# New Zealand Kidney Allocation Scheme

The New Zealand Kidney Allocation Scheme (NZKAS) has been developed to ensure that kidney allocation in NZ is performed on an equitable, accountable and transparent basis. This algorithm is used for the allocation of all deceased donor kidneys and non-directed live donors (NDD).

The National Renal Transplant Leadership Team (NRTLT) provides reviews and approves changes that may be required. NZKAStakes into account factors known to affect graft survival, but also give allocation advantage to patients who wait the longest. The outcomes of the operation of the algorithm are reviewed annually and, if necessary, the weightings of different items adjusted to ensure both aims continue to be achieved. The algorithm is run at the New Zealand Transplantation and Immunogenetics Laboratory in Auckland. All allocations are audited.

## GENERAL

All kidneys are allocated on a NZ-wide basis.

NDD are preferentially used in kidney exchanges (if agreed by the donor). The 'out' kidney from sequential chains initiated by NDD are allocated according to NZKAS.

The retrieval of deceased donor kidneys is coordinated by Organ Donation NZ, who are responsible for contacting transplant teams, offering of kidneys, and transport of kidneys.

A decision to accept or decline a deceased donor kidney offered by ODNZ is made by the transplant team. This should occur as soon as possible, and within two hours. Occasionally, for example, where the call to make the offer occurs prior to the retrieval, the two-hour time frame will commence at a later time point, as agreed between the ODNZ coordinator and the renal physician receiving the offer. Renal physicians will contact the ODNZ coordinator again to accept or decline the offer. Where this has not occurred within two hours, the ODNZ coordinator will make further contact with the renal physician before offering the kidney to the next recipient's team.

There is a separate "Roles, Responsibilities and Communication During Allocation and Retrieval of Deceased Donor Kidneys" which includes direction as to when kidneys should be biopsied and subsequently offered as dual transplants (two kidneys for one recipient) or not used.

There is no facility for urgent listing.

Waiting time is calculated as the number of months from the date of chronic dialysis initiation for treatment of end stage renal failure (or recommencement after a failed kidney transplant) to the date of offer of a kidney.

Where patients recover independent renal function unexpectedly after chronic dialysis initiation for the treatment of end stage renal failure, waiting time shall be calculated from the date of subsequent initiation of chronic dialysis for treatment of end stage renal failure.

Patients who are otherwise eligible for the deceased donor waiting list may be listed preemptively (before starting maintenance dialysis, either for the first time, or after failure of a prior kidney transplant) where they meet all of the following renal failure criteria:

1) Chronic renal failure, with estimated or measured GFR < 15 ml/min/1.73m2
2) Progressively falling eGFR, such that renal replacement therapy is estimated to be required shortly, e.g., within the next 6 months
3) There is no compatible directed live kidney donor who has completed assessment (does NOT include co-registered donors in the kidney exchange)

Patients who are active on the deceased donor waiting list are suspended when they have a directed live donor accepted by the transplant unit. Patients who are transplanted are removed from the deceased donor waiting list.

Following transplantation, if a patient meets renal failure criteria for listing within 1 year after kidney transplantation, the recipient will be reinstated on the waiting list with the same waiting start date they had prior to the most recent transplant, if they otherwise are or subsequently become eligible for deceased donor listing.
Kidneys must be offered to recipients in order of algorithm. Where a kidney is not transplanted into a recipient, a reason must be supplied for audit. The left kidney goes to the top ranked recipient unless there is specific reason to request the right kidney, at the discretion of the transplant unit of the top ranked recipient. Kidneys will only be offered where there is a suitable cross match with no significant donor specific anti-HLA antibodies, as determined by the Medical Director.

## ALGORITHM

**Tier1a:** Where another life-preserving organ (heart, liver, lungs) is to be offered to a recipient a kidney will be allocated to that recipient on request of the appropriate transplant team.

**Tier1b:** To a recipient allocated a pancreas under the NZ Pancreas Allocation Scheme for recipients accepted for simultaneous pancreas and kidney transplantation.

**Tier1c:** Where a recipient in a kidney exchange has been left without a kidney transplant due to failure of their matched donor proceeding with surgery or loss of the donated kidney prior to perfusion, AND after their exchange donor has donated (an 'orphan recipient'), the next compatible deceased donor kidney will be offered to them (and any subsequent kidneys until one is accepted).

**Tier 1d:** Any prior live kidney donor who is blood group compatible, and where there is no clinically relevant HLA incompatibility with the available kidney in the view of the Medical Director.

For tiers 2 and 3, points are calculated, and patients are ranked according to total points (highest to lowest points). Ties are separated by random number generation where required.

**Tier2:** The purpose of this tier is to allocate kidneys with a low number of HLA mismatches.

- Blood group identical (except A to AB), unless 0 and 1 HLA-A or HLA-B mismatch, then blood group compatible.
- All patients with 6000 points.
- HLA mismatches are calculated first (if score <4000 recipient is excluded from further consideration on this rank, e.g., 1 DR mismatch):
    - Minus 2100 points each HLA-DR mismatch.
    - Minus 900 points each HLA-B mismatch.

- Minus 800 points each HLA-A mismatch.

- Plus 100 points if recipient younger than 15 years.
- Waiting time:
  - Plus 1 point per month on waiting list.

**Tier3:** The purpose of this tier is to allocate kidneys to the longest waiting recipient with an acceptable degree of mismatch.

- Blood group identical, except that A kidneys can be allocated to AB recipients when there are more than 3 AB recipients on list.
- All patients with 2000 points:
  - Plus 200 points if 1 HLA DR mismatch, plus 300 points if 0 HLA DR mismatch.
  - Plus 100 points if recipient younger than 15 years.
  - Plus 3 points per month on waiting list.

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**Version History**

| Update number | Reason for update | Date Approved | Circulation Audience and Date |
|---|---|---|---|
| 1 | Audit has shown that the number of kidneys allocated on Rank 1 has increased to about 40%; this is well over the intention of 25-30%. Modelling has suggested that modifying the algorithm to exclude HLA-DR mismatches on Rank 1 will rectify this issue. | 2013 | |
| 2 | Added plan allocation NDDs to kidney exchange first priority, additional minor edits. | 2015 | |
| 3 | Added plan for 'orphan recipient' from kidney exchange. Ranking numbering extended to manual override categories (now 'Rank 1') and lower ranks renumbered. | November 2016 | |
| 4 | Amendment inserted. | September 2017 | |
| 5 | Added rank 1d: prior live kidney donor. | December 2017 | |
| 6 | For donation after circulatory death (DCD) donors it is agreed that, where possible, kidneys will be allocated to two separate transplant centres to ensure lowest possible cold ischaemia time.<br>(Deleted directive that "one kidney must be allocated to the regional transplant centre"). | September 2018 | |
| 7 | Paragraph about allocation time allowance.<br>Preemptive Listing Criteria updated.<br>Suspension from waiting list after live donor accepted.<br>Minor edits. | February 2019 | |
| 8 | Preemptive simultaneous pancreas and kidney listing.<br>Circulation audience and date to version history.<br>Reference to biopsy protocol document.<br>"Rank" replaced with "Tier" | December 2019 | |
| 9 | Backdating start date for small children. | March 2020 | |
| 10 | Minor terminology updates<br>Removal of DCD allocation to two different transplant centres<br>Make criteria for preemptive SPK listing same as for kidney transplant only. | December 2020 | |
| 11 | Remove NDDs restricted allocation within centre that assessed them. | June 2021 | |
| 12 | Make consistent with NZ Pancreas Allocation Scheme<br>Change waiting time calculation to be time on dialysis<br>Clarify recovery of ESKD approach<br>Minor edits, including elimination of redundant paediatric size clauses with waiting time change<br>Delete Kidney Damaged at Retrieval (included in communication document) | | |
| 13 | Extend definition of 'early graft failure' from 1 week to 1 year | December 2022 | |
| 14 | Mismatch points changed from 2200 to 2100 to be consistent with NZTIL (New Zealand Transplantation and Immunogenetics Laboratory | December 2022 | |

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| 15 | Changed to Blood group identical (except A to AB), unless 0 and 1 HLA-A or HLA-B mismatch, then blood group compatible | December 2022 | |