



*Blood and Transplant*

**REPORT FOR NHS ENGLAND –  
COMMISSIONERS OF TRANSPLANTATION  
SERVICES**

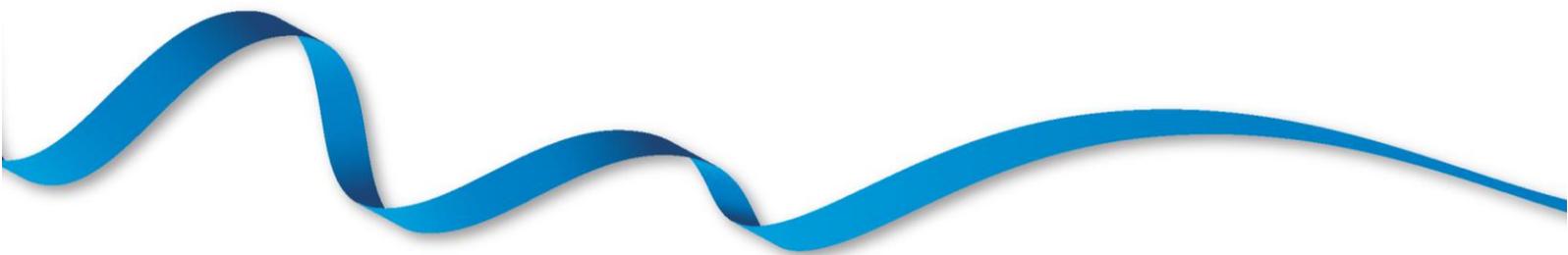
**CARDIOTHORACIC TRANSPLANTATION**

**INTERIM REPORT FOR 2016/2017  
(1 OCTOBER 2013 – 30 SEPTEMBER 2016)**

**PUBLISHED FEBRUARY 2017**



# Contents



## Contents

EXECUTIVE SUMMARY .....	3
INTRODUCTION .....	5
TRANSPLANT ACTIVITY .....	8
Adult Heart Transplant Activity .....	9
Adult Lung Transplant Activity .....	11
Paediatric Heart Transplant Activity .....	13
Paediatric Lung Transplant Activity .....	15
ADULT TRANSPLANTATION .....	17
HEART TRANSPLANTATION .....	17
30 Day Survival .....	18
LUNG TRANSPLANTATION .....	19
90 Day Survival .....	20
PAEDIATRIC TRANSPLANTATION .....	21
HEART TRANSPLANTATION .....	21
30 Day Survival .....	22
LUNG TRANSPLANTATION .....	23
90 Day Survival .....	24
APPENDIX .....	26
METHODS .....	26

# **Executive Summary**



## EXECUTIVE SUMMARY

This report presents key figures about cardiothoracic organ transplantation in the UK. The period reported covers three years of transplant data, from 1 October 2013 to 30 September 2016. The report presents information on the number of transplants and survival analysis after first heart and lung transplantation; both on a national and centre-specific basis.

### Key findings

- There were 1135 cardiothoracic organ **transplants** performed in the UK in the three year period. Of these, 1009 were in adult patients and 126 were in paediatric patients. Of the adult transplants, 457 were first heart-only and 524 were first lung-only. Of the paediatric transplants, 97 were first heart-only and 26 were first lung-only. Survival information was known for 96% of the cohort.
- The national rate of survival 30 days after first **heart transplantation of adult patients** in this cohort was 89.8%. Centre-specific rates range between 82.8% and 95.2% (not risk-adjusted for case mix).
- The national rate of survival 90 days after first **lung transplantation of adult patients** in this cohort was 88.6%. Centre-specific rates range between 82.5% and 92.5% (not risk-adjusted for case mix).
- The national rate of survival 30 days after first **heart transplantation of paediatric patients** in this cohort was 94.4%. The centre-specific rates for the two paediatric centres are 93.9% and 95.0% (not risk-adjusted for case mix).
- The national rate of survival 90 days after first **lung transplantation of paediatric patients** in this cohort was 90.5%. Centre-specific survival rates were not estimable for both paediatric centres due to small numbers of transplants performed in this category.

# Introduction



## INTRODUCTION

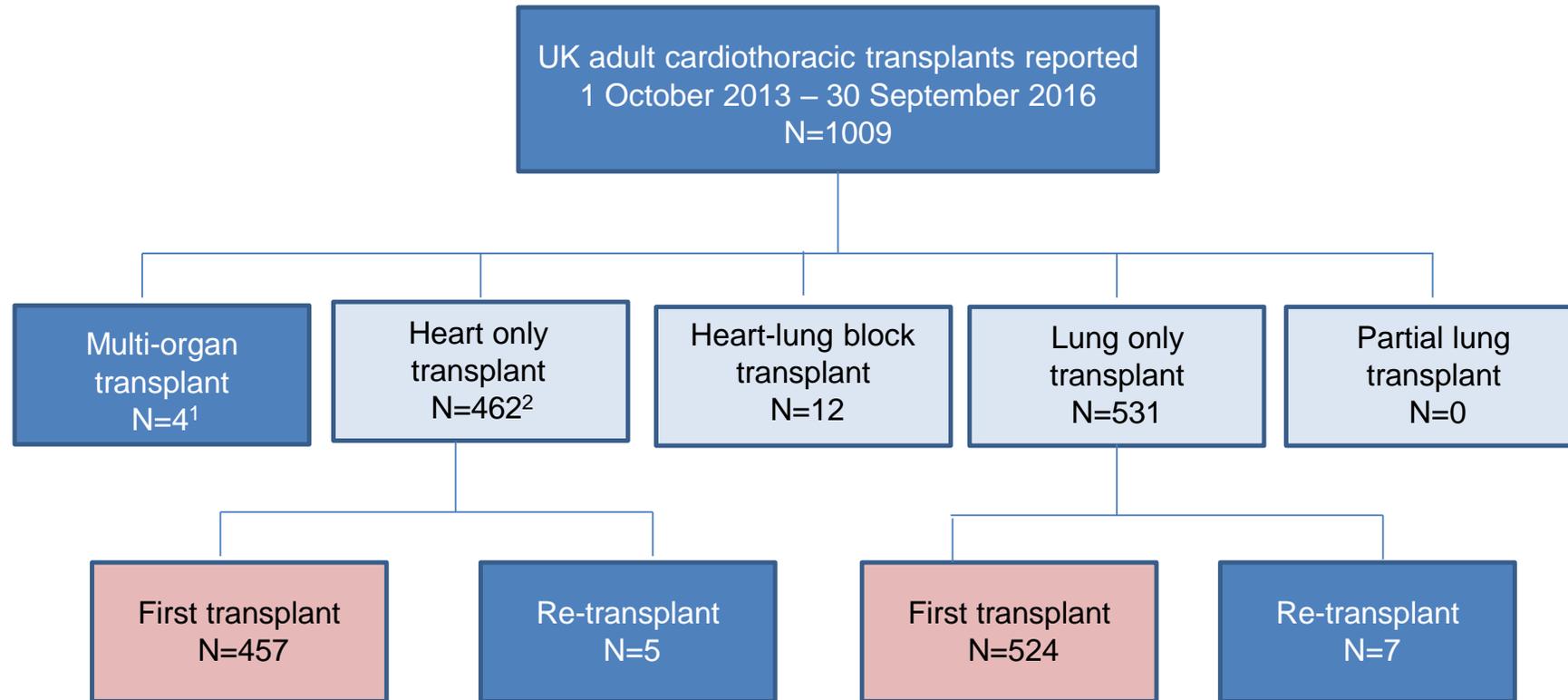
This interim report presents information on transplant activity and patient mortality after first heart and lung transplantation between 1 October 2013 and 30 September 2016, for all centres performing heart and lung transplantation in the UK. Data were obtained from the UK Transplant Registry, at NHS Blood and Transplant, which holds information relating to donors, recipients and outcomes for all cardiothoracic organ transplants performed in the UK.

There are two paediatric transplant centres: London, Great Ormond Street Hospital and Newcastle (also an adult transplant centre). Results are described separately for hearts and lungs and also for adult patients (aged  $\geq 16$  years) and paediatric patients (aged  $< 16$  years). However, any adult transplants performed at London, Great Ormond Street Hospital are included in the paediatric sections, and any paediatric transplants carried out at non-paediatric centres are included in the adult sections.

Methods used are described in the Appendix.

**Figure 1a** and **Figure 1b** show the breakdown of the 1135 cardiothoracic organ transplants performed in the UK in the three year period, for adult and paediatric activity respectively. Of the 1009 adult cardiothoracic organ transplants, 462 are analysed in the heart transplant activity section (multi-organ transplants are not included) and 543 are analysed in the lung transplant activity section (including heart-lung block transplants). Of the 126 paediatric cardiothoracic organ transplants, 100 are analysed in the heart transplant activity section and 26 are analysed in the lung transplant activity section. The survival analysis sections are restricted to first transplants only and the lung analyses exclude heart-lung block transplants.

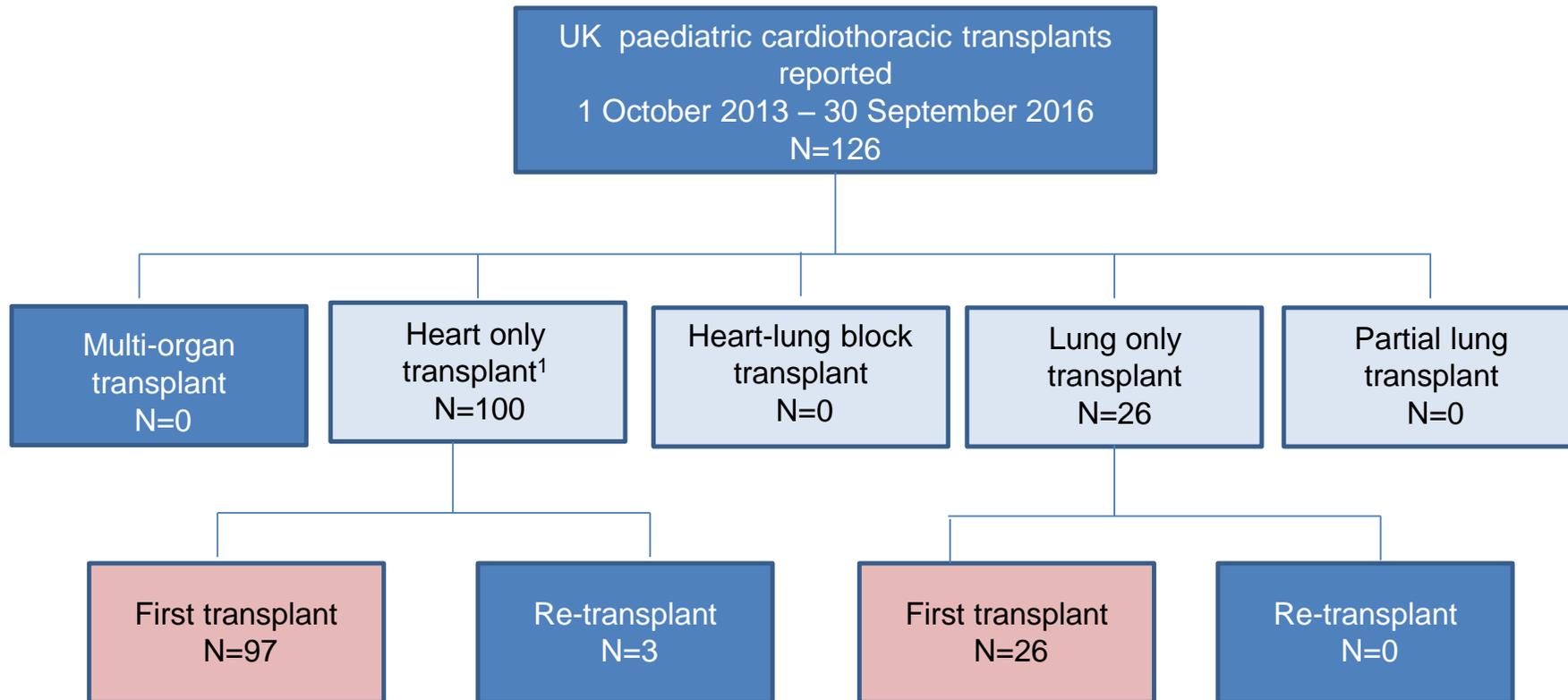
Figure 1a Adult cardiothoracic organ transplants performed in the UK, 1 October 2013 to 30 September 2016



<sup>1</sup> Includes 2 heart and kidney transplants, 1 heart and liver transplant, 1 lung and kidney transplant

<sup>2</sup> Includes 25 DCD heart transplants

**Figure 1b Paediatric cardiothoracic organ transplants performed in the UK, 1 October 2013 to 30 September 2016**



<sup>1</sup> Includes 1 DCD heart transplant

# **Transplant Activity**

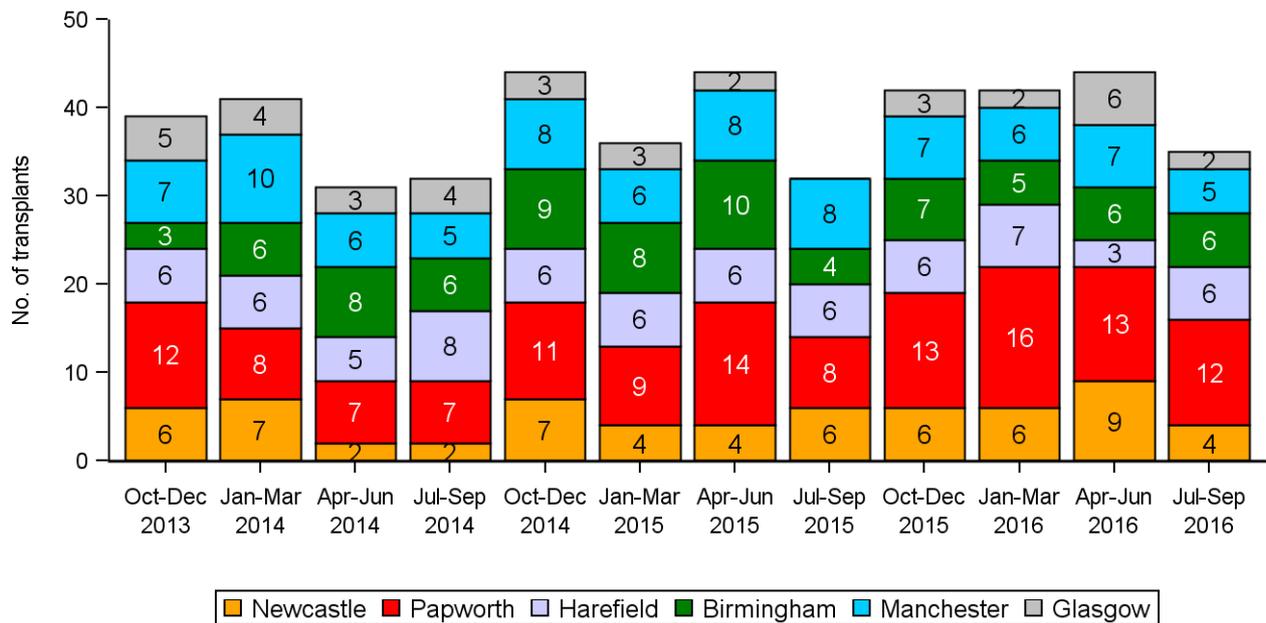


## Adult Heart Transplant Activity

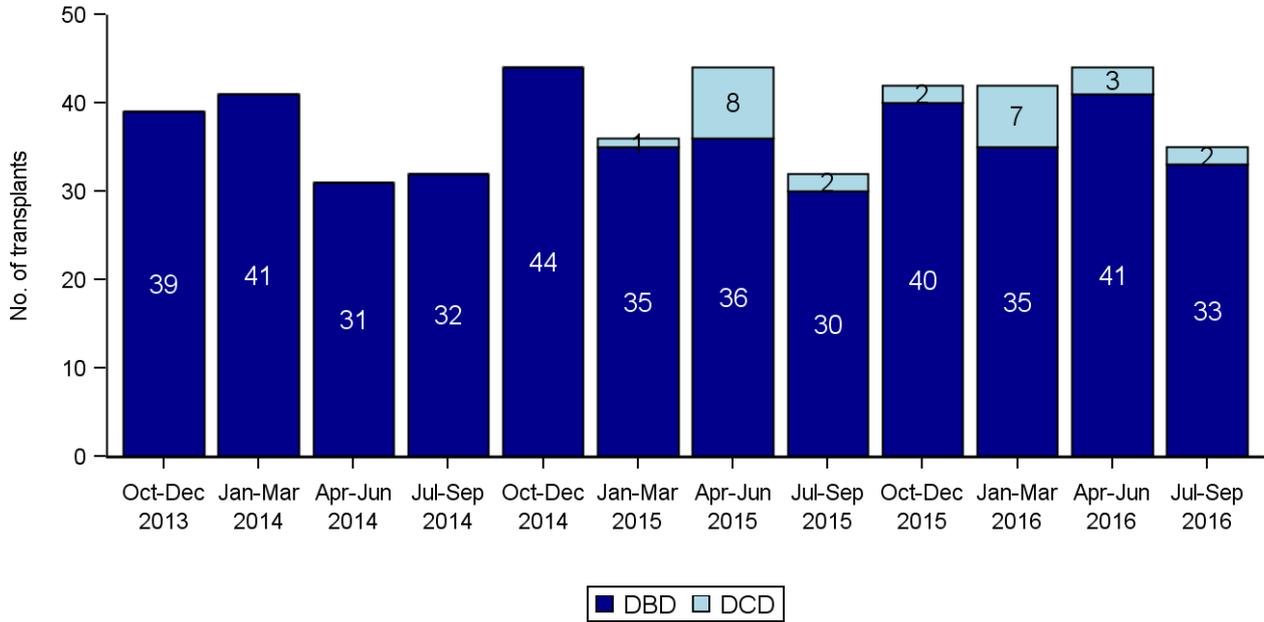
During the three year study period 462 adult heart only transplants were performed. **Figure 2** shows the adult heart transplant activity by quarter and transplant centre. Heart transplant activity has fluctuated between 31 and 44 per quarter over the three year period.

**Figure 3** shows adult heart transplant activity by quarter and donor type and **Figure 4** shows adult heart transplant activity by quarter and urgency status. In the latest quarter, July-September 2016, 89% of transplants performed were urgent.

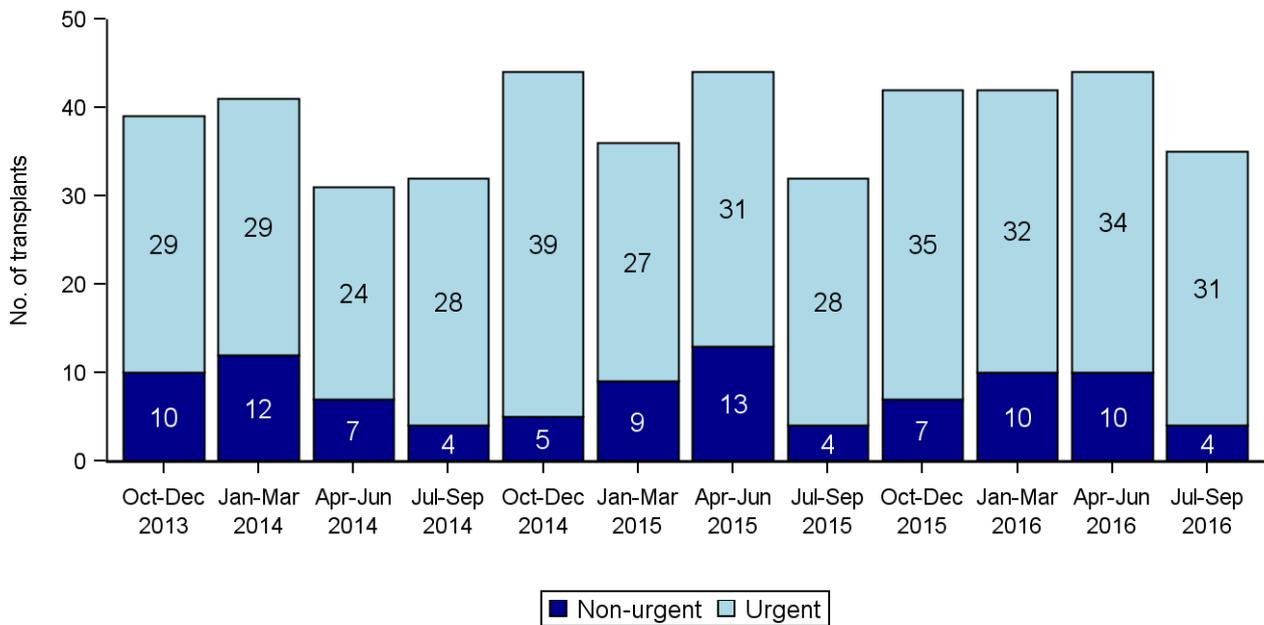
**Figure 2 Adult heart transplant activity, 1 October 2013 - 30 September 2016, by quarter and transplant centre**



**Figure 3 Adult heart transplant activity, 1 October 2013 - 30 September 2016, by quarter and donor type**



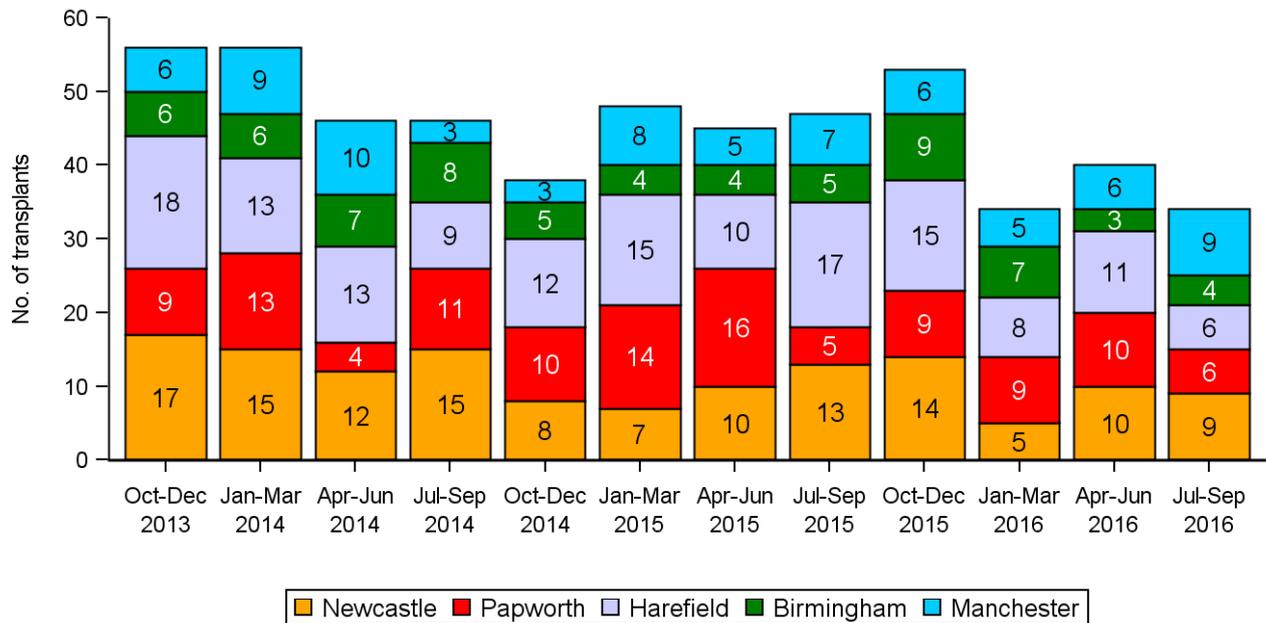
**Figure 4 Adult heart transplant activity, 1 October 2013 - 30 September 2016, by quarter and urgency status**



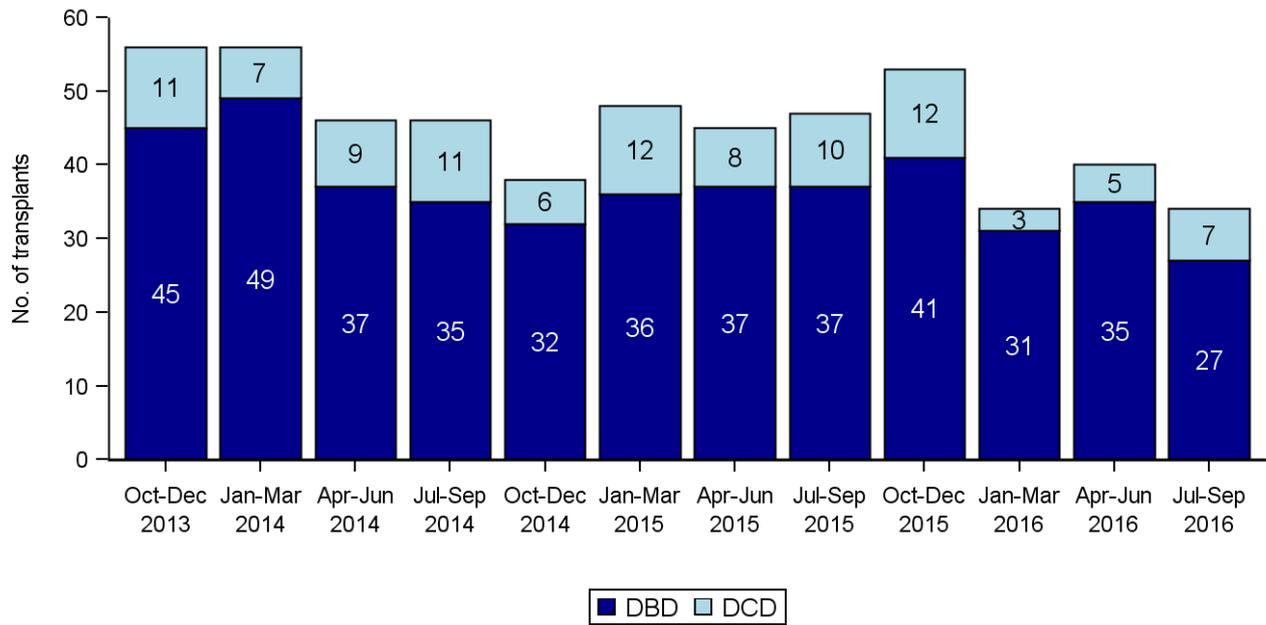
## Adult Lung Transplant Activity

During the three year study period 543 adult lung transplants were performed (including heart-lung block transplants). **Figure 5** shows the adult lung transplant activity by quarter and transplant centre. Quarterly lung transplant activity has decreased by 39% over the time period from 56 in October-December 2013 to 34 in July-September 2016. **Figure 6** shows adult lung transplant activity by quarter and donor type.

**Figure 5 Adult lung transplant activity, 1 October 2013 - 30 September 2016, by quarter and transplant centre**



**Figure 6 Adult lung transplant activity, 1 October 2013 - 30 September 2016, by quarter and donor type**

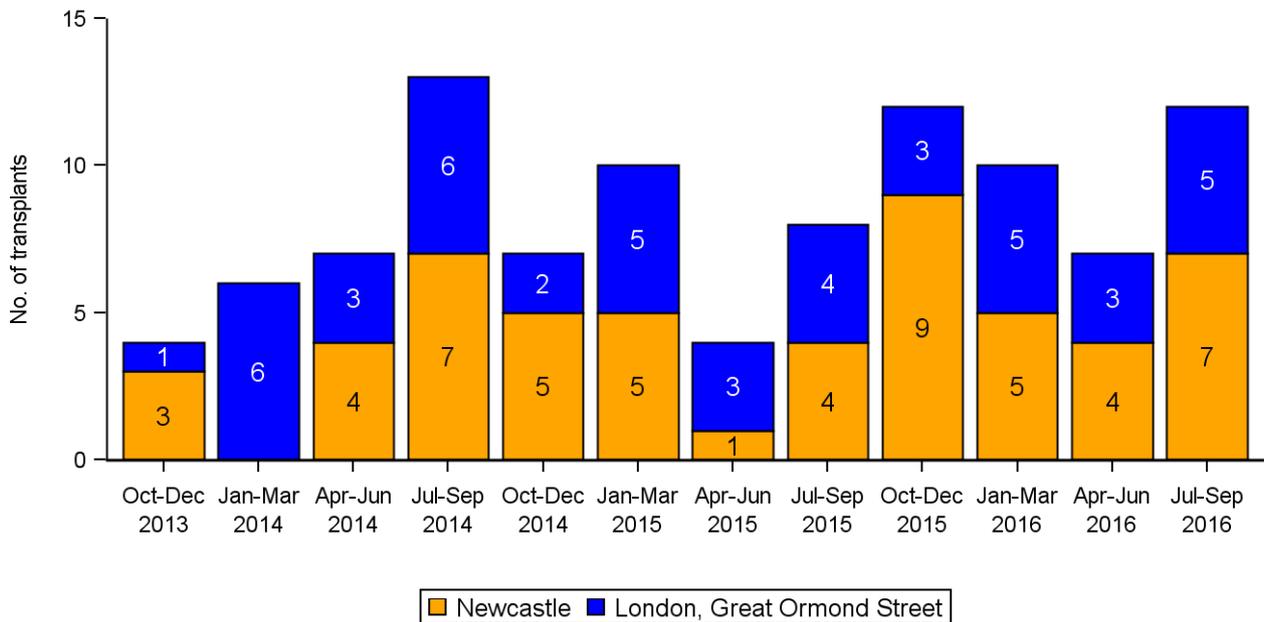


## Paediatric Heart Transplant Activity

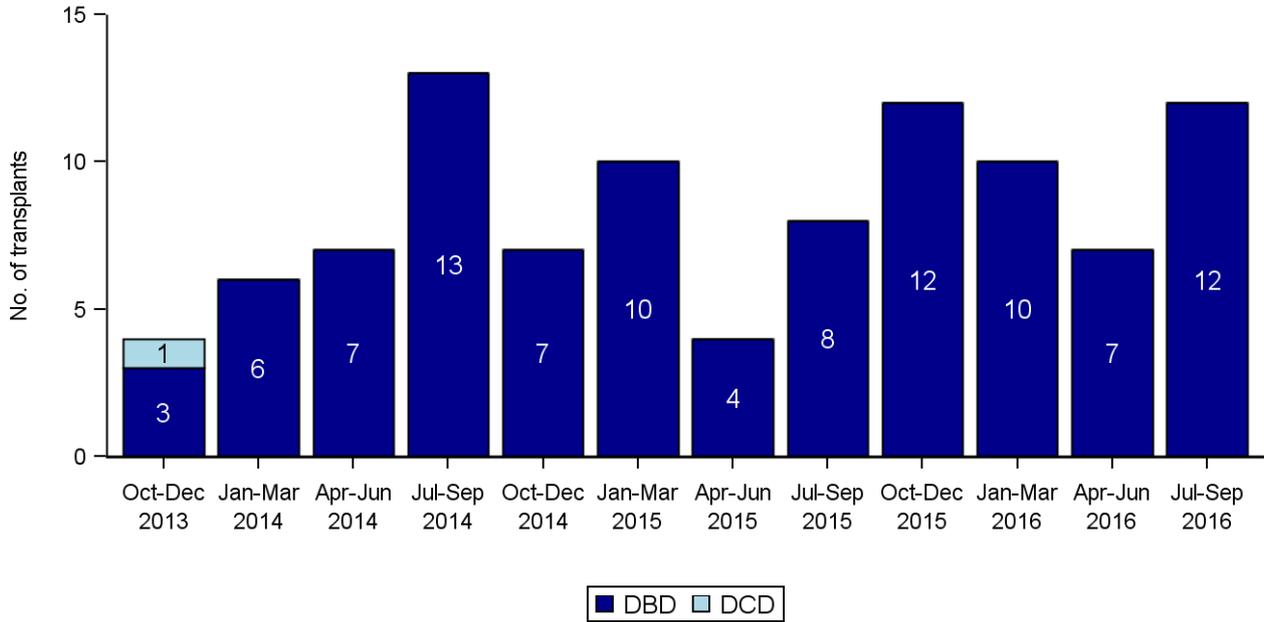
During the three year study period 100 paediatric heart transplants were performed. **Figure 7** shows the paediatric heart transplant activity by quarter and transplant centre. The total number of paediatric heart transplants per quarter ranged from 4 to 13.

**Figure 8** shows paediatric heart transplant activity by quarter and donor type and **Figure 9** shows paediatric heart transplant activity by quarter and urgency status. Most of the patients transplanted in the three year period were urgently listed, with only 11 non-urgent transplants across the entire period.

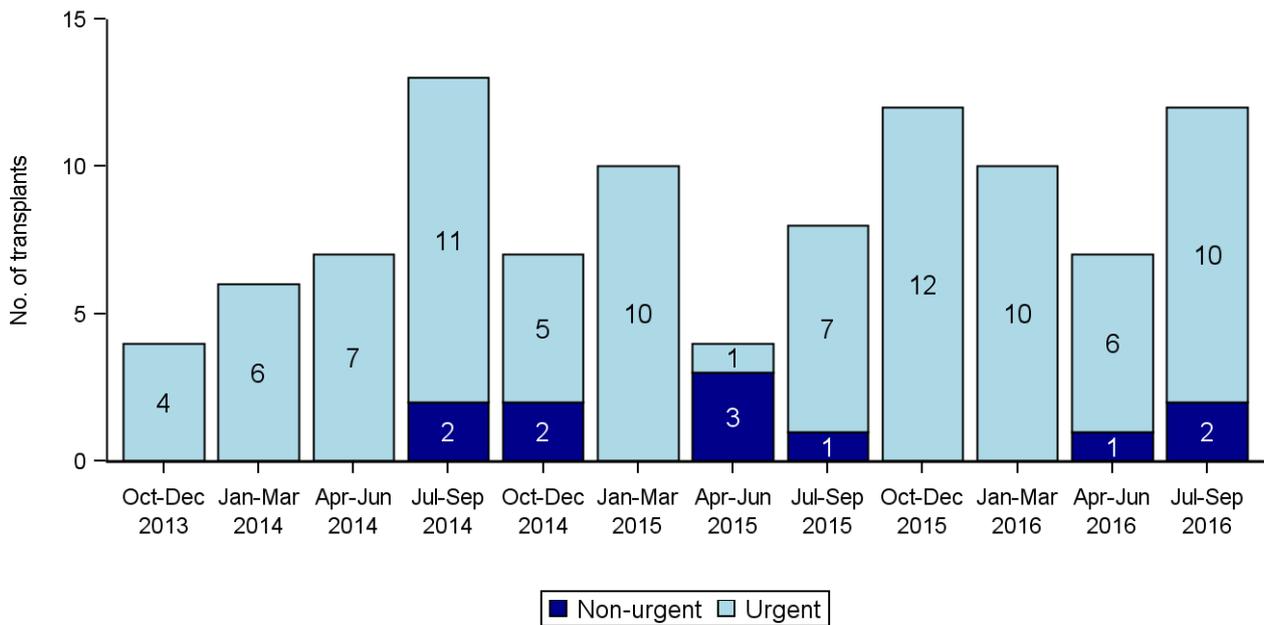
**Figure 7 Paediatric heart transplant activity, 1 October 2013 - 30 September 2016, by quarter and transplant centre**



**Figure 8 Paediatric heart transplant activity, 1 October 2013 - 30 September 2016, by quarter and donor type**



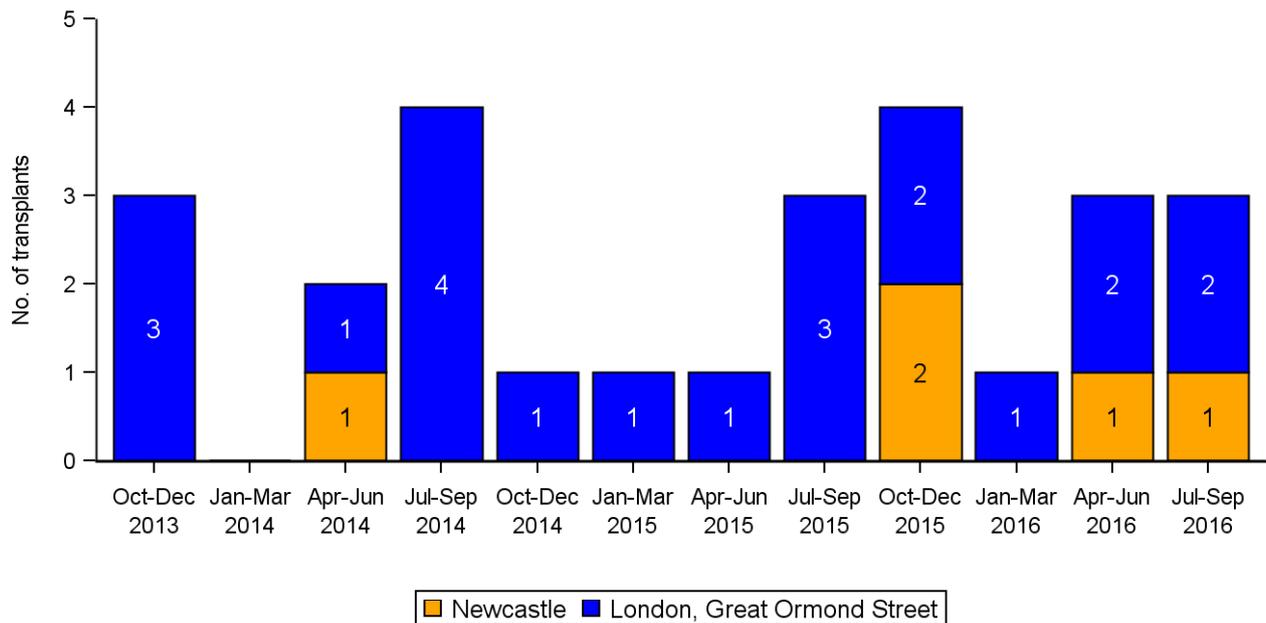
**Figure 9 Paediatric heart transplant activity, 1 October 2013 - 30 September 2016, by quarter and urgency status**



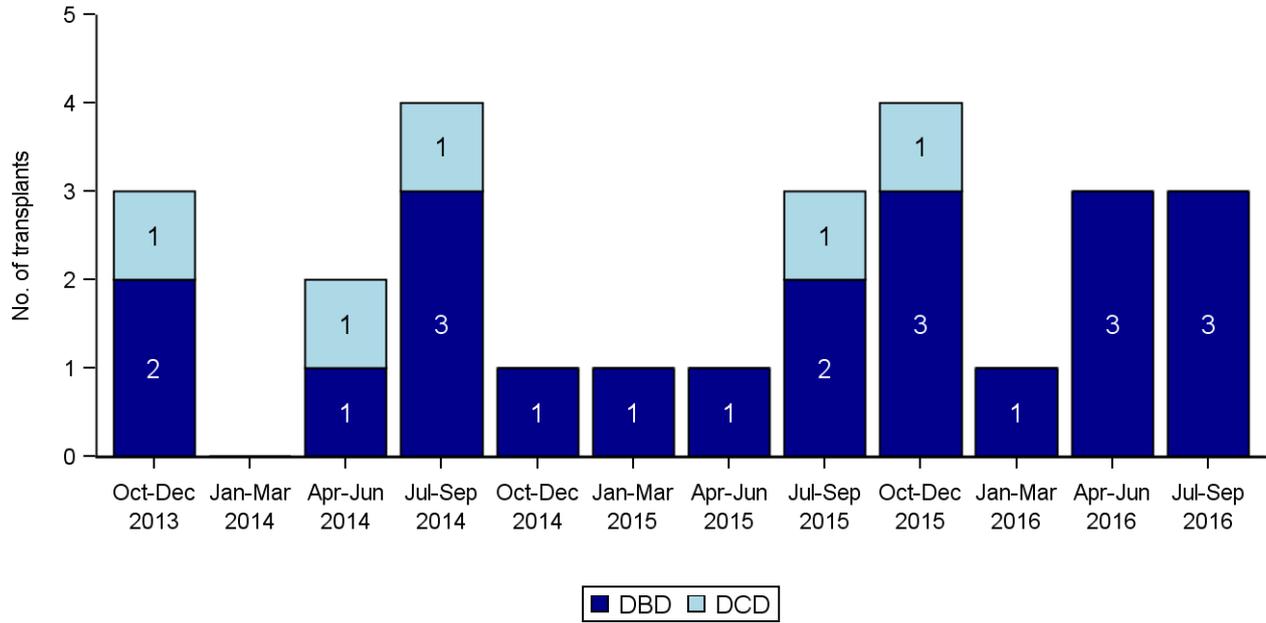
## Paediatric Lung Transplant Activity

During the three year study period 26 paediatric lung transplants were performed. **Figure 10** shows the paediatric lung transplant activity by quarter and transplant centre. Quarterly activity remained less than 5 during the time period. **Figure 11** shows paediatric lung transplant activity by quarter and donor type.

**Figure 10 Paediatric lung transplant activity, 1 October 2013 - 30 September 2016, by quarter and transplant centre**



**Figure 11 Paediatric lung transplant activity, 1 October 2013 - 30 September 2016, by quarter and donor type**



# **Heart Transplantation Adult**

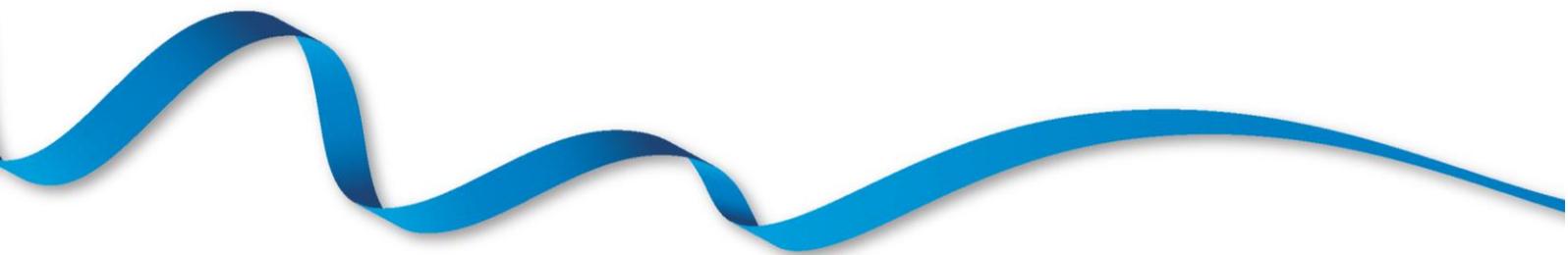


### 30 Day Survival

For the 457 adult first heart-only transplants that were performed between 1 October 2013 and 30 September 2016, survival information was known for 441 (96%) patients and the national survival rate at 30 days post-transplant was 89.8%. Thirty day unadjusted patient survival rates per centre are shown in **Table 1**.

<b>Table 1 Thirty day patient survival for first adult heart transplants, by centre, 1 October 2013 to 30 September 2016</b>				
Centre	Number of transplants	Number of deaths	30 day survival % (95% CI) Unadjusted	
Newcastle	59	10	83.1	(70.8 - 90.5)
Papworth	126	6	95.2	(89.7 - 97.8)
Harefield	64	11	82.8	(71.1 - 90.1)
Birmingham	73	9	87.7	(77.6 - 93.4)
Manchester	83	4	95.2	(87.7 - 98.2)
Glasgow	36	5	86.1	(69.8 - 94.0)
<b>UK</b>	<b>441</b>	<b>45</b>	<b>89.8</b>	<b>(86.6 - 92.3)</b>

# **Lung Transplantation Adult**

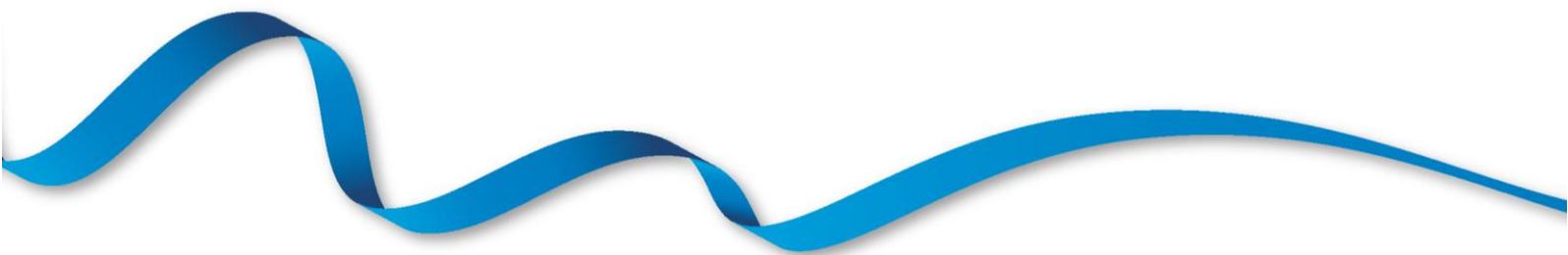


## 90 Day Survival

For the 524 adult first lung-only transplants that were performed between 1 October 2013 and 30 September 2016, survival information was known for 511 (98%) patients and the national survival rate at 90 days post-transplant was 88.6%. Ninety day unadjusted patient survival rates per centre are shown in **Table 2**.

<b>Table 2 Ninety day patient survival for first adult lung transplants, by centre, 1 October 2013 to 30 September 2016</b>				
Centre	Number of transplants	Number of deaths	90 day survival % (95% CI) Unadjusted	
Newcastle	129	20	84.5	(77.0 - 89.7)
Papworth	107	8	92.5	(85.6 - 96.2)
Harefield	138	12	91.3	(85.1 - 94.9)
Birmingham	63	11	82.5	(70.7 - 89.9)
Manchester	74	7	90.5	(81.2 - 95.4)
<b>UK</b>	<b>511</b>	<b>58</b>	<b>88.6</b>	<b>(85.5 - 91.1)</b>

# **Heart Transplantation Paediatric**

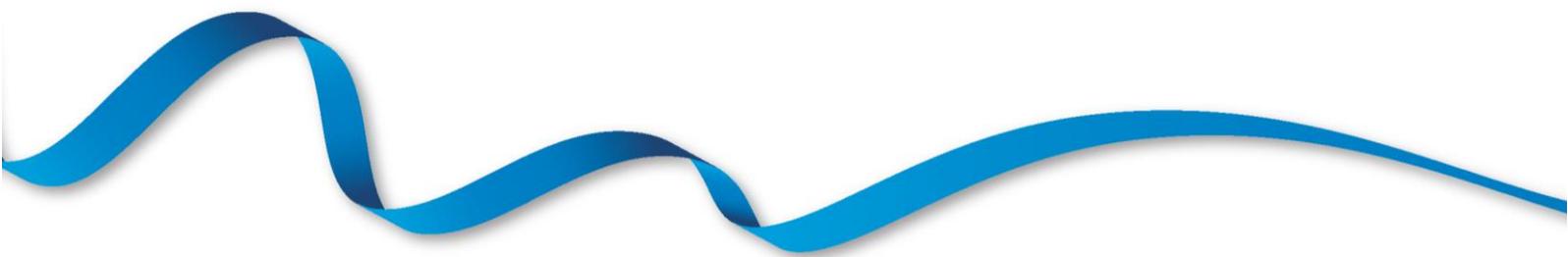


### 30 Day Survival

For the 97 paediatric first heart-only transplants that were performed between 1 October 2013 and 30 September 2016, survival information was known for 89 (92%) patients and the national survival rate at 30 days post-transplant was 94.4%. Thirty day unadjusted patient survival rates per centre are shown in **Table 3**.

<b>Table 3 Thirty day patient survival for first paediatric heart transplants, by centre, 1 October 2013 to 30 September 2016</b>				
Centre	Number of transplants	Number of deaths	30 day survival % (95% CI) Unadjusted	
Newcastle	49	3	93.9	(82.2 – 98.0)
London, Great Ormond Street	40	2	95.0	(81.5 - 98.7)
<b>UK</b>	<b>89</b>	<b>5</b>	<b>94.4</b>	<b>(87.0 - 97.6)</b>

# **Lung Transplantation Paediatric**



## 90 Day Survival

For the 26 paediatric first lung-only transplants that were performed between 1 October 2013 and 30 September 2016, survival information was known for 21 (81%) patients and the national survival rate at 90 days post-transplant was 90.5%. Ninety day unadjusted patient survival rates per centre are shown in **Table 4**, however it was not possible to estimate the survival rate for Newcastle due to small numbers of transplants performed.

<b>Table 4 Ninety day patient survival for first paediatric lung transplants, by centre, 1 October 2013 to 30 September 2016</b>				
Centre	Number of transplants	Number of deaths	90 day survival % (95% CI) Unadjusted	
Newcastle	4	0	-	-
London, Great Ormond Street	17	2	88.2	(60.6 - 96.9)
<b>UK</b>	<b>21</b>	<b>2</b>	<b>90.5</b>	<b>(67 - 97.5)</b>

# Appendix



## APPENDIX

### METHODS

#### **Unadjusted survival rates**

The Kaplan-Meier method was used to estimate the unadjusted 30 day patient mortality for heart transplants and 90 day patient mortality for lung transplants. Patients can be included in this method of analysis irrespective of the length of follow-up recorded. If a patient is alive at the end of the follow-up then information about the survival of the patient is censored.

Prepared by:

Statistics and Clinical Studies, NHS Blood and Transplant

Mrs Esther Wong  
Miss Sally Rushton

