Trillium Gift of Life Network

POLICIES

Wait list, organ offers and allocation

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1. Introduction

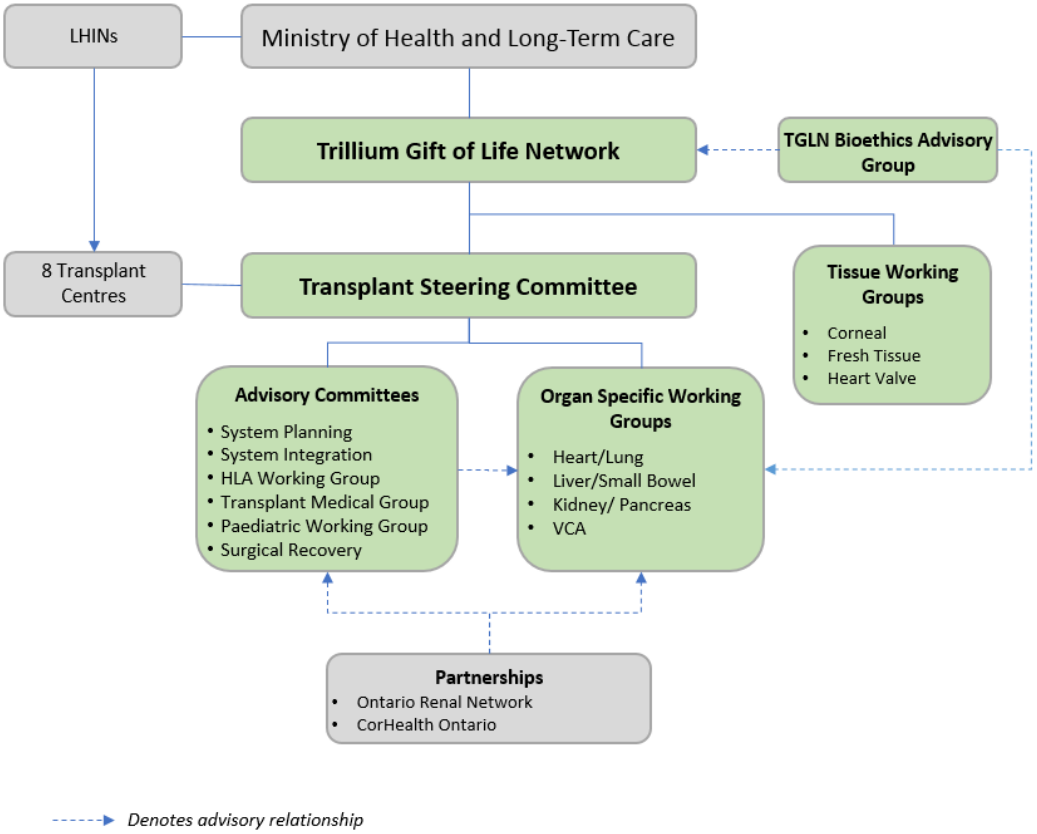
1.1 Trillium Gift of Life Network

Trillium Gift of Life Network (TGLN) is a not-for-profit agency of the Government of Ontario. TGLN plans, promotes, coordinates and supports organ and tissue donation and transplantation across Ontario. The mission of TGLN is to save and enhance lives through the gift of organ and tissue donation and transplantation in Ontario.

TGLN, in collaboration with the Ministry of Health and Long-Term Care (MOHLTC), oversees and manages the Transplant Program for the Government of Ontario. The mission of TGLN's Provincial Transplant Program is to support the development of a sustainable end-to-end transplant system and to continually strive to improve the dimensions of quality, safety, effectiveness, access, patient centered and integrated care in order to enable better patient outcomes.

1.2 Transplant System Governance

TGLN works with the MOHLTC and key stakeholders, including representatives from all eight of Ontario's transplant programs, to direct and oversee system monitoring. The Provincial Transplant Program is supported by a network of working groups and committees comprised of system experts who inform and guide TGLN. The Organ Specific Working Groups and Advisory Committees provide the Transplant Steering Committee with policy recommendations and decisions that are specific to their identified mandate. The Transplant Steering Committee then provides final approval for new and amended policies.



1.3 Allocation Policy Development, Amendment and Evaluation

The Organ Specific Working Groups at TGLN are tasked with recommending policies to ensure the allocation of deceased donor organs is equitable and wait list management is effective. These polices are:

- **Evidence-based:** Data-driven and informed by literature reviews and jurisdictional scans.
- **Use medical and clinical criteria**: Including medical urgency and medical compatibility.
- **Align with national guidelines and practices:** i.e.- Canadian Blood Services national organ sharing programs.
- **Consider key ethical principles:** Equity, utility, transparency, accountability and safety.

The Organ Specific Working Groups meet regularly to review transplant and wait list data to evaluate the allocation algorithms and ensure equitable access to transplantation.

1.4 National Organ Sharing Agreements

In order to provide greater access to organ transplants for Ontarians, TGLN participates in national programs for deceased donor organ listing and sharing: The National Organ Waitlist (NOW), the Highly Sensitized Patient (HSP) program and Interprovincial Organ Sharing (IPOS) for High Status Hearts (HSH). These programs are managed by Canadian Blood Services (CBS).

1.5 National Organ Waitlist Policy – Single Centre Listing

Transplant candidates of all organ types, can only be listed with one Canadian transplant centre.

1.6 Guide to this Document

The aim of this document is to provide the provincial policies relating to wait listing, wait times, organ offers and allocation to the deceased donor waiting list. These policies apply to all transplant candidates and recipients of organs from deceased donors. This document is updated regularly to reflect new or amended policies.

2. Organ Offers and Acceptance

2.1. Organ Offers and Acceptance

Organ offers are made directly to designated individuals at the transplant programs. Transplant programs must either accept or decline the organ offer within one hour of receiving information on the deceased donor. If the transplant program does not respond within this time, the offer expires and the organ is offered to next candidate on the allocation algorithm.

Exceptions:

- Programs have two hours to accept organ offers for kidneys from the national Highly Sensitized Patient (HSP) program in order to evaluate the human leukocyte antigen (HLA) match results.
- Programs have two hours to accept organ offers for heart patients participating in the IPOS Hearts program.
- In cases where further information is needed to make an informed decision, TGLN and the transplant program make every effort to ensure a timely decision.

2.2. Back-Up Candidates

Once an organ has been offered and accepted for an intended candidate, the accepting transplant program is responsible for determining a candidate's suitability for transplant. If the accepting program determines that the intended candidate is unsuitable, they must notify TGLN immediately to allow for the organ to be re-allocated.

TGLN identifies potential back-up candidates at time of organ offer as required. However, the re-allocation of the organ(s) only occurs when the transplant program has declined the organ for the intended candidate and provided a decline reason.

2.2.1. Back-Up Candidates (Heart)

TGLN will routinely identify back-up candidates with Ontario heart transplant programs. The back-up candidate will be identified as the next eligible Ontario heart patient as per the Ontario heart allocation algorithm. Routine back-up heart candidates will be arranged to prevent the loss of a suitable heart for transplantation in situations where late notice is provided to TGLN and transplantation cannot proceed for the intended candidate. If required, TGLN will work with the accepting program and the back-up program to facilitate the re-allocation of the organ to the back-up candidate.

2.3. Organ Reallocation

Prior to the Organ Recovery Team's Departure to the Donor OR

- Reallocation of accepted organs will be explored if a high status (i.e. Status 4, 4F, 3F, HSP) patient has been added to the wait list prior to the start of organ recovery only if the organ has not already been accepted for a high status patient as part of a National High Status sharing program.
- Reallocation of accepted organs will be explored if the allocation plan changes prior to the start of organ recovery in a way that will result in the loss of a suitable organ for transplant.
- A mandatory discussion between affected transplant programs will occur when reallocation is being considered. The final decision on reallocation will be made by the program that has already accepted the organ.

After Organ Recovery

- If an intended recipient is no longer able to receive an organ once the organ has been recovered but not yet shipped, the organ will be allocated to the next eligible patient/program on the allocation.
- If an intended recipient is no longer able to receive an organ once the organ has been shipped/delivered, the organ will be allocated to the next eligible patient at the receiving transplant program if there are not any new high status Ontario patients that have been recently listed.

2.4. Organs For Research

Organs that are unable to be used for transplant may be used for research where the appropriate consent for research has been obtained. TGLN will only allocate organs and/or specimens from organs for research use to studies approved by TGLN.

Researchers requiring organs and/or specimens from organs must submit their proposed research study to TGLN for review and approval. Only research studies related to organ donation/transplantation will be approved. In order to approve a research study, TGLN requires: a copy of the Research Ethics Board (REB) approval, a privacy agreement, an organ/tissue/blood terms of use agreement, and payment of the cost recovery fee. For more details please visit the TGLN website.

3. Kidney & Pancreas Policies

3.1. Wait List Requirements and Statuses

3.1.1. Dialysis

Candidates must be undergoing regularly scheduled hemodialysis or peritoneal dialysis to be eligible for listing on the Ontario deceased donor kidney wait list, with the following exceptions:

- Pediatrics (<19 years old)
- Candidates with a GFR<15ml/min on two occasions (estimated or measured)

For more information on referral and listing policies, refer to Ontario's Referral and Listing Criteria: https://www.giftoflife.on.ca/en/professionals.htm#transref

3.1.2. Medical Status

Kidney, kidney/pancreas, pancreas and kidney cluster candidates are listed by their transplant program with one of the following medical statuses:

Medical Status	Definition
High Priority (Medically Urgent)	Eligible for allocation. *Must be approved by the Kidney & Pancreas Special Case Committee.
Normal Priority	Eligible for allocation.
Temporarily On Hold	Candidates on hold are not eligible for allocation of donor kidneys but accrue wait time.

3.1.3. Wait List Suspension

A candidate who has a medical status of "on hold" for longer than 120 consecutive days without having their medical status reviewed by their transplant program is suspended. A suspended candidate is not eligible for organ allocation and does not accrue wait time towards their allocation point calculation.

3.1.4. Serum Testing Requirements and Status

Candidates on the wait list are required to have Antibody (PRA) testing every 4 months as a minimum. A candidate must have a PRA result <180 days old (4 months plus 60-day grace period) to be allocated an organ. If serum testing results are not reported by 120 days, the candidate's transplant programs is alerted. If serum is still not reported by 181 days, the candidate's registration is placed on hold and the candidate's transplant program is alerted.

Kidney, kidney/pancreas and pancreas candidates on the wait list have a system-generated registration status that is based on serum testing requirements as follows:

Serum Status	Definition
Active	Serum testing meets requirements and candidate is eligible for organ allocation.
On Hold	Serum testing requirements have not been met and candidate is not eligible for organ allocation. However, candidate continues to accrue wait time.

Kidney Cluster Candidates: With the exception of kidney/pancreas candidates, kidney cluster candidates are not required to meet the serum testing requirements outlined above and are not placed on hold as a result of out of date serum.

Sensitized Candidates: Minimum single antigen bead testing is required annually for sensitized candidates and every 4 months for candidates with cPRA > 95%.

3.1.5. Eligibility for the National Highly Sensitized Patient (HSP) Registry

Eligibility for the National Highly Sensitized Patient (HSP) Registry is determined by Canadian Blood Services (CBS) policies. In order to be listed on the HSP Registry, the following criteria must be met:

a. The candidate must be undergoing regularly scheduled hemodialysis or peritoneal dialysis.
b. The candidate must be wait-listed for a kidney transplant in a Canadian transplant centre.
c. The recipient must have a calculated panel reaction antibody (cPRA) value of greater than or equal to 95%.

3.1.6. Out of Province Transfers

Kidney and pancreas candidates on the wait list from another Canadian province may have their list date and dialysis start date transferred to an Ontario kidney transplant program only if they met the Ontario criteria at the time of listing. For candidates who did not meet the Ontario criteria at the time of listing, the date when criteria were met will be used as the date of listing. The following documentation must be provided:

- Date of activation on the non-Ontario wait list.
- Start date of regularly scheduled hemodialysis or peritoneal dialysis, or evidence required for pre-emptive listing.

3.2. Wait Time

3.2.1. Wait Time Calculations

Wait time is used to calculate allocation points (see Section 3.3.4). Wait time starts to accrue from the following time points:

Candidate Group	Start of wait time calculation
Adult Kidney and Kidney/Pancreas	The start date of regularly scheduled hemodialysis or peritoneal dialysis.
Pediatric	The earliest of the following: • Start date of dialysis • Date of listing
Pancreas After Kidney (PAK)	The earliest of the following: • Start date of dialysis for their most recent kidney transplant • Date of most recent kidney-only transplant
Pancreas Transplant Alone (PTA)	The date of listing.
Pancreas/PAK re-transplant -	The date of pancreas failure. This applies to candidates whose last transplant was a PTA, PAK or simultaneous pancreas-kidney transplantation (SPK).

Suspension Time: The number of days that a candidate has been suspended from the wait list is subtracted from total wait time.

3.2.2. Wait Time Reinstatement

Kidney Recipients: Recipients of deceased or living donor kidney transplant with early graft failure (</= 90 days) due to surgical (peri-operative factors including recipient coagulopathy, peri-operative graft loss or graft dysfunction) or donor related factors retain credit for previously accrued wait time. They are re-listed with their original start date of regularly scheduled hemodialysis or peritoneal dialysis.

Early graft failure is defined as kidney graft failure within the first 90 days of transplant evidenced by documentation that the recipient is either:

- on dialysis, or
- has measured creatinine clearance/calculated eGFR less than or equal to 20 ml/min on the date that is 90 days following the candidate's kidney transplant; or
- kidney graft removal within the first 90 days of transplant evidenced by a report of the nephrectomy for the transplanted kidney

Requests for wait time re-instatement not relating to surgical or donor related factors are reviewed by the Kidney Transplant Special Case Committee for consideration.

Pancreas Recipients: Recipients who lose their pancreas for technical reasons during the first 90 days after transplantation retain credit for previously accrued wait time. Pancreas failure that leads to the consideration of re-transplantation is defined by:

- Graft removal or the loss of graft function as evidenced by loss of c-peptide and return to insulin therapy at dosages similar to those used pre-transplant.

In rare circumstances that a non-technical failure occurs during the first 90 days after transplantation, pancreas recipients retain their original listing date.

3.3. Allocation

3.3.1. Identifying Potential Recipients (Matching)

Eligible candidates are matched based on their compatibility to the donor on the following criteria:

1) **Blood Group:**

Donor blood group	Recipient blood group can be:
O	O, A, B, AB
A	A, AB
B	B, AB
AB	AB
A, non-A_1 and AB, non-A_1B	B candidates willing to cross the A2 barrier as identified by the transplant program

2) **HLA Virtual Cross Matching:** Kidneys are matched to candidates with a negative virtual crossmatch (VXM) against the donor (see Appendix 3A for VXM rules), with the exception of multi-organ clusters. Organs will not be offered until VXM results are available.
    - Kidney only candidates with a positive VXM to the donor will be filtered out and not be eligible for organ offers.

- Kidney/pancreas and pancreas alone candidates with current Class I or Class II positive VXM results are filtered out and not eligible for organ offers.

3) **Infectious Diseases Serology/NAT:**
   - Hepatitis B core Ab positive donor organs are matched to candidates who have been identified by their transplant program as eligible.
   - Hepatitis C Ab positive donor organs are matched to candidates who have been identified by their transplant program as eligible.
   - Hepatitis C NAT positive donor organs are matched to candidates who have been identified by their transplant program as eligible.

4) **Extended Criteria Donors (ECD):** ECD kidneys are matched to candidates who have been identified by their transplant program as potential recipients.

5) **Double Kidneys:** All donor kidneys are offered as singles first. Kidneys are then offered as doubles once singles have been declined by all transplant programs.

6) **Kidneys from donors less than 4 years of age:** Kidneys from donors less than 4 years of age are only matched to candidates at London Health Sciences, Toronto General Hospital, The Ottawa Hospital, and Kingston General Hospital.

7) **Recipient Specific Criteria:** Other criteria such as height, weight/BMI, age, etc. are taken into consideration by the transplant program for recipient-donor matching.

3.3.2. Local and Provincial/National Allocation

3.3.2.1. Local Allocation

One kidney is allocated to a matched candidate listed at a transplant program in the same region as the donor hospital (see Appendix 3B for a list of donor hospitals and corresponding region for local allocation). Adult kidney only candidates are the only group that have a local donor region. Multi-organ candidates (cluster, combination, staged kidneys), kidney/pancreas candidates, pancreas alone candidates, and pediatric candidates (<19 years) do not have a local donor region. These candidates appear in the highest step they are eligible for in all donor regions, regardless of which program they are listed in.

If there are no matched candidates within the local allocation region, the kidney is allocated to a matched Ontario candidate outside the local allocation region.

Local Allocation Region (See Appendix 3B)	Corresponding Transplant Program(s)
Ottawa	The Ottawa Hospital
Kingston	Kingston General Hospital
Toronto	Toronto General Hospital St. Michael's Hospital The Hospital for Sick Children
Hamilton	St. Joseph's Healthcare Hamilton
London	London Health Sciences Centre

If there is only one kidney, or kidneys are to be used as doubles, the local kidney allocation takes priority over provincial/national allocation.

3.3.2.2. Provincial/National Allocation

The second kidney, if available, is allocated to a matched candidate on the Ontario wait list, regardless of region, or a matched candidate listed on the national Highly Sensitized Patient (HSP) program (as identified by the Canadian Transplant Registry).

Exceptions when Allocating to the National Highly Sensitized Patient (HSP) Program:

- A discussion occurs if an HSP allocation will lead to organ loss.
- Kidneys from donors < 4 years of age will be offered en bloc to Ontario candidates first then HSP.
- The HSP program has established thresholds to limit the number of exported kidneys by any one province. Once the national HSP export threshold for Ontario is met, TGLN will only export an HSP kidney when the following criteria are met:
    - HSP recipient cPRA = 100%

AND

    - No multi-organ, pediatric, kidney-pancreas, list exchange/previous living donor, cPRA >=95% recipients appear on the Ontario kidney allocation.

3.3.2.3. Allocation of Non-Directed Living Donor and List Exchange Donor Kidneys

Transplant programs are encouraged to enter non-directed living donors and list exchange donors into the national Kidney Paired Donation (KPD) program.

- If allocated through the KPD program, Canadian Blood Services generates the match run. If a non-directed donor who starts the KPD chain is an Ontario living donor, TGLN will allocate the unmatched kidney at the end of the chain to the deceased donor wait list within the hospital where the living donor is registered.

- Non-directed living donors and list exchange donors who do not wish to enroll in the KPD program or were not matched through KPD may choose to donate to the Ontario deceased donor wait list and will be allocated within the donor hospital where the living donor is registered.

'Conditional' organ donation (i.e. where a donor nominates, or excludes certain categories of recipient) is not permitted. Non-directed/list exchange donors may become ineligible to be a donor if they are unwilling to have their kidney allocated as per the policy.

3.3.3. Priority Categories for Matched Candidates

Matched candidates are prioritized using the following categories, depending on donor type (see allocation tables in Appendix 3C for specific steps).

Rank	Category
1	Medically urgent candidates
2	HSP candidates as identified by the CTR (for provincial/national kidney allocation only)
3	Pediatric candidates with cPRA = 100, then ≥ 99 to < 100 for donors < 35 years old, ABO identical
4	Adult candidates with cPRA=100, then cPRA ≥ 99 to < 100
5	List exchange/previous living donor (within the local donor region)
6	Multi-organ candidates with cPRA ≥ 95 to < 99, then cPRA < 95
7	Pediatric candidates (< 19 years old) for donors < 35 years old with cPRA ≥ 95 to < 99, then cPRA < 95, ABO identical
8	KP/PAK/PTA candidates with cPRA ≥ 95 to < 99, then cPRA < 95, ABO identical
9	Pediatric candidates (< 19 years old) for donors < 35 years old with cPRA ≥ 95 to < 99, then cPRA < 95, compatible ABO
10	KP/PAK/PTA candidates with cPRA ≥ 95 to < 99, then cPRA < 95, compatible ABO
11	Simultaneous Islet Kidney candidates
12	Candidates with cPRA ≥ 95 to < 99
13	Candidates with cPRA < 95
14	Age matching: < 35 year old donor to < 55 year old candidates

3.3.4. Ranking & Allocation Points

Within each of the priority categories identified in section 3.3.3, candidates are ranked according to ABO compatibility:

1) A_2 and A_2B into identified ABO B candidates
2) ABO Identical
3) ABO Compatible

Within each ABO compatibility group listed above, further ranking is determined by allocation points. Allocation points are calculated using the following formula:

Allocation Points = 0.1 point per 30 days waiting + [(cPRA/100) x 4]

Notes on allocation points calculation:

- cPRA refers to combined Class I and II cumulative cPRA.
- Candidates listed without a dialysis start date accrue allocation points for cPRA, but not waiting time.

In the event that two (or more) candidates have the same allocation points, priority is given to the candidate with the higher cPRA value, then wait time, and then earliest list date.

3.4. Kidney Recovery Policies

3.4.1. Kidney Pumps

Ontario deceased donor kidneys are placed on kidney pumps as the primary organ preservation method with the exception of the following:

- Standard Criteria Donor / Neurological Determination of Death Donor (SCD/NDD) kidneys allocated within the local region
- Pediatric donor kidneys
- Kidney/Pancreas donor kidneys

Note: The Ottawa Hospital has requested to use pumps for all kidneys.
Note: A kidney allocated to a Simultaneous Islet Kidney recipient must be pumped.

Under exceptional circumstances, transplant programs may request an exemption to use kidney pumps for locally allocated SCD/NDD kidneys. In these cases, transplant programs must request a kidney pump from TGLN at the time of offer and provide a medical rationale for the request (e.g. long expected cold ischemic time, organ quality).

3.4.2. Left versus Right Kidney Allocation

Left and right kidney allocation will take place once the kidneys have been recovered and visualized within the donor recovery OR. Kidneys should be assigned based on the anatomical needs of the recipient and the suitability of the kidney for transplantation. Where both the left and the right kidney are suitable for transplantation, the left kidney will be assigned using the following prioritization:

- Kidney cluster candidate (mandatory discussion between affected programs if both allocated recipients are cluster candidates)
- Recipient with a documented requirement/ anatomical rational for left or right
- Ontario HSP or Medically Urgent recipient
- Surgical recovery team recipient

Where cause for concern exists that only one kidney may be suitable for transplantation, the kidney will be assigned using the following prioritization:

- Ontario HSP (99-100% cPRA) or Medically Urgent recipient
- Kidney cluster candidate (mandatory discussion between affected programs if both allocated recipients are cluster)
- Pediatric candidate
- Other candidates (with mandatory discussion between affected programs)

The assignment of left and right kidney may be altered at the discretion of the surgical recovery team but a mandatory discussion with affected programs is required prior to the departure from the donor recovery OR.

3.5. Key Definitions

A2 and A2B into B Acceptable	ABO B candidates willing to cross the A2 barrier and accept ABO A donors as identified by the transplant program.

Allocation points	Allocation points are used to determine priority on the waitlist. Allocation points=0.1 point per 30 days waiting + [(cPRA/100) x 4]. Candidates listed without a dialysis start date accrue allocation points for cPRA but not waiting time.
Anonymous Donor	Living donors who may donate a kidney anonymously to the national Kidney Paired Donation (KPD) program or to the Ontario deceased kidney wait list.
Candidate	A person on the organ transplant waiting list.
cPRA	cPRA is the percentage of Canadian deceased organ donors expected to have one of more of the candidate's unacceptable antigens. cPRA scores are calculated automatically when HLA labs enter a candidate's serum antibody results. • TGLN uses the Canadian cPRA calculator that is used by the Canadian Transplant Registry. cPRA scores include Class I and Class II cumulative cPRA. cPRA values will automatically recalculate if there are any additions or deletions to the candidate's unacceptable list. cPRA scores for provincial and HSP kidneys are calculated for all unacceptable antigens at A, B, C, DRB1, DQA1, DQB1, DPA1, DPB1 and DRB345.
Deceased donor	A deceased person for whom at least one organ has been retrieved and transplanted.
Double Kidney Allocation	ECD donors with an eGFR <60 are eligible for double kidney allocation. Donor kidneys meeting the criteria for double kidneys are offered to programs accepting double kidneys. All other donor kidneys are offered as singles first, and then offered as doubles once singles have been declined by all programs.
Extended Criteria Donor (ECD)	ECD status will be determined using the donor Kidney Donor Profile Index (KDPI) score. Adult donors with a KDPI score ≥ 80 will be classified as ECD.
ECD Recipient	ECD kidneys are allocated to candidates based on ECD recipient acceptability. ECD candidates must consent to receive ECD kidneys and meet one of the following criteria: • > 60 years of age • Diabetes candidate >50 years of age • Candidates with other significant co-morbidities as determined by the attending transplant physician.
Kidney-Pancreas	Candidates on the wait list for a simultaneous kidney and pancreas transplant.
List Exchange	A list exchange is when a living donor gives a kidney to the deceased donor list because they are not compatible with their intended recipient. Their list exchange recipient will then receive priority on the deceased donor allocation. • **List exchange donor**: Donor kidneys are allocated to the deceased kidney transplant wait list within the donor hospital. • **List exchange recipient**: The list exchange recipient is prioritized on the deceased waiting list in the local allocation region once the list exchange donor kidney is transplanted.

Multi-Organ Kidney Candidate	Multi-organ kidney candidates are defined as any cluster or combination of kidney with another organ (excluding kidney/pancreas): • **Cluster:** A candidate who is activated on the wait list for a kidney and non-kidney organ(s) (heart, lung, liver, or small bowel) and receives all organs simultaneously from the same deceased donor. • **Combination:** A candidate who is activated on the wait list for a kidney and non-kidney organ(s) (heart, lung, liver, or small bowel) and may receive each organ at different times from different donors. • **Staged:** A candidate who is activated on the wait list for a non-kidney organ(s) and receives a non-kidney organ(s) transplant (heart, lung, liver, or small bowel). These patients may be subsequently activated on the wait list for a kidney transplant once they recover from their non-renal transplant.
Pancreas After Kidney (PAK)	Candidates who have received a previous kidney only transplant and are now placed on the wait list for a pancreas are classified as PAK. In order to be considered PAK, candidates must meet the following conditions: • Candidate qualified for both a kidney and a pancreas at the time of listing • Candidate received a living or deceased donor kidney only transplant and are now listed for a pancreas transplant. • Candidate's most recent transplant is the kidney only transplant
Pancreas Transplant Alone (PTA)	Candidates who are placed on the wait list for a pancreas transplant alone, without a receiving a prior kidney only transplant
Pancreas Re-Transplant	Candidates who have received a previous pancreas transplant and are registered for a second pancreas transplant. This includes patients whose last transplant was a PTA, PAK or SPK.
Previous Living Donors	Candidates who have previously donated a kidney to a recipient at a Canadian transplant program or other out-of-country transplant program.
Simultaneous Islet Kidney (SIK)	Candidates who are placed on the wait list for a simultaneous islet kidney transplant.
Virtual Crossmatch	A virtual crossmatch is a crossmatch that involves a determination of the presence or absence of donor HLA specific antibodies (DSA) in a patient by comparing the patients' HLA antibody specificity profile to the HLA typing of the proposed donor. Kidney only candidates with a positive virtual crossmatch to the donor are filtered out and not eligible for organ offers. Kidney/pancreas and pancreas candidates with current Class I or Class II positive virtual crossmatch results are filtered out and are eligible for organ offers.
Wait List	A computerized list of candidates who are waiting to be matched with specific deceased donor organs for transplant.

3.6. Kidney and Pancreas Policy Appendices

Appendix 3A: Virtual Crossmatch (VXM) Rules for Kidney Allocation

#	VXM RULES
1.	cPRA for provincial and HSP kidneys includes all unacceptable antigens at A, B, C, DRB1, DQA1, DQB1, DPA1, DPB1 and DRB345.
2.	VXM in Ontario is limited to A, B, Bw, C, DRB1, DRB3/4/5, and DQB1 loci. DQA1, DPA1 and DPB1 loci are mandatory in data entry, but are NOT taken into account when filtering out candidates. These loci are included in VXM results for information purposes only.
3.	The scope of VXM for the purpose of filtering out kidney candidates (i.e. determining whether a candidate should be displayed on the allocation list or not): If unacceptable DSA in Current or Cumulative in Class I or Class II, and on the core set of loci (A, B, Bw, C, DRB1, DRB3/4/5, DQA1, DQB1). Only candidates with a negative VXM (no DSA) on the core set of loci will appear on the allocation list.
4.	If the Unacceptable DSA are on the optional loci (DPA1 or DPB1), then the candidate still appears on the allocation list as per the VXM scope above. The VXM on the allocation report will contain a Positive: DP0401 in the unacceptable grid slot. The accepting program decides if they would like to accept the kidney in the setting of DP antibodies.
5.	Candidates with allele specific POSSIBLE DSA but with an otherwise negative VXM (no other DSA) appear on the allocation list. For example, the VXM on the allocation report will show DR52 in the Possible Allele Specific grid slot if this is the allele specific antibody in question. The alleles must be resolved by the candidate and donor HLA labs before the organ offer can be accepted.
6.	If the donor's HLA typing has not been completed, or is partially done (i.e. with missing loci in the core set of loci), allocation will not be allowed.
7.	If a candidate's HLA antibodies have never been tested (with a non-zero peak PRA and with no antigen specificities), the candidate will be filtered out (i.e. will not show up on the allocation list).
8.	If a candidate has no DSA (negative VXM) but some of the antibodies to the donor HLA are untested, then the candidate will still show up on the allocation list. For example, if the donor's HLA typing is "A2 A80 B61 B72 CW7 DR1……", but A80 was not tested in the candidate's serum, then the candidate will still appear on allocation, but the VXM will show A80 in the Untested grid slot on the allocation list.
9.	The scope of VXM for the purpose of filtering out KP, PAK, PTA and SIK candidates (i.e. determining whether a candidate should be displayed on the allocation list or not): If unacceptable DSA in Current or Cumulative in Class I or Class II, and on the core set of loci (A, B, Bw, C, DRB1, DRB3/4/5, DQA1, DQB1). Only KP, PAK, PTA, SIK candidates with a negative VXM (no DSA) for current class I or class II on the core set of loci will appear on the allocation list. All cumulative class I and class II results are communicated to the transplant program at the time of offer and allocation.

Appendix 3B: Donor Hospital Regions for Local Kidney Allocation

Donor Hospital Name	Local Allocation Region
Bayshore Centre - Stoney Creek	Hamilton
Brantford General Hospital	Hamilton
Cambridge Memorial Hospital	Hamilton
Douglas Memorial – NHS	Hamilton
Georgetown Hospital	Hamilton
Grand River – Freeport	Hamilton
Grand River – Kitchener	Hamilton
Greater Niagara General	Hamilton
Groves Memorial	Hamilton
Guelph General Hospital	Hamilton
Hamilton General Hospital	Hamilton
Hotel Dieu Shaver	Hamilton
Joseph Brant Memorial Hospital	Hamilton
Juravinski Hospital – Ham	Hamilton
Kincardine & District General	Hamilton
Listowel Memorial Hospital	Hamilton
Louise Marshall Hospital	Hamilton
Mcmaster Children's – Ham	Hamilton
Niagara On The Lake	Hamilton
Palmerston & District Hospital	Hamilton
Paris General Hospital	Hamilton
Port Colborne General	Hamilton
St. Catharines General	Hamilton
St. Joseph's Health – Hamilton	Hamilton
St. Joseph’s Health – West 5th	Hamilton
St. Joseph's Hospital – Brantford	Hamilton
St. Josephs Hospital – Guelph	Hamilton
St. Mary's General Hospital	Hamilton
St. Marys Memorial Hospital – HP	Hamilton
St. Peter's Hospital HHS	Hamilton
Welland County General	Hamilton
West Haldimand General Hospital	Hamilton
West Lincoln Memorial Hospital	Hamilton
Wingham & District Hospital	Hamilton
Belleville Dialysis Clinic	Kingston
Campbellford Memorial Hospital	Kingston
Haliburton Hospital	Kingston
Kingston Health Sciences Centre - Hotel Dieu Hospital	Kingston
Kingston Health Sciences Centre - Kingston General Hospital	Kingston
Lennox & Addington County General	Kingston
Picton Dialysis Unit	Kingston
Quinte Health Care - Belleville General Hospital	Kingston
Quinte Health Care - Prince Edward County Memorial - Picton	Kingston
Quinte Health Care - Trenton Memorial Hospital	Kingston
Adam Linton Centre	London
Alexandra Hospital	London
Alexandra Marine & General Hos	London
Bluewater Health - Charlotte Eleanor Englehart	London
Bluewater Health – Sarnia/Norman Site	London
Chatham Kent Health Alliance	London
Children's Hospital Of Western Ontario	London

Donor Hospital Name	Local Allocation Region
Clinton Public Hospital	London
Coroners Office: South Western Ontario	London
Funeral Home - South Western Ontario	London
Grey Bruce Regional Health Services	London
Health Sciences North	London
Home Death - South Western Ontario	London
Leamington District Memorial	London
Norfolk General Hospital	London
Nursing Home - South Western Ontario	London
Plummer Memorial Public Hospital	London
Richard's Landing Hospital	London
Sault Area Hospital	London
Seaforth Community Hospital	London
SJHC: Parkwood Hospital	London
South Huron Hospital Association	London
St Joseph's Health Centre – Sarnia	London
St. Joseph's Continuing Care – Sudbury	London
St. Joseph's Health – London	London
St. Joseph's Hospital – Chatham	London
St. Thomas Elgin General Hospital	London
Stratford General Hospital	London
Strathroy Middlesex General Hospital	London
Chatham Kent - Sydenham District Hospital	London
Thessalon Hospital	London
Tillsonburg District Memorial	London
University Hospital – London	London
Victoria Hospital- London	London
Weeneebayko General Hospital	London
Windsor Regional Hospital – Ouellette Campus	London
Windsor Regional Hospital - Metropolitan Campus	London
Windsor Regional Western Campus	London
Woodstock General Hospital	London
Almonte General Hospital	Ottawa
Arnprior District Memorial Hospital	Ottawa
Bayshore Home Health – Brockville	Ottawa
Brockville General Hospital	Ottawa
Carleton Place & District Memorial	Ottawa
Children's Hospital Of Eastern Ontario	Ottawa
Cornwall Community Hospital	Ottawa
Coroners Office: Eastern Ontario	Ottawa
Deep River & District Hospital	Ottawa
Elizabeth Bruyere	Ottawa
Funeral Home - Eastern Ontario	Ottawa
Glengarry Memorial Hospital	Ottawa
Hawkesbury & District General	Ottawa
Home Death - Eastern Ontario	Ottawa
Hotel Dieu Hospital – Cornwall	Ottawa
Kemptville District Hospital	Ottawa
Montfort Hospital	Ottawa
Nursing Home - Eastern Ontario	Ottawa
Ottawa - Carleton Dialysis Centre	Ottawa
Ottawa Heart Institute	Ottawa
Ottawa Hospital – Civic	Ottawa
Ottawa Hospital – General	Ottawa

Donor Hospital Name	Local Allocation Region
Pembroke Civic Hospital	Ottawa
Pembroke General Hospital	Ottawa
Perth And Smith Falls Community	Ottawa
Perth Great War Memorial Hospital	Ottawa
Queensway Carleton Hospital	Ottawa
Quinte Healthcare North Hastings	Ottawa
Renfrew Victoria Hospital	Ottawa
Riverside Hospital – Ottawa	Ottawa
Salvation Army Grace Hospital (Ottawa)	Ottawa
St. Joseph's Continuing Care – Cornwall	Ottawa
St. Vincent De Paul Hospital	Ottawa
Winchester District Memorial	Ottawa
Addiction Research Foundation	Toronto
Anson General Hospital	Toronto
Atikokan General Hospital	Toronto
Attawapiskat	Toronto
Barry's Bay St. Francis Memorial	Toronto
Baycrest Centre Geriatric	Toronto
Bingham Memorial Hospital	Toronto
Blind River District Health Centre	Toronto
Branson Division North York General	Toronto
Bridgepoint Active Healthcare	Toronto
Bruce Peninsula Health Service	Toronto
Burk's Falls & District	Toronto
Burlington Dialysis Center	Toronto
Casey House Hospice	Toronto
Chapleau Health Services	Toronto
Chesley District Memorial Hospital	Toronto
Collingwood General & Marine Hospital	Toronto
Coroners Office: Northern Ontario	Toronto
Coroners Office: Central & GTA	Toronto
County Bruce Hospital	Toronto
DMC – Ajax	Toronto
DMC – Markham	Toronto
DMC – Peterborough	Toronto
Doctors Hospital	Toronto
Donwood Institute	Toronto
Dryden Regional Health Centre	Toronto
Dufferin-Caledon Health Care	Toronto
Durham Hospital	Toronto
Englehart & District Hospital	Toronto
Espanola General Hospital	Toronto
Fort Albany	Toronto
Four Counties General Hospital	Toronto
Funeral Home - Central & GTA	Toronto
Funeral Home - Northern Ontario	Toronto
Georgian Bay General Hospital – Midland Site	Toronto
Georgian Bay General Hospital - Penetanguishene	Toronto
Geraldton District Hospital	Toronto
Grey Bruce Health - Markdale	Toronto
Grey Bruce Health - Meaford	Toronto
Haldimand War Memorial Hospital	Toronto
Hanover & District Hospital	Toronto
Headwaters Healthcare Center	Toronto

Donor Hospital Name	Local Allocation Region
Holland Bloorview Kids Rehab	Toronto
Home Death - Central & GTA	Toronto
Home Death - Northern Ontario	Toronto
Hornepayne Community Hospital	Toronto
Hospital For Sick Kids	Toronto
Humber River Hospital	Toronto
Huntsville District Memorial Hospital	Toronto
Huronia District Hospital	Toronto
James Bay General - Moosonee	Toronto
Kirkland Lake & District Hos	Toronto
Lady Dunn General Hospital	Toronto
Lady Minto Hospital	Toronto
Lake Of The Woods District Hospital	Toronto
Lakeridge Health Bowmanville	Toronto
Lakeridge Health Oshawa	Toronto
Lakeridge Health Port Perry	Toronto
Lakeridge Health Whitby	Toronto
Lions Camp Dorset	Toronto
Mackenzie Health – Cortellucci Vaughan Hospital	Toronto
Mackenzie Richmond Hill (Aka YCH)	Toronto
Manitoulin Health - Little Current	Toronto
Manitoulin Health Centre - Mindemoya	Toronto
Manitouwadge General Hospital	Toronto
Markham Stouffville Hospital	Toronto
Mattawa General Hospital	Toronto
Mccausland Hospital	Toronto
Milton District Hospital	Toronto
Minden Hospital	Toronto
Sinai Health System - Mount Sinai Hospital	Toronto
New Liskard Temiskaming Hospital	Toronto
Nipigon District Memorial	Toronto
North Bay Regional Hospital	Toronto
North West Gta	Toronto
North York General Hospital	Toronto
Northumberland Hills Hospital - Cobourg	Toronto
Notre-Dame	Toronto
Nursing Home - Central & Gta	Toronto
Nursing Home - Northern Ontario	Toronto
Halton Healthcare - Oakville Trafalgar Memorial	Toronto
Peterborough Clinic	Toronto
Peterborough Regional Health Centre	Toronto
Pickering Dialysis Management Centre	Toronto
Princess Margaret Hospital	Toronto
Providence Healthcare	Toronto
Rainy River Valley	Toronto
Red Lake Margaret Cochenour	Toronto
Ross Memorial Hospital	Toronto
Lakeridge Health Ajax Pickering	Toronto
Scarborough Rouge Hospital - Centenary	Toronto
Royal Victoria Hospital	Toronto
Runnymede Healthcare Centre	Toronto
Salvation Army Grace Hospital – Grace Manor (Toronto)	Toronto
Saugeen Memorial Hospital	Toronto
Scarborough Rouge Hospital - Birchmount	Toronto

Donor Hospital Name	Local Allocation Region
Scarborough Rouge Hospital – General Site	Toronto
Scarborough Satellite	Toronto
Sensenbrenner Hospital	Toronto
Shelburne District Hospital	Toronto
Sheppard Centre	Toronto
Sioux Lookout General Hospital	Toronto
Smooth Rock Falls Hospital	Toronto
Soldiers' Memorial Hospital	Toronto
South Muskoka Memorial Hospital	Toronto
Southlake Regional Health Centre	Toronto
St Joseph's Health Centre - Toronto	Toronto
St Michael's Hospital	Toronto
St. John's Rehab	Toronto
St. Joseph's Care Group - Thunder Bay	Toronto
St. Joseph's General - Elliot Lake	Toronto
Stevenson Memorial Hospital	Toronto
West Nipissing General Hospital	Toronto
Sunnybrook Health Sciences	Toronto
Sunnybrook Ortho & Arthritic	Toronto
Sussex Centre	Toronto
TGLN - PRC	Toronto
Thunder Bay Regional	Toronto
Timmins & District Hospital	Toronto
Michael Garron Hospital	Toronto
Toronto General Hospital	Toronto
Toronto Western Hospital	Toronto
Trillium Health Partners – Queensway Health	Toronto
Trillium Health Partners – Mississauga Hospital	Toronto
Trillium Health Partners – Credit Valley Hospital	Toronto
Uxbridge Hospital - MSH	Toronto
West Park Healthcare Centre	Toronto
West Parry Sound Health Centre	Toronto
William Osler Health System - Etobicoke	Toronto
William Osler Health System - Brampton	Toronto
Wilson Memorial General Hospital	Toronto
Women's College Hospital	Toronto

Appendix 3C: Kidney Allocation Tables

Candidates will be allocated to the highest ranking category which they are eligible for. Multi-organ candidates (cluster, combination, staged kidneys), kidney/pancreas candidates, pancreas alone candidates, and pediatric candidates (<19 years) do not have a local donor region and will appear in all local region steps, regardless of which program they are listed in.

Table 1. Allocation of Kidneys from Donors < 4 years

LOCAL ALLOCATION			
#	**Candidates within:**	**Candidate category:**	**ABO Ranking within category:**
1	Local Region	Medically Urgent	A2/A2B, identical ABO, compatible ABO
2	Local Region	cPRA = 100	A2/A2B, identical ABO, compatible ABO
3	Local Region	cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
4	Local Region	Kidney List Exchange/Previous Living Donor	A2/A2B, identical ABO, compatible ABO
5	All Ontario	Multi-Organ, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
6	All Ontario	Multi-Organ, cPRA < 95	A2/A2B, identical ABO, compatible ABO
7	Local Region	cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
8	Local Region	cPRA < 95	A2/A2B, identical ABO, compatible ABO
9	Outside Donor Region	Medically Urgent	A2/A2B, identical ABO, compatible ABO
10	Outside Donor Region	cPRA = 100	A2/A2B, identical ABO, compatible ABO
11	Outside Donor Region	cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
12	Outside Donor Region	cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
13	Outside Donor Region	cPRA < 95	A2/A2B, identical ABO, compatible ABO
PROVINCIAL/NATIONAL ALLOCATION			
#	**Candidates that are within:**	**Candidate category:**	**ABO Ranking within category:**
1	All Ontario	Medically Urgent	A2/A2B, identical ABO, compatible ABO
2	All Ontario & Canada	HSP candidates identified by the CTR	N/A
3	All Ontario	cPRA = 100	A2/A2B, identical ABO, compatible ABO
4	All Ontario	cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
5	All Ontario	Kidney List Exchange/Previous Living Donor within donor region	A2/A2B, identical ABO, compatible ABO
6	All Ontario	Multi-Organ, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
7	All Ontario	Multi-Organ, cPRA < 95	A2/A2B, identical ABO, compatible ABO
8	All Ontario	cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
9	All Ontario	cPRA < 95	A2/A2B, identical ABO, compatible ABO
10	All Canada	Out of Province	N/A
11	U.S (UNOS)	U.S.	N/A

Table 2. Allocation of Kidneys from Donors < 35 years

LOCAL ALLOCATION			
#	**Candidates that are within the:**	**Candidate category:**	**ABO Ranking within category:**
1	All Ontario	Medically Urgent, Pediatric	A2/A2B, identical ABO, compatible ABO
2	Local Region	Medically Urgent, Adult	A2/A2B, identical ABO, compatible ABO
3	All Ontario	Pediatric, cPRA = 100	A2/A2B, identical ABO, compatible ABO
4	All Ontario	Pediatric, cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
5	Local Region	Adult, cPRA = 100	A2/A2B, identical ABO, compatible ABO
6	Local Region	Adult, cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
7	Local Region	Kidney List Exchange/ Previous Living Donor	A2/A2B, identical ABO, compatible ABO
8	All Ontario	Multi-Organ, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
9	All Ontario	Multi-Organ, cPRA <95	A2/A2B, identical ABO, compatible ABO
10	All Ontario	Pediatric, cPRA ≥ 95 to < 99	A2/A2B, identical ABO
11	All Ontario	Pediatric, cPRA < 95	A2/A2B, identical ABO
12	All Ontario	KP/PAK/PTA, cPRA ≥ 95 to < 99	A2/A2B, identical ABO
13	All Ontario	KP/PAK/PTA, cPRA < 95	A2/A2B, identical ABO
14	All Ontario	Pediatric, cPRA ≥ 95 to < 99	Compatible ABO
15	All Ontario	Pediatric, cPRA < 95	Compatible ABO
16	All Ontario	KP/PAK/PTA, cPRA ≥ 95 to < 99	Compatible ABO
17	All Ontario	KP/PAK/PTA, cPRA < 95	Compatible ABO
18	All Ontario	Simultaneous Islet Kidney	A2/A2B, identical ABO, compatible ABO
19	Local Region	Adult ≤ 55 years, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
20	Local Region	Adult > 55 years, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
21	Local Region	Adult ≤ 55 years, cPRA < 95	A2/A2B, identical ABO, compatible ABO
22	Local Region	Adult > 55 years, cPRA < 95	A2/A2B, identical ABO, compatible ABO
23	Outside Donor Region	Medically Urgent	A2/A2B, identical ABO, compatible ABO
24	Outside Donor Region	Adult, cPRA = 100	A2/A2B, identical ABO, compatible ABO
25	Outside Donor Region	Adult, cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
26	Outside Donor Region	Adult ≤ 55 years, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
27	Outside Donor Region	Adult > 55 years, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
28	Outside Donor Region	Adult ≤ 55 years, cPRA < 95	A2/A2B, identical ABO, compatible ABO

29	Outside Donor Region	Adult > 55 years, cPRA < 95	A2/A2B, identical ABO, compatible ABO
PROVINCIAL/NATIONAL ALLOCATION			
#	**Candidates that are within the:**	**Candidate category**	**ABO Ranking within category:**
1	All Ontario	Medically Urgent Pediatric	A2/A2B, identical ABO, compatible ABO
2	All Ontario	Medically Urgent Adult	A2/A2B, identical ABO, compatible ABO
3	All Ontario & Canada	HSP candidates identified by the CTR	N/A
4	All Ontario	Pediatric, cPRA = 100	A2/A2B, identical ABO, compatible ABO
5	All Ontario	Pediatric, cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
6	All Ontario	Adult, cPRA = 100	A2/A2B, identical ABO, compatible ABO
7	All Ontario	Adult, cPRA ≥ 99 to <100	A2/A2B, identical ABO, compatible ABO
8	All Ontario	Kidney List Exchange/Previous Living Donor within donor region	A2/A2B, identical ABO, compatible ABO
9	All Ontario	Multi-Organ, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
10	All Ontario	Multi-Organ, cPRA <95	A2/A2B, identical ABO, compatible ABO
11	All Ontario	Pediatric, cPRA ≥ 95 to < 99	A2/A2B, identical ABO
12	All Ontario	Pediatric, cPRA < 95	A2/A2B, identical ABO
13	All Ontario	KP/PAK/PTA, cPRA ≥ 95 to < 99	A2/A2B, identical ABO
14	All Ontario	KP/PAK/PTA, cPRA < 95	A2/A2B, identical ABO
15	All Ontario	Pediatric, cPRA ≥ 95 to < 99	Compatible ABO
16	All Ontario	Pediatric, cPRA < 95	Compatible ABO
17	All Ontario	KP/PAK/PTA, cPRA ≥ 95 to < 99	Compatible ABO
18	All Ontario	KP/PAK/PTA, cPRA < 95	Compatible ABO
19	All Ontario	Simultaneous Islet Kidney	A2/A2B, identical ABO, compatible ABO
20	All Ontario	Adult ≤ 55 years, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
21	All Ontario	Adult > 55 years, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
22	All Ontario	Adult ≤ 55 years, cPRA < 95	A2/A2B, identical ABO, compatible ABO
23	All Ontario	Adult > 55 years, cPRA < 95	A2/A2B, identical ABO, compatible ABO
24	All Canada	Out of Province	N/A
25	U.S (UNOS)	U.S.	N/A

Table 3. Allocation of Kidneys from non-extended criteria donor ≥ 35 (non-ECD)

LOCAL ALLOCATION			
#	**Candidates that are within:**	**Candidate category:**	**ABO Ranking within category:**
1	All Ontario	Medically Urgent	A2/A2B, identical ABO, compatible ABO
2	Local Region	cPRA = 100	A2/A2B, identical ABO, compatible ABO
3	Local Region	cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
4	Local Region	Kidney List Exchange/Previous Living Donor	A2/A2B, identical ABO, compatible ABO
5	All Ontario	Multi-Organ, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
6	All Ontario	Multi-Organ, cPRA <95	A2/A2B, identical ABO, compatible ABO
7	All Ontario	KP/PAK/PTA, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
8	All Ontario	KP/PAK/PTA, cPRA < 95	A2/A2B, identical ABO, compatible ABO
9	All Ontario	Simultaneous Islet Kidney	A2/A2B, identical ABO, compatible ABO
10	Local Region	cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
11	Local Region	cPRA < 95	A2/A2B, identical ABO, compatible ABO
12	Outside Donor Region	Medically Urgent	A2/A2B, identical ABO, compatible ABO
13	Outside Donor Region	cPRA = 100	A2/A2B, identical ABO, compatible ABO
14	Outside Donor Region	cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
15	Outside Donor Region	cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
16	Outside Donor Region	cPRA < 95	A2/A2B, identical ABO, compatible ABO
PROVINCIAL/NATIONAL ALLOCATION			
#	**Candidates that are within:**	**Candidate category:**	**ABO Ranking within category:**
1	All Ontario	Medically Urgent	A2/A2B, identical ABO, compatible ABO
2	All Ontario & Canada	HSP candidates identified by the CTR	N/A
3	All Ontario	cPRA = 100	A2/A2B, identical ABO, compatible ABO
4	All Ontario	cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
5	All Ontario	Kidney List Exchange/Previous Living Donor within donor region	A2/A2B, identical ABO, compatible ABO
6	All Ontario	Multi-Organ, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
7	All Ontario	Multi-Organ, cPRA < 95	A2/A2B, identical ABO, compatible ABO
8	All Ontario	KP/PAK/PTA, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
9	All Ontario	KP/PAK/PTA, cPRA < 95	A2/A2B, identical ABO, compatible ABO
10	All Ontario	Simultaneous Islet Kidney	A2/A2B, identical ABO, compatible ABO
10	All Ontario	cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
11	All Ontario	cPRA < 95	A2/A2B, identical ABO, compatible ABO
12	All Canada	Out of Province	N/A

13	U.S (UNOS)	U.S.	N/A

Table 4. Allocation of Kidneys from extended criteria donors (ECD)

LOCAL ALLOCATION			
#	**Candidates that are within:**	**Candidate category:**	**ABO Ranking within category:**
1	All Ontario	ECD Medically Urgent	A2/A2B, identical ABO, compatible ABO
2	Local Region	ECD Candidates cPRA = 100	A2/A2B, identical ABO, compatible ABO
3	Local Region	ECD Candidates cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
4	Local Region	ECD Kidney List Exchange/ Previous Living Donor	A2/A2B, identical ABO, compatible ABO
5	All Ontario	ECD Multi-Organ, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
6	All Ontario	ECD Multi-Organ, cPRA < 95	A2/A2B, identical ABO, compatible ABO
7	Local Region	ECD Candidates, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
8	Local Region	ECD Candidates, cPRA < 95	A2/A2B, identical ABO, compatible ABO
9	Outside Donor Region	ECD Medically Urgent	A2/A2B, identical ABO, compatible ABO
10	Outside Donor Region	ECD Candidates, cPRA = 100	A2/A2B, identical ABO, compatible ABO
11	Outside Donor Region	ECD Candidates, cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
12	Outside Donor Region	ECD Candidates, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
13	Outside Donor Region	ECD Candidates, cPRA < 95	A2/A2B, identical ABO, compatible ABO
PROVINCIAL/NATIONAL ALLOCATION			
#	**Candidates that are within:**	**Candidate category:**	**ABO Ranking within category:**
1	All Ontario	ECD Medically Urgent	A2/A2B, identical ABO, compatible ABO
2	All Ontario & Canada	HSP candidates identified by the CTR	N/A
3	All Ontario	ECD Candidates, cPRA = 100	A2/A2B, identical ABO, compatible ABO
4	All Ontario	ECD Candidates, cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
5	All Ontario	ECD Kidney List Exchange/ Previous Living Donor within donor region	A2/A2B, identical ABO, compatible ABO
6	All Ontario	ECD Multi-Organ, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
7	All Ontario	ECD Multi-Organ, cPRA < 95	A2/A2B, identical ABO, compatible ABO
8	All Ontario	ECD Candidates, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
9	All Ontario	ECD Candidates, cPRA < 95	A2/A2B, identical ABO, compatible ABO

Table 5. Allocation of Kidneys from anonymous/living exchange (LE) living donors < 35

LOCAL ALLOCATION			
#	**Candidates that are within:**	**Candidate category:**	**ABO Ranking within category:**
1	Donor Hospital	Medically Urgent Pediatric	A2/A2B, identical ABO, compatible ABO
2	Donor Hospital	Medically Urgent Adult	A2/A2B, identical ABO, compatible ABO
3	Donor Hospital	Pediatric, cPRA = 100	A2/A2B, identical ABO, compatible ABO
4	Donor Hospital	Pediatric, cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
5	Donor Hospital	Adult, cPRA = 100	A2/A2B, identical ABO, compatible ABO
6	Donor Hospital	Adult, cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
7	Donor Hospital	Kidney List Exchange/Previous Living Donor	A2/A2B, identical ABO, compatible ABO
8	Donor Hospital	Multi-Organ, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
9	Donor Hospital	Multi-Organ, cPRA < 95	A2/A2B, identical ABO, compatible ABO
10	Donor Hospital	Pediatric, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
11	Donor Hospital	Pediatric, cPRA < 95	A2/A2B, identical ABO, compatible ABO
12	Donor Hospital	Adult ≤ 55 years, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
13	Donor Hospital	Adult > 55 years, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
14	Donor Hospital	Adult ≤ 55 years, cPRA < 95	A2/A2B, identical ABO, compatible ABO
15	Donor Hospital	Adult > 55 years, cPRA < 95	A2/A2B, identical ABO, compatible ABO

Table 6. Allocation of Kidneys from anonymous/living exchange (LE) living donors ≥ 35

LOCAL ALLOCATION			
#	**Candidates that are within:**	**Candidate category:**	**ABO Ranking within category:**
1	Donor Hospital	Medically Urgent	A2/A2B, identical ABO, compatible ABO
2	Donor Hospital	cPRA = 100	A2/A2B, identical ABO, compatible ABO
3	Donor Hospital	cPRA ≥ 99 to < 100	A2/A2B, identical ABO, compatible ABO
4	Donor Hospital	Kidney List Exchange/Previous Living Donor	A2/A2B, identical ABO, compatible ABO
5	Donor Hospital	Multi-Organ, cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
6	Donor Hospital	Multi-Organ, cPRA < 95	A2/A2B, identical ABO, compatible ABO

7	Donor Hospital	cPRA ≥ 95 to < 99	A2/A2B, identical ABO, compatible ABO
8	Donor Hospital	cPRA < 95	A2/A2B, identical ABO, compatible ABO

4. Pancreatic Islet Policies

4.1. Wait List Requirements and Statuses

4.1.1. Medical Status

Pancreatic islet candidates are listed by their transplant program with one of the following medical statuses:

Medical Status	Definition
Normal Priority	Eligible for allocation.
Temporarily On Hold	Candidates on hold are not eligible for allocation of islets but accrue wait time.

For more information on referral and listing policies, refer to Ontario's Referral and Listing Criteria: https://www.giftoflife.on.ca/en/professionals.htm#transref

4.1.2. Wait List Suspension

A candidate who has a medical status of "On Hold" for longer than 120 consecutive days without having their medical status reviewed by their transplant program is suspended. A suspended candidate is not eligible for islet allocation and does not accrue wait time towards their allocation point calculation.

4.1.3. Serum Testing Requirements and Status

Candidates on the wait list are required to have Antibody (PRA) testing every 4 months as a minimum. A candidate must have a PRA result <180 days old (4 months plus 60 day grace period) to be allocated islets. If serum testing results are not reported by 120 days, the candidate's transplant program is alerted. If serum is still not reported by 181 days, the candidate's serum status is placed on hold and the candidate's transplant program is alerted.

Islet candidates on the wait list have a system-generated registration status that is based on serum testing requirements as follows:

Serum Status	Definition
Active	Serum testing meets requirements and candidate is eligible for islet allocation.
On Hold	Serum testing requirements have not been met and candidate is not eligible for islet allocation. However, candidate continues to accrue wait time.

Sensitized Candidates: Minimum single antigen bead testing is required annually for sensitized candidates and every 4 months for candidates with cPRA > 95%.

4.1.4. Out of Province Transfers

Pancreatic islet candidates on the wait list from another Canadian province may have their list date transferred to an Ontario pancreatic islet transplant program only if they met the Ontario criteria at the time of listing. For candidates who did not meet the Ontario criteria at the time of listing, the date when criteria were met will be used as the date of listing. The following documentation must be provided:

- Date of activation on the non-Ontario wait list.

4.2. Wait Time

4.2.1. Wait Time Calculations

Wait time starts to accrue from the date and time when a patient is listed for transplantation. Wait time is retained from the first infusion list date until the clinical team indicates the transplant is complete.

Suspension Time: The number of days that a candidate has been suspended from the wait list is subtracted from total wait time.

4.3. Allocation

4.3.1. Identifying Potential Recipients (Matching)

Eligible candidates are matched based on their compatibility to the donor on the following criteria:

1) **Blood Group:**

Donor blood group	Recipient blood group can be:
O	O, A, B, AB
A	A, AB
B	B, AB
AB	AB

2) **HLA Virtual Cross Matching:** Islets are matched to candidates with a negative virtual crossmatch (VXM) against the donor.

4.3.2. Priority Categories for Matched Candidates

Pancreases are first offered to pancreas transplant programs for solid organ transplant in Ontario and across Canada. If not used as a whole organ, the pancreas will be allocated for islet transplantation.

Matched candidates are prioritized using the following categories:

Rank	Category

1	ABO identical candidate listed in Ontario
2	ABO compatible candidate listed in Ontario
3	Candidate listed in Quebec
4	Candidate listed in Alberta

5. Liver and Liver-Bowel Policies

5.1. Wait List Requirements and Statuses

5.1.1. Medical Status

Liver and liver cluster candidates are listed by their transplant program with one of the following medical statuses:

Status	Medical Criteria
4F	Imminent death; intubated and in fulminant hepatic failure (FHF): • meets King's College criteria for poor prognosis • includes acute M. Wilson, primary allograft failure i.e. allograft failure within 7 days of first transplant secondary to primary non function or hepatic artery thrombosis
3F	ICU admission for fulminant hepatic failure (FHF): • meets King's College criteria for poor prognosis • includes acute M. Wilson, primary allograft failure (i.e. allograft failure within 7 days of first transplant secondary to primary non function or hepatic artery thrombosis) OR Pediatric candidate (current age < 18) for liver-intestine or multi-visceral graft for related disease, regardless of hospitalization status
SMC	Sodium MELD Calculation or PELD for pediatric patients (see *Appendix 5A* for formula)
Temporarily On Hold	Candidates on hold are not eligible for allocation of donor livers but accrue wait time

For more information on referral and listing policies, refer to Ontario's Referral and Listing Criteria: https://www.giftoflife.on.ca/en/professionals.htm#transref

5.1.2. Wait List Suspension

A candidate who has a medical status of "on hold" for longer than 120 consecutive days without having their medical status reviewed by their transplant program is suspended. A suspended candidate is not eligible for organ allocation and does not accrue wait time or exception points towards their allocation prioritization.

5.1.3. Lab Testing Requirements and Registration Status

Candidates on the wait list are required to have SMC lab values reported at a minimum of every 90 days but may be done at shorter intervals and as frequent as deemed appropriate by the treating physician. Candidates must have SMC lab values < 90 days old to be allocated an organ. If SMC lab values are not reported by 70 days, the candidate's transplant program is alerted. If SMC lab values are still not reported by 90 days, the candidate's registration is placed on suspension and the candidate's transplant program is alerted.

Candidates with Hepatocellular Carcinoma (HCC) who meet the HCC exception criteria are required to have HCC data reported at a minimum of every 120 days but may be done at shorter intervals and as frequent as deemed appropriate by the treating physician. HCC candidates that meet the criteria must have HCC data < 120 days old to be allocated an organ. If HCC data is not reported by 70 days, the candidate's transplant program is alerted. If HCC data still not reported by 120 days, the candidate's registration is placed on suspension and the candidate's transplant program is alerted.

Liver and liver cluster candidates on the wait list have a system-generated registration status that is based on lab testing requirements as follows:

Status	Definition
Active	SMC and/or HCC lab testing meets requirements and candidate is eligible for organ allocation.
Suspension	SMC and/or HCC lab testing requirements have not been met and candidate is not eligible for organ allocation and does not accrue wait time.

Note: Candidates that urgently need an organ (4F and 3F patients) are not required to meet the SMC or HCC lab testing requirements outlined above.

5.1.4. Out of Province Transfers

Liver and liver-bowel candidates transferred from another Canadian province to an Ontario liver transplant program may have their wait time transferred only if they met the Ontario criteria at the time of listing. Candidates who did not meet the Ontario criteria at the time of listing can use the date when the Ontario criteria was met as the date of listing in order to retain their time waiting. The following documentation must be provided:

- Date of activation on the non-Ontario wait list
- Dates a candidate was not active (not accruing wait time) on the non-Ontario wait list
- Date and evidence of meeting Ontario criteria after non-Ontario listing date, if applicable.

5.2. Wait Time

5.2.1. Wait Time Calculations

Wait time is calculated using the date a candidate is added to the Ontario wait list with a medical status (see Section 5.1.1). Wait time starts to accrue from the following time points.

Candidate Group	Start of wait time calculation
Adult	The date of listing.
Pediatric	The date of listing.

Suspension Time: The number of days that a candidate has been suspended from the wait list is subtracted from total wait time.

5.3. Allocation

5.3.1. Identifying Potential Recipients (Matching)

Eligible candidates are matched based on their compatibility to the donor on the following criteria:

1) Blood Group:

LIVER ABO COMPATIBILITY TABLE				
Donor blood group	**Donor blood group (subtype)**	**Identical recipient blood group**	**Compatible recipient blood group**	**Incompatible recipient blood group**
O	-	O	A, B, AB	-
A	-	A	AB	B, O
A	A1	A	AB	B, O
A	A2	A	AB	B[(1)], O
B	-	B	AB	A, O
AB	-	AB	-	A, B, O
AB	A1B	AB	-	A, B, O
AB	A2B	AB	-	A, B, O

[(1)] A2 donors are treated as 'Selected compatible' with B recipients if their SMC ≥ 35 or they are 3F medical status.
NOTE: There are certain conditions where a candidate may receive an organ from an incompatible ABO donor (see section 5.3.5).

2) Serology/NAT:

- Hepatitis C Ab positive donor organs are matched to candidates who have been identified by their transplant program as eligible.
- Hepatitis C NAT positive donor organs are matched to candidates who have been identified by their transplant program as eligible.

3) Recipient Specific Criteria: Other criteria such as height, weight/BMI, age etc. are taken into consideration by the transplant program for recipient-donor matching

5.3.2. Local and Provincial/National Allocation

5.3.2.1. Local Allocation (Locality Rule)

A liver donated from a hospital local to a transplant program (defined in *Appendix 5B*) will be allocated to that transplant program when the difference in SMC between the highest need patients at each program is ≤ 4. Locality Rule does not apply to 4F and 3F patients.

5.3.2.2. Provincial/National Allocation

- Ontario donor livers are allocated to high status (4F and 3F) recipients provincially and nationally according to the categories listed in section 5.3.4

- If the highest ranked recipient on the organ allocation is a 4F or 3F recipient in Ontario or a 4F recipient from an out-of-province (OOP) program, no deferral discussion is required.
- If the highest ranked recipient on the allocation is an OOP 3F recipient, TGLN will notify the highest ranked Ontario program of the liver offer prior to contacting the OOP program. If both programs express interest in the liver a physician to physician deferral discussion will be arranged.
- If there is no consensus after the deferral discussion, the final decision to keep or defer the liver to the OOP 3F recipient will be made by the Ontario program.

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5.3.3. Organ Offer Discussion – New High Status Listings

If a new high status (4F or 3F) recipient is listed after a donor liver has been accepted by a transplant program, a physician to physician discussion must occur prior to the liver being deferred to the new higher status recipient. The final decision to keep or defer the liver will be made by the transplant program that had initially accepted the organ offer.

5.3.4. Split Procedures

- The decision as to whether to perform a split procedure is at the discretion of the accepting surgeon for the highest priority patient.
- The remainder of the split liver will be allocated to the next highest SMC patient on the list.
- The accepting program with the highest listed patient makes the decision as to where the split procedure will be performed.

5.3.5. Priority Categories for Matched Candidates

Matched candidates are prioritized using the following categories according to donor age and weight:

5.3.5.1. Pediatric (< 18 years old) Donor < 50 kg

Rank	Category
1	4F Recipient (regardless of ABO) listed in Ontario
2	4F Recipient (regardless of ABO) listed outside of Ontario in Canada
3	3F ABO Identical Recipient listed in Ontario
4	3F ABO Compatible, or Selected Compatible*** Pediatric or Adult Recipient listed in Ontario
5	3F ABO Incompatible Recipient (selected pediatrics patients only)* listed in Ontario
6	3F ABO Identical Recipient listed outside of Ontario in Canada (mandatory discussion prior to deferral)
7	3F ABO Compatible Recipient listed outside of Ontario in Canada (mandatory discussion prior to deferral)
8	Highest SMC or PELD ABO Identical or Compatible or Selected Compatible*** Pediatric Recipient, or Selected ABO Incompatible** Recipients Listed in Ontario
9	Highest SMC ABO Identical or Selected Compatible*** Adult Recipient listed in Ontario
10	Highest SMC ABO Compatible Adult Recipient listed in Ontario (not included in Step 9)
11	ABO Identical Recipient listed outside of Ontario in Canada
12	ABO Compatible Recipient listed outside of Ontario in Canada

13	Patients listed by US transplant program (UNOS)

**Selected Incompatible Recipients include ≤17 years, and 3F status*
***Selected Incompatible Recipients include infants < 12 months that meet standard liver transplantation criteria (for incompatible allocations)*
****Selected Compatible Recipients include:*

1) *ABO AB Recipient should be considered for Donor ABO of A, B, and O, if the recipient SMC ≥ 35*
2) *ABO B Recipient should be considered for Donor ABO of A2 and O liver, if recipient SMC ≥ 35* or status 3F

5.3.5.2. Adult or Pediatric Donor ≥ 50 kg

Rank	Category
1	4F Recipient (regardless of ABO) listed in Ontario
2	4F Recipient (regardless of ABO) listed outside of Ontario in Canada
3	3F ABO Identical Recipient listed in Ontario
4	3F ABO Compatible or Selected Compatible** Pediatric or Adult Recipient listed in Ontario
5	3F ABO Incompatible Recipient (selected pediatrics patients only)* listed in Ontario
6	3F ABO Identical Recipient listed outside of Ontario in Canada (mandatory discussion prior to deferral)
7	3F ABO Compatible Recipient listed outside of Ontario in Canada (mandatory discussion prior to deferral)
8	Highest SMC or PELD ABO Identical or Selected Compatible** Pediatric or Adult Recipient, or Selected ABO Incompatible*** Pediatric Recipient
9	Highest SMC or PELD ABO Compatible Recipient listed in Ontario (not included in Step 8)
10	ABO Identical Recipient listed outside of Ontario in Canada
11	ABO Compatible Recipient listed outside of Ontario in Canada
12	Patients listed by US transplant program (UNOS)

**Selected Incompatible Recipients include ≤17 years, and 3F status*
***Selected Compatible Recipients include:*

1) *ABO AB Recipient should be considered for Donor ABO of A, B, and O, if the recipient SMC ≥ 35*
2) *ABO B Recipient should be considered for Donor ABO of A2 and O liver, if recipient SMC ≥ 35* or status 3F

****Selected Incompatible Recipients include infants < 12 months that meet standard liver transplantation criteria (for incompatible allocations)*

5.3.6. Additional Ranking and Exception Points

Within each of the priority categories identified above, candidates are ranked in the following order:

1) **SMC or PELD** (only applicable to section 5.3.5.1 steps 8, 9 and 10 outlined above and section 5.3.5.2 steps 8 and 9 outlined above). The candidate with the highest SMC or PELD score will be prioritized on the allocation list.
2) **Wait Time** (days and hours) (not applicable to section 5.3.5.1. steps 11, 12 and 13, and section 5.3.5.2 steps 10, 11, and 12 outlined above)
3) **List Date** (not applicable to section 5.3.5.1 steps 11, 12 and 13, and section 5.3.5.2 and steps 10, 11, and 12 outlined above)

5.3.6.1. Exception Points

Some candidates have diseases/conditions for which their calculated SMC score will not be used to prioritize them on the wait list. These diseases/conditions are ones in which the SMC does not always reflect the candidates medical urgency/need for an organ.

Instead of the SMC score, candidates will receive exception points. Exception points apply to the following:

1) **Pediatric Patients**
2) **Multi-Organ Clusters**
3) **Exception Diseases**
4) **Hepatocellular Carcinoma (HCC)**

Pediatric patients and Multi-Organ Cluster patients are assigned exception point scores based on their disease/condition. Exception Disease patients will get a baseline of 22 points and a three point increase every 90 days up to a maximum of 40 points. HCC patients will get a baseline of 22 points and a three point increase every 90 days up to a maximum of 30 points. Details of each exception type can be found in *Appendix 5C*.

Rare/unique cases that fall outside of the established criteria as defined in the Ontario Liver & Liver-Bowel Transplantation Allocation Algorithm can be brought forward to the Special Case Committee at the discretion of the treating physician for review and consideration for listing and/or assigning exception points.

5.4. Key Definitions

Term	Description
ABO	Donor or recipient blood group
Candidate	A person on the organ transplant waiting list.
Cluster	A type of transplant that requires more than one organ to be retrieved from the same donor for a simultaneous transplant procedure.
Bridging Therapy	A type of therapy (embolization, radiation, etc.) aimed at reducing or preventing further growth of a tumour(s) for HCC patients on the liver transplant wait list
Deceased Donor	A deceased person for whom at least one organ has been retrieved and transplanted.
Downstaging	A type of therapy (embolization, radiation, etc.) aimed at reducing the size of a tumour(s) in order for HCC patients to meet the criteria to be a candidate on the liver transplant wait list.
Exception Disease	A type of condition/disease that candidates receive exception points for if meeting the criteria as applicable.
Hepatocellular Carcinoma (HCC)	A type of primary liver cancer. Candidates that meet the criteria for HCC will receive exception points.
Na MELD	Sodium Model for End-Stage Liver Disease. Scoring system used to prioritize severity on the deceased donor liver wait list.
PELD	Pediatric Model for End-Stage Liver Disease. Scoring system used to prioritize severity on the deceased donor liver wait list.

Special Case Committee	A committee that reviews and responds to requests for listing patients and/or assigning exceptions points for unique cases that fall outside of the established criteria as defined in the Ontario Liver & Liver-Bowel Transplantation Allocation Algorithm.
Wait list	A computerized list of candidates who are waiting to be matched with specific deceased donor organs for transplant.

5.5. Liver and Liver-Bowel Policy Appendices

Appendix 5A: SMC and PELD Calculations

Item	Description
Sodium MELD Calculation (SMC)	Model for End-Stage Liver Disease (MELD) measures the 90-day wait list mortality risk for candidates with end-stage liver disease. MELD is calculated as follows: MELD = {0.957*Log *e*(creatinine mg/dL) +0.378*Log *e*(bilirubin mg/dL) +1.12*Log *e*(INR) + 0.643}*10 *Calculation Notes:* • Range of MELD is between 1 and 40 • If On Dialysis then Creatinine = 353.6 µmol/L or (4 mg/dL) • If Bilirubin < 17.1 then Bilirubin = 17.1 µmol/L or (1.0 mg/dL) • If Serum Creatinine < 88.4 and not On Dialysis then Serum Creatinine = 88.4 µmol/L or (1.0 mg/dL) • If INR < 1 then INR=1 Sodium MELD is used to further prioritize candidates with end-stage liver disease on the liver transplant wait list. It uses the MELD score and incorporates the sodium value to calculate a sodium MELD score – SMC. SMC is calculated as follows: SMC = MELD - Na - 0.025*MELD*(140-Na) + 140 *Calculation Notes*: • Na = Sodium value • If Na is < 125 then Na = 125 mmol/L • If Na is > 137 then Na = 137 mmol/L
PELD	Pediatric End-Stage Liver Disease (PELD) is used to prioritize pediatric candidates < 12 years of age on the liver transplant wait list. PELD is calculated as follows: PELD = 0.480 x Log *e*(bilirubin mg/dL) + 1.857 x Log *e*(INR) - 0.687 x Log *e*(albumin g/dL) + 0.436 *Calculation Notes:* • If the patient is less than 1 year old (scores for patients listed for liver transplantation before the patient's first birthday continue to include the value assigned for age (< 1 Year) until the patient reached the age of 24 months) + 0.667 if the patient has growth failure (<-2 Standard deviation). • Multiply the score by 10 and round to the nearest whole number. • Laboratory values less than 1.0 are set to 1.0 for the purposes of the PELD score calculation.

Appendix 5B: Locality Rule – Defined Donor Hospitals

Donation Hospital Corporation Name	Transplant Program where Locality Rule Applies
BLUEWATER HEALTH	LHSC
HOTEL DIEU GRACE HEALTHCARE	LHSC
LONDON HEALTH SCIENCES CENTRE	LHSC
WINDSOR REGIONAL HOSPITAL	LHSC
HOSPITAL FOR SICK CHILDREN	TGH/HSC
HUMBER RIVER HOSPITAL	TGH/HSC
LAKERIDGE HEALTH	TGH/HSC
MACKENZIE HEALTH	TGH/HSC
MARKHAM STOUFFVILLE HOSPITAL	TGH/HSC
MICHAEL GARRON HOSPITAL	TGH/HSC
NORTH YORK GENERAL HOSPITAL	TGH/HSC
ROYAL VICTORIA HOSPITAL	TGH/HSC
SCARBOROUGH AND ROUGE HOSPITAL	TGH/HSC
SINAI HEALTH SYSTEM	TGH/HSC
SOUTHLAKE REGIONAL HEALTH CENTRE	TGH/HSC
ST JOSEPH'S HEALTH CENTRE - TORONTO	TGH/HSC
ST MICHAEL'S HOSPITAL	TGH/HSC
SUNNYBROOK HEALTH SCIENCES CENTRE	TGH/HSC
TRILLIUM HEALTH PARTNERS	TGH/HSC
UNIVERSITY HEALTH NETWORK	TGH/HSC
WILLIAM OSLER HEALTH SYSTEM	TGH/HSC

Appendix 5C: Exception Points

Item	Description
Pediatric Patients (current age < 18 years old)	Pediatric candidates will get a baseline of 24 points and a three point increase every 90 days up to a maximum of 39 points. ○ Candidates with a pediatric status (< 18 years old) at the time of listing will retain their exception points and continue to accrue a three point increase every 90 days up to a maximum of 39 points beyond their 18th birthday. Candidates will retain their pediatric status until they are transplanted or removed from the wait list. Pediatric candidates with a calculated PELD or SMC (children ≥12) that exceeds their exception points will receive a score equal to their calculated PELD or SMC. Pediatric candidates with a calculated PELD or SMC (children ≥ 12) > 25 and with one of the following criteria will be assigned a score of 43 and will be eligible to receive identical or compatible ABO donor livers: ○ On a mechanical ventilator; or ○ Gastrointestinal bleeding requiring at least 30 cc/kg of red blood cell replacement within the previous 24 hours; or candidates also on the intestine list, at least 10 cc/kg of red blood cell replacement within the previous 24 hours; or

	○ Renal failure or renal insufficiency defined as requiring dialysis or continuous CVVH or continuous CVVD; or ○ Glasgow coma score <10 within 48 hours of the listing/extension. ○ Status re-certification is required every 7 days otherwise patients will be assigned accumulated baseline score
Multi-Organ Clusters	**Liver-Lung or Liver-Heart Patients** ○ Adult and pediatric candidates requiring a liver-lung cluster or a liver-heart cluster from the same donor for a simultaneous transplant procedure will be assigned a score of 42 points **Liver-Bowel Patients** ○ Adult candidates requiring a liver-bowel cluster from the same donor for a simultaneous transplant procedure will get a baseline of 22 points plus 10% for the risk of three month mortality and a three point increase plus 10% every 90 days up to a maximum of 40 points. ○ Pediatric candidates requiring a liver-bowel cluster from the same donor for a simultaneous transplant procedure will get a baseline of 30 points and if not transplanted within 30 days will be assigned 38 points. **Liver-Kidney or Liver-Pancreas Patients** ○ Adult and pediatric candidates requiring a liver-kidney cluster or a liver-pancreas cluster from the same donor for a simultaneous transplant procedure will get a baseline of 22 points and a three point increase every 90 days up to a maximum of 40
Exception Diseases **Exception Diseases**	Below is a list of the exception diseases for which all patients will get a baseline of 22 points and a three point increase every 90 days up to a maximum of 40 points: ○ Cholangiocarcinoma (if treated within institutionally approved Mayo protocol) ○ Cystic fibrosis ○ Failed live donor / DCD graft (if transplanted within accepted criteria and graft failure due to biliary and/or vascular complication) ○ Familial amyloid polyneuropathy ○ Hepatoblastoma ○ Metabolic disorders ○ Polycystic liver disease ○ Primary hyperoaxaluria ○ Primary sclerosing cholangitis (PSC) • Patients who have 2 culture-proven bacteraemias within a 6-month period or who have septic complications of bacterial cholangitis including either a biliary or hepatic abscess, bacterial meningitis, bacterial endocarditis, bacterial osteomyelitis, fungaemia • Bacteraemia should be noniatrogenic (unrelated to a procedure such as recent endoscopic retrograde cholangiogram or transhepatic cholangiogram) and should occur in a patient who does not have a biliary tube or stent; in addition, these bacterial cholangitic episodes should occur in patients who have been treated with antibiotic therapy that has failed to suppress these septic episodes ○ Severe hepatopulmonary syndrome (PaO2 <60 mmHg on room air) ○ Refractory pruritus, if the following criteria are met: ○ Intractable pruritus secondary to underlying cholestatic liver disease, as shown by documented elevation of serum bile acid levels ○ Refractory or intolerant to all standard medical therapies (including pharmacologic and non-pharmalogic therapies), which include, but not limited to the following: ▪ First line treatment – Cholestyramine

	▪ Second, third and fourth line treatment – Rifampicin, Naltrexone (opiate antagonists) and sertraline ▪ Experimental approaches – plasmapheresis, phototherapy, extracorporeal dialysis, nasobiliary drainage o Severely impacted/impaired quality of life o Other (e.g. neuroendocrine tumours) through a) individual patient review and approval by the Special Case Committee, or b) research protocol after appropriate approvals have been granted and reviewed by the Special Case Committee **Hepatic Artery Thrombosis** o Patients who develop hepatic artery thrombosis (HAT) within 8-14 days post-transplant will get 40 points upon re-listing. o Patients who develop HAT more than 14 days post-transplant will be reviewed by the Special Case Committee on a case-by-case basis. **Pediatric Exception Diseases** o Hepatoblastoma – assigned 30 points and if not transplanted in 30 days are assigned 38 points o Metabolic condition/disease – assigned a baseline of 29 points and a three point increase every 90 days to a maximum of 38 points o Candidates with a pediatric status (< 18 years old) at the time of listing will retain their exception points and continue to calculate points as per the pediatric hepatoblastoma and/or metabolic condition/disease rules outlined above beyond their 18th birthday. Candidates will retain their pediatric status until they are transplanted or removed from the wait list. o Exception disease patients with a calculated SMC that exceeds their exception points will receive a score equal to their calculated SMC.
HCC	HCC exception patients will get a baseline of 22 points and a three point increase every 90 days up to a maximum of 30 points if they meet the following criteria: o Single HCC $\geq$ 2.0 cm ▪ OR o Multiple HCC (currently or over time) ≥ 1.0 cm ▪ OR o Single HCC > 1.0 cm and $\leq$ 2.0 cm that cannot be treated by intent to cure other than liver transplantation o OR o Any recurrent HCC $\geq$ 1.0 cm ▪ AND o TTV ≤145cm3 and AFP ≤1000 ▪ AND o No evidence of vascular invasion or extrahepatic spread ▪ AND o No HCC mixed with predominance of cholangiocarcinoma features on histology HCC candidates with a calculated SMC that exceeds their exception points will receive a score equal to their calculated SMC. HCC candidates not fulfilling the specified criteria (outlined above) do not receive exception points but can be actively listed as per their calculated SMC. <u>HCC imaging</u>: ▪ HCCs <1.0 cm on imaging are indeterminate and do not count as HCC

HCC	▪ Random audits will be conducted on HCC patients. Documentation is required, including dynamic imaging (CT, MRI, CEUS) that has the following characteristics: 1. Increased contrast enhancement on late arterial phase (relative to hepatic parenchyma) 2. Washout during the later contrast phases AND/OR peripheral rim enhancement (capsule/pseudocapsule) on delayed phase; or biopsy <u>Bridging therapy</u>: ▪ Candidate's whose tumours have been ablated after previously meeting the criteria will be eligible for exception points if the tumours fall within or below the minimum criteria (as reported every 90 days) <u>Downstaging:</u> ▪ Candidates undergoing downstaging treatment will be eligible for exceptions points if the HCC falls within or below the minimum criteria 90 days post procedure

6. Small Bowel Policies

6.1. Wait List Requirements and Statuses

6.1.1. Medical Status

Small bowel and small bowel cluster candidates are listed by their transplant program with one of the following medical statuses:

Status	Notes
3	Candidates are in ICU or step down admission for complication of bowel disease
2	Candidates are hospitalized for related disease
1	Candidates are waiting at home
On Hold	Candidates on hold are not eligible for allocation of donor Small Bowels but accrue wait time

For more information on referral and listing policies, refer to Ontario's Referral and Listing Criteria: https://www.giftoflife.on.ca/en/professionals.htm#transref

6.1.2. Wait List Suspension

A candidate who has a medical status of "on hold" for longer than 120 consecutive days without having their medical status reviewed by their transplant program is suspended. A suspended candidate is not eligible for organ allocation and does not accrue wait time towards their allocation prioritization (see 6.3.2).

6.1.3. Out of Province Transfers

Small Bowel candidates transferred from another Canadian province to an Ontario small bowel transplant program may have their wait time transferred only if they met the Ontario criteria at the time of listing. Candidates who did not meet the Ontario criteria at the time of listing can use the date when the Ontario criteria was met as the date of listing in order to retain their time waiting. The following documentation must be provided:

- Date of activation on the non-Ontario wait list

- Dates a candidate was not active (not accruing wait time) on the non-Ontario wait list
- Date and evidence of meeting Ontario criteria after non-Ontario listing date, if applicable

6.2. Wait Time

6.2.1. Wait Time Calculations

Wait time is calculated using the date a candidate is added to the Ontario wait list with a medical status (see Section 6.1.1). Wait time starts to accrue from the following time points.

Candidate Group	Start of wait time calculation
Adult	The date of listing.
Pediatric	The date of listing.

Suspension Time: The number of days that a candidate has been suspended from the wait list is subtracted from total wait time.

6.3. Allocation

6.3.1. Identifying Potential Recipients (Matching)

Eligible candidates are matched based on their compatibility to the donor on the following criteria:

1) Blood Group:

Donor blood group	Recipient blood group can be:
O	O, A, B, AB
A	A, AB
B	B, AB
AB	AB

2) Serology: Hepatitis C Ab positive donor organs are matched to all candidates. Hep C NAT positive donor organs are matched to candidates who have been identified by their transplant program as potential recipients.

3) Recipient Specific Criteria: Other criteria such as height, weight/BMI, age etc. are taken into consideration by the transplant program for recipient-donor matching.

6.3.2. Priority Categories for Matched Candidates

Matched candidates are prioritized using the following categories.

Rank	Category
1	Status 3 ABO Identical Recipient listed by any Bowel Transplant Program (BTP) in Ontario
2	Status 2 ABO Identical Recipient listed by any BTP in Ontario
3	Status 1 ABO Identical Recipient listed by any BTP in Ontario

4	Status 3 ABO Compatible Recipient listed by any BTP in Ontario
5	Status 2 ABO Compatible Recipient listed by any BTP in Ontario
6	Status 1 ABO Compatible Recipient listed by any BTP in Ontario
7	Status 3 ABO Identical Recipient listed by BTP outside of Ontario in Canada
8	Status 2 ABO Identical Recipient listed by BTP outside of Ontario in Canada
9	Status 1 ABO Identical Recipient listed by BTP outside of Ontario in Canada
10	Patients listed by US transplant program (UNOS)

6.3.3. Additional Ranking

Within each of the priority categories identified above, candidates are ranked in the following order:

1) **Wait Time** (days and hours) (not applicable to steps 7, 8, 9 and 10 outlined above)
2) **List Date** (not applicable to steps 7, 8, 9 and 10 outlined above)

6.4. Key Definitions

Term	Description
Candidate	A person on the organ transplant waiting list.
Cluster	A type of transplant that requires more than one organ to be retrieved from the same donor for a simultaneous transplant procedure.
Deceased Donor	A deceased person for whom at least one organ has been retrieved and transplanted.
Wait List	A computerized list of candidates who are waiting to be matched with specific deceased donor organs for transplant.

7. Heart Policies

7.1. Wait List Requirements and Statuses

7.1.1. Medical Status

Adult and pediatric heart candidates are listed by their transplant program with one of the following medical statuses.

Table 1. Adult Medical Status ≥ 19 Years Old

Status	Medical Criteria
4	• Patients supported with (and non-separable/unable to wean from) biventricular temporary mechanical circulatory support (ie. ECMO, centrimag bivads, impella/tandem heart/protek Duo in a configuration providing biventricular support). • Patients supported with (and non-separable/unable to wean from) temporary right ventricular mechanical circulatory support. • Patients dependent on temporary LV mechanical circulatory support (excluding IABP), unable to wean to inotrope/vasoactive medical therapy, and not a candidate for durable LVAD therapy. • Patients with total artificial heart that is non-dischargeable from hospital for device and/or medical reasons or complications. • Hospitalized durable LVAD patients with LVAD complications meeting status 4 criteria. **see 2017 CCTN Criteria for Status Eligibility in LVAD complications document for definitions* • Mechanically ventilated on high dose single (milrinone > 0.5mcg/kg/min OR dobutamine >10mcg/kg/min) or >2 inotropes/vasoactives and not a durable LVAD candidate. • Approved Status 4 exception requests. Note: Patients should be recertified every 7 days as a Status 4 by a qualified physician if still medically appropriate
3.5	• High dose single (milrinone >0.5mcg/kg/min OR dobutamine > 10mcg/kg/min) or multiple inotropes/vasoactives in patients requiring ICU/CCU admission who are NOT candidates for durable LVAD • Temporary surgical paracorporeal LVAD not meeting status 4 criteria • Temporary percutaneous LVAD excluding IABP (ie. tandem heart, impella) not meeting status 4 criteria • Refractory life-threatening arrhythmias requiring continuous intravenous antiarrhythmic drug therapy and not amenable to, or failed, VT ablation.
3	• Patients on inotropes/continuous IV vasodilators in hospital not meeting above criteria • Combined heart/lung transplant candidates • Combined heart/liver transplant candidates • Durable LVAD complications (VAD related infection, arrhythmia, bleeding, right heart failure, and/or thrombosis) not meeting status 4 criteria, requiring hospitalization OR intravenous therapies. • Non-hospitalized patients with total artificial heart • Cyanotic congenital heart disease with resting saturation <65%. • Congenital heart disease – arterial-shunt-dependent • Adult-sized complex congenital heart disease with increasing dysrhythmic or systemic ventricular decline
2	• Stable durable LVAD patients • Hospitalized patients for cardiac reasons in non-LVAD patients • Outpatients on continuous IV inotropic therapy • Adult with cyanotic congenital heart disease: resting O2 saturation 65-75% or prolonged desaturation to less than 60% with modest activity (i.e. walking). • Adult with fontan palliation with protein losing enteropathy • Combined Heart/Kidney transplant candidates (simultaneous or consecutive) • Restrictive cardiomyopathy for which LVAD is either contraindicated or associated with poor outcome and would usually not be suggested • Cardiac amyloidosis (given the patient is eligible for transplant and therefore would have no or minimal extra cardiac involvement)

	• HCM with severe HF symptoms not secondary to LVOT obstruction that would be amenable to surgical or alcohol ablation AND for whom LVAD would not be an option
1	• All other out-of-hospital candidates
Temporarily On Medical Hold	• Candidates on Medical Hold will be placed on Heart Suspension and will not be eligible for allocation and will not accrue wait time.

Table 2. Pediatric Medical Status <19 Years Old

Status	Medical Criteria
4	• VAD in a patient <10 kg and <1 year old at implantation. • Paracorporeal VAD in a single ventricle patient. • Continuous mechanical ventilation or non-invasive ventilation dependent (e.g. 24 hours) and any intravenous inotropes/vasoactives up to 2 weeks in a patient >10 kg. Beyond 2 weeks if patient and a VAD is not implanted then approval must be sought to remain listed as Status 4. • Continuous mechanical ventilation or non-invasive ventilation dependent (e.g. 24 hours) and any intravenous inotropes/vasoactives in a patient <10 kg. • Continuous mechanical ventilation or non-invasive ventilation dependent (e.g. 24 hours) for heart failure management not amenable to VAD or inotropic support. Beyond 2 weeks if a patient remains dependent then approval must be sought to remain listed as Status 4. • Meets criteria for Adult mechanical support status 4 listing (see adult listing criteria). • Hospitalized VAD patients with VAD complications (VAD-related infection, arrhythmia, bleeding, right heart failure, and/or thrombosis) meeting status 4 criteria. • Approved Status 4 exception requests Note: Patients should be recertified every 7 days as a Status 4 by a qualified physician at local site if status still medically appropriate.
3.5	• Hospitalized patient with a VAD who does not meet Status 4 criteria. • Congenital heart disease – prostaglandin dependent. • High dose or multiple inotropes/vasoactives in hospital and patient not a candidate for a VAD. • Continuous mechanical ventilation or non-invasive ventilation dependent (e.g. 24 hours) and any inotropes/vasoactives greater than 2 weeks in a patient >10 kg where approval was not granted to remain as Status 4, criteria 3 (above). • Refractory life-threatening arrhythmias requiring continuous intravenous antiarrhythmic drug therapy and not amenable to, or failed, ablation.
3	• VAD not meeting higher status criteria. • VAD complications (VAD-related infection, arrhythmia, bleeding, right heart failure, and/or thrombosis) not meeting status 4 criteria5, requiring hospitalization OR intravenous therapies. • Less than 6 months of age with congenital heart disease. • Cyanotic congenital heart disease with resting saturation less than 65%. • Congenital heart disease – arterial shunt or stented PDA dependent (i.e. Norwood).

	• Adult-sized complex congenital heart disease with increasing dysrhythmic or systemic ventricular decline. • Patients on inotropes in hospital or as an outpatient, not meeting above criteria. • Inpatient with CPAP/BIPAP support for HF management. • Restrictive cardiomyopathy. • Hypertrophic cardiomyopathy with severe HF symptoms not secondary to LVOT obstruction that would be amenable to surgical or alcohol ablation AND for whom LVAD would not be an option. • Heart-Lung or Heart-Liver transplant candidates. • Dischargeable total artificial heart.
2	• Stable durable outpatient LVAD patients. • At Home with intermittent CPAP/BIPAP support for HF management. • Hospitalized patients for cardiac reasons in non-LVAD patients.6 • Symptomatic cyanotic congenital heart disease limiting everyday day activities in the absence of surgical options • Fontan palliation • Heart-Kidney transplant candidates (simultaneous or consecutive)
1	• All other out of hospital candidates • In Utero (congenital heart disease or heart failure)
Medical Hold	• Candidates on Medical Hold will be placed on Heart Suspension and will not be eligible for allocation and will <u>not</u> accrue wait time.

7.1.2. High Status Heart (HSH) Candidates

Eligible patients participating in the IPOS Heart program are indicated by an “HSH” flag associated with their medical status. The HSH flag is applied to the following candidates:

- All status 4 candidates
- All sensitized non-status 4 candidates with a cPRA ≥80% using the Canadian cPRA calculator
- cPRA includes all HLA loci (A, B, C, DRB1, DRB345, DQA1, DQB1, DPA1, and DPB1).

7.1.3. Wait List Suspension

A candidate who has a medical status of “on hold” is suspended. A suspended candidate is not eligible for organ allocation and does not accrue wait time towards their allocation prioritization.

7.1.4. HLA Antibody (PRA) Testing Requirements and Status

Candidates on the waitlist are required to have HLA antibody (PRA) testing every 4 months as a minimum. A candidate must have antibody test results <180 days old (4 months plus 60-day grace period) to be allocated an organ. If antibody test results are not reported by 120 days from the sample draw date, the candidate’s transplant programs is alerted. If antibody test results are still not reported by 181 days, the candidate is placed on serum hold and the candidate’s transplant program is alerted.

Candidates will be placed on hold as per the following rules:

Heart Candidate Type	Serum Hold Rules

• Adult (≥ 19 years old) and medical status 1, 2, 3, 3.5	• If waitlisted without an antibody test result, candidate is automatically placed on serum hold and an alert indicating *Serum Hold: HLA Missing* will appear. • If on the waitlist and antibody sample draw date is > 180 days old, candidate is automatically placed on serum hold and an alert indicating *Serum Hold: HLA Expiry* will appear.
• Adult (≥ 19 years old) and medical status 4 • Pediatric (< 19 years old) and ≥ 1 year old, any medical status	• If waitlisted without an antibody test result, candidate is exempt from serum hold rules for first 180 days. ○ If an antibody test results is not entered by the 181st day after listing, candidate is automatically placed on serum hold and an alert indicating *Serum Hold: HLA Missing* will appear. • If candidate is on the waitlist and antibody sample draw date is greater than 180 days old, the candidate is automatically placed on serum hold and an alert indicating *Serum Hold: HLA Expiry* will appear.
• Pediatric < 1 year old, any medical status • Heart Cluster Candidates	• Not subject to any Serum Hold rules.

7.1.5. Out of Province Transfers

Heart candidates on the wait list from another Canadian province who relocate to Ontario may have their active wait time transferred only if they met the Ontario criteria at the time of listing. For candidates who did not meet the Ontario criteria at the time of listing, the date when criteria were met will be used as the date of listing. The Ontario list date will be calculated using the following documentation:

- Date of activation on the non-Ontario wait list.
- Dates a candidate is not active (not accruing wait time) on the non-Ontario wait list.
- Date and evidence of meeting Ontario criteria after non-Ontario listing date, if applicable.

7.2. Wait Time

7.2.1. Ontario Wait Time Calculations

Wait time is calculated based on all of the following considerations:

- **Listed Date:** Wait time starts to accrue from the date a candidate is listed on the Ontario wait list with a medical status other than 0 (see Section 7.1.1)

- **Status Changes (increase or decrease):**
  - All wait time from previous statuses of equal or greater value will be carried over to the wait time calculation of the new status.
  - All wait time from a lower statuses will not be carried over. Wait time will restart from the date of the status change

- **Suspension Time:** The number of days that a candidate has been suspended from the wait list is subtracted from total wait time.

7.2.2. IPOS Heart Program Wait Time Calculations

Wait time is calculated based on CBS policies. It includes all of the above Ontario Wait Time Calculations considerations with a divergence in Status Changes (increase or decrease):

- Wait time from all preceding higher statuses, if steadily downgrading (e.g. 3 → 2 → 1), will be carried over.
- If not steadily downgrading (e.g. 2 → 3 → 2), only the wait time from the immediately preceding higher status will be carried over to the new status.
- Wait time from an immediately preceding lower status (e.g. 2 → 3), will not be carried over. Wait time will reset from the date of the status change.

7.3. Allocation

7.3.1. Identifying Potential Recipients (Matching)

Eligible candidates are matched based on their compatibility to the donor on the following criteria:

1) Blood Group:

Donor blood group	Recipient blood group can be:
O	O, A, B, AB
A	A, AB
B	B, AB
AB	AB

NOTE: There are certain conditions where a candidate may receive an organ from an incompatible ABO donor (see section 7.3.4).

2) Matching:

- IPOS Heart program:
    i. HSH Status 4 candidates: are matched regardless of virtual crossmatch (VXM) results, HLA compatability, or without HLA input (if allocated, patients are required to have their HLA input by the next business day)
    ii. HSH highly sensitized candidates: are matched if current or cumulative VXM is negative
    iii. Recipients who are ABO compatible to the donor or identified as “Accept ABO Incompatible” in their donor acceptance criteria
    iv. Recipients who meet the minimum and maximum donor weight acceptance criteria

- Ontario Allocation:
    i. Non-HSH candidates: are matched according to VXM results under the transplant program’s discretion.

ii. If not previously allocated as an HSH sensitized candidate due to positive VXM, these candidates are allocated according to their medical status under the transplant program's discretion.

3) **Serology:** Hepatitis C Ab positive donor organs are matched to all candidates. Hep C NAT positive donor organs are matched to candidates who have been identified by their transplant program as potential recipients.

4) **Recipient Specific Criteria:** Other criteria such as height, weight/BMI, age etc. are taken into consideration by the transplant program for recipient-donor matching.

7.3.2. Allocation: Provincial, National and Non-Canadian

7.3.2.1. Provincial Allocation

All Ontario donor hearts will be allocated as per IPOS Heart and Ontario policies as outlined in the heart allocation tables (see 7.5).

7.3.2.2. National Allocation

All Canadian out-of-province donor hearts will be allocated nationally as per IPOS Heart program policies to all programs with eligible HSH candidates.

7.3.2.3. Non-Canadian Allocation

All non-Canadian donor hearts will be allocated as per Ontario policies. National HSH recipients will not be considered for allocation.

7.3.3. Organ Offer Discussion

7.3.3.1 IPOS Hearts Program Discussions

- As per CBS policies, all Canadian programs with an eligible HSH candidate will be notified and have the opportunity to request an organ deferral discussion between Physicians.

- If consensus is not reached for Ontario or out-of-province hearts, the final decision regarding allocation will be made by the program with the highest ranked recipient regardless of province.

7.3.3.2. Ontario Pediatric Discussions

A discussion occurs between Ontario programs when there is decision to defer a pediatric Ontario heart to an adult candidate.

7.3.4. Priority Categories for Matched Candidates

Matched candidates are prioritized using the following categories, depending on donor type (see allocation tables in Appendix 7A for specific steps):

1) Hearts from Ontario, Out of Province and Non-Canadian Donors ≥ 19 years

Rank	Category

1	HSH patients identified by CTR
2	4 candidate listed in Ontario
3	Sensitized candidate listed in Ontario
4	3.5 candidate listed in Ontario
5	3 candidate listed in Ontario
6	2 ABO identical candidate listed in Ontario
7	1 ABO identical candidate listed in Ontario
8	2 ABO compatible or selected incompatible candidate listed in Ontario
9	1 ABO compatible or selected incompatible candidate listed in Ontario
10	Candidates listed in Canada.
11	Candidates listed in the United States of America (UNOS).

NOTE: Recipients will not be matched in the "HSH patients identified by CTR" step for Out of Province open heart offers and Non-Canadian heart offers

2) Hearts from Ontario, Out of Province and Non-Canadian Donors < 19 years

Rank	Category
1	HSH patients identified by CTR
2	4 pediatric candidate listed in Ontario
3	4 adult candidate listed in Ontario
4	Pediatric sensitized candidate listed in Ontario
5	Adult sensitized candidate listed in Ontario
96	3.5 pediatric candidate listed in Ontario
7	3 pediatric candidate listed in Ontario
8	2 pediatric ABO identical candidate listed in Ontario
9	1 pediatric ABO identical candidate listed in Ontario
10	2 pediatric ABO compatible or selected incompatible candidate listed in Ontario
11	1 pediatric ABO compatible or selected incompatible candidate listed in Ontario
12	3.5 adult candidate listed in Ontario
13	3 adult candidate listed in Ontario
14	2 adult ABO identical candidate listed in Ontario
15	1 adult ABO identical candidate listed in Ontario
16	2 adult ABO compatible or selected incompatible candidate listed in Ontario
17	1 adult ABO compatible or selected incompatible candidate listed in Ontario
18	Candidates listed in Canada.
19	Candidates listed in the United States of America (UNOS).

NOTE: Recipients will not be matched in the "HSH patients identified by CTR" step for Out of Province open heart offers and Non-Canadian heart offers

7.3.5. Ranking

Within each of the priority categories identified above, candidates are ranked by the following:

1) Wait Time
2) List Date

In the event that two (or more) candidates have the same wait time, priority is given to the candidate with the earliest list date.

7.4. Key Definitions

Term	Description
cPRA	cPRA is the percentage of Canadian deceased organ donors expected to have one of more of the candidate's unacceptable antigens. CPRA scores are calculated automatically when HLA labs enter a candidate's serum antibody results. TGLN uses the Canadian cPRA calculator that is used by the Canadian Transplant Registry. CPRA scores include Class I and Class II cumulative cPRA. CPRA values will automatically recalculate if there are any additions or deletions to the candidate's unacceptable list.
Heart Medical Hold	A candidate who is placed on Medical Hold is not eligible for allocation and will not accrue wait time regardless of duration.
Heart Suspension	Candidates who have a medical status of "on hold" will have their registration suspended. Candidates are not eligible for allocation and do not accrue wait time.
Serum Hold	Candidates are not eligible for allocation, but will accrue wait time as per *7.1.4 HLA Antibody (PRA) Testing Requirements and Status*.
Virtual Crossmatch	A virtual crossmatch is a crossmatch that involves a determination of the presence or absence of donor HLA specific antibodies (DSA) in a patient by comparing the patients' HLA antibody specificity profile to the HLA typing of the proposed donor.

7.5. Heart Policy Appendices

Appendix 7A: Heart Allocation Tables

**Please refer to Section 7.3.3.2 regarding status 4 candidates.*

Table 1. Allocation of Hearts from,Donors ≥ 19 years

HEART ALLOCATION			
#	**Candidates that are within:**	**Candidate category:**	**ABO Ranking within category:**

1	All Canada	HSH patients identified by CTR	ABO identical, or ABO compatible or selected incompatible
2	All Ontario	*Status 4	ABO identical or ABO compatible, or selected incompatible
3	All Ontario	Sensitized Patients	ABO identical or ABO compatible, or selected incompatible
4	All Ontario	Status 3.5	ABO identical or ABO compatible, or selected incompatible
5	All Ontario	Status 3	ABO identical or ABO compatible, or selected incompatible
6	All Ontario	Status 2	ABO identical
7	All Ontario	Status 1	ABO identical
8	All Ontario	Status 2	ABO compatible or selected incompatible
9	All Ontario	Status 1	ABO compatible or selected incompatible
10	All Canada	Canadian National List	N/A
11	U.S. (UNOS)	U.S.	N/A

NOTE: Recipients will not be matched in the "HSH patients identified by CTR" step for Out of Province open heart offers and Non-Canadian heart offers

Table 2. Allocation of Hearts from Donors < 19 years

HEART ALLOCATION			
#	**Candidates that are within:**	**Candidate category:**	**ABO Ranking within category:**
1	All Canada	HSH patients identified by CTR	ABO identical, or ABO compatible or selected incompatible
2	All Ontario	*Pediatric Status 4	ABO identical or ABO compatible, or selected incompatible
3	All Ontario	*Adult Status 4	ABO identical or ABO compatible, or selected incompatible
4	All Ontario	*Pediatric Sensitized	ABO identical or ABO compatible, or selected incompatible
5	All Ontario	*Adult Sensitized	ABO identical or ABO compatible, or selected incompatible
6	All Ontario	Pediatric Status 3.5	ABO identical or ABO compatible, or selected incompatible
7	All Ontario	Pediatric Status 3	ABO identical or ABO compatible, or selected incompatible
8	All Ontario	Pediatric Status 2	ABO identical
9	All Ontario	Pediatric Status 1	ABO identical
10	All Ontario	Pediatric Status 2	ABO compatible or selected incompatible
11	All Ontario	Pediatric Status 1	ABO compatible or selected incompatible
12	All Ontario	Adult Status 3.5	ABO identical or ABO compatible, or selected incompatible

13	All Ontario	Adult Status 3	ABO identical or ABO compatible, or selected incompatible
14	All Ontario	Adult Status 2	ABO identical
15	All Ontario	Adult Status 1	ABO identical
16	All Ontario	Adult Status 2	ABO compatible or selected incompatible
17	All Ontario	Adult Status 1	ABO compatible or selected incompatible
18	All Canada	Canadian National List	N/A
19	U.S. (UNOS)	U.S.	N/A

NOTE: Recipients will not be matched in the "HSH patients identified by CTR" step for Out of Province open heart offers and Non-Canadian heart offers

8. Lung Policies

8.1. Wait List Requirements and Statuses

8.1.1. Medical Status

Lung candidates are listed by their transplant program with one of the following medical statuses:

Status	Medical Criteria
3	Heart-Lung or Rapidly Deteriorating
2	Decompensation
1	Out of Hospital (stable and waiting)
Temporarily On Hold	Candidates on hold are not eligible for allocation of donor lungs but accrue wait time.

8.1.2. Wait List Suspension

A candidate who has a medical status of "on hold" for longer than 120 consecutive days without having their medical status reviewed by their transplant program is suspended. A suspended candidate is not eligible for organ allocation and does not accrue wait time towards their allocation prioritization.

8.1.3. Out of Province Transfers

Lung candidates on the wait list from another Canadian province who relocate to Ontario may have their active wait time transferred only if they met the Ontario criteria at the time of listing. For candidates who did not meet the Ontario criteria at the time of listing, the date when criteria were met will be used as the date of listing. The Ontario list date will be calculated using the following documentation:

- Date of activation on the non-Ontario wait list.
- Dates a candidate is not active (not accruing wait time) on the non-Ontario wait list.
- Date and evidence of meeting Ontario criteria after non-Ontario listing date, if applicable.

8.2. Wait Time

8.2.1. Wait Time Calculations

Wait time is calculated using the date a candidate is added to the Ontario wait list with a medical status (see Section 8.1.1). Wait time starts to accrue from the following time points.

Candidate Group	Start of wait time calculation
Heart-Lung Recipient	The date of listing
Lung Recipient	The date of listing

Suspension Time: The number of days that a candidate has been suspended from the wait list is subtracted from total wait time.

8.3. Allocation

8.3.1. Identifying Potential Recipients (Matching)

Eligible candidates are matched based on their compatibility to the donor on the following criteria:

1) Blood Group:

Donor blood group	Recipient blood group can be:
O	O, A, B, AB
A	A, AB
B	B, AB
AB	AB

NOTE: There are certain conditions where a candidate may receive an organ from an incompatible ABO donor (see section 8.3.3).

2) Serology: Hepatitis C Ab positive donor organs are matched to all candidates. Hep C NAT positive donor organs are matched to candidates who have been identified by their transplant program as potential recipients.

3) Recipient Specific Criteria: Other criteria such as height, weight/BMI, age etc. are taken into consideration by the transplant program for recipient-donor matching.

8.3.2. Provincial/National Allocation

Lungs are first allocated to Ontario lung transplant programs, then to other Canadian lung transplant programs, and then to United Network for Organ Sharing (UNOS).

8.3.3. Priority Categories for Matched Candidates

Matched candidates are prioritized using the following categories:

Rank	Category
1	3 ABO identical heart-lung candidate listed in Ontario
2	3 ABO compatible heart-lung candidate listed in Ontario
3	3 ABO incompatible heart-lung candidate listed in Ontario
4	3 ABO identical lung candidate listed in Ontario
5	3 ABO compatible lung candidate listed in Ontario
6	3 ABO incompatible lung candidate listed in Ontario
7	2 ABO identical lung candidate listed in Ontario
8	1 ABO identical lung candidate listed in Ontario
9	2 ABO compatible lung candidate listed in Ontario
10	1 ABO compatible lung candidate listed in Ontario
11	2 ABO incompatible lung candidate listed in Ontario
12	1 ABO incompatible lung candidate listed in Ontario
13	3 ABO identical lung candidate listed in Canada
14	2 ABO identical lung candidate listed in Canada
15	1 ABO identical lung candidate listed in Canada
16	3 ABO compatible lung candidate listed in Canada
17	2 ABO compatible lung candidate listed in Canada
18	1 ABO compatible lung candidate listed in Canada
19	Candidates listed in the United States of America (UNOS).

8.3.4. Ranking

Within each of the priority categories identified above, candidates are ranked by the following:

1) Wait Time
2) List Date

In the event that two (or more) candidates have the same wait time, priority is given to the candidate with the earliest list date.