

NHS BLOOD AND TRANSPLANT

CARDIOTHORACIC ADVISORY GROUP - HEART

WAIT LIST OUTCOMES AND POST-TRANSPLANT SURVIVAL FOR PAEDIATRIC HEART PATIENTS

INTRODUCTION

1. This paper reports on outcomes on the heart transplant list for paediatric patients registered in a recent 5 year period. The analysis is split by urgency, by age group and by weight group. Post-transplant survival is also analysed for paediatric transplant recipients in the same time period. Adult outcomes are provided for comparison purposes.

DATA ANALYSIS

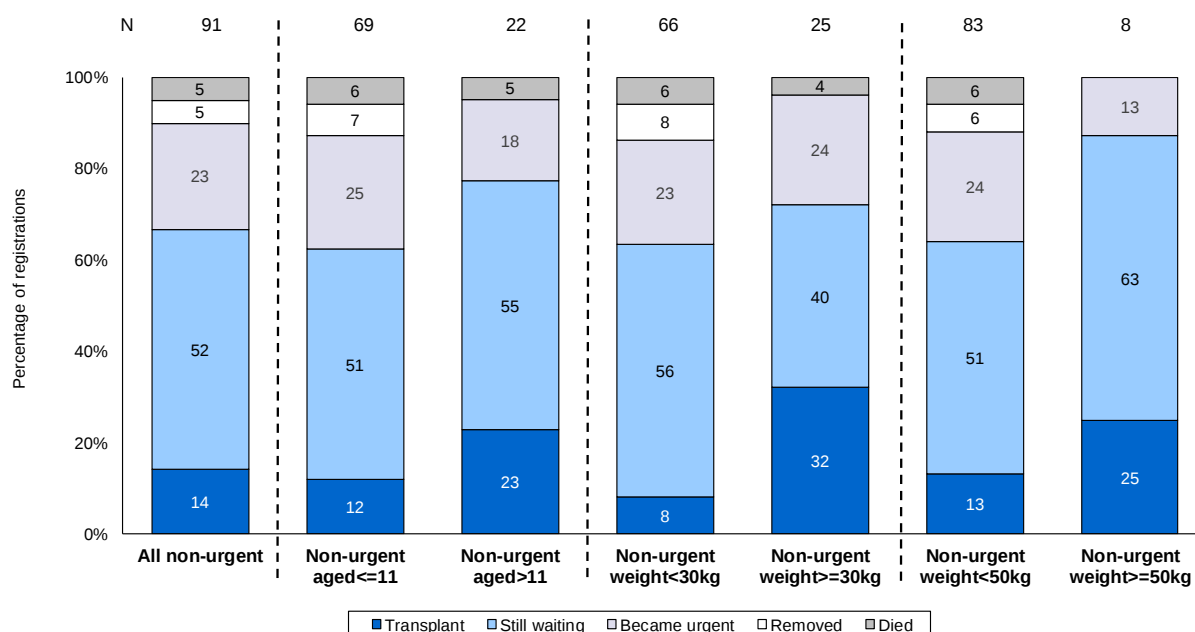
2. Data on patients registered for a heart transplant between 1 April 2018 and 31 March 2023 were extracted from the UK Transplant Registry (UKTR). Analysis was predominantly performed for paediatric patients (any patient registered at Great Ormond Street Hospital (GOSH) or a patient aged less than 16 registered at Newcastle), but also for adults for comparison purposes. Heart-lung registrations were excluded.
3. Outcomes on the transplant list at one-year post-registration were compared across age group and weight group using 100% bar charts. Non-urgent and urgent registrations were considered separately, and super-urgent registrations were not considered. Removals from the transplant list due to deteriorating condition were classed as deaths.
4. For the post-transplant analysis, first time heart only transplants from DBD and DCD donors between 1 April 2018 and 31 March 2023 were obtained from the UKTR. Patient survival to one year was analysed using the Kaplan-Meier method, separately for paediatric and adult recipients, and stratified by urgency (super-urgent transplants were included), as well as age group and weight group for paediatrics.

RESULTS

Registration outcomes

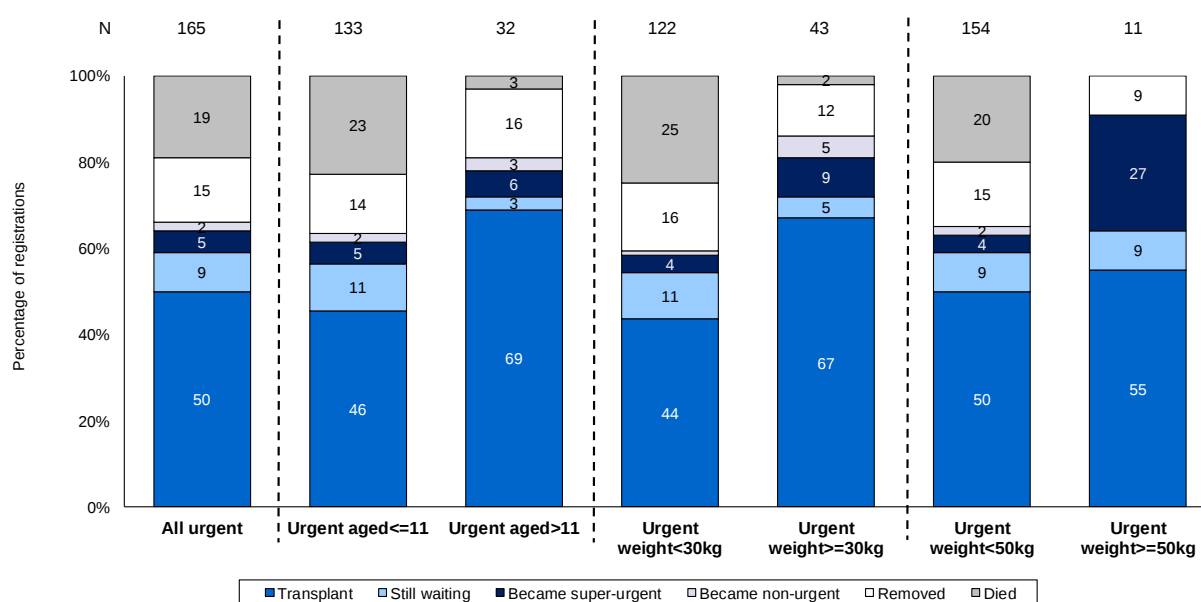
5. **Figure 1** shows one-year wait list outcomes for non-urgent paediatric registrations in the time period. There were 91 registrations in this group; 14% resulted in non-urgent transplant by one year, but 52% of patients were still waiting and 23% had become urgent. The one year wait list mortality rate was 5% overall and was reasonably similar across age and weight groups. The one-year transplantation rate was higher for patients aged >11 years (23%) than those aged ≤11 years (12%), and for those weighing ≥30kg (32%) compared with those weighing <30kg (8%).

Figure 1 One-year wait list outcomes for 91 paediatric non-urgent heart only registrations in the UK, 1 April 2018 to 31 March 2023, by age and weight



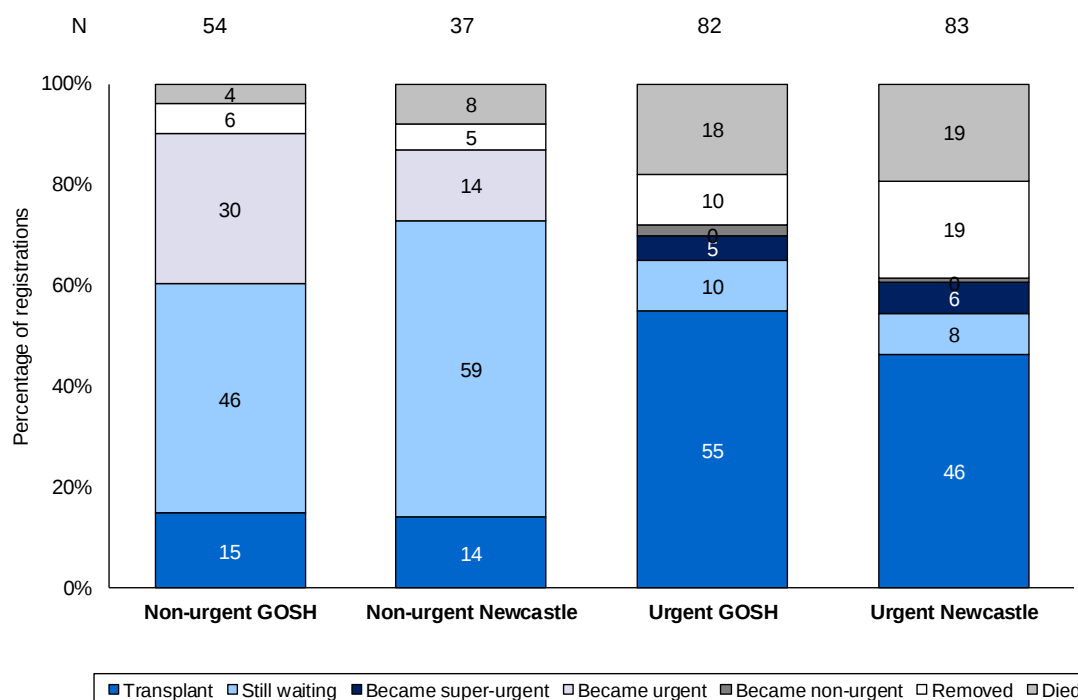
6. **Figure 2** shows one-year wait list outcomes for urgent paediatric registrations in the time period. There were 165 registrations in this group; 50% resulted in urgent transplant by one year, but 19% of patients had died on the urgent list. The wait list mortality rate was higher in the younger/smaller patients compared with the older/larger patients, and the transplantation rate was higher in the older/larger patients.

Figure 2 One-year wait list outcomes for 165 paediatric urgent heart only registrations in the UK, 1 April 2018 to 31 March 2023, by age and weight



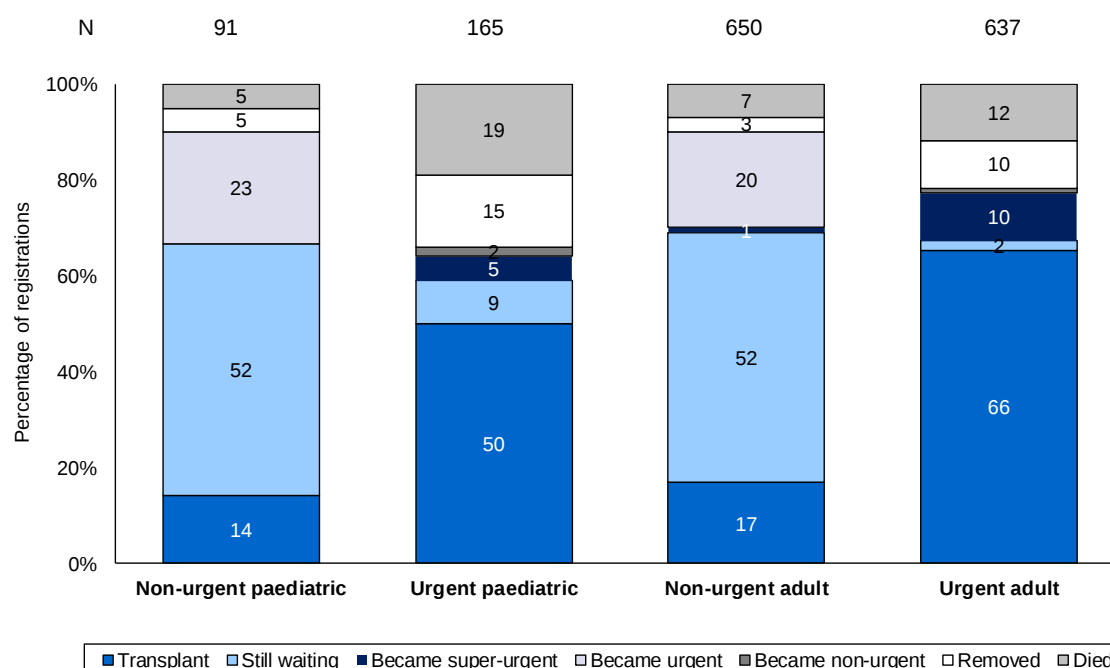
7. **Figure 3** shows one-year wait list outcomes for urgent and non-urgent paediatric registrations, split by centre. The one year wait list mortality rate was slightly higher for Newcastle patients than GOSH patients, and the transplantation rate was higher for urgent patients at GOSH compared with urgent patients at Newcastle.

Figure 3 One-year wait list outcomes for paediatric non-urgent and urgent heart only registrations in the UK, 1 April 2018 to 31 March 2023, by centre



8. **Figure 4** shows one-year wait list outcomes for urgent and non-urgent paediatric and adult registrations. The overall non-urgent transplantation rate at one year was 17% for adults compared with 14% for paediatric patients, and the wait list mortality rate was 7% for adults compared with 5% for paediatric patients. For urgent registrations, the transplantation rate was higher for adults at 66% compared with 50% for paediatric, and the mortality rate was lower at 12% for adults compared with 19% for paediatric.

Figure 4 One-year wait list outcomes for paediatric and adult non-urgent and urgent heart only registrations in the UK, 1 April 2018 to 31 March 2023



Post-transplant outcomes

- Figures 5-8** show Kaplan-Meier curves for one-year patient survival following heart transplantation for transplants performed in the analysis period; **Figures 5, 6 and 7** are for paediatric recipients, split by urgency, age group and weight group, respectively, and **Figure 8** is for adult recipients, split by urgency. One-year survival rates exceed 80% for all groups, and there were no significant differences between urgency groups, or the age and weight groups examined.

CONCLUSIONS

- Outcomes on the non-urgent heart transplant list are similar for adult and paediatric patients, but outcomes on the urgent list are poorer for paediatric patients than adults. The worst outcomes are in the younger and smaller children. Survival rates are generally very good post-transplant across all age groups, urgency groups and weight groups analysed.
- This data is provided to inform the paediatric heart allocation working group.

Figure 5 One-year patient survival following paediatric heart transplant, for transplants during 1 April 2018 – 31 March 2023, by urgency (log-rank p-value = 0.12)

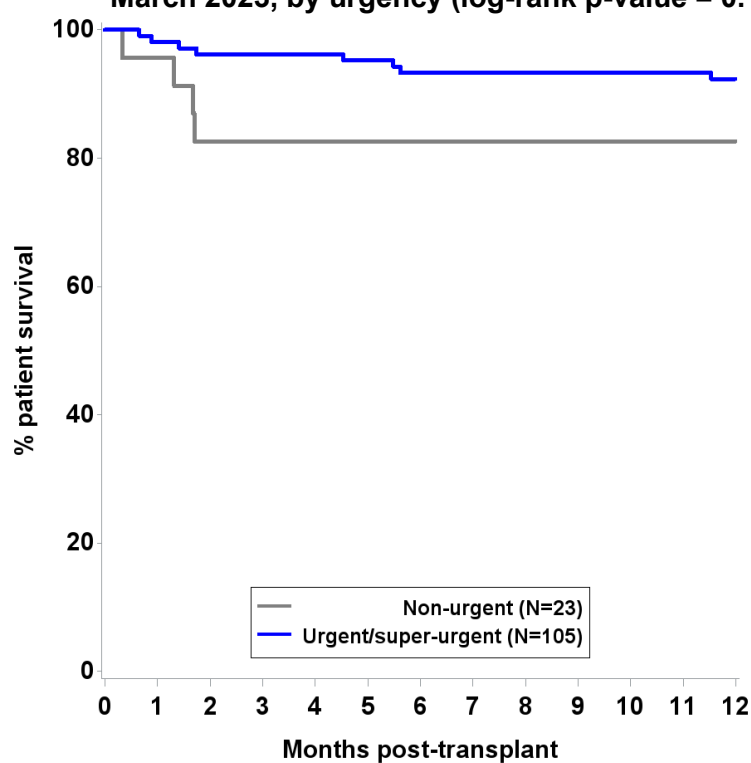


Figure 6 One-year patient survival following paediatric heart transplant, for transplants during 1 April 2018 – 31 March 2023, by age group (log-rank p-value = 0.98)

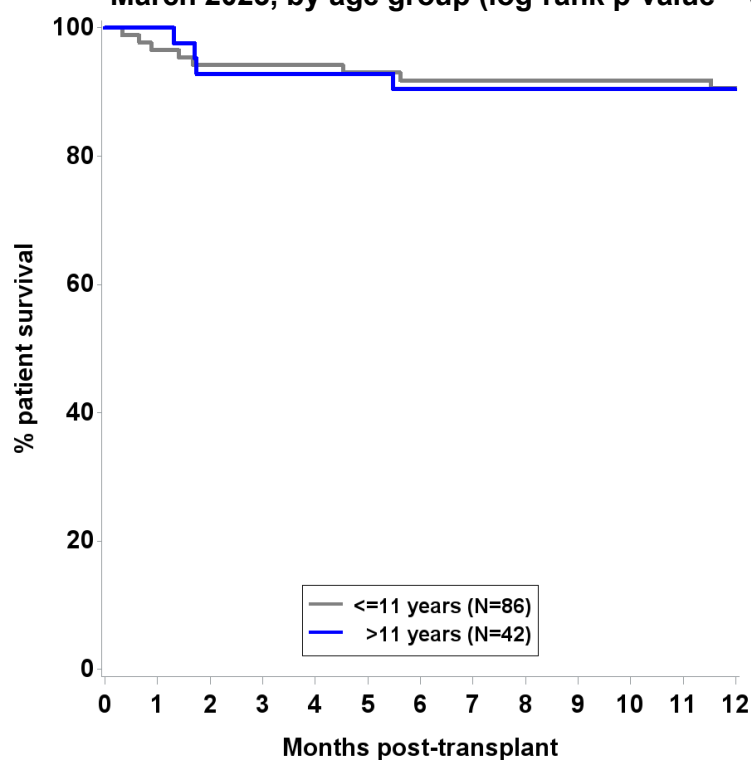


Figure 7 One-year patient survival following paediatric heart transplant, for transplants during 1 April 2018 – 31 March 2023, by weight group (log-rank p-value = 0.32)

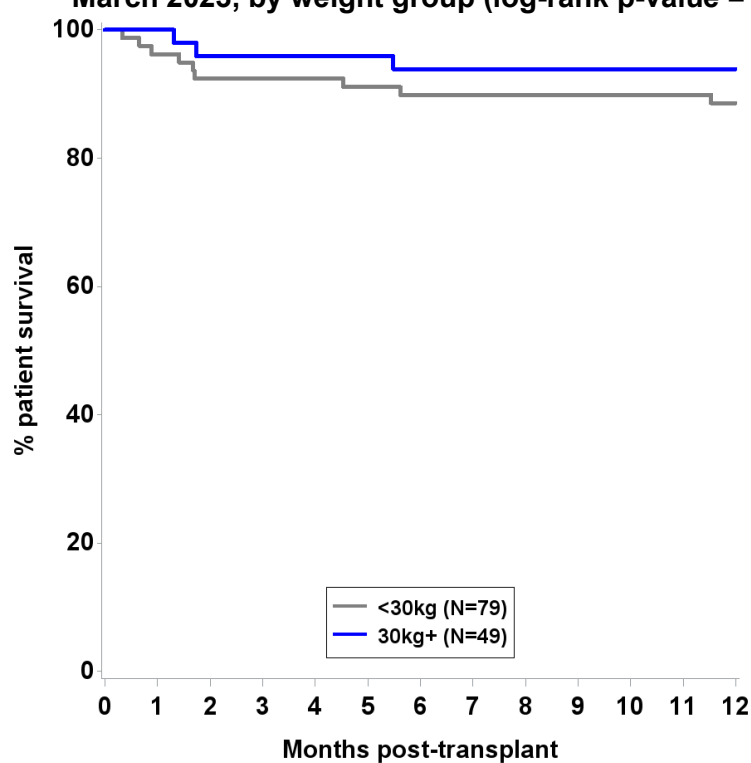


Figure 8 One-year patient survival following adult heart transplant, for transplants during 1 April 2018 – 31 March 2023, by urgency (log-rank p-value = 0.11)

