

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

KIDNEY ADVISORY GROUP

TIMING OF CROSSMATCH RESULTS

INTRODUCTION

- 1 Deceased donor renal transplantation relies on pre transplant crossmatch (antibody compatibility assessment) to proceed.
- 2 In March 2019, a working group set out guidance on the crossmatching for kidney transplantation from deceased donors. The aim to have a crossmatch result prior to the organ(s) arriving at the transplant centre was agreed.
- 3 Data on the timing of arrival of the organ and the timing of the crossmatch result are required to assess how often the crossmatch result is available when the kidney arrives, but NHSBT does not routinely collect either of these data items. Following agreement by KAG in November 2020 to monitor this for a 3-month period, a working group was set up to identify how this information could be collected.

BACKGROUND

- 4 The crossmatch is a checkpoint test required for a decision to proceed to transplantation: without this result the patient should not be anaesthetised. Early crossmatch reporting can shorten cold ischaemia times, particularly in the event of reallocation. In the case of a positive crossmatch result that vetoes the transplant (around 20 cases pa), the early reporting allows testing of a backup recipient without significantly compromising the integrity of the donor organ (in the primary accepting unit) or timely transfer of the organ to another centre for transplantation into an alternative recipient (the secondary accepting unit). The H&I laboratories met and agreed that this could be achieved by the use of Virtual Crossmatching or the use of Peripheral Blood (as opposed to Spleen), which could be sent in advance, if a laboratory crossmatch was required.

DATA

- 5 Time of arrival of the organ can be extracted from transport data.
- 6 A new field was added to the paper version of the kidney transplant record form to record the time crossmatch results are received. Currently, all but 3 centres return this information on paper. The time that crossmatch results are received is a temporary field in place for this analysis and is recorded by OTDT Hub Information Services onto a spreadsheet.
- 7 Data were obtained from the UK Transplant Registry, linked with crossmatch result times and organ arrival times.

- 8 There were 1458 deceased donor renal transplants between 10th January 2022 and 30th August 2022. 8 transplants were excluded from the analysis due to ambiguity of arrival time order.

RESULTS

- 9 **Table 1** shows the completeness of crossmatch result and kidney arrival times for 1450 deceased donor kidney transplants between 10th January 2022 and 30th August 2022.

Table 1 Completeness of crossmatch result and kidney arrival time data

	Transplants (%)
Both crossmatch result arrival time and kidney arrival time provided	702 (48%)
No kidney arrival time, crossmatch result arrival time provided ¹	19 (1%)
No crossmatch result arrival time, kidney arrival time provided ²	703 (49%)
Both crossmatch result arrival time and kidney arrival time missing ³	26 (2%)
	1450 (100%)

¹ 18 on-site retrievals, 1 transplant with no arrival data

² 568 transplants with no crossmatch result data, 59 reported but date/time missing, 74 date reported but time missing, 2 time reported but date missing

³ All on site-retrievals: 24 transplants with no crossmatch result data, 1 reported but date/time missing, 1 date reported but time missing

- 10 **Table 2** shows the order of arrival of the crossmatch result and the kidney for the 702 deceased donor renal transplants where both times were available. For 514 transplants, the crossmatch result arrived before the kidney arrived at the transplanting centre, with a median time difference of 461.5 minutes between the arrivals. Where the kidney arrived before the crossmatch result, the median time for the crossmatch result to arrive post kidney arrival was 225 minutes.

- 11 Over this time period there were 31 cases where an offer was accepted but not used due to a positive crossmatch.

Table 2 Order of times for the 702 deceased donor kidney transplants between 10th January 2022 and 30th August 2022 with complete data

	Transplants (%)	Median time between arrival of results in minutes (IQR)
Crossmatch result arrived before kidney	514 (73%)	461.5 (228,785)
Kidney arrived before crossmatch result	187 (27%)	225 (121,470)
Kidney and crossmatch result arrived at the same time	1 (0%)	
	702 (100%)	

SUMMARY

- 12 The timing of crossmatch results in relation to arrival of the kidney has been analysed for transplants between 10 January and 30 August 2022, using additional data collected for this study and linked with the National Transplant Database.
- 13 Crossmatch result and kidney arrival data was complete for 702 of the 1451 deceased donor renal transplants analysed. Of the 702 transplants with complete data, 514 (73%) crossmatch results were received before the kidney arrived at the transplanting centre.

ACTION

- 14 Members are asked to consider whether data should continue to be collected for this analysis for a further 6 month period.

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Table A Timing of crossmatch results, 10th January 2022- 30th August 2022, by centre						
	Transplants	Crossmatch data incomplete	Kidney arrival data incomplete	Complete data	Crossmatch result arrived before kidney	Crossmatch result arrived after kidney
Belfast	34	2 (6%)	1 (3%)	31	25 (81%)	6 (19%)
Newcastle	53	53 (100%)	1 (2%)	0		
Leeds	67	24 (36%)	3 (4%)	41	20 (49%)	21 (51%)
Leicester	44	8 (18%)	0 (0%)	36	26 (72%)	10 (28%)
Nottingham	32	3 (9%)	0 (0%)	29	24 (83%)	5 (17%)
Sheffield	29	5 (17%)	1 (3%)	24	15 (63%)	9 (38%)
Cambridge	103	103 (100%)	13 (13%)	0		
London, The Royal Free	62	54 (87%)	0 (0%)	8	4 (50%)	4 (50%)
London, The Royal London	68	61 (90%)	1 (1%)	7	2 (29%)	5 (71%)
London, Guy's	115	34 (30%)	1 (1%)	80	65 (81%)	14 (18%)
London, St George's	73	10 (14%)	6 (8%)	57	49 (86%)	8 (14%)
Portsmouth	45	45 (100%)	0 (0%)	0		
Oxford	96	34 (35%)	1 (1%)	62	51 (82%)	11 (18%)
Bristol	54	4 (7%)	3 (6%)	47	40 (85%)	7 (15%)
Plymouth	26	0 (0%)	0 (0%)	26	20 (77%)	6 (23%)
Birmingham	100	92 (92%)	6 (6%)	8	7 (88%)	1 (13%)
Coventry	17	8 (47%)	0 (0%)	9	4 (44%)	5 (56%)
Liverpool	44	44 (100%)	0 (0%)	0		
Manchester	125	15 (12%)	2 (2%)	108	66 (61%)	42 (39%)
Glasgow	51	49 (96%)	1 (2%)	2	. (%)	2 (100%)
Edinburgh	40	23 (58%)	0 (0%)	17	16 (94%)	1 (6%)
London, Great Ormond Street	5	4 (80%)	0 (0%)	1	1 (100%)	. (%)
London, WLRTC	120	52 (43%)	1 (1%)	68	46 (68%)	22 (32%)
Cardiff	47	2 (4%)	4 (9%)	41	33 (80%)	8 (20%)
Total	1450	729 (50%)	45 (3%)	702	514 (73%)	187 (27%)