

## NHS BLOOD AND TRANSPLANT

### RESEARCH, INNOVATION AND NOVEL TECHNOLOGIES ADVISORY GROUP

#### DCD HEART ACTIVITY

#### INTRODUCTION

- 1 DCD heart retrieval began in February 2015 for a 15 month initial evaluation period involving two centres; Harefield and Papworth. Since the end of the evaluation period, activity has continued with a third centre, Manchester, joining the programme in December 2016.
- 2 This paper looks at DCD heart activity and patient outcomes from 1 February 2015 to 31 August 2017. It evaluates the number of DCD heart retrievals and transplants performed by each team in the time period, along with the short and medium term outcomes of the recipients. For any donors who had their heart retrieved but not transplanted, the reason for non-use is also documented.
- 3 The outcomes of lung and abdominal organ offers for the DCD heart donors over this period are also considered.
- 4 For each DCD heart retrieval carried out, a Supplementary Record form is sent to NHSBT Statistics and Clinical Studies. The data presented in this paper are therefore a combination of standard data held on the database and additional information from the Supplementary Record forms.

#### RESULTS

- 5 In the time period, there have been 44 DCD heart donors, with 39 hearts successfully transplanted. In the initial evaluation period (ended 12 May 2016) there were 25 donations, resulting in 23 transplants and since this ended there have been a further 19 donations with 16 transplants. This activity is shown broken down by centre in **Table 1**. Manchester joined the programme on 5 December 2016 and so are only included after the initial evaluation period.

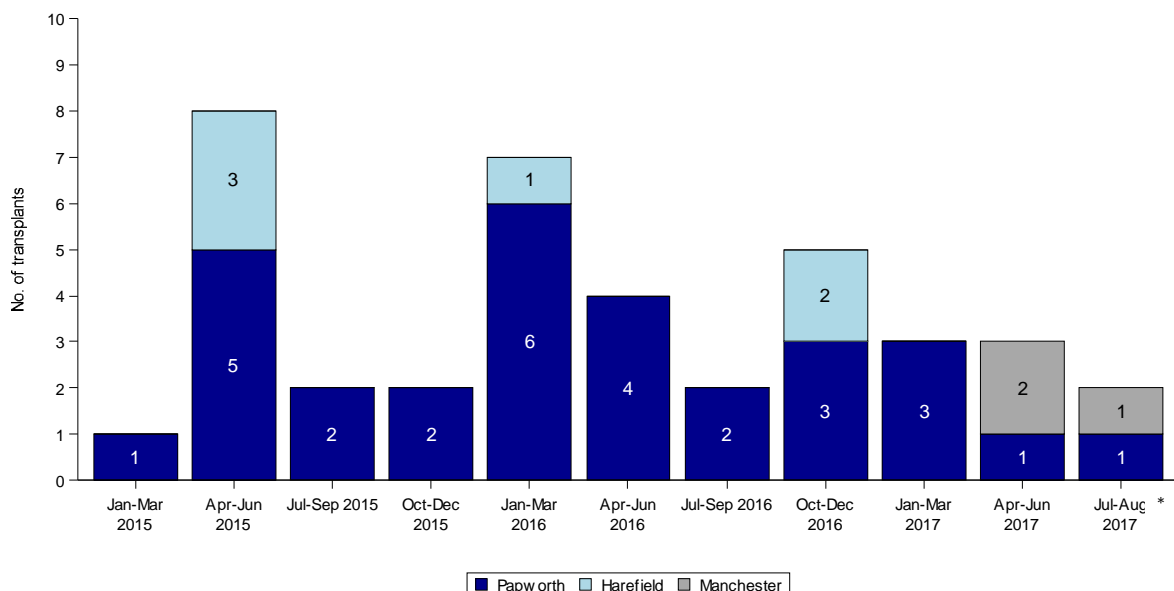
<b>Period</b>	<b>Centre</b>	<b>Retrieved</b>	<b>Transplanted</b>
1 February 2015 – 12 May 2016	Harefield	5	4
	Papworth	20	19
	<b>Total</b>	<b>25</b>	<b>23</b>
13 May 2016 – 31 August 2017	Harefield	2	2
	Papworth	13	11
	Manchester	4	3
	<b>Total</b>	<b>19</b>	<b>16</b>
<b>Total</b>		<b>44</b>	<b>39</b>

6 Across the whole time period, there have been 5 DCD hearts retrieved but not transplanted. The reason for non-use for each is seen below in **Table 2**. The reason is taken from the DCD Heart Transplant Supplementary Record form. Where this is not available, as the form was returned incomplete, the reason was taken from the Duty Office records.

Centre	Donation Date	Reason for non-use
Harefield	October 2015	Continuous ventricular fibrillation after reperfusion on OCS
Papworth	July 2015 June 2016 January 2017	Declined for transplantation due to rising lactate level Function Donation ceased at recipient hospital - due to donor pancreatic tumour results from histology
Manchester	June 2017	Function

7 **Figure 1** shows the number of DCD heart transplants by quarter and centre. The beginning and end of the evaluation period saw the biggest peaks in activity, with activity remaining relatively stable since it ended in May 2016. Please note that only two months (July and August) are included in the final bar.

**Figure 1 DCD heart transplant activity, 1 January 2015 to 31 August 2017, by quarter and centre**



\* Only two months of data included

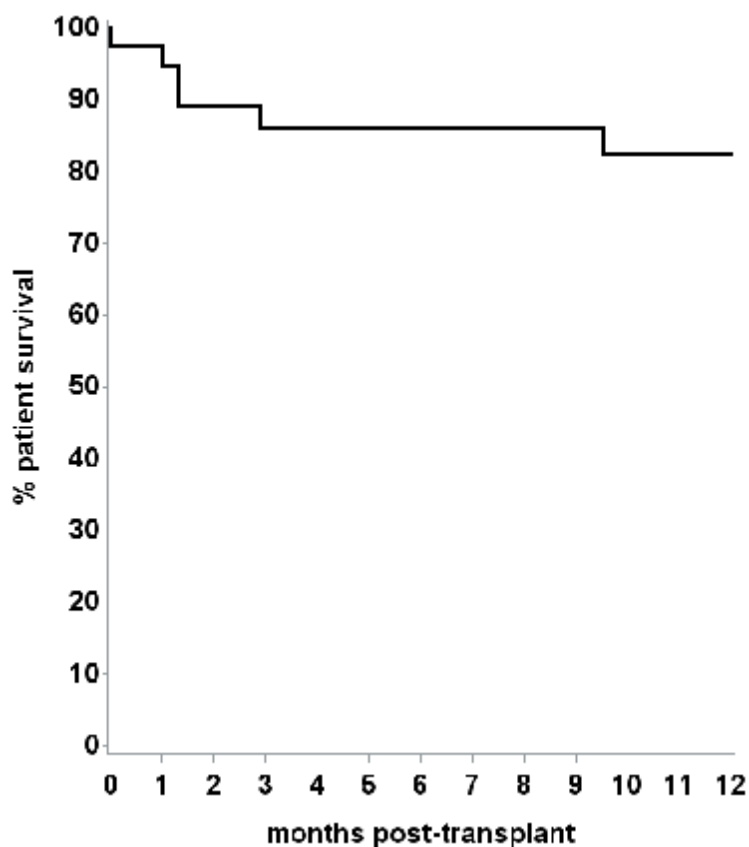
- 8 The 30 day outcomes of all 39 DCD heart transplants are summarised in **Table 3**. This information is based on the receipt of one of the following three forms: a DCD Heart Supplementary Record form, a transplant record form, or a three month follow up form.

**Table 3 DCD heart patient outcomes at 30 days post-transplant, for transplants performed 1 February 2015 – 31 August 2017**

Centre	Alive at 30 days	Dead at 30 days	Unknown at 30 days
Harefield	5	1	0
Papworth	30	0	0
Manchester	3	0	0
<b>Total</b>	<b>38</b>	<b>1</b>	<b>0</b>

- 9 **Figure 2** below shows the Kaplan-Meier patient survival function up to one year for the cohort. The one year survival estimate for DCD heart recipients is 82.5% (95% CI: 64.9–91.8) (for reference: one year survival rate for DBD heart recipients is 82.8% in 2015/16 NHSBT Cardiothoracic Annual Report). As at 27 September 2017, there have been 6 recorded deaths of DCD heart recipients; two were due to donor organ failure, one due to septicaemia, one due to a CVA, one was a sudden unexplained cardiac death and one is not yet reported.

**Figure 2 Kaplan-Meier patient survival function for DCD heart transplant recipients, 1 February 2015 – 31 August 2017**



- 10 The need for post-transplant mechanical support within 30 days is shown in **Table 4** along with the devices used. Out of the 39 patients, 13 (33%) required mechanical support; most of which were IABP only or ECMO only.

<b>Mechanical support post-transplant</b>	<b>Number of patients</b>
Yes	13
- <i>IABP only</i>	5
- <i>ECMO only</i>	4
- <i>ECMO and IABP</i>	2
- <i>ST VAD and ECMO</i>	2
No	26

- 11 **Table 5** below shows the outcomes of lung and abdominal organ offers for the 44 DCD heart donors.

<b>Outcome</b>	<b>Lungs*</b>	<b>Kidney*</b>	<b>Liver</b>	<b>Pancreas</b>
Offered	33	44	44	39
Retrieved	7	42	38	33
Transplanted (% of DCD heart donors)	7 (16%)	37 (84%)	26 (59%)	16 (36%)

\* at least one

- 12 20 of the 37 donor lungs that were not used were declined due to poor function. Donor related issues were generally the reasons provided for the livers and kidneys that were not used. For the 28 pancreas that were not used, a range of reasons for non-use were provided including insufficient islet yields, donor history and prolonged ischaemia time.