

HEART ALLOCATION

This policy has been created by the Cardiothoracic Advisory Group (CTAG) on behalf of NHSBT.

The policy has been considered and approved by the Clinical Governance Monitoring Group (CGMG) and the Senior Management Team of the Organ Donation and Transplantation Directorate (ODT). It has also received final approval from the Transplant Policy Review Committee (TPRC), who act on behalf of the NHSBT Board, and who will be responsible for annual review of the guidance herein.

*Last updated: April 2014
Next review: [Month] 2015*

The aim of this document is to provide a policy for the allocation and acceptance of donated hearts to adult and paediatric recipients on the UK national transplant list. These criteria apply to all proposed recipients of organs from deceased donors.

In the interests of equity and justice all centres should work to the same allocation criteria. Non-compliance to these guidelines will be handled directly by NHSBT, in accordance with the *NHS Blood and Transplant Organ Donation and Transplantation: Policy on Non-compliance with Selection and Allocation policies*.

It is acknowledged that these guidelines require regular review and refreshment. Where they do not cover specific individual cases, mechanisms are in place for the allocation of organs in exceptional cases that ensure equity and fairness.

The guidance in this document describes how hearts donated by deceased donors are allocated to the designated UK transplant units.

1. Allocation policy

Organs are allocated on a national basis for those on the urgent list and to the centre for those on the routine (non-urgent) list. A new super urgent scheme is anticipated to be implemented in 2015 which further separates out the most critical urgent patients. Such patients will be given priority over urgent patients through an allocation process similar to the current urgent process (see section 1.3.7).

Patients meeting criteria for transplantation with organs from deceased donors must be registered at NHS Blood and Transplant. The person requesting registration is accountable for the accuracy of the information provided. NHSBT will ensure that patients meet registration criteria and refer back those where the criteria are not met.

1.1 Rationale for allocation policy

The rationale for this policy is the need to balance the importance to improve outcomes for patients by selecting the most appropriate recipient for the heart with the need to give priority to the sickest candidate.

1.2 Donor information

An adult heart donor is defined as being a patient aged 16 years or above at the time of death. A paediatric heart donor is defined as being a patient aged less than 16 years at the time of death. Paediatric recipients (patients aged less than 16 years) and those with a body weight of 30 kg or less at the time of offer, will receive priority within the offering sequence for any organs available from a paediatric donor.

A centre may request, through the appeals panel, registration of a small adult, weighing 40 kg or less, when there are specific reasons to justify inclusion in this priority group (such as excess fluid retention which may not reflect lean body mass).

Comment [KA1]: Move to selection?

Transplantation is associated with risk. It is the responsibility of the surgeon to ensure that the potential transplant recipient understands and accepts the risks associated with organ transplantation as well as the benefits. Obtaining informed consent is a process which involves the whole multi-disciplinary team. NHSBT and the British Transplantation Society have given advice on Consent that is available on www.odt.nhs.uk.

Comment [KA2]: Move to selection?

Donor contraindications to organ donation are reviewed regularly and revised as needed. These criteria define those potential deceased donors where no organ would be accepted for transplantation and so the families would not be approached. Contraindications for donation and heart donation are available on the website (www.odt.nhs.uk).

As with all guidelines, these should be used with clinical judgement and, if a clinician feels that a person excluded by this policy, should be offered the opportunity to donate, then the family should be approached for consent/authorisation.

1.3 Allocation policy

1.3.1 Details of policy

Allocation zones

There are seven designated heart transplant centres in the UK: Harefield, Papworth, Glasgow, Birmingham, Newcastle, Manchester and Great Ormond Street, London. Newcastle transplant adult and paediatric recipients, and Great Ormond Street transplant paediatric recipients only.

At present, hearts allocated by deceased donors in the UK are allocated first to those on the national urgent waiting list and then, if there is no suitable recipient, to a centre. Each designated transplant centre has been allocated a donation zone so potential donors in that zone will be offered first to that centre. If the offer is declined, then the heart will be offered to the other centres in rotation.

The risks and benefits of a zonal allocation-based approach compared with either regional or national allocation remains under close consideration. While a national allocation system may offer advantages in ensuring transparency and equity, a zonal allocation may offer benefits in terms of closer matching of donor and recipient to ensure better outcomes. NHSBT is working closely with clinicians and other stakeholders to review and develop the most appropriate allocation systems for the patients in UK.

Allocation of donor organs to centres is being reviewed and arrangements made to ensure equity for patients by adjusting the allocation zone to ensure optimal outcomes.

1.3.2 Heart offering sequence

Group 1 and group 2 recipients are defined in the Directions to NHS Blood and Transplant

1.3.2.1 Adult heart offering sequence

Offers will be made to centres in the following priority order for Group 1 recipients:

- Adult urgent patients, UK wide
- Paediatric urgent patients, nationwide
- The designated zonal retrieval centre
- The Royal Hospital for Sick Children, Great Ormond Street (for paediatric recipients)
- Designated centres in the UK
- Centres in the Republic of Ireland
- Organ Exchange Organisations in EC and other Group 1 countries.

Offers will then be made to centres in the following priority order for Group 2 recipients:

- The designated zonal retrieval centre
- Designated centres in the UK or Republic of Ireland
- Organ Exchange Organisations in Group 2 countries

- Once the super urgent scheme is implemented, paediatric patients registered on to this scheme will feature at the top of the offering sequence, nationwide, above paediatric urgent patients

1.3.2.2 Paediatric heart offering sequence

All paediatric cardiothoracic organs in the UK or Republic of Ireland will be offered first for paediatric recipients and then for adults in the following priority order for Group 1 recipients:

- Urgent paediatric patients, nationwide
- Urgent adult patients, nationwide
- Designated paediatric transplant centres and those centres with small adults registered as paediatric recipients in the UK or Republic of Ireland
- The designated zonal retrieval centre for adult patients
- Designated centres in the UK or Republic of Ireland for adult patients;
- Organ Exchange organisations in EC and other Group 1 countries

Offers will then be made to centres in the following priority order for Group 2 recipients:

- Designated paediatric transplant centres and those centres with small adults registered as paediatric recipients in the UK or Republic of Ireland
- The designated zonal retrieval centre for adult recipients
- Designated centres in the UK or Republic of Ireland for adult recipients
- Organ Exchange Organisations in Group 2 countries

Once the Super Urgent scheme is implemented, adult patients registered on to this scheme will feature at the top of the offering sequence, nationwide, above adult urgent patients.

1.3.3 Adult non-urgent allocation

Organs for non-urgent transplantation are first allocated to the designated transplant centre in whose zone the donor occurs, and this allows the clinicians to select the most appropriate recipient, based on need, benefit and other clinical issues. Reasons for the selection should be recorded. Should the organ not be suitable for any local zonal recipients the organ is offered in sequence nationally.

Transplant centre rota

The cardiac centre rota includes heart only and heart/lung recipients.

The adult rota will comprise first the designated centres, always headed by the local zonal retrieval centre, and secondly the non-designated centres currently transplanting cardiothoracic organs in the UK.

All donors identified within the Royal Hospital for Sick Children, Great Ormond Street, will be offered to the Great Ormond Street Transplant Unit before reverting to the local zone.

- Donor organ offers for adult heart or heart/lung patients will be in accordance with the cardiac centre rota current at the time of offer. This rota is as follows:
 - The offer sequence will be in reverse-chronological order of last transplant date for non-urgent patients when organs are accepted outside of their own retrieval zone. A centre does not move position on the rota should they accept an organ from within their own zone
 - As each centre carries out a transplant using an organ donated from within the UK or Republic of Ireland and imported from another zone, it will be placed at the bottom of the rota
 - Following a transplant for an urgent patient, the unit will rotate to the bottom of the cardiac rota in the usual way

The rota will be used to advise designated units of the availability of donor organs regardless of whether or not a patient of the appropriate blood group is registered from their unit on the National Transplant Database at the time.

If the retrieval team consider the cardiothoracic organs not to be suitable, the organs must be offered to two more adult cardiothoracic transplant units for non-urgent patients before they are deemed un-transplantable.

1.3.4 Paediatric non-urgent heart allocation

Transplant centre rota

The paediatric rota consists of the two designated paediatric transplant units and adult transplant units with small adults registered as paediatric recipients. The adult rota consists of the designated centres, headed by the zonal retrieval centre, and the non-designated centres currently transplanting hearts in the UK.

All donors within the Royal Hospital for Sick Children, Great Ormond Street, will be offered to the Great Ormond Street Transplant Unit before reverting to the paediatric cardiac centre rota or the zone which would have first refusal.

- Paediatric donor organ offers for heart or heart/lung recipients will be in accordance with the cardiac centre rota current at the time of offer.
- The rotas used for paediatric donor organs will comprise first paediatric recipients followed by adult recipients. The rota is as follows:
 - The offer sequence will be in reverse-chronological order of last transplant date

- If a paediatric recipient centre carries out a paediatric transplant using an organ donated from within the UK or Republic of Ireland, it will be placed at the bottom of the paediatric rota
- A centre carrying out a heart/lung block transplant will be rotated to the bottom of both the cardiac and the equivalent lung centre rota
- An adult centre registering a small adult as a paediatric recipient will start at the bottom of the paediatric rotation
- As each adult centre carries out an adult transplant using an organ donated from a paediatric donor within the UK or Republic of Ireland and imported from another zone, it will be placed at the bottom of the appropriate adult rota
- A centre carrying out a heart/lung block transplant will be rotated to the bottom of both the adult cardiac and lung centre rota
- Offers will be made to non-designated units in accordance with the offer rota only if a suitable blood group recipient is registered from their unit on the National Transplant Database at the time
- Hearts from adult donors taller than 1.5 m can only be accepted for non-urgent patients at Great Ormond Street if there is a ≤ 20 cm difference between the donor and recipient height
- Where a centre transplanting a heart/lung block donates a domino heart to another centre, the centre receiving the domino heart will be rotated on the cardiac centre rota

1.3.5 Adult urgent heart allocation

Donor organs will be offered preferentially to patients registered on the urgent heart scheme and then non-urgent lists. Hearts offered through the fast track scheme may be used for urgent patients (see Section 1.3.12).

- The order of offering shall be first by blood group and then by waiting time:
 - Donor recipient blood group identical blood group matching has priority over compatible matches
 - However, these criteria may be overridden in cases where a local centre retains a local heart for a local urgent patient
- Where two patients of the same blood group are registered on the adult urgent heart scheme, the patient who was registered first with the ODT Duty Office will have priority
- A centre with a local donor may retain the heart for an urgent patient of identical blood group even if another similar patient is waiting elsewhere; this will minimise cold ischemia time and improve the outcome for the recipient
- A centre with a local donor and a pre-registered urgent patient with compatible blood group can retain a heart even if there is a patient of identical blood group

registered at another centre. If an organ is accepted by a centre for a patient on the urgent scheme, the organ cannot be used for a different patient

- Where two patients of the same size but of different blood groups are registered on the urgent scheme, the blood group identical patient will have priority over the blood group compatible patient
- If an organ is accepted for a patient on the urgent scheme, no further offers will be made for that patient unless the transplant does not proceed
- A patient registered for an urgent heart will have precedence over a non-urgent patient waiting for a heart/lung block
- If an adult (aged ≥ 16 years) is registered at the Royal Hospital for Sick Children, Great Ormond Street, they will be placed in the adult urgent heart offering sequence
- Adult donor hearts may be offered for paediatric patients registered on the paediatric urgent heart scheme

1.3.6 Paediatric urgent heart allocation

Paediatric donor organs will be offered first to paediatric recipients, including registered small adults, then to adult recipients before being offered to European Organ Exchange Organisations or the Republic of Ireland. No paediatric organ should be offered to a Group 2 patient in the UK or Republic of Ireland if there is a clinically suitable Group 1 patient in the UK or Republic of Ireland.

- Allocation of paediatric donor organs to paediatric urgent patients is to the patient who has been registered for the longest period of time
 - There is no blood group priority
- Recipients of hearts from paediatric donors will usually be those under the age of 16 years. If a paediatric donor heart is not required for a paediatric urgent patient and is of a suitable size for an adult recipient, it may be offered to an adult recipient

1.3.7 Super urgent allocation

A new super urgent scheme is anticipated to be implemented in 2015 which further separates out the most critical urgent patients. Once implemented, donor organs will be offered preferentially to patients registered on the super urgent scheme before those on the urgent heart scheme.

Organ allocation to the super urgent list will work in the same way as for the urgent list – a donor heart will be offered to the national super urgent patients based on time on the waiting list, though preference will be maintained for a super urgent recipient within the allocation zone of a donor heart.

Blood group identical patients take priority over blood group compatible patients regardless of waiting time, since this has worked effectively within the urgent scheme

with no statistically significant difference in time to transplant or time to death between blood groups.

There will be a separate adult and paediatric offering sequence as for the urgent scheme.

If there are no suitable super urgents in the country, the donor heart will be offered to urgently listed patients as per current practice.

There will be an ongoing audit of the listing criteria used and the percentage of patients being super urgently listed, and time spent on the super urgent, urgent and standard lists. If the super urgent list became too long then these criteria would need to be revised as then it would have failed its purpose – to provide a means of transplanting the sickest patients in a suitable timeframe. The criteria do not specify which patients are too high-risk for transplantation; it is the responsibility of the transplanting centre to ensure that the risk profile of recipients is acceptable.

1.3.8 Blood group restrictions

Blood group O donor hearts for non-urgent adults patients must be made to blood group O and B patients, first within-zone then to other centres rotationally. If there are no suitable O and B patients, the heart may then be offered to blood group A and AB patients. Again, first within-zone and then to other centres. If a heart from an 'O' blood group donor is offered 'out-of-zone' to centres via the national allocation sequence, consideration must be given for 'O' and 'B' blood group patients nationally before any other blood group.

1.3.9 Local allocation of donor organs

Selection of recipients within a zone must be done in a transparent and equitable manner with clear lines of accountability for the decision. Factors to be considered when allocating hearts within a local zone include:

Blood Group

- Identical has priority over compatible
- O blood group donor organs should be allocated to O and B blood group recipients

Prospective cross-match

Size

This is important for intra-thoracic transplantation as the power output of the transplanted heart has to match the recipient. Small female hearts will not necessarily have the power for average sized males.

Logistics

Given the consideration of ischaemic time and occasional short notice, the logistics of recipient transplantation may come into play in the choice of potential recipient.

Physiology

Particularly with reference to the pulmonary vascular resistance or the pressure drop across the lungs, which might be important in placing marginal donor organs.

CMV status

Wherever possible, organs from donors who are CMV positive should not be transplanted into patients who are CMV negative unless prophylaxis is offered.

Prognostic "priority"

All patients on the heart transplant list are in end stage heart failure and need should be a major factor in prioritisation although other factors should be taken into account.

Recipient and donor age matching

There has been a recent tendency to put older donor material into older recipients, although this discriminatory factor only comes into play if all other factors are equal.

Waiting time

If all other things are equal, preference may be given to patients who have been on the waiting list longest.

HLA compatibility

To be considered where practicable and clinically appropriate

1.3.10 Exceptions

Exceptions will be made to the strict reverse-chronological rota in the following cases:

- An organ donated from within a designated centre's zone will be offered first to that unit regardless of that unit's current place on the rota. If the organ is used, that unit will retain its place and not be rotated to the bottom of the relevant rota
- A centre transplanting an organ donated from outside the UK or Republic of Ireland will retain its former place and not be moved to the bottom of the rota
- Where a centre transplanting an imported heart/lung block donates a domino heart to a centre, other than the zonal retrieval centre exporting the heart/lung block, the centre receiving the domino heart will be rotated on the rota

1.3.11 Offering time

- Offers will be made in accordance with the cardiothoracic centre rotas for offering donor hearts, on the basis of a firm offer to the first centre and a provisional offer to the second in line

- For all cases, centres to which a firm offer has been made must advise the ODT Duty Office within 45 minutes whether they wish to accept or decline the offer. If the organ is declined, it will be offered to the second in line as a firm offer and to the third in line as a provisional offer, and so on throughout the heart allocation sequence. An offer will automatically be withdrawn after 60 minutes if a response is not made
 - For firm offers made to a centre previously advised provisionally, the ODT Duty Office must be advised within 30 minutes whether they wish to accept or decline the firm offer
- Only once all centres have declined a donor for a Group 1 patient will Group 2 patient requirements be considered
- A centre to which an offer has been made will retain its place on the heart allocation sequence while a decision is pending, although the ODT Duty Office will use discretion in offering a second time to centres which are currently considering an offer. If the centre chooses to decline the offer of an organ, it will retain its place in the allocation sequence
- The centre should maintain contact with the local donor procurement coordinator during the offering sequence and the retrieval surgeon is empowered to abort the offering sequence on the basis of increasing donor instability that is likely to jeopardise other solid organ retrieval
 - Wherever possible echocardiography and invasive monitoring (including cardiac output studies) should be utilised to endorse this decision

1.3.12 Fast track

Fast track offer scheme – offers from the UK

Designated cardiothoracic units may register with the ODT Duty Office to receive offers of hearts which are available at short notice from another unit in the UK. The scheme applies to hearts referred to NHSBT which are either to be removed within 90 minutes of the referral to NHSBT or already removed or in the process of removal. The scheme will operate as follows:

- Offers of hearts meeting the fast track offer scheme criteria will be made only to centres registered in the scheme
- Offers will be made by the ODT Duty Office by either simultaneous facsimile transmission or text message to pager/mobile phone of donor information
- Centres must respond by telephone to all fast track offers within 30 minutes of the offer whether they wish to accept or decline the offer. The ODT Duty Office will not follow-up those centres failing to respond within this time
- Hearts offered through the fast track scheme may be accepted for patients registered for an urgent heart transplant. In such instances priority will go to the urgent patient

- If an organ is accepted by more than one centre, it will be allocated to the centre placed highest on the rota at the time of offering the organ. Group 1 patients will be allocated organs before Group 2 patients
- Within 45 minutes of receiving the referral, the ODT Duty Office will advise the offering centre of the outcome

Fast track offer scheme – offers from outside the UK and Republic of Ireland

Designated cardiothoracic units may register with the ODT Duty Office to receive offers of organs which are available from other units in Europe. The Scheme will operate as follows:

- Offers of cardiothoracic organs meeting the fast track offer scheme criteria will be made only to centres registered in the scheme
- Offers will be made by the ODT Duty Office by either simultaneous facsimile transmission or text message to pager/mobile phone of donor information
- Acceptance will be on a first come first served basis. Centres not responding will be deemed to have declined the offer
- Within 45 minutes of receiving the referral, the ODT Duty Office will advise the offering European Organ Exchange Organisation of the outcome

2. Acceptance of allocated organs

It is the responsibility of the recipient surgeon to decide whether to accept an organ and this decision will depend on both donor and recipient factors. Organs from all donors will carry some degree of risk and the risks associated with transplantation must be balanced against the benefits of transplantation and the risks of awaiting a further offer. The recipient is entitled to decline organs from donors with some characteristics and these wishes should be respected.

3 Allocation policies for multiple organs

3.1 Offering heart/lung blocks and their division

When a heart/lung block is available for donation, the organs will first be offered using the cardiac centre rota. If part of a block is accepted for transplant, the remainder will be offered on, using the rota appropriate (either the cardiac or the equivalent lung rota) to the remaining organ(s).