Kidney Activity

Key messages

- **The number of patients registered on the kidney transplant list this year fell by 2% from 5313 to 5233**
- **The number of deceased kidney donors increased by 3% to 1336**
- **Kidney transplants from living donors fell by 3% to 1009, while transplants from deceased donors increased by 5% to 2338**
- **74 kidney transplants were made possible by the paired living kidney donation programme**
- **There were 86 non-directed altruistic living kidney donors, this led to 122 patients benefitting from a living donor transplant**

5.1 Overview

The number of deceased kidney donors increased by 3% in 2016-2017 compared to 2015-2016 and the number of deceased donor kidney transplants increased by 5%. There were 5233 patients waiting for a kidney transplant at 31 March 2017, and for the 8th year running the number of 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 2017 for a kidney only or multi-organ kidney transplant has fallen by 25% since 2008. These registrations include patients suspended on the kidney waiting list but active on the liver waiting list for a combined liver and kidney transplant.

Figure 5.1 **Deceased donor kidney programme in the UK, 1 April 2007 - 31 March 2017, Number of donors, transplants and patients on the active transplant list at 31 March**

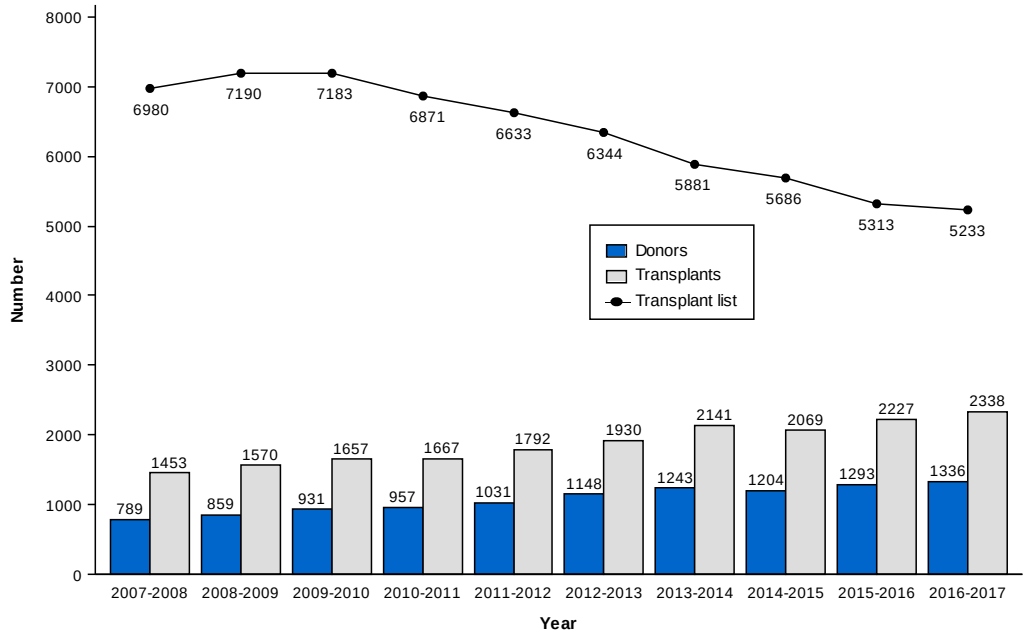


Table 5.1 shows the number of deceased and living donor kidney transplants carried out in 2016-2017 at each centre. Kidney transplants from donors after circulatory death are increasingly common and in this financial year all adult kidney transplant centres performed such transplants. As yet, very few 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 1336 in 2016-2017 from 1293 in 2015-2016 and the number of transplants increased from 2227 to 2338. The number of kidney donors after circulatory death increased to 567 from 557 in 2015-2016 and the number of transplants from such donors increased by 4% to 934.

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 used in the kidney donor activity.

Table 5.1 **Kidney donors and transplants, 1 April 2016 - 31 March 2017 (2015-2016) and transplant list at 31 March 2017 (2016) in the UK, by centre**

Centre	Deceased kidney donors				Deceased donor transplants				Living donor transplants		Active transplant list	
	DBD		DCD		DBD		DCD					
Belfast	31	(28)	10	(18)	35	(27)	10	(23)	79	(66)	120	(115)
Birmingham	47	(51)	44	(29)	96	(111)	31	(32)	65	(64)	413	(425)
Bristol	32	(28)	19	(27)	63	(57)	31	(36)	30	(45)	227	(262)
Cambridge	36	(30)	51	(59)	58	(46)	87	(82)	41	(53)	211	(184)
Cardiff	27	(31)	15	(18)	28	(32)	25	(37)	38	(29)	135	(98)
Coventry[1]	10	(11)	5	(9)	19	(14)	11	(12)	22	(29)	84	(92)
Edinburgh	29	(19)	34	(31)	46	(56)	33	(23)	36	(39)	169	(165)
Glasgow	43	(34)	19	(11)	61	(66)	45	(51)	47	(41)	271	(264)
Great Ormond Street	0	(0)	0	(0)	4	(7)	0	(0)	18	(19)	12	(6)
Leeds	42	(43)	33	(27)	87	(84)	57	(58)	45	(46)	216	(227)
Leicester	10	(18)	10	(7)	59	(42)	25	(29)	26	(21)	154	(190)
Liverpool	46	(34)	32	(30)	35	(39)	38	(30)	41	(43)	155	(185)
Manchester	57	(42)	41	(41)	140	(127)	104	(91)	78	(105)	395	(482)
Newcastle	50	(50)	31	(34)	63	(44)	48	(30)	59	(51)	244	(218)
North Thames[2]	90	(93)	52	(49)	-	-	-	-	-	-	-	-
Royal Free	-	-	-	-	60	(52)	33	(30)	33	(39)	243	(246)
Royal London	-	-	-	-	77	(57)	38	(27)	33	(34)	295	(306)
WLRTC	-	-	-	-	86	(86)	44	(47)	48	(36)	429	(400)
Nottingham	16	(15)	18	(28)	40	(40)	32	(34)	10	(19)	145	(128)
Oxford[1]	34	(25)	25	(19)	98	(87)	71	(72)	54	(48)	273	(280)
Plymouth	18	(36)	20	(21)	18	(22)	22	(24)	17	(13)	90	(67)
Portsmouth	35	(33)	18	(26)	58	(31)	26	(33)	23	(23)	188	(203)
Sheffield	18	(14)	11	(12)	27	(32)	20	(19)	22	(23)	151	(164)
South Thames[2]	98	(101)	79	(61)	-	-	-	-	-	-	-	-
Guy's	-	-	-	-	93	(114)	72	(55)	79	(89)	343	(331)
St George's	-	-	-	-	53	(55)	31	(24)	54	(49)	270	(275)
TOTAL	**769**	**(736)**	**567**	**(557)**	**1404**	**(1328)**	**934**	**(899)**	**1009[3,5]**	**(1038[4,6])**	**5233**	**(5313)**

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 1 transplant performed at The London Clinic; 1 at The London Independent Hospital; 5 at London, Cromwell Hospital and 4 at London Bridge Hospital
[4] Includes an additional 3 transplants performed at The London Independent Hospital; 7 at London, Cromwell Hospital; and 4 at London Bridge Hospital
[5] Includes 2 domino donors;
[6] Includes 2 domino donors

5.2 Transplant list

The number of patients registered on the kidney or kidney and pancreas transplant list fell by 2% in the year: on 31 March 2017, 5,233 patients were registered as active, compared with 5,313 at the end of March 2016. The number of patients waiting for a kidney transplant represents 80.1 patients per million population (pmp).

Of the 5,233 patients on the active transplant list at 31 March 2017, 195 required a kidney and pancreas transplant (184 at 31 March 2016). Additionally, 29 patients were registered for a pancreas only transplant (43 at 31 March 2016).

The outcome of patients registered on the UK kidney and kidney/pancreas transplant list at 1 April 2016, or subsequently registered during the financial year, is shown in **Table 5.2**. A total of 3,710 patients joined the kidney transplant list last year, while a further 215 joined the kidney/pancreas transplant list.

Table 5.2 Kidney transplant list and new registrations in the UK, 1 April 2016 - 31 March 2017

Outcome of patient at 31 March 2017	Active and suspended patients at 1 April 2016		New registrations in 2016-2017[1]		**TOTAL**	
	N	**%**	**N**	**%**	**N**	**%**
Kidney transplant list						
Remained active/suspended	5129	62	2966	80	**8095**	**68**
Transplanted	2332	28	705	19	**3037**	**25**
Removed	520	6	21	1	**541**	**5**
Died	248	3	18	0	**266**	**2**
TOTAL	**8229**		**3710**		**11939**	
Kidney/pancreas transplant list						
Remained active/suspended	152	47	180	84	**332**	**62**
Transplanted	132	41	30	14	**162**	**30**
Removed	24	7	1	0	**25**	**5**
Died	14	4	4	2	**18**	**3**
TOTAL	**322**		**215**		**537**	

[1] Includes re-registrations for second or subsequent transplants

Table 5.3 shows the active transplant list in the UK at 31 March 2017 and 2016 by country/ former Strategic Health Authority of patient's residence. In 2017, the overall kidney transplant list rate was 80.1 pmp with rates across the Strategic Health Authorities ranging from 58.1 pmp to 130.2 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) 2017		2016	
North East	206	(78.6)	187	(71.4)
North West	520	(72.5)	619	(86.3)
Yorkshire and The Humber	342	(63.5)	375	(69.6)
North of England	**1068**	**(70.4)**	**1181**	**(77.8)**
East Midlands	359	(76.7)	373	(79.7)
West Midlands	509	(88.5)	524	(91.1)
East of England	384	(63.2)	371	(61.0)
Midlands and East	**1252**	**(75.8)**	**1268**	**(76.8)**
London	**1129**	**(130.2)**	**1106**	**(127.6)**
South East Coast	269	(58.1)	275	(59.4)
South Central	356	(82.4)	367	(85.0)
South West	389	(71.1)	398	(72.8)
South of England	**1014**	**(70.3)**	**1040**	**(72.1)**
England	**4463**	**(81.5)**	**4595**	**(83.9)**
Isle of Man	**6**	**(75.0)**	**9**	**(112.5)**
Channel Islands	**11**	**(68.8)**	**12**	**(75.0)**
Wales	**185**	**(59.7)**	**145**	**(46.8)**
Scotland	**437**	**(81.4)**	**427**	**(79.5)**
Northern Ireland	**125**	**(67.6)**	**121**	**(65.4)**
TOTAL[1]	**5233**	**(80.1)**	**5313**	**(81.3)**

[1] Includes patients in 2017 (2016) residing in: Unspecified UK 6 (1); Republic of Ireland 0 (1); Overseas 0 (2)

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 25% 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 944 days reported last year to 864 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 2804 new adult kidney only registrations made in the UK, 1 April 2011 - 31 March 2012**

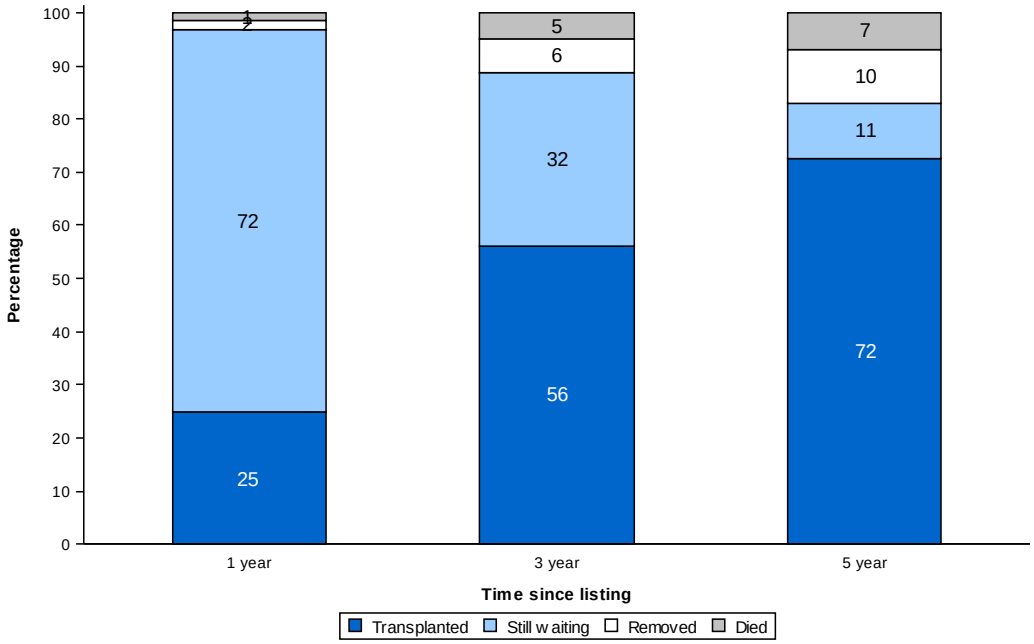


Table 5.4 **Median waiting time to kidney only transplant in the UK, for patients registered 1 April 2010 - 31 March 2014**

Blood group	Number of patients registered	Waiting time (days) Median	95% Confidence interval
Adult			
O	4081	1032	1005 - 1059
A	3192	664	637 - 691
B	1273	1029	975 - 1083
AB	375	293	242 - 344
TOTAL	**8921**	**864**	**845 - 883**
Paediatric			
O	110	367	288 - 446
A	97	217	115 - 319
B	41	177	110 - 244
AB	11	287	214 - 360
TOTAL	**259**	**266**	**205 - 327**

Table 5.5 Median waiting time to kidney only transplant in the UK, for patients registered 1 April 2010 - 31 March 2014

Ethnicity	Number of patients registered	Waiting time (days)	
		Median	95% Confidence interval
Adult			
White	6312	806	785 - 827
Asian	1447	962	917 - 1007
Black	789	1074	1025 - 1123
Other	259	929	863 - 995
TOTAL[1]	**8921**	**864**	**845 - 883**
Paediatric			
White	155	222	156 - 288
Asian	69	397	194 - 600
Black	20	323	0 - 669
Other[3]	9	-	-
TOTAL[2]	**259**	**266**	**205 - 327**

[1] Includes 114 patients whose ethnicity was not reported
[2] Includes 6 patients whose ethnicity was not reported
[3] Median waiting time not calculated for fewer than 10 patients

5.3 Donor and organ supply

Of the 829 organ donors after brain death in the UK in 2016-2017, 769 (93%) were kidney donors. From these donors, 1,529 kidneys were retrieved. There were 567 kidney donors after circulatory death in 2016-2017. From these donors, 1,129 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 11.8 pmp, with rates across the Strategic Health Authorities ranging from 7.5 to 18.7 pmp. The number of kidneys retrieved from donors after brain death in the UK is 23.4 pmp and varies from 15 to 36.6 pmp.

The overall rate for kidney donors after circulatory death is 8.7 pmp, with rates across the Strategic Health Authorities ranging from 5.5 to 12.3 pmp. The number of kidneys retrieved from donors after circulatory death is 17.3 pmp and varies from 11.1 to 24.7 pmp.

Table 5.6 Kidney donation and retrieval rates for deceased donors in the UK, 1 April 2016 - 31 March 2017, by country/ Strategic Health Authority

Country/ Strategic Health Authority of residence	Kidney donors (pmp)				Kidneys retrieved (pmp)			
	DBD		DCD		DBD		DCD	
North East	49	(18.7)	22	(8.4)	96	(36.6)	44	(16.8)
North West	87	(12.1)	70	(9.8)	172	(24.0)	140	(19.5)
Yorkshire and The Humber	56	(10.4)	44	(8.2)	111	(20.6)	86	(16.0)
North of England	**192**	**(12.6)**	**136**	**(9.0)**	**379**	**(25.0)**	**270**	**(17.8)**
East Midlands	35	(7.5)	35	(7.5)	70	(15.0)	70	(15.0)
West Midlands	63	(11.0)	48	(8.3)	125	(21.7)	96	(16.7)
East of England	69	(11.3)	75	(12.3)	138	(22.7)	150	(24.7)
Midlands and East	**167**	**(10.1)**	**158**	**(9.6)**	**333**	**(20.2)**	**316**	**(19.1)**
London	**86**	**(9.9)**	**48**	**(5.5)**	**172**	**(19.8)**	**96**	**(11.1)**
South East Coast	69	(14.9)	51	(11.0)	138	(29.8)	102	(22.0)
South Central	47	(10.9)	36	(8.3)	94	(21.8)	71	(16.4)
South West	62	(11.3)	42	(7.7)	124	(22.7)	82	(15.0)
South of England	**178**	**(12.3)**	**129**	**(8.9)**	**356**	**(24.7)**	**255**	**(17.7)**
England	**623**	**(11.4)**	**471**	**(8.6)**	**1240**	**(22.6)**	**937**	**(17.1)**
Isle of Man	**2**	**(25.0)**	**2**	**(25.0)**	**4**	**(50.0)**	**4**	**(50.0)**
Channel Islands	**4**	**(25.0)**	**1**	**(6.3)**	**8**	**(50.0)**	**2**	**(12.5)**
Wales	**36**	**(11.6)**	**27**	**(8.7)**	**69**	**(22.3)**	**54**	**(17.4)**
Scotland	**74**	**(13.8)**	**55**	**(10.2)**	**148**	**(27.6)**	**110**	**(20.5)**
Northern Ireland	**30**	**(16.2)**	**11**	**(5.9)**	**60**	**(32.4)**	**22**	**(11.9)**
TOTAL[1]	**769**	**(11.8)**	**567**	**(8.7)**	**1529**	**(23.4)**	**1129**	**(17.3)**

[1] Includes 14 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 23.5 to 45.6 pmp across Strategic Health Authorities and overall was 33 pmp. The living donor transplant rate ranged from 8.8 to 21.4 pmp across the Strategic Health Authorities and overall was 15.1 pmp.

Table 5.7 Kidney only transplant rates per million population (pmp), in the UK, 1 April 2016 - 31 March 2017, by country and English Strategic Health Authority

Country/ Strategic Health Authority of residence	DBD		DCD		**TOTAL**		Living	
	N	(pmp)	N	(pmp)	N	(pmp)	N	(pmp)
North East	47	(17.9)	39	(14.9)	86	(32.8)	56	(21.4)
North West	152	(21.2)	121	(16.9)	273	(38.1)	113	(15.8)
Yorkshire and The Humber	116	(21.5)	75	(13.9)	191	(35.4)	65	(12.1)
North of England	**315**	**(20.8)**	**235**	**(15.5)**	**550**	**(36.2)**	**234**	**(15.4)**
East Midlands	99	(21.2)	57	(12.2)	156	(33.3)	41	(8.8)
West Midlands	108	(18.8)	44	(7.7)	152	(26.4)	80	(13.9)
East of England	76	(12.5)	112	(18.4)	188	(30.9)	86	(14.1)
Midlands and East	**283**	**(17.1)**	**213**	**(12.9)**	**496**	**(30)**	**207**	**(12.5)**
London	**254**	**(29.3)**	**141**	**(16.3)**	**395**	**(45.6)**	**138**	**(15.9)**
South East Coast	68	(14.7)	41	(8.9)	109	(23.5)	59	(12.7)
South Central	95	(22)	67	(15.5)	162	(37.5)	76	(17.6)
South West	95	(17.4)	64	(11.7)	159	(29.1)	63	(11.5)
South of England	**258**	**(17.9)**	**172**	**(11.9)**	**430**	**(29.8)**	**198**	**(13.7)**
England	**1110**	**(20.3)**	**761**	**(13.9)**	**1871**	**(34.1)**	**777**	**(14.2)**
Isle of Man	**1**	**(12.5)**	**2**	**(25)**	**3**	**(37.5)**	**0**	**(0)**
Channel Islands	**1**	**(6.3)**	**0**	**(0)**	**1**	**(6.3)**	**1**	**(6.3)**
Wales	**36**	**(11.6)**	**38**	**(12.3)**	**74**	**(23.9)**	**51**	**(16.5)**
Scotland	**86**	**(16)**	**78**	**(14.5)**	**164**	**(30.5)**	**83**	**(15.5)**
Northern Ireland	**35**	**(18.9)**	**10**	**(5.4)**	**45**	**(24.3)**	**77**	**(41.6)**
TOTAL[1, 2]	**1269**	**(19.4)**	**890**	**(13.6)**	**2159**	**(33)**	**990**	**(15.1)**

[1] Excludes recipients of a kidney who reside outside of the UK (1 deceased donor, 19 living donors)
[2] Includes recipients of a kidney with an unspecified postcode in the UK (1 deceased donor, 1 living donor)

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 5 en bloc kidneys and 16 double kidney transplants in 2016-2017 (4 and 14 in 2015-2016). Kidney transplants from donors after circulatory death include 8 en bloc and 37 double kidney transplants in 2016-2017 (8 and 32 in 2015-2016). This table excludes multi-organ transplants: 10 kidney and liver, 1 kidney and heart, 162 kidney and pancreas, 1 kidney and islets and 1 multivisceral.

Table 5.8 Adult kidney only transplants in the UK, 1 April 2015 - 31 March 2017, by transplant centre

Transplant centre	2015-2016 DBD	DCD	Living donor	TOTAL	2016-2017 DBD	DCD	Living donor	TOTAL
Belfast	27	23	66	116	34	10	74	118
Birmingham	96	32	58	186	82	31	56	169
Bristol	55	36	42	133	55	31	29	115
Cambridge	29	72	53	154	39	79	41	159
Cardiff	28	35	26	89	24	24	35	83
Coventry[1]	14	12	29	55	19	11	22	52
Edinburgh	39	23	39	101	25	33	36	94
Glasgow	62	51	39	152	60	45	43	148
Guy's	84	46	74	204	75	64	68	207
Leeds	73	57	41	171	79	57	43	179
Leicester	42	29	20	91	59	25	26	110
Liverpool	39	30	43	112	35	38	41	114
Manchester	108	77	86	271	118	91	68	277
Newcastle	35	30	49	114	52	48	53	153
Nottingham	30	34	16	80	30	30	8	68
Oxford[1]	50	63	48	161	59	59	54	172
Plymouth	22	24	13	59	18	22	16	56
Portsmouth	31	33	23	87	58	26	23	107
Sheffield	32	19	23	74	27	20	22	69
St George's	55	24	49	128	53	31	54	138
The Royal Free	49	30	39	118	58	33	33	124
The Royal London	57	27	34	118	77	38	33	148
WLRTC	77	44	36	157	82	41	48	171
TOTAL	**1134**	**851**	**960**[2]	**2945**	**1218**	**887**	**937**[3]	**3042**

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 transplant performed at London Independent, 7 at London Cromwell Hospital and 4 at London Bridge
[3] Includes 1 transplant performed at London Clinic, 1 at London Independent, 5 at London Cromwell Hospital and 4 at London Bridge

Living donor kidney transplants fell by 3% to 1009 in 2016-2017, 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 1% decrease in these transplants. In addition there are now a number of 'undirected' living donor transplants (also known as altruistic donor transplants). Last year 86 such donors donated a kidney to a recipient, 82 transplanted into an adult recipient and 4 transplanted into a paediatric recipient. Of the 86 altruistic donors, 24 went into an altruistic donor chain (12 short (2 transplants each) and 12 long chains (3 transplants each)) benefiting 35 adult and 1 paediatric patient in the paired/pooled scheme. The kidneys from the paired donors of these recipients led to 23 adult and 1 paediatric transplant for patients on the deceased donor transplant list. Thus 24 altruistic donors creating chains benefited 58 adult and 2 paediatric patients in total.

When a potential 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 2016-2017, there were also 74 paired living kidney donor transplants (72 adult and 2 paediatric recipients).

As a percentage of the number of patients on the active transplant list at 31 March 2017, the number of living donor adult transplants in the year was 18% and ranged from 6% to 62% at individual transplant centres.

Table 5.9 Adult living donor kidney transplants in the UK, 1 April 2016 - 31 March 2017, and percentage of active transplant list at 31 March, by transplant centre

	2016-2017				TOTAL	
Transplant centre	Directed	Non-directed (altruistic) to waiting list	Paired/ pooled exchanges	Altruistic donor chain[4]	**N**	**% list**
Belfast	58	1	11	4	**74**	**62**
Birmingham	47	5	4	0	**56**	**15**
Bristol	24	3	0	2	**29**	**14**
Cambridge	35	3	2	1	**41**	**20**
Cardiff	28	3	1	3	**35**	**26**
Coventry[1]	12	3	6	1	**22**	**26**
Edinburgh	29	2	1	4	**36**	**21**
Glasgow	30	7	3	3	**43**	**16**
Guy's	58	2	4	4	**68**	**21**
Leeds	33	2	5	3	**43**	**21**
Leicester	25	1	0	0	**26**	**17**
Liverpool	34	3	0	4	**41**	**26**
Manchester	60	2	4	2	**68**	**18**
Newcastle	45	4	4	0	**53**	**22**
Nottingham	7	1	0	0	**8**	**6**
Oxford[1]	33	4	11	6	**54**	**20**
Plymouth	13	1	0	2	**16**	**18**
Portsmouth	16	3	2	2	**23**	**12**
Sheffield	15	3	2	2	**22**	**15**
St George's	40	2	5	7	**54**	**20**
The Royal Free	28	2	2	1	**33**	**14**
The Royal London	29	2	1	1	**33**	**11**
WLRTC	36	2	4	6	**48**	**11**
TOTAL	**746[2]**	**61[3]**	**72**	**58**	**937[2]**	**18**

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 1 transplant performed at London Clinic, 1 at London Independent, 5 at London Cromwell Hospital and 4 at London Bridge
[3] Includes 2 domino donor transplants
[4] Includes transplants for paired pooled and deceased donor transplant list patients

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 2015 - 31 March 2017, by donor centre**

	2015-2016				2016-2017			
Donor centre	Transplant list	Chain	**Total**	**%**	Transplant list	Chain	**Total**	**%**
Belfast	3	1	4	5	2	2	4	5
Birmingham	3	1	4	5	3	2	5	6
Bristol	1	0	1	1	2	0	2	2
Cambridge	2	1	3	4	4	2	6	7
Cardiff	2	0	2	2	2	0	2	2
Coventry[1]	2	1	3	4	1	0	1	1
Edinburgh	3	3	6	7	9	2	11	13
Glasgow	2	0	2	2	1	4	5	6
Guy's	1	2	3	4	3	1	4	5
Leeds	3	1	4	5	2	0	2	2
Leicester	2	0	2	2	1	0	1	1
Liverpool	2	0	2	2	4	1	5	6
Manchester	11	0	11	13	5	2	7	8
Newcastle	3	2	5	6	1	0	1	1
Nottingham	3	0	3	4	2	2	4	5
Oxford[1]	3	7	10	12	4	2	6	7
Plymouth	3	3	6	7	1	0	1	1
Portsmouth	3	1	4	5	7	0	7	8
Sheffield	1	1	2	2	2	1	3	3
St George's	1	0	1	1	0	2	2	2
The Royal Free	1	1	2	2	0	0	0	0
The Royal London	2	0	2	2	4	1	5	6
WLRTC	1	0	1	1	2	0	2	2
Total donors	**58**	**25**	**83**	**100**	**62**	**24**	**86**	**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 72 living donor transplants and 55 deceased donor transplants in paediatric patients in 2016-2017. The paediatric transplant list has increased by 9% from 77 patients at 31 March 2016 to 84 at the end of March 2017.

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 2015 - 31 March 2017, by transplant centre

	2015-2016				2016-2017			
Paediatric transplant centre	DBD	DCD	Living donor	**TOTAL**	DBD	DCD	Living donor	**TOTAL**
Belfast	0	0	0	**0**	1	0	5	**6**
Birmingham	5	0	6	**11**	7	0	9	**16**
Bristol	2	0	3	**5**	8	0	1	**9**
Glasgow	4	0	2	**6**	1	0	4	**5**
Great Ormond Street	7	0	19	**26**	4	0	18	**22**
Guy's	4	1	15	**20**	2	0	11	**13**
Leeds	8	1	5	**14**	8	0	2	**10**
Manchester	5	2	19	**26**	6	1	10	**17**
Newcastle	2	0	2	**4**	3	0	6	**9**
Nottingham	10	0	3	**13**	10	2	2	**14**
Adult centres	0	0	4	**4**	2	0	4	**6**
TOTAL	**47**	**4**	**78**	**129**[1]	**52**	**3**	**72**[2]	**127**

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

At 31 March 2017, there were approximately 35,800 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 3,169 kidney only transplant recipients in 2016-2017, dialysis status at time of transplant was reported for 3,039 (96%). Of these 3,039 transplants, 671 (22%) were carried out in pre-dialysis patients.

Pre-emptive transplants accounted for 28% of all paediatric kidney only transplants with reported dialysis status, compared with 22% of those in adults. Living donor transplants are more likely to be carried out before the need for dialysis than deceased donor transplants: 34% and 15% 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 2016 - 31 March 2017			
	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	2105	2016 (95.8)	14.9
Living donor transplant	937	900 (96.1)	34.6
Paediatric			
Deceased donor transplant	55	54 (98.2)	20.0
Living donor transplant	72	69 (95.8)	31.9

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 2016 - 31 March 2017				
	Number of kidney only transplants[1]	Median (hours)	Inter-quartile range[2] Q1	Q3
Adult				
DBD donor transplant	1218	13.6	10.5	17.3
DCD donor transplant	887	12.9	9.9	16.3
Total	**2105**	**13.3**	**10.3**	**17.0**
Paediatric				
DBD donor transplant	52	14.0	10.4	16.6
DCD donor transplant	3	13.3	12.2	15.0
Total	**55**	**13.9**	**10.8**	**16.6**
TOTAL	**2160**	**13.3**	**10.3**	**17.0**

[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 schemes, 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

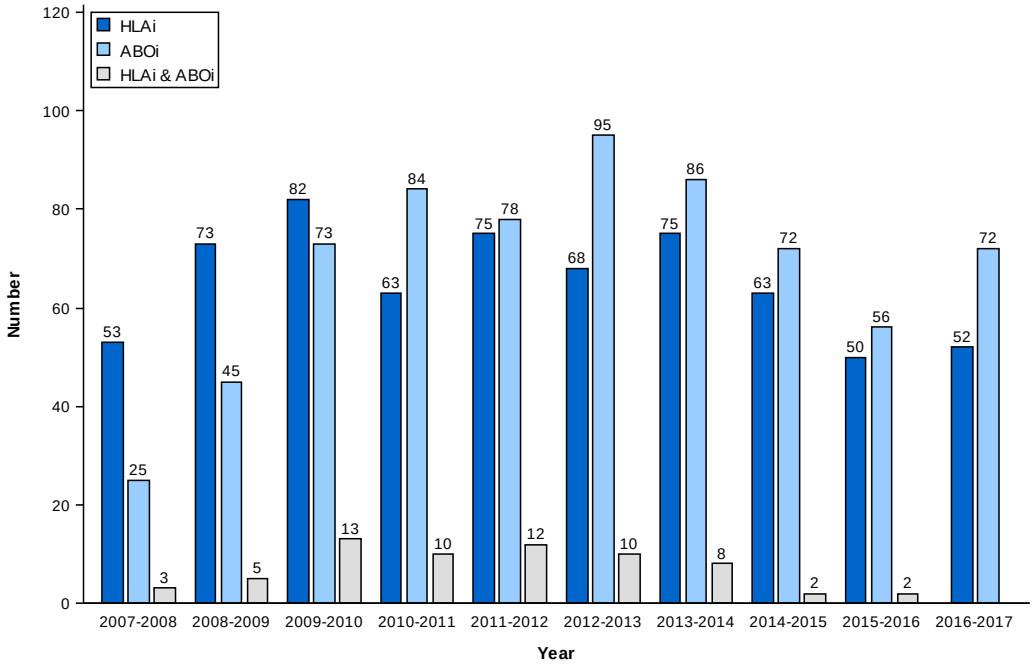
Level	HLA mismatch summary	HLA mismatch combinations included
1	000	000
2	[0 DR and 0/1 B]	100, 010, 110, 200, 210
3	[0 DR and 2 B] or [1 DR and 0/1 B]	020, 120, 220, 001, 101, 201, 011, 111, 211
4	[1 DR and 2 B] or [2 DR]	021, 121, 221, 002, 102, 202, 012, 112, 212, 022, 122, 222

Table 5.15 HLA matching for kidney only transplants in the UK, 1 April 2016 - 31 March 2017

	DBD		DCD		Living	
	N	(%)	N	(%)	N	(%)
Adult						
Level 1 (Best match)	187	(15)	48	(5)	102	(11)
Level 2	507	(42)	212	(24)	153	(17)
Level 3	479	(39)	527	(59)	393	(43)
Level 4	45	(4)	100	(11)	256	(28)
Not reported					33	
Paediatric						
Level 1 (Best match)	4	(8)	1	(33)	1	(1)
Level 2	42	(81)	2	(67)	17	(24)
Level 3	6	(12)	0	(0)	50	(71)
Level 4	0	(0)	0	(0)	2	(3)
Not reported					2	

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 654 HLA incompatible (HLAi) transplants performed; 188 used kidneys from deceased donors and 466 used living donor kidneys whilst the vast majority of ABO incompatible (ABOi) transplants used living donor kidneys (681 of 686). Due to the nature of reporting HLA incompatible transplants the numbers presented may be subject to change over time.

Figure 5.3 Incompatible kidney only transplants in the UK, 1 April 2007 - 31 March 2017



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 2016 - 31 March 2017, and transplant list patients at 31 March

Age group (years)	Donors		Transplant recipients		Active transplant list patients	
	N	(%)	N	(%)	N	(%)
0 - 17	52	(4)	59	(3)	84	(2)
18 - 34	181	(14)	293	(13)	602	(12)
35 - 49	303	(23)	685	(29)	1473	(28)
50 - 59	330	(25)	614	(26)	1461	(28)
60 - 69	294	(22)	526	(22)	1202	(23)
70+	176	(13)	161	(7)	411	(8)
mean (SD)	51	(17)	50	(15)	51	(14)
Male	760	(57)	1472	(63)	3095	(59)
Female	576	(43)	866	(37)	2138	(41)
White	1243	(94)	1661	(72)	3416	(66)
Asian	27	(2)	384	(17)	923	(18)
Black	17	(1)	189	(8)	600	(12)
Chinese	3	(0)	24	(1)	71	(1)
Other	31	(2)	46	(2)	133	(3)
Not reported	15		34		90	
O	619	(46)	1006	(43)	2775	(53)
A	564	(42)	953	(41)	1418	(27)
B	119	(9)	278	(12)	914	(17)
AB	34	(3)	101	(4)	126	(2)
First graft			2004	(86)	3997	(76)
Re-graft			334	(14)	1236	(24)
TOTAL	**1336**	**(100)**	**2338**	**(100)**	**5233**	**(100)**

Table 5.17 Demographic characteristics of living kidney donors and transplant recipients, 1 April 2016 - 31 March 2017

Age group (years)	Donors		Transplant recipients	
	N	(%)	N	(%)
0 - 17	0	(0)	72	(7)
18 - 34	191	(19)	224	(22)
35 - 49	363	(36)	265	(26)
50 - 59	263	(26)	240	(24)
60 - 69	159	(16)	161	(16)
70+	33	(3)	47	(5)
mean (SD)	48	(13)	45	(17)
Male	485	(48)	611	(61)
Female	524	(52)	398	(39)
White	876	(87)	843	(84)
Asian	75	(7)	80	(8)
Black	17	(2)	29	(3)
Chinese	7	(1)	6	(1)
Other	33	(3)	41	(4)
Not reported	1		10	
O	580	(58)	458	(45)
A	311	(31)	377	(37)
B	95	(9)	128	(13)
AB	21	(2)	46	(5)
Not reported	2			
First graft			865	(86)
Re-graft			144	(14)
TOTAL	**1009**	**(100)**	**1009**	**(100)**