

Type	Canadian Transplant Registry
Program	Inter-provincial Sharing: Kidney, Highly Sensitized Patient
Policy Title	Matching and Ranking

Policy Number	CTR.50.003
Version (Date)	v4.0 (2020-12-08)
Policy Sponsor	Kidney Transplant Advisory Committee
Committee Review	Kidney Transplant Advisory Committee (TBD), National HLA Advisory Committee (TBD), Donation and Transplantation Administrators Advisory Committee (TBD), Organ Donation and Transplantation Expert Advisory Committee (TBD)
Committee Endorsement	Kidney Transplant Advisory Committee (TBD), National HLA Advisory Committee (TBD), Donation and Transplantation Administrators Advisory Committee (2021-03-22), Organ Donation and Transplantation Expert Advisory Committee (TBD)
Provincial/Territorial Sign-Off	< 'Complete' or 'Incomplete' > (See Appendix A)
Effective Date	<Date policy comes into effect>

Purpose

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

Policy

1. Identifying Potential Recipient Matches

There are three tiers of matching and ranking that the kidney algorithm performs, to develop a final listing of potential paediatric and HSP recipients 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.

1.1.2

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 Allele-specific antigens are identified by the algorithm and flagged for investigation, but do not screen out potential matches.

1.2.3 For potential kidney recipient's with cPRA >98.9%, their HLA lab, in consultation with their transplant program, can indicate certain antibodies as Willing to Cross. Both an adjusted (cPRA after removal of Willing to Cross antibodies) 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 cardio-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. 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.

HSP Medical urgency	1
Unadjusted cPRA of 99.5 to 100% - higher cPRA ranked above lower cPRA Note: Unadjusted cPRA – There are no ‘Willing to Cross’ antibodies. Internal tier ranking based on 1 digit place.	2
Adjusted cPRA of 99.5 to 100% - higher cPRA ranked above lower cPRA Note: Adjusted cPRA – This is the cPRA after ‘Willing to Cross’ antibodies 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 digit place.	3
Unadjusted cPRA of 99.0 to 99.4% - higher cPRA ranked above lower cPRA Note: Unadjusted cPRA – There are no ‘Willing to Cross’ antibodies. Internal tier ranking based on 1 digit place.	4
Adjusted cPRA of 99.0 to 99.4% - higher cPRA ranked above lower cPRA Note: Adjusted cPRA – This is the cPRA after ‘Willing to Cross’ antibodies 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 digit place.	5
Unadjusted cPRA of 98.5 to 98.9% - higher cPRA ranked above lower cPRA Note: Unadjusted cPRA – There are no ‘Willing to Cross’ antibodies. Internal tier ranking based on 1 digit 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 antigens	9
Kidney-pancreas transplant	10
Non-HSP Pediatric Match: DRB1, DQA and DQB zero mismatch in paediatric recipients	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: ▪ West region: BC, AB, SK, MB	13

<ul style="list-style-type: none"> ▪ East region: ON, QC, ATL 	
Time on Dialysis (number of days starting at the most recent initiation of 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 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. 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) and the Organ Donation and Transplantation Expert Advisory Committee (ODTEAC).

References
<p>September 2011, Reviewed at NKRAC February 2012, Reviewed at ODTEAC March 2012, Prior Living Donor change approved at NKRAC October 17, 2012, Reviewed at NKRAC. Request to change Kidney-Pancreas Patient to Kidney-Pancreas Offer. Canadian Blood Services to investigate. Canadian Highly Sensitized Patient and Living Donor Paired Exchange Registries: Task Force Discussion Document (October 2005) Assessment and Management of Immunologic Risk in Transplantation. A Canadian Council for Donation and Transplantation Consensus Forum Report and Recommendations (January 2005) Kidney Allocation in Canada: A Canadian Forum Report and Recommendations (February 2007) CTR.80.002 Willing to Cross Antibodies Policy</p>

Version History		
Version	Date	Comments / Changes
V4.0	Draft	Revised: 2.1 – inclusion of adjusted and unadjusted cPRA of 100% to 2 nd and 3 rd rank below medical urgency. Revised: 2.1 – inclusion of adjusted and unadjusted cPRA of 99% to 4 th and 5 th rank above pediatrics. Revised: Change to include interprovincial pediatric sharing
V3.0	2016-06-20	Revised: 2.1 – inclusion of cPRA of 100% and cPRA of 99% to 2 nd and 3 rd rank based on decisions from KTAC (KTAC Minutes, May 15, 2015). 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 3 rd ranking; Clarification and formatting;
V2.0	2012-06	Reviewed at ODTEAC; recommendation to move Prior Living Donor to 3 rd 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