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. Non-favourable mismatch grades are defined as all grades excluding 000, 100, 010 and 110.

2 With the intention of moving away from the terminology "favourable" and "non-favourable" mismatch grades, the HLA mismatch levels have been presented alongside the match grades in table 1. For the purpose of this paper, HLA mismatch group Level 2 has been split into two subgroups, separating those with/without a DR mismatch.

Table A HLA mismatch groups

Level	HLA mismatch summary	HLA mismatch combinations included
1	000	000
2a	[0 DR and 0/1 B]	100, 010, 110, 200, 210
2b	[1 DR and 0 B]	001, 101, 201
3	[0 DR and 2 B] or [1 DR and 1 B]	020, 120, 220, 011, 111, 211
4	[1 DR and 2 B] or [2 DR]	021, 121, 221, 002, 102, 202, 012, 112, 212, 022, 122, 222

3 **Table 1** lists all paediatric non-favourably HLA-mismatched kidney transplants performed in the UK between 1 April 2023 – 31 March 2025. In 9 of the 10 cases, the child had waited for more than 365 days prior to transplant and therefore are compliant with the recommendation. In one case the wait time was 298 days.

Table 1 Non-favourably HLA-mismatched kidney transplants in paediatric patients 1 April 2023 to 31 March 2025

Transplant date	Age (years) Recip	Donor	Match points	HLA mismatch level	Match grade	Waiting time	Time on dialysis	Donor type	Kidneys grafted	Compliant ?
July 2023	9	23	1	4	021	3371	3371	DBD	Kidney	Yes
January 2024	15	20	4	2a	210	710	.	DBD	Kidney	Yes
February 2024	15	1	2	3	111	515	514	DCD	En-bloc kidney	Yes
February 2024	12	36	2	2b	101	1444	1443	DBD	Kidney	Yes
July 2024	10	25	2	2b	101	613	466	DBD	Kidney	Yes
August 2024	17	16	2	3	111	298	295	DCD	Kidney	No
September 2024	16	31	4	3	211	2317	2315	DCD	Kidney	Yes
January 2025	17	29	4	2a	200	600	599	DCD	Kidney	Yes
January 2025	17	22	5	3	011	1479	1478	DBD	Kidney	Yes
February 2025	13	45	5	2a	210	806	805	DBD	Kidney	Yes

4 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**

5 **Table 2a and 2b** show a summary of mismatch grades for all patients aged under 18 on the kidney transplant waiting list as at 8 April 2025. **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 **Mismatch grades at listing for all paediatric patients on the kidney transplant waiting list, as at 8 April 2025**

	Mismatch grade (at registration)														
Transplant centre	****02**		****03**		****13**		**110**		**020**		**221**		**222**		**All**
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
Belfast	-	-	-		1	100									**1**
Newcastle	-	-	-	-	-	-	-	-	6	100	-	-	-	-	**6**
Leeds	6	40	1	7	-	-	7	47	-	-	-	-	1	7	15
Nottingham	21	100	-	-	-	-	-	-	-	-	-	-	-	-	**21**
Evelina	13	81	-	-	3	19	-	-	-	-	-	-	-	-	**12**
Bristol	-	-	-	-	-	-	6	100	-	-	-	-	-	-	**6**
Birmingham	22	96	-	-	-	-	-	-	-	-	-	-	1	4	**23**
Manchester	21	91	-	-	-	-	-	-	-	-	1	4	1	4	**23**
Glasgow	-	-	-	-	-	-	3	100	-	-	-	-	-	-	**3**
GOSH	-	-	-	-	5	22	18	78	-	-	-	-	-	-	**23**
Adult	1	33	-	-	1	25	-	-	-	-	-	-	3	75	**4**
All	**83**	**59**	**1**	**1**	**10**	**7**	**34**	**24**	**6**	**4**	**1**	**1**	**6**	**4**	**141**

Table 2b **Current mismatch grades for all paediatric patients on the kidney transplant waiting list, as at 8 April 2025**

Transplant centre	Mismatch grade (as at 8 April 2025)																								All
	***3		**02		**03		**12		**13		000		110		111		020		211		221		222		
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Belfast	-	-	-	-	-	-	-	-	1	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Newcastle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	100	-	-	-	-	-	-	**6**
Leeds	5	33	1	7	-	-	-	-	-	-	1	7	-	-	-	-	-	-	1	7	1	7	6	40	**15**
Nottingham	-	-	17	81	1	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	14	-	-	**21**
Evelina	-	-	4	25	-	-	-	-	10	63	-	-	-	-	-	-	-	-	-	-	1	6	1	6	**16**
Bristol	-	-	-	-	-	-	-	-	-	-	-	-	1	17	2	33	-	-	-	-	2	33	1	17	**6**
Birmingham	-	-	8	35	6	26	1	4	7	30	-	-	-	-	-	-	-	-	-	-	-	-	1	4	**23**
Manchester	2	9	14	61	-	-	2	9	-	-	-	-	-	-	-	-	-	-	-	-	4	17	1	4	**23**
Glasgow	-	-	-	-	-	-	-	-	-	-	-	-	2	67	-	-	-	-	-	-	-	-	1	33	**3**
GOSH	-	-	-	-	-	-	-	-	21	91	-	-	2	9	-	-	-	-	-	-	-	-	-	-	**23**
Adult centres	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	100	**4**
All	**7**	**5**	**44**	**31**	**7**	**5**	**3**	**2**	**39**	**28**	**1**	**1**	**5**	**4**	**2**	**1**	**6**	**4**	**1**	**1**	**11**	**8**	**15**	**11**	**141**

Table 3 **Further patient details of those who are currently listed for 221 and 222 mismatched transplant, as at 8 April 2025**

Transplant centre	Match grade	Waiting time	Sensitisation	Recipient age	Recipient blood group	Matchability score
Leeds	221	491	0	17	O	2
Leeds	222	1800	100	12	O	10
Leeds	222	2017	14	12	O	6
Leeds	222	1154	43	15	O	9
Leeds	222	902	66	16	A	9
Leeds	222	875	44	10	A	9
Leeds	222	460	17	16	A	9
Leicester	222	210	0	17	O	6
Nottingham	221	818	34	15	O	7
Nottingham	221	846	0	8	A	3
Nottingham	221	1583	0	13	B	8
Cambridge	222	152	0	17	O	9
The Royal London	222	207	0	17	B	1
Guy's	221	1925	0	6	B	5
Guy's	222	903	1	7	B	4
Bristol	221	1976	0	9	B	6
Bristol	221	1461	24	6	B	9
Bristol	222	849	95	17	O	9
Birmingham	222	75	0	17	A	4
Manchester	221	539	19	11	O	7
Manchester	221	1773	99	16	A	9
Manchester	221	1528	99	5	A	9
Manchester	221	63	0	17	B	9
Manchester	222	936	67	17	O	2
Glasgow	222	981	27	9	O	9
Edinburgh	222	292	0	17	O	3

SUMMARY

6 There have been 6 non-favourably HLA-mismatched kidney transplants in paediatric patients in the 2024 financial year; one patient a waiting time of 298 days at point of transplant whilst the other five had waited more than 365 days. The patient waiting less than a year was listed at an adult centre.

7 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.

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