

1. Upon receipt of a complete application, including the name and signature of the candidate's physician or surgeon, the OPTN Contractor will implement the waiting time modification.
2. The OPTN Contractor will report the modification, without person-identified data, to the relevant organ-specific Committee.
3. The Committee will report the modification, without person-identified data, to the Board of Directors.

3.8 Removing Candidates from the Waiting List

If a candidate receives a transplant or dies while awaiting a transplant then the registering transplant hospitals must remove the candidate from the hospital's organ waiting lists and notify the OPTN Contractor within 24 hours of the event. If the candidate has multiple-registrations for the same organ, each transplant hospital where the candidate is registered must meet these requirements.

The OPTN Contractor will notify other transplant hospitals when a multiple registered candidate receives a transplant or another transplant hospital reports the candidate as deceased. Upon notification, all other transplant hospitals involved can investigate and remove the candidate from the transplant hospital's waiting list.

If the transplant recipient re-registers for another organ to replace a transplanted organ, then waiting time will begin as of the date and time the candidate re-qualifies. The waiting time from the previous registration may be added to the new registration according to *Policy 3.6.B: Waiting Time Reinstatement for Non-Function of Transplanted Organ*.

3.8.A Removing Liver Candidates from the Waiting List

For a liver candidate, the data necessary to calculate the candidate's current MELD or PELD score is required to remove the candidate from the waiting list.

3.8.B Removing Pancreas Islets Candidates from the Waiting List

The transplant center must remove the candidate from the waiting list within 24 hours of the candidate receiving each islet infusion.

History

Policy 3.2: UNOS Patient Waiting List: 6/25/2007; 6/20/2008; 3/3/2009; 11/17/2009; 11/9/2010; 11/15/2011; 6/26/2012; 11/13/2012

Policy 3: Candidate Registrations, Modifications, and Removals: 11/12/2013 (2/1/2014); 3/7/14; 6/23/2014 (9/1/2014); 10/30/2014 (11/8/2010); 6/24/2013 (12/4/2014)

Pending Implementation

Policy 3.4.H: In Utero Candidate Registrations: 6/23/2014 (TBD); *Policy 3.4.D: Candidate Human Leukocyte Antigen (HLA) Information:* 11/12/2014 (TBD)

Notes

1. For acceptance and screening criteria, see *Policies 5.1: Minimum Acceptance Criteria* and *5.3: Additional Acceptance and Screening Criteria*.
2. For international exchange of organs, see *Policy 17: International Organ Transplantation*.
3. For criteria to accrue waiting time, see the organ specific *Policies 6 through 11*.

Policy 4: Histocompatibility

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4.1 HLA Typing

4.1.A Requirements for Performing and Reporting HLA Typing

Laboratories must do *all* of the following:

1. Perform HLA typing on all potential transplant recipients and donors when requested by a physician or other authorized individuals.
2. Ensure that all HLA typing is accurately determined and report HLA typing results to the OPO or Transplant Program according to the turnaround time specified in the written agreement between the laboratory and any affiliated OPO or transplant program.
3. Report serological split level and molecular typing results to the OPO for all required HLA types according to Table 4.1 *HLA Typing Requirements for Deceased Donors*, whenever the lab performs HLA typing on deceased kidney, kidney-pancreas, and pancreas donors.
4. Report HLA typing results to the Transplant Program for all required HLA types, according to Table 4.2 *HLA Typing Requirements for Candidates*, whenever the laboratory performs HLA typing on candidates.

Table 4.1 shows HLA types required to be reported for deceased donors.

Table 4.1: HLA Typing Requirements for Deceased Donors

Organ	A	B	Bw4	Bw6	C	DR	DR51	DR52	DR53	DPB	DQB
Kidney	●	●	●	●	●	●	●	●	●		●
Pancreas	●	●	●	●	●	●	●	●	●		●
Kidney-Pancreas	●	●	●	●	●	●	●	●	●		●
Heart*	●	●	●	●	●	●	●	●	●	●	●
Lung*	●	●	●	●	●	●	●	●	●	●	●

* For deceased heart and lung donors, if a transplant hospital requires donor HLA typing prior to submitting a final organ acceptance, it must communicate this request to the OPO and document this request. The OPO must provide the HLA information required in the table above and document that the information was provided to the transplant program. The transplant hospital may request HLA-DPB typing, but the OPO need only provide it if its affiliated laboratory performs related testing.

Table 4.2 shows HLA types required to be reported for candidates.

Table 4.2: HLA Typing Requirements for Candidates

Organ	A	B	Bw4	Bw6	DR
Kidney alone	●	●	●	●	●
Pancreas alone	●	●	●	●	●
Kidney-Pancreas	●	●	●	●	●

4.2 Resolving Discrepant Donor and Recipient HLA Typing Results

Laboratories must submit donor and recipient histocompatibility forms to the OPTN Contractor after transplant according to *Policy 18.0: Data Submission Requirements*. After laboratories submit donor and recipient HLA typing results to the OPTN Contractor, the OPTN Contractor will provide a report to the laboratories including any discrepant HLA typing results.

The report includes *all* of the following donor information:

1. Donor id

2. HLA typing results
3. Date of tests
4. Test methods
5. Laboratory Identifiers
6. OPO Identifier (if applicable)

The report includes *all* of the following recipient information:

1. SSN
2. HLA typing results
3. Date of tests
4. Test methods
5. Laboratory identifier

Laboratories must resolve discrepancies within 30 days of notification of discrepant HLA typing results. The Laboratory Director or designated staff must contact the other Laboratory Director or designated staff to resolve the discrepancies. Each laboratory involved in the HLA typing discrepancy must identify and report the reason for the discrepancy to the OPTN Contractor.

The OPTN Contractor will remove all discrepant flags from HLA typing results that have been resolved. Discrepancies that have not been resolved will remain flagged. The Histocompatibility Committee will review, at least every three months, any outstanding discrepant typing recorded since the last review. The committee will use the results of these reviews to determine whether policy modifications are required.

4.3 Antibody Screening and Reporting

The laboratory must screen a patient for the presence of anti-HLA antibodies if requested by a physician or other authorized individuals.

When a laboratory performs an antibody screening, the laboratory must do *all* of the following:

- Report anti-HLA antibodies identified to the candidate's requesting provider
- Use at least one solid phase immunoassay using purified HLA molecules

4.4 Crossmatching

4.4.A Crossmatching for Kidney Transplants

Laboratories performing histocompatibility testing for kidney transplants or multi-organ transplants in which a kidney is to be transplanted must perform a final crossmatch and report the results to the Transplant Program before transplant.

4.4.B General Crossmatching Requirements

When a laboratory performs a physical crossmatch, the laboratory must do *all* of the following:

1. Perform a crossmatch according to the terms specified in the written agreement between the laboratory and the OPO or transplant program if a physician or other authorized individual requests it.
2. Perform crossmatches with potential donor T lymphocytes to identify class I anti-HLA antibodies.

3. Perform crossmatches with potential donor B lymphocytes to identify class I and class II anti-HLA antibodies using a method that distinguishes between reactions with T and B lymphocytes.
4. Use a crossmatching technique with increased sensitivity.

4.5 Blood Type Determination

If a laboratory performs blood type testing, the laboratory must:

1. Follow manufacturer's directions for materials and equipment used in testing.
2. Perform testing in compliance with federal regulations.

4.6 Preservation of Excess Specimens

If a laboratory performs testing to determine histocompatibility between a donor and recipient, then the laboratory must preserve enough specimen from the deceased donor to perform subsequent testing for at least five years after the transplant.

4.7 HLA Antigen Values and Split Equivalences

HLA matching of A, B, and DR locus antigens is based on the antigens which are listed in *Policy 4.8: Reference Tables of HLA Antigen Values and Split Equivalences*. The Histocompatibility Committee must review and recommend any changes needed to the tables on or before June 1 of each year. For matching purposes, split antigens not on this list will be indicated on the waiting list as the parent antigens and will match only with the corresponding parent antigens.

4.8 Reference Tables of HLA Antigen Values and Split Equivalences

Tables 4-3, 4-4, and 4-5 show patient-donor antigen combination and whether they are mismatches. For each candidate antigen, the donor antigens that are not mismatched are listed below. All other combinations are considered mismatches. Antigens with an * indicate an allele that may not have a World Health Organization (WHO)-approved serologic specificity. Antigens given **99 means the patient locus was not tested.

Table 4-3: HLA A Matching Antigen Equivalences

Patient A Locus Antigen	Equivalent Donor Antigens
1	1
2	2, 203
3	3
9	9
10	10
11	11
19	19
23	23
24	24, 2403
25	25
26	26

Patient A Locus Antigen	Equivalent Donor Antigens
28	28
29	29
30	30
31	31
32	32
33	33
34	34
36	36
43	43
66	66, *6601, *6602

Patient A Locus Antigen	Equivalent Donor Antigens
68	68
69	69
74	74
80	80
203	203, 2
210	210, 2
2403	2403, 24
*6601	*6601, 66
*6602	*6602, 66
** 99	(No equivalent)

Table 4-4: HLA B Matching Antigen Equivalences

Patient B Locus Antigen	Equivalent Donor Antigens
5	5
7	7, 703
8	8
12	12
13	13
14	14, 64, 65
15	15
16	16
17	17
18	18
21	21
22	22
27	27
35	35
37	37
38	38
39	39, 3901, 3902, *3905
40	40, 61
41	41
42	42
44	44
45	45
46	46

Patient B Locus Antigen	Equivalent Donor Antigens
47	47
48	48
49	49
50	50, 4005
51	51, 5102, 5103
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
67	67
70	70, 71, 72
71	71, 70
72	72, 70

Patient B Locus Antigen	Equivalent Donor Antigens
73	73
75	75, 15
76	76, 15
77	77, 15
78	78
81	81
82	82, *8201
703	703, 7
*0804	*0804, 8
*1304	*1304, 15, 21, 49, 50
2708	2708, 27
3901	3901, 39
3902	3902, 39
*3905	*3905, 39
4005	4005, 50
5102	5102, 51, 53
5103	5103, 51
7801	7801
*8201	*8201, 82
** 99	(No equivalent)

Table 4-5: HLA DR Matching Antigen Equivalences

Patient DR Locus Antigen	Equivalent Donor Antigens	Patient DR Locus Antigen	Equivalent Donor Antigens	Patient DR Locus Antigen	Equivalent Donor Antigens
1	1, 103	9	9	16	16
2	2	10	10	17	17
3	3	11	11	18	18
4	4	12	12	103	103, 1
5	5	13	13	1403	1403, 14, 6
6	6	14	14, 1403, 1404	1404	1404, 14, 6
7	7	15	15	** 99	(No equivalent)
8	8				

* Indicates an allele; may not have a WHO-approved serologic specificity

** Code 99 means not tested

Examples of how “Matching Antigen Equivalences” works:

If patient has B70: Donors with B70, B71, and B72 are considered not mismatched.

If patient has B71: Donors with B71 and B70 are considered not mismatched. Donors with B72 are considered mismatched.

Table 4-6: HLA A Unacceptable Antigen Equivalences

Patient's Unacceptable A Locus Antigen	Donor Equivalent Antigens	Patient's Unacceptable A Locus Antigen	Donor Equivalent Antigens	Patient's Unacceptable A Locus Antigen	Donor Equivalent Antigens
1	1	23	23	66	66, *6601, *6602
2	2, 203, 210	24	24	68	68
3	3	25	25	69	69
9	9, 23, 24, 2403	26	26	74	74
10	10, 25, 26, 34, 66, *6601, *6602, 43	28	28, 68, 69	80	80
11	11	29	29	203	203
19	19, 29, 30, 31, 32, 33, 74	30	30	210	210
		31	31	2403	2403
		32	32	*6601	*6601
		33	33	*6602	*6602
		34	34		
		36	36		
		43	43		

Table 4-7: HLA B Unacceptable Antigen Equivalences

Patient's Unacceptable B Locus Antigen	Donor Equivalent Antigens
5	5, 51, 5103, 52, 78
7	7, 703
8	8
12	12, 44, 45
13	13
14	14, 64, 65
15	15, 62, 63, 75, 76, 77
16	16, 38, 39
17	17, 57, 58
18	18
21	21, 49, 50, 4005
22	22, 54, 55, 56
27	27
35	35
37	37
38	38
39	39, 3901, 3902, *3905
40	40, 60, 61
41	41
42	42
44	44
45	45
46	46

Patient's Unacceptable B Locus Antigen	Donor Equivalent Antigens
47	47
48	48
49	49
50	50, 4005
51	51, 5103
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
67	67
70	70, 71, 72
71	71
72	72
73	73
75	75
76	76
77	77
78	78
81	81
82	82, *8201

Patient's Unacceptable B Locus Antigen	Donor Equivalent Antigens
703	703
*0804	*0804
*1304	*1304
2708	2708
3901	3901
3902	3902
*3905	*3905
4005	4005, 50
5102	5102
5103	5103
7801	7801, 78
*8201	*8201, 82
Bw4	Bw4, 5, 13, 17, 27, 37, 38, 44, 47, 49, 51, 52, 53, 57, 58, 59, 63, 77
Bw6	Bw6, 7, 8, 14, 18, 22, 2708, 35, 39, 40, 41, 42, 45, 48, 50, *4005, 54, 55, 56, 60, 61, 62, 64, 65, 67, 70, 71, 72, 75, 76, 78, 81, 82