



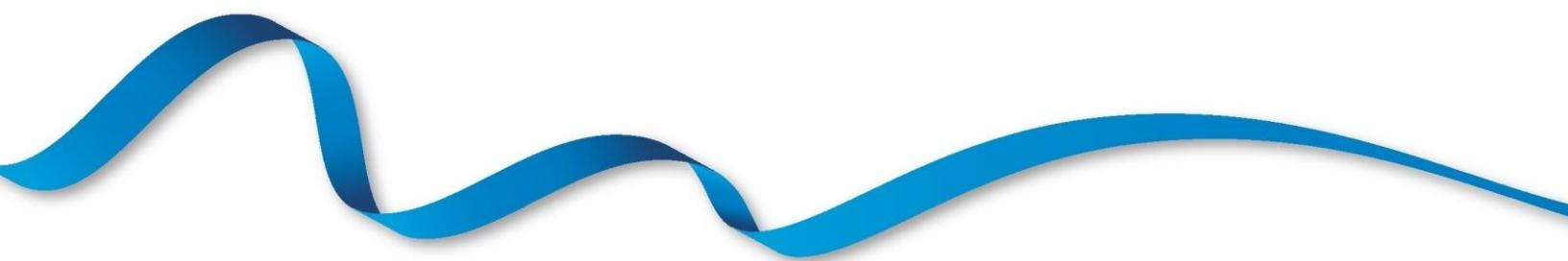
Blood and Transplant

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

**REPORT FOR 2019/20
(1 April 2019 - 31 March 2020)**

PUBLISHED NOVEMBER 2020

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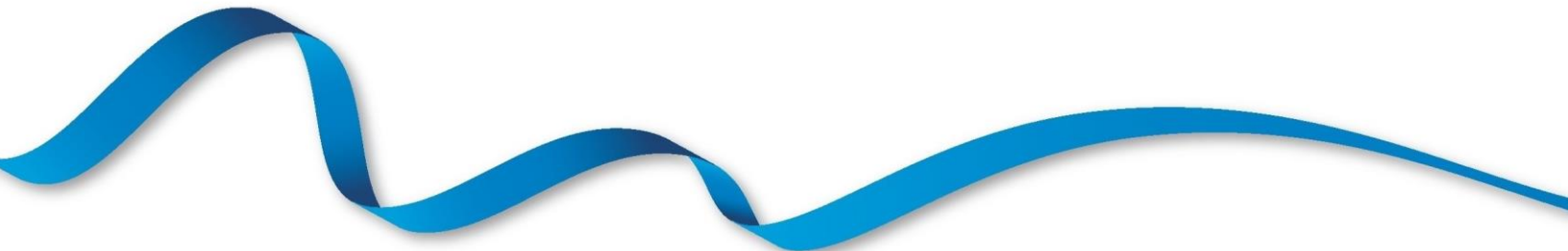
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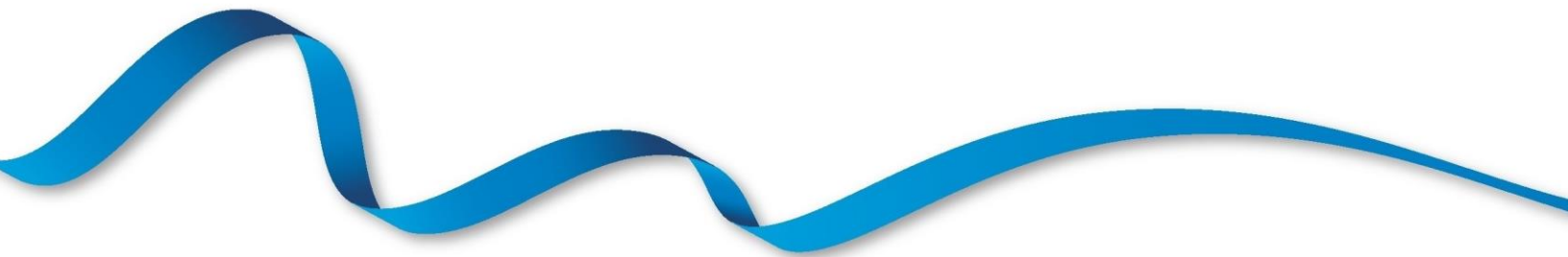
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EXECUTIVE SUMMARY



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 2019 to 31 March 2020. Data were extracted from the UK Transplant Registry on 8 July 2020.

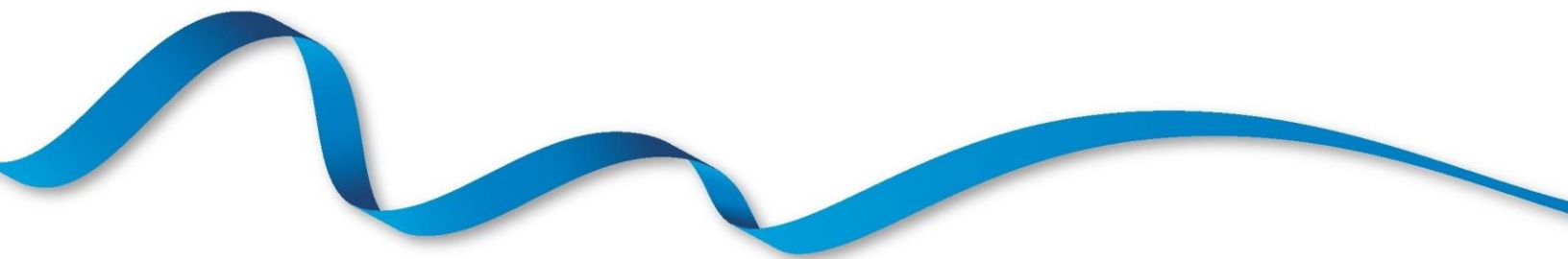
Although there were no changes to the operational workings of the National Organ Retrieval Service during this period as a result of the COVID-19 crisis, there has still been a reduction in activity due to changes in other aspects of organ donation and transplantation in the UK.

Key findings:

- From 1 April 2019 to 31 March 2020, 1942 potential organ donors were attended by a retrieval team. 1574 (81%) of these proceeded to abdominal organ donation and 319 (55% of the 581 attended by a cardiothoracic team) proceeded to cardiothoracic organ donation.
- There was no significant change in the number of donors attended in this financial year compared to the previous year (from 1941 to 1942).
- On average, 5.4 potential donors were attended by a retrieval team per day, which is an increase from the previous year (5.3).
- On average, abdominal teams attended at least one donor on 58% of on-call days in the year (60% the previous year), while cardiothoracic teams attended at least one donor on 39% of on-call days (40% the previous year).
- There were statistically significant differences in the mean number of DBD abdominal organs retrieved and the mean number of DCD cardiothoracic organs transplanted.
- The transplantation rates for retrieved organs were variable across organs from 48.3% for DCD pancreases up to 95.2% for DBD bowels. Additionally, 32 DCD hearts were retrieved, 24 of which were transplanted in that period.

Use of the contents of this report should be acknowledged as follows: Annual Report on The National Organ Retrieval Service 2019/20, 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 2019 to 31 March 2020. 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 (0.8% and 0.8% for RTI and ORI, respectively) of forms were missing at time of data extraction, 8 July 2020.

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.

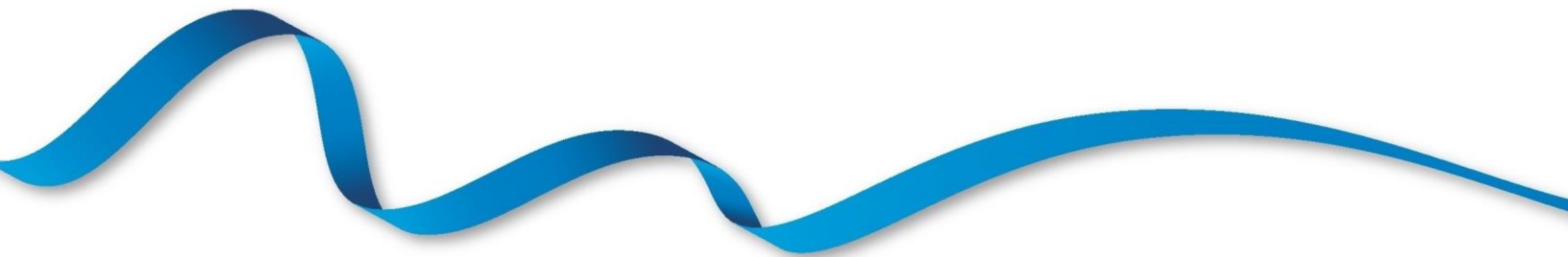
Since February 2019 NORS teams have been mobilised using a sequence, the first and second teams in the sequence are defined for each UK hospital (largely based on travel times but adjusted to give a more even workload across NORS teams), while subsequent teams in the sequence are ordered based on travel 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.

From April 2016 to February 2019 teams were mobilised entirely based on the closest available system. The move to the defined sequence model resulted from a Demand and Capacity review in 2018.

ACTIVITY



ACTIVITY

DONOR ATTENDANCES

The number of DBD and DCD donors that were attended by each retrieval team between 1 April 2019 and 31 March 2020 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 2019 - 31 March 2020, by donor type (DBD/DCD)							
Attending retrieval team (Weeks on-call per annum)	DBD		DCD		Total	% of all donors attended	(% attended in 2018/19)
	N	%	N	%			
Abdominal							
Birmingham (38w)	123	52.6	111	47.4	234	12.1	(13.3)
Cambridge (52w)	117	41.6	164	58.4	281	14.5	(13.8)
Cardiff (15w)	46	63.0	27	37.0	73	3.8	(3.7)
Edinburgh (52w)	97	61.8	60	38.2	157	8.1	(7.5)
King's College (52w)	188	53.7	162	46.3	350	18.1	(18.2)
Leeds (30w)	74	44.6	92	55.4	166	8.6	(8.8)
Manchester (30w)	76	45.8	90	54.2	166	8.6	(8.4)
Newcastle (52w)	104	51.0	100	49.0	204	10.5	(11.1)
Oxford (30w)	68	43.0	90	57.0	158	8.2	(8.4)
Royal Free (29w)	72	49.3	74	50.7	146	7.5	(6.8)
Abdominal total	965	49.9	970	50.1	1935	-	(-)
Cardiothoracic							
Birmingham (26w)	72	85.7	12	14.3	84	14.5	(15.6)
Glasgow (26w)	49	87.5	7	12.5	56	9.6	(6.8)
Harefield (26w)	77	64.7	42	35.3	119	20.5	(19.9)
Manchester (26w)	86	77.5	25	22.5	111	19.1	(20.5)
Newcastle (26w)	54	79.4	14	20.6	68	11.7	(12.6)
Papworth (26w)	86	60.1	57	39.9	143	24.6	(24.6)
Cardiothoracic total	424	73.0	157	27.0	581	-	(-)
Total no. attendances	1389	55.2	1127	44.8	2516	100	(100)
Total no. donors attended	970	49.9	972	50.1	1942	100	(100)
<p>There were 2 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 4 potential donors attended by an off-duty abdominal NORS team (2 Manchester, 2 Leeds) and 52 by an off-duty cardiothoracic NORS team (1 Glasgow, 24 Papworth, 4 Newcastle, 2 Manchester, 21 Harefield).</p>							

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 1942 donors attended by a retrieval team. Of these 970 (50%) were potential DBD donors and 972 (50%) were potential DCD donors. 941 of the potential DBD donors attended by an abdominal retrieval team (97%) proceeded to abdominal organ donation, while 249 (59%) of the potential DBD donors attended by a cardiothoracic team proceeded to cardiothoracic donation. For potential DCD donors, 633 (65%) of those attended by an abdominal team proceeded to abdominal donation, while 70 (45%) of those attended by a cardiothoracic team proceeded to cardiothoracic organ donation.

Table 1b Number of donor attendances per retrieval team, 1 April 2019 - 31 March 2020 by donor type (DBD/DCD) and proceeding/non-proceeding						
Attending retrieval team (Weeks on-call per annum)	Actual	DBD Non-proceeding	% non-proc	Actual	DCD Non-proceeding	% non-proc
Abdominal						
Birmingham (38w)	120	3	2.4	74	37	33.3
Cambridge (52w)	114	3	2.6	116	48	29.3
Cardiff (15w)	46	0	0.0	18	9	33.3
Edinburgh (52w)	95	2	2.1	47	13	21.7
King's College (52w)	186	2	1.1	107	55	34.0
Leeds (30w)	72	2	2.7	55	37	40.2
Manchester (30w)	75	1	1.3	50	40	44.4
Newcastle (52w)	100	4	3.8	61	39	39.0
Oxford (30w)	66	2	2.9	60	30	33.3
Royal Free (29w)	67	5	6.9	45	29	39.2
Abdominal total	941	24	2.5	633	337	34.7
Cardiothoracic						
Birmingham (26w)	42	30	41.7	4	8	66.7
Glasgow (26w)	19	30	61.2	4	3	42.9
Harefield (26w)	49	28	36.4	16	26	61.9
Manchester (26w)	45	41	47.7	9	16	64.0
Newcastle (26w)	33	21	38.9	4	10	71.4
Papworth (26w)	61	25	29.1	33	24	42.1
Cardiothoracic total	249	175	41.3	70	87	55.4
Total donors (abdominal and/or cardiothoracic)	947	23	2.4	634	338	34.8

Figure 1a shows the proportion of donors attended by any abdominal retrieval team. Leeds and Manchester retrieval teams only began to work as separate teams from April 2016 onwards and therefore are presented in this figure as joint to allow overall comparison in the time period. In the most recent financial year, King's College attended the highest proportion of abdominal donors (18.1%) and Cardiff attended the lowest proportion (3.8%).

Figure 1a Proportion of donors attended by an abdominal team between 1 April 2015 - 31 March 2020

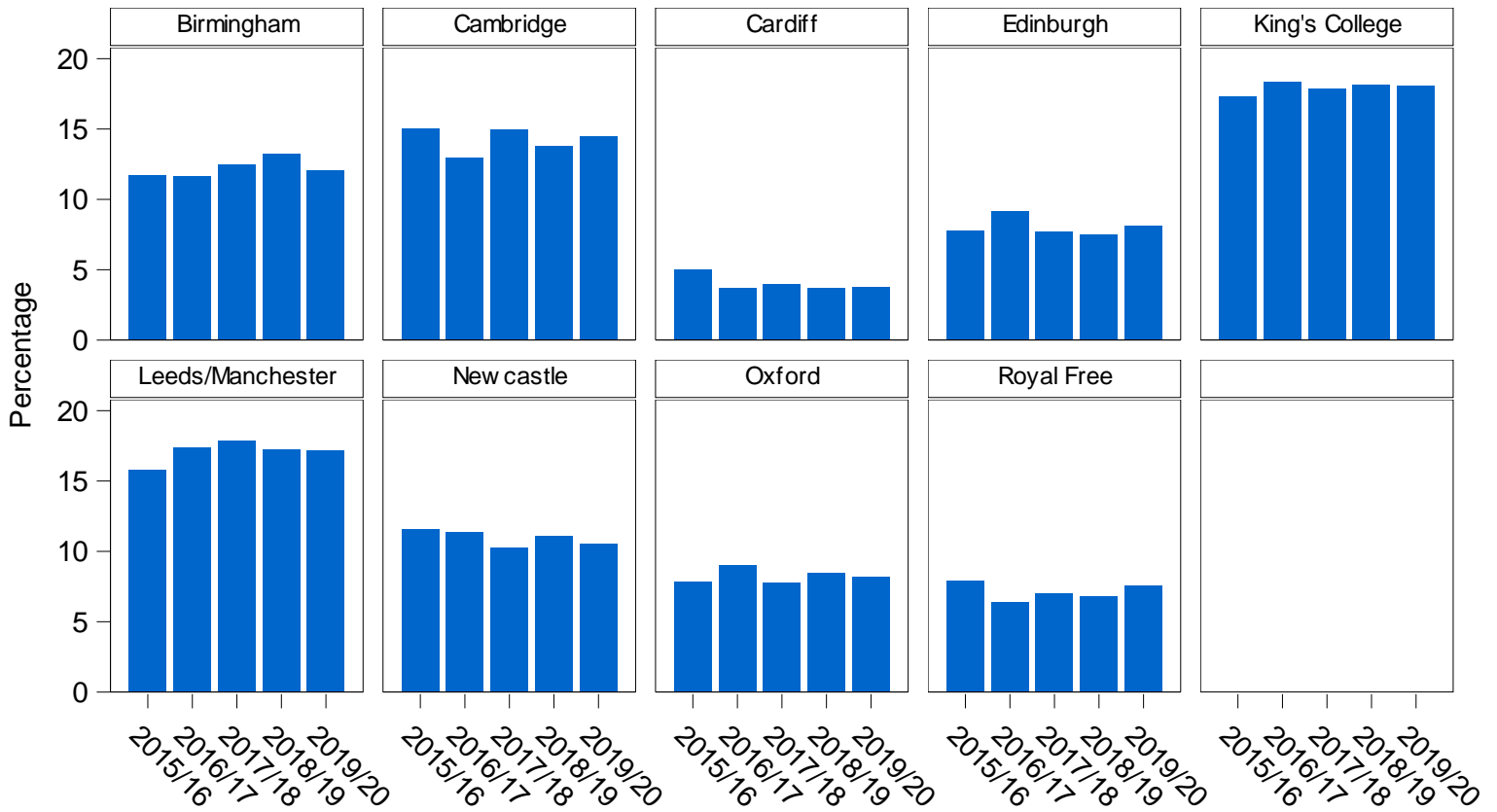


Figure 1b shows the proportion of donors attended by any cardiothoracic retrieval team. In the most recent financial year, Papworth attended the largest proportion of cardiothoracic donors (24.6%) and Glasgow attended the lowest proportion (9.6%).

Figure 1b Proportion of donors attended by a cardiothoracic team between 1 April 2015 - 31 March 2020

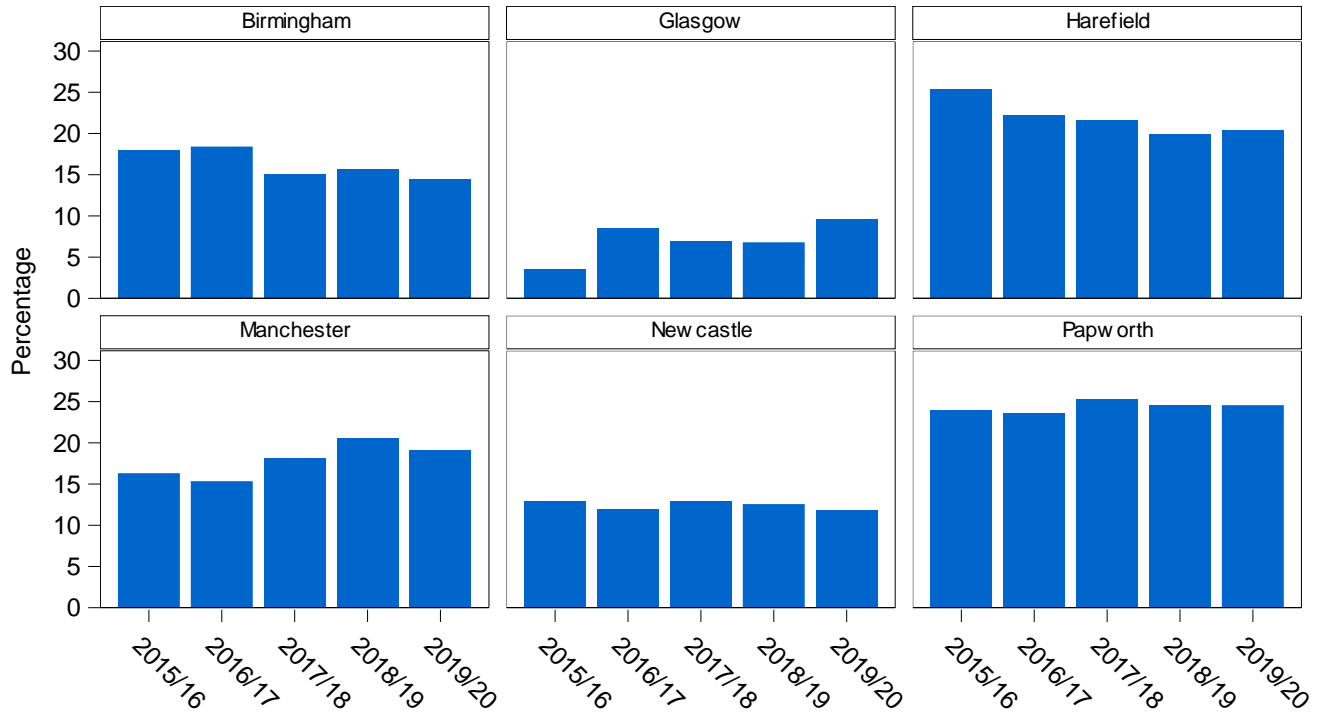


Figure 2 shows the distribution of the number of actual and non-proceeding donors attended by at least one retrieval team, per day in 2019/20. The number of donors per day ranged from 0 (4 days) to 13 (1 day). The mean number of donors per day was 5.4.

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 2019 - 31 March 2020

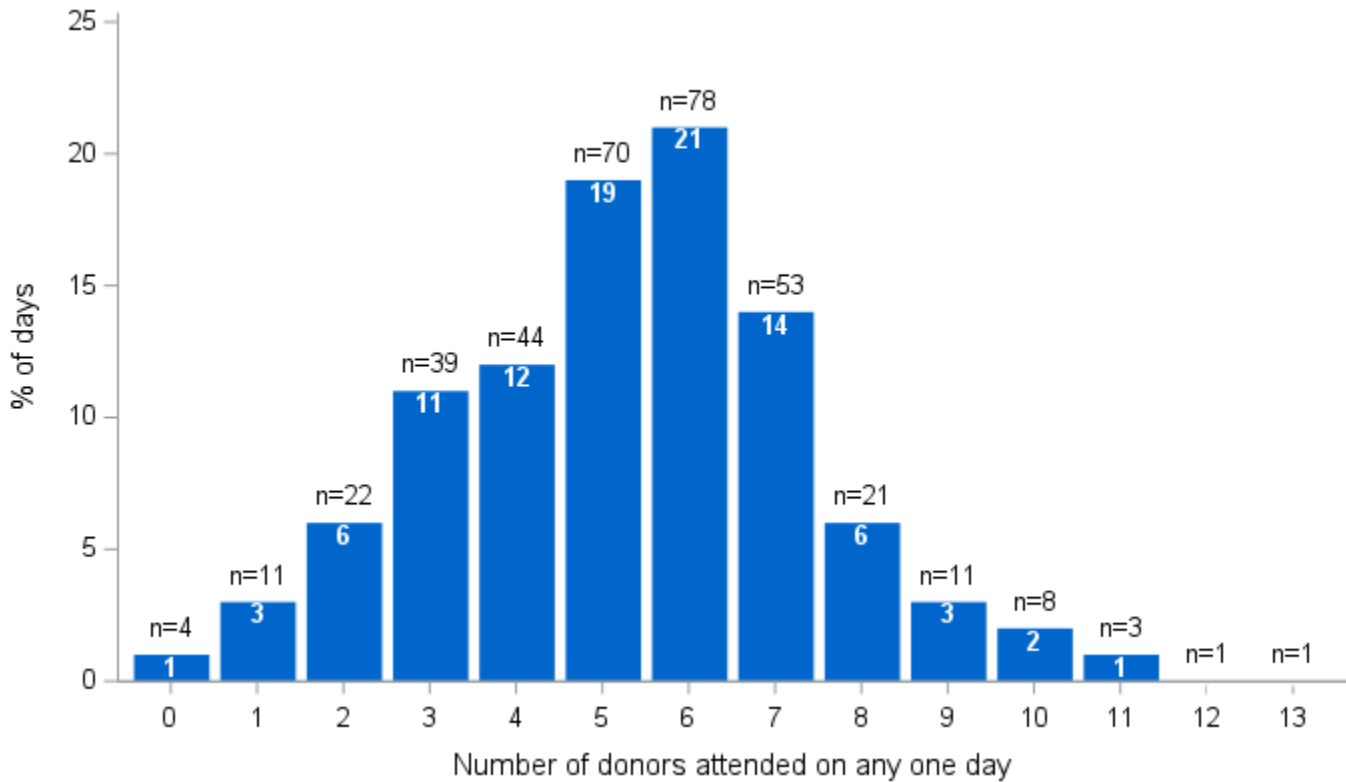


Figure 3a shows the distribution of the number of abdominal teams out on any one day during 2019/20. For example, there were 28 days in the 12-month period (8% of days) where two abdominal teams were out attending donors.

Figure 3a Distribution of the number of abdominal retrieval teams out on any one day, between 1 April 2019 - 31 March 2020

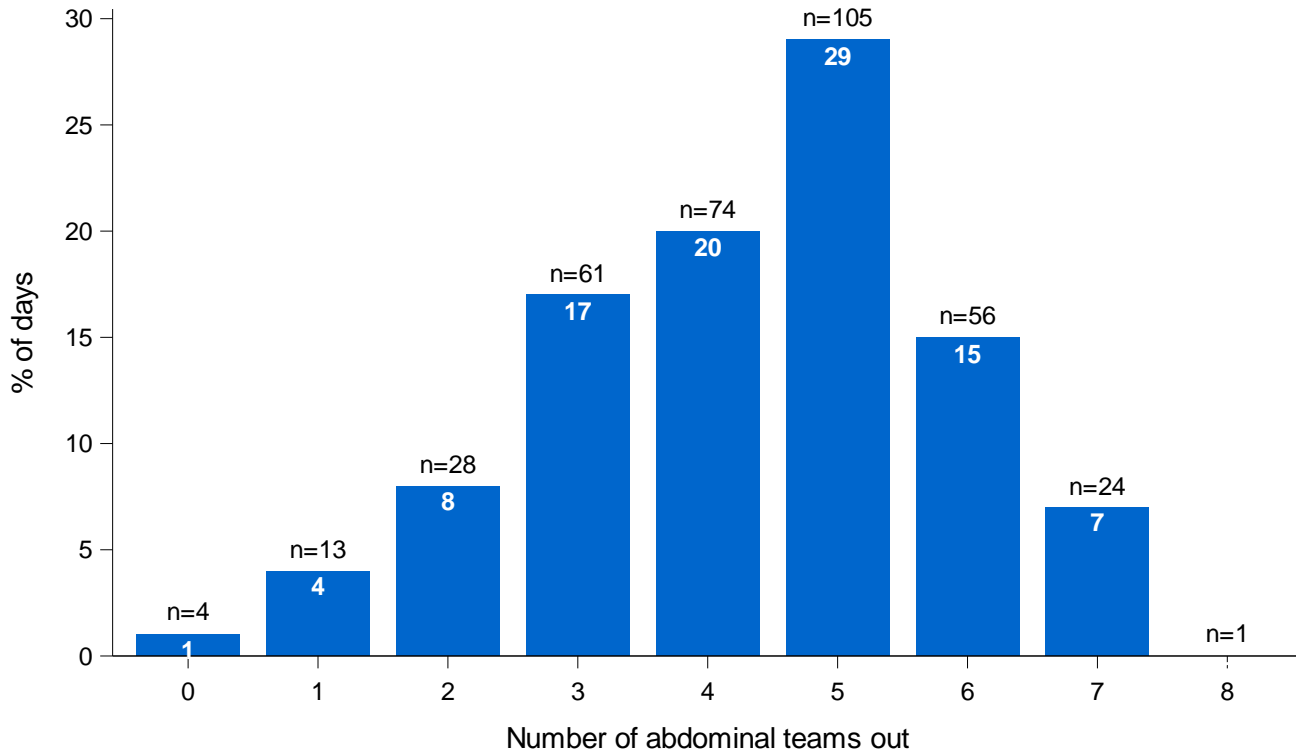


Figure 3b shows the distribution of the number of donors (actual and non-proceeding) attended by each abdominal team on any one day (that they were on call) during the year. On average abdominal teams did not attend any donors on 41% of the days in the year, attended one donor 46% of days, attended two donors 11% of days, attended three donors 2% of days and attended four donors on 0% of days. The 'busiest' team in 2019/20 in terms of days active was King's College.

Figure 3b Distribution of the number of actual and non-proceeding donors attended by each abdominal team on any one day, between 1 April 2019 - 31 March 2020

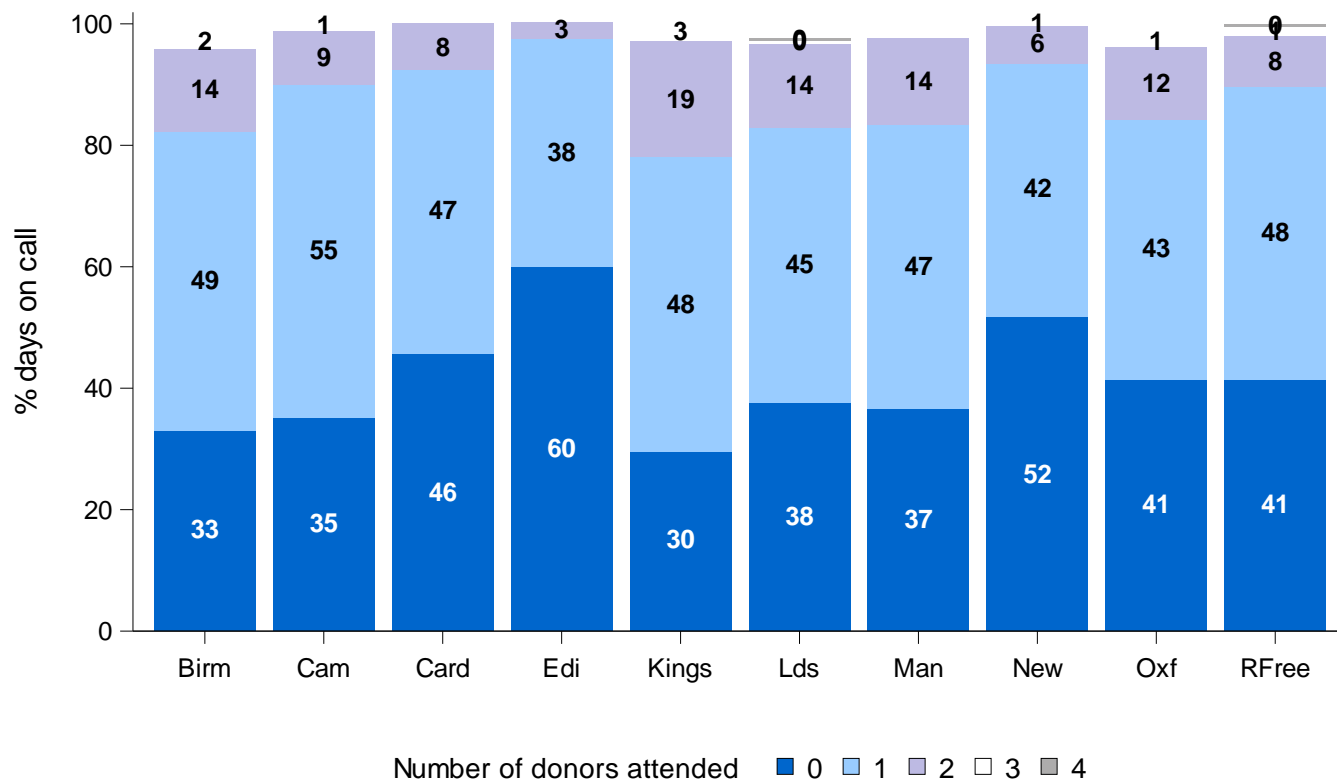


Figure 4a shows the distribution of the number of cardiothoracic teams out on any one day during 2019/20. It is most common for one cardiothoracic team to be out on any given day.

Figure 4a **Distribution of the number of cardiothoracic retrieval teams out on any one day, between 1 April 2019 - 31 March 2020**

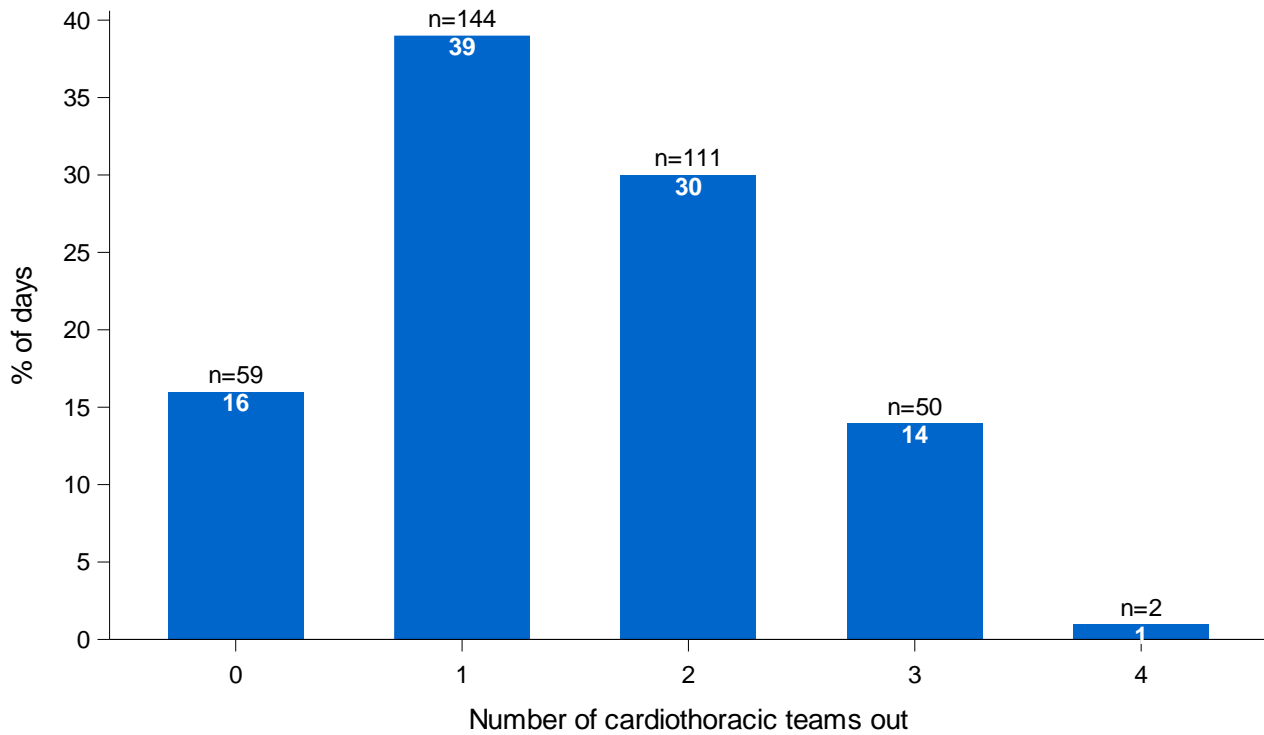


Figure 4b shows the distribution of the number of donors (actual and non-proceeding) attended by each cardiothoracic team on any one day (that they were on call) during the year. On average cardiothoracic teams did not attend any donors on 61% of the days in the year, attended one donor 35% of days, attended two donors 5% of days, and attended three donors 1% of days. The 'busiest' team in 2019/20 in terms of days active was Papworth (when on call).

Figure 4b Distribution of the number of actual and non-proceeding donors attended by each cardiothoracic team on any one day, between 1 April 2019 - 31 March 2020

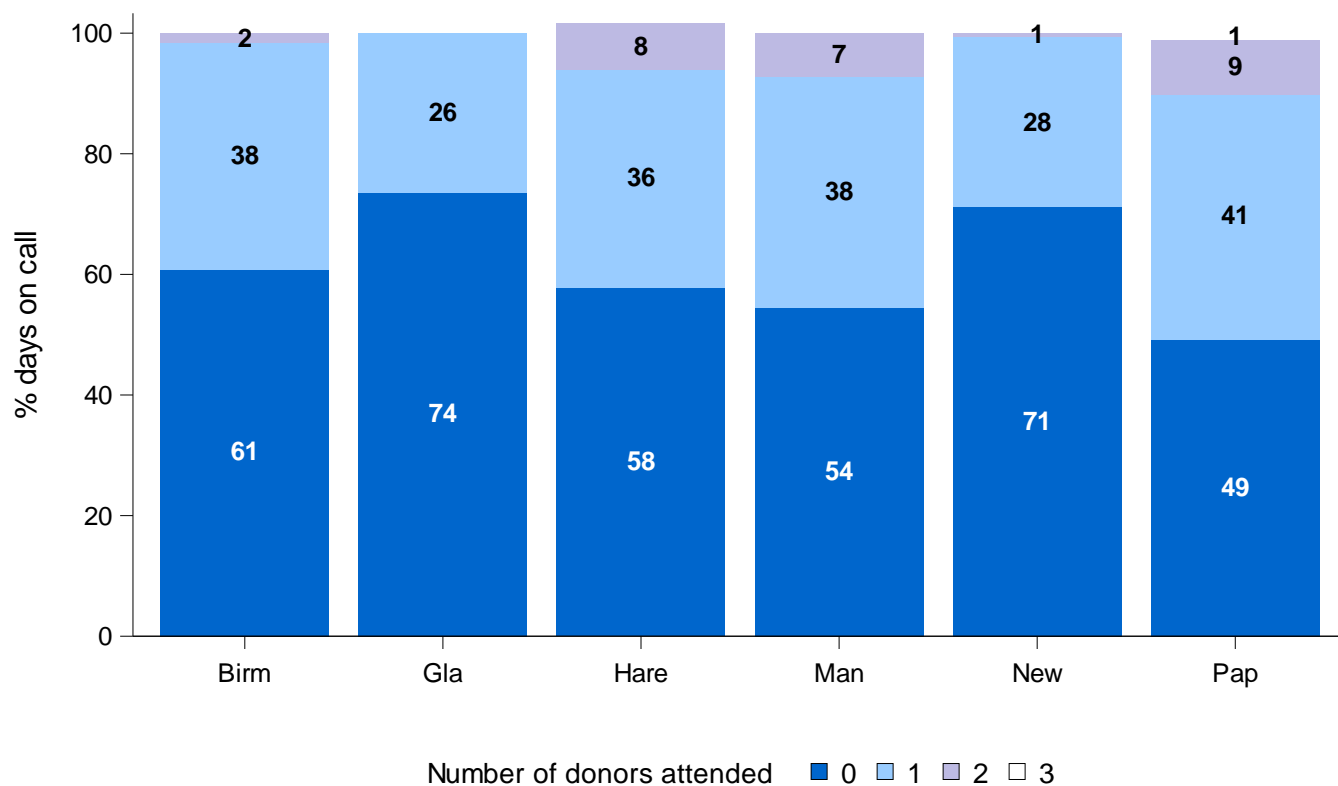


Table 2a shows the position of the retrieval team in the retrieval team attendance sequence for each of the actual and non-proceeding donors that were attended by an abdominal NORS team during the period 1 April 2019 to 6 January 2020. After 6 January 2020, the abdominal service increased to eight abdominal teams on-call at any time. The data for this period have been excluded to ensure ease of interpretation.

Table 2b shows the position of the retrieval team in the retrieval team attendance sequence for each of the actual and non-proceeding donors that were attended by a cardiothoracic NORS team during the period 1 April 2019 to 31 March 2020.

Mobilisation of teams is based on a defined first and second sequence, subsequent teams are mobilised based on a closest available system.

The amount of times teams attended a donor when they were not first in the sequence varies. For abdominal teams the amount of attendances where teams were not first in sequence ranges from 15.3% to 68.0% for Edinburgh and Royal Free respectively. For cardiothoracic this ranges from 11.7% to 41.8% for Newcastle and Glasgow respectively.

Table 2a Number of actual and non-proceeding donors attended by each retrieval team, 1st April 2019 - 6th January 2020, by position of team in on-call sequence									
Attending retrieval team (Weeks on-call per annum)	First team in seq.	Second team in seq.	Third team in seq.	Forth team in seq.	Fifth team in seq.	Sixth team in seq.	Seventh team in seq.	Total	% not first in seq.
Abdominal									
Birmingham (38w)	119	27	15	15	2	0	0	178	33.1
Cambridge (52w)	110	36	47	15	6	3	0	217	49.3
Cardiff (15w)	34	3	3	10	2	2	0	54	37.0
Edinburgh (52w)	94	2	5	1	0	2	7	111	15.3
King's College (52w)	179	10	62	5	3	0	0	259	30.9
Leeds (30w)	82	25	3	4	5	0	0	119	31.1
Manchester (30w)	75	21	9	3	7	0	0	115	34.8
Newcastle (52w)	80	43	23	3	0	7	0	156	48.7
Oxford (30w)	42	58	14	3	2	0	0	119	64.7
Royal Free (29w)	33	54	12	1	3	0	0	103	68.0
Abdominal total	848	279	193	60	30	14	7	1431	40.7
Cardiothoracic									
Birmingham (26w)	49	17	2	-	-	-	-	68	27.9
Glasgow (26w)	22	1	19	-	-	-	-	42	47.6
Harefield (26w)	51	9	9	-	-	-	-	69	26.1
Manchester (26w)	53	30	2	-	-	-	-	85	37.6
Newcastle (26w)	40	1	4	-	-	-	-	45	11.1
Papworth (26w)	70	11	4	-	-	-	-	85	17.6
Cardiothoracic total	285	69	40	-	-	-	-	394	27.7
Total	1133	348	233	60	30	14	7	1825	37.9

Table 2b Number of actual and non-proceeding donors attended by each cardiothoracic retrieval team, 1 April 2019 - 31 March 2020, by position of team in on-call sequence

Attending retrieval team (Weeks on-call per annum)	First team in seq.	Second team in seq.	Third team in seq.	Total	% not first in seq.
Birmingham (26w)	60	21	3	84	28.6
Glasgow (26w)	32	1	22	55	41.8
Harefield (26w)	57	11	13	97	24.7
Manchester (26w)	68	38	2	108	37.0
Newcastle (26w)	53	2	5	60	11.7
Papworth (26w)	87	11	5	115	13.9
Total	357	84	50	519	25.8

Note that 9 paediatric (<145cm or 40kg) cardiothoracic retrievals have been excluded from this table due to special arrangements for paediatric retrieval. Attendances where teams were not on-call are also excluded.

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) 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. Cases where retrieval took more than 48 hours have been removed along with cases where not all date/time points required were reported.

Leeds/Manchester data are presented as shared in **Figure 5a** to allow for comparison with previous financial years although these teams are now independent.

Figure 5a Median (IQR) time an abdominal team is out attending a donor from departure to return to base, between 1 April 2015 - 31 March 2020

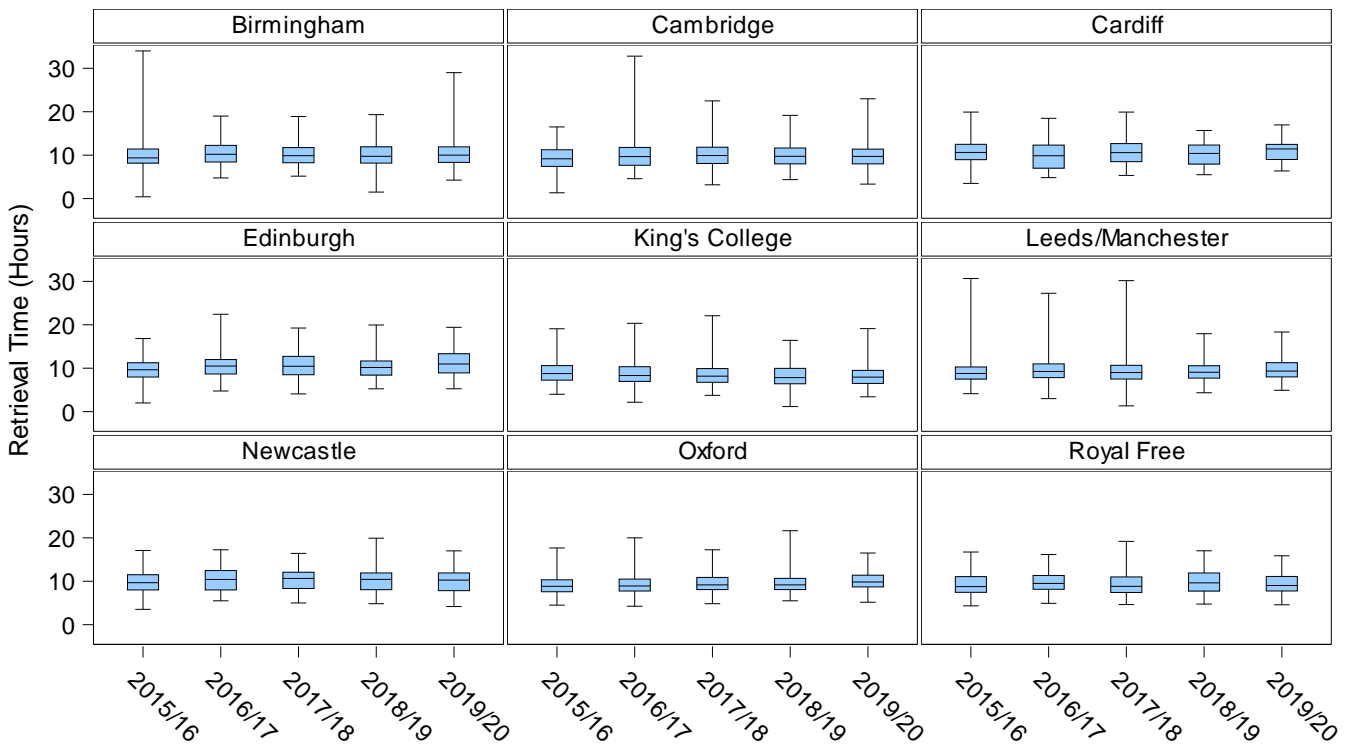
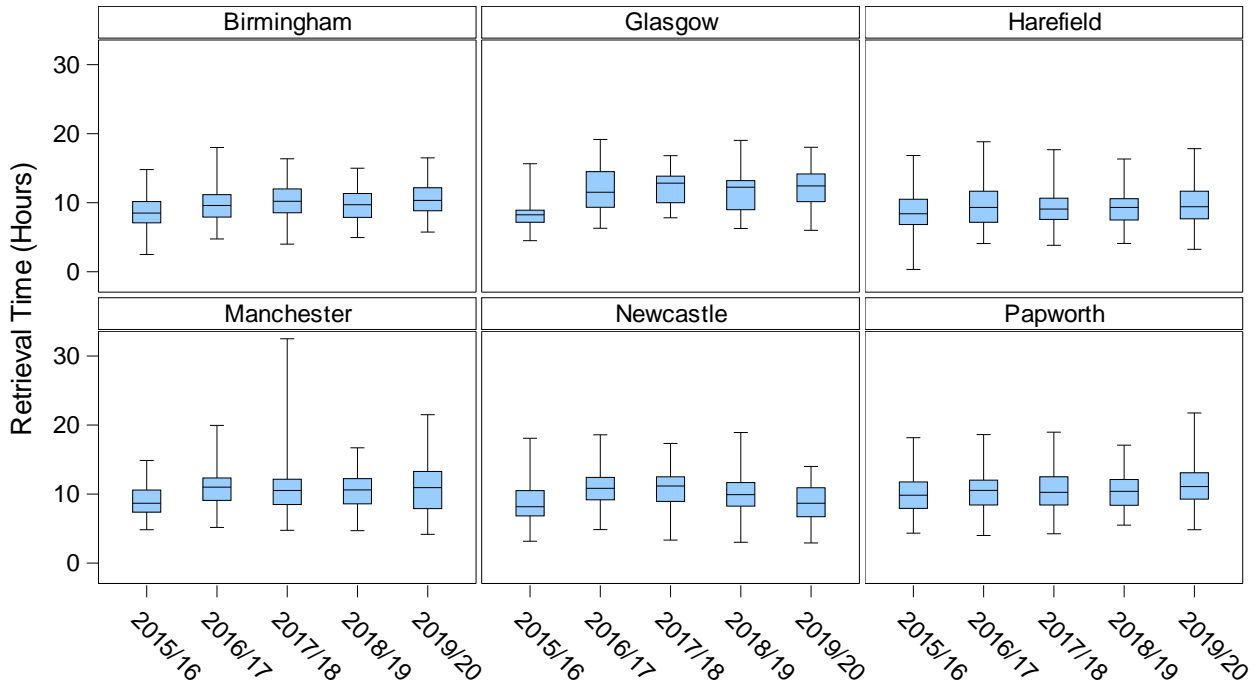
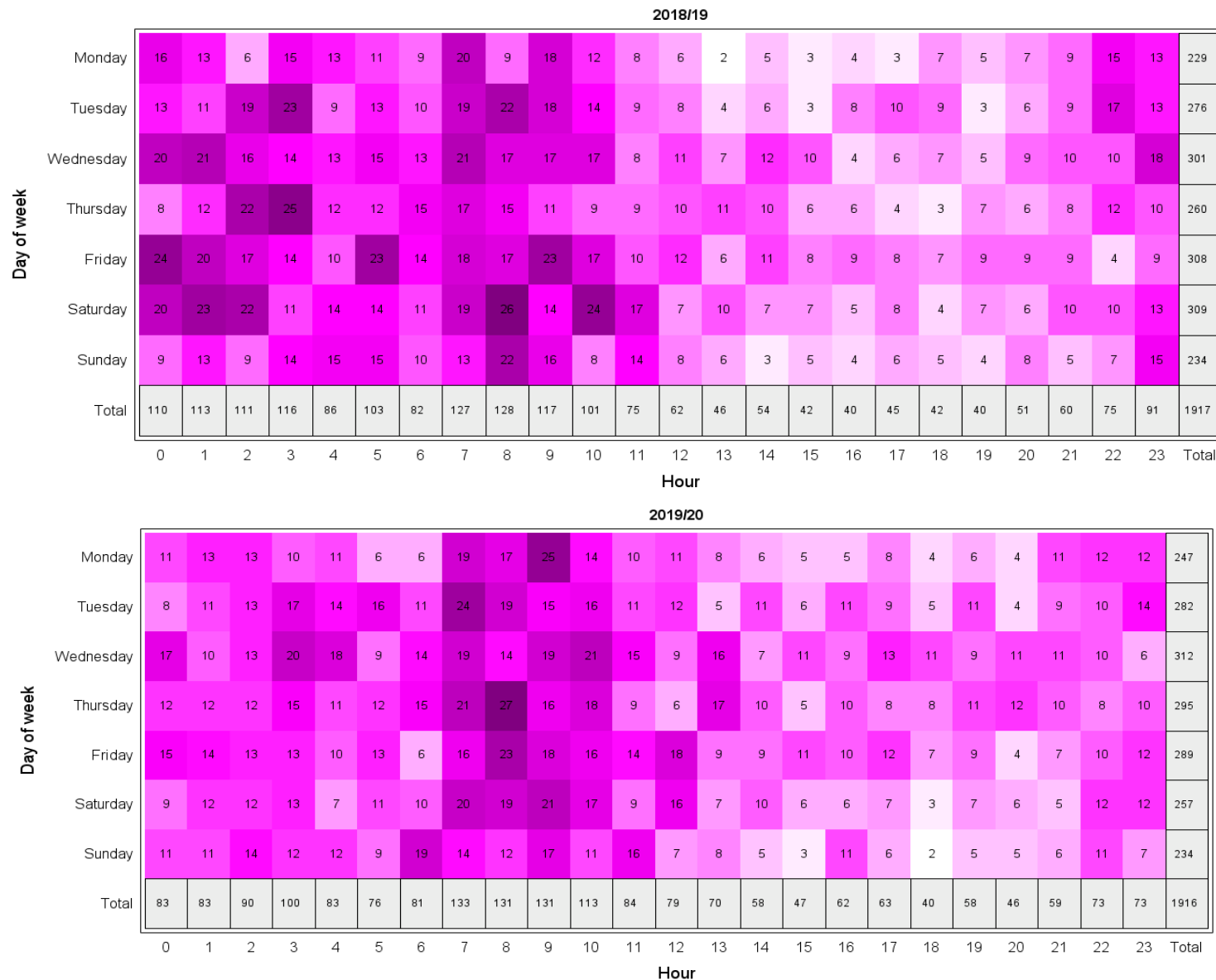


Figure 5b Median (IQR) time a cardiothoracic team is out attending a donor from departure to return to base, between 1 April 2015 - 31 March 2020

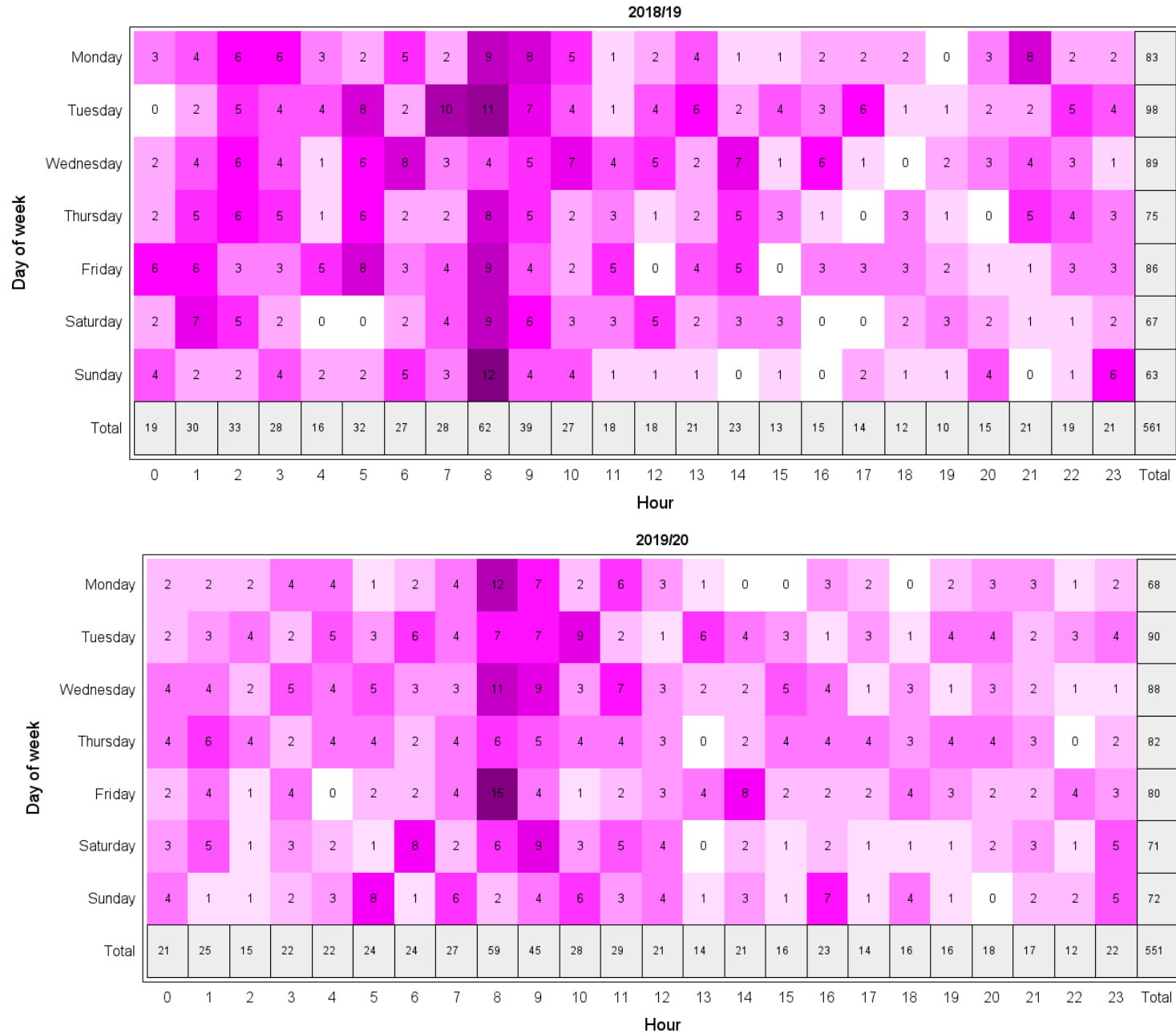


The day of week and time of day at which mobilisation of NORS teams occurred throughout the year, and for the previous year are presented as heat maps in **Figures 6a and 6b**, for abdominal and cardiothoracic teams, respectively. Mobilisation time is the time that the team actually departed from their base. 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 2018 - 31 March 2020**



**Figure 6b Mobilisation time of cardiothoracic teams
1 April 2018 - 31 March 2020**



The proportion of occasions where the travel time to a donor hospital is greater than three hours is shown in **Figures 7a and 7b**, for abdominal and cardiothoracic teams, respectively. Both figures exclude donor attendances where flights were used.

Figure 7a Proportion of donor attendances (actual and non-proceeding) outside of 3 hours travel time for each abdominal team, between 1 April 2019 - 31 March 2020

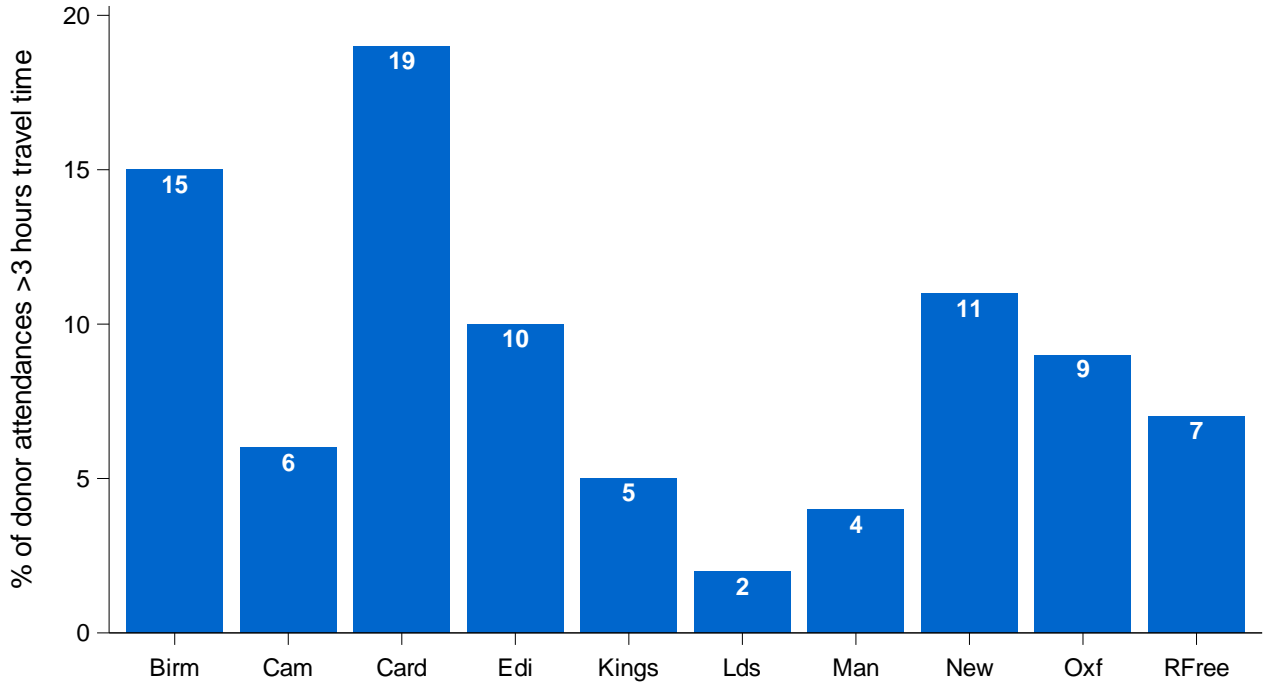
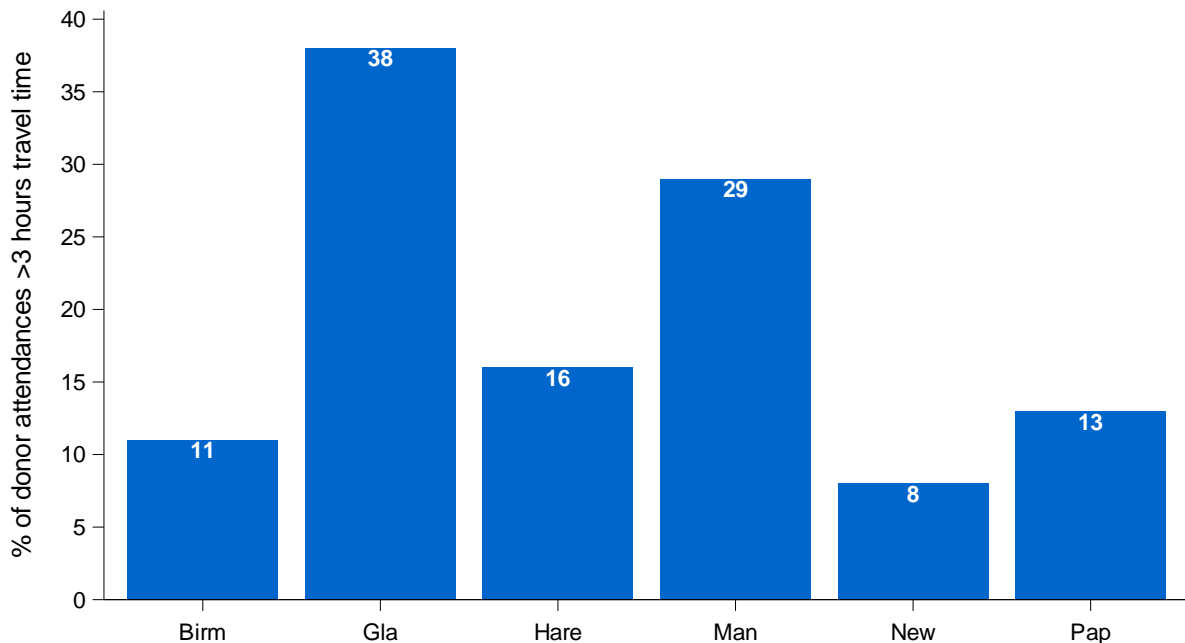


Figure 7b Proportion of donor attendances (actual and non-proceeding) outside of 3 hours travel time for each cardiothoracic team, between 1 April 2019 - 31 March 2020



ORGANS RETRIEVED

Table 3a shows the percentage of actual abdominal donors donating their kidneys, livers, pancreases and bowels by the team that attended and the donor type. Overall, 91.7% of actual DBD donors (donating at least one abdominal organ) donated their kidneys, 90.2% donated their liver, 35.4% donated their pancreas and 2.2% 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.

Table 3a Organs retrieved from actual abdominal donors, 1 April 2019 - 31 March 2020, by attending retrieval team											
Attending retrieval team	% donors donating										
	No. of abdo. donors		Kidneys		Livers		Pancreases		Bowel		
	DBD	DCD	DBD	DCD	DBD	DCD	DBD	DCD	DBD	DCD	
Birmingham	120	74	91.7	100	92.5	54.1	35.8	16.2	0.0	-	
Cambridge	114	116	94.7	98.3	94.7	41.4	41.2	19	10.5	-	
Cardiff	46	18	95.7	100	93.5	55.6	43.5	16.7	0.0	-	
Edinburgh	95	47	90.5	95.7	90.5	36.2	37.9	10.6	0.0	-	
King's College	186	107	88.7	93.5	89.8	50.5	31.7	20.6	1.6	-	
Leeds	72	55	94.4	98.2	91.7	47.3	44.4	21.8	1.4	-	
Manchester	75	50	92.0	98.0	84.0	36.0	32.0	18.0	0.0	-	
Newcastle	100	61	93.0	98.4	87.0	32.8	28.0	18.0	0.0	-	
Oxford	66	60	90.9	100	93.9	41.7	40.9	20.0	6.1	-	
Royal Free	67	45	89.6	97.8	83.6	44.4	25.4	17.8	1.5	-	
Total	941	633	91.7	97.6	90.2	43.9	35.4	18.3	2.2	-	

Table 3b 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 3b Abdominal organs retrieved and percentage that went on to be transplanted, 1 April 2019 - 31 March 2020, by attending retrieval team								
Attending retrieval team	Kidneys		Livers		Pancreases		Bowel	
	Retrieved	% txd	Retrieved	% txd	Retrieved	% txd	Retrieved	% txd
DBD								
Birmingham	219	90.9	111	83.8	43	55.8	0	-
Cambridge	214	87.4	108	81.5	47	59.6	12	100
Cardiff	87	94.3	43	95.3	20	45.0	0	-
Edinburgh	167	90.4	86	88.4	36	36.1	0	-
King's College	328	87.8	167	85.0	59	57.6	3	100
Leeds	133	93.2	66	89.4	32	40.6	1	100
Manchester	136	94.9	63	85.7	24	50.0	0	-
Newcastle	185	85.4	87	80.5	28	53.6	0	-
Oxford	118	88.1	62	80.6	27	33.3	4	75.0
Royal Free	118	85.6	56	87.5	17	52.9	1	100
Total	1705	89.3	849	85.0	333	49.8	21	95.2
DCD								
Birmingham	147	79.6	40	72.5	12	58.3	-	-
Cambridge	226	83.6	48	64.6	22	40.9	-	-
Cardiff	36	86.1	10	70.0	3	66.7	-	-
Edinburgh	90	80.0	17	41.2	5	20.0	-	-
King's College	199	77.4	54	57.4	22	50.0	-	-
Leeds	107	75.7	26	57.7	12	41.7	-	-
Manchester	98	86.7	18	55.6	9	44.4	-	-
Newcastle	119	84.0	20	55.0	11	45.5	-	-
Oxford	119	79.0	25	60.0	12	50.0	-	-
Royal Free	84	82.1	20	70.0	8	12.5	-	-
Total	1225	81.0	278	61.2	116	44.0	-	-
Total	2930	85.8	1127	79.1	449	48.3	21	95.2

Note: there was 1 patient attended by a local or overseas retrieval team, this attendance is not included in this table.

Figures 8a and 8b show the number of organs retrieved, by attending retrieval team, for DBD and DCD donors, respectively.

Figure 8a DBD abdominal organs retrieved, 1 April 2019 - 31 March 2020 by attending retrieval team

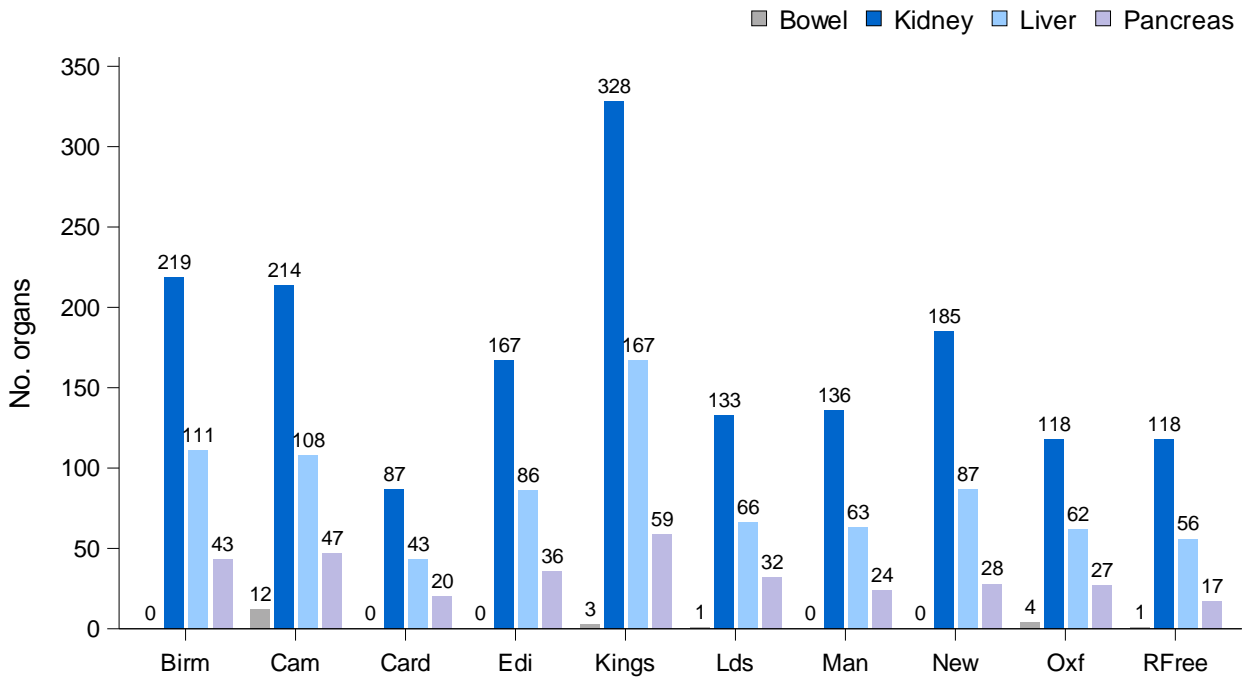


Figure 8b DCD abdominal organs retrieved, 1 April 2019 - 31 March 2020 by attending retrieval team

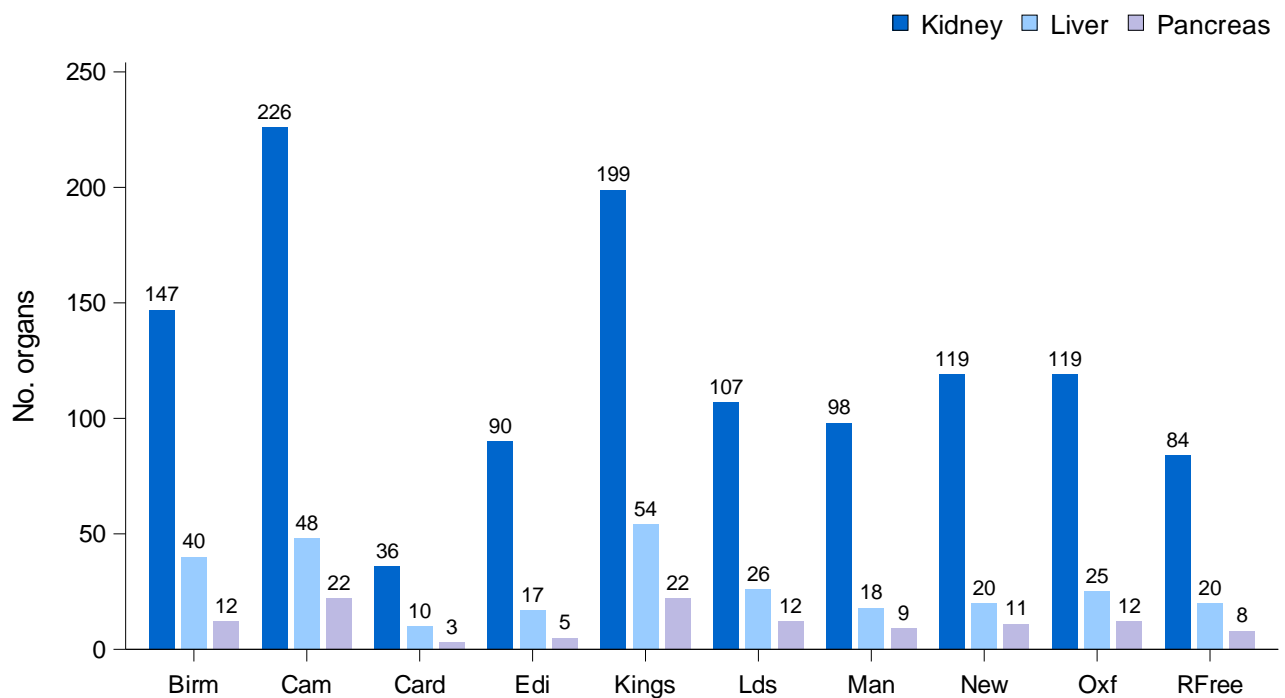


Table 3c shows the mean number of abdominal organs retrieved and transplanted for each proceeding abdominal donor, by attending retrieval team and donor type. Mean donor age is also reported.

- 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 ($p=0.01$).
- The mean number of organs transplanted per DBD donor ranged from 2.4 to 2.9 across teams, analysis of variance indicated that the differences were not statistically significant ($p=0.14$).
- The mean number of organs retrieved per DCD donor ranged from 2.4 to 2.7 across teams, analysis of variance indicated that the differences were not statistically significant ($p=0.58$).
- The mean number of organs transplanted per DCD donor ranged from 1.7 to 2.2 across teams, analysis of variance indicated that the differences were not statistically significant ($p=0.64$).

Table 3c

Mean donor age, organs retrieved, and organs transplanted, per proceeding abdominal donor, 1 April 2019 - 31 March 2020, by attending retrieval team

Attending retrieval team	Actual abdo. donors	DBD						DCD						
		Donor age		Orgs. retrieved		Orgs. txd		Donor age		Orgs. retrieved		Orgs. txd		
		Mean	(SD.)	Mean	(SD.)	Mean	(SD.)	Actual abdo. donors	Mean	(SD.)	Mean	(SD.)	Mean	(SD.)
Birmingham	120	53.4	(16.7)	3.1	(0.9)	2.6	(1.0)	74	51.7	(16.6)	2.7	(0.7)	2.1	(1.1)
Cambridge	114	48.8	(17.8)	3.3	(0.9)	2.8	(1.2)	116	54.8	(15.2)	2.6	(0.8)	2.0	(1.0)
Cardiff	46	50.8	(17.1)	3.3	(0.8)	2.9	(0.8)	18	53.3	(15.1)	2.7	(0.8)	2.2	(1.1)
Edinburgh	95	49.4	(14.4)	3.0	(0.9)	2.5	(1.0)	47	55.3	(13.5)	2.4	(0.7)	1.7	(0.9)
King's College	186	52.2	(17.9)	3.0	(0.9)	2.5	(1.2)	107	51.4	(19.8)	2.6	(0.8)	1.8	(1.1)
Leeds	72	51.1	(16.8)	3.2	(0.9)	2.7	(1.0)	55	51.3	(17.2)	2.6	(0.8)	1.8	(1.1)
Manchester	75	49.9	(16.7)	3.0	(0.9)	2.6	(1.0)	50	52.3	(14.7)	2.5	(0.8)	2.0	(0.9)
Newcastle	100	51.9	(17.8)	3.0	(0.8)	2.4	(1.1)	61	50.8	(15.8)	2.5	(0.8)	1.9	(1.0)
Oxford	66	48.4	(17.0)	3.2	(1.0)	2.5	(1.1)	60	55.9	(16.1)	2.6	(0.8)	1.9	(1.1)
Royal Free	67	53.9	(17.1)	2.9	(0.9)	2.4	(1.1)	45	52.4	(14.9)	2.5	(0.8)	1.9	(0.8)
Total	941	51.1	(17.1)	3.1	(0.9)	2.6	(1.1)	633	52.9	(16.3)	2.6	(0.8)	1.9	(1.0)

Table 4a 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, 43% of DBD donors (donating at least one cardiothoracic organ) donated their heart only, 35.3% donated their lung(s) only, and 21.7% donated their heart and lung(s). Additionally, 34.3% of actual DCD donors donated their heart only, 54.3% donated their lung(s) only, and 11.4% donated their heart and lung(s).

Table 4a Organs retrieved from actual cardiothoracic donors, 1 April 2019 - 31 March 2020, 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	42	45.2	33.3	21.4	4	0.0	100	0.0
Glasgow	19	26.3	47.4	26.3	4	50.0	50.0	0.0
Harefield	49	53.1	30.6	16.3	16	25.0	75.0	0.0
Manchester	45	42.2	28.9	28.9	9	22.2	77.8	0.0
Newcastle	33	60.6	24.2	15.2	4	0.0	100	0.0
Papworth	61	29.5	47.5	23.0	33	48.5	27.3	24.2
Total	249	43.0	35.3	21.7	70	34.3	54.3	11.4

Table 4b 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 276 DBD lungs retrieved and of these 93.1% were transplanted. DCD hearts are generally retrieved for use by the centre retrieving, however in this period, there were two cases where the heart was retrieved by Papworth for use by Great Ormond Street.

Table 4b Cardiothoracic organs retrieved and percentage that went on to be transplanted, 1 April 2019 - 31 March 2020, by attending retrieval team				
Attending retrieval team	Hearts		Lungs	
	Retrieved	% txd	Retrieved	% txd
DBD				
Birmingham	28	100	45	100
Glasgow	10	100	27	66.7
Harefield	34	88.2	44	97.7
Manchester	32	93.8	51	96.1
Newcastle	25	100	24	87.5
Papworth	32	93.8	85	95.3
Total	161	95.0	276	93.1
DCD				
Birmingham	0	-	8	100
Glasgow	2	50.0	4	50.0
Harefield	4	75.0	23	91.3
Manchester	2	100	14	85.7
Newcastle	0	-	8	75.0
Papworth	24	75.0	34	47.1
Total	32	75.0	91	71.4
Total	193	91.7	367	87.7

Figures 9a and 9b show the number of organs retrieved, by attending retrieval team, for DBD and DCD donors, respectively.

Figure 9a DBD cardiothoracic organs retrieved, 1 April 2019 - 31 March 2020 by attending retrieval team

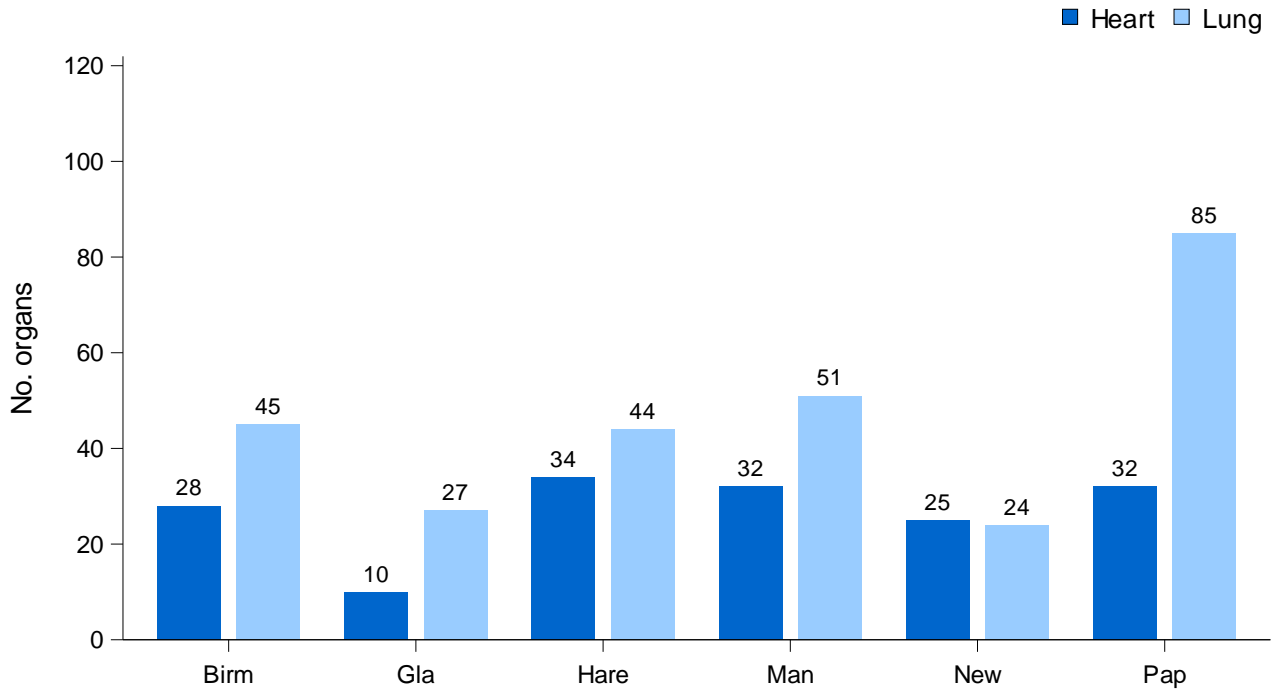


Figure 9b DCD cardiothoracic organs retrieved, 1 April 2019 - 31 March 2020 by attending retrieval team

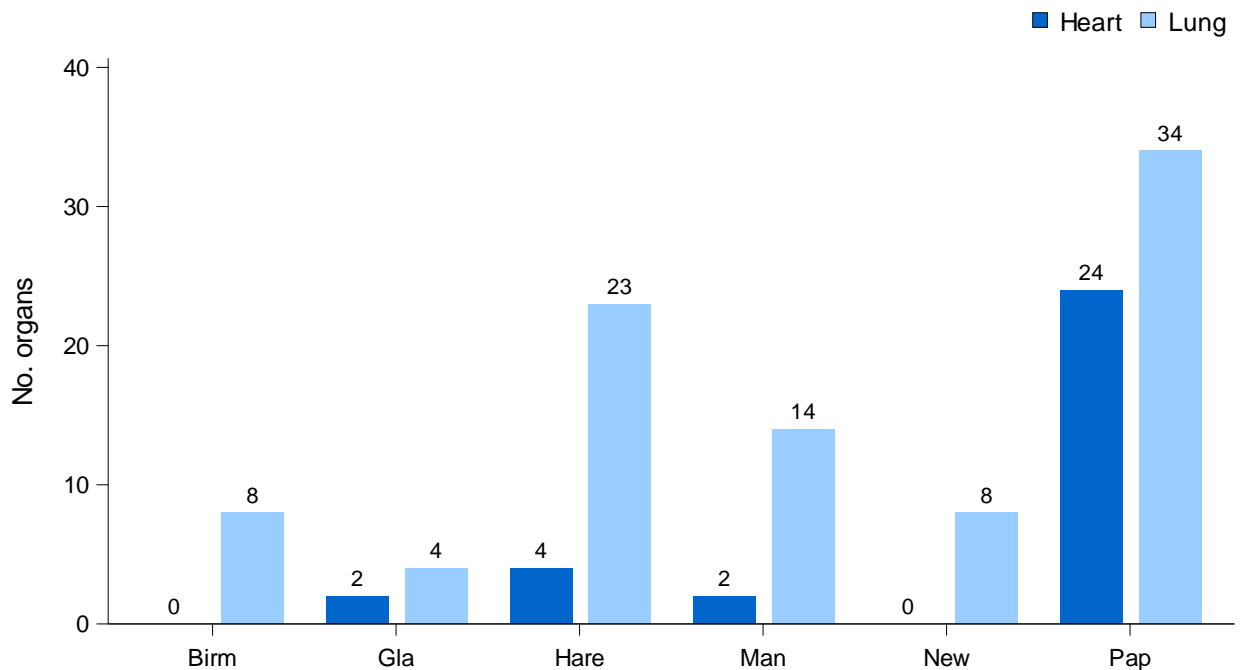
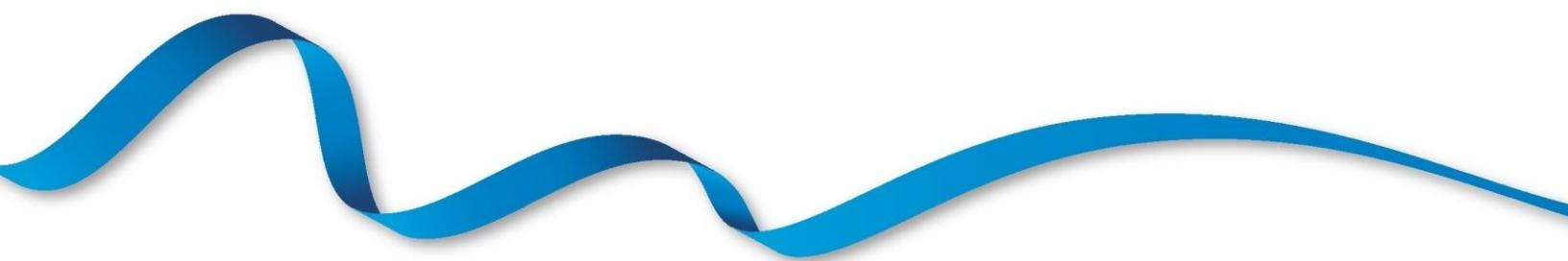


Table 4c shows the mean number of cardiothoracic organs retrieved and transplanted for each proceeding cardiothoracic donor, by attending retrieval team and donor type. Mean donor age is also reported.

- The mean number of organs retrieved per DBD donor ranged from 1.5 to 1.9 across teams, analysis of variance indicated that the differences were not statistically significant ($p=0.06$).
- The mean number of organs transplanted per DBD donor ranged from 1.4 to 1.8 across teams, analysis of variance indicated that the differences were not statistically significant ($p=0.11$).
- The mean number of organs retrieved per DCD donor ranged from 1.5 to 2 across teams, analysis of variance indicated that the differences were not statistically significant ($p=0.87$).
- The mean number of organs transplanted per DCD donor ranged from 0.8 to 2 across teams, analysis of variance indicated that the differences were statistically significant ($p=0.05$).

Table 4c Mean donor age, organs retrieved, and organs transplanted, per proceeding cardiothoracic donor, 1 April 2019 - 31 March 2020, 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	42	42.0	(13.6)	1.7	(0.8)	1.7	(0.8)	4	49.8	(20.5)	2.0	(0.0)	2.0	(0.0)
Glasgow	19	38.1	(16.2)	1.9	(0.8)	1.5	(1.1)	4	43.0	(11.0)	1.5	(0.6)	0.8	(1.0)
Harefield	49	35.5	(13.5)	1.6	(0.7)	1.5	(0.8)	16	46.6	(15.8)	1.7	(0.5)	1.5	(0.7)
Manchester	45	42.3	(15.1)	1.8	(0.9)	1.8	(0.9)	9	46.0	(15.8)	1.8	(0.4)	1.6	(0.7)
Newcastle	33	35.4	(18.9)	1.5	(0.7)	1.4	(0.7)	4	51.5	(23.0)	2.0	(0.0)	1.5	(1.0)
Papworth	61	38.8	(17.5)	1.9	(0.7)	1.8	(0.8)	33	36.3	(13.3)	1.8	(0.8)	1.0	(0.8)
Total	249	38.8	(15.9)	1.8	(0.8)	1.6	(0.9)	70	41.9	(15.6)	1.8	(0.6)	1.3	(0.8)

APPENDIX



APPENDIX

Appendix 1 Retrieval data missing form rates, 1 April 2019 - 31 March 2020					
Attending retrieval team	Number of forms due	Retrieval team forms missing		SNOD forms missing	
		N	%	N	%
Abdominal					
Oxford	158	0	-	2	1.3
Cardiff	73	0	-	1	1.4
Birmingham	234	0	-	4	1.7
Newcastle	204	0	-	1	0.5
Edinburgh	157	1	0.6	1	0.6
King's College	350	0	-	5	1.4
Manchester	166	0	-	0	-
Cambridge	281	0	-	3	1.1
Leeds	166	0	-	0	-
Royal Free	146	0	-	1	0.7
Cardiothoracic					
Glasgow	56	7	12.5	0	-
Papworth	143	0	-	2	1.4
Newcastle	68	9	13.2	0	-
Manchester	111	0	-	0	-
Harefield	119	2	1.7	0	-
Birmingham	84	0	-	1	1.2
Total	2516	19	0.8	21	0.8

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