

**NHS BLOOD AND TRANSPLANT**  
**CARDIOTHORACIC ADVISORY GROUP**  
**PAEDIATRIC ALLOCATION ZONES PROPOSAL**

**BACKGROUND**

1. The most clinically urgent paediatric patients in need of cardiothoracic organ transplantation are served via the urgent heart and urgent and super-urgent lung allocation schemes, which prioritise individuals based on waiting time.
2. For non-urgent paediatric patients, however, offers are made to the two paediatric centres, Great Ormond Street Hospital (GOSH) and Newcastle, according to the Paediatric Centre Rota and the centre can select a suitable patient from their non-urgent list.
3. The Paediatric Centre Rota, described below, does not reflect the different demand for organs at the two paediatric centres and therefore leads to inequity in waiting times between paediatric patients at GOSH and Newcastle (as shown in *Access to Heart Transplantation for Paediatric Patients CTAG(15)H17*).
4. It is proposed that paediatric allocation zones are introduced to replace the Paediatric Centre Rota. These would be similar to the allocation zones used for adult heart offering and non-urgent adult lung offering. This was agreed in principle at the Paediatric Organ Allocation Working Group (POAWG) meeting in June 2017. Both are described in more detail below.

**THE PAEDIATRIC CENTRE ROTA**

5. The rota operates independently for hearts and lungs and works in the following way:
  - Paediatric centres are ordered in reverse-chronological order of the last non-urgent paediatric transplant they performed from a UK donor.
  - As each centre carries out a transplant, it is moved to the bottom of the rota.
  - A centre transplanting an organ donated from outside the UK will retain its place and not be moved to the bottom of the rota.
  - A centre transplanting a heart-lung block will be rotated to the bottom of both the Paediatric Heart Centre Rota and the Paediatric Lung Centre Rota.
6. **Appendix 1A** and **1B** show the heart and lung allocation sequences, for adult and paediatric donors, where the sections that use the Paediatric Centre Rota are circled.

## PROPOSAL

1. The proposal is to split the UK into two geographical zones, one for each paediatric centre. Donors arising in each centre's zone would be preferentially offered to that centre before the other centre. The size of each zone and the hospitals included in it would be dictated by the transplant centre's percentage share of registrations onto the national non-urgent paediatric transplant list and the geographical spread of paediatric donors according to the donating hospital. The zones may be different for hearts and lungs due to the differing number of registrations of each type at each centre and the possible difference in distribution of paediatric heart and lung donors.
2. The allocation zones would be reviewed annually by CTAG and altered if a statistically significant difference is observed between the percentage share of registrations and the percentage share of donors (at the 5% significance level, or 10% if greater sensitivity desired). This is the same methodology used for adult heart and lung allocation zones and also liver allocation zones.
3. Registrations would be defined as:

The total number of UK non-urgent paediatric (<16 at time of registration) Group 1 heart, lung or heart-lung registrations in the latest three financial years. Registrations that ended in a domino or live donor transplant are included, as are multi-organ registrations. Registrations that were only ever suspended and not made active are excluded as are registrations that were only ever urgent. Registrations for heart-lung transplantation are included in the number of heart registrations as heart-lung blocks are allocated according to the Non-Urgent Heart Allocation Scheme. Retrospective registrations made after an unlisted patient was transplanted are also included.

For patients registered more than once in the registration period, the following rules apply:

- If a patient was registered, removed then reregistered, only the first registration is included.
- If a patient was registered, transplanted then reregistered, both registrations are included.
- If a patient was active, suspended then reactivated, only the first activation is included.

4. Donors would be defined as:

The total number of UK paediatric (<16 years at time of death) heart and lung donors after brain death in the latest three financial years. Donors whose heart or lungs were not transplanted were excluded. If only one lung from a donor was transplanted, this was included as a lung donor.

5. At the June 2017POAWG meeting it was agreed that three years' worth of heart and lung registrations and donors should be used to define zone sizes, as this would provide a good balance between being too insensitive or volatile in reflecting the current waiting list sizes.

6. The geographical spread of paediatric donors and the registration percentage share is used to draw a zonal boundary, and all potential donor hospitals (even if not generating a paediatric DBD heart and/or lung donor in the last three years) above that boundary are allocated to Newcastle's zone and those below are allocated to GOSH's zone. This is important to note because, as shown in **Appendix 1B**, adult donor lungs would also be allocated using these zones even though they are not taken into account in the calculations. This is justifiable because paediatric donors are more relevant than adult donors for these patients.
7. To demonstrate this proposal, **Appendix 2** shows the latest three years of heart and lung registrations by centre, hence the proportions that define the proposed paediatric allocation zone sizes. The number of paediatric donors that would have appeared in the proposed zones over the last three years is also shown. **Appendix 3** illustrates the zone sizes using a map of the UK.

## IMPLEMENTATION

8. CTAG members are asked to review and ratify this proposal before it is submitted to the NHSBT Transplant Policy Review Committee (TPRC) for further ratification.
9. If approved, this requirement would need to be submitted to the ODT HUB programme board in order for IT resource and timescales to be estimated.
10. It should be noted that once implemented this proposal would not add time to the offering process.

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APPENDIX 1A - Current allocation sequences for adult and paediatric donor hearts

Figure 1 Allocation for an adult donor heart (donor ≥ 16 years)

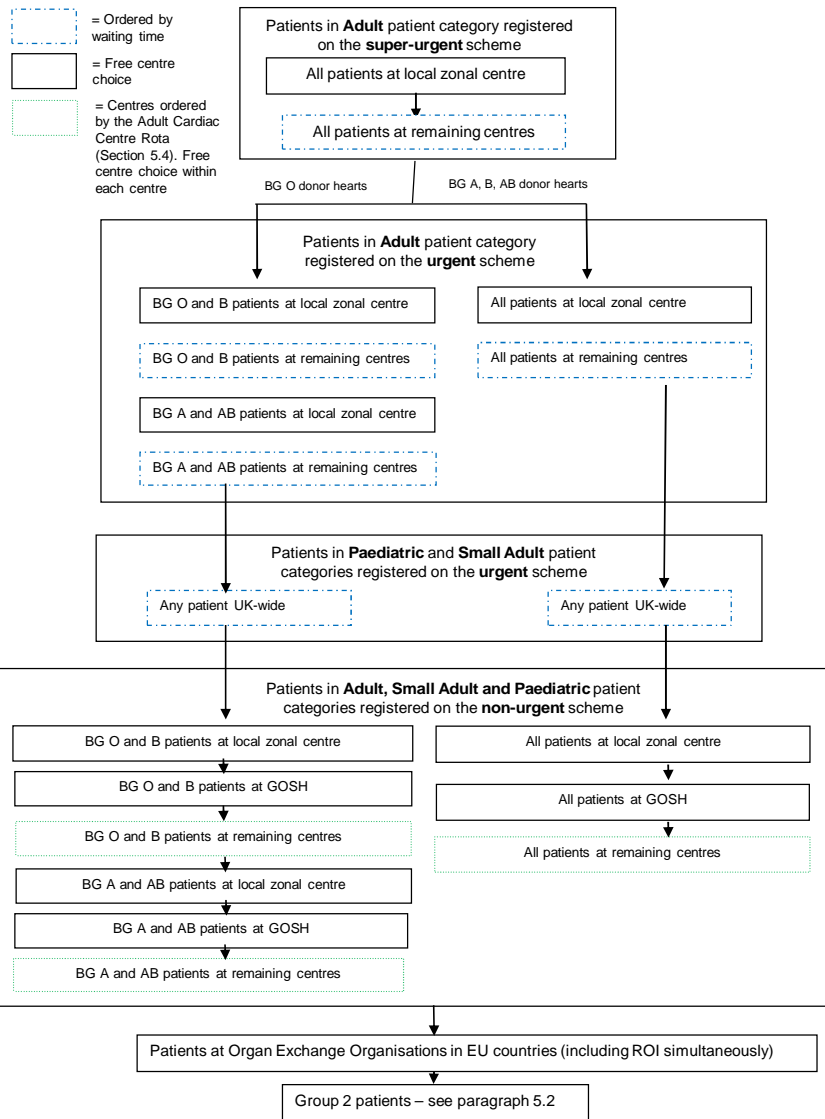
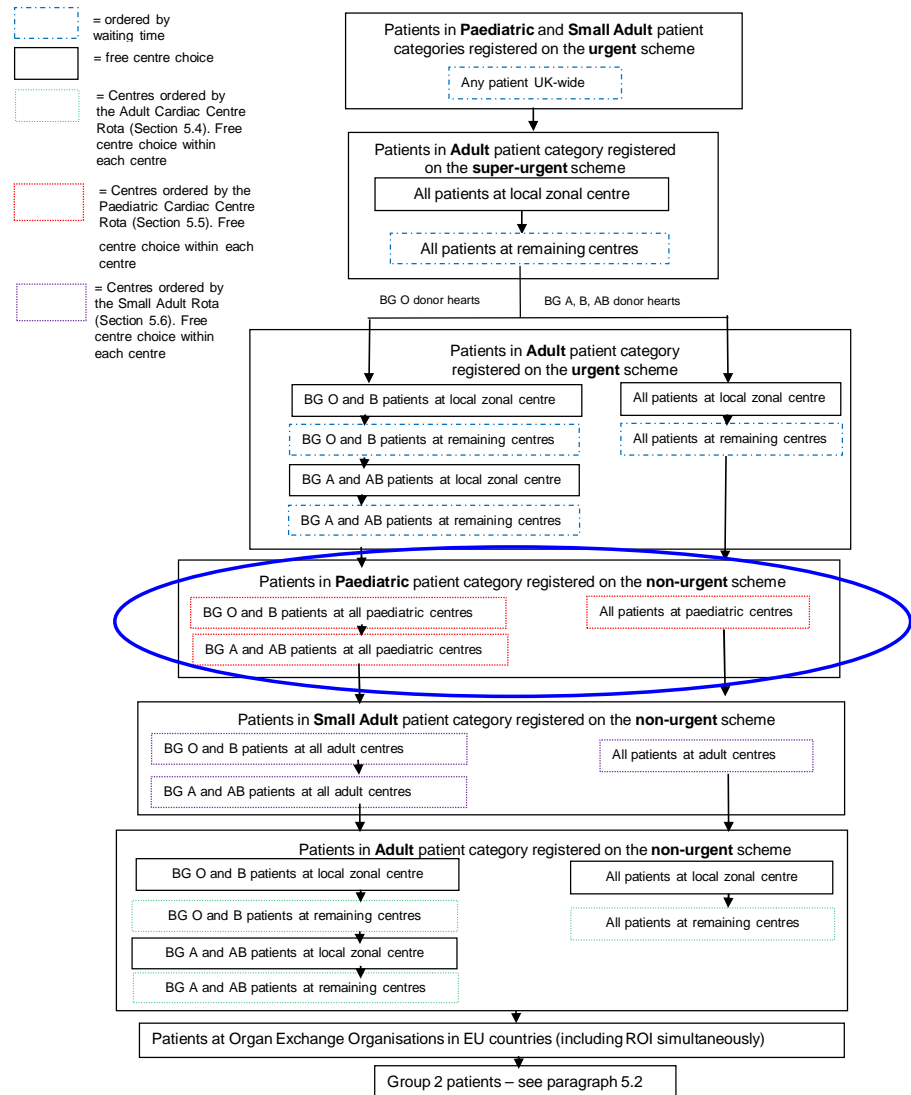


Figure 2 Allocation for a paediatric donor heart (donor < 16 years)



APPENDIX 1B - Current allocation sequences for adult and paediatric donor lungs

Figure 1 Allocation for adult donor lungs (donor ≥ 16 years)

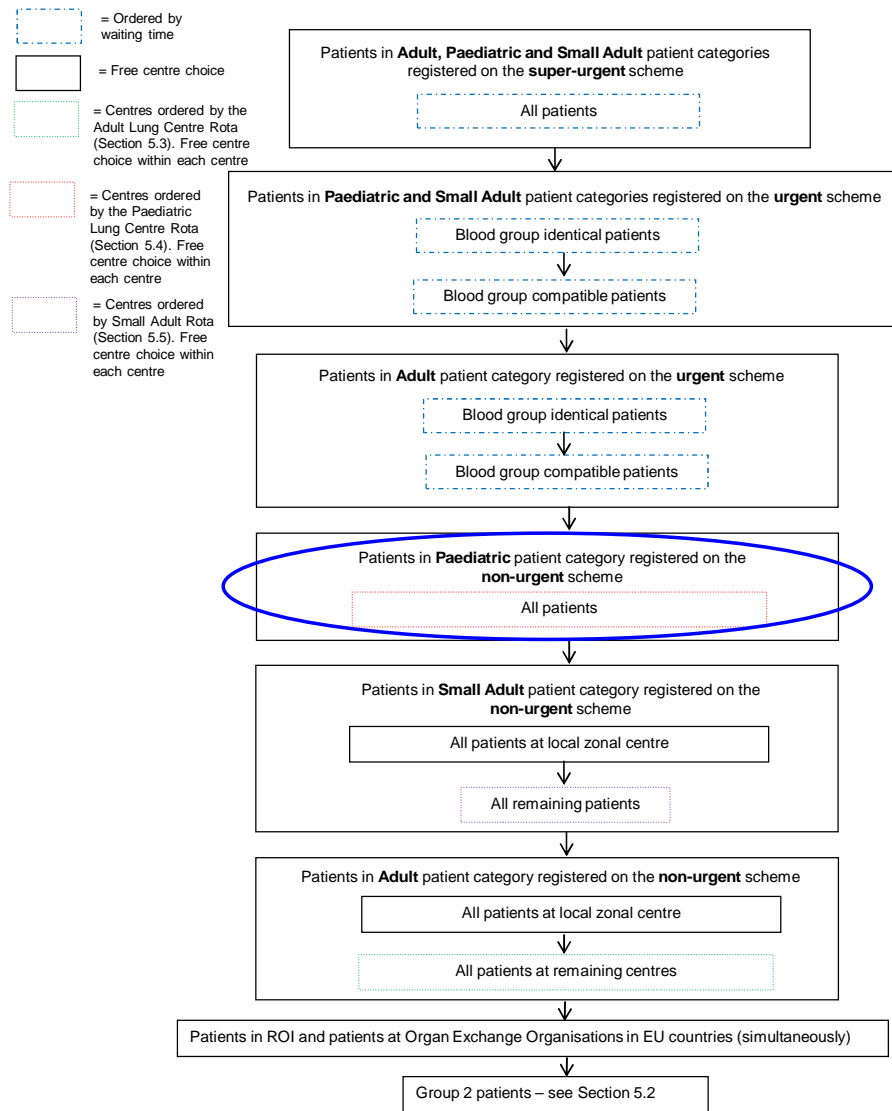
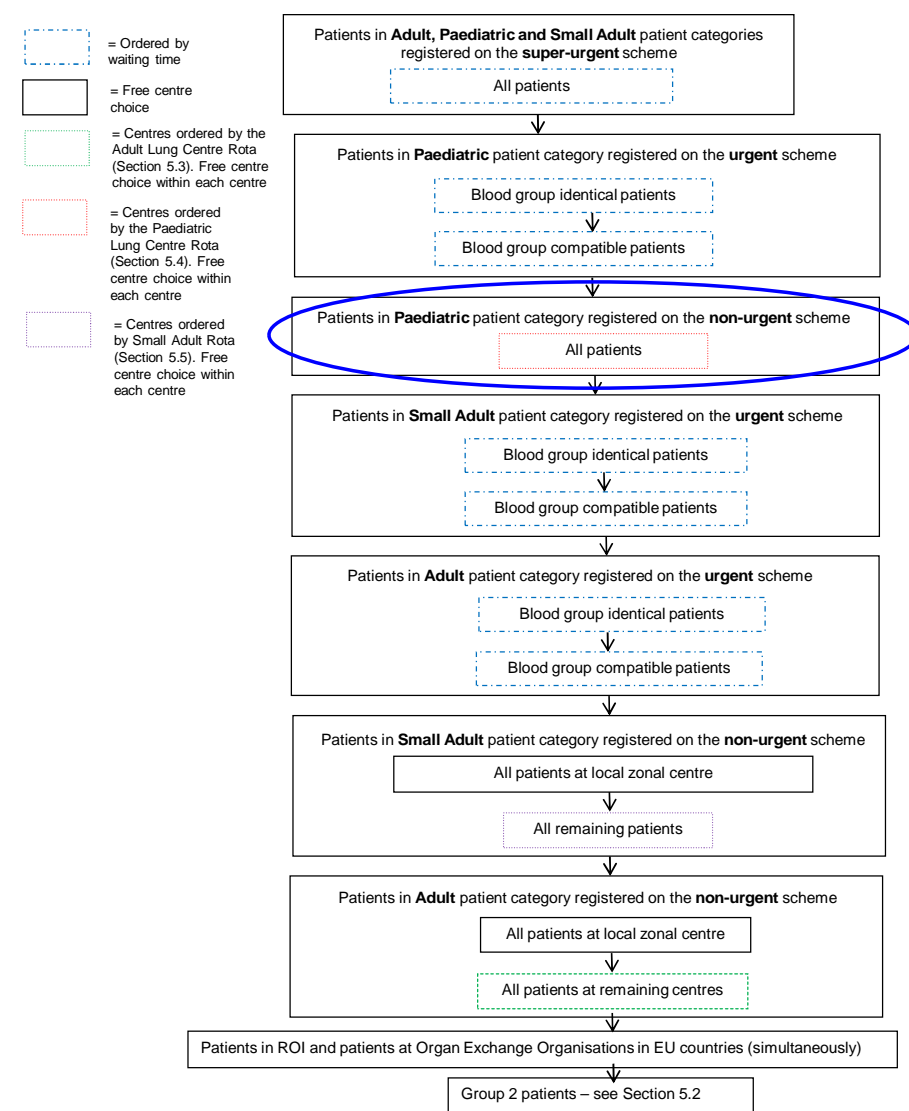


Figure 2 Allocation for paediatric donor lungs (donor < 16 years)



**APPENDIX 2 – Paediatric non-urgent registrations and paediatric DBD donors in proposed zone in the latest three financial years**

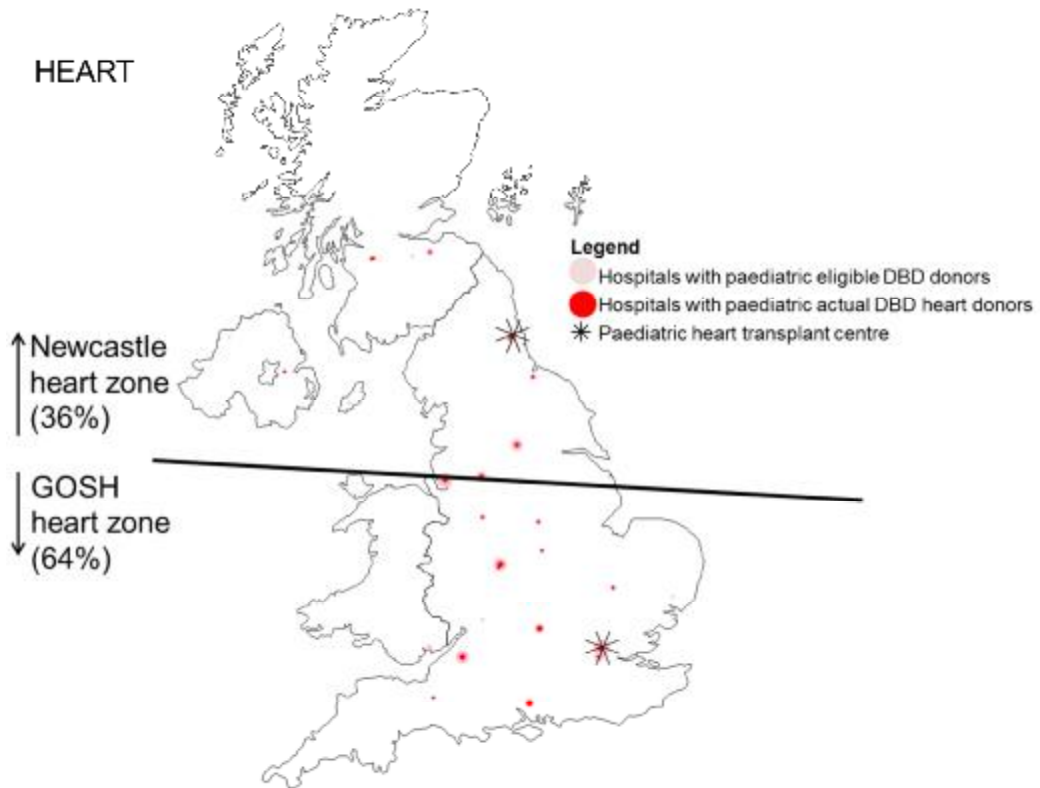
<b>Appendix 2A Paediatric heart and heart-lung non-urgent registrations by centre and paediatric DBD heart donors in proposed zone from 1 April 2014 to 31 March 2017</b>		
<b>Centre</b>	<b>Registrations</b>	<b>Donors in proposed zone</b>
Newcastle	20 (36%)	14 (36%)
Great Ormond Street Hospital	35 (64%)	25 (64%)
<b>Total</b>	<b>55</b>	<b>39</b>

<b>Appendix 2B Paediatric lung non-urgent registrations by centre and DBD lung donors in proposed zone from 1 April 2014 to 31 March 2017</b>		
<b>Centre</b>	<b>Registrations</b>	<b>Donors in proposed zone</b>
Newcastle	13 (37%)	9 (35%)
Great Ormond Street Hospital	22 (63%)	17 (65%)
<b>Total</b>	<b>35</b>	<b>26</b>

Note: it was not possible to match the percentages more closely due to the small number of paediatric lung donors in the period (in Figure 3B, if Liverpool Alder Hey Children's Hospital was moved to Newcastle's zone their percentage share would become 42%)

**APPENDIX 3 – UK map illustration of proposed paediatric allocation zones**

**Figure 3A Proposed paediatric heart allocation zones based on latest three years of paediatric DBD heart donors**



**Figure 3B Proposed paediatric lung allocation zones based on latest three years of paediatric DBD lung donors**

