

Kidney Activity

Key messages

- The number of patients registered on the kidney transplant list this year fell by 1% from 5,033 to 4,977
- The number of deceased kidney donors increased by 2% to 1,506
- Kidney transplants from living donors fell by 2% to 1,017, while transplants from deceased donors remained similar at 2,577
- 100 kidney transplants were made possible by the paired living kidney donation programme
- There were 64 non-directed altruistic living kidney donors, leading to 134 patients benefitting from a living donor transplant

5.1 Overview

The number of deceased kidney donors increased by 2% in 2018-2019 compared to 2017-2018 and the number of deceased donor kidney transplants remained stable. There were 4,977 patients waiting for a kidney transplant at 31 March 2019, and for the 10th year running the number of active patients on the national list for a kidney transplant has declined.

A summary of activity for deceased donor kidney transplants and the transplant list at year end for the last ten years is shown in **Figure 5.1**. The number of patients registered on the active transplant list at 31 March 2019 for a kidney only or multi-organ kidney transplant has fallen by 31% since 2010. These registrations include patients suspended on the kidney waiting list but active on the liver waiting list for a combined liver and kidney transplant.

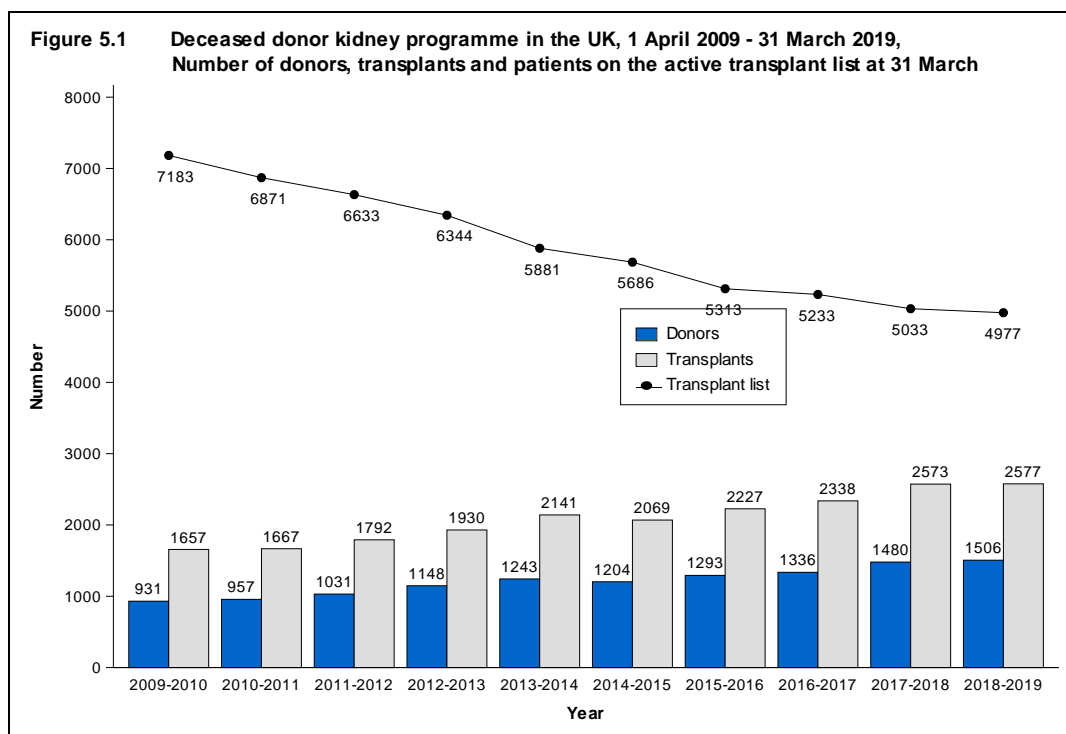


Table 5.1 shows the number of deceased and living donor kidney transplants carried out in 2018-2019 at each centre. As yet, very few kidneys from donors after circulatory death are transplanted in paediatric patients (<18 years). Donation figures for centres in North and South Thames are not reported individually as they have shared designated areas and donor populations. Multi-organ transplants including a kidney are included in the table.

The total number of deceased kidney donors rose to 1,506 in 2018-2019 from 1,480 in 2017-2018 and the number of transplants increased from 2,573 to 2,577. The number of kidney donors after circulatory death increased to 624 from 596 in 2017-2018 and the number of transplants from such donors increased by 3% to 1,020.

Throughout this chapter, intestinal transplants involving a kidney are not included in the kidney transplant activity reported. Any kidneys retrieved and used for such transplants are however reported in the kidney donor activity. Intestinal transplant activity is reported in Chapter 9.

Table 5.1 Kidney donors and transplants, 1 April 2018 - 31 March 2019 (2017-2018) and transplant list at 31 March 2019 (2018) in the UK, by centre

Centre	Deceased kidney donors				Deceased donor transplants				Living donor transplants		Active transplant list	
	DBD		DCD		DBD		DCD					
Belfast	23	(24)	17	(14)	20	(38)	28	(28)	62	(65)	91	(91)
Birmingham	50	(54)	49	(48)	89	(111)	45	(53)	45	(69)	335	(346)
Bristol	46	(37)	27	(22)	69	(60)	42	(44)	36	(30)	165	(210)
Cambridge	46	(52)	51	(64)	79	(72)	98	(84)	27	(37)	190	(218)
Cardiff	33	(32)	29	(25)	42	(25)	42	(29)	35	(30)	139	(135)
Coventry ¹	18	(9)	15	(7)	30	(39)	26	(12)	27	(21)	85	(70)
Edinburgh	30	(23)	17	(28)	70	(63)	22	(32)	60	(40)	231	(187)
Glasgow	35	(33)	13	(11)	63	(85)	34	(46)	46	(54)	251	(245)
Great Ormond Street	0	(0)	0	(0)	11	(10)	0	(0)	13	(17)	17	(11)
Leeds	45	(45)	33	(52)	95	(79)	57	(72)	67	(35)	255	(271)
Leicester	16	(9)	14	(16)	57	(43)	44	(32)	28	(27)	172	(171)
Liverpool	61	(60)	35	(22)	54	(47)	36	(34)	41	(42)	134	(161)
Manchester	57	(81)	32	(52)	120	(131)	96	(121)	74	(80)	377	(362)
Newcastle	62	(44)	33	(30)	59	(55)	23	(34)	58	(73)	257	(220)
North Thames ²	106	(123)	63	(39)	-	-	-	-	-	-	-	-
Royal Free	-	-	-	-	56	(83)	21	(29)	40	(33)	251	(247)
Royal London	-	-	-	-	100	(69)	46	(21)	48	(41)	304	(286)
WLRTC	-	-	-	-	89	(103)	52	(38)	44	(48)	450	(448)
Nottingham	26	(17)	30	(23)	32	(45)	42	(44)	6	(21)	126	(115)
Oxford ¹	34	(33)	21	(21)	113	(120)	83	(80)	65	(50)	240	(258)
Plymouth	23	(28)	15	(19)	31	(23)	18	(19)	26	(22)	89	(89)
Portsmouth	32	(32)	33	(30)	43	(47)	31	(38)	28	(33)	165	(163)
Sheffield	27	(24)	19	(13)	35	(33)	16	(26)	19	(22)	117	(129)
South Thames ²	112	(124)	78	(60)	-	-	-	-	-	-	-	-
Guy's	-	-	-	-	128	(130)	73	(46)	75	(93)	285	(336)
St George's	-	-	-	-	72	(70)	45	(30)	41	(41)	251	(264)
TOTAL	882	(884)	624	(596)	1557	(1581)	1020	(992)	1017^{3,5}	(1035^{4,6})	4977	(5033)

WLRTC - West London Renal and Transplant Centre

¹ As of 1 June 2016 Coventry and Oxford began working in partnership as a transplant network.

² Donor figures in this area cannot be linked to individual transplant centres due to shared retrieval areas.

³ Includes an additional 3 transplants performed at London, Cromwell Hospital and 3 transplants performed at London, London Bridge Hospital

⁴ Includes an additional 6 transplants performed at London, Cromwell Hospital and 5 transplants performed at London, London Bridge Hospital

⁵ Includes 3 domino donors

⁶ Includes 1 domino donors

5.2 Transplant list

The number of patients registered on the kidney or kidney and pancreas transplant list fell by 1% in the year: on 31 March 2019, 4,977 patients were registered as active, compared with 5,033 at the end of March 2018. The number of patients waiting for a kidney transplant represents 75.4 patients per million population (pmp).

Of the 4,977 patients on the active transplant list at 31 March 2019, 212 required a kidney and pancreas transplant (185 at 31 March 2018).

The outcome of patients registered on the UK kidney and kidney/pancreas transplant list at 1 April 2018, or subsequently registered during the financial year, is shown in **Table 5.2**. A total of 3,952 patients joined the kidney transplant list last year, while a further 209 joined the kidney/pancreas transplant list.

Table 5.2 Kidney transplant list and new registrations in the UK, 1 April 2018 - 31 March 2019						
Outcome of patient at 31 March 2019	Active and suspended patients at 1 April 2018		New registrations in 2018-2019¹		TOTAL	
	N	%	N	%	N	%
Kidney transplant list						
Remained active/suspended	4775	61	2963	75	7738	66
Transplanted	2351	30	938	24	3289	28
Removed ²	436	6	27	1	463	4
Died	232	3	24	1	256	2
TOTAL	7794		3952		11746	
Kidney/pancreas transplant list						
Remained active/suspended	146	45	175	84	321	60
Transplanted	133	41	28	13	161	30
Removed ³	34	10	3	1	37	7
Died	15	5	3	1	18	3
TOTAL	328		209		537	

¹ Includes re-registrations for second or subsequent patients
² Includes 4 patients removed from kidney list and made active on kidney/pancreas list
³ Includes 3 patients removed from kidney/pancreas list and made active on kidney/islet list

Table 5.3 shows the active transplant list in the UK at 31 March 2019 and 2018 by country/ former Strategic Health Authority of patient's residence. In 2019, the overall kidney transplant list rate was 75.4 pmp with rates across the Strategic Health Authorities ranging from 42.6 pmp to 131.8 pmp.

Table 5.3 Active kidney transplant list at 31 March, by Country/ Strategic Health Authority of patient residence				
Country/ Strategic Health Authority of residence	Kidney transplant list (pmp)			
	2019		2018	
North East	224	(84.8)	195	(73.9)
North West	485	(66.8)	473	(65.2)
Yorkshire and The Humber	368	(67.5)	384	(70.5)
North of England	1077	(70.2)	1052	(68.5)
East Midlands	335	(70.2)	325	(68.1)
West Midlands	444	(75.8)	435	(74.2)
East of England	361	(58.5)	377	(61.1)
Midlands and East	1140	(67.9)	1137	(67.7)
London	1164	(131.8)	1173	(132.8)
South East Coast	200	(42.6)	251	(53.5)
South Central	304	(69.6)	302	(69.1)
South West	329	(59.2)	383	(68.9)
South of England	833	(57.0)	936	(64.0)
England	4214	(75.8)	4298	(77.3)
Isle of Man	2	(25.0)	7	(87.5)
Channel Islands	7	(43.8)	9	(56.3)
Wales	171	(54.6)	189	(60.4)
Scotland	482	(88.9)	430	(79.3)
Northern Ireland	92	(49.2)	93	(49.7)
TOTAL¹	4977	(75.4)	5033	(76.2)

¹Includes patients in 2019 (2018) residing in: Unspecified UK 6 (4); Overseas 3 (3)

An indication of outcomes for adult patients listed for a kidney only transplant is summarised in **Figure 5.2**. This shows the proportion of patients transplanted or still waiting one, three and five years after joining the list. It also shows the proportion removed from the transplant list (typically because they become too unwell for transplant) and those dying while on the transplant list. Only 28% of patients are transplanted within one year, while five years after listing 72% of patients have received a transplant.

The median (average) waiting time for a kidney only transplant has fallen from 782 days reported last year to 706 days for an adult patient and is shown by blood group in **Table 5.4** and patient ethnicity in **Table 5.5**. Because of the need to match donor and recipient blood groups and tissue types, waiting times to transplant differ according to patient blood groups and ethnicity due to differences between the donor pool and patients awaiting a kidney transplant. Note that these waiting times are not adjusted for other relevant factors which may be influential and which may differ across blood or ethnic groups.

Figure 5.2 Post-registration outcome for 3016 new adult kidney only registrations made in the UK, 1 April 2013 - 31 March 2014

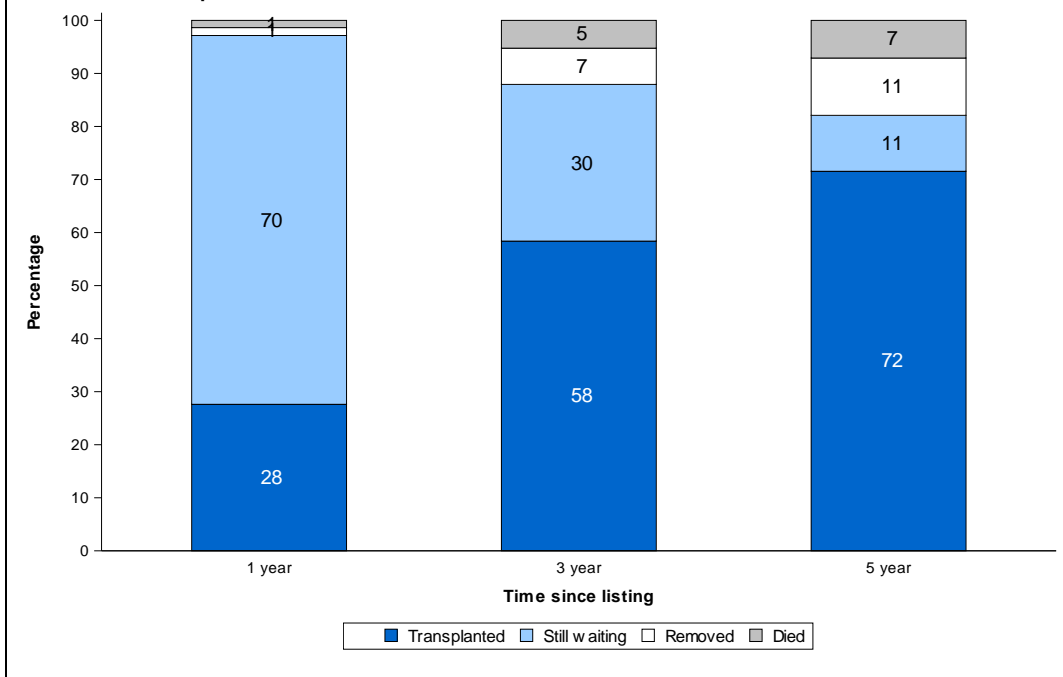


Table 5.4 Median waiting time to kidney only transplant in the UK, for patients registered 1 April 2012 - 31 March 2016, by blood group

Blood group	Number of patients registered	Waiting time (days)	
		Median	95% Confidence interval
Adult			
O	4318	883	858 - 908
A	3474	504	485 - 523
B	1372	958	917 - 999
AB	420	206	175 - 237
TOTAL	9584	706	689 - 723
Paediatric			
O	102	397	259 - 535
A	89	230	187 - 273
B	33	259	54 - 464
AB	11	207	105 - 309
TOTAL	235	287	200 - 374

Table 5.5 Median waiting time to kidney only transplant in the UK, for patients registered 1 April 2012 - 31 March 2016, by ethnicity

Ethnicity	Number of patients registered	Waiting time (days)	
		Median	95% Confidence interval
Adult			
White	6648	640	622 - 658
Asian	1591	830	782 - 878
Black	923	965	914 - 1016
Other	288	810	735 - 885
TOTAL¹	9584	706	689 - 723
Paediatric			
White	136	222	182 - 262
Asian	68	397	271 - 523
Black	13	517	138 - 896
Other	14	738	447 - 1029
TOTAL²	235	287	200 - 374

¹ Includes 134 patients whose ethnicity was not reported

² Includes 4 patients whose ethnicity was not reported

5.3 Donor and organ supply

Of the 962 organ donors after brain death in the UK in 2018-2019, 882 (92%) were kidney donors. From these donors, 1,749 kidneys were retrieved. There were 624 kidney donors after circulatory death in 2017-2018. From these donors, 1,236 kidneys were retrieved. **Table 5.6** shows this activity by donor country/Strategic Health Authority of donor's residence. No adjustments have been made for potential demographic differences in populations.

The overall rate for kidney donors after brain death is 13.4 pmp, with rates across the Strategic Health Authorities ranging from 11.3 to 22.3 pmp. The number of kidneys retrieved from donors after brain death in the UK is 26.5 pmp and varies from 22.5 to 43.9 pmp.

The overall rate for kidney donors after circulatory death is 9.4 pmp, with rates across the Strategic Health Authorities ranging from 7.5 to 12.5 pmp. The number of kidneys retrieved from donors after circulatory death is 18.7 pmp and varies from 14.8 to 24.8 pmp.

Table 5.6 Kidney donation and retrieval rates for deceased donors in the UK, 1 April 2018 - 31 March 2019, by Country/ Strategic Health Authority								
Country/ Strategic Health Authority of residence	Kidney donors (pmp)				Kidneys retrieved (pmp)			
	DBD		DCD		DBD		DCD	
North East	59	(22.3)	28	(10.6)	116	(43.9)	56	(21.2)
North West	104	(14.3)	66	(9.1)	205	(28.2)	131	(18.0)
Yorkshire and The Humber	71	(13.0)	50	(9.2)	141	(25.9)	98	(18.0)
North of England	234	(15.2)	144	(9.4)	462	(30.1)	285	(18.6)
East Midlands	55	(11.5)	56	(11.7)	108	(22.6)	111	(23.3)
West Midlands	66	(11.3)	55	(9.4)	132	(22.5)	109	(18.6)
East of England	80	(13.0)	77	(12.5)	158	(25.6)	153	(24.8)
Midlands and East	201	(12.0)	188	(11.2)	398	(23.7)	373	(22.2)
London	102	(11.6)	66	(7.5)	203	(23.0)	131	(14.8)
South East Coast	76	(16.2)	47	(10.0)	150	(32.0)	92	(19.6)
South Central	57	(13.0)	42	(9.6)	113	(25.9)	84	(19.2)
South West	77	(13.8)	47	(8.5)	154	(27.7)	93	(16.7)
South of England	210	(14.4)	136	(9.3)	417	(28.5)	269	(18.4)
England	747	(13.4)	534	(9.6)	1480	(26.6)	1058	(19.0)
Isle of Man	2	(25.0)	0	(0.0)	4	(50.0)	0	(0.0)
Channel Islands	1	(6.3)	0	(0.0)	2	(12.5)	0	(0.0)
Wales	45	(14.4)	44	(14.1)	89	(28.4)	87	(27.8)
Scotland	64	(11.8)	29	(5.4)	128	(23.6)	57	(10.5)
Northern Ireland	23	(12.3)	17	(9.1)	46	(24.6)	34	(18.2)
TOTAL¹	882	(13.4)	624	(9.4)	1749	(26.5)	1236	(18.7)

¹Includes 13 donors where the hospital postcode was used in place of an unknown donor postcode

5.4 Transplants

The number of kidney transplants by recipient country/Strategic Health Authority of residence is shown in **Table 5.7**. No adjustments have been made for potential demographic differences in populations. The deceased donor transplant rate ranged from 24.6 to 51.6 pmp across Strategic Health Authorities and overall was 36.3 pmp. The living donor transplant rate ranged from 8.6 to 19.3 pmp across the Strategic Health Authorities and overall was 15.1 pmp.

Country/ Strategic Health Authority of residence	DBD		DCD		TOTAL		Living	
	N	(pmp)	N	(pmp)	N	(pmp)	N	(pmp)
North East	46	(17.4)	19	(7.2)	65	(24.6)	51	(19.3)
North West	146	(20.1)	102	(14.0)	248	(34.2)	106	(14.6)
Yorkshire and The Humber	121	(22.2)	73	(13.4)	194	(35.6)	88	(16.1)
North of England	313	(20.4)	194	(12.6)	507	(33.0)	245	(16.0)
East Midlands	102	(21.4)	93	(19.5)	195	(40.9)	41	(8.6)
West Midlands	117	(20.0)	76	(13.0)	193	(32.9)	65	(11.1)
East of England	109	(17.7)	108	(17.5)	217	(35.2)	63	(10.2)
Midlands and East	328	(19.5)	277	(16.5)	605	(36.0)	169	(10.1)
London	298	(33.7)	158	(17.9)	456	(51.6)	138	(15.6)
South East Coast	83	(17.7)	45	(9.6)	128	(27.3)	66	(14.1)
South Central	78	(17.8)	79	(18.1)	157	(35.9)	84	(19.2)
South West	127	(22.8)	78	(14.0)	205	(36.9)	79	(14.2)
South of England	288	(19.7)	202	(13.8)	490	(33.5)	229	(15.7)
England	1227	(22.1)	831	(14.9)	2058	(37.0)	781	(14.0)
Isle of Man	0	(0.0)	2	(25.0)	2	(25.0)	2	(25.0)
Channel Islands	4	(25.0)	5	(31.3)	9	(56.3)	3	(18.8)
Wales	60	(19.2)	49	(15.7)	109	(34.8)	45	(14.4)
Scotland	116	(21.4)	55	(10.1)	171	(31.5)	106	(19.6)
Northern Ireland	20	(10.7)	28	(15.0)	48	(25.7)	62	(33.2)
TOTAL^{1,2}	1427	(21.6)	972	(14.7)	2399	(36.3)	999	(15.1)

¹ Excludes 18 recipients of a living donor kidney who reside outside of the UK (18 living donors)
² Includes 2 recipients with an unknown UK postcode

The number of kidney only transplants from deceased donors at each transplant centre is shown in **Table 5.8** for adult patients only. Kidney transplants from donors after brain death include 7 en bloc kidneys and 17 double kidney transplants in 2018-2019 (2 and 13 in 2017-2018). Kidney transplants from donors after circulatory death include 6 en bloc and 19 double kidney transplants in 2018-2019 (6 and 26 in 2017-2018). This table excludes multi-organ transplants: 12 kidney and liver, 158 kidney and pancreas and 8 kidney and islets in 2018-2019.

**Table 5.8 Adult kidney only transplants in the UK,
1 April 2017 - 31 March 2019, by transplant centre**

Transplant centre	2017-2018			TOTAL	2018-2019			TOTAL
	DBD	DCD	Living donor		DBD	DCD	Living donor	
Belfast	38	27	65	130	20	28	58	106
Birmingham	101	53	63	217	79	45	37	161
Bristol	55	44	29	128	62	42	31	135
Cambridge	55	77	37	169	66	89	27	182
Cardiff	20	27	29	76	37	40	35	112
Coventry ¹	39	12	21	72	30	26	27	83
Edinburgh	48	29	40	117	53	22	60	135
Glasgow	80	46	46	172	60	32	36	128
Guy's	90	40	78	208	93	64	66	223
Leeds	70	72	30	172	88	57	61	206
Leicester	43	32	27	102	57	44	28	129
Liverpool	47	34	42	123	54	36	41	131
Manchester	110	98	68	276	103	78	55	236
Newcastle	45	34	71	150	51	23	55	129
Nottingham	39	44	18	101	25	41	5	71
Oxford ¹	80	72	50	202	71	73	64	208
Plymouth	23	19	22	64	31	18	26	75
Portsmouth	46	38	33	117	43	31	28	102
Sheffield	33	26	21	80	35	16	19	70
St George's	70	30	41	141	72	45	41	158
The Royal Free	82	29	33	144	56	21	40	117
The Royal London	68	21	40	129	100	46	48	194
WLRTC	97	36	48	181	84	52	44	180
TOTAL	1379	940	963²	3282	1370	969	938³	3277

WLRTC - West London Renal and Transplant Centre

¹ As of 1 June 2016 Coventry and Oxford began working in partnership as a transplant network

² Includes 6 transplants performed at London Cromwell Hospital and 5 transplants performed at London Bridge Hospital

³ Includes 3 transplants performed at London Cromwell Hospital and 5 transplants performed at London Bridge Hospital

Living donor kidney transplants fell by 2% to 1,017 in 2018-2019, representing 30% of the total kidney transplant programme. The total number of living donor adult transplants performed by each transplant centre is shown in **Table 5.9**. Also shown is the number as a percentage of patients listed at the end of the year, to indicate the size of the living donor programme relative to the centre's transplant list.

Most living donor transplants are 'directed'. This means that a kidney is donated to a specific recipient known to the donor - a close family member or friend. There has been a 2% decrease in these transplants. In addition there are now a number of 'non-directed' living donor transplants (also known as altruistic donor transplants). Last year 64 such donors donated a kidney to a recipient, 62 transplanted into an adult recipient and 2 transplanted into a paediatric recipient. Of the 64 altruistic donors, 33 went into an altruistic donor chain (15 short (2 transplants each) and 18 long chains (3 transplants each)) benefiting 51 adult patients in the paired/pooled scheme. The kidneys from the paired donors of these recipients led to 31 adult and 1 paediatric transplant for patients on the deceased donor transplant list. Thus 33 altruistic donors creating chains benefited 82 adults and 1 paediatric patient in total.

When a potential living donor and recipient are biologically incompatible (blood group or tissue type), they may consider joining a list of others in the same situation with the hope that an exchange of kidneys between them can lead to a compatible living donor transplant. The scheme also includes compatible pairs that would like a better match. This type of exchange is known as paired donation and most exchanges are between two pairs (i.e. two donors and their respective incompatible recipients), or between three pairs. In 2018-2019, there were also 100 paired living kidney donor transplants (97 adult and 3 paediatric recipients).

As a percentage of the number of patients on the active transplant list at 31 March 2019, the number of living donor adult transplants in the year was 19% and ranged from 4% to 64% at individual transplant centres.

Table 5.9 Adult living donor kidney transplants in the UK, 1 April 2018 - 31 March 2019, and percentage of active transplant list at 31 March, by transplant centre						
Transplant centre	2018-2019				TOTAL	
	Directed	Non-directed (altruistic) to waiting list	Paired/pooled exchanges	Altruistic donor chain	N	% list
Belfast	45	0	8	5	58	64
Birmingham	28	3	3	3	37	12
Bristol	23	1	3	4	31	20
Cambridge	22	1	1	3	27	15
Cardiff	30	1	3	1	35	25
Coventry ¹	17	0	5	5	27	32
Edinburgh	45	1	9	5	60	26
Glasgow	19	3	6	8	36	15
Guy's	51	4	6	5	66	25
Leeds	49	1	10	1	61	25
Leicester	24	1	2	1	28	16
Liverpool	33	1	4	3	41	31
Manchester	48	2	0	5	55	15
Newcastle	50	1	3	1	55	22
Nottingham	4	0	1	0	5	4
Oxford ¹	46	4	6	8	64	27
Plymouth	18	2	2	4	26	29
Portsmouth	19	0	6	3	28	17
Sheffield	14	1	2	2	19	16
St George's	31	0	6	4	41	16
The Royal Free	32	0	3	5	40	16
The Royal London	37	2	4	5	48	16
WLRTC	36	3	4	1	44	10
TOTAL	727²	32³	97	82	938	19

WLRTC – West London Renal and Transplant Centre
¹ As of 1 June 2016 Coventry and Oxford began working in partnership as a transplant network
² Includes 3 transplants performed at London Cromwell Hospital and 3 transplants performed at London Bridge
³ Includes 3 domino donor transplants

Non-directed, altruistic donor kidneys are matched to a suitable recipient on a national basis and thus are rarely used in the transplant centre responsible for the 'work-up' of the donor. The number of non-directed donors according to donor hospital (rather than transplant hospital) and whether the altruistic donor donated as part of a chain within the paired/ pooled scheme or directly to the deceased donor list is shown in **Table 5.10**.

Table 5.10 Altruistic kidney donors in the UK, 1 April 2017 - 31 March 2019, by donor centre

Donor centre	2017-2018				2018-2019			
	Transplant list	Chain	Total	%	Transplant list	Chain	Total	%
Belfast	0	4	4	4	2	3	5	8
Birmingham	1	1	2	2	0	0	0	0
Bristol	1	0	1	1	3	1	4	6
Cambridge	0	1	1	1	0	2	2	3
Cardiff	3	1	4	4	0	0	0	0
Coventry ¹	2	0	2	2	0	0	0	0
Edinburgh	5	1	6	7	1	5	6	9
Glasgow	1	2	3	3	2	0	2	3
Guy's	5	8	13	15	4	3	7	11
Leeds	6	1	7	8	5	2	7	11
Leicester	1	0	1	1	0	0	0	0
Liverpool	2	2	4	4	1	0	1	2
Manchester	9	1	10	11	2	2	4	6
Newcastle	4	3	7	8	1	2	3	5
Nottingham	0	0	0	0	1	1	2	3
Oxford ¹	5	0	5	6	3	1	4	6
Plymouth	7	3	10	11	0	5	5	8
Portsmouth	1	2	3	3	2	4	6	9
Sheffield	0	1	0	1	0	1	1	2
St George's	0	1	1	1	0	1	1	2
The Royal Free	2	0	2	2	2	0	2	3
The Royal London	0	1	1	1	1	0	1	2
WLRTC	1	0	1	1	1	0	1	2
Total donors	56	33	89	100	31	33	64	100

WLRTC – West London Renal and Transplant Centre

¹ As of 1 June 2016 Coventry and Oxford began working in partnership as a transplant network

The number of deceased donor and living donor transplants in paediatric patients (<18 years) performed by each paediatric transplant centre is shown in **Table 5.11**. There were 79 living donor transplants and 60 deceased donor transplants in paediatric patients in 2018-2019. The paediatric transplant list has increased by 45% from 64 patients at 31 March 2018 to 93 at the end of March 2019.

Occasionally older paediatric patients are listed and/or transplanted at adult kidney transplant centres and these are indicated in **Table 5.11**.

Table 5.11 Paediatric patient kidney transplants in the UK, 1 April 2017 - 31 March 2019, by transplant centre								
Paediatric transplant centre	2017-2018				2018-2019			
	DBD	DCD	Living donor	TOTAL	DBD	DCD	Living donor	TOTAL
Belfast	0	1	0	1	0	0	4	4
Birmingham	6	0	6	12	7	0	8	15
Bristol	5	0	1	6	7	0	5	12
Glasgow	5	0	8	13	3	2	10	15
Great Ormond Street	10	0	17	27	11	0	13	24
Guy's	9	0	15	24	9	0	9	18
Leeds	4	0	5	9	7	0	6	13
Manchester	7	2	12	21	6	0	19	25
Newcastle	2	0	2	4	0	0	3	3
Nottingham	6	0	3	9	7	1	1	9
Adult centres	3	0	3	6	0	0	1	1
TOTAL	57	3	72¹	132	57	3	79²	139

¹ Includes 3 non-directed donor transplants, 1 paired living donor transplant and 4 altruistic donor chains (3 as a patient on transplant list at end of chain, and 1 as part of a paired programme)

² Includes 2 non-directed donor transplants, 3 paired living donor transplants and 1 altruistic donor chain (1 as a patient on transplant list at end of chain)

At 31 March 2019, there were approximately 39,700 recipients with a functioning kidney transplant (including multi-organ transplants) being followed-up as reported to the UK Transplant Registry.

Rates of pre-emptive kidney only transplantation are shown in **Table 5.12**. Of the 3,416 kidney only transplant recipients in 2018-2019, dialysis status at time of transplant was reported for 3,371 (99%). Of these 3,371 transplants, 691 (20%) were carried out in pre-dialysis patients.

Pre-emptive transplants accounted for 22% of all paediatric kidney only transplants with reported dialysis status, compared with 20% of those in adults. Living donor transplants are more likely to be carried out before the need for dialysis than deceased donor transplants: 37% and 14% respectively. This is because a living donor transplant can often be carried out more quickly than a deceased donor kidney transplant as the latter often necessitates a long waiting time.

Table 5.12 Pre-emptive kidney only transplants in the UK, 1 April 2018 - 31 March 2019

	Number of kidney only transplants	Number of transplants with known dialysis status at transplant (% of all)	Percentage of patients transplanted prior to the need for dialysis (of those with known status)
Adult			
Deceased donor transplant	2339	2300 (98.3)	13.4
Living donor transplant	938	932 (99.4)	37.8
Paediatric			
Deceased donor transplant	60	60 (100.0)	18.3
Living donor transplant	79	79 (100.0)	24.1

The length of time that elapses between a kidney being removed from the donor to its transplantation into the recipient is called cold ischaemia time (CIT). Generally, the shorter this time, the more likely the kidney is to work immediately and the better the long-term outcome. The factors which determine CIT include a) transportation of the kidney from the retrieval hospital to the hospital where the transplant is performed, b) the need to tissue type the donor and cross-match the donor and potential recipients, c) the occasional necessity of moving the kidney to another hospital if a transplant cannot go ahead, d) contacting and preparing the recipient for the transplant and e) access to the operating theatre. Median CITs are shown in addition to inter-quartile ranges in **Table 5.13**.

Table 5.13 Median cold ischaemia time for kidney only transplants in the UK, 1 April 2018 - 31 March 2019

	Number of kidney only transplants ¹	Median (hours)	Inter-quartile range ²	
			Q1	Q3
Adult				
DBD donor transplant	1370	13.1	10.0	16.9
DCD donor transplant	969	12.2	9.6	15.5
Total	2339	12.7	9.7	16.4
Paediatric				
DBD donor transplant	57	13.0	9.4	15.0
DCD donor transplant	3	10.5	9.4	12.7
Total	60	12.9	9.4	14.9
TOTAL	2399	12.7	9.7	16.4

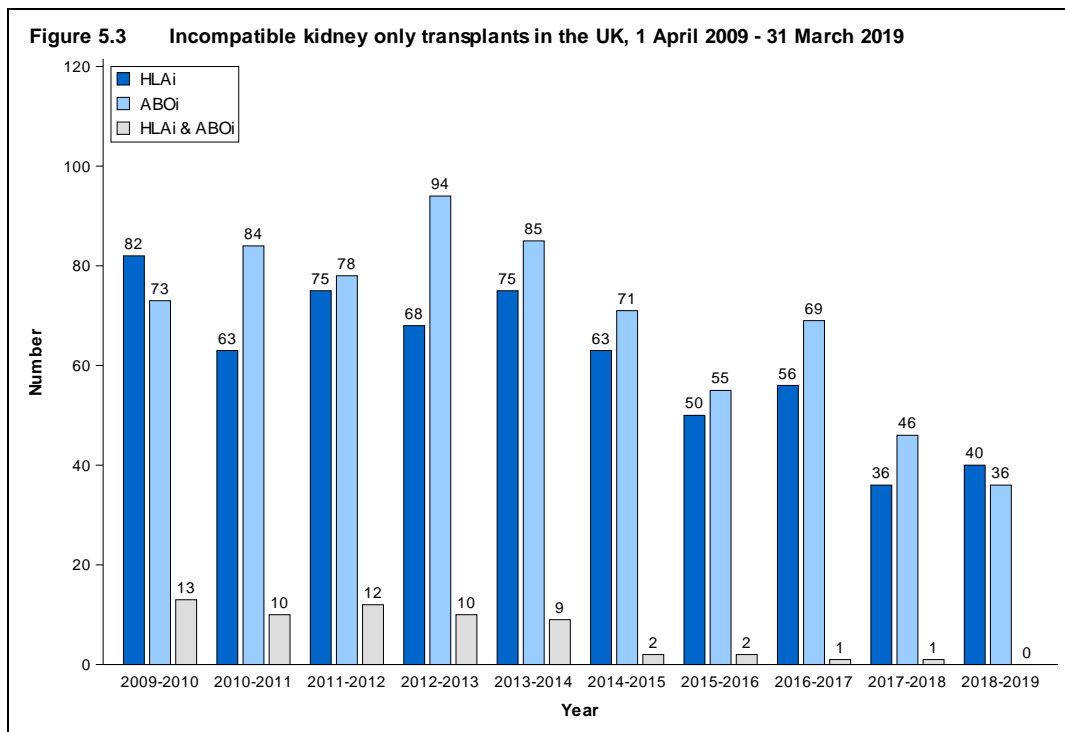
¹ Not all cold ischaemia times are reported
² 25% of times are shorter than Q1, 25% are longer than Q3

Kidneys from donors after brain death and some kidneys from donors after cardiothoracic death are allocated on the basis of a national Kidney Allocation Scheme which incorporates HLA matching between donor and recipient. These HLA matches are based on four levels which are described in **Table 5.14**. Patients with 000 HLA-A, B, DR mismatch (Level 1) are prioritised in the scheme, whereas kidneys are rarely transplanted as a Level 4 match. More information about the allocation scheme can be found at www.odt.nhs.uk. **Table 5.15** gives the HLA mismatch group for adult and paediatric patients for DBD donor transplants but also for DCD and living donor transplants. For living donor transplantation, many transplants have a less good HLA match between donor and recipient. Very often there is no genetic relationship between donor and recipient.

Table 5.14 HLA mismatch groups		
Level	HLA mismatch summary	HLA mismatch combinations included
1	000	000
2	[0 DR and 0/1 B]	100, 010, 110, 200, 210
3	[0 DR and 2 B] or [1 DR and 0/1 B]	020, 120, 220, 001, 101, 201, 011, 111, 211
4	[1 DR and 2 B] or [2 DR]	021, 121, 221, 002, 102, 202, 012, 112, 212, 022, 122, 222

Table 5.15 HLA matching for kidney only transplants in the UK, 1 April 2018 - 31 March 2019						
	DBD		DCD		Living	
	N	(%)	N	(%)	N	(%)
Adult						
Level 1 (Best match)	165	(12)	32	(3)	90	(10)
Level 2	466	(34)	262	(27)	141	(16)
Level 3	702	(51)	561	(58)	434	(48)
Level 4	36	(3)	114	(12)	233	(26)
Not reported	1		0		40	
Paediatric						
Level 1 (Best match)	1	(2)	0	(0)	3	(4)
Level 2	40	(70)	2	(67)	19	(26)
Level 3	16	(28)	1	(33)	52	(70)
Level 4	0	(0)	0	(0)	0	(0)
Not reported	0		0		5	

Often potential living donors and their recipients are HLA or blood group incompatible. Increasingly it is possible to proceed with transplantation across the incompatibilities with appropriate management. The number of HLA and ABO blood group incompatible transplants over the last ten years is shown in **Figure 5.3**. Of the 608 HLA incompatible (HLAi) transplants performed; 200 used kidneys from deceased donors and 408 used living donor kidneys whilst the vast majority of ABO incompatible (ABOi) transplants used living donor kidneys (687 of 691). Due to the nature of reporting HLA incompatible transplants the numbers presented may be subject to change over time.



5.5 Demographic characteristics

The age group, sex, ethnicity and blood group of deceased donors, transplant recipients and patients on the transplant list are shown in **Table 5.16** and for living donors and transplants in **Table 5.17**. Note that all percentages quoted are based only on data where relevant information was available. Changes made to the Kidney Allocation Scheme in 2006 mean that tissue matching criteria between donor and recipient are less strict than previously and waiting time to transplant is now more important than it was in deciding kidney allocation. These changes have an indirect benefit for patients from ethnic minority groups, who are less often a good tissue match with the predominantly white donor pool. As a result, access to transplantation is becoming more equitable.

Table 5.16 Demographic characteristics of deceased kidney donors and transplant recipients, 1 April 2018 - 31 March 2019, and transplant list patients at 31 March						
Age group (years)	Donors		Transplant recipients		Active transplant list patients	
	N	(%)	N	(%)	N	(%)
0 - 17	54	(4)	60	(2)	93	(2)
18 - 34	188	(12)	296	(11)	535	(11)
35 - 49	335	(22)	679	(26)	1320	(27)
50 - 59	364	(24)	703	(27)	1443	(29)
60 - 69	350	(23)	622	(24)	1158	(23)
70+	215	(14)	217	(8)	428	(9)
mean (SD)	52	(17)	51	(15)	52	(14)
Male	823	(55)	1610	(63)	2872	(58)
Female	683	(45)	964	(37)	2097	(42)
Not reported	0		3		8	
White	1389	(93)	1751	(69)	3149	(64)
Asian	51	(3)	433	(17)	921	(19)
Black	14	(1)	270	(11)	602	(12)
Chinese	3	(0)	24	(1)	59	(1)
Other	39	(3)	70	(3)	172	(4)
Not reported	10		29		74	
O	736	(49)	1152	(45)	2650	(53)
A	592	(39)	959	(37)	1269	(25)
B	131	(9)	325	(13)	924	(19)
AB	47	(3)	141	(5)	134	(3)
First graft			2216	(86)	3772	(76)
Re-graft			361	(14)	1205	(24)
TOTAL	1506	(100)	2577	(100)	4977	(100)

Table 5.17 Demographic characteristics of living kidney donors and transplant recipients, 1 April 2018 - 31 March 2019

Age group (years)	Donors		Transplant recipients	
	N	(%)	N	(%)
0 - 17	0	(0)	79	(8)
18 - 34	161	(16)	220	(22)
35 - 49	371	(36)	282	(28)
50 - 59	287	(28)	237	(23)
60 - 69	157	(15)	136	(13)
70+	41	(4)	63	(6)
mean (SD)	48	(12)	44	(18)
Male	480	(47)	651	(64)
Female	537	(53)	365	(36)
Not reported	0		1	
White	878	(86)	835	(83)
Asian	78	(8)	86	(9)
Black	24	(2)	30	(3)
Chinese	7	(1)	9	(1)
Other	30	(3)	42	(4)
Not reported	0		15	
O	590	(58)	451	(44)
A	311	(31)	390	(38)
B	105	(10)	135	(13)
AB	11	(1)	41	(4)
First graft			867	(85)
Re-graft			150	(15)
TOTAL	1017	(100)	1017	(100)