NHS BLOOD AND TRANSPLANT

PAEDIATRIC SUB GROUP OF THE KIDNEY ADVISORY GROUP

AUDITING THE USE OF NON-FAVOURABLY HLA-MISMATCHED GRAFTS IN PAEDIATRIC PATIENTS

1 Children with end stage renal disease are often likely to require more than one kidney transplant throughout their lifetime. It is therefore particularly important to minimise their exposure to foreign HLA through transplantation. Since July 2001 it has been recommended that children who are defined as 'easy to HLA match' (i.e. having a matchability score of 5 or less) should not receive kidneys from non-favourably HLA-mismatched donors within their first year of listing.

2 **Table 1** lists all paediatric non-favourably HLA-mismatched kidney transplants performed in the UK between 11 September 2019 – 31 March 2024. In 28 cases, the child had waited for more than 365 days prior to transplant and therefore are compliant with the recommendation. In 2 cases the wait time was less than 365 days.

Table 1 **Non-favourably HLA-mismatched kidney transplants in paediatric patients 11 September 2019 to 31 March 2024**

Transplant date	Age (years) Recip	Donor	Match points	Match grade	Waiting time	Time on dialysis	Donor type	Kidneys grafted	Compliant?
September 2019	17	18	3	210	377	377	DCD	Kidney	Yes
January 2020	9	24	5	210	415	0	DBD	Kidney	Yes
August 2020	16	31	1	101	737	737	DBD	Kidney	Yes
August 2020	17	19	1	200	732	.	DBD	Kidney	Yes
August 2020	13	2	5	211	772	.	DBD	En-bloc kidney	Yes
August 2020	16	18	2	201	915	915	DBD	Kidney	Yes
August 2020	17	25	2	101	870	867	DCD	Kidney	Yes
December 2020	11	18	5	200	1401	1401	DBD	Kidney	Yes
January 2021	3	38	1	101	613	608	DBD	Kidney	Yes
January 2021	17	40	1	001	233	231	DCD	Kidney	No
June 2021	10	41	2	210	671	669	DBD	Kidney	Yes
October 2021	17	34	3	101	1346	1344	DCD	Kidney	Yes
October 2021	11	2	4	210	426	.	DBD	En-bloc kidney	Yes
October 2021	17	26	3	101	301	299	DBD	Kidney	No
January 2022	13	33	3	210	590	590	DCD	Kidney	Yes
February 2022	15	36	1	101	455	.	DCD	Kidney	Yes
April 2022	10	51	4	001	2033	2031	DBD	Kidney	Yes
June 2022	9	43	4	101	2297	1929	DBD	Kidney	Yes
July 2022	16	38	3	111	592	256	DCD	Kidney	Yes
July 2022	16	36	3	201	1625	1624	DBD	Kidney	Yes
November 2022	12	33	3	101	1210	1209	DCD	Kidney	Yes
December 2022	13	13	3	210	734	.	DBD	Kidney	Yes
January 2023	13	5	3	001	1599	.	DBD	Kidney	Yes
February 2023	17	43	4	210	773	.	DBD	Kidney	Yes
March 2023	17	20	1	210	593	171	DBD	Kidney	Yes
March 2023	16	29	3	101	1322	1317	DBD	Kidney	Yes
July 2023	9	23	1	021	3371	3371	DBD	Kidney	Yes
January 2024	15	20	4	210	710	.	DBD	Kidney	Yes
February 2024	15	1	2	111	515	514	DCD	En-bloc kidney	Yes
February 2024	12	36	2	101	1444	1443	DBD	Kidney	Yes

3 For reference the following information has been extracted from the recipient registration form and details how the HLA mismatch grade is defined for patients listed on the kidney transplant waiting list:

For each of the A, B and DR loci, the greatest extent of mismatching that is acceptable for this recipient should be indicated. The asterisk character may be used to combine loci. The total box is the sum of the asterisks only and is therefore left blank when no asterisk characters are used.

Enter the greatest extent of mismatching acceptable for this recipient (enter 222 if no limit is to be set)

A	B	DR		Total (* only)
			=	

Mismatch example 1
Two mismatches are allowed at each of the A and B loci but no more than one mismatch is allowed at the DR locus. Note: no asterisk characters are used, so the total box is left blank.

A	B	DR		Total (* only)
2	**2**	**1**	=	

Mismatch example 2
Again, no more than one mismatch is allowed at the DR locus but in this example no more than three mismatches over the A&B loci combined will be acceptable. Note: the total box is to be completed only when the asterisk is used to combine loci.

A	B	DR		Total (* only)
*	*	**1**	=	**3**

4 **Table 2a and 2b** show a summary of mismatch grades for all patients aged under 18 on the kidney transplant waiting list as at 22 April 2024. **Table 2a** shows the mismatch grades of the patients at the time of registration, whereas **Table 2b** shows their current mismatch grades. Further details are provided in **Table 3** for those who are currently listed for a 221 and 222 mismatched transplant.

Table 2a **Match grades at listing for all paediatric patients on the kidney transplant waiting list, as at 22 April 2024**

Transplant centre	**Match grade (at registration)**														**All**
	****02**		****13**		**110**		**121**		**020**		**221**		**222**		
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
Newcastle	-	-	-	-	-	-	-	-	1	100	-	-	-	-	**1**
Leeds	-	-	-	-	9	90	-	-	-	-	-	-	1	10	**10**
Nottingham	17	100	-	-	-	-	-	-	-	-	-	-	-	-	**17**
Evelina	12	100	-	-	-	-	-	-	-	-	-	-	-	-	**12**
Bristol	1	17	-	-	5	83	-	-	-	-	-	-	-	-	**6**
Birmingham	17	94	1	6	-	-	-	-	-	-	-	-	-	-	**18**
Manchester	18	90	1	5	-	-	-	-	-	-	-	-	1	5	**20**
Glasgow	-	-	-	-	4	80	1	20	-	-	-	-	-	-	**5**
GOSH	-	-	1	5	18	95	-	-	-	-	-	-	-	-	**19**
Adult	1	33	-	-	-	-	-	-	-	-	1	33	1	33	**3**
All	**66**	**59**	**3**	**3**	**36**	**32**	**1**	**1**	**1**	**1**	**1**	**1**	**3**	**3**	**111**

Table 2b **Current match grades for all paediatric patients on the kidney transplant waiting list, as at 22 April 2024**

Transplant centre	Match grade (as at 22 April 2024)																						All
	***3		**02		**03		**12		**13		110		111		020		211		221		222		
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Newcastle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	100	-	-	-	-	-	-	**1**
Leeds	1	10	-	-	1	10	-	-	-	-	3	30	-	-	-	-	-	-	3	30	2	20	**10**
Nottingham	-	-	13	76	1	6	-	-	-	-	-	-	-	-	-	-	-	-	3	18	-	-	**17**
Evelina	-	-	3	25	-	-	-	-	7	58	-	-	-	-	-	-	-	-	1	8	1	8	**12**
Bristol	-	-	-	-	-	-	-	-	2	33	3	50	1	17	-	-	-	-	-	-	-	-	**6**
Birmingham	-	-	10	56	1	6	-	-	6	33	-	-	-	-	-	-	1	6	-	-	-	-	**18**
Manchester	-	-	9	45	-	-	4	20	3	15	-	-	-	-	-	-	-	-	2	10	2	10	**20**
Glasgow	-	-	-	-	-	-	-	-	-	-	1	20	2	40	-	-	-	-	1	20	1	20	**5**
GOSH	-	-	-	-	-	-	-	-	11	58	8	42	-	-	-	-	-	-	-	-	-	-	**19**
Adult centres	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	33	2	67	**3**
All	**1**	**1**	**35**	**32**	**3**	**3**	**4**	**4**	**29**	**26**	**15**	**14**	**3**	**3**	**1**	**1**	**1**	**1**	**11**	**10**	**8**	**7**	**111**

Table 3 **Further patient details of those who are currently listed for 221 and 222 mismatched transplant, as at 22 April 2024**

Transplant centre	Match grade	Days active	Sensitisation	Recipient age	Recipient blood group	Matchability score
Leeds	221	1665	14	11	O	6
Leeds	221	945	0	15	O	9
Leeds	221	818	34	5	O	9
Leeds	222	1448	100	11	O	10
Leeds	222	802	43	14	O	9
Leicester	222	1690	20	17	B	7
Nottingham	221	1344	0	17	O	7
Nottingham	221	466	34	14	O	7
Nottingham	221	1231	0	12	B	8
Evelina	221	860	0	17	O	7
Evelina	222	551	0	6	B	4
Oxford	221	234	18	17	O	5
Manchester	221	1421	99	15	A	9
Manchester	221	1176	98	4	A	9
Manchester	222	402	32	17	A	3
Manchester	222	832	16	17	B	8
Glasgow	221	1052	0	9	O	8
Glasgow	222	644	42	5	O	8
WLRTC	222	903	34	17	A	7

SUMMARY

5 There have been 4 additional non-favourably HLA-mismatched kidney transplants in paediatric patients since the last iteration of this paper, however all these patients had waited more than 365 days.

6 At registration, majority of patients were listed with a HLA-mismatch grade of **02 or 110. Over the course of patients' time on the list, HLA-mismatch grades were relaxed to also include more patients listed with **13, 221 and 222 mismatch grades.

Sam Richards
Statistics and Clinical Research **May 2024**