

NHS BLOOD AND TRANSPLANT
KIDNEY ADVISORY GROUP
REVIEW OF KIDNEY FAST TRACK SCHEMES

INTRODUCTION

- 1 On 1 November 2012 and 1 March 2013, the donor after brain death (DBD) and donor after circulatory death (DCD) Kidney Fast Track Schemes (KFTS) were respectively implemented. Both schemes were designed to optimise the utilisation of kidneys available for transplantation through simultaneous offering of previously declined, difficult to place kidneys.
- 2 This paper reviews activity of both KFTS since their introduction. Data were obtained from the UK Transplant Registry on both DBD and DCD donation processes where at least one kidney had been retrieved with the intention of transplantation.
- 3 At June 2021 the current centres enrolled in KFTS:
 - Belfast
 - Cambridge
 - Cardiff
 - Guy's
 - Leeds
 - Leicester
 - Liverpool
 - Manchester
 - Newcastle
 - Oxford
 - Royal Free
 - Royal London

As shown in summary data however, other centres have accepted fast track offers in the past but have since left the schemes.

KEY FINDINGS

ACTIVITY

- 4 **Figure 1** presents a flow diagram indicating activity in both the DBD and DCD schemes combined since their respective start dates. In the time period, 16% of kidneys donated were fast-tracked and of these, 61% (over 1900) went on to be transplanted. This figure has been produced up to and including activity on 31st March 2020 only due to the COVID-19 pandemic impacted transplantation activity in the year 2020/21.
- 5 **Table 1** shows overall activity by financial year and does include 2020/21 data to present change in activity over time. There has been an increase in the overall percentage of kidneys fast tracked since introduction of the schemes, this has risen from 13% to 21% in the most recent financial year 2020/21. Transplantation activity in 2020/21 was greatly impacted by the COVID-19 pandemic with many centres closing and amendments being made to organ selection and offering processes.

- 6 **Table 2** shows demographics and additional detail regarding donors that donated at least one kidney that was offered via the fast track schemes, presented by whether the kidney(s) were subsequently transplanted. Those kidneys that were transplanted were from younger donors and those with a lower UKKDRI. **Table 3** shows the perfusion quality at retrieval of individual fast-tracked kidneys and whether they were subsequently transplanted.

OUTCOMES

- 7 **Figure 2** shows five-year graft and patient survival after adult kidney transplant. There was a statistically significant difference in graft survival ($p=0.002$) for those kidneys that were transplanted through the fast track schemes (82% cf. 86.3%). For five-year patient survival the result was borderline, $p=0.054$ (85.2% cf. 88.3%).
- 8 **Table 4** shows delayed graft function and eGFR at 3- and 12- months, comparing kidneys transplanted through the fast track scheme with those transplanted through the national offering scheme. Kidneys which were placed through the fast-track schemes experienced a lower proportion with immediate function (62% cf. 67%, $p<0.001$, 3 df) and a lower eGFR at 3- and 12-months (44 cf. 48, $p<0.001$, 1 df and 47 cf. 51, $p<0.001$, 1df respectively) when compared with those placed outside the scheme.
- 9 **Table 5** shows a breakdown of the causes of failure of kidneys which were transplanted following fast-track, the most commonly reported cause of failure was 'recipient died, graft was functioning at time of death'.

DISCUSSION

- 10 Activity in both the DBD and DCD kidney fast-track schemes has increased since their introduction. Of those kidneys offered through the fast-track schemes, 61% went on to be transplanted.
- 11 There are differences in outcomes for those kidneys transplanted through the fast-track schemes when compared to those transplanted through the national offering scheme. Most notably a significant difference in five-year graft survival (82% compared with 86.3%, $p=0.002$).
- 12 Analysis into the outcomes of transplanted fast-tracked kidneys was published in 2017. This analysis will be updated with a larger cohort and following the 2019 change to the kidney offering scheme to further investigate outcomes.
- 13 If any centre wishes to opt-in or out of the kidney fast-track schemes, please contact NHSBT ODT Hub Operations.

Figure 1 - Donor Kidneys, combined DBD and DCD figures
(DBD: 1 November 2012 to 31 March 2020, DCD: 1 March 2013 to 31 March 2020)

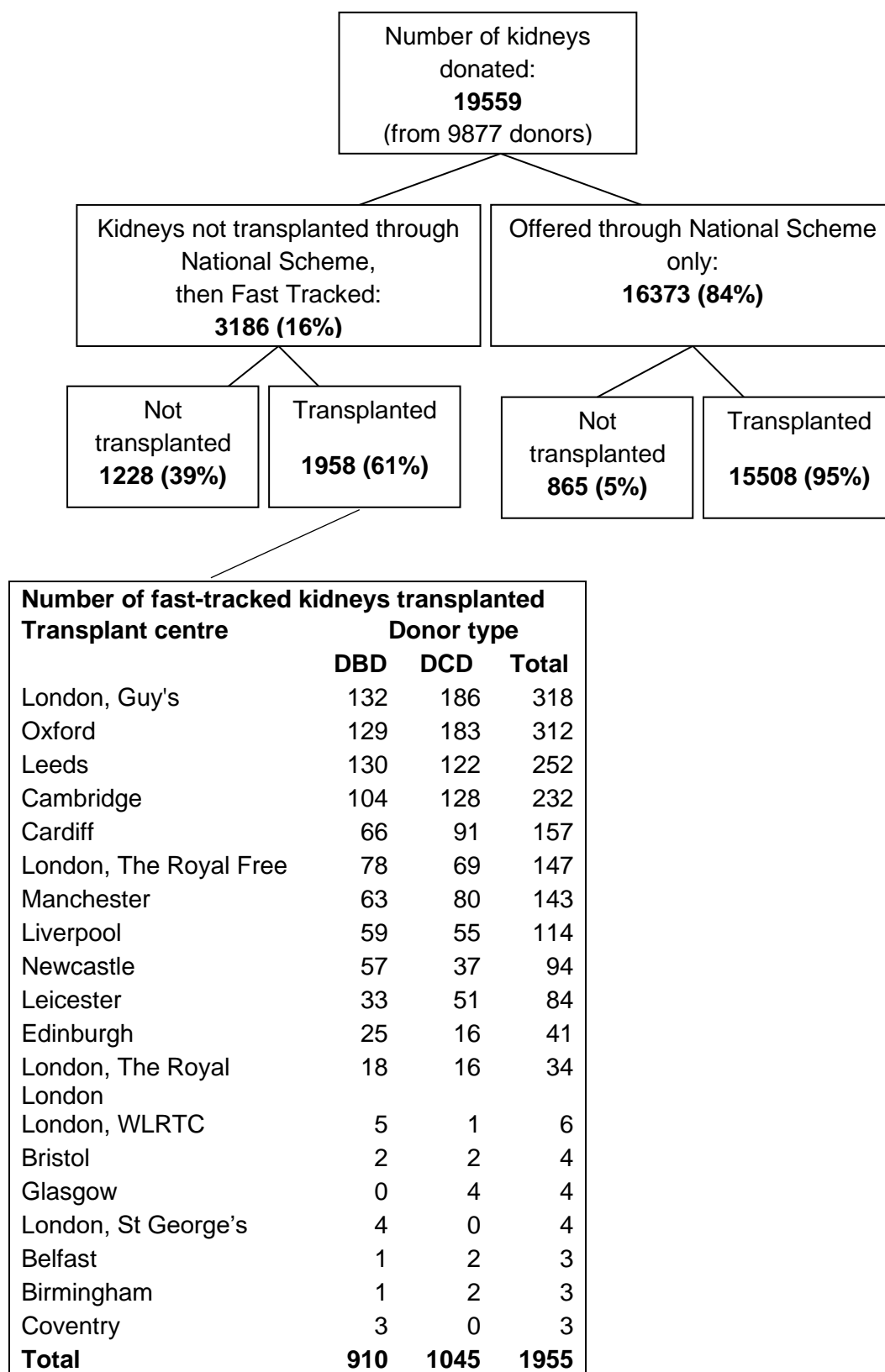


Table 1 – Fast track activity, by financial year, combined DBD and DCD figures								
DBD: 1 November 2012 to 31 March 2021, DCD: 1 March 2013 to 31 March 2021								
Financial year	Number of kidney donors	Number of kidneys donated	Kidneys fast tracked		Fast tracked kidneys - transplanted		Fast tracked kidneys – not transplanted	
			N	%	N	%	N	%
2012/13	367	719	99	14	69	70	30	30
2013/14	1245	2464	282	11	207	73	75	27
2014/15	1202	2375	351	15	226	64	125	36
2015/16	1290	2552	387	15	248	64	139	36
2016/17	1328	2637	419	16	266	63	153	37
2017/18	1473	2904	485	17	307	63	178	37
2018/19	1507	2981	590	20	323	55	267	45
2019/20	1481	2926	572	20	312	55	260	45
2020/21	1106	2174	462	21	302	65	160	35

Table 2 - Demographics for donors that donated at least one kidney to the fast-track scheme, by whether the fast-tracked kidney(s) was transplanted or not. N and % are presented, unless specified DBD: 1 November 2012 to 31 March 2020, DCD: 1 March 2013 to 31 March 2020

Demographic		Was the fast-tracked kidney transplanted?			
		No		Yes	
		N	%	N	%
Donor type	DBD	481	52	681	48
	DCD	449	48	739	52
Donor age	Median (IQR)	62	(51-70)	55	(44-66)
Donor cause of death	CVA	568	61	673	47
	Miscellaneous	336	36	688	48
	RTA	9	1	31	2
	Other trauma	17	2	28	2
Donor sex	Male	556	60	823	58
	Female	374	40	597	42
Donor ethnicity	White	863	93	1322	93
	BAME	58	6	90	6
	Unknown	9	1	8	1
Donor CMV status	Negative	413	44	670	47
	Positive	515	55	738	52
	Indeterminate	1	0	9	1
	Not tested	1	0	3	0
Donor past history of hypertension?	No	489	53	896	63
	Yes	422	45	510	36
	Unknown	19	2	14	1
Donor past history of alcohol abuse?	No	209	22	380	27
	Yes	43	5	91	6
	Unknown	678	73	949	67
Donor past cardio disease?	No	699	75	1147	81
	Yes	209	22	238	17
	Unknown	22	2	35	2
Donor past diabetes?	No	806	87	1248	88
	Yes	111	12	158	11
	Unknown	13	1	14	1
Donor past drug abuse?	No	823	88	1147	81
	Yes	89	10	244	17
	Unknown	18	2	29	2
Donor past tumour?	No	865	93	1312	92
	Yes	50	5	91	6
	Unknown	15	2	17	1
Donor UKKDRI	<1.08	223	24	570	40
	1.08-<1.50	224	24	316	22
	1.50-<1.93	212	23	250	18
	≥1.93	230	25	242	17
	Unknown	41	4	42	3
	Median (IQR)	1.5	(1.08-1.93)	1.34	(1-1.63)

Table 3 – Perfusion quality of kidneys donated via the fast-track scheme, by whether the kidney was transplanted or not

		Was the kidney transplanted?			
		No		Yes	
Perfusion quality	Good	N	%	N	%
	Fair	644	51	1043	53
	Poor/Patchy	107	8	127	6
	Unknown	103	8	82	4
		405	32	706	36

Figure 2 - Adult kidney transplants survival, DBD and DCD combined

DBD: 1 November 2012 to 31 March 2016, DCD: 1 March 2013 to 31 March 2016

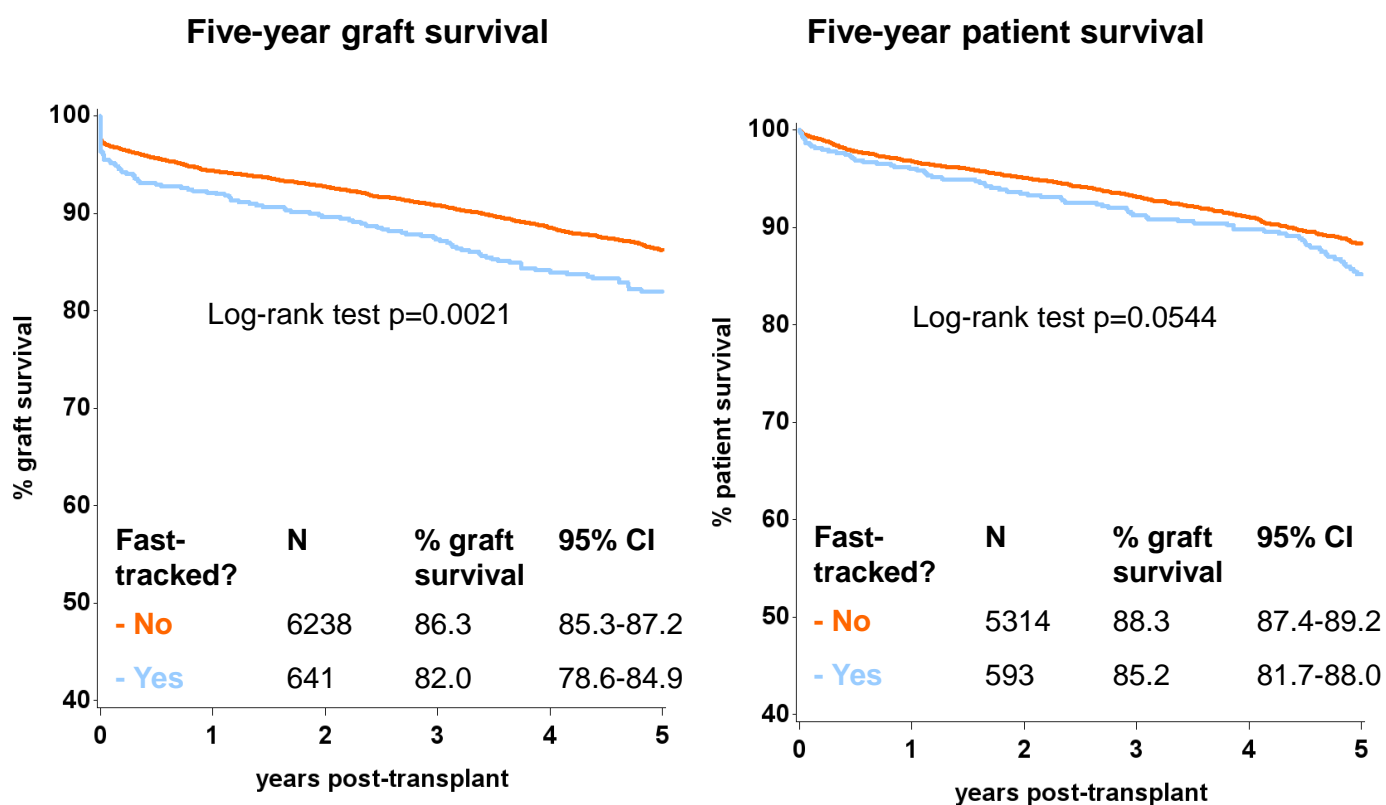


Table 4 - Recipient outcomes measures, by whether the kidney was offered through the KFTS**DBD: 1 November 2012 to 31 March 2020, DCD: 1 March 2013 to 31 March 2020**

Variable	Was the kidney placed into the KFTS?		p-value	
	No	Yes		
DGF	N	14824	1788	<0.001
	Immediate	9969 (67%)	1103 (62%)	
	Delayed	2858 (19%)	477 (27%)	
	PNF	352 (2%)	36 (2%)	
	Unknown	1645 (11%)	172 (10%)	
Recipient eGFR at 3 months	N	12279	1460	<0.001
	Median	48	44	
	IQR	36-63	32-57	
	Range	5-185	6-137	
Recipient eGFR at 12 months	N	11749	1401	<0.001
	Median	51	47	
	IQR	38-66	35-61	
	Range	5-191	6-146	

IQR: Interquartile range, Range: Minimum and maximum values reported

A Chi squared test was used to test for differences in DGF for the KFTS indicator.

A Mann-Whitney test was used to test for differences in eGFR at 3 and 12 months and the KFTS indicator.

Table 5 – Cause of failure for those kidneys which were offered through the KFTS, where transplanted and failed**DBD: 1 November 2012 to 31 March 2020, DCD: 1 March 2013 to 31 March 2020**

Cause of failure	Donor type		
	DCD	DBD	Total
Recipient died; graft was functioning at time of death	54	50	104
Other	36	25	61
Rejection while taking immunosuppressive drug(s)	29	14	43
Non-viable kidney	10	4	14
Vascular or ureteric operative problems (excluding vascular thrombosis)	7	4	11
Recurrent primary renal disease	2	5	7
Vascular (arterial or venous) thrombosis	3	4	7
Removal of functioning graft	1	1	2
Hyperacute rejection	0	1	1
Infection of graft	1	0	1
Total	143	108	251