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Blood and Transplant

ANNUAL REPORT ON THE NATIONAL ORGAN RETRIEVAL SERVICE (NORS)

REPORT FOR 2016/17
(1 April 2016 - 31 March 2017)

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CONTENTS

EXECUTIVE SUMMARY	3
INTRODUCTION	5
RESULTS	7
DONOR ATTENDANCES	8
ORGANS RETRIEVED.....	20
APPENDIX	28

EXECUTIVE SUMMARY

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The National Organ Retrieval Service (NORS) was introduced on 1 April 2010, when at any given time there were 7 abdominal organ retrieval teams and 6 cardiothoracic organ retrieval teams available to undertake organ retrieval. Following a review of the National Organ Retrieval Service, the number of cardiothoracic teams on call at any time reduced to three on 4 April 2016. Also, from this date retrieval teams began to be called out to attend donors on a closest first basis, rather than by designated zones. This report presents organ retrieval data from the last full financial year, 1 April 2016 to 31 March 2017. Data were extracted from the UK Transplant Registry on 5th June 2017.

Between 1 April 2016 and 31 March 2017, 1,755 potential organ donors were attended by a retrieval team. 1,410 (80%) of these proceeded to abdominal organ donation and 310 (56% of the 552 attended by a cardiothoracic team) proceeded to cardiothoracic organ donation.

Key Findings

- There was a 3% increase in the number of 'donors' attended in this financial year compared to the previous year.
- On average, 4.8 potential donors were attended by a retrieval team per day, which has increased slightly from last year (4.7 last year).
- On average, abdominal teams attended at least one donor on 56% of days in the year (55% last year), while cardiothoracic teams attended at least one donor on 42% of on call days (24% last year). The increase for cardiothoracic teams reflects the new on call arrangements.
- The proportion of attendances where the estimated travel time is > 3 hours ranged from 3% (Leeds and Manchester) to 13% (Newcastle) for abdominal teams and from 5% (Papworth) to 33% (Newcastle) for cardiothoracic teams. In 2015/16 under the designated zone system, abdominal teams went out of zone a higher proportion of times than they travel beyond 3 hours to attend a donor. This may be due to many donors being within 3 hours travel time but outside of their previous zone.
- A very high proportion of abdominal organs accepted for transplantation were retrieved, e.g. >99% for DBD and DCD kidneys across all teams. The proportion was lower for cardiothoracic organs accepted: 79% and 73% for heart and lungs respectively. The transplantation rates for retrieved organs were variable across organs, from 46% for DBD pancreases, up to 97% for DBD hearts and lungs. Additionally, 16 DCD hearts were retrieved in that time period, 14 of which were transplanted.

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 last full financial year, 1 April 2016 to 31 March 2017. 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 (3%) of forms were missing at time of data extraction, which was 5th June 2017.

As of 4 April 2016 the number of cardiothoracic NORS teams available at any given time to perform retrievals reduced from six to three. This was the recommendation from a review of the NORS which found that all six teams did not need to be available 365 days a year. The six cardiothoracic teams now share on call responsibilities. Of the ten abdominal teams, six share on call responsibilities and four are full time, resulting in seven teams on call at any given time. The joint Leeds/Manchester team became two separate teams as of 4 April 2016. Similarly, the multi-organ Scotland team is now separately reported as the Edinburgh abdominal team and the Glasgow cardiothoracic team.

The first on call NORS team is the closest available team to the donor hospital, whereas prior to 4 April 2016 this was based on designated zones. If a team are first on-call for a particular donor hospital, they are required to attend potential donors at that hospital if at least one organ has been accepted for transplantation. If the team are already retrieving when they are called to attend, then a second team are called in to retrieve, and so on.

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 death after treatment withdrawal can cause unsuitability of organs for transplantation. Note that a donor may be a non-proceeding cardiothoracic donor but an actual abdominal donor 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 relevant form (RTI or ORI).

Due to cardiothoracic teams now sharing on call responsibilities there have been occasions when an off duty team attends a donor. This can occur when all three on call teams are already out retrieving and an off duty team is mobilised and later reimbursed. The increase in DCD heart transplantation activity has also resulted in off duty teams going out to attend a DCD donor with the aim of retrieving the heart for transplantation at their centre.

RESULTS

RESULTS

DONOR ATTENDANCES

The number of DBD and DCD donors that were attended by each retrieval team between 1 April 2016 and 31 March 2017 is shown in **Table 1a**. The number of donors attended varies due to the geographical distribution of donors and the on-call arrangements.

Table 1a Number of donor attendances (proceeding and non-proceeding) per retrieval team, 1 April 2016 - 31 March 2017, by donor type (DBD/DCD)							
Attending retrieval team	DBD		DCD		Total	% of all donors attended	(% attended in 2015/16)
	N	%	N	%			
Abdominal							
Birmingham ¹	103	50.5	101	49.5	204	11.6	(11.7)
Cambridge	95	42.0	131	58.0	226	12.9	(15.0)
Cardiff ¹	25	38.5	40	61.5	65	3.7	(5.0)
Edinburgh	83	51.6	78	48.4	161	9.2	(7.8)
King's College	158	49.1	164	50.9	322	18.4	(17.3)
Leeds ²	69	49.3	71	50.7	140	8.0	(15.9)⁵
Manchester ²	64	38.8	101	61.2	165	9.4	
Newcastle	104	52.0	96	48.0	200	11.4	(11.6)
Oxford ³	79	50.0	79	50.0	158	9.0	(7.8)
Royal Free ³	61	54.5	51	45.5	112	6.4	(7.9)
Abdominal total	841	48.0	912	52.0	1753	100.0	(100.0)
Cardiothoracic⁴							
Birmingham	76	73.8	27	26.2	103	18.7	(17.9)
Glasgow	36	76.6	11	23.4	47	8.5	(3.5)
Harefield	93	76.2	29	23.8	122	22.1	(25.4)
Manchester	64	76.2	20	23.8	84	15.2	(16.3)
Newcastle	55	84.6	10	15.4	65	11.8	(12.9)
Papworth	87	66.4	44	33.6	131	23.7	(23.9)
Cardiothoracic total	411	74.5	141	25.5	552	100.0	(100.0)
Total no. attendances	1252	54.3	1053	45.7	2305	.	(-)

Table 1a Number of donor attendances (proceeding and non-proceeding) per retrieval team, 1 April 2016 - 31 March 2017, by donor type (DBD/DCD)

Attending retrieval team	DBD		DCD		Total	% of all donors attended	(% attended in 2015/16)
	N	%	N	%			
Total no. donors attended	842	48.0	913	52.0	1755	.	(-)

^{1,2,3,4} Share on-call responsibilities.

⁵ In 2015/16 Leeds and Manchester worked as a joint retrieval team

Note: there were 2 abdominal donor attendances reported as attended by more than one retrieval team.

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

Includes 13 potential donors attended by an off duty abdominal NORS team (1 Oxford, 2 Birmingham, 3 Manchester, 6 Leeds and 1 Royal Free) and 34 by an off duty cardiothoracic NORS team (2 Glasgow, 15 Papworth, 4 Newcastle, 2 Manchester, 9 Harefield and 2 Birmingham).

The 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 1,755 potential donors attended by a retrieval team. Of these, 842 (48%) were potential DBD donors and 913 (52%) were potential DCD donors. 826 (98%) of potential DBD donors attended by an abdominal team proceeded to abdominal organ donation while 265 (64%) of potential DBD donors attended by a cardiothoracic team proceeded to cardiothoracic organ donation. For potential DCD donors, 584 (64%) of those attended by an abdominal team proceeded to abdominal organ donation while 45 (32%) of those attended by a cardiothoracic team proceeded to cardiothoracic organ donation. There were a few instances 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 2016 - 31 March 2017 by donor type (DBD/DCD) and proceeding/non-proceeding						
Attending retrieval team	Donors after brain death			Donors after circulatory death		
	Actual	Non-proceeding	% non-proc	Actual	Non-proceeding	% non-proc
Abdominal						
Birmingham ¹	103	0	0.0	62	39	38.6
Cambridge	94	1	1.1	90	41	31.3
Cardiff ¹	25	0	0.0	27	13	32.5
Edinburgh	82	1	1.2	57	21	26.9
King's College	152	6	3.8	98	66	40.2
Leeds ²	67	2	2.9	49	22	31.0
Manchester ²	62	2	3.1	64	37	36.6
Newcastle	101	3	2.9	60	36	37.5
Oxford ³	79	0	0.0	48	31	39.2
Royal Free ³	61	0	0.0	29	22	43.1
Abdominal total	826	15	1.8	584	328	36.0
Cardiothoracic⁴						
Birmingham	49	27	35.5	6	21	77.8
Glasgow	22	14	38.9	3	8	72.7
Harefield	57	36	38.7	8	21	72.4
Manchester	47	17	26.6	5	15	75.0
Newcastle	33	22	40.0	4	6	60.0
Papworth	57	30	34.5	19	25	56.8
Cardiothoracic total	265	146	35.5	45	96	68.1
Total donors (abdominal and/or cardiothoracic)	829	13	1.5	584	329	36.0

^{1,2,3,4} Share on-call responsibilities.
Note: there were 2 abdominal donor attendances reported as attended by more than one retrieval team. These have been allocated to the team which was highest in the attendance sequence. There was 1 cardiothoracic donor attendances reported as attended by more than one retrieval team. These have been allocated to the team which was highest in the attendance sequence.
Includes 13 potential donors attended by an off duty abdominal NORS team (1 Oxford, 2 Birmingham, 3 Manchester, 6 Leeds and 1 Royal Free) and 34 by an off duty cardiothoracic NORS team (2 Glasgow, 15 Papworth, 4 Newcastle, 2 Manchester, 9 Harefield and 2 Birmingham).

Figure 1a shows the proportion of donors attended by any abdominal team, by the first on call team. Prior to 4 April 2016 the first on call team was based on geographic areas, known as zones. Since then the first on call team has been based on closest team to the donor hospital. For example, 19% of potential donors in 2016/17 arose where Birmingham/Cardiff were first on call (but this does not mean that Birmingham or Cardiff were the attending team). This graph shows that King's College had the highest percentage share of abdominal donors and Edinburgh and Cambridge had the lowest.

Figure 1a Percentage share of donors attended by an abdominal team between 1 April 2016 and 31 March 2017, by first on call abdominal team.

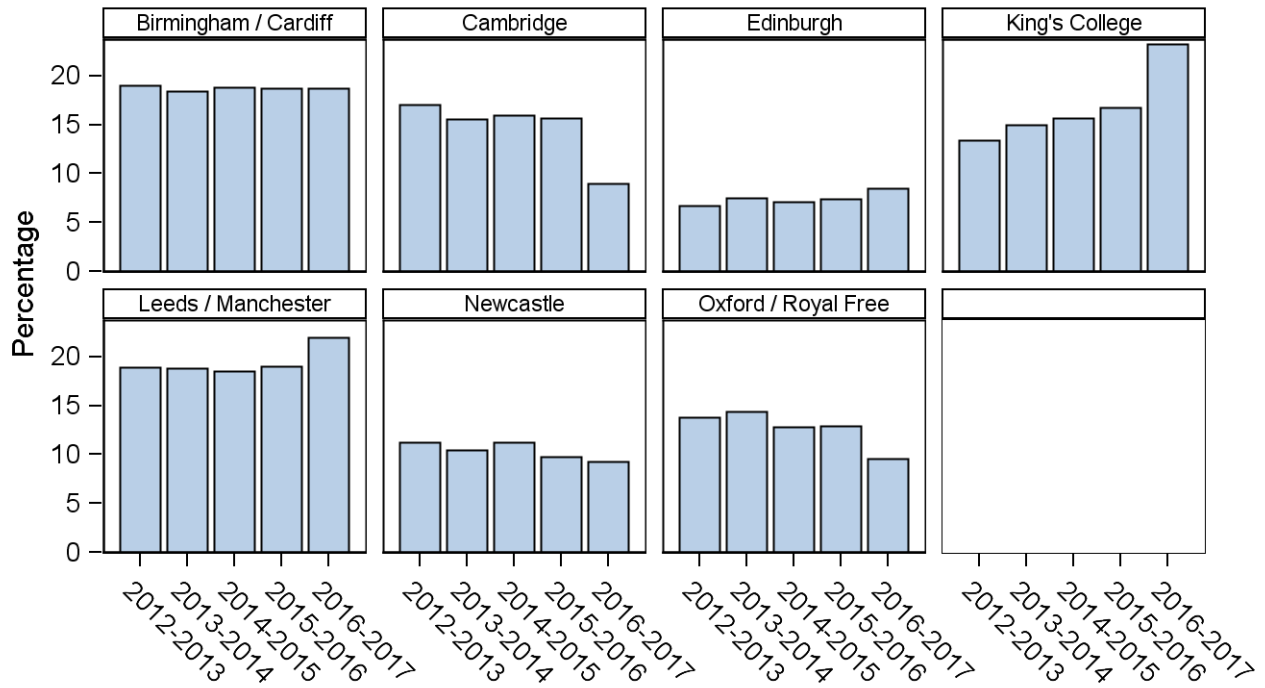


Figure 1b shows the proportion of donors attended by any cardiothoracic team, by first on call team. Papworth had the highest percentage share of potential cardiothoracic donors in the last financial year, while Glasgow had the lowest.

Figure 1b Percentage share of donors attended by a cardiothoracic team between 1 April 2016 and 31 March 2017, by first on call cardiothoracic team.

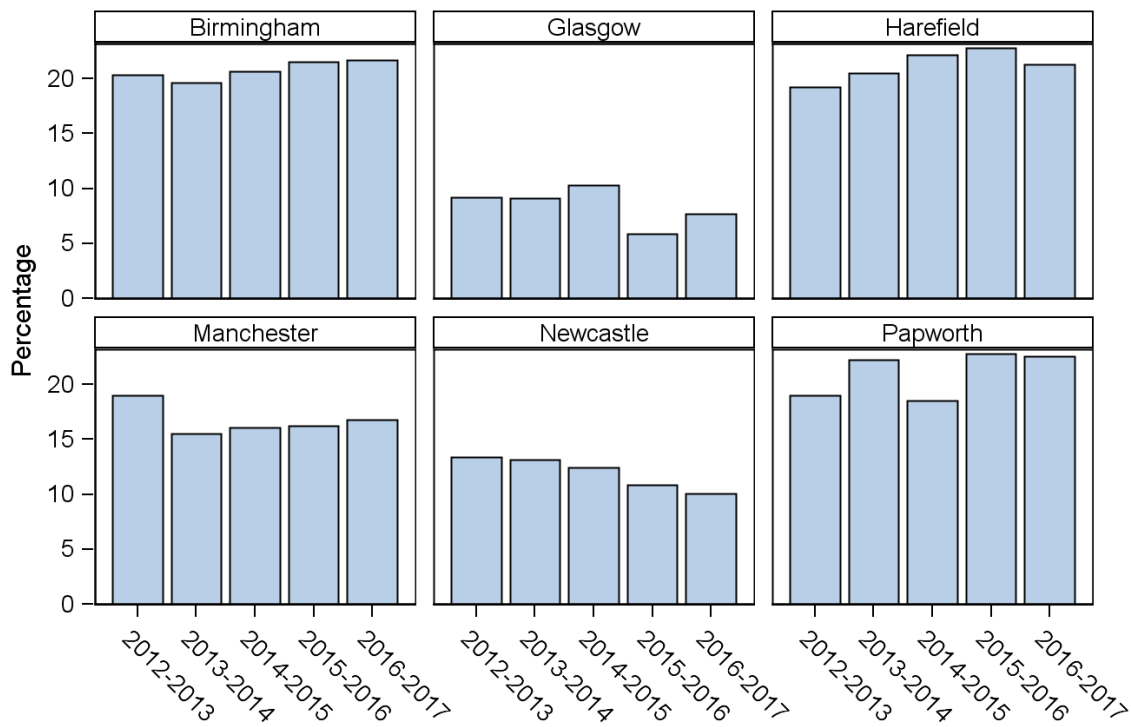


Figure 2 shows the distribution of the number of donors (actual and non-proceeding) attended by at least one retrieval team, per day in 2016/17. The number of donors per day ranged from zero (3 days) to 11 (1 day). The mean number of donors per day was 4.8.

Figure 2 Distribution of the number of actual and non-proceeding donors attended by at least one retrieval team on any one day, 1 April 2016 - 31 March 2017

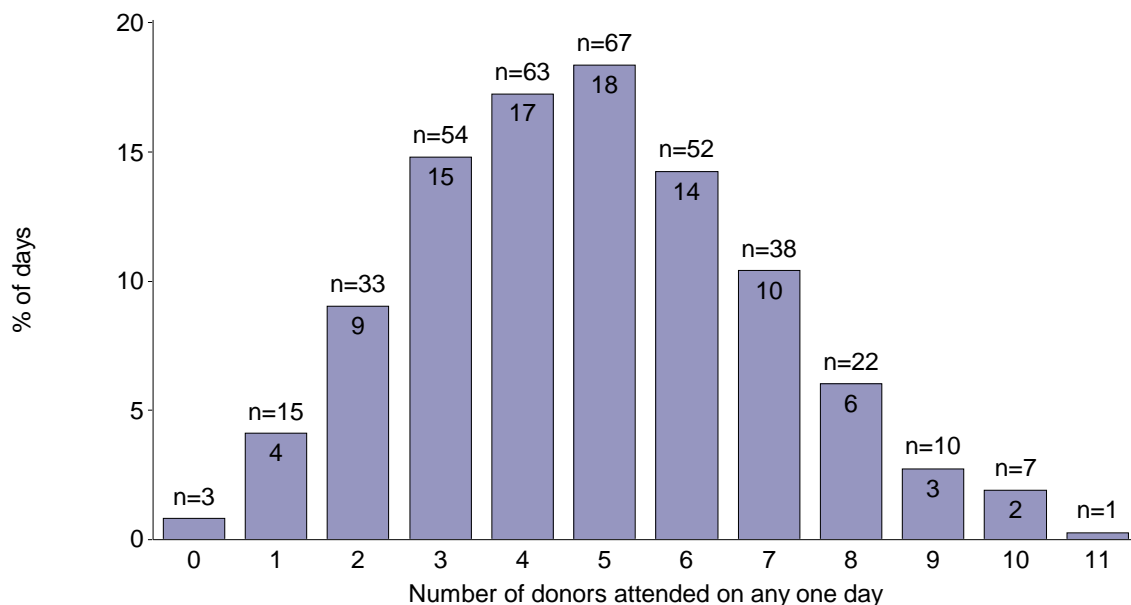


Figure 3a shows the distribution of the number of abdominal teams out on any one day during 2016/17. For example, there were 88 days in the 12 month period (24% of days) where five abdominal teams were out attending donors.

Figure 3a Distribution of the number of abdominal retrieval teams out on any one day, 1 April 2016 - 31 March 2017

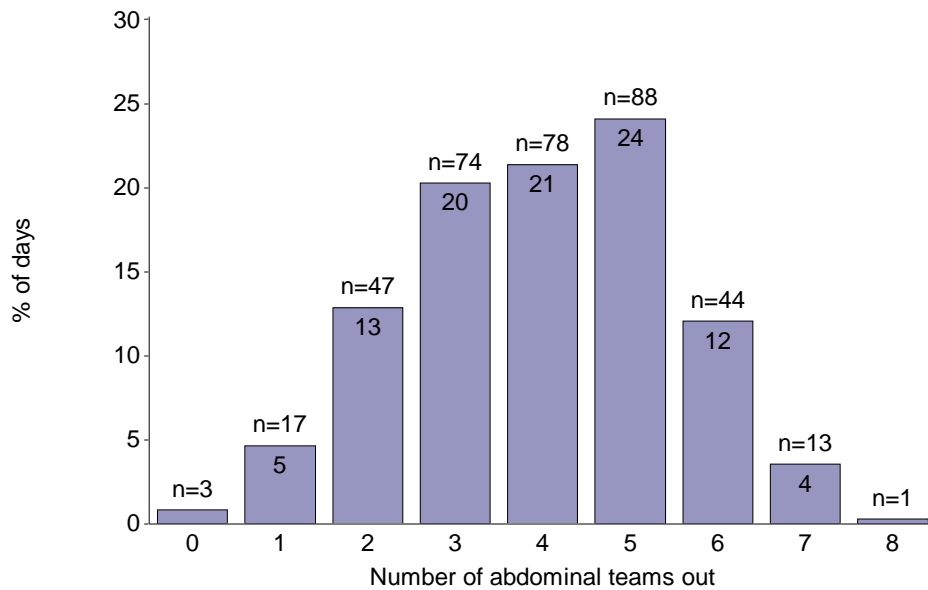


Figure 3b shows the distribution of the number of donors (actual and non-proceeding) attended by each abdominal team on any one day during the year (that they were on call). On average, abdominal teams attended no donors on 44% of the days in the year, one donor on 45% of days, two donors on 10% of days and three donors on 1% of days. The 'busiest' teams in 2016/17 in terms of days active were King's, Manchester and Oxford (when on call).

Figure 3b Distribution of the number of actual and non-proceeding donors attended by each abdominal team on any one day, 1 April 2016 - 31 March 2017

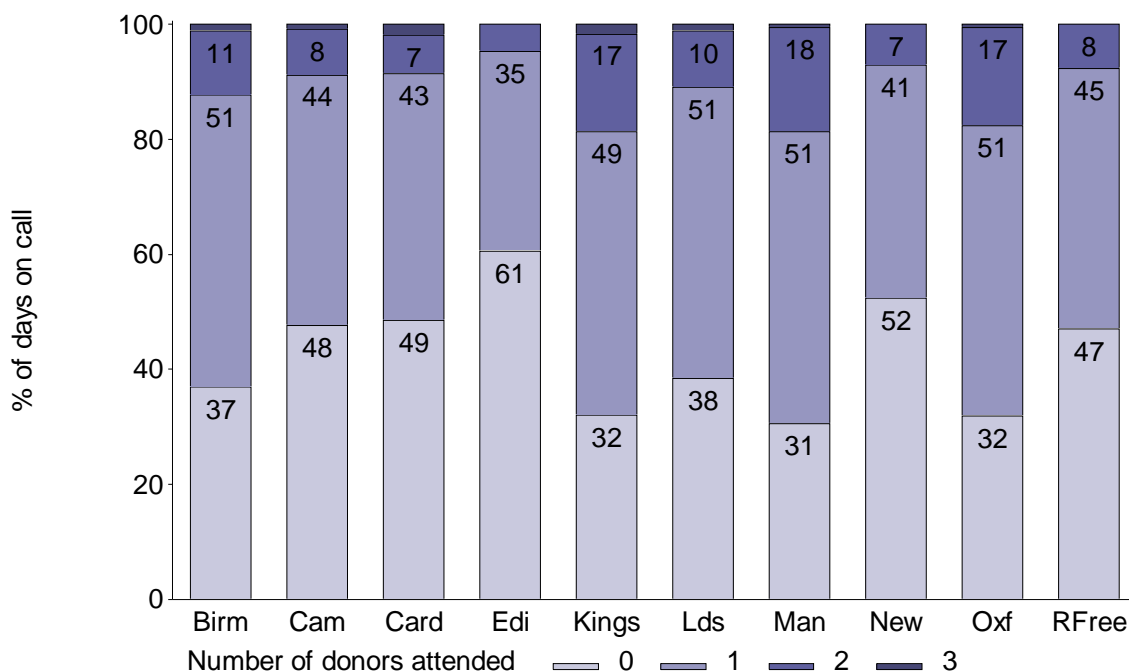


Figure 4a shows the distribution of the number of cardiothoracic teams out on any one day during 2016/17. It is most common for only one cardiothoracic team to be out at once (five is most common for abdominal teams).

Figure 4a Distribution of the number of cardiothoracic retrieval teams out on any one day, 1 April 2016 and 31 March 2017

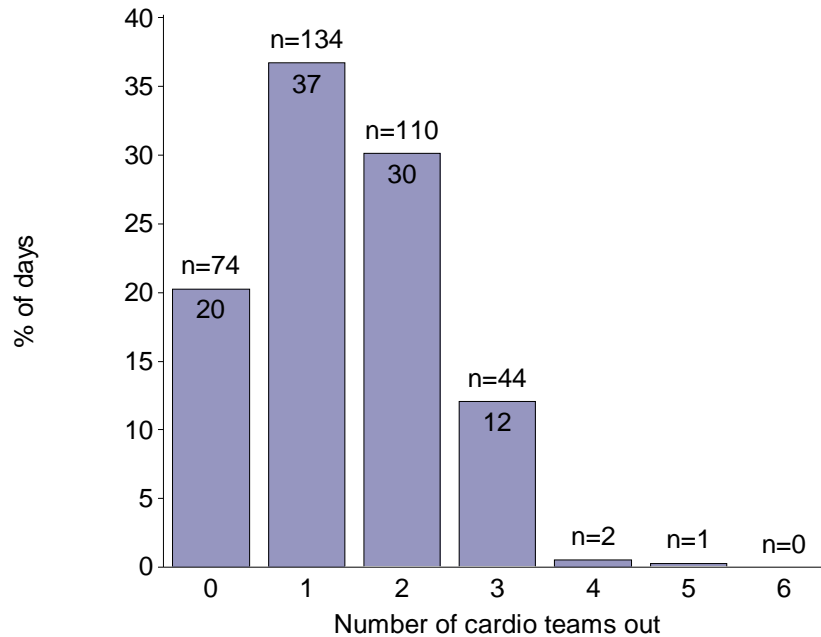


Figure 4b shows the distribution of the number of donors (actual and non-proceeding) attended by each cardiothoracic team on any one day during the year (that they were on call). On average cardiothoracic teams attended no donors on 58% of days in the year, one donor on 38% of days, two donors on 4% of days and three donors on <1% of days. The 'busiest' teams in 2016/17 in terms of days active were Harefield and 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 2016 - 31 March 2017

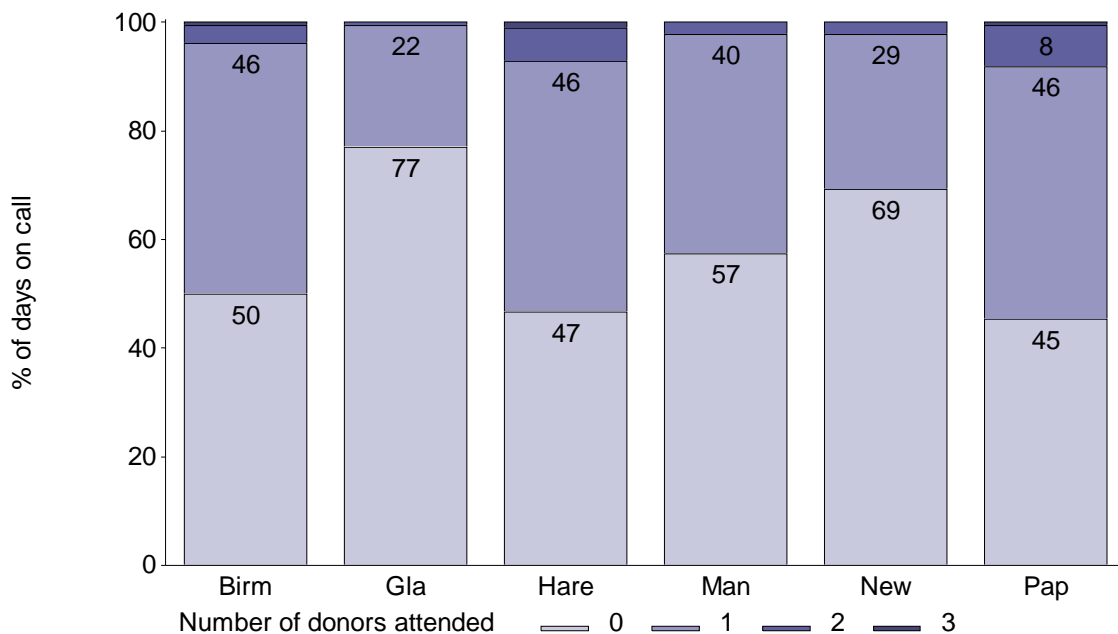


Table 2 shows the position of the retrieval team in the retrieval team attendance sequence for each of the actual and non-proceeding donors that were attended during the financial year. The data shows that teams went out when not first on call a variable proportion of times. 69.4% of Royal Free attendances were when they were not first on call, compared with 12.2% for Manchester. For cardiothoracic teams, the range was from 15% for Papworth to 35.1% for Newcastle.

Table 2 Number of actual and non-proceeding donors attended by each retrieval team, 1 April 2016 - 31 March 2017, by the position of the donor hospital in the on-call attendance sequence									
Attending retrieval team	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	144	35	6	13	0	0	0	198	27.3
Cambridge	123	25	52	17	5	1	1	224	45.1
Cardiff	47	1	3	10	1	0	0	62	24.2
Edinburgh	133	12	9	1	0	0	5	160	16.9
King's College	257	44	7	2	3	0	0	313	17.9
Leeds	112	13	2	1	2	0	0	130	13.8
Manchester	137	10	2	3	4	0	0	156	12.2
Newcastle	121	35	24	4	0	12	0	196	38.3
Oxford	69	63	16	7	0	1	0	156	55.8
Royal Free	33	47	21	1	3	3	0	108	69.4
Abdominal Total	1176	285	142	59	18	17	6	1703	30.9
Cardiothoracic									
Birmingham	77	22	0	0	0	0	0	99	22.2
Glasgow	30	3	10	0	0	0	0	43	30.2
Harefield	84	16	11	0	0	0	0	111	24.3
Manchester	61	20	0	0	0	0	0	81	24.7
Newcastle	37	7	13	0	0	0	0	57	35.1
Papworth	96	15	2	0	0	0	0	113	15.0
Cardiothoracic Total	385	83	36	0	0	0	0	504	23.6
Total	1561	368	178	59	18	17	6	2207	29.3
Note that 9 paediatric (< 145 cm) cardiothoracic retrievals and 25 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 across the latest four financial years in **Figure 5a and 5b**. This time 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.

Figure 5a Median (IQR) time an abdominal team is out attending a donor from departure to return to base, 1 April 2013 to 31 March 2017

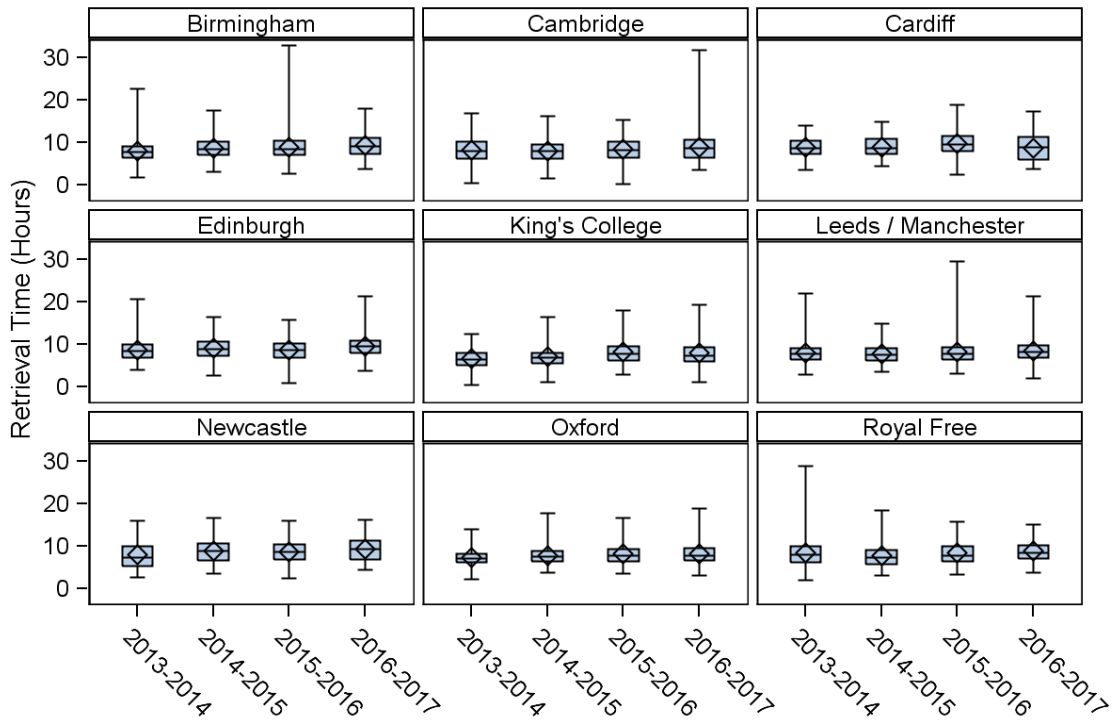
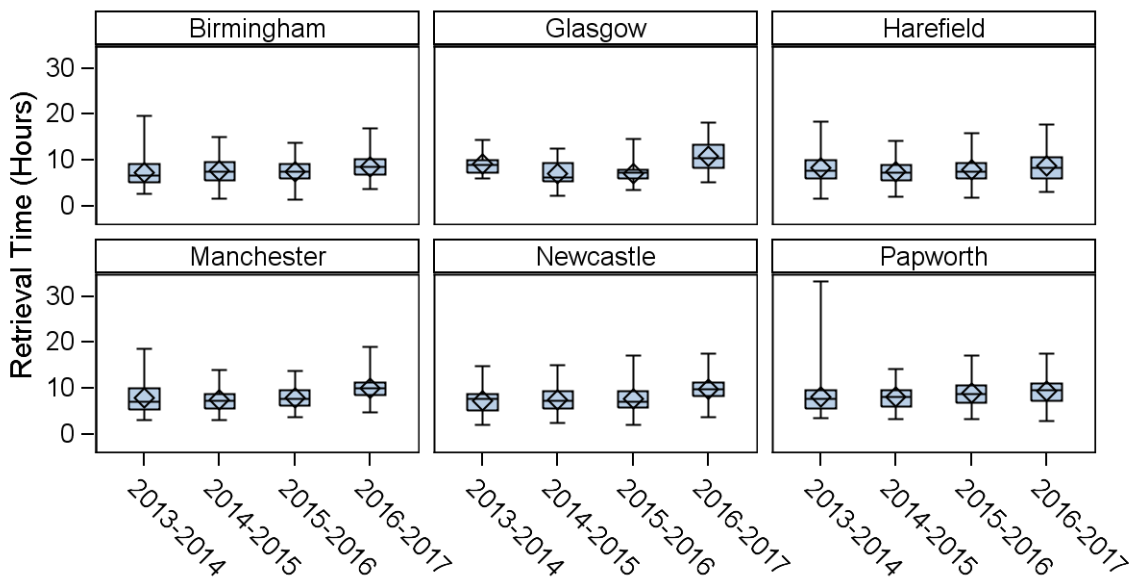


Figure 5b Median (IQR) time an cardiothoracic team is out attending a donor from departure to return to base, 1 April 2013 to 31 March 2017



The mobilisation time of NORS Teams by time of day is shown in **Figure 6a** and **Figure 6b**, for abdominal and cardiothoracic teams, respectively. Mobilisation time is the agreed departure time of teams.

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
2015/16	Mon	23	15	7	9	11	10	10	9	18	8	10	3	8	9	0	3	2	1	4	2	8	9	9	14	202
	Tue	8	15	11	21	15	14	16	10	14	15	12	6	6	2	8	4	7	3	3	1	5	6	11	18	231
	Wed	14	20	25	26	22	19	12	19	16	11	11	11	6	2	5	7	7	4	4	4	5	10	20	17	297
	Thu	18	20	18	18	23	12	7	23	19	15	8	10	7	4	5	8	6	1	9	2	7	10	15	11	276
	Fri	13	14	21	14	12	18	13	18	18	8	14	10	6	6	4	2	2	8	4	6	4	7	12	14	248
	Sat	15	23	15	18	6	17	16	14	14	16	13	10	5	7	5	2	2	2	2	3	7	10	6	13	241
	Sun	9	13	19	11	5	8	8	13	13	13	11	7	8	5	1	0	4	3	7	3	9	4	10	20	204
Total	100	120	116	117	94	98	82	106	112	86	79	57	46	35	28	26	30	22	33	21	45	56	83	107	1699	
2016/17	Mon	9	7	13	13	6	13	13	14	15	6	13	3	11	9	8	4	2	1	2	2	5	6	9	3	187
	Tue	10	22	8	18	10	10	18	12	17	10	14	8	8	10	5	2	3	5	5	4	4	11	10	13	237
	Wed	12	17	11	21	9	7	20	20	13	11	14	6	12	15	10	4	9	6	5	4	12	6	12	15	271
	Thu	11	19	14	17	19	12	18	20	21	15	15	6	8	6	9	8	7	6	5	4	5	7	6	7	265
	Fri	10	14	20	22	17	15	14	17	12	16	6	8	10	5	8	3	6	7	2	6	8	7	9	14	256
	Sat	17	20	17	14	14	17	14	21	21	19	15	15	9	3	4	5	1	7	3	8	7	6	7	8	272
	Sun	16	11	9	9	9	12	14	18	14	10	13	9	6	4	5	6	5	3	4	5	10	3	10	15	220
Total	85	110	92	114	84	86	111	122	113	87	90	55	64	52	49	32	33	35	26	33	51	46	63	75	1708	

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
2015/16	Mon	5	6	3	3	5	2	4	6	13	2	2	4	0	3	2	0	2	0	4	3	1	0	3	4	77
	Tue	3	5	5	3	9	5	6	5	11	6	2	2	4	5	4	0	2	0	3	0	1	2	4	2	89
	Wed	3	5	7	2	7	5	9	2	8	7	6	5	5	1	0	2	4	0	1	1	1	1	2	6	90
	Thu	3	4	7	5	8	2	3	3	12	8	5	3	2	3	2	2	4	0	2	0	2	3	2	1	86
	Fri	3	4	3	5	2	8	5	6	10	4	5	3	4	0	2	1	1	1	2	2	3	1	2	2	79
	Sat	2	2	7	5	3	3	3	7	8	0	3	5	1	3	1	3	0	0	2	1	1	6	3	1	70
	Sun	1	4	4	3	0	1	4	5	6	5	7	9	3	3	0	1	0	2	2	1	0	2	4	2	69
Total	20	30	36	26	34	26	34	34	68	32	30	31	19	18	11	9	13	3	16	8	9	15	20	18	560	
2016/17	Mon	2	0	6	4	3	4	3	6	8	4	1	4	4	5	3	0	0	2	0	1	3	4	3	0	70
	Tue	5	2	0	7	0	4	4	4	5	8	2	4	3	4	4	0	2	2	3	1	3	2	4	1	74
	Wed	3	4	4	6	6	1	5	4	5	4	4	8	5	5	3	4	0	3	4	2	1	3	2	5	91
	Thu	3	1	5	1	2	5	3	8	8	4	6	1	4	3	2	7	2	4	2	1	1	1	0	0	74
	Fri	3	2	6	6	4	7	6	1	5	6	2	2	1	3	2	2	5	1	2	1	2	1	0	2	72
	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	1	6	3	3	4	2	3	4	7	2	5	2	1	2	2	2	1	1	3	3	2	2	1	3	65
Total	22	19	26	30	20	29	33	31	49	33	25	27	19	25	17	15	12	14	15	11	13	14	10	12	521	

The proportion of attendances where the estimated travel time is >3 hours is shown per team in **Figure 7a** and **Figure 7b**, for abdominal and cardiothoracic teams, respectively.

Figure 7a Proportion of donor attendances (actual and non-proceeding) outside of 3 hours estimated travel time for each abdominal team, 1 April 2016 - 31 March 2017

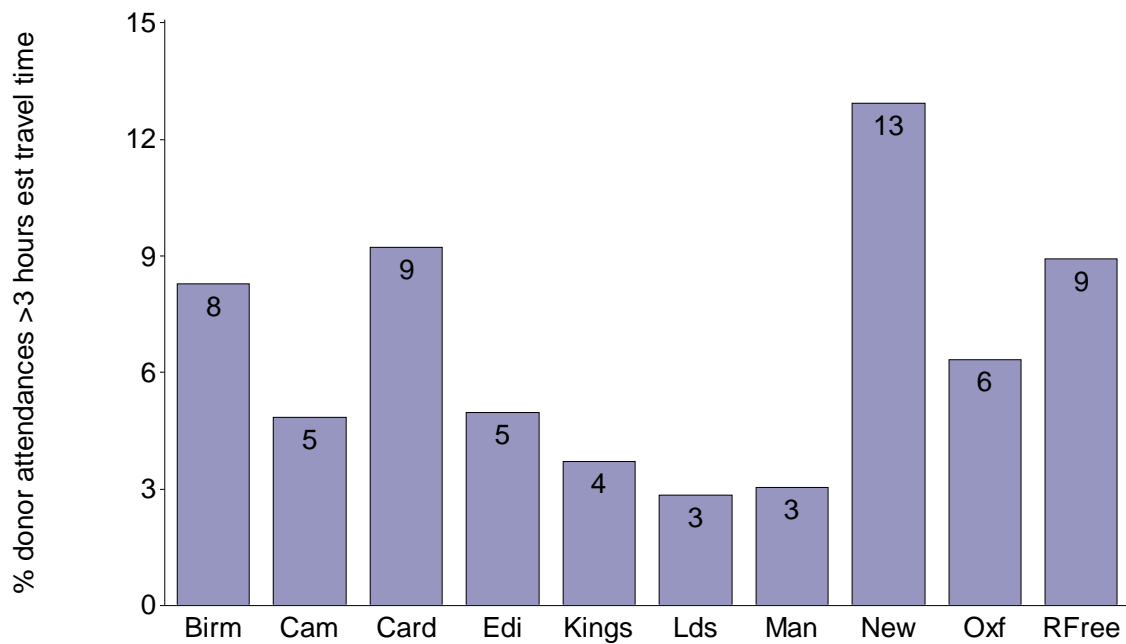
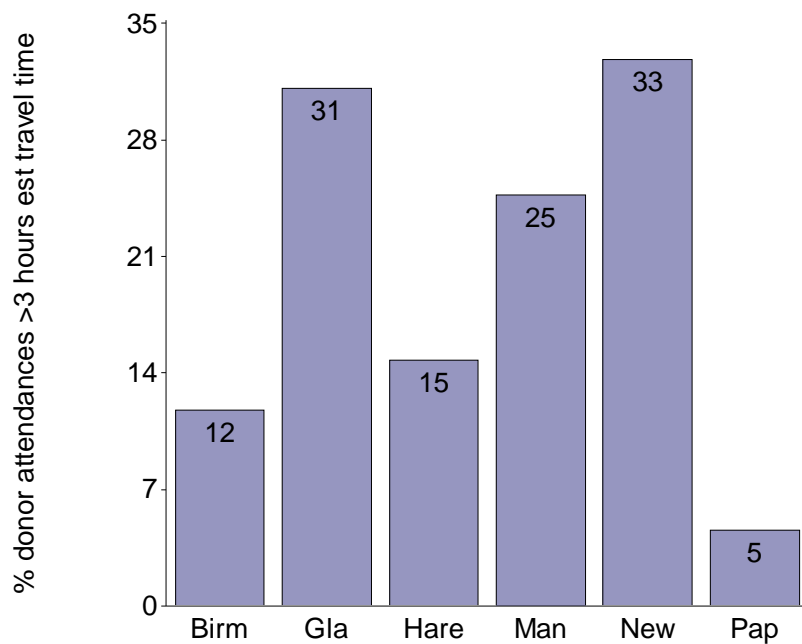


Figure 7b Proportion of donor attendances (actual and non-proceeding) outside of 3 hours estimated travel time for each cardiothoracic team, 1 April 2016 - 31 March 2017



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 (donating at least one abdominal organ) DBD donors donated their kidneys, 90.4% donated their liver, 43.7% donated their pancreas and 1.7% donated their bowel. The overall donation rates for actual DCD donors are low for livers and pancreases but slightly higher for kidneys.

Table 3a Organs retrieved from actual abdominal donors, 1 April 2016 - 31 March 2017, by attending retrieval team										
Attending retrieval team ¹	No. of donors				% donors donating					
			Kidney(s)		Liver		Pancreas		Bowel	
	DBD	DCD	DBD	DCD	DBD	DCD	DBD	DCD	DBD	DCD
Birmingham	103	62	92.2	98.4	94.2	46.8	42.7	11.3	1.9	0.0
Cambridge	94	90	94.7	98.9	89.4	56.7	46.8	26.7	6.4	0.0
Cardiff	25	27	92.0	92.6	96.0	55.6	48.0	18.5	0.0	0.0
Edinburgh	82	57	90.2	96.5	84.1	31.6	45.1	12.3	0.0	0.0
King's College	152	98	92.8	95.9	94.7	67.3	39.5	26.5	1.3	0.0
Leeds	67	49	94.0	100.0	89.6	36.7	44.8	12.2	1.5	0.0
Manchester	62	64	93.5	98.4	90.3	50.0	43.5	25.0	0.0	0.0
Newcastle	101	60	96.0	96.7	87.1	38.3	45.5	21.7	1.0	0.0
Oxford	79	48	93.7	91.7	89.9	60.4	51.9	18.8	2.5	0.0
Royal Free	61	29	90.2	100.0	88.5	44.8	32.8	13.8	0.0	0.0
Total	826	584	93.1	97.1	90.4	50.3	43.7	20.0	1.7	0.0

¹ A small number of organs were retrieved by a team that does not match the attending retrieval team here (1 bowel pancreas block, 1 where Newcastle were the attending team was retrieved by Oxford)

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 was also shown. The figures are broken down by donor type and attending retrieval team. For example, there were 770 actual DBD abdominal donors overall where at least one kidney was accepted, and of these 99.9% had at least one kidney retrieved, and of these 95.6% had at least one kidney transplanted.

Table 3b Organs accepted, retrieved and transplanted from actual abdominal donors, 1 April 2016 - 31 March 2017, by attending retrieval team

Attending retrieval team ¹	Kidney			Liver			Pancreas			Bowel		
	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	95	100	93.7	99	98	90.7	44	100	56.8	2	100	100
Cambridge	89	100	96.6	87	96.6	95.2	53	83	61.4	7	85.7	100
Cardiff	23	100	95.7	24	100	87.5	12	100	58.3	0	-	-
Edinburgh	74	100	97.3	70	98.6	95.7	40	92.5	40.5	0	-	-
King's College	141	100	94.3	145	99.3	86.8	62	96.8	43.3	2	100	100
Leeds	63	100	93.7	62	96.8	93.3	34	88.2	33.3	1	100	100
Manchester	58	100	98.3	56	100	92.9	29	93.1	37	1	0	-
Newcastle	98	99	95.9	93	94.6	87.5	49	93.9	50	1	100	100
Oxford	74	100	97.3	71	100	90.1	42	97.6	51.2	2	100	100
Royal Free	55	100	94.5	56	96.4	83.3	23	87	45	1	0	-
Total	770	99.9	95.6	763	97.9	90.2	388	93	47.9	17	82.4	100
DCD												
Birmingham	61	100	93.4	35	82.9	75.9	10	70	42.9	0	-	-
Cambridge	89	100	85.4	51	100	74.5	24	100	50	0	-	-
Cardiff	25	100	84	16	93.8	60	5	100	60	0	-	-
Edinburgh	55	100	90.9	25	72	88.9	7	100	14.3	0	-	-
King's College	95	98.9	89.4	68	97.1	71.2	28	92.9	46.2	0	-	-
Leeds	49	100	93.9	23	78.3	83.3	7	85.7	33.3	0	-	-
Manchester	64	98.4	90.5	36	88.9	59.4	16	100	56.3	0	-	-
Newcastle	58	100	93.1	26	88.5	73.9	13	100	7.7	0	-	-
Oxford	44	100	90.9	30	96.7	55.2	10	90	33.3	0	-	-
Royal Free	29	100	93.1	15	86.7	69.2	4	100	75	0	-	-
Total	569	99.6	90.3	325	90.5	70.7	124	94.4	41.9	0	-	-
Total	1339	99.8	93.3	1088	95.7	84.7	512	93.4	46.4	17	82.4	100

¹ A small number of organs were retrieved by a team that does not match the attending retrieval team here (1 bowel pancreas block, 1 where Newcastle were the attending team was retrieved by Oxford)

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

Figure 8a DBD abdominal organs retrieved, 1 April 2016 - 31 March 2017, by attending retrieval team

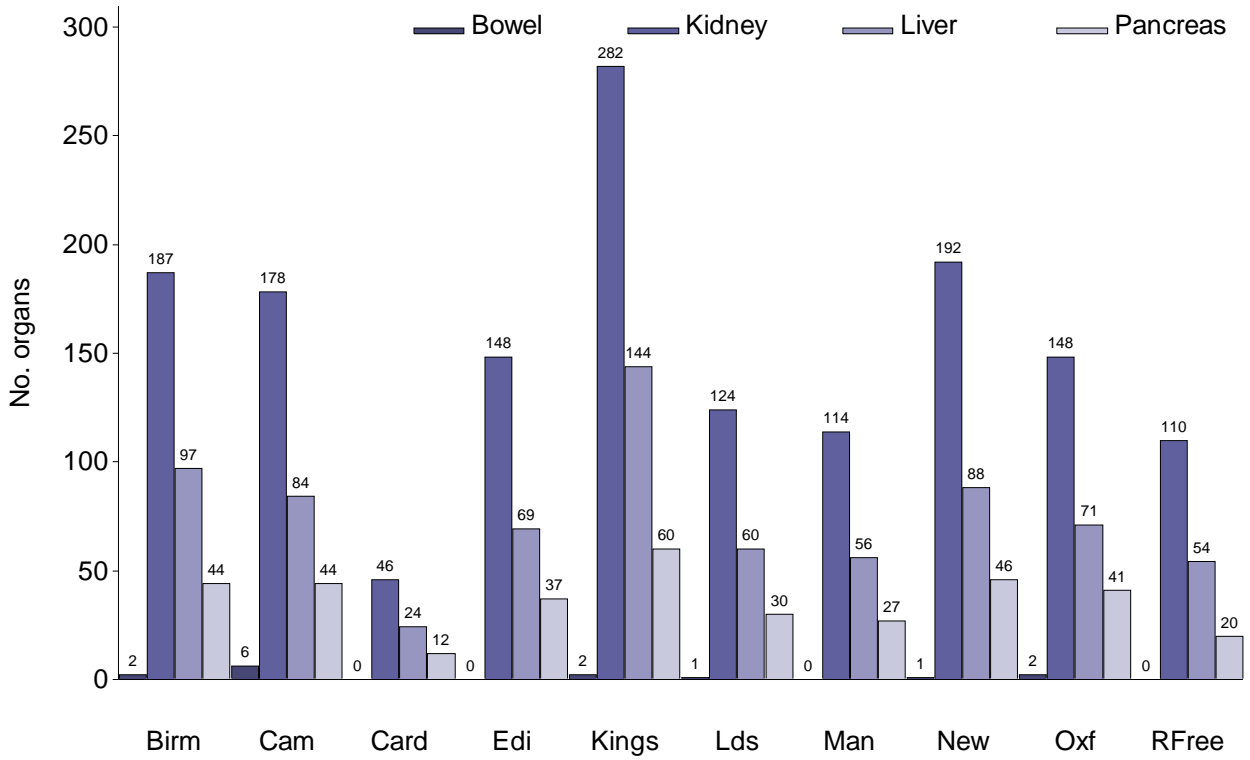


Figure 8b DCD abdominal organs retrieved, 1 April 2016 - 31 March 2017, by attending retrieval team

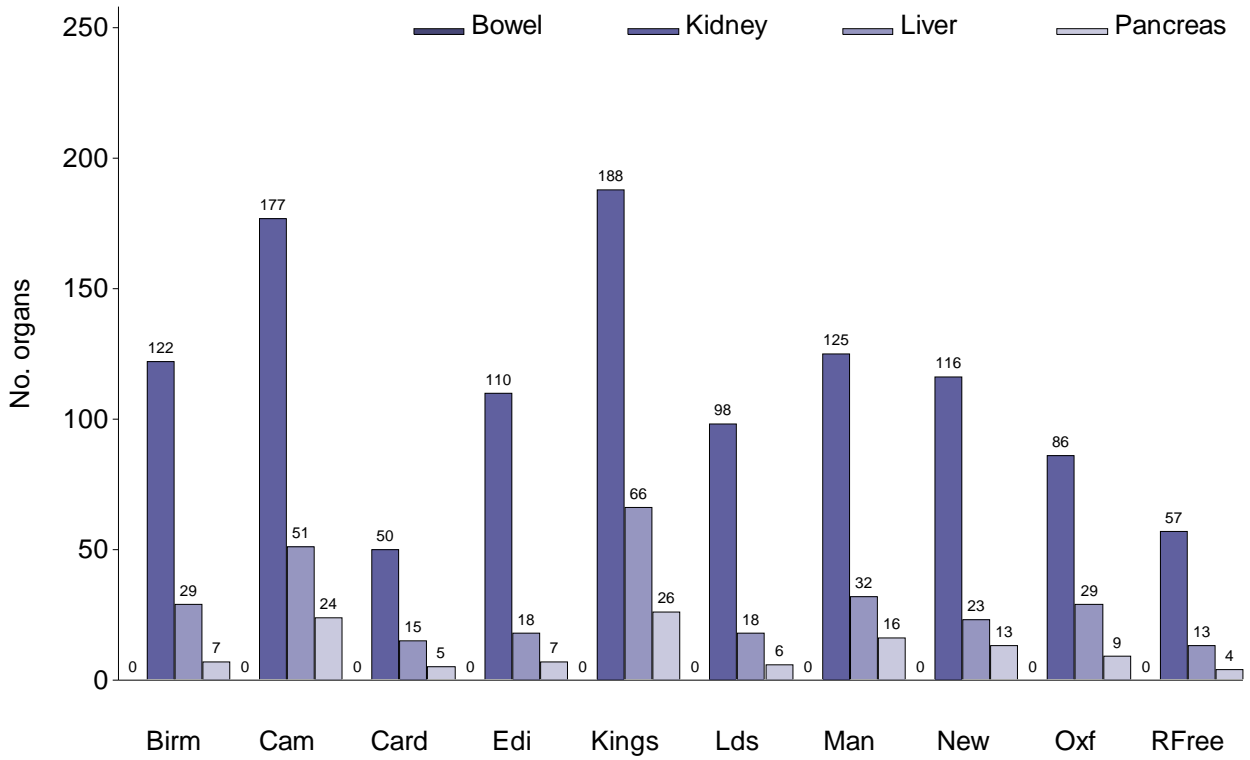


Table 3c shows the mean number of abdominal organs retrieved and transplanted per proceeding abdominal donor, for each attending abdominal team, by donor type. The mean number of organs retrieved per DBD donor ranged from 3.0 to 3.3 across teams. Analysis of Variance indicated that these differences were not statistically significant ($p=0.59$). The mean number of organs transplanted per DBD donor range from 2.6 to 3.0 across teams (no significant differences: $p=0.60$). The mean number of organs retrieved and transplanted per DCD donor is lower than per DBD donor, and there were significant differences found between teams for number of organs retrieved ($p=0.006$) however there were no significant differences for organs transplanted ($p=0.44$). Note that summary statistics for donor age are also shown in **Table 3c**, for reference, and no significant variation was found in the mean donor age across teams, for either DBD or DCD donors.

Table 3c Mean number of abdominal organs retrieved and transplanted per proceeding abdominal donor and mean donor age, by attending team, 1 April 2016 to 31 March 2017

Attending retrieval team	No. of actual donors	DBD						DCD						
		Donor age		Mean no. organs retrieved		Mean no. organs txd		Donor age		Mean no. organs retrieved		Mean no. organs txd		
		Mean	(Sd.)	Mean	(Sd.)	Mean	(Sd.)	Mean	(Sd.)	Mean	(Sd.)	Mean	(Sd.)	
Birmingham	103	51.9	(17.9)	3.2	(0.9)	2.7	(1.0)	62	55.0	(15.4)	2.5	(0.7)	2.1	(0.8)
Cambridge	94	48.2	(17.4)	3.3	(0.9)	3.0	(1.0)	90	54.2	(15.2)	2.8	(0.8)	2.2	(1.1)
Cardiff	25	50.8	(18.1)	3.3	(0.9)	2.8	(0.9)	27	47.5	(20.0)	2.6	(0.8)	1.8	(1.1)
Edinburgh	82	49.9	(15.7)	3.1	(0.9)	2.7	(0.9)	57	55.5	(13.2)	2.4	(0.6)	2.0	(0.9)
King's College	152	51.6	(17.4)	3.2	(0.8)	2.7	(1.0)	98	52.6	(17.3)	2.9	(0.8)	2.3	(1.1)
Leeds	67	50.7	(15.0)	3.2	(0.8)	2.7	(0.9)	49	57.4	(12.9)	2.5	(0.6)	2.2	(0.8)
Manchester	62	47.7	(16.6)	3.2	(0.9)	2.8	(0.9)	64	51.6	(16.7)	2.7	(0.8)	2.1	(0.9)
Newcastle	101	46.9	(18.8)	3.2	(0.8)	2.7	(1.0)	60	52.6	(16.5)	2.5	(0.8)	2.0	(0.8)
Oxford	79	48.1	(15.6)	3.3	(0.8)	2.8	(1.0)	48	56.3	(19.5)	2.6	(0.9)	2.0	(1.0)
Royal Free	61	51.1	(17.0)	3.0	(0.9)	2.6	(1.0)	29	54.9	(17.8)	2.6	(0.7)	2.2	(1.0)
Total	826	49.7	(17.1)	3.2	(0.9)	2.8	(1.0)	584	53.9	(16.3)	2.6	(0.8)	2.1	(1.0)

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 retrieval team that attended and the donor type. Overall, 43.4% of actual (donating at least one cardiothoracic organ) DBD donors donated their heart only, 31.3% donated their lung(s) only and 25.3% donated their heart and lung(s). Additionally, 26.7% of actual DCD donors donated their heart only, 64.4% donated their lung(s) only and 8.9% donated their heart and lung(s).

Table 4b shows the number of potential donors where each cardiothoracic organ was accepted and the proportion of these where 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 233 DBD hearts accepted for transplantation and of these 78.1% were retrieved, and of these 96.2% were transplanted.

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

Table 4a Organs retrieved from actual cardiothoracic donors, 1 April 2016 - 31 March 2017, 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	49	49	32.7	18.4	6	-	100.0	-
Glasgow	22	40.9	27.3	31.8	3	-	100.0	-
Harefield	57	54.4	19.3	26.3	8	25.0	75.0	-
Manchester	47	31.9	36.2	31.9	5	-	100.0	-
Newcastle	33	42.4	36.4	21.2	4	-	100.0	-
Papworth	57	38.6	36.8	24.6	19	52.6	26.3	21.1
Total	265	43.4	31.3	25.3	45	26.7	64.4	8.9

Table 4b

**Cardiothoracic organs accepted, retrieved and transplanted,
1 April 2016 - 31 March 2017, by attending retrieval team**

Attending retrieval team	Heart			Lung		
	No. acc.	% ret.	% of ret. organs txd	No. acc.	% ret.	% of ret. organs txd
DBD						
Birmingham	45	73.3	100.0	31	80.6	100.0
Glasgow	16	100.0	100.0	16	81.3	84.6
Harefield	59	78.0	91.3	34	76.5	96.2
Manchester	36	83.3	100.0	39	82.1	96.9
Newcastle	29	72.4	100.0	25	76.0	100.0
Papworth	48	75.0	91.7	47	74.5	97.1
Total	233	78.1	96.2	192	78.1	96.7
DCD						
Birmingham	0	-	-	10	60.0	83.3
Glasgow	0	-	-	4	75.0	100.0
Harefield	2	100.0	100.0	12	50.0	83.3
Manchester	0	-	-	8	62.5	80.0
Newcastle	0	-	-	5	80.0	75.0
Papworth	17	82.4	85.7	22	40.9	88.9
Total	19	84.2	87.5	61	54.1	84.8
Total	252	78.6	95.5	253	72.3	94.5

Figure 9a DBD cardiothoracic organs retrieved, 1 April 2016 - 31 March 2017, by attending retrieval team

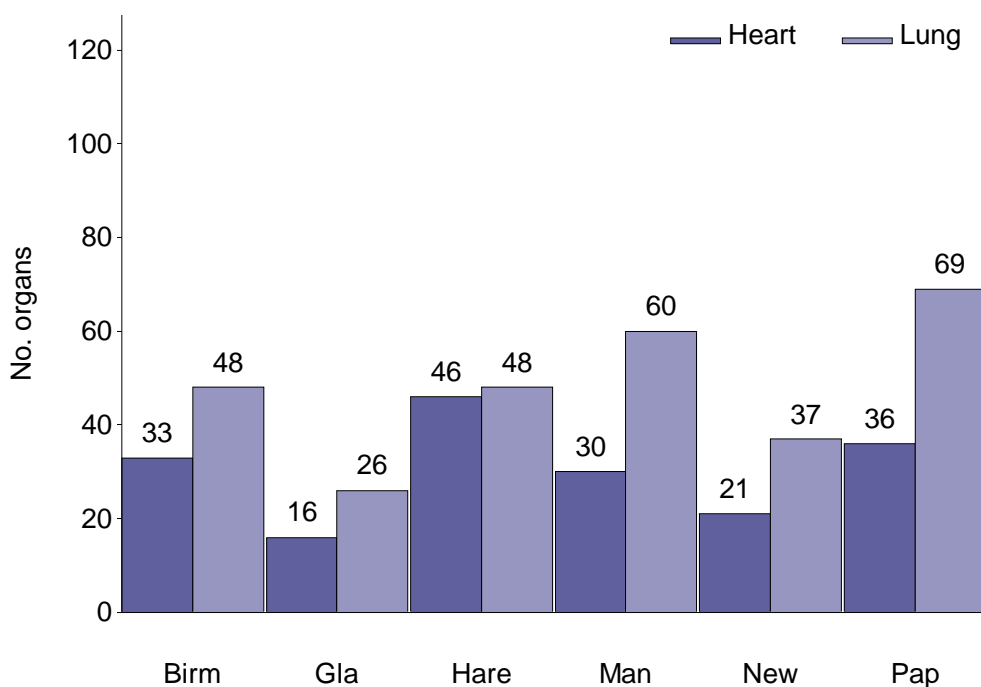


Figure 9b DCD cardiothoracic organs retrieved, 1 April 2016 - 31 March 2017, by attending retrieval team

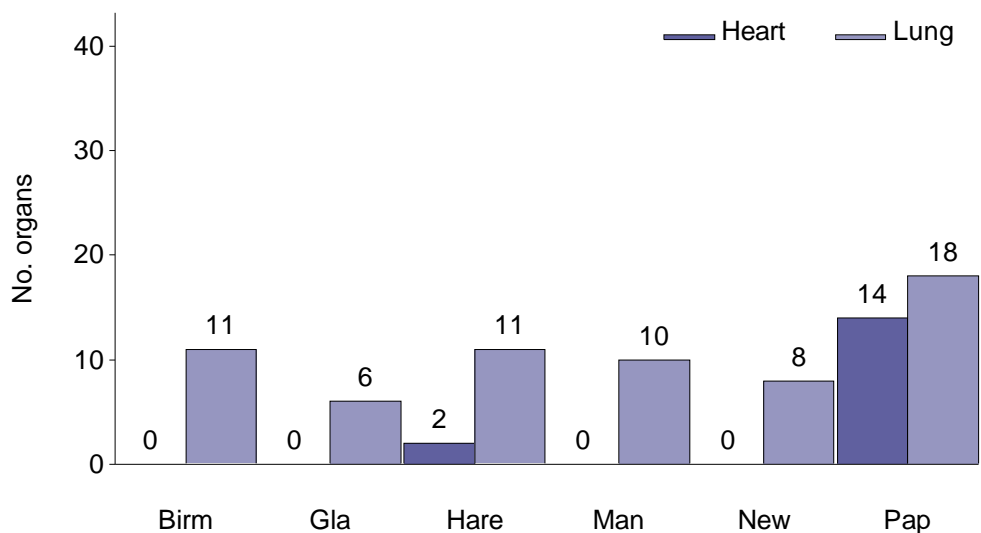


Table 4c shows the mean number of cardiothoracic organs retrieved and transplanted per proceeding cardiothoracic donor, for each attended cardiothoracic team, by donor type. The mean number of organs retrieved per DBD donors ranged from 1.6 to 1.9 across teams. Analysis of Variance indicated that these differences were not statistically significant ($p=0.40$). The mean number of organs transplanted per DBD donor ranged from 1.5 to 1.9 across teams. The mean number of organs retrieved per DCD donor was significantly different ($p=0.77$) across teams, ranging from 1.6 to 2.0 and the mean number of organs transplanted ($p=0.95$) ranged from 1.4 to 2.0.

Table 4c Mean number of cardiothoracic organs retrieved and transplanted per proceeding cardiothoracic donor, by attending retrieval team, 1 April 2016 - 31 March 2017

Attending retrieval team	Number of actual cardiothoracic donors	DBD				DCD				
		Mean no. organs retrieved		Mean no. organs transplanted		Mean no. organs retrieved		Mean no. organs transplanted		
		Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.	
Birmingham	49	1.7	(0.8)	1.7	(0.8)	6	1.8	(0.4)	1.5	(0.8)
Glasgow	22	1.9	(0.9)	1.6	(0.7)	3	2.0	(0.0)	2.0	(0.0)
Harefield	57	1.6	(0.8)	1.5	(0.8)	8	1.6	(0.5)	1.4	(0.7)
Manchester	47	1.9	(0.8)	1.9	(0.8)	5	2.0	(0.0)	1.6	(0.9)
Newcastle	33	1.8	(0.8)	1.8	(0.8)	4	2.0	(0.0)	1.5	(1.0)
Papworth	57	1.8	(0.8)	1.8	(0.9)	19	1.7	(0.8)	1.5	(1.0)
Total	265	1.8	(0.8)	1.7	(0.8)	45	1.8	(0.6)	1.5	(0.9)

APPENDIX

APPENDIX

Appendix I Retrieval data form completion rates, 1 April 2016 - 31 March 2017					
Attending retrieval team	Number of forms due	Retrieval team forms missing		SN-OD forms missing	
		N	%	N	%
Abdominal					
Birmingham	204	4	2.0	5	2.5
Cambridge	226	12	5.3	4	1.8
Cardiff	65	0	0.0	0	0.0
Edinburgh	161	15	9.3	5	3.1
King's College	322	1	0.3	5	1.6
Leeds	140	7	5.0	4	2.9
Manchester	165	2	1.2	2	1.2
Newcastle	200	0	0.0	8	4.0
Oxford	158	0	0.0	3	1.9
Royal Free	112	0	0.0	2	1.8
Cardiothoracic					
Birmingham	102	0	0.0	2	2.0
Glasgow	45	9	20.0	2	4.4
Harefield	122	1	0.8	3	2.5
Manchester	84	4	4.8	3	3.6
Newcastle	64	12	18.8	1	1.6
Papworth	131	0	0.0	2	1.5
Total	2301	67	2.9	51	2.2

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