

**NHS BLOOD AND TRANSPLANT  
ORGAN & TISSUE DONATION AND TRANSPLANTATION DIRECTORATE**

**KIDNEY ADVISORY GROUP**

**2019 NATIONAL KIDNEY OFFERING SCHEME  
FOUR-YEAR ACTIVITY REVIEW**

**SUMMARY**

- 1 On 11<sup>th</sup> September 2019 a new kidney offering scheme was introduced in the UK to reflect the changing donor pool which had led to a higher rate of offer declines and an increasing use of DCD donors. The scheme was designed to meet several key objectives identified through reviewing the past Kidney Allocation Scheme introduced in April 2006, comparing alternative schemes across the world, looking at the philosophies in allocation, and understanding whether improvements could be made in histocompatibility and immunogenetics. Input was received from clinicians, patient groups and lay members across the UK.
- 2 All deceased donors are now offered using national rules through a two-tier offering sequence
  - Tier A – Patients with a matchability score = 10\*, 100% cRF or  $\geq 7$  years waiting time
  - Tier B – All other patients

Tier A patients are prioritised by matchability score and waiting time.  
Tier B patients are prioritised by a point score including:

  - donor-recipient risk index combinations
  - Waiting time from earliest of dialysis or activation on the list
  - tissue match and age combined
  - location
  - matchability score
  - total mismatch
  - blood-group match
  - donor-recipient age match
- 3 As with all changes to allocation protocols, the national Kidney Offering Scheme will be carefully monitored for effectiveness and any unforeseen consequences. Activity over the first 4 years is presented here. The SARS coronavirus 2 (SARS-CoV-2) pandemic led to centre closures from March 2020. In response to the centre closures, the offering scheme was amended between 30 March and 16 June 2020 so that offers to Tier B patients would be centre choice. Named patient-based offering remained in Tier A. Data from this period is excluded from the analysis.

**Key points:**

- 1 There were 7048 kidney-only transplants performed during the first four years of the new scheme. Of these, 4263 were from DBD donors and 2785 from DCD donors.
- 2 There has been an increase in the proportion of highly sensitised recipients receiving any type of kidney transplant from 13% in the previous time period, to 18% during the first four years of the 2019 scheme. 4% of transplants were received by recipients with 100% cRF compared with 2% in a comparable period from the previous scheme.
- 3 During the first four years of the scheme, difficult to match recipients received 30% of transplants (37% in the previous four years), and 35% of transplants were to recipients in Black, Asian and Mixed Race and Minority Ethnic backgrounds (30% in previous four years).
- 4 On the transplant list, most recipient characteristics have remained unchanged since the introduction of the 2019 scheme; however, there has been a reduction in the proportion of difficult to match patients on the waiting list from 34% at 1 September 2019 to 18% at 1 December 2023.
- 5 Since the introduction of the new scheme there has been an increase in the number of offers being declined due to recipient reasons, 19% previously compared with 23% more recently. The majority of these are cited as 'recipient did not need a transplant'. This is mainly where recipients have received multiple offers of a kidney transplant having already accepted a previous offer.
- 6 There was no statistical difference in the 3-month patient survival ( $p=0.8420$ ) following deceased donor kidney only transplant in the four years of the scheme, compared with the most recent four years of the previous scheme.
- 7 There were slight statistically significant differences found in 1-year patient survival ( $p=0.0485$ ) following deceased donor kidney only transplant in the first four years of the scheme, compared with the most recent four years of the previous scheme.
- 8 The 3-month graft survival following deceased donor kidney only transplant was 97.0% in the first four years of the scheme, compared to 95.8% in a similar four-year period of the previous scheme, this difference was statistically significant ( $p=0.0002$ ).
- 9 There were statistically significant differences in the 1-year graft survival ( $p<0.0001$ ) following deceased donor kidney only transplant in the first four years of the scheme, compared with the most recent four years of the previous scheme.

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# TRANSPLANTATION

**Table 1.1 – Overview of transplant activity**

Donors type:	11 Sep 2015 - 10 Sep 2019*				11 Sep 2019 – 10 Sep 2023*			
	DBD		DCD		DBD		DCD	
	N	%	N	%	N	%	N	%
Kidney	4646	89	2966	92	4215	91	2742	94
En-bloc kidney	16	0	26	1	9	0	11	0
Double kidney	25	0	74	2	39	1	32	1
Liver & kidney	66	1	.	.	28	1	3	0
Kidney & pancreas	439	8	165	5	307	7	134	5
Kidney & pancreas islets	8	0	3	0	12	0	7	0
<b>TOTAL</b>	<b>5200</b>	<b>100</b>	<b>3234</b>	<b>100</b>	<b>4610</b>	<b>100</b>	<b>2929</b>	<b>100</b>

\*excluding 31 March – 15 June (for 2019 and 2020)

**Table 1.2 - Overview of kidney only transplant activity**

Donors type:	11 Sep 2015 - 10 Sep 2019*				11 Sep 2019 – 10 Sep 2023*			
	DBD		DCD		DBD		DCD	
	N	%	N	%	N	%	N	%
Local	723	15.4	1691	55.2	336	7.9	504	18.1
Regional	1920	41.0	1288	42.0	1282	30.1	1100	39.5
Rest of UK	2043	43.6	87	2.8	2645	62.1	1181	42.4
<b>TOTAL</b>	<b>4686</b>	<b>100</b>	<b>3066</b>	<b>100</b>	<b>4263</b>	<b>100</b>	<b>2785</b>	<b>100</b>

\*excluding 31 March – 15 June (for 2019 and 2020)

Table 1.3 - Centre specific kidney only activity

Donors type:	11 Sep 2015 - 10 Sep 2019*				11 Sep 2019 – 10 Sep 2023*			
	DBD		DCD		DBD		DCD	
Edinburgh	160	3	106	3	149	3	71	3
Glasgow	263	6	167	5	211	5	165	6
Leeds	275	6	197	6	225	5	179	6
Liverpool	152	3	109	4	153	4	67	2
Manchester	377	8	286	9	346	8	261	9
Newcastle	165	4	110	4	191	4	95	3
<b>North Region</b>	<b>1392</b>	<b>30</b>	<b>975</b>	<b>32</b>	<b>1275</b>	<b>30</b>	<b>838</b>	<b>30</b>
Belfast	115	2	83	3	55	1	40	1
Birmingham	366	8	165	5	330	8	181	6
Cambridge	144	3	239	8	110	3	120	4
Coventry	93	2	57	2	65	2	54	2
Leicester	167	4	97	3	142	3	123	4
Nottingham	144	3	146	5	115	3	79	3
Sheffield	120	3	76	2	95	2	85	3
<b>Midlands Region</b>	<b>1149</b>	<b>25</b>	<b>863</b>	<b>28</b>	<b>912</b>	<b>21</b>	<b>682</b>	<b>24</b>
Bristol	242	5	146	5	194	5	138	5
Cardiff	91	2	109	4	106	2	66	2
Oxford	183	4	166	5	182	4	164	6
Plymouth	92	2	78	3	96	2	46	2
Portsmouth	175	4	116	4	130	3	105	4
<b>South West Region</b>	<b>783</b>	<b>17</b>	<b>615</b>	<b>20</b>	<b>708</b>	<b>17</b>	<b>519</b>	<b>19</b>
GOSH	33	1	0	0	24	1	7	0
Guy's	271	6	109	4	271	6	145	5
St George's	245	5	131	4	236	6	135	5
The Royal Free	195	4	74	2	195	5	112	4
The Royal London	301	6	126	4	269	6	133	5
WLRTC	317	7	173	6	373	9	214	8
<b>London Region</b>	<b>1362</b>	<b>29</b>	<b>613</b>	<b>20</b>	<b>1368</b>	<b>32</b>	<b>746</b>	<b>27</b>
<b>TOTAL</b>	<b>4686</b>		<b>3066</b>		<b>4263</b>		<b>2785</b>	

\*excluding 31 March – 15 June (for 2019 and 2020)

Table 1.4 – Kidney only transplant demographics by donor type

Factor	Level	11 Sep 2015 - 10 Sep 2019*				11 Sep 2019 – 10 Sep 2023*			
		DBD		DCD		DBD		DCD	
Number of transplants		4686		3066		4263		2785	
		N	%	N	%	N	%	N	%
HLA mismatch	1	666	14	147	5	133	3	65	2
	2	1931	41	854	28	1122	26	660	24
	3	2025	43	1817	59	2057	48	1461	52
	4	64	1	248	8	950	22	599	22
	Missing	.	.	.	.	1	0	.	.
Highly sensitised	Yes	753	16	216	7	805	19	494	18
Sensitisation At tx	0-9	2788	59	2152	70	2406	56	1623	58
	10-39	456	10	302	10	410	10	264	9
	40-59	301	6	190	6	280	7	180	6
	60-84	402	9	210	7	367	9	228	8
	85-94	257	5	100	3	259	6	151	5
	95-99	365	8	93	3	383	9	216	8
	100	117	2	19	1	158	4	123	4
Waiting time	<1 year	1076	23	905	30	477	11	393	14
	1-3 years	1710	36	1348	44	1647	39	1149	41
	3-5 years	1053	22	633	21	1362	32	850	31
	5-7 years	412	9	122	4	487	11	231	8
	>=7 years	435	9	58	2	290	7	162	6
Matchability	Easy (1-3)	533	11	368	12	1371	32	955	34
	Moderate (4-7)	2271	48	1688	55	1593	37	1025	37
	Difficult (8-10)	1869	40	1006	33	1291	30	795	29
	Missing	13	0	4	0	8	0	10	0
Age (years)	<18	208	4	15	0	131	3	45	2
	18-29	399	9	140	5	387	9	172	6
	30-39	727	16	270	9	573	13	290	10
	40-49	997	21	548	18	673	16	423	15
	50-59	1194	25	864	28	1096	26	805	29
	60-69	881	19	913	30	969	23	749	27
	>=70	280	6	316	10	434	10	301	11
Blood group	O	2059	44	1284	42	1793	42	1179	42
	A	1761	38	1249	41	1675	39	1114	40
	B	605	13	372	12	576	14	349	13
	AB	261	6	161	5	219	5	143	5
Graft number	1	3811	81	2738	89	3424	80	2284	82
	2	717	15	290	9	715	17	431	15
	3	138	3	32	1	104	2	56	2
	4	19	0	5	0	18	0	11	0
	5	1	0	1	0	2	0	3	0
Diabetic	Yes	439	9	367	12	557	13	376	14
Donor-recipient age difference	<15 years	2991	64	2291	75	3182	75	2186	78
	15-25 years	1135	24	562	18	812	19	464	17
	>25 years	560	12	213	7	269	6	135	5

Sex	Male	2889	62	1956	64	2537	60	1712	61
	Female	1793	38	1110	36	1726	40	1073	39
	Not reported	4	0	.	.	.	.	.	.
Tier	A					494	12	301	11
	B					3769	88	2484	89
Ethnicity	White	3122	67	2211	72	2630	62	1786	64
	Asian	886	19	523	17	832	20	539	19
	Black	478	10	231	8	561	13	319	11
	Other	134	3	65	2	161	4	97	3
	Not reported	66	1	36	1	79	2	44	2
Risk Group	R1	1624	35	779	25	1044	24	579	21
	R2	1090	23	825	27	947	22	622	22
	R3	1078	23	835	27	1122	26	809	29
	R4	894	19	627	20	1150	27	775	28

\*excluding 31 March – 15 June (for 2019 and 2020)



Table 1.5 – Kidney only transplant demographics

Factor	Level	11 Sep 2015 - 10 Sep 2019*		11 Sep 2019 – 10 Sep 2023*	
		N	%	N	%
Number of transplants		7752		7048	
HLA mismatch	1	813	10	198	3
	2	2784	36	1782	25
	3	3843	50	3518	50
	4	312	4	1549	22
	Missing	.	.	1	0
Highly sensitised	Yes	969	13	1299	18
Sensitisation	0-9	4940	64	4029	57
At tx	10-39	758	10	674	10
	40-59	491	6	460	7
	60-84	612	8	595	8
	85-94	357	5	410	6
	95-99	458	6	599	8
	100	136	2	281	4
Waiting time	<1 year	1981	25	870	12
	1-3 years	3058	39	2796	40
	3-5 years	1686	22	2212	31
	5-7 years	534	7	718	10
	>=7 years	493	6	452	6
Matchability	Easy (1-3)	901	12	2326	33
	Moderate (4-7)	3959	51	2618	37
	Difficult (8-10)	2875	37	2086	30
	Missing	17	0	18	0
Age (years)	<18	223	3	176	2
	18-29	539	7	559	8
	30-39	997	13	863	12
	40-49	1545	20	1096	16
	50-59	2058	27	1901	27
	60-69	1794	23	1718	24
	>=70	596	8	735	10
Blood group	O	3343	43	2972	42
	A	3010	39	2789	40
	B	977	13	925	13
	AB	422	5	362	5
Graft number	1	6549	84	5708	81
	2	1007	13	1146	16
	3	170	2	160	2
	4	24	0	29	0
	5	2	0	5	0
Diabetic	Yes	806	10	933	13
Donor-recipient age difference	<15 years	5282	68	5368	76
	15-25 years	1697	22	1276	18
	>25 years	773	10	404	6
Sex	Male	4845	63	4249	60

	Female	2903	37	2799	40
	Unknown	4	0	.	.
Tier	A			795	11
	B			6253	89
Ethnicity	White	5333	69	4416	63
	Asian	1409	18	1371	19
	Black	709	9	880	12
	Other	199	3	258	4
	Not reported	102	1	123	2
Risk Group	R1	2403	31	1623	23
	R2	1915	25	1569	22
	R3	1913	25	1931	27
	R4	1521	20	1925	27

\*excluding 31 March – 15 June (for 2019 and 2020)

Table 1.6 – Kidney only blood group matching, 11 Sep 2019 – 10 Sep 2023\*

Donor blood group	O		Recipient blood group				AB		TOTAL	
	N	%	N	%	N	%	N	%	N	%
O	2972	90	108	3	204	6	5	0	3289	(47)
A	.	.	2680	95	.	.	150	5	2830	(40)
B	.	.	1	0	721	100	.	.	722	(10)
AB	.	.	.	.	.	.	207	100	207	(3)
<b>TOTAL</b>	<b>2972</b>	<b>42</b>	<b>2789</b>	<b>40</b>	<b>925</b>	<b>13</b>	<b>362</b>	<b>5</b>	<b>7048</b>	<b>(100)</b>

\*excluding 31 March 2020 – 15 June 2020

# **TRANSPLANT WAITING LIST**

Table 2.1 - All patients – demographic summary of the transplant waiting list

Factor	Level	1 Sep 2019 4923		1 Dec 2023 5649	
		N	%	N	%
Number of patients					
Highly sensitised	Yes	1298	26	906	16
Sensitisation At listing	0-9	2509	51	3406	60
	10-39	428	9	561	10
	40-59	288	6	374	7
	60-84	400	8	402	7
	85-94	292	6	214	4
	95-99	406	8	298	5
	100	600	12	394	7
Waiting time	<1 year	1581	32	1752	31
	1-3 years	2151	44	2656	47
	3-5 years	666	14	883	16
	5-7 years	239	5	133	2
	>=7 years	286	6	202	4
	Missing	-	-	23	0
Matchability	Easy (1-3)	1323	27	1918	34
	Moderate (4-7)	1831	37	2694	48
	Difficult (8-10)	1658	34	1037	18
	Missing	111	2	-	-
Age (years)	<18	94	2	115	2
	18-29	293	6	330	6
	30-39	545	11	622	11
	40-49	917	19	1156	20
	50-59	1405	29	1648	29
	60-69	1202	24	1362	24
	>=70	467	9	416	7
Blood group	O	2646	54	2965	52
	A	1198	24	1455	26
	B	970	20	1102	20
	AB	109	2	127	2
Diabetic	Yes	567	12	695	12
Sex	Male	2864	58	3455	61
	Female	2051	42	2176	39
	Unknown	8	0	18	0
Ethnicity	White	3028	62	3332	60
	Asian	1033	21	1174	21
	Black	613	12	695	12
	Other	176	4	190	3
	Not reported	12	0	46	1
	Unknown	56	1	212	4
Risk Group	R1	1206	24	2054	36
	R2	1373	28	1622	29
	R3	1138	23	1152	20
	R4	1093	22	695	12
	Missing	113	2	126	2

# **OFFERING, RETRIEVAL AND ORGAN USE**

Table 3.1 Summary of kidney offers for named recipients made through the 2019 scheme\*

	Total offers		Offer accepted, used		Offer accepted, not used in intended recipient		Offer declined	
	N	% of all offers	N	%	N	%	N	%
Edinburgh	975	4	209	3	152	4	614	5
Glasgow	981	4	318	5	199	5	464	4
Leeds	1212	5	384	6	209	5	619	5
Liverpool	855	4	189	3	182	4	484	4
Manchester	1920	9	532	8	426	10	962	8
Newcastle	812	4	262	4	140	3	410	4
<b>North Region</b>	<b>6755</b>	<b>30</b>	<b>1894</b>	<b>30</b>	<b>1308</b>	<b>31</b>	<b>3553</b>	<b>31</b>
Belfast	247	1	85	1	28	1	134	1
Birmingham	2105	9	501	8	391	9	1213	10
Cambridge	484	2	185	3	103	2	196	2
Coventry	509	2	152	2	112	3	245	2
Leicester	976	4	232	4	154	4	590	5
Nottingham	852	4	179	3	146	3	527	5
Sheffield	619	3	174	3	153	4	292	3
<b>Midlands Region</b>	<b>5792</b>	<b>26</b>	<b>1508</b>	<b>24</b>	<b>1087</b>	<b>26</b>	<b>3197</b>	<b>28</b>
Bristol	708	3	294	5	106	2	308	3
Cardiff	638	3	163	3	129	3	346	3
Oxford	737	3	263	4	201	5	273	2
Plymouth	362	2	132	2	49	1	181	2
Portsmouth	666	3	190	3	143	3	333	3
<b>South West Region</b>	<b>3111</b>	<b>14</b>	<b>1042</b>	<b>16</b>	<b>628</b>	<b>15</b>	<b>1441</b>	<b>12</b>
GOSH	56	0	32	1	10	0	14	0
Guy's	1334	6	385	6	243	6	706	6
St George's	1184	5	324	5	266	6	594	5
The Royal Free	830	4	282	4	141	3	407	4
The Royal London	1434	6	363	6	242	6	829	7
WLRTC	1693	8	507	8	330	8	856	7
<b>London Region</b>	<b>6531</b>	<b>29</b>	<b>1893</b>	<b>30</b>	<b>1232</b>	<b>29</b>	<b>3406</b>	<b>29</b>
<b>TOTAL</b>	<b>22189</b>		<b>6337</b>		<b>4255</b>		<b>11597</b>	

\*excluding 31 March 2020 – 15 June 2020

**Table 3.2 - Reason for decline of kidney offer, 11 September 2019 – 10 September 2023\*, by centre**

	Reason related to -								Total declined offers	
	Centre		Donor		Organ		Recipient		N	% of all offers
	N	%	N	%	N	%	N	%		
Belfast	32	5	26	0	1	0	18	1	77	1
Birmingham	127	20	643	10	34	8	181	7	985	10
Bristol	23	4	120	2	22	5	92	3	257	3
Cambridge	3	0	91	1	4	1	60	2	158	2
Cardiff	13	2	236	4	16	4	51	2	316	3
Coventry	21	3	136	2	5	1	44	2	206	2
Edinburgh	14	2	476	8	22	5	53	2	565	6
GOSH	.	.	10	0	1	0	.	.	11	0
Glasgow	7	1	231	4	15	3	136	5	389	4
Guy's	22	3	348	6	22	5	241	9	633	6
Leeds	18	3	403	6	31	7	96	4	548	5
Leicester	25	4	374	6	33	7	111	4	543	5
Liverpool	13	2	237	4	17	4	138	5	405	4
Manchester	163	25	324	5	48	11	205	8	740	7
Newcastle	11	2	271	4	18	4	68	3	368	4
Nottingham	5	1	366	6	26	6	85	3	482	5
Oxford	40	6	122	2	13	3	58	2	233	2
Plymouth	.	.	126	2	6	1	27	1	159	2
Portsmouth	4	1	218	3	11	2	69	3	302	3
Sheffield	30	5	163	3	19	4	42	2	254	3
St George's	12	2	340	5	26	6	147	5	525	5
The Royal Free	9	1	222	4	12	3	126	5	369	4
The Royal London	29	5	318	5	18	4	348	13	713	7
WLRTC	19	3	430	7	31	7	280	10	760	8
<b>TOTAL</b>	<b>640</b>		<b>6231</b>		<b>451</b>	<b>100</b>	<b>2676</b>		<b>9998</b>	

\*excluding 31 March 2020 – 15 June 2020

Table 3.3 - Reasons for decline of named kidney offers

Reason	11 Sep 2015 – 10 Sep 2019		11 Sep 2019 – 10 Sep 2023*	
	No. of declined offers	% of all declined offers	No. of declined offers	% of all declined offers
Clinical	1	0	3	0
Donor unsuitable - cause of death	40	0	37	0
Donor unsuitable - age	1233	15	734	6
Donor unsuitable - past history	3002	36	3837	33
Donor unsuitable - size	74	1	90	1
Donor unsuitable - virology	233	3	36	0
Donor unsuitable - medical reasons	2	0	5	0
Poor function	1086	13	1348	12
Medication				
Infection	131	2	128	1
Tumour	16	0	12	0
Other disease	3	0	2	0
<b>All donor reasons</b>	<b>5821</b>	<b>69</b>	<b>6232</b>	<b>54</b>
Recipient died	6	0	4	0
Recipient unfit	414	5	511	4
No suitable recipient	16	0	5	0
Recipient unavailable	162	2	158	1
Recipient refused	377	4	411	4
Recipient did not need transplant	397	5	1179	10
Better match required	52	1	322	3
X match positive	84	1	42	0
HLA/ABO type	59	1	43	0
Other recipient	.	.	1	0
<b>All recipient reasons</b>	<b>1567</b>	<b>19</b>	<b>2676</b>	<b>23</b>
Anatomical	126	1	199	2
Poor perfusion	34	0	70	1
Contamination	2	0	10	0
Ischaemia time too long	91	1	117	1
Organ damaged	23	0	53	0
Organ unsuitable	.	.	2	0
<b>All organ reasons</b>	<b>276</b>	<b>3</b>	<b>451</b>	<b>4</b>
Centre criteria not achieved	5	0	3	0
Centre already retrieving/transplanting	96	1	331	3
No beds	18	0	184	2
No time	7	0	8	0
No staff	2	0	7	0
No theatre	1	0	47	0
Distance	.	.	1	0
Other centre reason	7	0	59	1
<b>All centre reasons</b>	<b>136</b>	<b>2</b>	<b>640</b>	<b>6</b>
<b>Other</b>	<b>637</b>	<b>8</b>	<b>1599</b>	<b>14</b>
<b>TOTAL</b>	<b>8437</b>		<b>11598</b>	

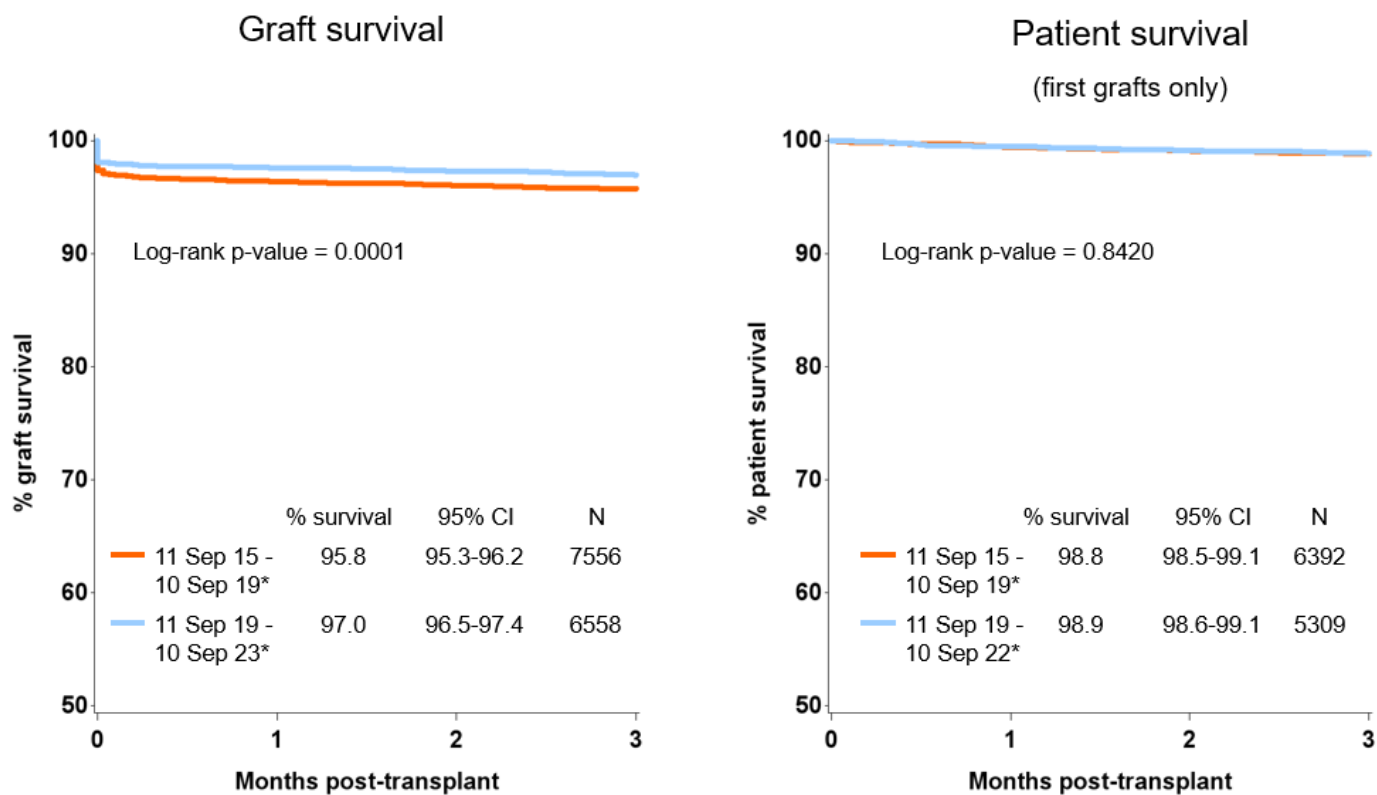
\*excluding 31 March – 15 June (for 2019 and 2020)



# TRANSPLANT OUTCOME

Figure 4.1 - 3-month graft and patient survival after first deceased donor kidney only transplant in the UK

Figure 4.1 All patients – 3 month Graft and patient survival after deceased donor kidney only transplant in the UK

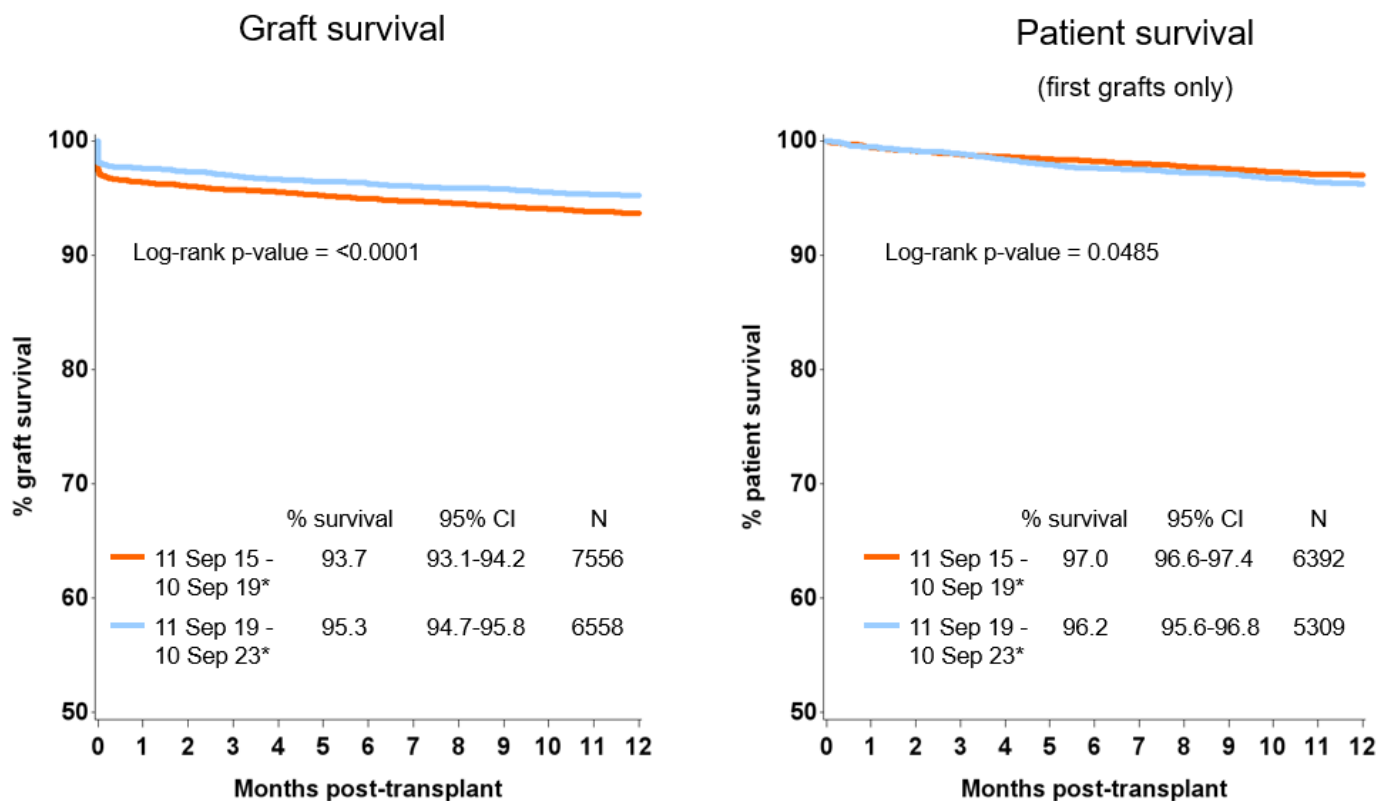


\*excluding 31 March – 15 June (for 2019 and 2020)

\*\*Deaths within 28 days of a positive test for SARS-CoV-2 are removed from analysis of patient survival

Figure 4.2 – 1-year graft and patient survival after first deceased donor kidney only transplant in the UK

Figure 4.2 All patients – 1 year graft and patient survival after deceased donor kidney only transplant in the UK



\*excluding 31 March – 15 June (for 2019 and 2020)

\*\*Deaths within 28 days of a positive test for SARS-CoV-2 are removed from analysis of patient survival