NHS
Blood and Transplant

ANNUAL REPORT ON THE NATIONAL ORGAN RETRIEVAL SERVICE (NORS)

REPORT FOR 2017/18
(1 April 2017 - 31 March 2018)

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EXECUTIVE SUMMARY

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The National Organ Retrieval Service (NORS) was introduced on 1 April 2010 comprised of 10 abdominal and 6 cardiothoracic organ retrieval teams available to retrieve organs for transplantation from deceased donors in the UK. At present four abdominal NORS teams are full-time on call (52 weeks per annum) while six teams are commissioned to be operational part-time (varying between 15 and 37 weeks). When NORS was introduced at any given time there were 7 out of 10 abdominal organ retrieval teams available to perform retrievals and 6 cardiothoracic organ retrieval teams. Following a review of the National Organ Retrieval Service in April 2016, the number of cardiothoracic teams on call at any time reduced to three. Following this review, the system of mobilisation of NORS teams also changed. Before the review a zonal infrastructure was in place with part-time teams sharing a rota to support a number of named donor hospitals in a particular geographical zone. After the review a more flexible system was adopted mobilising the 'closest and available' NORS team. This report presents organ retrieval data from the most recent financial year, 1 April 2017 to 31 March 2018. Data were extracted from the UK Transplant Registry on 29th May 2018.

Between 1 April 2017 to 31 March 2018, 1,911 potential organ donors were attended by a retrieval team. 1,565 (82%) of these proceeded to abdominal organ donation and 371 (59% of the 624 attended by a cardiothoracic team) proceeded to cardiothoracic organ donation.

Key Findings

- There was a 9% increase in the number of donors attended in this financial year compared to the previous year (from 1,755 to 1,911).

- On average, 5.2 potential donors were attended by a retrieval team per day, which is an increase from the previous year (4.8).

- On average, abdominal teams attended at least one donor on 61% of on-call days in the year (56% the previous year), while cardiothoracic teams attended at least one donor on 47% of on-call days (42% the previous year). Due to the increase in NORS team activity a Capacity and Demand review is currently in progress.

- There were no statistically significant differences in the mean number of DBD or DCD organs retrieved for either abdominal or cardiothoracic teams.

- A high proportion of abdominal organs accepted for transplantation were retrieved; 97% or greater for DBD and DCD kidneys across all teams. The proportion was lower for cardiothoracic organs accepted (51% to 69% for DBD cardiothoracic donors across the six teams). The transplantation rates for retrieved organs were variable across organs, from 46.6% for DCD pancreases, up to 95.3% for DBD hearts. Additionally, 29 DCD hearts were retrieved, 25 of which were transplanted in that period.

INTRODUCTION

INTRODUCTION

The National Organ Retrieval Service (NORS) was introduced on 1 April 2010 and is made up of a number of specialist surgical teams dedicated to organ retrieval from UK deceased organ donors.

This report presents organ retrieval activity from the latest full financial year, 1 April 2017 to 31 March 2018. 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 (1%) of forms were missing at time of data extraction, 29th May 2018.

From 2010 to 2016 at any given time there were 7 out of 10 abdominal organ retrieval teams available to perform retrievals and 6 cardiothoracic organ retrieval teams. It is of relevance to state that four abdominal NORS teams are full-time on call (52 weeks per annum) while six teams are commissioned to be operational part-time (varying between 15 and 37 weeks). Until 2017 each team had a designated zone (with part-time teams sharing a zone and a complementing rota) for which they were first on-call, based on the proximity of their base to each donor hospital. If a team were first on-call for a particular donor hospital, they were required to attend potential donors at that hospital if at least one organ had been accepted for transplantation. If the team were already retrieving when they were called to attend, then a second team were called in to retrieve, and so on. Practice has since changed, and in 2017/18 teams were mobilised based on availability and expected travel time to the donor hospital, thus abandoning the original zonal infrastructure.

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 a RTI or ORI form.

ACTIVITY

ACTIVITY

DONOR ATTENDANCES

The number of DBD and DCD donors that were attended by each retrieval team between 1 April 2017 and 31 March 2018 is shown in **Table 1a**. The number of donors attended varies due to the geographical distribution of donors and the on-call arrangements where the on-call arrangements for part-time NORS teams are always in a block of seven consecutive days (Monday to Monday).

Table 1a **Number of donor attendances (proceeding and non-proceeding) per retrieval team, 1 April 2017 - 31 March 2018, by donor type (DBD/DCD)**

	DBD		DCD				
Attending retrieval team (Weeks on-call per annum)	**N**	**%**	**N**	**%**	**Total**	**% of all donors attended**	**(% attended in 2016/17)**
Abdominal							
Birmingham (37w)	113	47.7	124	52.3	**237**	**12.5**	**(11.6)**
Cambridge (52w)	142	50.0	142	50.0	**284**	**15.0**	**(12.9)**
Cardiff (15w)	33	43.4	43	56.6	**76**	**4.0**	**(3.7)**
Edinburgh (52w)	73	49.7	74	50.3	**147**	**7.7**	**(9.2)**
King's College (52w)	193	56.9	146	43.1	**339**	**17.9**	**(18.4)**
Leeds (26w)	79	44.9	97	55.1	**176**	**9.3**	**(8.0)**
Manchester (26w)	84	51.5	79	48.5	**163**	**8.6**	**(9.4)**
Newcastle (52w)	97	49.7	98	50.3	**195**	**10.3**	**(11.4)**
Oxford (26w)	81	54.7	67	45.3	**148**	**7.8**	**(9.0)**
Royal Free (26w)	75	56.4	57	42.9	**133**	**7.0**	**(6.4)**
Abdominal total	**971**	**51.2**	**927**	**48.8**	**1898**	**100.0**	**(100.0)**
Cardiothoracic							
Birmingham (26w)	69	72.6	26	27.4	**95**	**15.2**	**(18.4)**
Glasgow (26w)	36	83.7	7	16.3	**43**	**6.9**	**(8.5)**
Harefield (26w)	102	75.6	33	24.4	**135**	**21.6**	**(22.2)**
Manchester (26w)	86	76.1	27	23.9	**113**	**18.1**	**(15.3)**
Newcastle (26w)	60	75.0	20	25.0	**80**	**12.8**	**(11.9)**
Papworth (26w)	109	69.0	49	31.0	**158**	**25.3**	**(23.6)**
Cardiothoracic total	**462**	**74.0**	**162**	**26.0**	**624**	**100.0**	**(100.0)**
Total no. attendances	**1433**	**56.8**	**1089**	**43.2**	**2522**	**.**	**(-)**
Total no. donors attended	**980**	**51.3**	**931**	**48.7**	**1911**	**.**	**(-)**

Note: There was 1 cardiothoracic retrieval reported as attended by more than one retrieval team. This donor has been allocated to the team which was highest in the attendance sequence.

Included in this table are 16 potential donors attended by an off duty abdominal NORS team (3 Oxford, 4 Birmingham, 3 Manchester, 3 Leeds and 3 Royal Free) and 39 by an off duty cardiothoracic NORS team (17 Papworth, 6 Newcastle, 4 Manchester and 12 Harefield).
There was 1 additional donor attended by a local team (Belfast).

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 1,911 potential donors attended by a retrieval team. Of these, 980 (51.3%) were potential DBD donors and 931 (48.7%) were potential DCD donors. 949 (97%) of the potential DBD donors attended by an abdominal team proceeded to abdominal organ donation while 305 (66%) of the potential DBD donors attended by a cardiothoracic team proceeded to cardiothoracic organ donation. For potential DCD donors, 616 (66%) of those attended by an abdominal team proceeded to abdominal organ donation while 619 (66%) of those attended by a cardiothoracic team proceeded to cardiothoracic organ donation. A small number of UK donors were attended by local or overseas retrieval teams and there was one instance where more than one abdominal or cardiothoracic team attended, as detailed in the footnotes of the tables.

Table 1b **Number of donor attendances per retrieval team, 1 April 2017 - 31 March 2018 by donor type (DBD/DCD) and proceeding/non-proceeding**

	Donors after brain death			Donors after circulatory death		
Attending retrieval team (Weeks on-call per annum)	**Actual**	**Non-proceeding**	**% non-proc**	**Actual**	**Non-proceeding**	**% non-proc**
Abdominal						
Birmingham (37w)	111	2	1.8	80	44	35.5
Cambridge (52w)	139	3	2.1	100	42	29.6
Cardiff[1] (15w)	32	1	3.0	27	16	37.2
Edinburgh (52w)	72	1	1.4	47	27	36.5
King's College (52w)	185	8	4.1	102	44	30.1
Leeds (26w)	78	1	1.3	68	29	29.9
Manchester (26w)	83	1	1.2	45	34	43.0
Newcastle (52w)	94	3	3.1	62	36	36.7
Oxford (26w)	80	1	1.2	44	23	34.3
Royal Free (26w)	74	1	1.3	41	16	28.1
Abdominal total	**948**	**22**	**2.3**	**616**	**311**	**33.5**
Cardiothoracic						
Birmingham (26w)	47	22	31.9	8	18	69.2
Glasgow (26w)	21	15	41.7	1	6	85.7
Harefield (26w)	67	35	34.3	11	22	66.7
Manchester (26w)	57	29	33.7	12	15	55.6
Newcastle (26w)	45	15	25.0	9	11	55.0
Papworth (26w)	68	41	37.6	25	24	49.0
Cardiothoracic total	**305**	**157**	**34.0**	**66**	**96**	**59.3**
Total donors (abdominal and/or cardiothoracic)	**954**	**25**	**2.6**	**619**	**312**	**33.5**

Note: There was 1 cardiothoracic retrievals reported as attended by more than one retrieval team. This donor has been allocated to the team which was highest in the attendance sequence.

Included in this table are 16 potential donors attended by an off duty abdominal NORS team (3 Oxford, 4 Birmingham, 3 Manchester, 3 Leeds and 3 Royal Free) and 39 by an off duty cardiothoracic NORS team (17 Papworth, 6 Newcastle, 4 Manchester and 12 Harefield).
There was 1 additional donor attended by a local team (Belfast).

Figure 1a shows the proportion of donors attended by any abdominal team, by the first on call team. Prior to 4 April 2016 this was based on the geographic area they arose in, known as zones. Since then the first on call team is based on closest team to the donor hospital based on expected travel time. Birmingham/Cardiff, Leeds/Manchester, and Oxford/Royal Free activity is presented as shared here to allow for comparison with previous financial years. All of these teams are independent and are mobilised as such however they do share rotas. For example, 19% of potential donors in 2017/18 arose where Birmingham/Cardiff were first on call (however this does not mean that Birmingham or Cardiff were the attending team). This figure shows that Leeds/Manchester had the highest percentage share of abdominal donors (24.7%) and Edinburgh had the lowest (6.6%).

Figure 1a **Percentage share of donors attended by an abdominal team between 1 April 2017 and 31 March 2018, by first on call abdominal team.**

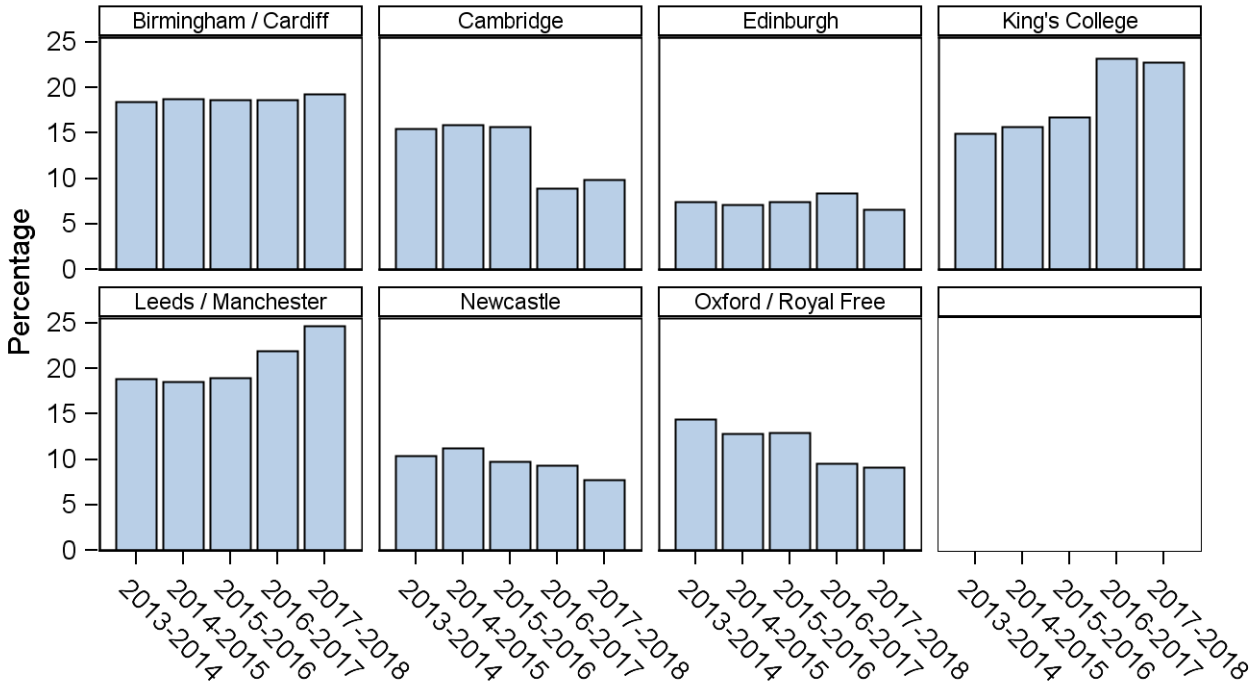


Figure 1b shows the proportion of donors attended by any cardiothoracic team, by first on call team. Harefield and Papworth had the highest percentage share of potential cardiothoracic donors in 2017/18 (23.4% and 23.7% respectively), while Glasgow had the lowest (4.3%).

Figure 1b **Percentage share of donors attended by a cardiothoracic team between 1 April 2017 and 31 March 2018, by first on call cardiothoracic team.**

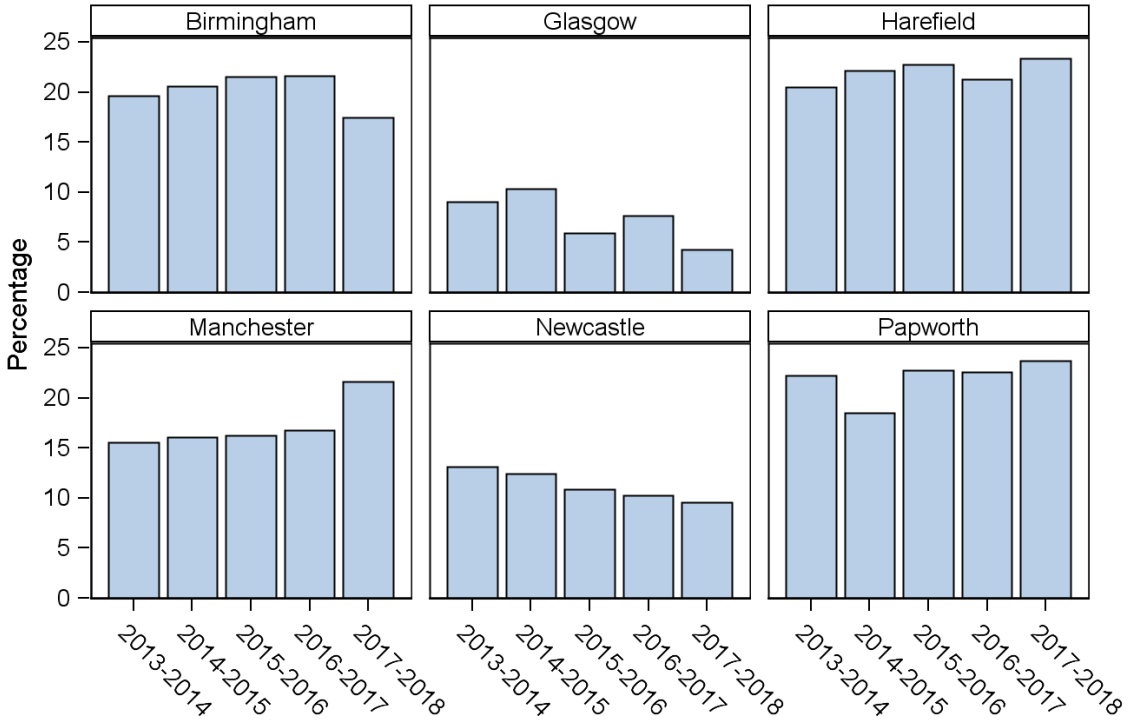


Figure 2 shows the distribution of the number of actual and non-proceeding donors attended by at least one retrieval team, per day in 2017/18. The number of donors per day ranged from zero (4 days) to 14 (1 day). The mean number of donors per day was 5.2.

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 2017 - 31 March 2018**

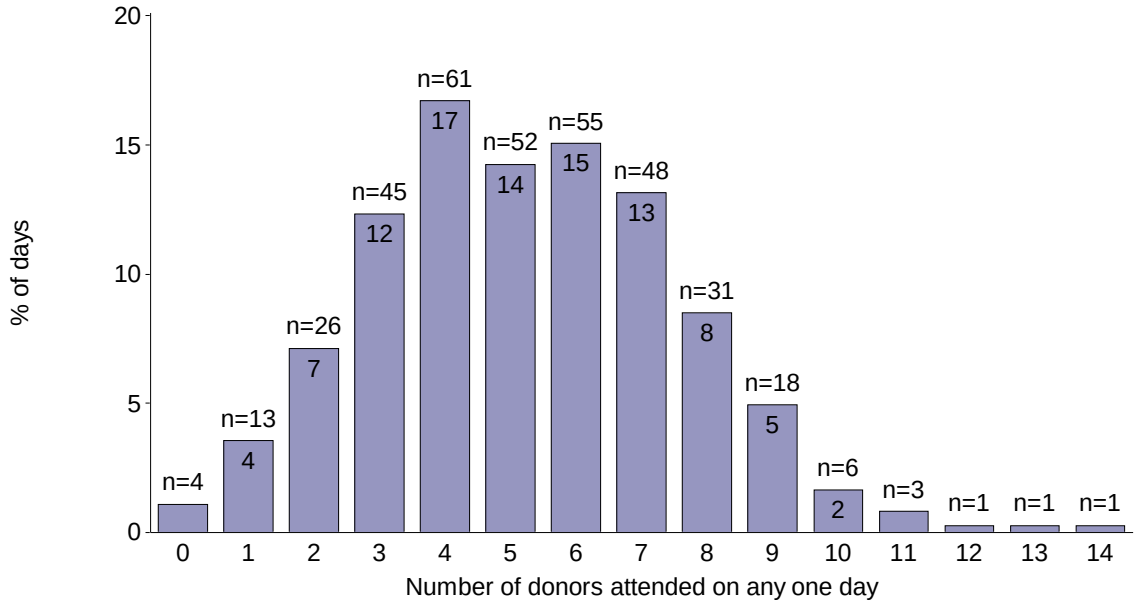


Figure 3a shows the distribution of the number of abdominal teams out on any one day during 2017/18. For example, there were 83 days in the 12-month period (23% of days) where 5 abdominal teams were out attending donors.

Figure 3a **Distribution of the number of abdominal retrieval teams out on any one day, between 1 April 2017 and 31 March 2018**

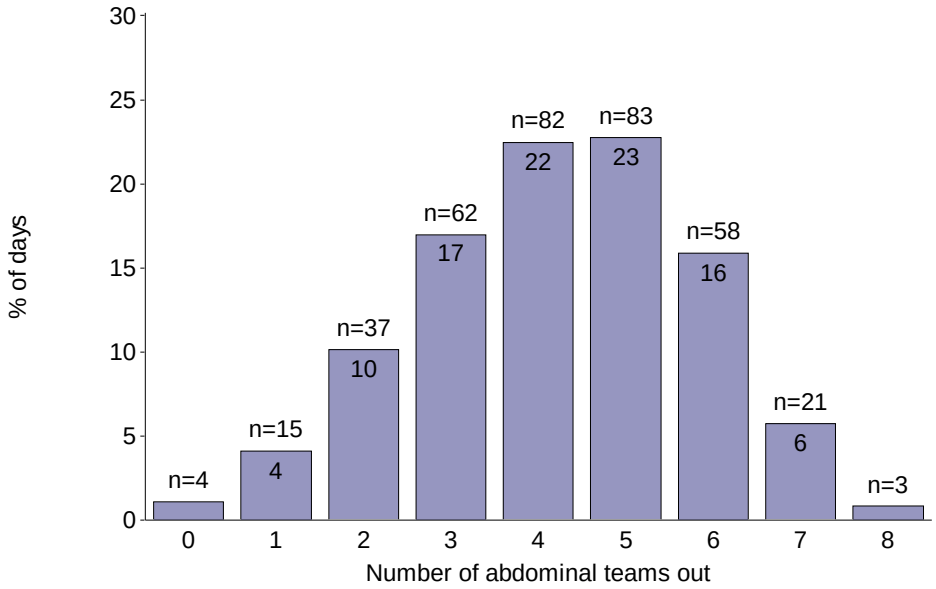


Figure 3b shows the distribution of the number of donors (actual and non-proceeding) attended by each abdominal team on any one day (that they were on call) during the year. On average abdominal teams did not attend any donors on 39% of the days in the year, attended one donor 48% of days, attended two donors 12% of days, attended three donors 1% of days and attended four donors on <1% of days. The 'busiest' team in 2017/18 in terms of days active was Leeds (when on call).

Figure 3b **Distribution of the number of actual and non-proceeding donors attended by each full-time or part-time abdominal team on any one day during 1 April 2017 - 31 March 2018**

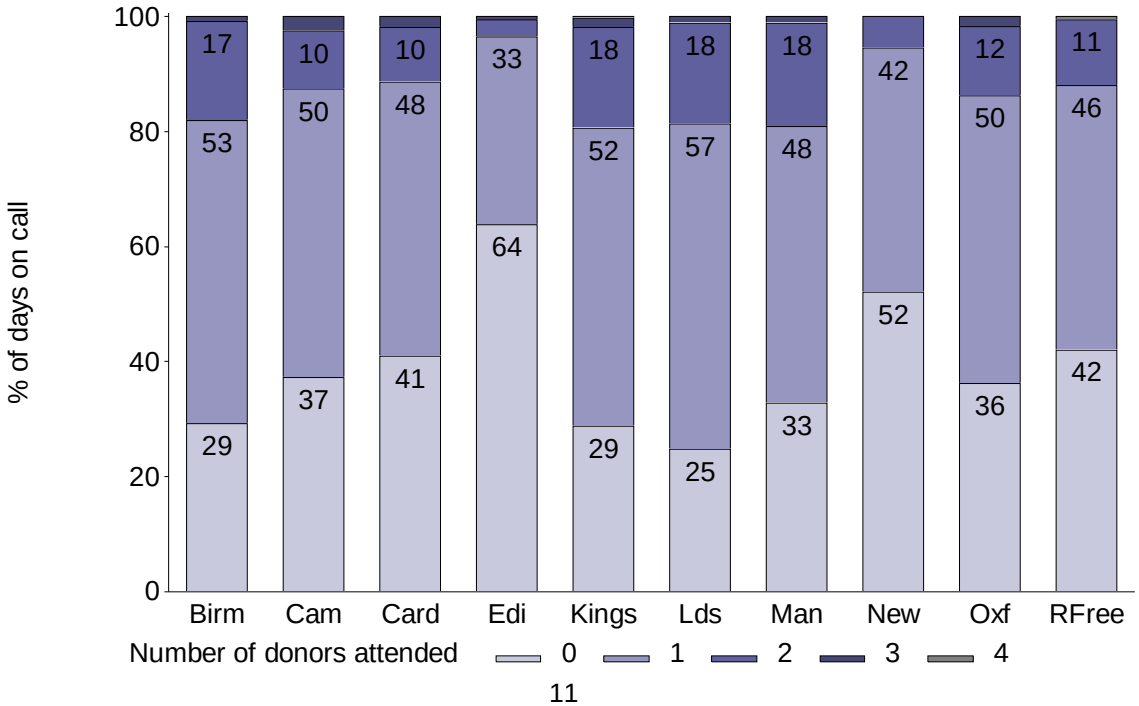


Figure 4a shows the distribution of the number of cardiothoracic teams out on any one day during 2017/18. It is most common for two cardiothoracic teams to be out at once (five is most common for abdominal teams).

Figure 4a **Distribution of the number of cardiothoracic retrieval teams out on any one day, between 1 April 2017 and 31 March 2018**

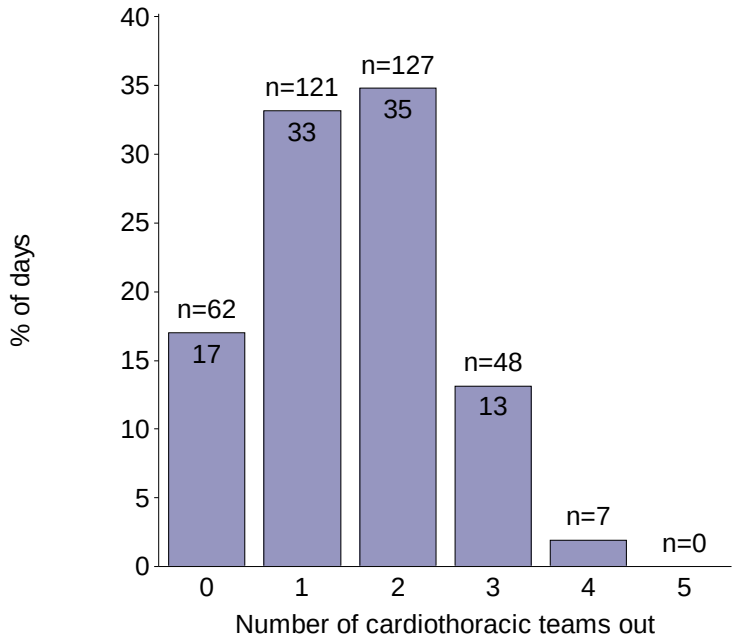


Figure 4b shows the distribution of the number of donors (actual and non-proceeding) attended by each cardiothoracic team on any one day during the year. On average cardiothoracic teams did not attend any donors 53% of days in the year, attended one donor 40% of days, attended two donors 6% of days and attended three donors <1% of days. The 'busiest' team in 2017/18 in terms of days active was Papworth.

Figure 4b **Distribution of the number of actual and non-proceeding donors attended by each cardiothoracic team on any one day during 1 April 2017 - 31 March 2018**

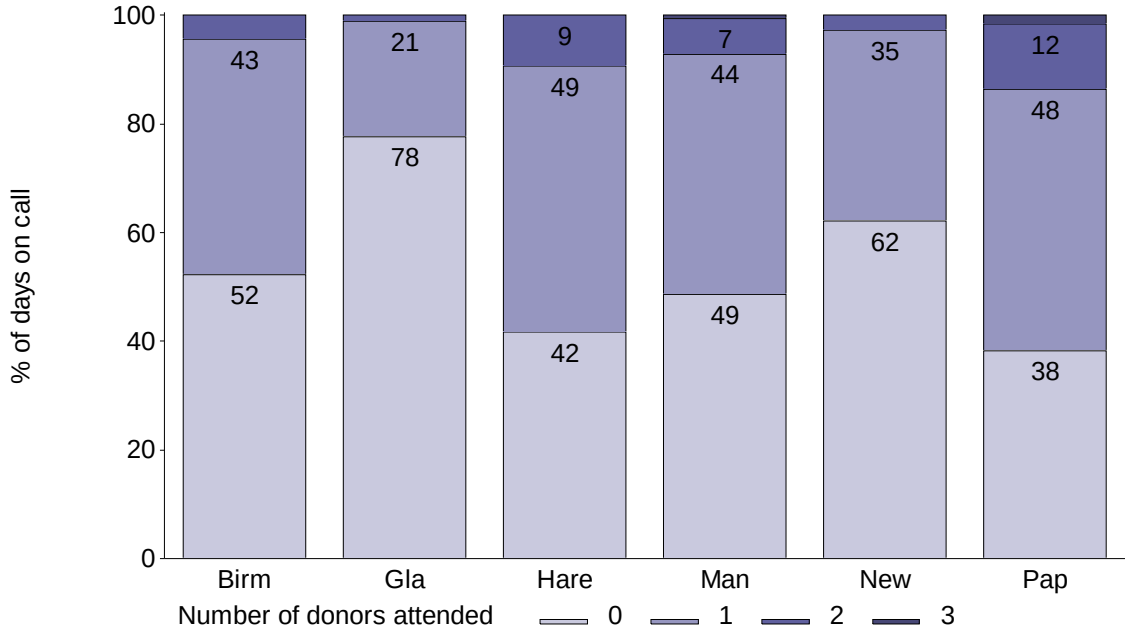


Table 2 shows the position of the retrieval team in the retrieval team attendance sequence for each of the actual and non-proceeding donors that were attended during the financial year. Teams are mobilised based on availability and expected travel times, if the closest team (first team in sequence) are unavailable the second closest team will be mobilised in their stead (second team in sequence) and so on.

The amount of times teams went out when they were not first in the on-call sequence varies. 63.6% of Oxford attendances were when they were not first on call, compared with 12.2% for Leeds and for cardiothoracic teams, where they were not first on call activity ranged from 46.3% for Glasgow and 22.8% for Harefield.

Table 2 **Number of actual and non-proceeding donors attended by each retrieval team, 1 April 2017 - 31 March 2018, by the position of the donor hospital in the on-call attendance sequence**

Attending retrieval team (Weeks on-call per annum)	**First team in seq.**	**Second team in seq.**	**Third team in seq.**	**Fourth team in seq.**	**Fifth team in seq.**	**Sixth team in seq.**	**Seventh team in seq.**	**Total**	**% not first in seq.**
Abdominal									
Birmingham (37w)	164	49	6	12	0	0	0	**231**	29.0
Cambridge (52w)	152	30	64	29	7	0	0	**282**	46.1
Cardiff (15w)	53	2	7	9	1	0	0	**72**	26.4
Edinburgh (52w)	111	16	7	2	2	4	4	**146**	24.0
King's College (52w)	257	54	14	3	4	2	1	**335**	23.3
Leeds (26w)	151	12	3	3	3	0	0	**172**	12.2
Manchester (26w)	124	13	6	7	9	0	0	**159**	22.0
Newcastle (52w)	103	47	27	7	0	9	0	**193**	46.6
Oxford (26w)	52	61	22	4	3	1	0	**143**	63.6
Royal Free (26w)	50	50	16	6	5	1	0	**128**	60.9
Abdominal Total	**1217**	**334**	**172**	**82**	**34**	**17**	**5**	**1861**	**34.6**
Cardiothoracic									
Birmingham (26w)	68	27	0	0	0	0	0	**95**	28.4
Glasgow (26w)	22	3	16	0	0	0	0	**41**	46.3
Harefield (26w)	95	13	15	0	0	0	0	**123**	22.8
Manchester (26w)	81	27	0	0	0	0	0	**108**	25.0
Newcastle (26w)	47	5	15	0	0	0	0	**67**	29.9
Papworth (26w)	102	35	3	0	0	0	0	**140**	27.1
Cardiothoracic Total	**415**	**110**	**49**	**0**	**0**	**0**	**0**	**574**	**27.7**
Total	**1632**	**444**	**221**	**82**	**34**	**17**	**5**	**2435**	**33.0**

Note that 7 paediatric (< 145 cm) cardiothoracic retrievals and 17 paediatric (< 5 years) abdominal retrievals have been excluded from this table due to the special arrangements for paediatric retrieval.

The time taken for teams to attend a donor is shown by team for the most recent four financial years in **Figure 5a and 5b**. The time shown is the hours between departure from base and 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. A small increase in time out attending a donor can be seen over time.

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, 1 April 2014 to 31 March 2018**

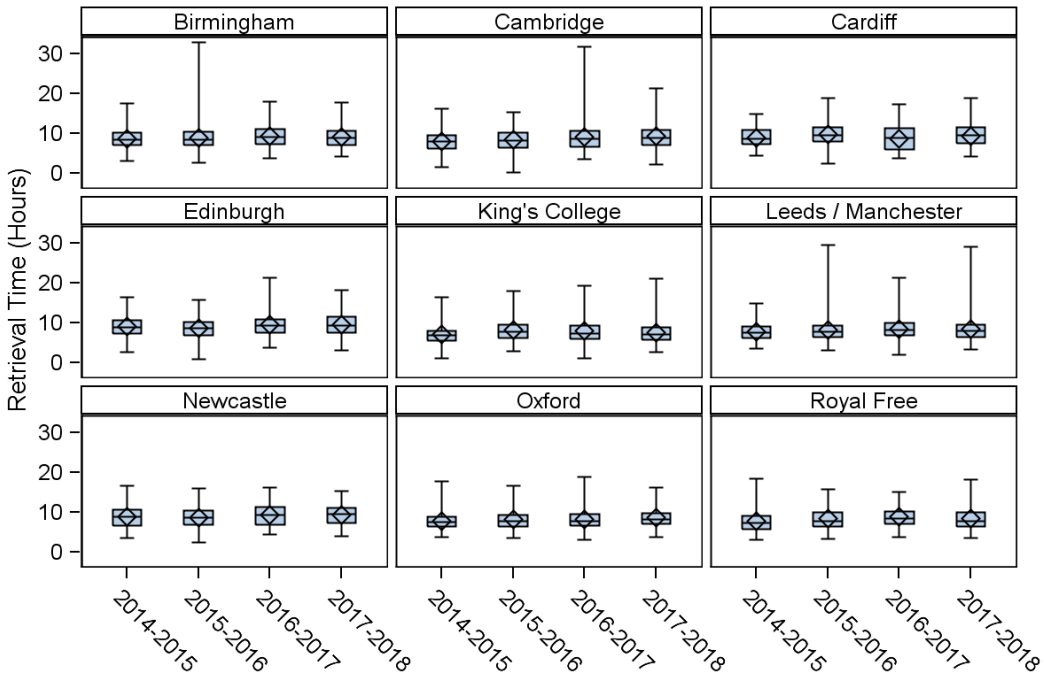
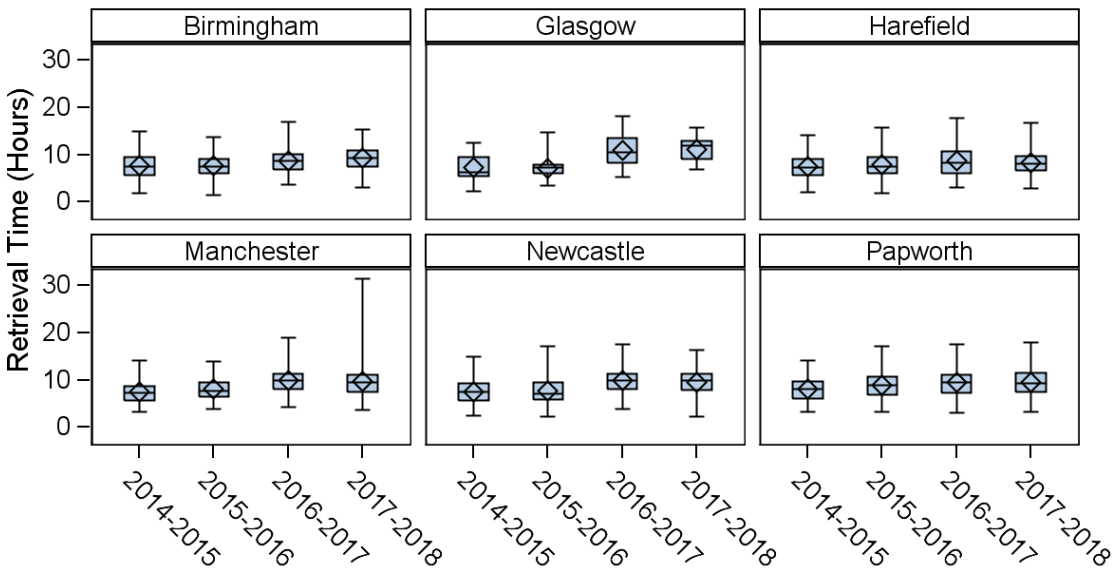


Figure 5b **Median (IQR) time a cardiothoracic team is out attending a donor from departure to return to base, 1 April 2014 to 31 March 2018**



The mobilisation time of NORS Teams by time of day is shown in heatmaps in **Figure 6a** and **Figure 6b**, for abdominal and cardiothoracic teams, respectively. Mobilisation time is the agreed departure time of teams. Heatmaps are used here to indicate the level of activity, darker shades are used to indicate high activity.

Figure 6a Mobilisation time of abdominal teams

Hour

		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	**Total**
2016/17	Mon	9	7	13	13	6	13	13	14	15	7	13	3	11	9	8	4	2	1	2	2	5	7	9	4	190
	Tue	10	22	8	18	12	11	19	13	17	11	14	9	8	11	5	2	3	5	5	4	4	11	10	13	245
	Wed	13	17	11	22	11	8	20	20	13	11	14	6	13	15	10	5	9	6	5	4	12	7	12	15	279
	Thu	12	19	14	17	19	12	18	21	22	15	16	6	8	6	9	8	7	7	5	4	5	7	6	7	270
	Fri	10	15	20	22	18	15	14	17	12	16	6	9	10	5	9	3	7	7	2	6	9	7	9	15	263
	Sat	17	21	17	14	14	19	14	21	23	19	14	15	9	3	5	5	1	7	3	8	7	6	7	8	277
	Sun	16	11	10	9	10	13	14	18	14	10	13	9	6	4	5	6	5	3	4	5	10	3	10	16	224
	Total	87	112	93	115	90	91	112	124	116	89	90	57	65	53	51	33	34	36	26	33	52	48	63	78	1748
2017/18	Mon	20	19	18	11	9	11	10	13	9	16	16	13	7	3	5	2	6	9	3	5	5	6	17	7	240
	Tue	10	17	13	18	13	13	16	24	20	13	15	9	7	13	7	4	4	1	7	8	6	14	7	17	276
	Wed	13	16	22	23	10	16	16	30	13	19	11	9	7	14	12	7	9	11	5	9	9	11	11	12	315
	Thu	12	21	20	21	24	15	21	21	20	16	13	18	15	7	10	8	10	1	6	7	4	3	9	16	318
	Fri	12	18	21	10	10	8	13	16	22	17	14	16	11	8	4	9	7	7	6	6	8	6	9	17	275
	Sat	11	16	14	14	13	10	10	25	17	19	20	11	13	6	5	6	5	3	4	6	4	5	13	12	262
	Sun	10	6	13	10	9	8	12	13	18	16	16	4	8	8	6	3	2	6	2	9	5	6	8	6	204
	Total	88	113	121	107	88	81	98	142	119	116	105	80	68	59	49	39	43	38	33	50	41	51	74	87	1890

Figure 6b Mobilisation time of cardiothoracic teams

Hour

		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	**Total**
2016/17	Mon	2	0	6	4	4	4	3	7	8	4	1	4	4	5	3	0	0	2	0	1	3	4	3	0	72
	Tue	5	2	0	7	0	4	4	4	5	9	2	4	4	4	4	0	2	2	3	1	3	2	4	1	76
	Wed	3	4	4	6	6	1	5	4	5	6	4	8	5	5	3	4	0	3	4	2	1	3	2	5	93
	Thu	3	3	5	2	2	5	3	8	8	5	8	1	5	3	2	7	2	4	2	1	1	1	0	0	81
	Fri	3	2	6	6	4	7	6	1	5	6	3	3	1	3	2	2	5	3	2	1	2	1	0	2	76
	Sat	5	4	2	3	1	6	9	4	11	5	5	6	1	3	1	0	2	1	1	2	1	1	0	1	75
	Sun	2	6	3	3	4	2	3	4	8	2	5	2	1	2	2	2	1	1	3	3	2	2	1	3	67
	Total	23	21	26	31	21	29	33	32	50	37	28	28	21	25	17	15	12	16	15	11	13	14	10	12	540
2017/18	Mon	5	3	6	3	7	0	3	4	13	4	2	1	5	3	4	1	0	0	0	1	4	3	7	0	79
	Tue	3	5	6	5	5	7	3	4	12	8	5	3	8	5	2	2	3	1	2	5	3	2	5	2	106
	Wed	6	5	6	2	6	4	3	3	11	4	3	1	8	4	1	4	2	4	6	4	1	3	4	6	101
	Thu	2	8	5	5	5	3	3	4	8	7	2	2	10	5	0	8	2	2	3	1	1	0	4	2	92
	Fri	4	6	1	2	2	2	2	0	9	7	5	2	5	9	3	2	1	5	4	1	2	5	1	1	81
	Sat	4	3	4	0	0	4	1	5	15	6	3	2	6	3	0	0	2	0	2	2	3	1	2	4	72
	Sun	1	6	3	1	2	5	0	4	10	5	5	5	6	2	0	1	1	2	0	2	2	2	1	2	68
	Total	25	36	31	18	27	25	15	24	78	41	25	16	48	31	10	18	11	14	17	16	16	16	24	17	599

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

Figure 7a **Proportion of donor attendances (actual and non-proceeding) outside of 3 hours estimated travel time for each abdominal team 1 April 2017 - 31 March 2018**

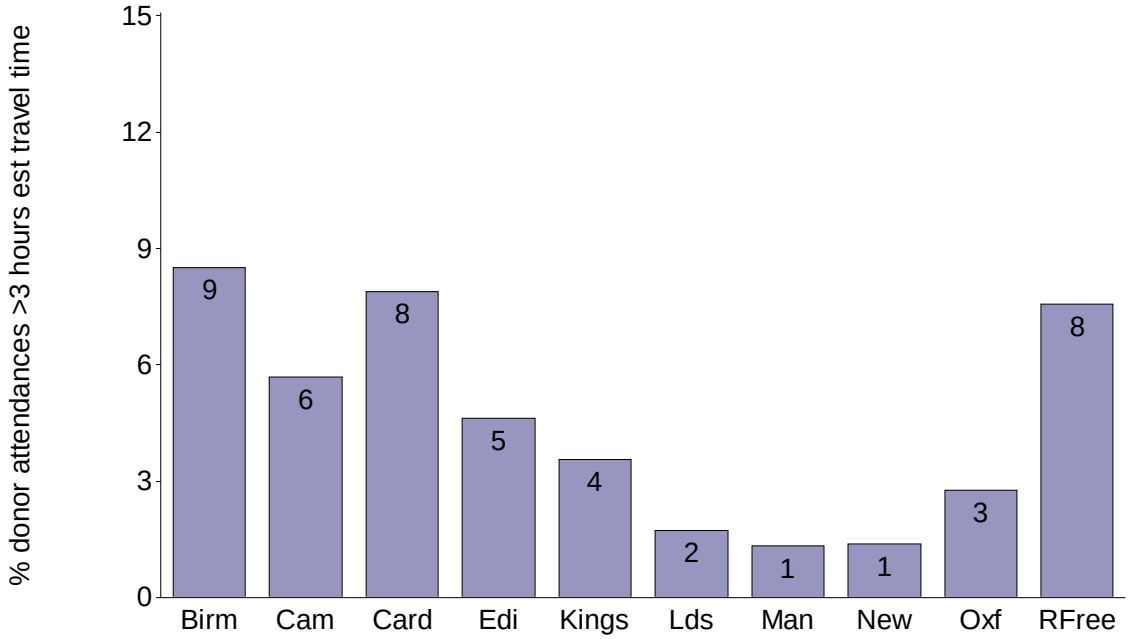
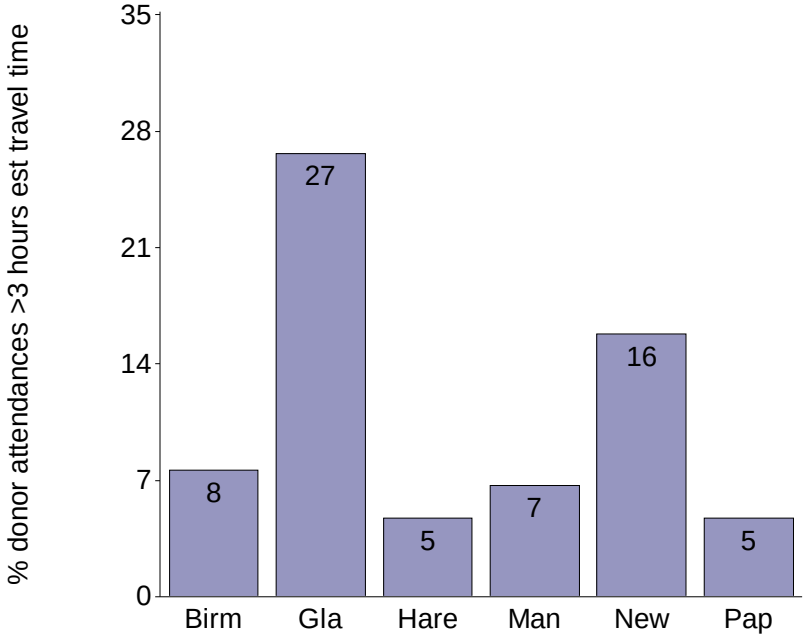


Figure 7b **Proportion of donor attendances (actual and non-proceeding) outside of 3 hours estimated travel time for each cardiothoracic team 1 April 2017 - 31 March 2018**



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, 93.1% of actual DBD donors (donating at least one abdominal organ) donated their kidneys, 89.7% donated their liver, 38.3% donated their pancreas and 2.6% donated their bowel. The overall donation rates for actual DCD donors are lower for livers and pancreases and higher for kidneys.

Table 3a Organs retrieved from actual abdominal donors, 1 April 2017 – 31 March 2018, by attending retrieval team

	No. of donors		% donors donating							
			Kidney(s)		Liver		Pancreas		Bowel	
Attending retrieval team (Weeks on-call per annum)	**DBD**	**DCD**	**DBD**	**DCD**	**DBD**	**DCD**	**DBD**	**DCD**	**DBD**	**DCD**
Birmingham (37w)	111	80	95.5	96.3	90.1	47.5	46.8	17.5	3.6	0.0
Cambridge (52w)	139	100	93.5	99.0	89.2	53.0	40.3	21.0	10.8	0.0
Cardiff (15w)	32	27	90.6	92.6	87.5	55.6	21.9	18.5	0.0	0.0
Edinburgh (52w)	72	47	94.4	95.7	90.3	31.9	51.4	19.1	0.0	0.0
King's College (52w)	185	102	89.7	95.1	93.0	54.9	41.6	22.5	1.1	0.0
Leeds (26w)	78	68	97.4	97.1	84.6	45.6	32.1	14.7	0.0	0.0
Manchester (26w)	83	45	94.0	93.3	90.4	53.3	36.1	17.8	0.0	0.0
Newcastle (52w)	94	62	92.6	100.0	90.4	37.1	34.0	24.2	0.0	0.0
Oxford (26w)	80	44	93.8	95.5	82.5	54.5	30.0	13.6	5.0	0.0
Royal Free (26w)	74	41	91.9	100.0	93.2	48.8	31.1	17.1	0.0	0.0
Total	**948**	**616**	**93.1**	**96.8**	**89.7**	**48.5**	**38.3**	**19.2**	**2.6**	**0.0**

Note: There was 1 domino donor attendance (Royal Free) not counted here. In addition, there was 1 additional DBD donor attended by a local team (Belfast).

Table 3b shows the number of actual abdominal donors where each organ was accepted and the proportion of these where each organ was retrieved. The proportion of donors where each organ was transplanted, out of those where the organ was retrieved are also presented. The figures are broken down by donor type and attending retrieval team. For example, there were 886 actual DBD abdominal donors overall where at least one kidney was accepted, and of these 99.7% had at least one kidney retrieved and, of these, 94.9% had at least one kidney transplanted.

Table 3b **Organs accepted, retrieved and transplanted from actual abdominal donors, 1 April 2017 - 31 March 2018, by attending retrieval team**

	Kidney			Liver			Pancreas			Bowel		
Attending retrieval team	**No. acc.**	**% ret.**	**% of ret orgs txd**	**No. acc.**	**% ret.**	**% of ret orgs txd**	**No. acc.**	**% ret.**	**% of ret orgs txd**	**No. acc.**	**% ret.**	**% of ret orgs txd**
DBD												
Birmingham	106	100.0	95.3	101	99.0	89.0	60	86.7	46.2	4	100.0	100.0
Cambridge	130	100.0	95.4	129	96.1	92.7	68	82.4	50.0	17	88.2	93.3
Cardiff	29	100.0	96.6	28	100.0	96.4	10	70.0	28.6	0	-	-
Edinburgh	68	100.0	97.1	69	94.2	95.4	41	90.2	51.4	0	-	-
King's College	168	98.8	91.0	174	98.9	89.0	83	92.8	40.3	5	40.0	100.0
Leeds	76	100.0	100.0	71	93.0	100.0	33	75.8	52.0	0	-	-
Manchester	78	100.0	96.2	76	98.7	90.7	41	73.2	50.0	0	-	-
Newcastle	87	100.0	92.0	90	94.4	88.2	38	84.2	40.6	0	-	-
Oxford	76	98.7	97.3	70	94.3	83.3	27	88.9	58.3	4	100.0	100.0
Royal Free	68	100.0	94.1	70	98.6	92.8	25	92.0	69.6	1	0.0	-
Total	**886**	**99.7**	**94.9**	**878**	**96.8**	**91.1**	**426**	**85.2**	**48.2**	**31**	**80.6**	**96.0**
DCD												
Birmingham	77	100.0	90.9	47	80.9	76.3	18	77.8	50.0	0	-	-
Cambridge	99	100.0	84.8	59	89.8	67.9	25	84.0	28.6	0	-	-
Cardiff	25	100.0	88.0	19	78.9	40.0	7	71.4	40.0	0	-	-
Edinburgh	46	97.8	91.1	26	57.7	73.3	16	56.3	44.4	0	-	-
King's College	97	100.0	93.8	67	83.6	62.5	27	85.2	43.5	0	-	-
Leeds	67	98.5	90.9	46	67.4	80.6	15	66.7	60.0	0	-	-
Manchester	43	97.7	92.9	28	85.7	62.5	9	88.9	50.0	0	-	-
Newcastle	62	100.0	90.3	32	71.9	60.9	16	93.8	66.7	0	-	-
Oxford	42	100.0	95.2	30	80.0	66.7	7	85.7	50.0	0	-	-
Royal Free	41	100.0	95.1	21	95.2	70.0	9	77.8	42.9	0	-	-
Total	**599**	**99.5**	**90.9**	**375**	**79.7**	**67.2**	**149**	**79.2**	**46.6**	**0**	**-**	**-**
Total	**1485**	**99.6**	**93.3**	**1253**	**91.7**	**84.9**	**575**	**85.2**	**48.8**	**31**	**80.6**	**96.0**

Note: There was 1 domino donor attendance (Royal Free) not counted here.

Figure 8a **DBD abdominal organs retrieved, 1 April 2017 - 31 March 2018, by attending full-time or part-time retrieval team**

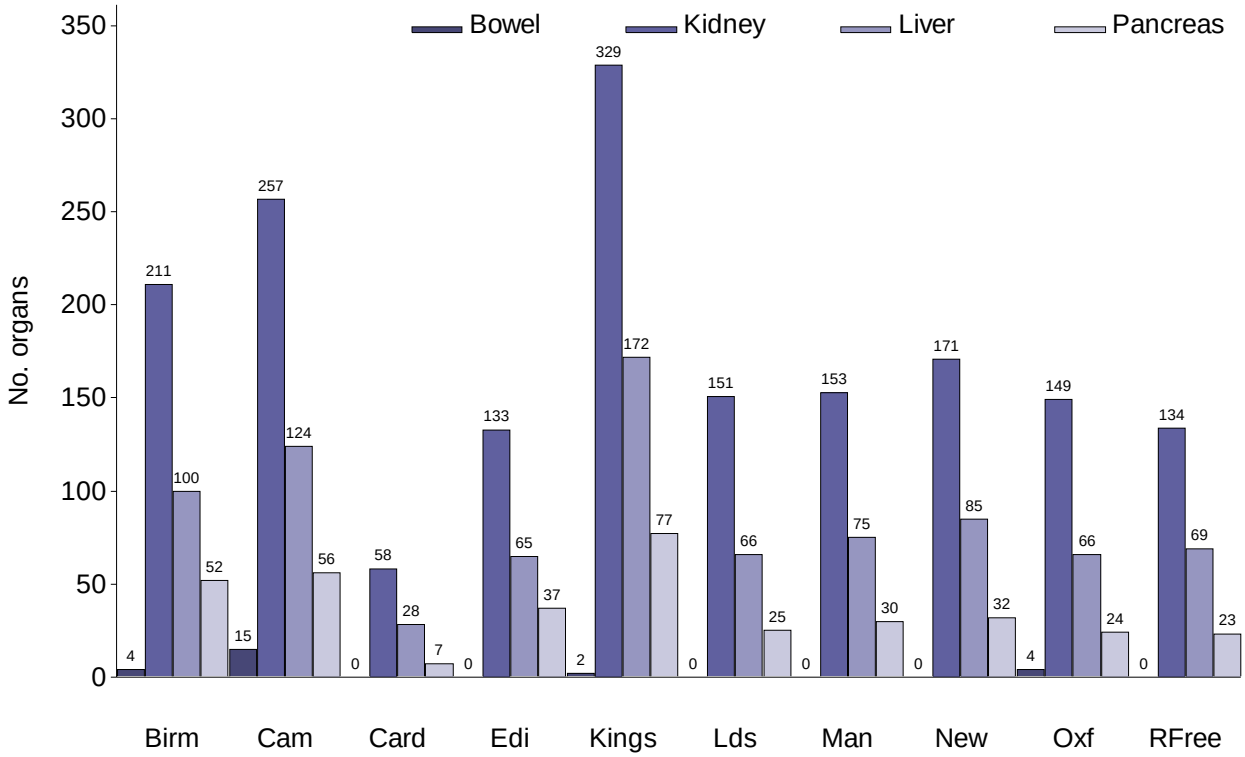


Figure 8b **DCD abdominal organs retrieved, 1 April 2017 - 31 March 2018, by attending full-time or part-time retrieval team**

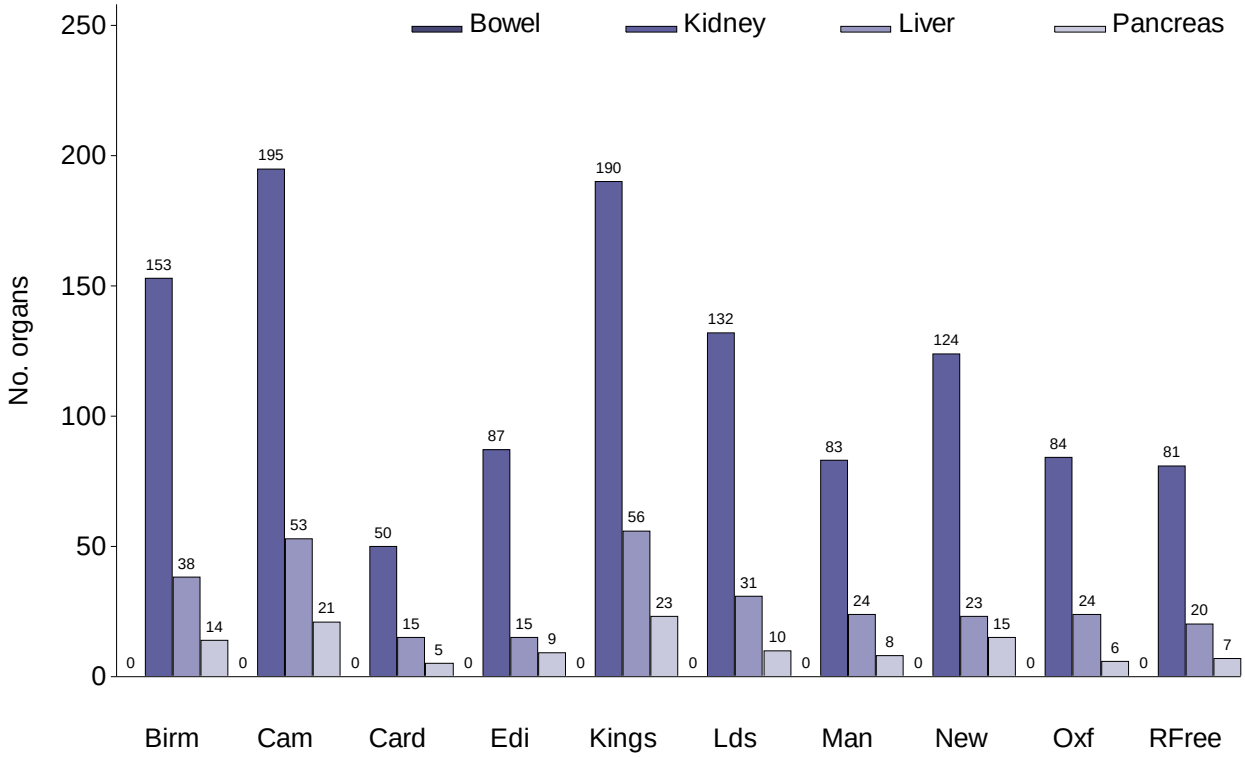


Table 3c shows the mean number of abdominal organs retrieved and transplanted per proceeding abdominal donor, for each attending abdominal team, by donor type in 2017/18. The mean number of organs retrieved per DBD donor ranged from 2.8 to 3.5 across teams. Analysis of Variance indicated that the differences were not statistically significant (p=0.18). The mean number of organs transplanted per DBD donor from 2.6 to 3.1 across teams (no significant difference: p=0.13). The mean number of organs retrieved and transplanted per DCD donor are lower than per DBD donor, again there were no significant differences found between teams.

Table 3c Mean number of abdominal organs retrieved and transplanted per proceeding abdominal donor and mean donor age, by attending full-time or part-time team, 1 April 2017 to 31 March 2018

	DBD							DCD						
	No. of actual donors	Donor age		Mean no. organs retrieved		Mean no. organs txd		No. of actual donors	Donor age		Mean no. organs retrieved		Mean no. organs txd	
Attending retrieval team		Mean	(Sd.)	Mean	(Sd.)	Mean	(Sd.)		Mean	(Sd.)	Mean	(Sd.)	Mean	(Sd.)
Birmingham	182	47.1	(16.8)	3.3	(1.0)	2.8	(1.0)	150	53.4	(17.5)	1.7	(1.4)	1.4	(1.3)
Cambridge	142	48.9	(16.6)	3.2	(1.1)	2.8	(1.2)	142	54.3	(15.8)	1.9	(1.4)	1.4	(1.3)
Cardiff	33	56.2	(14.9)	2.8	(0.9)	2.5	(0.9)	43	54.5	(16.2)	1.6	(1.4)	1.2	(1.2)
Edinburgh	73	48.6	(15.2)	3.2	(1.0)	2.8	(1.0)	74	52.1	(14.8)	1.5	(1.3)	1.2	(1.2)
Glasgow	36	41.4	(14.9)	3.5	(0.8)	3.1	(0.9)	7	50.3	(10.1)	1.3	(1.7)	1.3	(1.7)
Harefield	102	43.4	(14.1)	3.4	(1.1)	3.1	(1.1)	33	47.6	(14.3)	2.5	(1.5)	1.9	(1.4)
King's College	193	52.7	(16.8)	3.0	(1.1)	2.4	(1.2)	146	55.7	(16.4)	1.8	(1.4)	1.5	(1.3)
Leeds	79	50.6	(16.9)	3.1	(0.8)	2.8	(0.8)	97	55.3	(12.9)	1.8	(1.3)	1.5	(1.3)
Manchester	170	47.3	(17.1)	3.1	(1.0)	2.8	(1.0)	106	52.4	(17.6)	1.8	(1.5)	1.4	(1.3)
Newcastle	157	47.0	(19.0)	3.1	(1.1)	2.7	(1.1)	118	51.4	(17.1)	1.7	(1.4)	1.4	(1.3)
Oxford	81	52.0	(15.2)	3.0	(1.0)	2.6	(1.1)	67	56.2	(15.0)	1.7	(1.4)	1.4	(1.3)
Papworth	109	45.4	(13.6)	3.3	(1.0)	2.8	(1.0)	49	41.3	(14.1)	2.4	(1.6)	1.9	(1.5)
Royal Free	75	53.2	(17.4)	3.0	(0.9)	2.7	(1.0)	57	55.9	(14.6)	1.9	(1.3)	1.5	(1.2)
Total	**1432**	**48.6**	**(16.7)**	**3.2**	**(1.0)**	**2.7**	**(1.1)**	**1089**	**53.2**	**(16.2)**	**1.8**	**(1.4)**	**1.4**	**(1.3)**

Note: There was an additional 1 donor attended by a local team (Belfast).

Table 4a shows the percentage of actual cardiothoracic donors donating their heart only, their lung(s) only or both their heart and lung(s), by the cardiothoracic retrieval team that attended and the donor type. Overall, 35.7% of actual DBD donors (donating at least one cardiothoracic organ) donated their heart only, 37.0% donated their lung(s) only and 27.2% donated their heart and lung(s). Additionally, 36.4% of actual DCD donors donated their heart only, 56.1% donated their lung(s) only and 7.6% donated their heart and lung(s).

Table 4a Organs retrieved from actual cardiothoracic donors, 1 April 2017 - 31 March 2018, by attending retrieval team

	DBD donors donating				DCD donors donating			
Attending retrieval team	**N**	**Heart only (%)**	**Lung only (%)**	**Heart & Lung (%)**	**N**	**Heart only (%)**	**Lung only (%)**	**Heart & Lung (%)**
Birmingham	47	31.9	42.6	25.5	8	-	100.0	-
Glasgow	21	33.3	38.1	28.6	1	-	100.0	-
Harefield	67	37.3	34.3	28.4	11	27.3	72.7	-
Manchester	57	36.8	38.6	24.6	12	41.7	41.7	16.7
Newcastle	45	33.3	40.0	26.7	9	11.1	88.9	0.0
Papworth	68	38.2	32.4	29.4	25	60.0	28.0	12.0
Total	**305**	**35.7**	**37.0**	**27.2**	**66**	**36.4**	**56.1**	**7.6**

There was 1 case where the team that the retrieved the heart was different to the team that retrieved the lungs. In this table, these cases are allocated to the team highest in the retrieving sequence.

Table 4b shows the number of potential donors by each cardiothoracic organ and the proportion of the where each organ was accepted and the proportion each organ retrieved. The proportion of donors where each organ was transplanted, out of those where the organ retrieved is also shown. The figures are broken down by donor type and attending retrieval team. For example, there were 333 DBD hearts accepted for transplantation and of these 57.7% were retrieved, and of these 95.3% were transplanted.

Table 4b Cardiothoracic organs accepted, retrieved and transplanted, 1 April 2017 - 31 March 2018, by attending retrieval team

	Heart			Lung		
Attending retrieval team	**No. acc.**	**% ret.**	**% of ret. organs txd**	**No. acc.**	**% ret.**	**% of ret. organs txd**
DBD						
Birmingham	44	61.4	92.6	42	76.2	90.6
Glasgow	27	48.1	92.3	26	53.8	57.1
Harefield	81	54.3	93.2	69	60.9	90.5
Manchester	59	59.3	94.3	62	58.1	94.4
Newcastle	44	61.4	96.3	43	69.8	90.0
Papworth	78	59.0	100.0	70	60.0	97.6
Total	**333**	**57.7**	**95.3**	**312**	**62.8**	**90.3**
DCD						
Birmingham	2	50.0	100.0	23	39.1	100.0
Glasgow	0	.	.	5	20.0	100.0
Harefield	11	27.3	66.7	22	36.4	100.0
Manchester	8	87.5	85.7	19	36.8	85.7
Newcastle	1	100.0	100.0	16	50.0	75.0
Papworth	27	66.7	88.9	26	38.5	90.0
Total	**49**	**61.2**	**86.7**	**111**	**38.7**	**90.7**
Total	**382**	**58.1**	**94.1**	**423**	**56.5**	**90.4**

For the 1 cases where the team that retrieved the heart differs to the team that retrieved the lungs, the patient will appear twice in this table, once for the heart retrieval and once for the lung retrieval

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 2017 - 31 March 2018, by attending retrieval team**

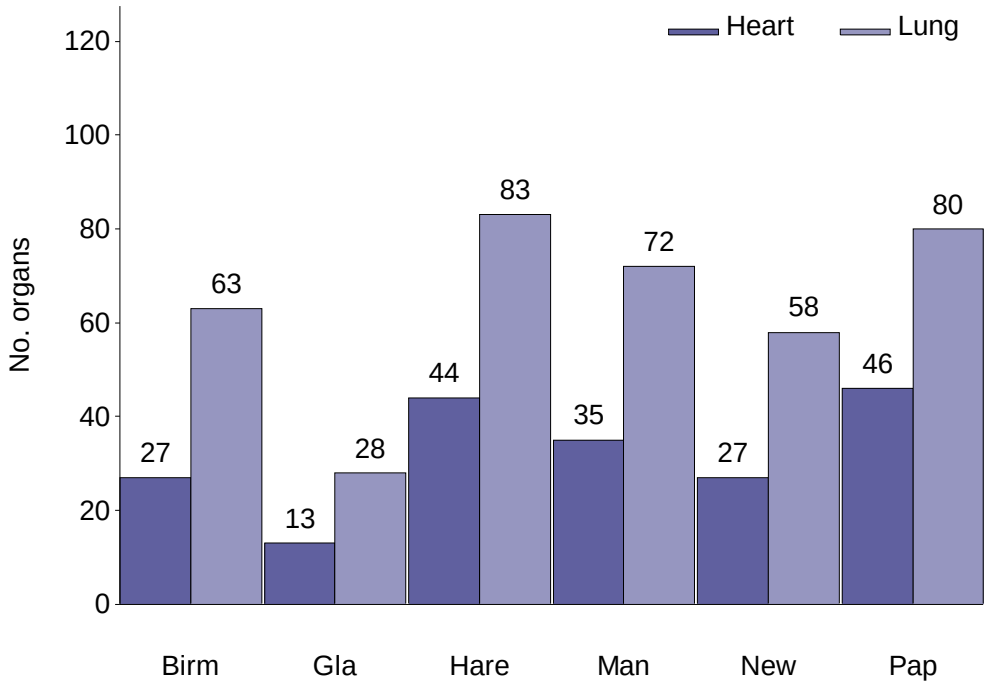


Figure 9b **DCD cardiothoracic organs retrieved, 1 April 2017 - 31 March 2018, by attending retrieval team**

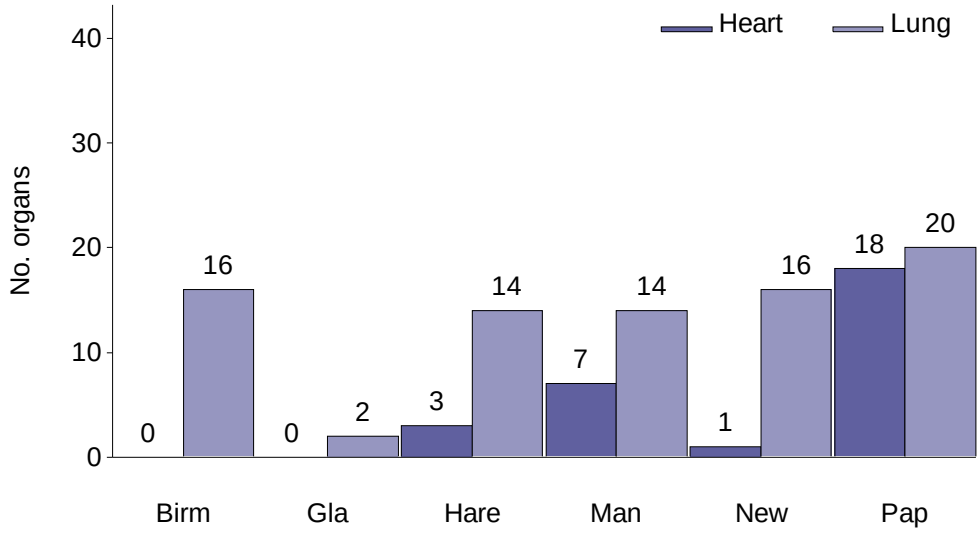


Table 4c shows the mean number of cardiothoracic organs retrieved and transplanted per proceeding cardiothoracic donor, for each attending cardiothoracic team, by donor type. The mean number of organs retrieved per DBD donor ranged from 1.9 to 2.0 across teams. Analysis of variance indicated that the differences were not statistically significant (p=0.997). The mean number of organs transplanted per DBD donor ranged from 1.3 to 1.8 across teams. The mean number of organs retrieved per DCD donor, ranging from 1.5 to 2.0, was not significantly different (p=0.32) across teams and the mean number of organs transplanted per DCD donor ranged from 1.4 to 2.0 (p=0.46).

Table 4c **Mean number of cardiothoracic organs retrieved and transplanted per proceeding cardiothoracic donor, by attending retrieval team, 01 April 2017 - 31 March 2018**

	DBD					DCD				
	Number of actual cardiothoracic donors	Mean no. organs retrieved		Mean no. organs transplanted		Number of actual cardiothoracic donors	Mean no. organs retrieved		Mean no. organs transplanted	
Attending retrieval team		**Mean**	**Std.**	**Mean**	**Std.**		**Mean**	**Std.**	**Mean**	**Std.**
Birmingham	47	1.9	(0.8)	1.7	(0.9)	8	2.0	(0.0)	2.0	(0.0)
Glasgow	21	2.0	(0.8)	1.3	(0.9)	1	2.0		2.0	
Harefield	67	1.9	(0.8)	1.7	(0.9)	11	1.5	(0.5)	1.5	(0.7)
Manchester	57	1.9	(0.8)	1.8	(0.9)	12	1.8	(0.8)	1.5	(1.0)
Newcastle	45	1.9	(0.8)	1.7	(0.8)	9	1.9	(0.3)	1.4	(0.9)
Papworth	68	1.9	(0.8)	1.8	(0.8)	25	1.5	(0.7)	1.4	(0.8)
Total	**305**	**1.9**	**(0.8)**	**1.7**	**(0.9)**	**66**	**1.7**	**(0.6)**	**1.5**	**(0.8)**

There was 1 case where the team that the retrieved the heart was different to the team that retrieved the lungs. In this table, these cases are allocated to the team highest in the retrieving sequence.

APPENDIX

APPENDIX

Appendix I Retrieval data form completion rates, 1 April 2017 - 31 March 2018

Attending retrieval team	Number of forms due	Retrieval team forms missing		SN-OD forms missing	
		N	%	N	%
Abdominal					
Birmingham	237	1	0.4	1	0.4
Cambridge	284	1	0.4	2	0.7
Cardiff	76	0	0.0	0	0.0
Edinburgh	147	0	0.0	2	1.4
King's College	339	0	0.0	1	0.3
Leeds	176	0	0.0	0	0.0
Manchester	163	0	0.0	2	1.2
Newcastle	195	0	0.0	0	0.0
Oxford	148	1	0.7	1	0.7
Royal Free	133	0	0.0	2	1.5
Cardiothoracic					
Birmingham	95	0	0.0	1	1.1
Glasgow	43	9	20.9	0	0.0
Harefield	135	0	0.0	0	0.0
Manchester	113	0	0.0	0	0.0
Newcastle	80	13	16.3	0	0.0
Papworth	158	0	0.0	1	0.6
Total	**2522**	**25**	**1.0**	**13**	**0.5**

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