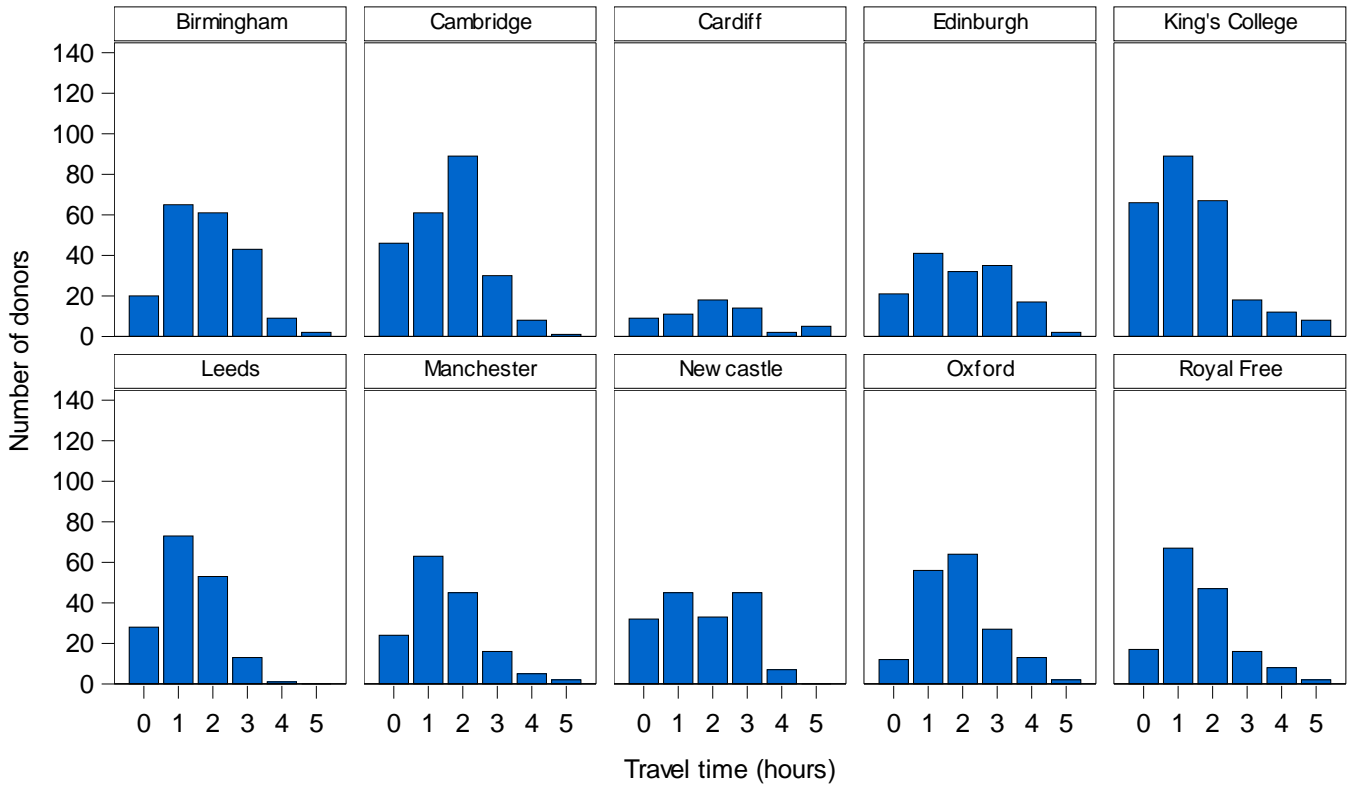
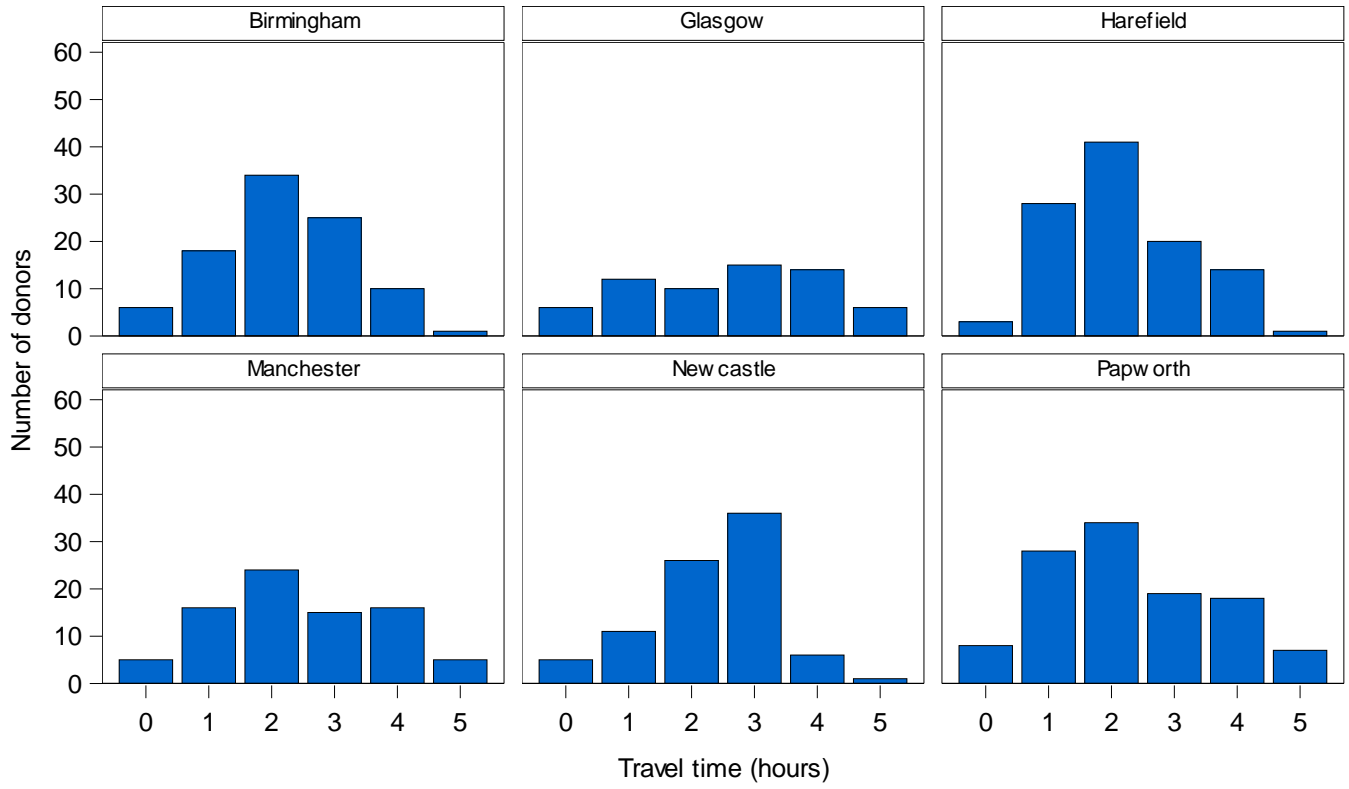


Figure 9b Travel time to donor hospital for each cardiothoracic team, between 1 April 2023 - 31 March 2024



Organs Retrieved

Table 2a shows the percentage of actual abdominal donors donating their kidneys, livers, pancreases and bowels by the team that attended and the donor type. Overall, 94% of actual DBD donors (donating at least one abdominal organ) donated their kidneys, 90% donated their liver, 30% donated their pancreas and 3% donated their bowel. The overall donation rates for actual DCD donors are lower for livers and pancreases and higher for kidneys. DCD donors cannot donate their small bowel.

Attending retrieval team		No. of abdo. donors		% donors donating							
		DBD	DCD	Kidneys		Livers		Pancreases		Bowel	
		DBD	DCD	DBD	DCD	DBD	DCD	DBD	DCD	DBD	DCD
Birmingham		87	90	92.0	93.3	90.8	51.1	27.6	15.6	2.3	-
Cambridge		86	113	93.0	98.2	94.2	63.7	33.7	15.0	15.1	-
Cardiff		22	26	90.9	92.3	81.8	76.9	27.3	19.2	0.0	-
Edinburgh		66	81	100	98.8	93.9	74.1	39.4	17.3	0.0	-
King's College		132	105	92.4	98.1	90.9	50.5	33.3	15.2	3.8	-
Leeds		77	73	93.5	98.6	83.1	56.2	35.1	21.9	1.3	-
Manchester		73	44	97.3	100	87.7	40.9	16.4	15.9	0.0	-
Newcastle		79	60	97.5	100	89.9	53.3	30.4	15.0	0.0	-
Oxford		85	67	91.8	100	90.6	41.8	29.4	16.4	3.5	-
Royal Free		64	77	92.2	100	85.9	49.4	25.0	9.1	0.0	-
Total		771	736	94.0	98.1	89.6	55.4	30.2	15.8	3.1	-

Table 2b shows the number of abdominal donors by what organs were donated, this is broken down by donor type and the attending retrieval team. This includes any donors who proceeded to cardiothoracic donation as well as abdominal donation.

Table 2b Abdominal organs donated, 1 April 2023 - 31 March 2024, by attending retrieval team								
Attending retrieval team	Total donors		Kidney only		Liver only		Abdominal multi-organ	
	DBD	DCD	DBD	DCD	DBD	DCD	DBD	DCD
Birmingham	87	90	6	39	6	6	75	45
Cambridge	86	113	5	40	6	2	75	71
Cardiff	22	26	4	5	1	2	17	19
Edinburgh	66	81	3	20	0	1	63	60
King's College	132	105	12	49	10	2	110	54
Leeds	77	73	9	29	4	1	64	43
Manchester	73	44	9	23	1	0	63	21
Newcastle	79	60	6	28	2	0	71	32
Oxford	85	67	8	36	6	0	71	31
Royal Free	64	77	7	38	5	0	52	39
Total	771	736	69	307	41	14	661	415

Table 2c shows the number of abdominal organs retrieved and the percentage that were transplanted, this is broken down by organ type and the attending retrieval team.

Table 2c Abdominal organs retrieved and percentage that went on to be transplanted, 1 April 2023 - 31 March 2024, by attending retrieval team								
Attending retrieval team	Kidneys		Livers		Pancreases		Bowel	
	Retrieved	% txd	Retrieved	% txd	Retrieved	% txd	Retrieved	% txd
DBD								
Birmingham	159	92.5	79	86.1	24	54.2	2	100
Cambridge	160	86.3	81	82.7	29	79.3	13	100
Cardiff	39	74.4	18	83.3	6	33.3	0	-
Edinburgh	132	87.1	62	85.5	26	65.4	0	-
King's College	242	93.0	120	82.5	44	45.5	5	80.0
Leeds	142	92.3	64	76.6	27	44.4	1	0.0
Manchester	139	88.5	64	75.0	12	33.3	0	-
Newcastle	154	88.3	71	78.9	24	37.5	0	-
Oxford	155	88.4	77	87.0	25	52.0	3	100
Royal Free	116	81.9	55	74.5	16	25.0	0	-
Total	1438	88.7	691	81.5	233	50.2	24	91.7
DCD								
Birmingham	167	83.2	46	58.7	14	35.7	-	-
Cambridge	219	79.0	72	72.2	17	58.8	-	-
Cardiff	48	79.2	20	75.0	5	0.0	-	-
Edinburgh	159	93.7	60	65.0	14	71.4	-	-
King's College	201	86.6	53	60.4	16	62.5	-	-
Leeds	142	85.2	41	58.5	16	62.5	-	-
Manchester	88	86.4	18	77.8	7	71.4	-	-
Newcastle	118	83.1	32	62.5	9	33.3	-	-
Oxford	133	85.0	28	57.1	11	45.5	-	-
Royal Free	151	82.8	38	63.2	7	28.6	-	-
Total	1426	84.6	408	64.5	116	51.7	-	-
Total	2864	86.7	1099	75.2	349	50.7	24	91.7

Figures 10a and 10b show the number of organs retrieved, by attending retrieval team, for DBD and DCD donors, respectively.

Figure 10a DBD abdominal organs retrieved, 1 April 2023 - 31 March 2024 by attending retrieval team

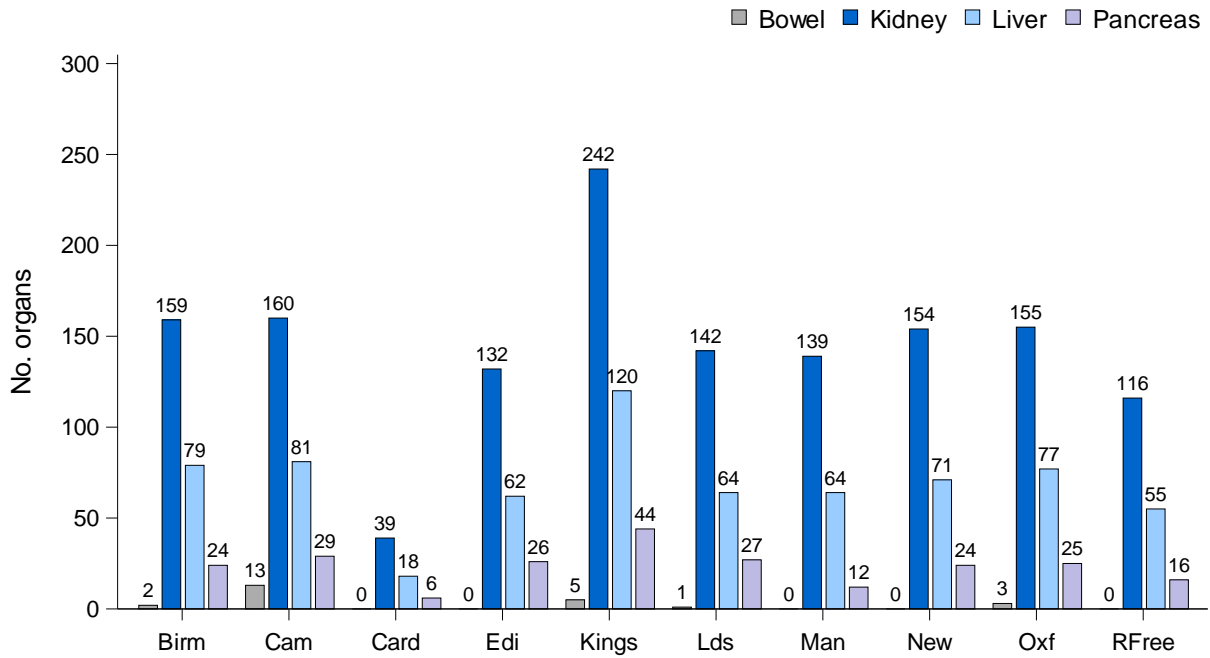


Figure 10b DCD abdominal organs retrieved, 1 April 2023 - 31 March 2024 by attending retrieval team

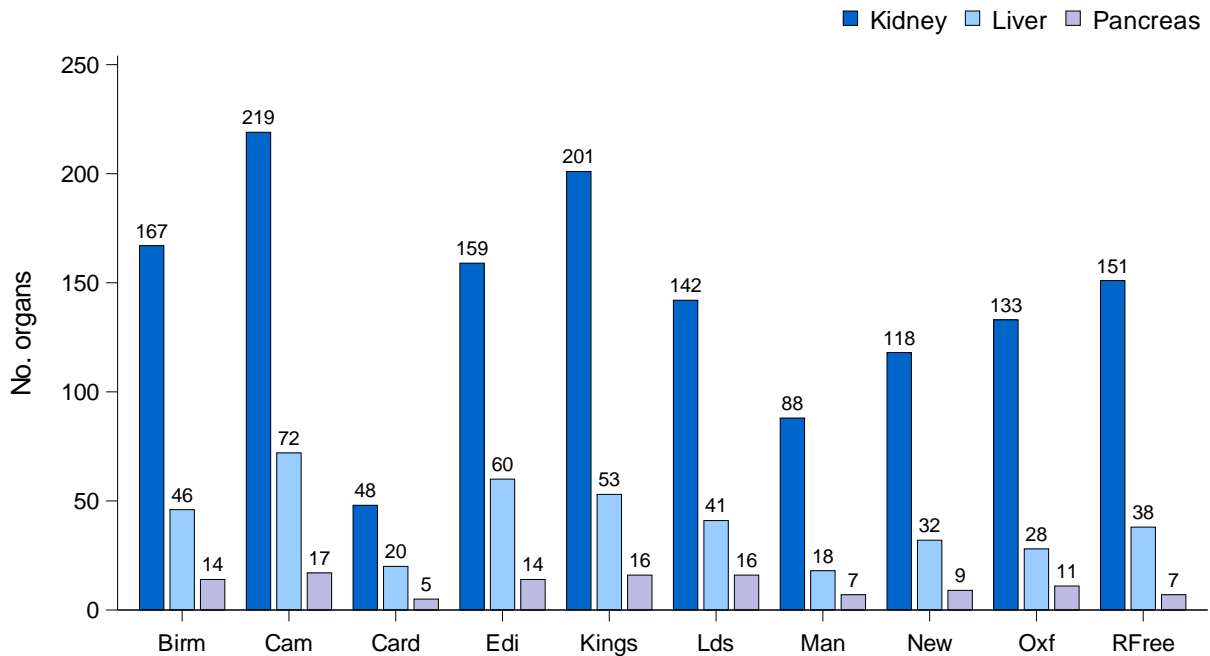


Table 2d shows the mean number of abdominal organs retrieved and transplanted for each proceeding abdominal donor, by attending retrieval team and donor type. Mean donor age is also reported.

- The mean number of organs retrieved per DBD donor ranged from 2.9 to 3.3 across teams, analysis of variance indicated that the differences were statistically significant (p=0.03).
- The mean number of organs transplanted per DBD donor ranged from 2.1 to 2.8 across teams, analysis of variance indicated that the differences were statistically significant (p=0.005).
- The mean number of organs retrieved per DCD donor ranged from 2.5 to 2.9 across teams, analysis of variance indicated that the differences were statistically significant (p=0.04).
- The mean number of organs transplanted per DCD donor ranged from 1.9 to 2.4 across teams, analysis of variance indicated that the differences were statistically significant (p=0.05).

Table 2d Mean donor age, organs retrieved, and organs transplanted, per proceeding abdominal donor, 1 April 2023 - 31 March 2024, by attending retrieval team														
Attending retrieval team	Actual abdo. donors	Donor age		DBD Orgs. retrieved		Orgs. txd		Actual abdo. donors	Donor age		DCD Orgs. retrieved		Orgs. txd	
		Mean	(SD.)	Mean	(SD.)	Mean	(SD.)		Mean	(SD.)	Mean	(SD.)	Mean	(SD.)
Birmingham	87	51.2	(17.2)	3.0	(0.8)	2.6	(1.0)	90	54.4	(14.7)	2.5	(0.8)	1.9	(0.9)
Cambridge	86	48.1	(19.5)	3.3	(1.0)	2.8	(1.4)	113	54.9	(13.9)	2.7	(0.7)	2.1	(1.1)
Cardiff	22	51.1	(16.6)	2.9	(0.8)	2.1	(1.0)	26	55.4	(15.1)	2.8	(0.8)	2.0	(1.1)
Edinburgh	66	44.1	(16.0)	3.3	(0.6)	2.8	(0.9)	81	54.0	(15.9)	2.9	(0.7)	2.4	(0.8)
King's College	132	51.0	(18.1)	3.1	(0.9)	2.6	(1.1)	105	56.4	(14.9)	2.6	(0.8)	2.1	(0.9)
Leeds	77	48.8	(16.7)	3.0	(0.8)	2.5	(1.0)	73	50.6	(15.8)	2.7	(0.8)	2.1	(1.0)
Manchester	73	51.0	(14.9)	2.9	(0.6)	2.4	(0.8)	44	54.2	(15.6)	2.6	(0.7)	2.2	(1.0)
Newcastle	79	50.6	(16.0)	3.2	(0.7)	2.5	(0.9)	60	52.1	(14.3)	2.7	(0.7)	2.0	(1.0)
Oxford	85	53.5	(17.4)	3.1	(0.9)	2.6	(1.1)	67	54.1	(14.6)	2.6	(0.7)	2.0	(1.0)
Royal Free	64	53.8	(14.9)	2.9	(0.8)	2.2	(1.1)	77	57.0	(13.5)	2.5	(0.7)	2.0	(0.9)
Total	771	50.4	(17.1)	3.1	(0.8)	2.6	(1.1)	736	54.4	(14.8)	2.6	(0.7)	2.1	(1.0)

Table 3a shows the number of cardiothoracic organs retrieved and the percentage that were transplanted, this is broken down by organ type and the attending retrieval team. Overall, 51% of DBD donors (donating at least one cardiothoracic organ) donated their heart only, 24% donated their lung(s) only, and 25% donated their heart and lung(s).

DCD donors in the UK have, until recent years, been able only to donate lungs for transplant. DCD heart retrieval is a highly complex procedure which can only be undertaken using perfusion technology. The technique was developed in the UK, with activity increasing over the past few years due to a focused pilot. The retrieval of DCD hearts is undertaken by highly experienced staff within specific NORS teams, funded non recurrently in 2023/24. Longer term funding to support commissioning of DCD heart retrieval has not yet been secured. Despite this, 58% of actual DCD donors donated their heart only, 27% donated their lung(s) only, and 15% donated their heart and lung(s). DCD heart retrieval contributed to 27% of all heart transplants in the UK in 2023/24. The Perfusion Technologies section of this report contains more information on DCD heart activity.

Table 3a Organs retrieved from actual cardiothoracic donors, 1 April 2023 - 31 March 2024, by attending retrieval team								
Attending retrieval team	DBD donors donating				DCD donors donating			
	N	Heart only (%)	Lung only (%)	Heart & lung (%)	N	Heart only (%)	Lung only (%)	Heart & lung (%)
Birmingham	46	60.9	17.4	21.7	4	0.0	100	0.0
Glasgow	23	65.2	26.1	8.7	22	54.5	22.7	22.7
Harefield	38	42.1	34.2	23.7	16	68.8	25.0	6.3
Manchester	38	42.1	21.1	36.8	3	0.0	100	0.0
Newcastle	52	42.3	26.9	30.8	6	0.0	100	0.0
Papworth	30	63.3	20.0	16.7	50	72.0	10.0	18.0
Total	227	51.1	24.2	24.7	101	58.4	26.7	14.9

Table 3b shows the number of cardiothoracic organs retrieved and the percentage that were transplanted, this is broken down by organ type and the attending retrieval team. For example, there were 219 DBD lungs retrieved and of these 97% were transplanted.

Table 3b Cardiothoracic organs retrieved and percentage that went on to be transplanted, 1 April 2023 - 31 March 2024, by attending retrieval team				
Attending retrieval team	Hearts		Lungs	
	Retrieved	% txd	Retrieved	% txd
DBD				
Birmingham	38	97.4	35	100
Glasgow	17	100	16	100
Harefield	25	100	44	95.5
Manchester	30	100	43	95.3
Newcastle	38	97.4	59	98.3
Papworth	24	100	22	90.9
Total	172	98.8	219	96.8
DCD				
Birmingham	0	-	8	50.0
Glasgow	17	94.1	20	100
Harefield	12	91.7	10	80.0
Manchester	0	-	6	66.7
Newcastle	0	-	12	66.7
Papworth	45	84.4	28	67.9
Total	74	87.8	84	75.0
Total	246	95.5	303	90.8

Figures 11a and 11b show the number of organs retrieved, by attending retrieval team, for DBD and DCD donors, respectively.

Figure 11a DBD cardiothoracic organs retrieved, 1 April 2023 - 31 March 2024 by attending retrieval team

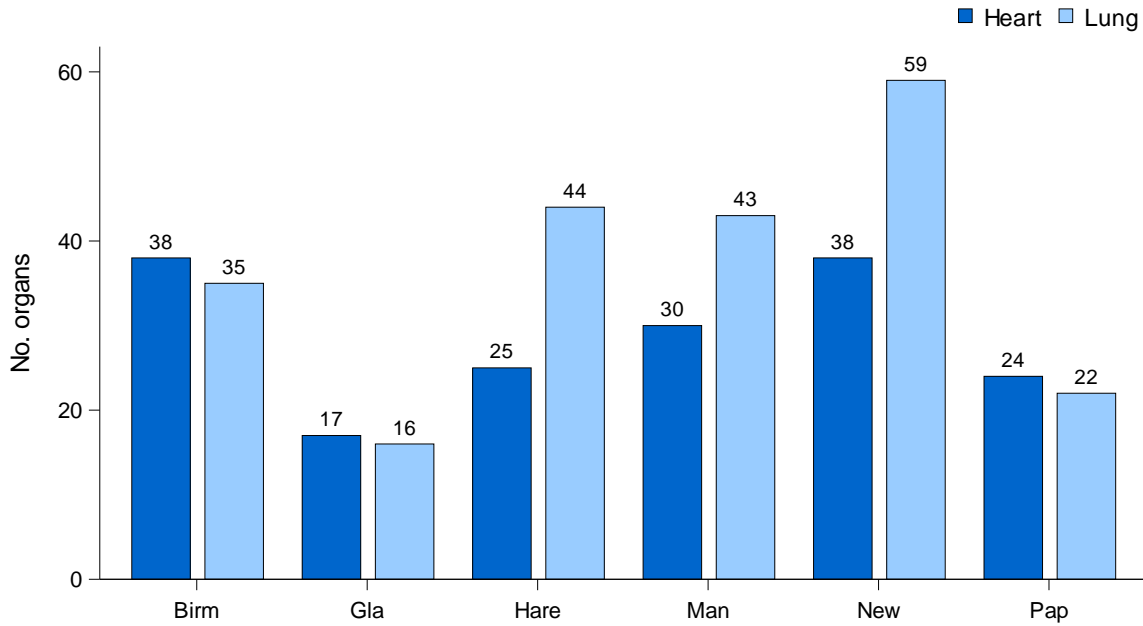


Figure 11b DCD cardiothoracic organs retrieved, 1 April 2023 - 31 March 2024 by attending retrieval team

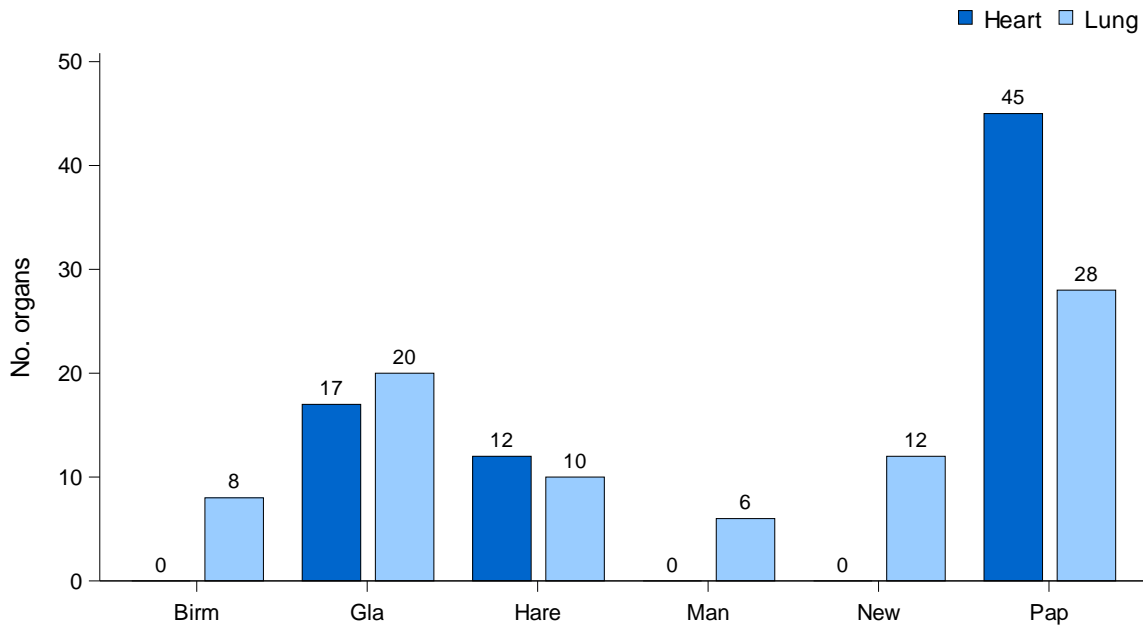
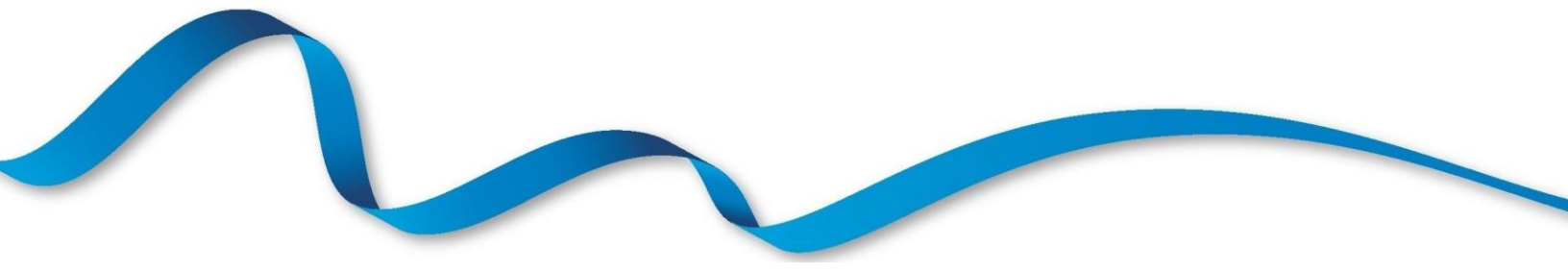


Table 3c shows the mean number of cardiothoracic organs retrieved and transplanted for each proceeding cardiothoracic donor, by attending retrieval team and donor type. Mean donor age is also reported.

- The mean number of organs retrieved per DBD donor ranged from 1.4 to 1.9 across teams, analysis of variance indicated that the differences were not statistically significant (p=0.07).
- The mean number of organs transplanted per DBD donor ranged from 1.4 to 1.9 across teams, analysis of variance indicated that the differences were not statistically significant (p=0.12).
- The mean number of organs retrieved per DCD donor ranged from 1.4 to 2.0 across teams, analysis of variance indicated that the differences were not statistically significant (p=0.21).
- The mean number of organs transplanted per DCD donor ranged from 1.0 to 1.6 across teams, analysis of variance indicated that the differences were not statistically significant (p=0.27).

Table 3c Mean donor age, organs retrieved, and organs transplanted, per proceeding cardiothoracic donor, 1 April 2023 - 31 March 2024, by attending retrieval team														
Attending retrieval team	Actual cardio. donors	Donor age		DBD Orgs. retrieved		Orgs. txd		Actual cardio. donors	Donor age		DCD Orgs. retrieved		Orgs. txd	
		Mean	(SD.)	Mean	(SD.)	Mean	(SD.)		Mean	(SD.)	Mean	(SD.)	Mean	(SD.)
Birmingham	46	38.3	(14.5)	1.6	(0.8)	1.6	(0.8)	4	52.5	(4.2)	2.0	(0.0)	1.0	(1.2)
Glasgow	23	39.0	(14.1)	1.4	(0.7)	1.4	(0.7)	22	37.9	(14.5)	1.7	(0.8)	1.6	(0.9)
Harefield	38	39.7	(17.0)	1.8	(0.8)	1.8	(0.9)	16	40.9	(11.4)	1.4	(0.6)	1.2	(0.8)
Manchester	38	37.8	(14.1)	1.9	(0.9)	1.9	(0.9)	3	58.0	(8.7)	2.0	(0.0)	1.3	(1.2)
Newcastle	52	36.0	(16.2)	1.9	(0.8)	1.8	(0.9)	6	42.8	(18.8)	2.0	(0.0)	1.3	(1.0)
Papworth	30	39.4	(18.2)	1.5	(0.8)	1.5	(0.8)	50	33.7	(9.7)	1.5	(0.8)	1.1	(0.7)
Total	227	38.1	(15.6)	1.7	(0.8)	1.7	(0.8)	101	37.8	(12.7)	1.6	(0.7)	1.3	(0.8)

PERFUSION TECHNOLOGIES



The term 'Perfusion Technologies' refers to the use of non-traditional techniques by which organ retrieval and organ quality is enhanced by the use of perfusion technology at the retrieval stage. Perfusion Technologies are still developing, but are already contributing to the successful expansion of clinical organ retrieval from deceased donors, in particular DCD donors. The resulting increase in the numbers of organs for transplant, and the enhanced safety and quality of these organs, contributes significantly to UK clinical transplantation.

Although Perfusion Technologies are highly successful, there is no sustainable funding yet identified for their longer term use as part of UK organ retrieval. Retrievals utilising perfusion technology are reported here as they are undertaken by commissioned NORS teams, with additional staff and equipment funded on a non-recurrent basis.

Abdominal Normothermic Regional Perfusion

Abdominal Normothermic Regional Perfusion (A-NRP) in DCD donors does not form part of the commissioned NORS service but has been in use in the UK since 2010. This has primarily been performed by Edinburgh and Cambridge teams on donors where they have accepted the liver but has recently expanded to include a wider range of donors. Since 2018/19, limited funding support has been provided by Scotland, Wales, and Northern Ireland Health Departments, along with NHSBT and some local funding to sustain the restricted use of A-NRP. A steering group was set up in November 2020 to provide oversight and governance for A-NRP and to support new teams wishing to utilise the technology.

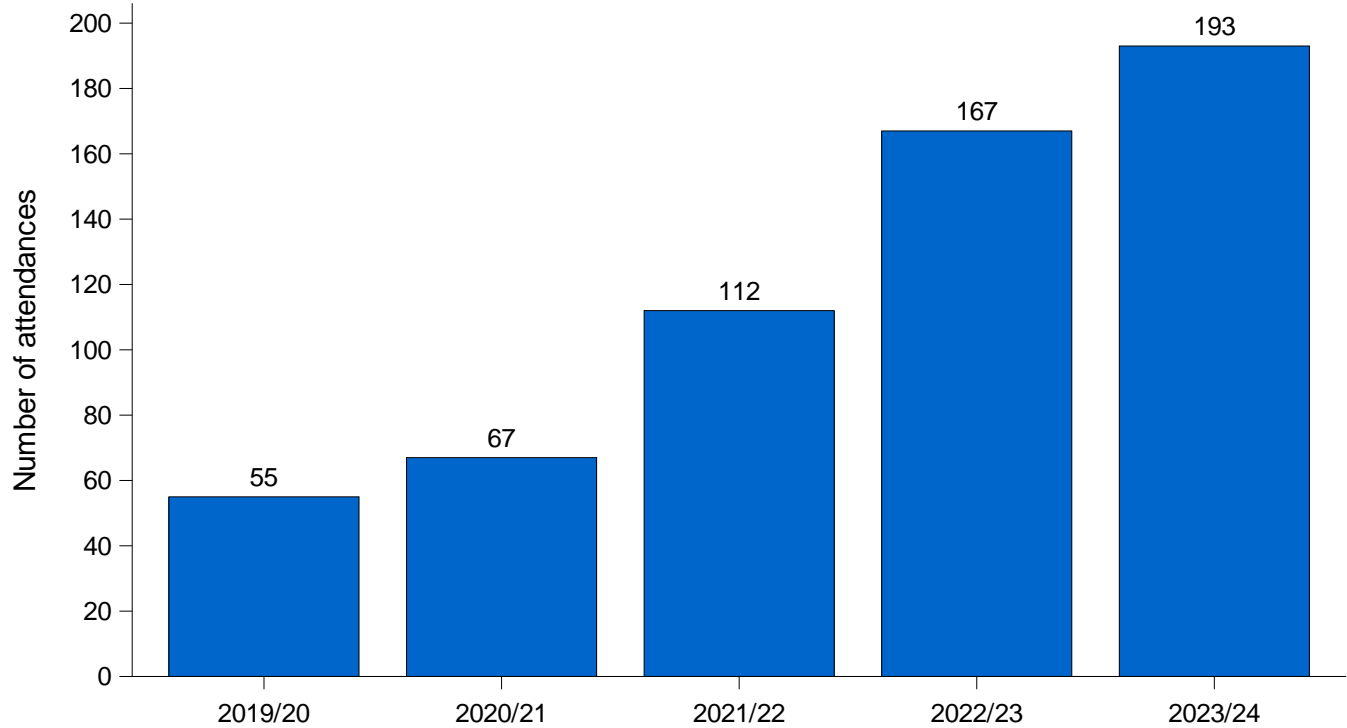
Table 4 shows the number of DCD attendances for all abdominal teams in the last year, along with how many underwent NRP and the number of donors proceeding to donation. Of the 968 DCD attendances, 193 (20%) underwent NRP, with 161 (83%) of the NRP attendances proceeding to donate at least one organ. Note these numbers contain 10 DCD attendances where the NRP team below were not the main abdominal team in attendance, but did attend to perform NRP.

Table 4 DCD and NRP attendances by A-NRP retrieval team, 1 April 2023 - 31 March 2024				
Retrieval team	All DCD attendances	Total proceeding¹	NRP attendances	NRP proceeding¹
Birmingham	114	90	16	13
Cambridge	152	119	60	53
Cardiff	37	26	18	12
Edinburgh	101	84	74	66
King's College	124	102	-	-
Leeds	90	72	-	-
Manchester	81	43	-	-
Newcastle	83	60	7	5
Oxford	91	66	-	-
Royal Free	95	77	18	12
Total	968	739	193	161

¹Proceeded to donate at least one organ for the purpose of transplantation

Figure 12 shows the number of A-NRP attendances for the most recent five financial years. Attendances have been increasing each year, with 2023/24 having a 16% increase in attendances compared to the previous year.

Figure 12 A-NRP donor attendances between 1 April 2019 - 31 March 2024



Organ utilisation rates for the 161 proceeding NRP donors between 1 April 2023 and 31 March 2024 is shown in **Table 5** compared to the general DCD donor population donating at least one organ, excluding A-NRP donors. Transplantation rates for kidney, liver, and pancreas are higher in the NRP population when comparing to the general DCD population.

Table 5 Organ offer outcomes from 161 NRP donors, 1 April 2023 - 31 March 2024					
Outcome	Kidney¹	Liver	Pancreas	Lungs¹	Heart
Offered	160	161	66	66	33
Accepted	159	153	38	28	21
Retrieved	158	138	28	5	11
Transplanted	145	110	17	4	10
% Transplanted of offered	91%	68%	26%	6%	30%
% Transplanted of retrieved	92%	80%	61%	80%	91%
National DCD organ % transplanted of offered*	89%	29%	19%	13%	46%
National DCD organ % transplanted of retrieved*	90%	57%	49%	76%	87%

¹ at least one
*Based on all UK proceeding DCD donors between 1 April 2023 and 31 March 2024 where A-NRP was not intended

DCD Hearts

A service evaluation for DCD heart retrieval and transplantation began in February 2015, initially with two centres, Harefield and Papworth. Funding was limited to 20 transplants. Since then, other centres who acquired short term funding within their organisations were able to retrieve and transplant DCD hearts.

The Joint Innovation Fund (JIF) was established in 2019 to provide funding to enable a 12-month UK wide retrieval and transplantation DCD heart pilot. The pilot began on 7 September 2020 with three retrieval teams having responsibility for retrieving hearts from DCD donors for the whole of the UK. Harefield and Papworth are two of the teams, with third team support having been provided by Manchester, Glasgow, and a hybrid team consisting of Harefield surgeons and Papworth peri-operative staff. The JIF funding was fully utilised in 2021/22. The DCD heart program continued to be funded since then using non-recurrent funds with the service being delivered by Papworth, Harefield and Glasgow. Longer term funding is still to be secured if this technology is to continue to be used.

Table 6 shows DCD heart activity by team between 1 April 2023 and 31 March 2024. Overall, there were 101 attendances where DCD heart retrieval was planned, with 74 (73%) proceeding to DCD heart retrieval, resulting in 65 transplants. Attendances are identified through Retrieval Team Information forms as well as DCD Heart Passports. Information on recipient outcomes following DCD heart transplantation can be found in the NHSBT Annual Report on Heart Transplantation.

Table 6 DCD heart activity by centre, 1 April 2023 - 31 March 2024			
Retrieval team	Attended¹	Retrieved	Transplanted²
Glasgow	22	17	16
Harefield	13	10	9
Papworth	66	47	40
Total	101	74	65

¹ Includes cases where a DCD Heart Supplementary form has not been returned but notes reported on the Retrieval Team Information form suggest that DCD heart retrieval was intended.

² Transplanted at any UK transplant centre

Organ utilisation rates for the 74 proceeding DCD heart donors between 1 April 2023 and 31 March 2024 is shown in **Table 7** compared to the general DCD donor population donating at least one organ. Transplantation rates for other organs are higher in the DCD heart population when comparing to the general DCD population.

Table 7 Abdominal and lung offer outcomes from 74 DCD heart donors, 1 April 2023 - 31 March 2024				
Outcome	Lungs¹	Kidney¹	Liver	Pancreas
Offered	54	74	72	69
Accepted	30	73	63	43
Retrieved	15	72	51	37
Transplanted	11	72	35	22
% Transplanted of offered	20%	97%	49%	32%
% Transplanted of retrieved	73%	100%	69%	59%
National DCD organ % transplanted of offered*	9%	88%	37%	17%
National DCD organ % transplanted of retrieved*	78%	89%	64%	48%

¹ at least one
*Based on all UK proceeding DCD donors between 1 April 2023 and 31 March 2024 where the heart was not retrieved

APPENDIX



**Appendix 1 Retrieval data missing form rates,
1 April 2023 - 31 March 2024**

Attending retrieval team	Number of forms due	Retrieval team forms missing		SNOD forms missing	
		N	%	N	%
Abdominal					
Birmingham	203	0	0	0	0
Cambridge	236	0	0	0	0
Cardiff	59	0	0	0	0
Edinburgh	165	11	6.7	0	0
King's College	264	0	0	0	0
Leeds	171	0	0	0	0
Manchester	156	0	0	0	0
Newcastle	164	0	0	0	0
Oxford	178	0	0	1	0.6
Royal Free	162	0	0	0	0
Cardiothoracic					
Birmingham	96	0	0	0	0
Glasgow	66	0	0	0	0
Harefield	107	0	0	0	0
Manchester	82	0	0	0	0
Newcastle	88	0	0	0	0
Papworth	120	0	0	0	0
Total	2317	11	0.5	1	0

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