

The National Organ Retrieval Service and Usage of Organs

Key messages

- National Organ Retrieval Service teams attended 794 possible DBD donors and 967 possible DCD donors; 97% of these DBD donors and 76% of these DCD donors attended, proceeded to donation
- Overall, 54% of organs offered from those donors that did proceed were transplanted, but individually, these rates were 84% for kidneys, 57% for livers, 24% for pancreases, 41% for hearts, 19% for lungs and 11% for bowels
- Overall, 82% of organs retrieved were transplanted, but individually, these rates were 87% for kidneys, 75% for livers, 51% for pancreases, 96% for hearts, 91% for lungs and 92% for bowels
- The number of deceased donors per million of population was 22.3, however 6% of actual donors resulted in no organ transplants, an increase on the previous year (5%)

4.1 The National Organ Retrieval Service (NORS)

There are 16 NORS teams in total, ten abdominal and six cardiothoracic. Since January 2020, the abdominal aspect of the service increased capacity to eight abdominal NORS teams available to retrieve organs from deceased donors in the UK for transplantation, at any given time. Three cardiothoracic NORS teams are available at any given time, an arrangement that has been in place since April 2016.

NORS teams are 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.

The number of possible DBD and DCD donors that were attended by each of the teams in 2023-2024 is shown in **Table 4.1**. The geographical distribution of donors and the on-call arrangements lead to variation in these numbers across teams. The figures are broken down by whether the possible donor proceeded to organ donation (proceeding donors) or not. Non-proceeding donors are more common in the pool of potential DCD donors as prolonged time to death after treatment withdrawal can result in unsuitability of organs for transplantation. A small number of possible donors may be attended by local kidney transplant teams. This is typically for DCD donors when only the kidneys have been accepted for transplantation and the teams are appropriately reimbursed if they are willing and able to retrieve.

Table 4.1 Number of proceeding and non-proceeding donors attended by each NORS team in the UK, 1 April 2023 – 31 March 2024

NORS team	DBD				DCD			
	Proceeding ²	Non-proceeding	% non-proc	No. attended	Proceeding ²	Non-proceeding	% non-proc	No. attended
Abdominal								
Birmingham ¹	87	2	2	89	90	24	21	114
Cambridge	86	3	3	89	113	34	23	147
Cardiff ¹	22	-	-	22	26	11	30	37
Edinburgh	66	1	1	67	81	17	17	98
King's	132	5	4	137	105	22	17	127
Leeds ¹	77	3	4	80	73	18	20	91
Manchester ¹	73	2	3	75	44	37	46	81
Newcastle	79	2	2	81	60	23	28	83
Oxford ¹	85	1	1	86	67	25	27	92
Royal Free ¹	64	3	4	67	77	18	19	95
Abdominal total	771	22	3	793	736	229	24	965
Cardiothoracic¹								
Birmingham	46	35	43	81	4	11	73	15
Glasgow	23	9	28	32	23	12	34	35
Harefield	38	34	47	72	15	19	56	34
Manchester	38	28	42	66	3	13	81	16
Newcastle	52	26	33	78	6	4	40	10
Papworth	30	14	32	44	50	26	34	76
Cardiothoracic total	227	146	39	373	101	85	46	186
Total donors attended	772	22	3	794	738	229	24	967

¹ Part-time teams

² For abdominal, at least one abdominal organ retrieved. For cardiothoracic, at least one cardiothoracic organ retrieved

For more detailed information regarding the National Organ Retrieval Service and individual team activity, an annual NORS report is available here: <https://www.odt.nhs.uk/statistics-and-reports/annual-national-organ-retrieval-service-report/>

4.2 Retrieval and usage of organs

The number of 'consented' donors ('authorised' donors in Scotland) and 'offered' donors (where at least one organ was offered for transplant) are shown in **Table 4.2**. Note that organs are not always offered from 'consented' donors, e.g. because the donor's condition deteriorates, or it is discovered the donor is unsuitable for organ donation. The number of organs offered from 'offered' donors is also shown. Each year a number of actual organ donors result in no transplants. Donors resulting in at least one transplant are termed 'utilised' donors and the number of actual and utilised donors is shown in **Table 4.2**. The number of donors per million of population (pmp) is also shown. In 2023-2024, 6% of actual donors resulted in no organ transplants, the same as the previous year.

Table 4.2 Consented, offered, actual and utilised deceased donors in the UK, 1 April 2023 - 31 March 2024						
	DBD (pmp)		DCD (pmp)		Total (pmp)	
Consented donors ¹	849	(12.6)	1135	(16.8)	1984	(29.3)
Offered donors ²	822	(12.2)	1052	(15.6)	1874	(27.7)
<i>Kidneys offered</i>	1574		2068		3642	
<i>Livers offered</i>	789		963		1752	
<i>Pancreases offered</i>	483		374		857	
<i>Bowels offered</i>	199		3		202	
<i>Hearts offered</i>	444		193		637	
<i>Lungs offered</i>	937		770		1707	
Actual donors ³	772	(11.4)	738	(10.9)	1510	(22.3)
Utilised donors ⁴	737	(10.9)	680	(10.1)	1417	(21.0)

¹ Consented donors defined as patients where consent for at least one organ was given
² Offered donors defined as donors where one or more organs were offered for transplantation
³ Actual donors defined as donors where one or more organs were retrieved
⁴ Utilised donors defined as donors where one or more organs were retrieved and transplanted

There were 1,510 actual deceased organ donors in 2023-2024, but not all organs from these donors were offered for transplantation. **Table 4.3** shows the number of organs offered, retrieved and transplanted from the 772 DBD and 738 DCD actual donors. The number of organs from these donors that were subsequently used for research purposes is also shown. The number of organs offered for transplantation excludes those where the donor did not meet the nationally agreed age criteria for suitability for donation of that specific organ. There are no nationally agreed age criteria for kidney and liver donation.

Table 4.3 Donation and transplantation of organs from 1,510 deceased donors in the UK, 1 April 2023 - 31 March 2024

Organ	Organs meeting initial suitability criteria and offered for transplantation	Organs retrieved for transplantation		Organs transplanted			Organs used for research (from actual organ donors)
		N	% of offered	N	% of retrieved	% of offered	
DBD donor organs							
Kidney	1488	1438	97	1276	89	86	86
Liver	747	691	93	563	81	75	49
Pancreas	459	234	51	117	50	25	32
Bowel	194	24	12	22	92	11	0
Heart	426	172	40	170	99	40	1
Lung	891	219	25	212	97	24	4
Total	4205	2778	66	2360	85	56	172
DCD donor organs							
Kidney	1464	1427	97	1206	85	82	129
Liver	692	408	59	263	64	38	54
Pancreas	291	116	40	60	52	21	18
Heart	153	74	48	65	88	42	3
Lung	564	84	15	63	75	11	17
Total	3166	2109	67	1657	79	52	221
Deceased donor organs							
Kidney	2952	2865	97	2482	87	84	215
Liver	1439	1099	76	826	75	57	103
Pancreas	750	350	47	177	51	24	50
Bowel	196	24	12	22	92	11	0
Heart	579	246	42	235	96	41	4
Lung	1455	303	21	275	91	19	21
Total	7371	4887	66	4017	82	54	393

Suitability criteria:

Pancreas: donors with a BMI < 40 and aged < 60 years (DBD) or aged < 55 years (DCD)

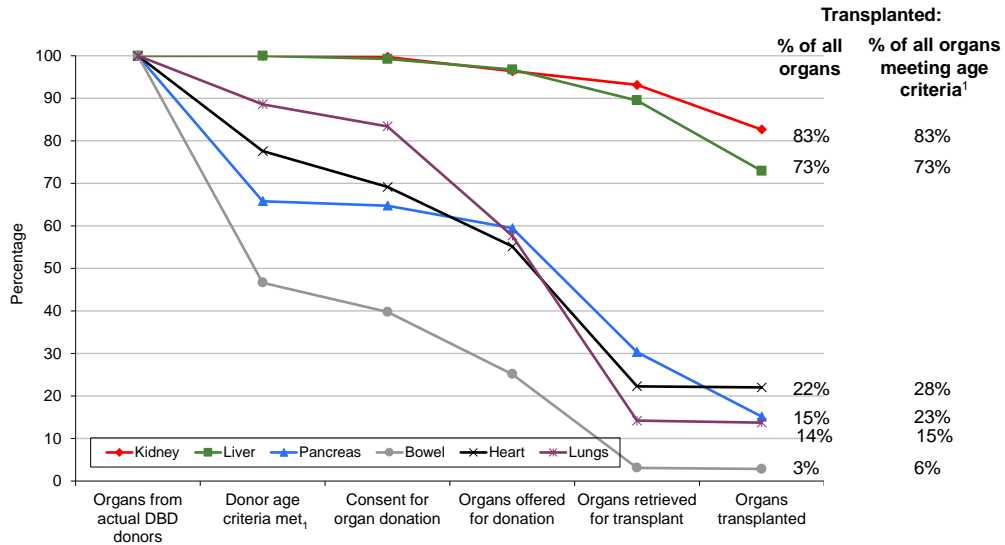
Bowel: donors aged < 60 years and weighting < 90kg

Heart: donors aged < 65 years (DBD) or aged < 55 years (DCD) or died due to myocardial infarction (DBD)

Lung: donors aged < 70 years

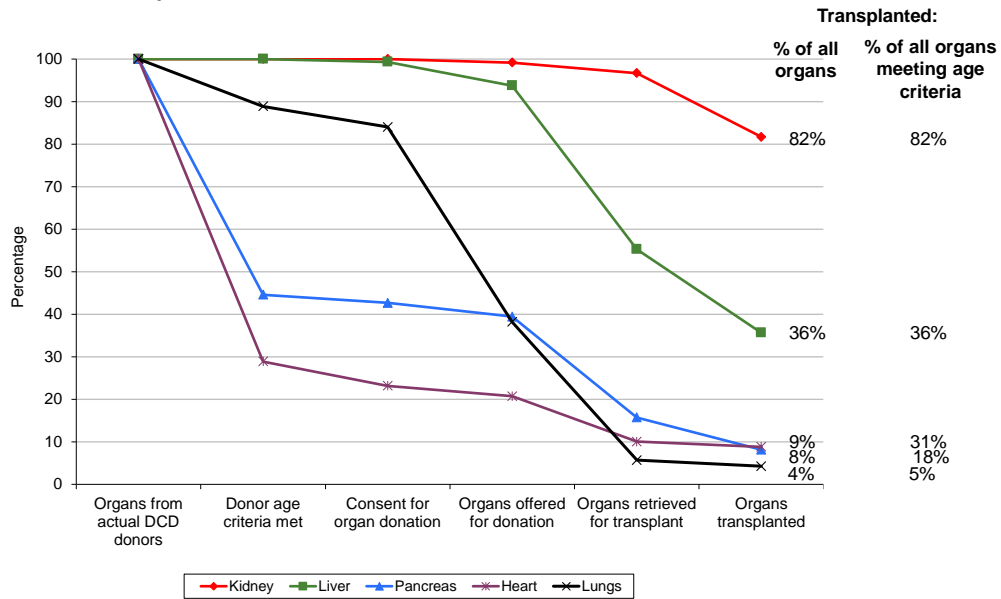
Figures 4.1 and 4.2 show line graphs of the pathway for all donor organs through to transplantation. The charts start at 100% for each organ, representing all organs from the 772 DBD and 738 DCD donors. The proportion of these organs where any national donor age criteria are met is then shown, followed by the proportion with consent, the proportion offered, the proportion retrieved and finally the proportion transplanted. For example, **Figure 4.2** shows that 82% of the kidneys from the 738 DCD donors were transplanted. Transplantation rates for kidneys and livers are generally high, while for other organs, even after allowing for the agreed age criteria, the rates are generally low.

Figure 4.1 Donation and transplantation rates of organs from DBD organ donors in the UK, 1 April 2023 – 31 March 2024



¹ Hearts – in addition to age criteria, donors who died due to myocardial infarction are excluded
 Bowels – in addition to age criteria, donors who weigh >=90kg are excluded

Figure 4.2 Donation and transplantation rates of organs from DCD organ donors in the UK, 1 April 2023 – 31 March 2024



Reasons for organs not being offered for transplantation, being offered but not accepted and being retrieved but not subsequently transplanted are shown in **Table 4.4** and **Table 4.5** for abdominal organs from DBD and DCD donors, respectively. **Table 4.6** shows the same information for cardiothoracic organs. Reasons for the medical unsuitability of an organ include infections, tumours, anatomy and disease. Non-medical reasons include donor size and donor instability. Clinical unsuitability of an organ encompasses poor perfusion, prolonged ischaemia, past history of the donor and, in the case of pancreases for islet usage, insufficiency of viable islet yield. Reasons reported under 'other' primarily include recipient related issues (such as no suitable recipients), but may also include logistical reasons and un-coded reasons reported of a miscellaneous nature. Note that reasons associated with the COVID-19 pandemic may also be included under either medical unsuitability or 'other'.

These tables also show the number of organs from UK donors that were transplanted overseas. These organs were not accepted for transplantation by any UK transplant centre, but were accepted for suitable recipients identified elsewhere, usually in Europe. In 2023-2024 only a small number of livers, hearts and lungs were exported for transplantation outside the UK. Organs from outside the UK are occasionally imported for transplant. Further information on the import and export of organs can be found in **Appendix IV**.

The percentage of organs retrieved that were not transplanted are shown in **Figure 4.3**, **Figure 4.4**, **Figure 4.5**, **Figure 4.6** and **Figure 4.7** for kidneys, livers, pancreases, hearts, and lungs respectively. The rates are shown over the last decade. Some organs are found not to be suitable for transplantation after they have been retrieved and this 'non-utilisation rate' is generally increasing over time for each organ, reflecting the ageing donor population. Many organs retrieved but found not to be suitable for transplantation are instead used for research (with appropriate consent).

Table 4.4 Reasons for non-retrieval and non-use of abdominal organs from DBD donors in the UK, 1 April 2023 - 31 March 2024

	Kidney	Liver	Pancreas	Bowel
All actual DBD organ donors	772	772	772	772
Donors from whom organs not offered for donation	28	25	313	578
Reasons for organs not being offered¹				
Family permission refused	2	4	4	44
Permission refused by coroner	0	2	0	3
Permission refused other	0	0	4	6
Donor unsuitable - medical	3	0	1	2
Donor unsuitable - non-medical	0	0	18	17
Donor unsuitable - age	0	0	231	4
Organ unsuitable - clinical	7	16	45	28
Poor function	16	2	2	2
Donor age >=60 or donor weight >=90kg	-	-	-	410
Other	0	1	8	62
Organs offered for donation	1488	747	459	194
Organs not retrieved (% of organs offered for donation)	50 (3)	56 (7)	225 (49)	170 (88)
Donor unsuitable - medical	3	8	3	17
Donor unsuitable - non-medical	0	4	32	47
Donor unsuitable - age	6	0	26	12
Organ unsuitable - clinical	26	30	89	35
Poor function	12	4	17	8
Other	3	10	58	51
Organs retrieved (% of organs offered for donation)	1438 (97)	691 (93)	234 (51)	24 (12)
Organs transplanted in the UK	1276	563	117	22
Organs transplanted overseas	0	5	0	0
Organs not transplanted	162	128	117	2
Reasons for organ not being transplanted				
Donor unsuitable - medical	66	25	16	0
Donor unsuitable - non-medical	0	6	0	0
Donor unsuitable - age	2	0	0	0
Organ unsuitable - clinical	48	65	69	0
Poor function	10	10	3	0
Other	36	22	29	2
TOTAL ORGANS RETRIEVED, NOT TRANSPLANTED (Number used for research)	162 (86)	128 (49)	117 (32)	2 (0)

¹ Includes donors whose organ may have been offered but are outside of organ specific criteria

Table 4.5 Reasons for non-retrieval and non-use of abdominal organs from DCD donors in the UK, 1 April 2023 - 31 March 2024

	Kidney	Liver	Pancreas
All actual DCD organ donors	738	738	738
Donors from whom organs not offered for donation	6	46	447
Reasons for organs not being offered¹			
Family permission refused	0	0	5
Permission refused by coroner	0	3	6
Permission refused other	0	2	3
Donor unsuitable - medical	0	0	0
Donor unsuitable - non-medical	0	3	17
Donor unsuitable - age	0	6	366
Organ unsuitable - clinical	4	28	42
Poor function	0	1	0
Other	2	3	8
Organs offered for donation	1464	692	291
Organs not retrieved (% of organs offered for donation)	37 (3)	284 (41)	175 (60)
Donor unsuitable - medical	4	12	9
Donor unsuitable - non-medical	0	15	26
Donor unsuitable - age	7	32	28
Organ unsuitable - clinical	20	131	69
Poor function	2	34	11
Other	4	60	32
Organs retrieved (% of organs offered for donation)	1427 (97)	408 (59)	116 (40)
Organs transplanted in the UK	1206	263	60
Organs transplanted overseas	0	0	0
Organs not transplanted	221	145	56
Reasons for organ not being transplanted			
Donor unsuitable - medical	72	20	6
Donor unsuitable - non-medical	1	11	0
Donor unsuitable - age	1	2	2
Organ unsuitable - clinical	77	58	29
Poor function	19	25	1
Other	51	29	18
TOTAL ORGANS RETRIEVED, NOT TRANSPLANTED (Number used for research)	221 (129)	145 (54)	56 (18)

¹ Includes donors whose organ may have been offered but are outside of organ specific criteria

Table 4.6 Reasons for non-retrieval and non-use of cardiothoracic organs from deceased donors in the UK, 1 April 2023 - 31 March 2024

	Heart (DBD)	Lung (DBD)	Heart (DCD)	Lung (DCD)
All actual organ donors	772	772	738	738
Donors from whom organs not offered for donation	346	327	585	456
Reasons for organs not being offered¹				
Family permission refused	36	19	12	11
Permission refused by coroner	23	18	29	22
Permission refused other	6	3	1	3
Donor unsuitable - medical	6	25	3	28
Donor unsuitable - non-medical	2	0	25	2
Donor unsuitable - age	163	68	409	112
Organ unsuitable - clinical	75	86	79	147
Poor function	26	97	15	123
Other	9	11	12	8
Organs offered for donation	426	891	153	564
Organs not retrieved (% of organs offered for donation)	254 (60)	672 (75)	79 (52)	480 (85)
Reasons for non-retrieval				
Donor unsuitable - medical	8	10	4	26
Donor unsuitable - non-medical	10	26	6	17
Donor unsuitable - age	17	46	5	28
Organ unsuitable - clinical	55	148	15	130
Poor function	108	328	26	164
Other	56	114	23	115
Organs retrieved (% of organs offered for donation)	172 (40)	219 (25)	74 (48)	84 (15)
Organs transplanted in the UK	169	208	65	63
Organs transplanted overseas	1	4	0	0
Organs not transplanted	2	7	9	21
Reasons for organ not being transplanted				
Donor unsuitable - medical	0	0	1	0
Donor unsuitable - non-medical	1	0	0	0
Donor unsuitable - age	0	0	0	0
Organ unsuitable - clinical	1	3	0	5
Poor function	0	2	7	6
Other	0	2	1	10
TOTAL ORGANS RETRIEVED, NOT TRANSPLANTED (Number used for research)	2 (1)	7 (4)	9 (3)	21 (17)

¹ Includes donors whose organ may have been offered but are outside of organ specific criteria

Figure 4.3 Percentage of kidneys retrieved that were not transplanted from deceased organ donors in the UK, 1 April 2014 - 31 March 2024

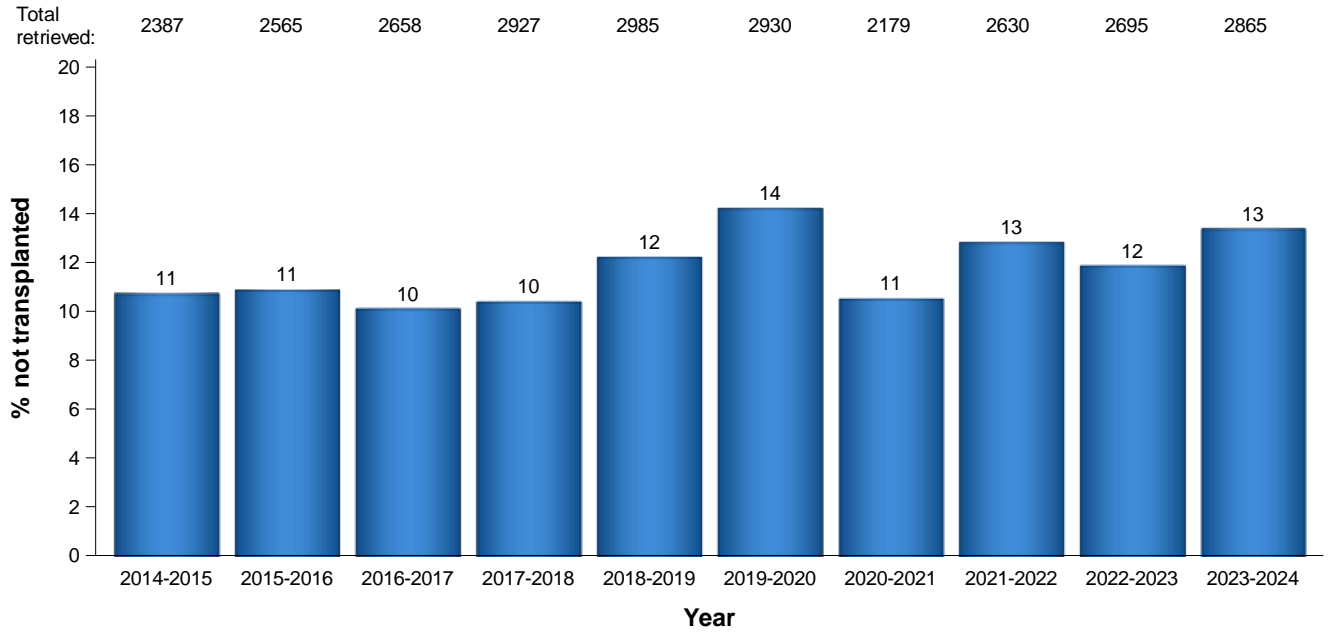


Figure 4.4 Percentage of livers retrieved that were not transplanted from deceased organ donors in the UK, 1 April 2014 - 31 March 2024

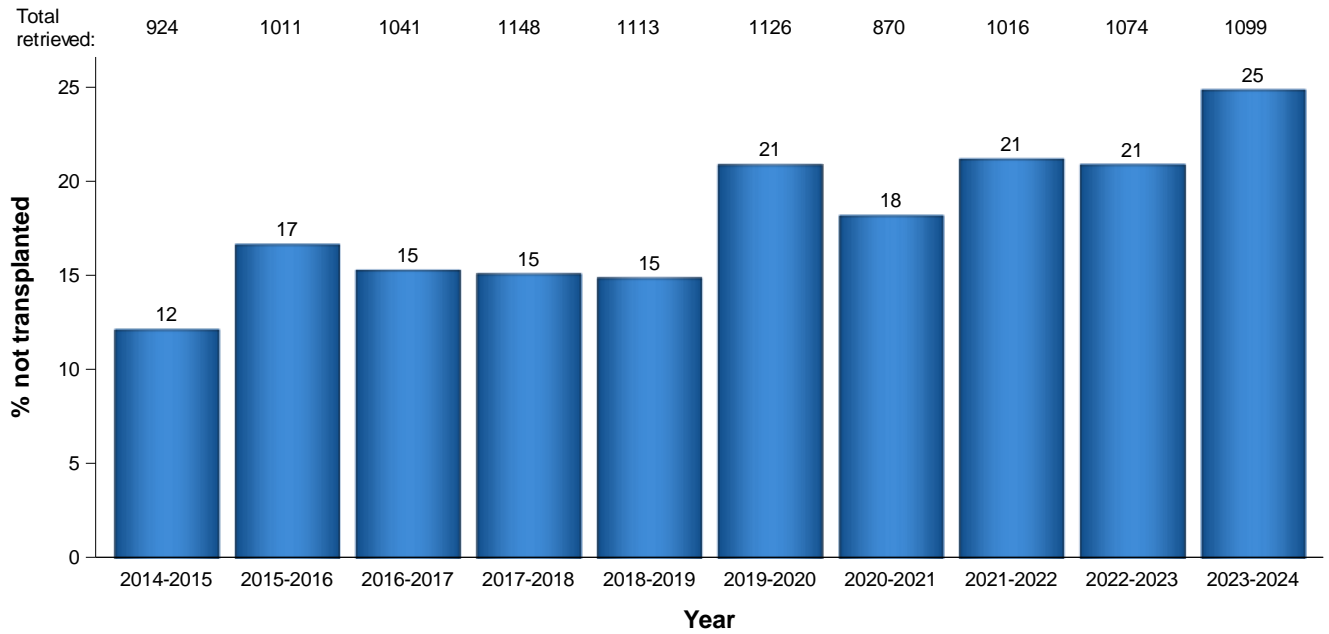
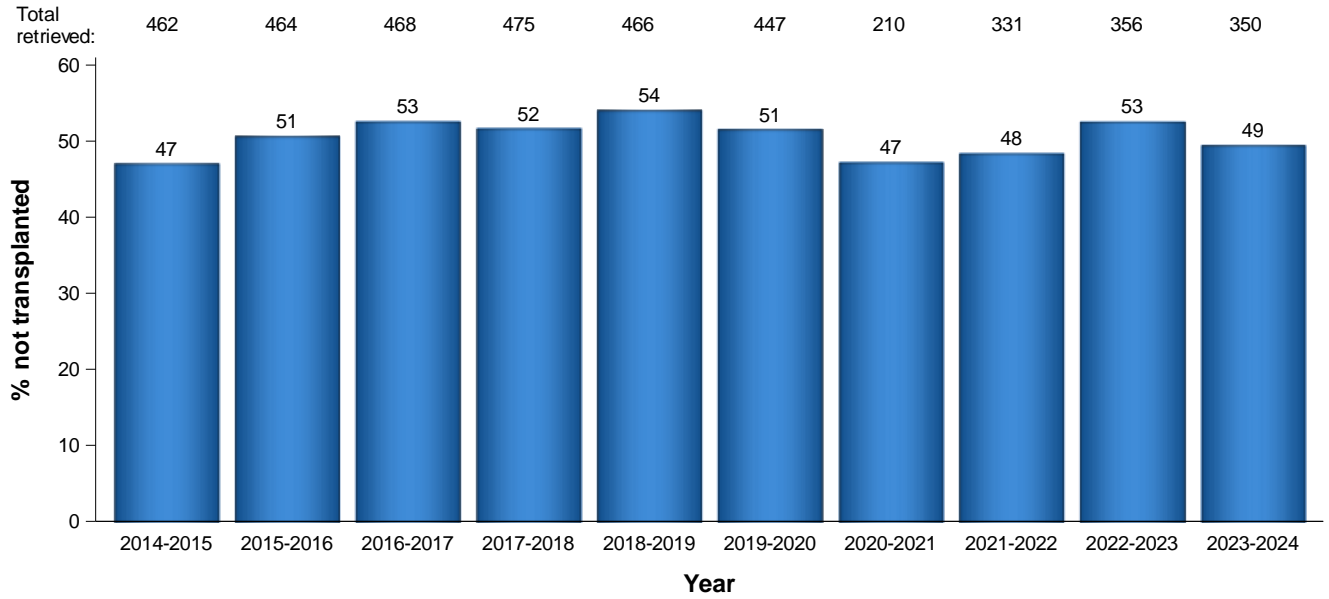


Figure 4.5 Percentage of pancreases¹ retrieved that were not transplanted from deceased organ donors in the UK, 1 April 2014 - 31 March 2024



¹Includes pancreases retrieved for islet transplantation and not transplanted due to the outcome of the islet isolation

Figure 4.6 Percentage of hearts retrieved that were not transplanted from deceased organ donors in the UK, 1 April 2014 - 31 March 2024

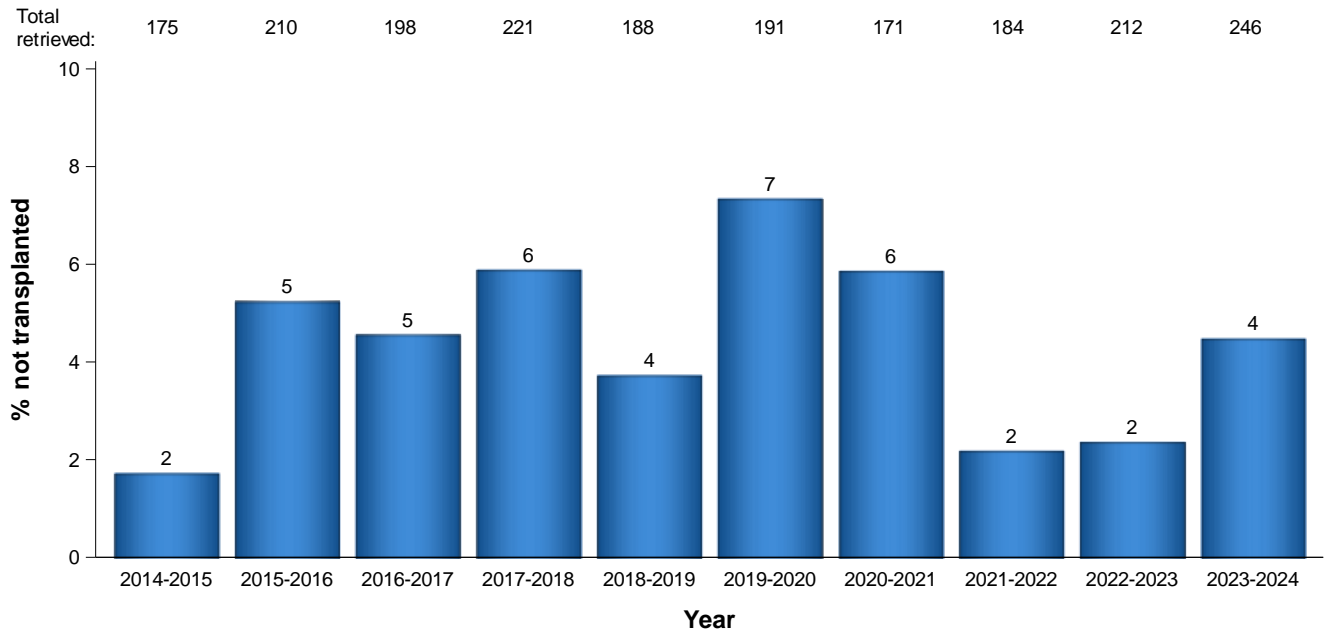


Figure 4.7 Percentage of lungs retrieved that were not transplanted from deceased organ donors in the UK, 1 April 2014 - 31 March 2024

