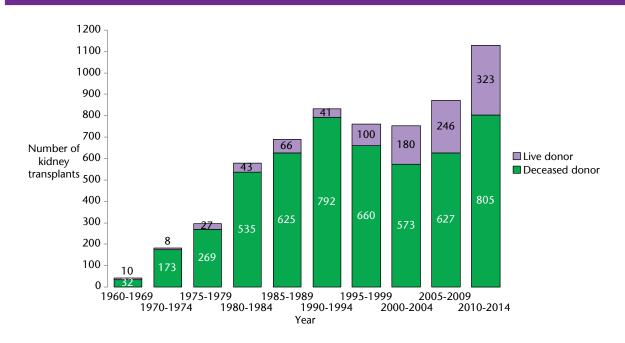
SECTION F KIDNEY TRANSPLANTATION

F1 Frequency of kidney transplantation in Scotland

F1.1 Frequency and donor type, kidney transplants performed in Scotland 1960-2014



Between 1960 and 31 December 2014, 6145 kidney transplants were performed in Scotland in 5191 patients with postcode of residence in Scotland.

The kidney donor was deceased for 5097 (83%) transplants, 1048 (17%) of transplanted kidneys were donated by live donors.

5161 first kidney transplants were performed, 806 second transplants, 153 third transplants and 25 fourth or subsequent kidney transplants.

183 Scottish residents have received a simultaneous kidney and pancreas transplant, 14 patients have received a simultaneous kidney and liver transplant.

Kidney transplants performed outside of Scotland are excluded. Transplants performed in Scotland for patients not resident in Scotland are also excluded.

F1.2	Frequency, transplant type and donor type, kidney transplants
	performed in Scotland 2005-2014

Year of transplant		Deceased donor kidney alone		Live donor Kidney and pancreas				Total kidney	
	n	%	n	%	n	%	n	%	transplants
2005	86	61.4	41	29.3	12	8.6	1	0.7	140
2006	88	68.8	29	22.7	10	7.8	1	0.8	128
2007	102	56.0	58	31.9	22	12.1	0	-	182
2008	128	60.4	69	32.5	13	6.1	2	0.9	212
2009	147	69.7	49	23.2	14	6.9	1	0.5	211
2010	127	69.0	50	27.2	7	3.8	0	-	184
2011	127	65.8	53	27.5	12	6.2	1	0.5	193
2012	146	64.9	63	28.0	14	6.2	2	0.9	225
2013	166	62.6	83	31.3	16	6.0	0	-	265
2014	171	65.5	74	28.4	16	6.1	1	0.4	261

F1.3a Frequency and donor type of adult kidney transplants performed in Scotland 2005-2014 by transplanting centre

Year				GLAS	GOW				Total
	DE	BD BD	DCD		DD		LD		
	n	%	n	%	n	%	n	%	
2005	0	-	3	4.1	48	65.8	22	30.1	73
2006	0	-	0	-	50	80.6	12	19.4	62
2007	1	1.3	0	-	52	67.5	24	31.2	77
2008	0	-	3	3.3	51	55.4	38	41.3	92
2009	5	5.4	3	3.3	65	70.7	19	20.7	92
2010	40	47.6	11	13.1	14	16.7	19	22.6	84
2011	53	54.6	14	14.4	2	2.1	28	28.8	97
2012	59	48.4	33	27.0	0	-	30	24.6	122
2013	56	39.4	41	28.9	0	-	45	34.6	142
2014	64	46.0	38	27.3	1	0.7	36	25.9	139

DBD - Deceased after brain death; DCD - Deceased after circulatory death;

DD - Deceased donor unspecified; LD - Living donor.

F1.3b Frequency and donor type of adult kidney transplants performed in Scotland 2005-2014 by transplanting centre

Year				R	IE				Total
	DB	D*	DCD*		DD*		LD		
	n	%	n	%	n	%	n	%	
2005	24	39.3	2	3.3	21	34.4	14	22.9	61
2006	42	72.4	1	1.7	0	-	15	25.8	58
2007	56	57.7	12	12.4	0	-	29	29.9	97
2008	63	60.6	19	18.3	0	-	22	21.2	104
2009	71	64.0	13	11.7	0	-	27	24.3	111
2010	49	52.7	17	18.3	0	-	27	29.0	93
2011	53	58.2	16	17.6	0	-	22	24.2	91
2012	43	44.8	25	26.0	0	-	28	29.2	96
2013	48	41.4	33	28.4	0	-	35	30.2	116
2014	50	45.5	29	26.4	0	-	31	28.2	110

^{*} Includes combined kidney + pancreas and kidney + liver transplants.

Since 2005 kidney transplantation for adult patients in Scotland has been undertaken in two units the Glasgow renal and transplant unit and the transplant unit of the Royal Infirmary of Edinburgh.

Kidney transplants for patients under the care of RHSC are not shown in tables F1.3a+b.

DBD - Deceased after brain death; DCD - Deceased after circulatory death;

DD - Deceased donor unspecified; LD - Living donor.

F1.4 Age	F1.4 Age of patients at the time of kidney transplantation												
Year of	ŀ	irst kidne	ey transp	lants	Second and subsequent transplants								
transplant	n	Mean Age	SD	Age Range	n	Mean Age	SD	Age Range					
1960-1969	41	26.4	11.0	8.0 - 47.6	1	19.1	-	-					
1970-1974	162	33.2	12.2	10.1 - 64.8	19	30.2	10.3	11.6 - 55.2					
1975-1979	258	35.0	11.2	12.0 - 65.1	38	30.7	9.3	13.0 - 47.9					
1980-1984	479	38.1	14.6	2.3 - 68.6	99	36.2	11.5	15.4 - 68.9					
1985-1989	565	39.9	15.9	1.3 - 77.6	126	35.5	13.4	3.4 - 63.6					
1990-1994	697	43.0	15.5	0.3 - 76.2	136	37.0	12.3	12.4 - 69.5					
1995-1999	628	41.7	15.4	2.1 - 78.4	132	37.8	12.7	3.9 - 65.5					
2000-2004	628	42.4	15.5	4.0 - 78.1	125	38.7	11.4	16.7 - 71.3					
2005-2009	736	44.1	15.4	2.4 - 77.7	137	42.4	11.4	16.4 - 69.2					
2010-2014	967	47.8	14.8	3.3 - 79.3	161	43.5	11.8	8.2 - 75.5					

F1.5 Year	of firs	t kidne	y trans	plant a	ınd dia	gnosis	group				
Year of transplant		Glomerulo- nephritis		Interstitial		Multisystem		Diabetes		Unknown	
	n	%	n	%	n	%	n	%	n	%	
1960-1969	19	46.3	11	26.8	3	7.3	0	-	8	19.5	
1970-1974*	69	42.6	54	33.3	13	8.0	0	-	25	15.4	
1975-1979	104	40.3	102	39.5	30	11.6	0	-	22	8.5	
1980-1984	142	29.6	208	43.4	53	11.1	28	5.8	48	10.0	
1985-1989	162	28.7	214	37.9	80	14.2	41	7.3	68	12.0	
1990-1994	194	27.8	260	37.3	102	14.6	69	9.9	72	10.3	
1995-1999	174	27.7	232	36.9	75	11.9	70	11.1	77	12.3	
2000-2004	154	24.5	229	36.5	81	12.9	74	11.8	90	14.3	
2005-2009	157	21.3	289	39.3	91	12.4	106	14.4	93	12.6	
2010-2014	229	23.7	372	38.5	120	12.4	131	13.5	115	11.9	

^{*} One patient who received a first kidney transplant between 1960-1974 has missing PRD.

F2 Transplanted Kidney Survival

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	F2.1 Graft survival of first kidney transplants by year of transplantation 1960 - 2013												
Year of	Grafts surv	iving 1 year	Grafts survi	ving 5 years	Grafts surviving 10 years								
transplant	n	%	n	%	n	%							
1960-1969	26	81	15	65	12	57							
1970-1974	97	75	67	62	51	54							
1975-1979	149	64	107	48	83	40							
1980-1984	340	74	248	57	178	46							
1985-1989	464	86	327	67	229	52							
1990-1994	561	85	429	70	301	55							
1995-1999	548	90	459	79	345	66							
2000-2004	563	93	481	85	382	73							
2005-2009	675	94	592	87									
2010	145	94											
2011	147	94											
2012	182	97											
		İ											

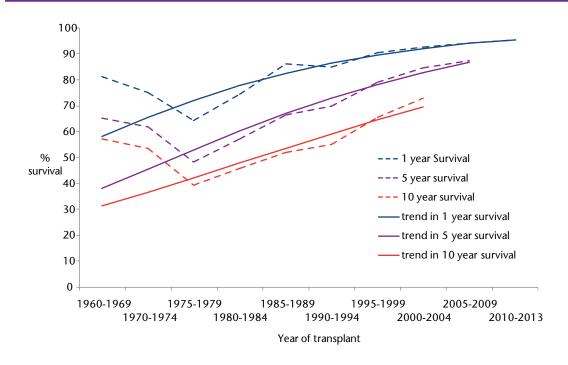
Survival of first kidney transplants only, for transplants performed in Scotland, are shown in the table.

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Grafts with insufficient follow-up and those that did not fail in patients dying within the relevant period have been excluded from the table.

2013

F2.2 Trends in first graft survival by year of transplantation 1960-2013



Trend in 1 year survival: year to year OR 1.06 (95% CI 1.05-1.07)
Trend in 5 year survival: year to year OR 1.06 (95% CI 1.05-1.07)
Trend in 10 year survival: year to year OR 1.05 (95% CI 1.04-1.06)

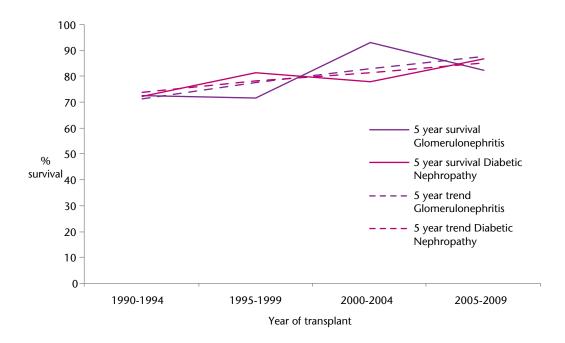
The trends in 1 year, 5 year and 10 year graft survival are all statistically significant. (Wald-statistic, df=1,p<0.001)

F2.3 Graft survival in the glomerulonephritis and diabetic nephropathy PRD groups in those aged 45-64 at time of first kidney transplant 1990-2013

Year of	PRD Group	1 year	survival	5 year	survival	10 year	survival
transplant		n	%	n	%	n	%
1990-1994	Glomerulonephritis	60	90	45	73	29	55
	Diabetic nephropathy	21	88	13	72	4	40
1995-1999	Glomerulonephritis	54	87	43	72	32	59
	Diabetic nephropathy	17	89	13	81	9	75
2000-2004	Glomerulonephritis	59	95	55	93	41	79
	Diabetic nephropathy	22	96	14	78	12	71
2005-2009	Glomerulonephritis	53	88	47	82		
	Diabetic nephropathy	32	91	26	87		
2010-2013	Glomerulonephritis	77	97				
	Diabetic nephropathy	39	93				

Grafts with insufficient follow-up and those that did not fail in patients dying within the relevant period have been excluded from the table. Patients in receipt of combined kidney and pancreas transplant are included in the analysis.

F2.4 Trend in five year graft survival in the glomerulonephritis and diabetic nephropathy PRD groups in those aged 45-64 at time of first kidney transplant 1990-2009



Glomerulonephritis trend in 5 year survival: year to year OR 1.07 (95% CI 1.01-1.14) Diabetic nephropathy trend in 5 year survival: year to year OR 1.05 (95% CI 0.96-1.15)

F2.5 Graft survival by current Health board of residence 2005-2013												
	Grafts sui	rviving 1	year	Grafts sur	viving 2	years	Grafts surviving 5 years					
	Number of first kidney transplants 2005-2013	n	%	Number of first kidney transplants 2005-2012	n	%	Number of first kidney transplants 2005-2009	n	%			
A&A	94	90	95.7	93	87	93.5	89	80	89.9			
BORD	37	36	97.3	37	36	97.3	33	31	93.9			
D&G	38	37	97.4	35	34	97.1	35	32	91.4			
FIFE	98	89	90.8	98	85	86.7	96	79	82.3			
FV	78	75	96.2	78	73	93.6	76	69	90.8			
GG&C	342	323	94.4	338	312	92.3	331	295	89.1			
GRAM	155	148	95.5	155	142	91.6	149	133	89.3			
HIGH	96	92	95.8	96	89	92.7	92	83	90.2			
LAN	187	178	95.2	183	168	91.8	177	159	89.8			
LOTH	210	199	94.8	206	191	92.7	193	174	90.2			
ORKN	3	3	100.0	3	3	100.0	3	3	100.0			
SHET	3	3	100.0	3	3	100.0	3	3	100.0			
TAY	88	82	93.2	87	81	93.1	86	78	90.7			
WI	6	6	100.0	6	6	100.0	6	6	100.0			
Scotland	1435	1361	94.8	1418	1311	92.5	1369	1225	89.5			

Grafts with insufficient follow-up and those that did not fail in patients dying within the relevant period have been excluded from the table.

F3 Patient survival after Kidney Transplantation

96.4

96.4

Year of transplant		surviving ⁄ear	Patients : 5 ye	surviving ears	Patients surviving 10 years		
	n	%	n	%	n	%	
1960-1969	31	75.6	19	46.3	16	39.0	
1970-1974	121	74.7	90	55.6	70	43.2	
1975-1979	215	83.3	187	72.5	155	60.1	
1980-1984	446	93.1	377	78.7	290	60.5	
1985-1989	532	94.2	455	80.5	365	64.6	
1990-1994	655	94.0	556	79.8	435	62.4	
1995-1999	602	95.9	551	87.7	479	76.3	
2000-2004	607	96.7	547	87.1	487	77.5	
2005-2009	714	97.0	662	89.9			
2010	155	98.7					
2011	157	97.5					

Patient survival is reported from the time of first kidney transplant for transplants performed in Scotland. Patients with insufficient follow-up are excluded.

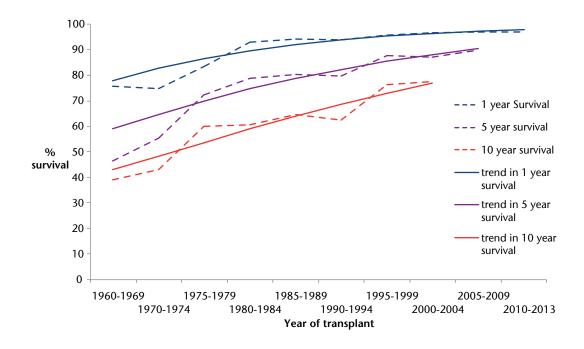
2012

2013

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F3.2 Trends in patient survival by year of first kidney transplantation 1960-2013



Trend in 1 year survival: year to year OR 1.06 (95% CI 1.05-1.07)

Trend in 5 year survival: year to year OR 1.05 (95% CI 1.04-1.06)

Trend in 10 year survival: year to year OR 1.04 (95% CI 1.04-1.05)

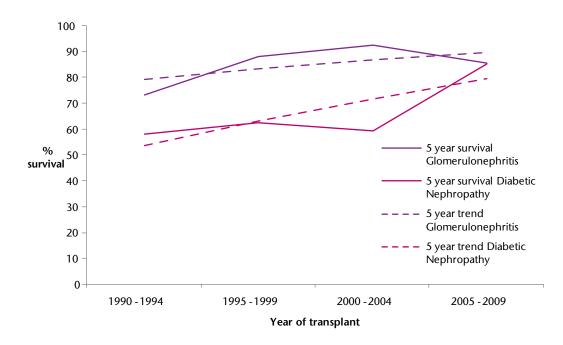
The trends in 1 year, 5 year and 10 year graft survival are all statistically significant. (Wald-statistic, df=1,p<0.001)

F3.3 Patient survival in the glomerulonephritis and diabetic nephropathy PRD groups in those aged 45-64 at time of first kidney transplant 1990-2013

Year of	PRD Group	1 year s	survival	5 year	survival	10 year survival	
transplant		n	%	n	%	n	%
1990-1994	Glomerulonephritis	71	95	55	73	40	53
	Diabetic nephropathy	27	87	18	58	7	23
1995-1999	Glomerulonephritis	64	96	59	88	48	72
	Diabetic nephropathy	20	83	15	63	11	46
2000-2004	Glomerulonephritis	65	97	62	93	52	78
	Diabetic nephropathy	28	88	19	59	16	50
2005-2009	Glomerulonephritis	67	96	60	86		
	Diabetic nephropathy	47	100	40	85		
2010-2013	Glomerulonephritis	82	99				
	Diabetic nephropathy	44	92				

Patients in receipt of combined kidney and pancreas transplant are included in the analysis.

F3.4 Trend in five year survival in the glomerulonephritis and diabetic nephropathy PRD groups in those aged 45-64 at time of first kidney transplant 1990-2009



Glomerulonephritis trend in 5 year survival: year to year OR 1.06 (95% CI 0.99-1.21) Diabetic Nephropathy trend in 5 year survival: year to year OR 1.09 (95% CI 1.02-1.16)

F4 Transplant Kidney Function

F4.1	Transplanted kidney function at one year in adult recipients after first kidney transplant performed 2004-2013										
Year	Transplants performed	with fun	patients ctioning t 1 year	Patients with creatinine result		creatinine comole/L)	eGFR (ml/min)				
		n	%	n	Median	IQR	Median	IQR			
2004	95	90	94.7	83	137	111-174	46.1	34.5-56.0			
2005	106	98	92.5	98	131	106-159	51.2	39.3-62.7			
2006	97	92	94.8	89	132	108-161	49.7	39.1-59.6			
2007	147	132	89.8	131	118	100-143	55.0	43.9-64.9			
2008	167	154	92.2	153	118	102-145	55.2	42.4-66.9			
2009	170	152	89.4	145	123	95-152	54.4	40.2-68.6			
2010	151	140	92.7	118	111	93-137	58.8	46.0-73.9			
2011	156	143	91.7	130	119	102-152	52.5	41.7-67.4			
2012	187	175	94.6	165	119	94-144	55.5	45.2-73.3			
2013	218	206	94.5	171	111	88-135	57.5	46.6-73.0			

Patients dying within the first year post transplant are excluded.

Patients aged under 18 years at the time of transplantation are excluded.

Kidney transplants performed outside of Scotland are excluded. Transplants performed in Scotland for patients not resident in Scotland are also excluded.

F4.2 Transplanted kidney function one year in adult recipients after first kidney transplant performed 2004-2013 by primary renal diagnosis group									
Recipient primary renal diagnosis	Transplants performed	patien functi	iving ts with oning t 1 year	Patients with creatinine result	Serum creatinine (micromole/L)		eGFR (ml/min)		
group		n	%	n	Median	IQR	Median	IQR	
Glomerulo- nephritis	347	320	92.2	289	127	105-165	51.2	39.7-64.9	
Interstitial	547	515	94.1	480	120	97-146	53.0	40.2-66.6	
Multisystem	190	173	91.0	157	118	100-143	55.5	44.3-67.6	
Diabetic nephropathy*	215	199	92.6	195	113	94-139	59.2	46.5-71.4	
Unknown	195	175	87.9	162	119	102-151	55.2	43.5-66.9	

^{*} Includes patients receiving simultaneous kidney and pancreas transplant

F4.3 Transplanted kidney function one year in adult recipients after first kidney transplant performed 2004-2013 by donor type

Donor type	Transplants performed	patien functi	iving ts with oning t 1 year	Patients Serum creatinine (micromole/L) creatinine result			eGFR (ml/min)	
		n	%	n	Median	IQR	Median	IQR
Deceased donor	1077	988	91.7	930	121	100-153	52.6	40.2-66.8
Live donor	417	394	94.5	353	116	100-139	56.2	46.1-68.3

F4.4 Transplanted kidney function one year in adult recipients after first kidney transplant performed 2005-2013 by transplanting unit

Transplant Centre	Transplants performed	Surviving patients with functioning graft at 1 year		Patients with creatinine result	(micr	creatinine omole/L)	eGFR (ml/min)	
		n	%	n	Median	IQR	Median	IQR
GLAS	684	631	92.3	565	117	96-144	55.7	42.9-70.2
RIE	714	660	92.4	634	121	101-147	53.3	41.9-66.5

F5 Listing for Kidney Transplantation

F5.1 Percentage and prevalence per 100000 population of RRT patients with functioning kidney transplant or on transplant waiting list 31 December 2014 by NHS Board area of residence

	All RRT patients	Patients with kidney transplant			lant or int listed	NHS Board population	per 100000
	31/12/2014	n	%	n	%		population
A&A	370	183	49	246	66	371110	66.3
BORD	103	61	59	81	79	114030	71.0
D&G	136	70	51	97	71	149940	64.7
FIFE	333	159	48	209	63	367260	56.9
FV	259	141	54	182	70	300410	60.6
GG&C	1111	672	60	839	76	1142580	73.4
GRAM	505	273	54	351	70	584240	60.1
HIGH	277	177	64	223	81	320760	69.5
LAN	607	363	60	473	78	653310	72.4
LOTH	622	362	58	459	74	858090	53.5
ORKN	15	6	40	9	60	21590	41.7
SHET	13	6	46	8	62	23230	34.4
TAY	387	193	50	252	65	413800	60.9
WI	20	8	40	11	55	27250	40.4
Scotland	4758	2674	56	3443	72	5347600	64.4

The percentage of patients in each NHS Board area treated by all forms of RRT (PD, HD, Transplant) who are either on the transplant waiting list or have a functioning transplant are shown.

Patients who were on the transplant waiting list but had suspended rather than active status are included.

Three patients live outside of Scotland and were receiving treatment within Scottish renal units on 31 December 2014.

F5.2 Frequency of first kidney transplants and time from start of RRT to activation on transplant waiting list, by NHS Board area of residence at transplantation 2010-2014

	n	Pre-emptive transplants	LD Tx in first year	Patients with listing		om start of listing***
		(DD)	of RRT*	date**	Median	IQR
A&A	59	9 (4)	8	50	110	-96 - 558
BORD	29	3 (2)	3	26	118	-85 - 274
D&G	25	6 (2)	7	20	101	27 - 336
FIFE	63	10 (4)	8	55	86	-123 - 339
FV	67	8 (4)	8	58	146	-17 - 326
GG&C	244	50 (19)	46	211	109	-147 -380
GRAM	100	10 (2)	13	89	86	-75 - 320
HIGH	52	7 (3)	8	45	195	-41 - 330
LAN	146	20 (8)	22	132	268	9 - 494
LOTH	125	13 (6)	18	112	183	-56 - 426
ORKN	0	0 -	0	-	-	-
SHET	2	0 -	1	1	-	-
TAY	54	9 (1)	12	45	99	-34 - 75
WI	1	0 -	0	1	-	-
Scotland	967	145 55	154	845	144	-66 - 392

^{*} Includes pre-emptive LD transplants

145 patients received a pre-emptive transplant in 2010-2014, 90 from a live donor (LD), 55 from a deceased donor (DD).

A further 64 patients received a LD transplant within one year of starting RRT.

Renal Association guidelines suggest that patients with progressive deterioration in renal function who are suitable for transplantation should be placed on the national transplant list within six months (-182 days) of their anticipated dialysis start date. Patients listed from transplantation for longer than six months prior to starting RRT have their duration of listing truncated to six months for the analysis.

^{**} Patients receiving LD pre-emptive transplants excluded

^{***} Truncated to -182 days

F5.3 Time from start of RRT to activation on transplant waiting list patients starting RRT 2010-2013, by NHS Board area of residence at start of RRT

	Number starting RRT 2010-2013	Patients active on Tx waiting list by 31 Dec 2014*		Days from start of RRT to listing***		
		n	%	Median	IQR	
A&A	177	50	28.4	138	-65 - 384	
BORD	37	19	51.4	103	-62 - 370	
D&G	56	19	33.9	41	-182 - 239	
FIFE	185	42	22.7	136	-182 - 341	
FV	125	38	30.4	87	-26 - 341	
GG&C	484	179	37.0	29	-167 - 215	
GRAM	219	77	35.2	58	-78 - 304	
HIGH	101	38	37.6	22	-100 - 246	
LAN	269	113	42.0	241	-39 - 435	
LOTH	233	67	28.8	108	-118 - 311	
ORKN	9	2	22.2	114	-	
SHET	5	1	20.0	600	-	
TAY	181	42	23.2	106	-99 - 332	
WI	9	3	33.3	119	-	
Scotland	2090	690	33.0	91	-99 - 329	

^{*} Patients active on transplant waiting list at any time up until 31 December 2014.

Renal Association guidelines suggest that patients with progressive deterioration in renal function who are suitable for transplantation should be placed on the national transplant list within six months (-182 days) of their anticipated dialysis start date. Patients listed from transplantation for longer than six months prior to starting RRT have their duration of listing truncated to six months for the analysis.

^{**} Truncated to -182 days