

Program	Interprovincial Organ Sharing: Kidney
Title	CTR.50.003 Matching and Ranking
Version (Date)	V4.1 2024-10-01
Policy Sponsor	Acting Director OTDT, Peggy John
Committee Review	Kidney Transplant Advisory Committee, National HLA Advisory Committee, Donation and Transplantation Administrators Advisory Committee
Committee Endorsement	Kidney Transplant Advisory Committee, National HLA Advisory Committee, Donation and Transplantation Administrators Advisory Committee
Provincial/Territorial Sign-Off	Complete
Effective Date	2024-12-04

Purpose

The Canadian Transplant Registry (CTR) identifies transplant opportunities across Canada for kidney transplant candidates who are pediatric or highly sensitized to Human Leukocyte Antigens (HLA). This policy outlines the matching algorithm rules used to identify and rank pediatric and highly sensitized patients (HSP) who are potential matches to an available deceased donor kidney.

Policy

1.0 Identifying Potential Recipient Matches

There are three tiers of matching and ranking that the kidney algorithm performs to develop a final listing of potential pediatric and HSP recipient matches for a deceased donor who has been registered in the CTR.

The three tiers are:

- Blood Group Compatibility
- HLA Compatibility
- Recipient and Transplant Program-specific filter

1.1 Blood Group Compatibility

- 1.1.1 Eligible potential kidney recipients are first matched for blood group compatibility, and then for HLA compatibility.

Blood Group (ABO) Compatibility

If donor blood group is:	Then recipient blood group can be:
O	O, A, B, AB
A	A, AB
B	B, AB
AB	AB

1.2 HLA Compatibility

- 1.2.1 Potential matches are excluded when the deceased donor has HLA antigens that have been listed in the potential kidney recipient's record as being unacceptable.
- 1.2.2 Currently allele-specific antigens are identified by the algorithm and flagged for investigation by HLA lab director or delegate, but do not screen out potential matches.
- 1.2.3 For potential kidney recipient's with cPRA \geq 99.0% their HLA lab, in consultation with their transplant program, can indicate certain antigens as Willing to Cross. Both an adjusted cPRA (after removal of Willing to Cross antigens) and unadjusted cPRA will be used for ranking.

1.3 Recipient and Transplant Program/Agency Specific Filters

- 1.3.1 Optional filters can be applied by a transplant program/agency for the potential kidney recipients listed by that program, based on an assessment of the potential recipient's individual needs or preference(s) of the transplant program/agency.
- 1.3.2 The kidney matching algorithm will exclude potential matches based on filters entered for the specific potential kidney recipient. The following filters can be turned on or off and values can be added within specified ranges.

Filter Attribute
Accept a deceased donor up to a specified maximum age (<35, <40, <45, <50, <55, <60, <65, no restriction)
Accept a deceased donor who has tested positive for Hepatitis B core antibody

Accept a deceased donor who has tested positive for Hepatitis C

Accept a DCD (donation after circulatory death) donor

1.4 Pediatric Class II Matching

1.4.1 Non-HSP pediatric candidates receive a possible match only when there is a zero mismatch between donor and candidate at DRB1, DQA and DQB loci.

2.0 Ranking of Matched Potential Recipients

2.1 If more than one potential kidney recipient is a match for a deceased donor kidney, matches are prioritized based on the following ranking criteria.

Matching/Ranking Attribute	Rank
HSP Medical urgency	1
Unadjusted cPRA of 99.5 to 100% - higher cPRA ranked above lower cPRA <ul style="list-style-type: none"> Note: Unadjusted cPRA – There are no ‘Willing to Cross’ antigens. Internal tier ranking based on 1 decimal place. 	2
Adjusted cPRA of 99.5 to 100% - higher cPRA ranked above lower cPRA <ul style="list-style-type: none"> Note: Adjusted cPRA – This is the cPRA after ‘Willing to Cross’ antigens. are removed and is relevant for the current allocation, if the offer requires ‘Willing to Cross to be used. Internal tier ranking based on 1 decimal place. 	3
Unadjusted cPRA of 99.0 to 99.4% - higher cPRA ranked above lower cPRA <ul style="list-style-type: none"> Note: Unadjusted cPRA – There are no ‘Willing to Cross’ antigens. Internal tier ranking based on 1 decimal place. 	4
Adjusted cPRA of 99.0 to 99.4% - higher cPRA ranked above lower cPRA <ul style="list-style-type: none"> Note: Adjusted cPRA – This is the cPRA after ‘Willing to Cross’ antigens. are removed and is relevant for the current allocation, if the offer requires ‘Willing to Cross to be used. Internal tier ranking based on 1 decimal place. 	5
Unadjusted cPRA of 98.5 to 98.9% - higher cPRA ranked above lower cPRA <ul style="list-style-type: none"> Note: Unadjusted cPRA – There are no ‘Willing to Cross’ antigens. Internal tier ranking based on 1 decimal place. 	6
HSP Pediatric (< 19 years of age)	7
HSP Candidate who is a prior living kidney donor	8

HSP HLA match: The HLA typing for the deceased donor and recipient indicates a zero out of six (0/6) mismatch for DRB1, DQA and DQB loci	9
Kidney-pancreas transplant	10
Non-HSP Pediatric HLA Match: The HLA typing for the deceased donor and pediatric recipient indicates a zero out of six (0/6) mismatch for DRB1, DQA and DQB loci.	11
The deceased donor and potential kidney recipient are in the same province	12
The deceased donor and potential kidney recipient are in the same region: <ul style="list-style-type: none"> West region: BC, AB, SK, MB East region: ON, QC, ATL 	13
Time on Dialysis (number of days starting at the most recent initiation of chronic dialysis)	14
Time on CTR wait list (number of days starting on the date of eligibility in CTR, for patients not yet on dialysis)	15

2.1.1 Transplant Programs can list potential kidney recipients as Medically Urgent in CTR if they are approved for and actively listed as Medically Urgent on a deceased donor waitlist by the local Transplant Program.

2.1.1.1 The potential kidney recipient’s sponsoring physician submits data to document the factors that have resulted in the Medically Urgent status using, “Canadian Transplant Registry - Medical Urgency Data Collection Form”.

2.1.1.2 The “Canadian Transplant Registry - Medical Urgency Data Collection Form” will be audited annually and as needed, by the Kidney Transplant Advisory Committee (KTAC).

2.1.2 There is pre-emptive listing allowed for pediatric patients participating in the interprovincial kidney program. See policy CTR.50.001 for eligibility requirements for pediatric recipients.

2.1.3 The kidney-pancreas patient will receive a priority ranking score only in the event of an offer that includes the transplantable pancreas with the kidney.

3.0 Approval of HSP Allocation Methodology

The kidney allocation methodology, including the cPRA cut-off value, will be reviewed bi-annually by the Kidney Transplant Advisory Committee (KTAC).

Version History		
Version	Date	Comments /Changes
V4.1	2024-10-01	<ol style="list-style-type: none"> 1. Rewording from Willing to Cross “antibodies” to “antigens”, revised based on decisions from NHLAAC (NHLAAC Minutes, May 2, 2024) 2. -For consistency revised >98.9% cPRA for WTC to ≥99.0% 3. For consistency updated Non-HSP Pediatric Match description to match HSP HLA match in matching and ranking table. 4. Revised spelling of Pediatric to Pediatrics for consistency.
V4.0	Draft	<ol style="list-style-type: none"> 1. Revised: 2.1 – inclusion of adjusted and unadjusted cPRA of 100% to 2nd and 3rd rank below medical urgency. 2. Revised: 2.1 – inclusion of adjusted and unadjusted cPRA of 99% to 4th and 5th rank above pediatrics. Revised: Change to include interprovincial pediatric sharing
V3.0	2016-06-20	<ol style="list-style-type: none"> 1. Revised: 2.1 – inclusion of cPRA of 100% and cPRA of 99% to 2nd and 3rd rank based on decisions from KTAC (KTAC Minutes, May 15, 2015). 2. Revised: 2.1.1 – replacement of Medically Urgent Approval process for a Medically Urgent Data Collection and Tracking process based on decisions from KTAC (HSP Medical Urgency Survey Responses, 2015-02-06).
V2.4	2013-02-27	Remove: 2.2.1- unacceptable or not tested, add process for medical urgency determination expanded to reflect NKRAC
V2.3	2012-10-17	Remove PRA cut-off from Matching; Expand HLA Compatibility, KP ranking, medical urgency
V2.2	2012-10-09	Formatting and clarification of Filters and Ranking

V2.1	2012-09-07	Reviewed at NKRAC F to F; no recommended changes
V2.1	2012-03-06	Move Prior Living Donor to 3rd ranking; Clarification and formatting;
V2.0	2012-06	Reviewed at ODTEAC; recommendation to move Prior Living Donor to 3rd rank
V2.0	2010-11-02	Revised based on decisions from NKRAC (NKRAC Minutes, October 28, 2010). Changes include: <ul style="list-style-type: none"> • Removal of the points for those moderately sensitized patients with a PRA of less than 80% • Inclusion of time on dialysis from day one, in order to closer resemble the allocation methodologies in use locally for patients waiting for transplant.
V1.0	2009-10-28	Original Version

References

September 2011, Reviewed at NKRAC