Objective

Describes the process for the reporting of deceased donor HLA types to NHSBT-Organ Donation and Transplantation

Changes in this version

Authorisation to initiate the allocation process when a correct but unusual antigen association has been identified must be made in writing (email). Job title of ODT Hub – Operations staff updated.

Roles

- **OASs** to enter the HLA type onto NTxD and report any consistency failure to the submitting laboratory
- **H&I scientist(s)** to resolve any HLA consistency failure and provide the OAS with further instruction as necessary

Restrictions

- N/A

Items Required

- N/A

Instructions

1. Procedure for reporting of donor offer HLA type (donor laboratory)

- Complete **FRM4365** HLA Report
- Ensure that the current version of this report form is used.
- In-house generated report forms may be used, but must mimic the format and content of **FRM4365** exactly

1.1. Enter identification and contact details of the laboratory submitting the HLA type.

1.2 Enter the HLA type:

The type must be reported in compliance with the minimum typing resolution requirements (**DAT2885**: Minimum Typing Requirements for Reporting Donor and Recipient Types).

- The type should be reported using molecular nomenclature although serological nomenclature may also be included.
- The database will automatically 'map' alleles to the antigens used in the organ allocation process
- Ensure that serological nomenclature (if reported) is entered into the 'HLA broad' and/or 'HLA split specificity' boxes and molecular nomenclature is reported in the 'HLA allele(s)' boxes.
- Ensure that valid WHO nomenclature is used for all HLA loci.

1.3 Indicate that the type is an 'OFFER TYPE' by ticking the 'Donor Centre: offer type' box. This is essential in order to alert ODT Hub Operations that this type is to be used in the organ allocation process.

⚠ Caution

Do not tick the 'revised type' or 'retype' boxes when submitting an offer type.

1.4 Enter date and time

1.5 Enter method(s) of typing technique used either by using the tick boxes or by entering as text into the 'Comments' box.

1.6 Note any information that may be useful for other laboratories in the 'Comments' box, including HLA-DPA and DQA type if known.

⚠ Advice

Information given in this area is not entered onto the database, recorded by the OASs or considered in the organ allocation process.

1.7 Enter ODT donor identification number, if known

1.8 Click on 'Make Read Only' and 'Submit Form'. The form will automatically be emailed to the ODTHub Operations Mailbox odthub.operations@nhsbt.nhs.uk. The form may also be faxed to ODT Hub Operations but laboratories are requested to send the form using secure email wherever possible.

1.9 ***The H&I scientist must then telephone ODT Hub Operations to confirm that the email or fax has been received.***

1.10 ***If the OAS has not contacted the laboratory to report a failure of the automated consistency checks on the HLA type, twenty minutes following submission of the HLA report form, the donor laboratory H&I scientist must telephone ODT Hub Operations to confirm that the HLA type has successfully passed the consistency checking procedure and the organ allocation process has been initiated.***

HLA Type Automated CONSISTENCY CHECKING Process

The automated process checks consistency according to the following 6 rules:

Rule 1: There is consistency between HLA broad/split antigens/alleles.

(Example 1, Appendix 1)

Valid WHO nomenclature is used

(Example 2, Appendix 1)

If there is inconsistency between broad antigens/ split antigens/ alleles or invalid WHO nomenclature is used the HLA type cannot be entered into the database.

Rule 2: No more than 2 antigens/alleles can be reported at a single locus

If more than 2 antigens or alleles are reported at a single locus, the HLA type cannot be entered into the database.

Action:

- ODT Hub Operations contacts the laboratory that issued the donor HLA type and requests that the type is reviewed so that it can be entered into the database
- The laboratory resolves the error and submits the revised HLA type to ODT
- following the process described in Section II for submission of revised types.
- ***If the laboratory H&I scientist is unable to resolve the error, the scientist will then contact their own Head of Laboratory (or designated deputy) for advice and resolution.***
- The laboratory will submit the revised HLA type to ODT following the process described in Section 2 for submission of revised types and ***confirm that the organ allocation process has been successfully initiated.***

Rule 3. Bw4/Bw6 antigen associations must be consistent with HLA B locus antigens/alleles

Unsuccessful consistency checking according to rule 3 generates the following error message:

The reported HLA type displays an unlikely Bw4/Bw6 association with reported B locus antigens. Please check HLA type.

(Example 3, Appendix 1)

Rule 4. DR51/51N/52/53/53N antigen associations must be consistent with HLA-DR locus antigens/alleles

Unsuccessful consistency checking according to rule 4 generates the following error message:

The reported HLA type displays an unlikely DR51/52/53 or DRB3/4*/5* association with reported DR locus antigens. Please check HLA type.*

(Example 4, Appendix 1)

Rule 5. DRB3/4/5 allele associations must be consistent with HLA-DR locus antigens/alleles and DR51/51N/52/53/53N antigens.

Unsuccessful consistency checking according to rule 5 generates the following error message:

The reported HLA type displays an unlikely DR51/52/53 or DRB3/4*/5* association with reported DR locus antigens. Please check HLA type.*

(Examples 5, 6,7 Appendix 1)

Rule 6. At least one specificity must be reported at the HLA- A, B, C, DRB1 and DQB1 loci

Unsuccessful consistency checking according to rule 6 generates the following error message:

At least one allele/antigen must be declared at the HLA-…. locus

Unsuccessful consistency checking according to rules 3, 4, 5 or 6:

Action:

- ODT Hub Operations contacts the laboratory that issued the donor HLA type and requests that the type is reviewed.
- The laboratory resolves the error and submits the revised HLA type to ODT following the process described in Section II for submission of revised types.
- ***If the laboratory H&I scientist is unable to resolve the error, the scientist will then contact their own Head of Laboratory (or designated deputy) for advice and resolution.***
- The laboratory will submit the revised HLA type to ODT following the process described in Section 2 for submission of revised types and ***confirm that the organ allocation process has been successfully initiated.***

  If the HLA type is correct but an unusual antigen association has been identified, the Head of Laboratory (or designated deputy) will contact ODT Hub Operations in writing (email) to authorize initiation of the allocation process with the HLA type as reported.

Please note that all donor HLA types will be manually checked by NHSBT-ODT Scientific Support staff during normal working hours within 5 working days of submission. Any inconsistencies detected by the consistency checking process will be followed up with the Head of the Laboratory reporting the donor type and be included in the papers for the Clinical Audit Risk and Effectiveness Group of NHSBT- Organ Donation and Transplantation and in the 'Donor Discrepancy Monitoring Report'.

2. Reporting of revised donor HLA type

2.1 Donor Laboratory Revised HLA type:

- If the offer type is revised the donor laboratory must immediately inform ODT Hub Operations by telephone.
- The revised HLA type should be entered onto the HLA report form **FRM4365** Deceased Donor HLA Report Form and emailed or faxed to ODT Hub Operations. **The 'Donor Centre: Revised Type' box on the report form must be ticked.**

⚠ Caution

Do not tick the 'offer type' or 'retype' boxes when submitting a revised type.

- ***The H&I scientist must then telephone ODT Hub Operations to confirm that the email/fax has been received.***
- ***Twenty minutes following submission of the form, the laboratory must telephone ODT Hub Operations to confirm that the type has been received and that the organ allocation process has been successfully initiated.***

The allocation algorithm will be repeated with the revised type if the type is received within 18 hours of original offer type. ODT Hub Operations will inform all organ recipient centres (where relevant) of the revision. The ODT Hub Operations Standard Operating Procedure will be followed if re-allocation of an organ is necessary.

2.2 Recipient Laboratory Revised HLA type:

- If there is a discrepancy between the HLA type performed at the recipient centre laboratory and the type submitted by the donor centre laboratory, the recipient H&I scientist must contact the donor H&I scientist to discuss and resolve the discrepancy. The OASs do not have the relevant knowledge to advise on or resolve a discrepancy identified in an HLA type. It is the responsibility of the scientists to resolve any such discrepancy.
- Where the offer type is to be revised the donor centre must inform ODT Hub Operations by telephone. The revised HLA type should be entered onto the **FRM4365** Deceased Donor HLA Report Form and emailed/faxed to ODT Hub Operations. The 'Donor Centre: Revised Type' box on the report form must be ticked.

⚠ Caution

Do not tick the 'offer type' or 'retype' boxes when submitting a revised type.

- The recipient centre must then email/fax a **FRM4365** Deceased Donor HLA Report Form ticking the 'Recipient centre Revised type' box to ODT.

⚠ Caution

Do not tick the 'offer type' or 'retype' boxes when submitting a revised type.

- The procedure for 'Donor Centre Revision' as given above will then be initiated.

⚠ Advice

All revised donor HLA types will be followed up by ODT Scientific Support Services and be included in the papers for the Clinical Audit Risk and Effectiveness Group of NHSBT- Organ Donation and Transplantation and in the 'Donor Discrepancy Monitoring Report'.

3. Reporting of Donor HLA re-type (CONFIRMATORY TYPE)

- Following a transplant, the **FRM4365** Deceased donor HLA Report form should be used to email/fax the results of confirmatory HLA types or retypes. **The 'HLA re-type' box must be ticked.**

⚠ Caution

Do not tick the 'offer type' or 'revised type' boxes when submitting a retype.

- No immediate action will be taken by ODT Hub Operations on receipt of a re-type.
- HLA retypes are entered onto the database and are taken into account for the definitive HLA
- type used in survival analysis.

⊖ End of Procedure

Definitions

- **OAS** – Organ Allocation Specialist (ODT Hub Operations)

Related Documents/Reference

- **FRM4365** - HLA Report
- **DAT2885** - Minimum Resolution for Donor and Patient HLA Types (Minimum Typing Requirements for Reporting Donor and Recipient Types)
- HLA Conversion Chart for Organ Allocation
- These forms/information sheets accessible at: www.odt.nhs.uk/transplantation/pathology-services/histocompatibility-and-immunogenetics

Appendices

Appendix 1

Examples of Non valid and Revised HLA types

Example 1

Rule1: There is consistency between HLA broad/split antigens/alleles.

HLA type submitted:

	HLA broad specificity	HLA split specificity	HLA allele(s)	HLA broad specificity	HLA split specificity	HLA allele(s)	
HLA -A	2		02	**9**	**25**	**25**	
-B	8		08	35		35	Bw6
-DR	103		01:03	3	17	03	DR52
-Cw	4		04	7		07	
-DQB1	1	5	05:01-04	2		02:01-04	

-DRB3 alleles	01-03		-DRB4 alleles	
-DRB5 alleles				

-DPB1			01:01			02:01

The OAS will be unable to enter this type as there is **inconsistency between A9/A25/A*25**

HLA type reviewed by laboratory and revised type emailed/faxed to ODT Hub Operations:

	HLA broad specificity	HLA split specificity	HLA allele(s)	HLA broad specificity	HLA split specificity	HLA allele(s)	
HLA -A	2		02	**9**	**24**	**24**	
-B	8		08	35		35	Bw6
-DR	103		01:03	3	17	03	DR52
-Cw	4		04	7		07	
-DQB1	1	5	05:01-04	2		02:01-04	

-DRB3 alleles	01-03		-DRB4 alleles		
-DRB5 alleles					

-DPB1			01:01				02:01	

Appendix 1

Examples of Non valid and Revised HLA types

Example 2

Rule1: **Valid WHO nomenclature is used**

HLA type submitted:

	HLA broad specificity	HLA split specificity	HLA allele(s)	HLA broad specificity	HLA split specificity	HLA allele(s)	
HLA -A			01			02	
-B			08			**62**	Bw6
-DR			04				DR53
-Cw			03:03/11/13			07	
-DQB1			0301			03:02	

-DRB3 alleles			-DRB4 alleles	01	
-DRB5 alleles					

-DPB1			01:01				02:01	

The OAS will be unable to enter this type as **B*62 is invalid nomenclature**

HLA type reviewed by laboratory and revised type emailed/faxed to ODT Hub Operations:

	HLA broad specificity	HLA split specificity	HLA allele(s)	HLA broad specificity	HLA split specificity	HLA allele(s	
HLA -A			01			02	
-B			08			**15:01/04-07/20**	Bw6
-DR			04				DR53
-Cw			03:03/11/13			07	
-DQB1			03:01			03:02	

-DRB3 alleles			-DRB4 alleles	01	
-DRB5 alleles					

-DPB1			01:01				02:01	

Appendix 1

Examples of Non valid and Revised HLA types

Example 3

Rule 3: **Bw4/Bw6 antigen associations must be consistent with HLA B locus antigens/alleles**

HLA type submitted:

	HLA broad specificity	HLA split specificity	HLA allele(s)	HLA broad specificity	HLA split specificity	HLA allele(s)	
HLA -A	2		02	11		11	
-B	16	39	39	12	**44**	**44**	**Bw6**
-DR	1		01:01/02/04-10	4		04	DR53
-Cw			05			12	
-DQB1	1	5	05	3	7	03:01/09/10/13	

-DRB3 alleles			-DRB4 alleles	01/02:01N	
-DRB5 alleles					

-DPB1			01:01			02:01

B44 is not consistent with Bw6.

Auto generated error message:

The reported HLA type displays an unlikely Bw4/Bw6 association with reported B locus antigens. Please check HLA type.

HLA type reviewed by laboratory and revised type emailed/faxed to ODT Hub Operations:

	HLA broad specificity	HLA split specificity	HLA allele(s)	HLA broad specificity	HLA split specificity	HLA allele(s)	
HLA -A	2		02	11		11	
-B	16	39	39	12	**44**	**44**	**Bw4,6**
-DR	1		01:01/02/04-10	4		04	DR53
-Cw						12	
-DQB1	1	5	05	3	7	03:01/09/10/13	

-DRB3 alleles			-DRB4 alleles	01/02:01N	
-DRB5 alleles					

-DPB1			01:01			02:01

Appendix 1

Examples of Non valid and Revised HLA types

Example 4

Rule 4: **DR51/51N/52/53/53N antigen associations must be consistent with HLA DR locus antigens/alleles**

HLA type submitted:

	HLA broad specificity	HLA split specificity	HLA allele(s)	HLA broad specificity	HLA split specificity	HLA allele(s)	
HLA -A	1		01	2		02:01	
-B	7		07	17	57	57	Bw4,6
-DR	**2**	**15**	15:01	4		04:01	**DR53**
-Cw	6		06	7		06	
-DQB1	1	6	06	3	7	03:01	

-DRB3 alleles			-DRB4 alleles	01
-DRB5 alleles	01			

-DPB1			01:01			02:01

DR15(2) is not consistent with DR53

Auto generated error message:

The reported HLA type displays an unlikely DR51/52/53 or DRB3*/4*/5* association with reported DR locus antigens. Please check HLA type

HLA type reviewed by laboratory and revised type emailed/faxed to ODT Hub Operations:

	HLA broad specificity	HLA split specificity	HLA allele(s)	HLA broad specificity	HLA split specificity	HLA allele(s)	
HLA -A	1		01	2		02:01	
-B	7		07	17	57	57	Bw4,6
-DR	**2**	**15**	15:01	4		04:01	**DR51,53**
-Cw	6		06	7		06	
-DQB1	1	6	06	3	7	03:01	

-DRB3 alleles			-DRB4 alleles	01
-DRB5 alleles	01			

-DPB1			01:01			02:01

Appendix 1

Examples of Non valid and Revised HLA types

Example 5

Rule 4: DR51/51N/52/53/53N antigen associations must be consistent with HLA DR locus antigens/alleles

HLA type submitted:

	HLA broad specificity	HLA split specificity	HLA allele(s)	HLA broad specificity	HLA split specificity	HLA allele(s)	
HLA -A			01			23	
-B			08			49	Bw4,6
-DR			03:01/04			**04**	**DR52**
-Cw			07				
-DQB1			02			03:01/09/10	

-DRB3 alleles	01		-DRB4 alleles	
-DRB5 alleles				

-DPB1			01:01			02:01

DRB1*04 is not consistent with DR52

Auto generated error message:

The reported HLA type displays an unlikely DR51/52/53 or DRB3*/4*/5* association with reported DR locus antigens. Please check HLA type

HLA type reviewed by laboratory and revised type emailed/faxed to ODT Hub Operations:

	HLA broad specificity	HLA split specificity	HLA allele(s)	HLA broad specificity	HLA split specificity	HLA allele(s)	
HLA -A			01			23	
-B			08			49	Bw4,6
-DR			03:01/04			**13**	**DR52**
-Cw			07				
-DQB1			02			03:01/09/10	

-DRB3 alleles			-DRB4 alleles	
-DRB5 alleles				

-DPB1			01:01			02:01

Appendix 1

Examples of Non valid and Revised HLA types

Example 6

Rule 5: **DRB3/4/5 allele associations must be consistent with HLA DR locus antigens/alleles and DR51/51N/52/53/53N antigens**

HLA type submitted:

	HLA broad specificity	HLA split specificity	HLA allele(s)	HLA broad specificity	HLA split specificity	HLA allele(s)	
HLA -A			02				
-B			15:01/04			57	Bw4,6
-DR			03:01/04			07	DR52,**53**
-Cw			12:03/6			05:01/3/4	
-DQB1			03:01/4			03:03	

-DRB3 alleles		01	-DRB4 alleles	**01:03:01:02N**
-DRB5 alleles				

-DPB1			01:01			02:01	

DRB4*01:03:01:02N is not consistent with DR53

Auto generated error message:

The reported HLA type displays an unlikely DR51/52/53 or DRB3*/4*/5* association with reported DR locus antigens. Please check HLA type

HLA type reviewed by laboratory and revised type emailed/faxed to ODT Hub Operations:

	HLA broad specificity	HLA split specificity	HLA allele(s)	HLA broad specificity	HLA split specificity	HLA allele(s)	
HLA -A			02				
-B			15:01/04			57	
-DR			03:01/04			07	DR52,**53N**
-Cw			12:03/6			05:01/3/4	
-DQB1			03:01/4			03:03	

-DRB3 alleles		01	-DRB4 alleles	**01:03:01:02N**
-DRB5 alleles				

-DPB1			01:01			02:01	

Appendix 1

Examples of Non valid and Revised HLA types

Example 7

Rule 5: **DRB3/4/5 allele associations must be consistent with HLA DR locus antigens/alleles and DR51/51N/52/53/53N antigens**

HLA type submitted:

	HLA broad specificity	HLA split specificity	HLA allele(s)	HLA broad specificity	HLA split specificity	HLA allele(s)	
HLA -A	1		01	11		11	
-B	22	55	55	17	57	57	Bw4,6
-DR	**3**	**17**	**03:01/04**	4		**04**	**52**
-Cw	3	9	03:03/11/12	6		6	
-DQB1	2		02	3	7	03:01/09/10/13	

-DRB3 alleles			-DRB4 alleles	**01**	
-DRB5 alleles					

-DPB1			01:01			02:01

DR4 DRB1*04 is not consistent with DR52
DR17(3) DRB1*0301 is not consistent with DRB4*01
DRB4*01 is not consistent with DR52
Auto generated error message:
The reported HLA type displays an unlikely DR51/52/53 or DRB3*/4*/5* association with reported DR locus antigens. Please check HLA type

HLA type reviewed by laboratory and revised type emailed/faxed to ODT Hub Operations:

	HLA broad specificity	HLA split specificity	HLA allele(s)	HLA broad specificity	HLA split specificity	HLA allele(s)	
HLA -A	1		01	11		11	
-B	22	55	55	17	57	57	Bw4,6
-DR	**3**	**17**	**03:01/04**	4		**04**	**52,53**
-Cw	3	9	03:03/11/12	6		6	
-DQB1	2		02	3	7	03:01/09/10/13	

-DRB3 alleles	**01-03**		-DRB4 alleles	**01**	
-DRB5					

-DPB1			01:01			02:01