

## NHS BLOOD AND TRANSPLANT

## NATIONAL RETRIEVAL GROUP

## REVIEW OF ORGAN DAMAGE RATES, 1 APRIL 2016 TO 31 MARCH 2018

## INTRODUCTION

- 1 This report presents results of analyses of data reported on the damage of organs retrieved by National Organ Retrieval Service retrieval teams in the 24 months from 1 April 2016 to 31 March 2018, data as at 10 September 2018. Rates of damage are determined according to organs reported with moderate or severe damage as recorded on the HTA-B form by the receiving surgeon.
- 2 Damage rates for each organ were analysed separately for donors after brain death (DBD) and donors after circulatory death (DCD) and a sub-analysis including only exported organs was also conducted. Funnel plots were produced to compare teams' damage rates to national rates and a cross-validation method was also used to identify any rates that were significantly divergent from other teams' rates.

## RESULTS

- 3 **Table 1** summarises the findings from the cross-validation analyses. This summary uses a strict 5% level to define significance. In the "all organ" analyses, Manchester had a significantly high DCD liver damage rate. These findings were supported in the "exported organ" only analyses. Several teams had significantly low damage rates, as shown in the table.

Table 1      Summary of the “all organ” and “exported organ” only damage rate analysis results, for the period 1 April 2016 – 31 March 2018, by organ and retrieval team												
Retrieval team	Kidneys				Livers				Pancreases			
	DBD		DCD		DBD		DCD		DBD		DCD	
Abdominal teams	All	Exp	All	Exp	All	Exp	All	Exp	All	Exp	All	Exp
Birmingham												
Cardiff											SL	SL
Cambridge												
Edinburgh												
King's College												
Leeds							SL	SL				
Manchester							SH	SH				
Newcastle											SL	SL
Oxford												
Royal Free											SL	SL
Cardiothoracic teams	Lungs				Hearts		DBD					
	DBD		DCD		DBD		Exp					
	All	Exp	All	Exp	All	Exp						
Birmingham												
Glasgow							SL	SL				
Harefield												
Manchester												
Newcastle							SL	SL				
Papworth	SL	SL	SL	SL								

Key:

SH

Damage rate significantly high

SL

Damage rate significantly low

(based on a strict significant level of 5%)

Key: SH Damage rate significantly high  
SL Damage rate significantly low  
(based on a strict significant level of 5%)

- 4 Previous analyses have identified Manchester to be an outlier with regards to DBD heart damage; however, this is no longer the case. King's College no longer have a significantly high DBD and DCD pancreas damage rate. When Leeds and Manchester were reported as one they had significantly high DCD kidney and liver damage rates. Now that these are reported separately we see a significantly high DCD liver damage rate for Manchester and significantly low for Leeds.
- 5 Nationally, over the last four years, there has been a significant change in the proportion of DCD kidneys reported as damaged.

## **RECOMMENDATIONS**

- 6 This report is for information only and will not be published online due to concerns regarding organ damage data which are widely acknowledged by the National Retrieval Group.
- 7 Since June 2016 each NORS team have received monthly team specific reports on the damage reported on all organs they retrieved and whether the organ was transplanted or not. These offer timely feedback to the teams and provide the detail behind this report.

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**October 2018**

**NHS BLOOD AND TRANSPLANT  
CLINICAL RETRIEVAL GROUP**

**REVIEW OF ORGAN DAMAGE RATES, 1 APRIL 2016 TO 31 March 2018**

**INTRODUCTION**

- 1 This report presents results of analyses of data reported on the damage of organs retrieved by National Organ Retrieval Service retrieval teams in the 24 months from 1 April 2016 to 31 March 2018. Data were extracted from the UK Transplant Registry on 10 September 2018.
- 2 Rates of damage are determined according to organs reported with moderate or severe damage as recorded on the HTA-B form by the receiving surgeon. Moderate damage is defined as surgical repair required to make the organ usable. Severe damage is defined as organ unusable due to damage. Any organs that have been rated severely damaged but were transplanted have had their damage changed to moderate for the purposes of this report. Where damage is completed on the HTA-B form for a lung pair/ en-bloc kidney / heart lung block then this damage is counted as one since only one patient would receive these organs.
- 3 Data are presented separately for donors after brain death (DBD) and donors after circulatory death (DCD). Data have been analysed for all organs and also only for exported organs, i.e. organs which were not transplanted by the retrieving team's centre.

**Methods**

- 4 Organ retrieval damage rates are presented as funnel plots and further analysed using a cross-validation method. These methods are described below.

*Funnel plots*

- 5 Within the funnel plots each retrieval team's damage rate is represented as a dot. The national damage rate is shown on the plot as a horizontal dotted line, together with 95% and 99.8% confidence limits for this rate. These limits form a 'funnel', with the 95% limits shown as a solid line and the 99.8% limits shown as a dashed line.
- 6 If a team's rate lies within the 95% limits, then that team has a rate that is statistically consistent with the national rate. If a team lies outside the 95% confidence limits, this serves as an alert that the team may have a rate that is significantly different from the national rate. When a team's rate lies above the upper 99.8% limit, this indicates a rate that is significantly higher than the national rate, while a team that lies below the lower limit has a rate that is significantly lower than the national rate. It is important to note that no adjustment has been made for factors that may affect the likelihood of damage, which may differ across teams.
- 7 One limitation of this type of analysis is that teams with large activity can influence national rates unduly and mask differences between teams. As a consequence, a cross-validation analysis was also used to analyse the organ damage rates, as described below.

*Cross-validation analysis*

- 8 The cross-validation method compares the number of moderately or severely damaged organs retrieved by a given team with the number expected on the basis of data from the remaining teams. Therefore, the cross-validation method is used to examine whether the performance of a given team diverges from what we would expect from the remaining teams.

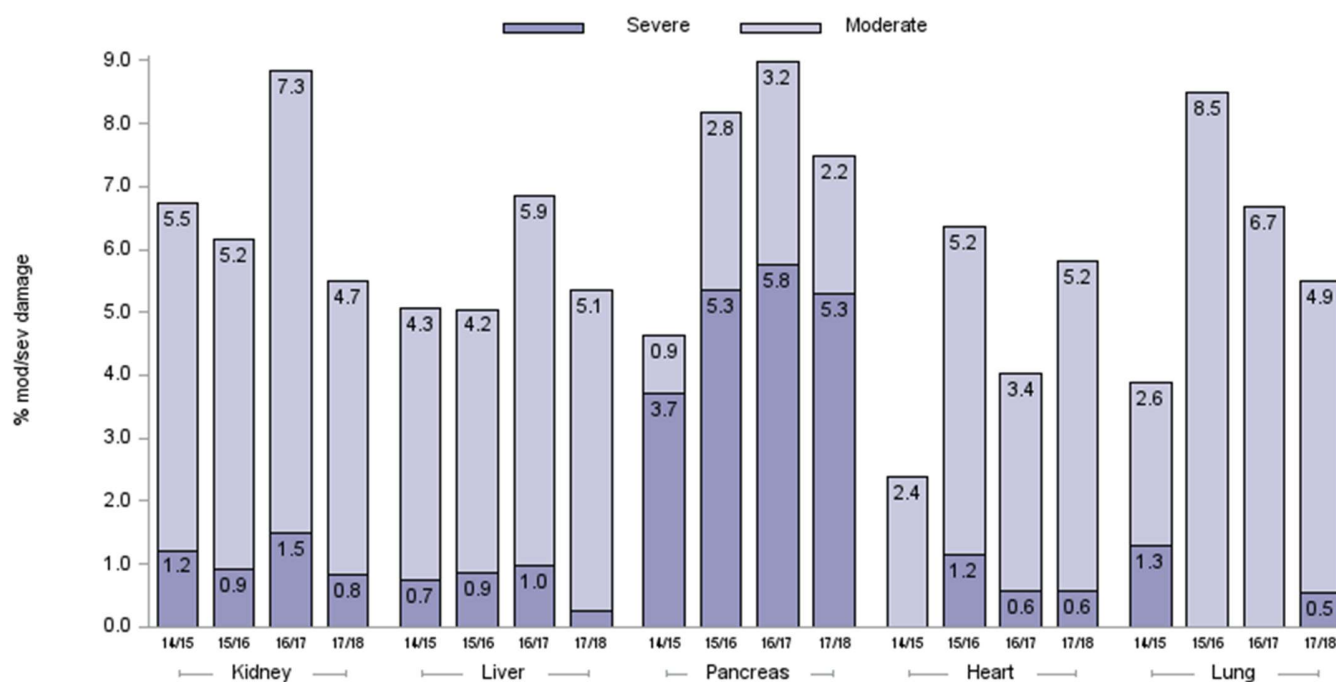
- 9 To calculate the number of expected organs moderately or severely damaged, a simulation method was used to obtain expected damage outcomes for every organ retrieved by a given team based on the data from the other remaining teams. The simulation was repeated 1000 times and a p-value was obtained from the proportion of times, out of 1000 simulations, the observed number of damaged organs from a team exceeds that expected.

## RESULTS

### Section 1 – Analysis of 1 April 2014 to 31 March 2018 damage data

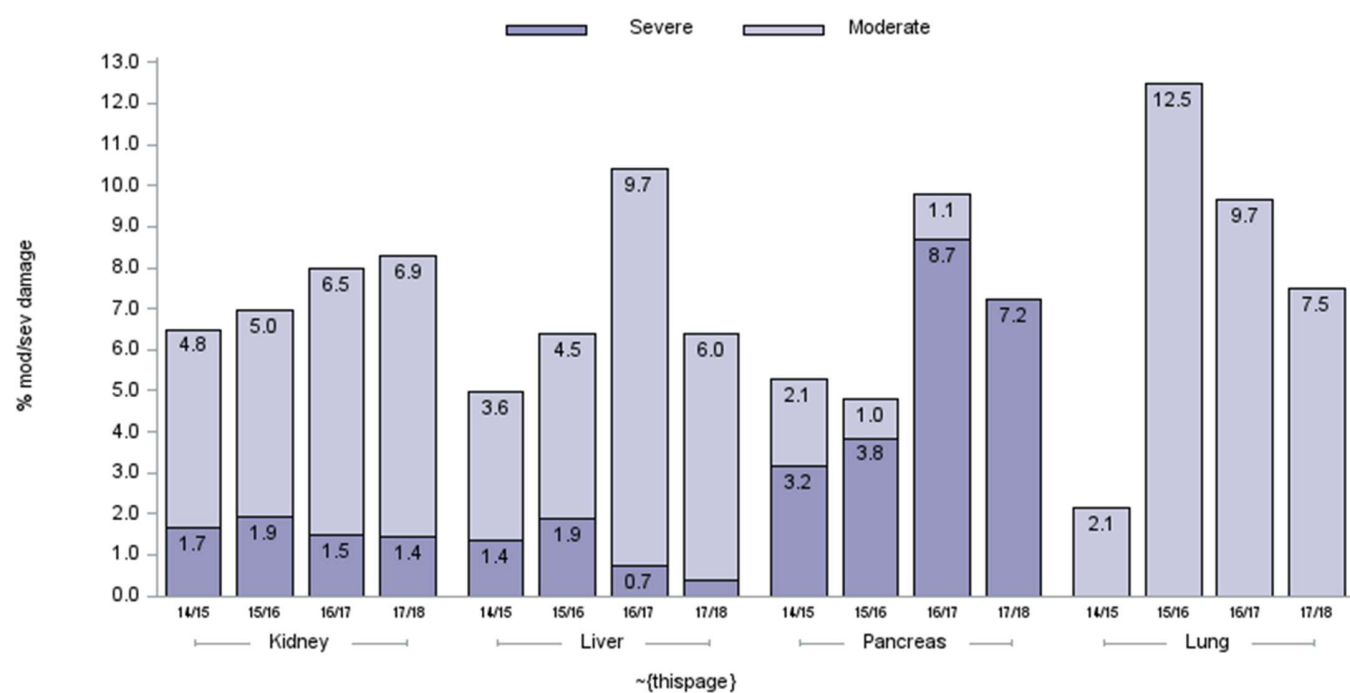
- 10 This section of the report looks at changes in national organ damage rates over time. **Figure 1** shows DBD national organ damage rates for each organ, for donors from 1 April 2014 to 31 March 2018. The bars show the percentage of organs reported as moderately or severely damaged. Nationally, in the most recent 12 months, 5.5% of kidneys, 5.4% of livers, 7.5% of pancreases, 5.8% of hearts and 7.5% of lungs from DBD donors were reported as moderately or severely damaged. There have been changes over the last four years in the proportion of organs reported as damaged, but these changes were not found to be statistically significant for any organ.

**Figure 1 DBD organ damage rates, 1 April 2014 to 31 March 2018**



- 11 **Figure 2** shows DCD organ damage rates for each organ retrieved from UK donors between 1 April 2014 and 31 March 2018. Nationally, in the most recent 12 months, 8.3% of kidneys, 6.4% of livers, 7.2% of pancreases and 7.5% of lungs from DCD donors were reported as moderately or severely damaged in that year. There have been changes over the last four years in the proportion of organs reported as damaged, but these changes were only found to be statistically significant for kidneys ( $p=0.02$ ).

**Figure 2** DCD organ damage rates, 1 April 2014 to 31 March 2018



12 Note that organ retrieval damage data were missing at the time of analysis for a proportion of organs, as shown in **Table 1**. The proportion of missing data differs across the years which mean the results above should be considered with caution.

**Table 1** Organ damage data completeness by organ and financial year, 1 April 2014 – 31 March 2018

Organ	Damage information expected and not reported							
	2014/15		2015/16		2016/17		2017/18	
	N	%	N	%	N	%	N	%
Heart	5	2.9	5	2.5	6	3.1	9	4.3
Kidney	72	3.0	65	2.5	56	2.1	95	3.3
Liver	31	3.4	30	3.0	26	2.5	27	2.3
Lung	14	6.5	12	5.8	12	6.2	21	8.2
Pancreas	44	9.5	17	3.6	27	5.7	26	5.4

13 **Tables 2 & 3** provide a breakdown of organ damage rates by donor type, year, organ type and retrieval team for abdominal and cardiothoracic organs respectively. The rates presented are out of the number of organs retrieved, of that type, where damage data were reported. Additionally, there is some potential bias due to different data completion rates over time and across teams.

**Table 2 Abdominal organ damage rates by donor type, year, organ type and retrieval team as reported by receiving surgeon, 1 April 2014 - 30 September 2017**

Retrieval team	% moderately/severely damaged															
	DBD								DCD							
	2014/15		2015/16		2016/17		2017/18		2014/15		2015/16		2016/17		2017/18	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
<b>Kidneys</b>																
Birmingham	14	7.0	14	8.0	22	12.2	14	7.0	10	9.5	12	10.3	11	9.3	12	8.2
Cambridge	6	3.2	7	4.1	12	7.1	11	4.4	6	3.7	7	3.1	13	7.7	16	8.4
Cardiff	3	4.1	2	2.4	6	12.8	5	9.3	6	16.7	2	4.7	1	2.6	4	8.3
Edinburgh	7	5.9	5	5.1	14	9.7	6	4.5	5	7.6	8	8.8	7	6.5	2	2.4
King's	27	12.0	15	5.7	26	9.5	19	6.2	12	8.5	9	6.0	18	10.8	14	7.9
Leeds	-	-	-	-	7	5.8	8	5.4	-	-	-	-	7	7.3	9	7.1
Leeds/Manchester	11	5.1	12	5.9	-	-	-	-	12	6.7	22	13.3	-	-	-	-
Manchester	-	-	-	-	8	7.2	3	2.1	-	-	-	-	11	8.8	10	12.3
Newcastle	11	7.3	14	8.5	15	8.0	8	4.9	3	3.3	5	4.3	8	7.2	9	7.8
Oxford	5	4.7	6	5.4	10	6.8	9	6.3	3	4.8	2	3.1	2	2.4	8	10.1
Royal Free	10	8.5	11	8.6	11	10.8	9	7.1	2	3.2	6	7.5	7	13.2	9	12.5
<b>Total</b>	<b>94</b>	<b>6.7</b>	<b>86</b>	<b>6.1</b>	<b>131</b>	<b>8.8</b>	<b>92</b>	<b>5.5</b>	<b>59</b>	<b>6.5</b>	<b>73</b>	<b>7.0</b>	<b>85</b>	<b>8.0</b>	<b>93</b>	<b>8.3</b>
<b>Livers</b>																
Birmingham	5	4.8	5	5.7	7	7.4	4	4.3	3	6.8	4	10.5	2	7.7	1	3.2
Cambridge	2	2.3	8	9.8	5	6.3	5	4.1	1	2.8	0	-	4	8.5	5	10.0
Cardiff	5	13.2	2	4.5	1	4.3	6	21.4	1	8.3	1	10.0	2	15.4	1	10.0
Edinburgh	9	15.0	1	2.0	5	7.5	5	8.1	1	5.9	0	-	1	5.9	0	-
King's	1	0.9	0	-	9	6.5	4	2.4	1	2.6	2	4.3	4	6.3	2	3.8
Leeds	-	-	-	-	2	3.3	3	4.5	-	-	-	-	0	-	0	-
Leeds/Manchester	6	5.9	4	4.0	-	-	-	-	1	3.0	4	9.5	-	-	-	-
Manchester	-	-	-	-	6	10.9	6	8.1	-	-	-	-	9	33.3	2	10.0
Newcastle	3	5.4	4	5.1	5	6.3	4	5.0	0	-	2	9.5	1	4.8	1	4.8
Oxford	3	5.8	2	3.2	5	7.2	4	6.5	2	13.3	3	23.1	2	7.4	3	13.6
Royal Free	0	-	9	14.8	4	8.2	3	4.5	1	7.1	1	6.3	3	27.3	2	11.1
<b>Total</b>	<b>34</b>	<b>5.1</b>	<b>35</b>	<b>5.1</b>	<b>49</b>	<b>6.9</b>	<b>44</b>	<b>5.4</b>	<b>11</b>	<b>5.0</b>	<b>17</b>	<b>6.4</b>	<b>28</b>	<b>10.4</b>	<b>17</b>	<b>6.4</b>
<b>Pancreases</b>																
Birmingham	3	6.4	4	10.5	4	10.0	5	10.4	0	-	1	10.0	0	-	2	16.7
Cambridge	4	7.8	1	2.4	3	7.5	0	-	1	5.0	0	-	2	10.0	1	5.9
Cardiff	0	-	0	-	1	11.1	0	-	1	20.0	0	-	0	-	0	-
Edinburgh	1	3.6	1	5.3	2	7.1	2	6.5	0	-	0	-	1	20.0	1	14.3
King's	3	6.3	9	13.8	6	11.3	8	11.9	0	-	3	17.6	4	16.7	2	11.8
Leeds	-	-	-	-	1	3.7	2	10.0	-	-	-	-	1	20.0	0	-
Leeds/Manchester	1	2.1	6	11.5	-	-	-	-	0	-	0	-	-	-	-	-
Manchester	-	-	-	-	3	15.8	0	-	-	-	-	-	1	6.7	0	-
Newcastle	1	3.1	1	2.9	1	2.6	4	14.3	1	14.3	1	14.3	0	-	0	-
Oxford	1	4.3	1	3.4	2	5.4	1	4.3	1	11.1	0	-	0	-	1	20.0
Royal Free	1	3.4	3	13.6	5	25.0	2	9.5	1	25.0	0	-	0	-	0	-
<b>Total</b>	<b>15</b>	<b>4.6</b>	<b>26</b>	<b>8.2</b>	<b>28</b>	<b>9.0</b>	<b>24</b>	<b>7.5</b>	<b>5</b>	<b>5.3</b>	<b>5</b>	<b>4.8</b>	<b>9</b>	<b>9.8</b>	<b>7</b>	<b>7.2</b>

**Table 3 Cardiothoracic organ damage rates by donor type, year, organ type and retrieval team as reported by receiving surgeon, 1 April 2014 – 31 March 2018**

% moderately/severely damaged																
Retrieval team	DBD								DCD							
	2014/15		2015/16		2016/17		2017/18		2014/15		2015/16		2016/17		2017/18	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
<b>Hearts<sup>1</sup></b>																
Birmingham	1	3.3	0	-	0	-	3	11.1	0	-	0	-	0	-	0	-
Glasgow	1	7.7	1	12.5	0	-	0	-	0	-	0	-	0	-	0	-
Harefield	2	5.1	3	7.9	4	9.1	3	8.3	0	-	0	-	0	-	0	-
Manchester	0	-	5	13.2	3	10.3	3	9.7	0	-	0	-	0	-	0	-
Newcastle	0	-	1	4.8	0	-	0	-	0	-	0	-	0	-	0	-
Papworth	0	-	1	2.3	0	-	1	2.5	0	-	0	-	0	-	0	-
<b>Total</b>	<b>4</b>	<b>2.4</b>	<b>11</b>	<b>6.4</b>	<b>7</b>	<b>4.0</b>	<b>10</b>	<b>5.8</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>-</b>
<b>Lungs</b>																
Birmingham	1	3.4	2	8.0	3	12.0	1	2.9	0	-	2	25.0	1	20.0	1	11.1
Glasgow	1	12.5	2	22.2	1	7.1	3	33.3	0	-	0	-	1	33.3	0	-
Harefield	0	-	1	2.6	1	4.0	2	5.3	0	-	1	8.3	1	16.7	0	-
Manchester	1	4.8	4	14.3	3	9.1	3	9.4	1	9.1	1	14.3	0	-	1	20.0
Newcastle	0	-	4	18.2	2	11.1	1	3.7	0	-	1	12.5	0	-	1	14.3
Papworth	3	9.1	0	-	0	-	0	-	0	-	0	-	0	-	0	-
<b>Total</b>	<b>6</b>	<b>3.9</b>	<b>13</b>	<b>8.5</b>	<b>10</b>	<b>6.7</b>	<b>10</b>	<b>5.5</b>	<b>1</b>	<b>2.1</b>	<b>5</b>	<b>12.5</b>	<b>3</b>	<b>9.7</b>	<b>3</b>	<b>7.5</b>

<sup>1</sup> There were 67 DCD hearts retrieved during this period (45 of which were from 01 April 2016 to 31 March 2018); these have been excluded from this report

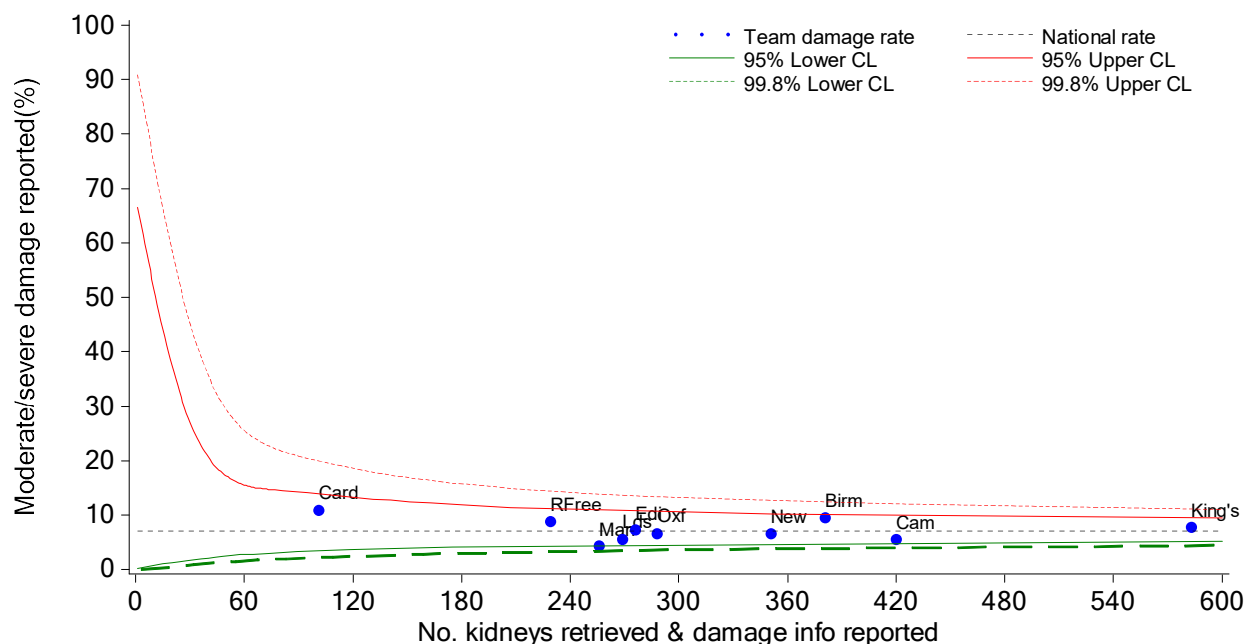
## Section 2 – Analysis of 1 April 2016 to 31 March 2018 damage data

- 14 **Figures 3 to 7** show the organ damage funnel plots for DBD organ damage rates. **Figures 8 to 11** show the organ damage funnel plots for DCD organ damage rates. The results from the corresponding cross-validation analysis are discussed after each funnel plot.
- 15 The **Appendix** contains **Tables 3 to 6** which detail the organ retrieval damage data reported by the receiving surgeon for all organs. Additionally, **Tables 7 to 10** contain organ damage data reported by the *retrieving* surgeon, which are provided for information. **Table 11** cross-tabulates damage reported by the receiving surgeon and the retrieving surgeon for each organ.
- 16 **Figures 12 to 20** show the funnel plots for exported organs only.

### Organ damage funnel plots by donor type

#### Donors after brain death (DBD)

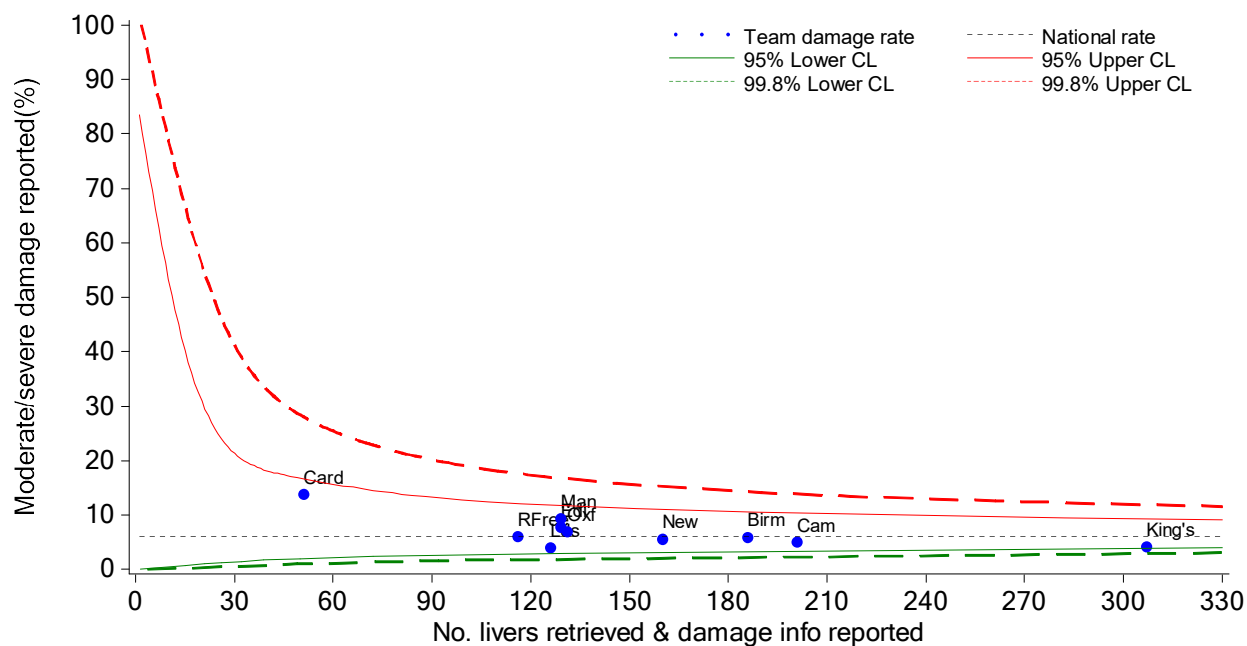
**Figure 3** DBD Kidneys, 1 April 2016 to 31 March 2018



- 17 The DBD kidney damage rates are shown in **Figure 3**. No team has a damage rate that is significantly different than the national rate, which was confirmed by the cross-validation analysis.

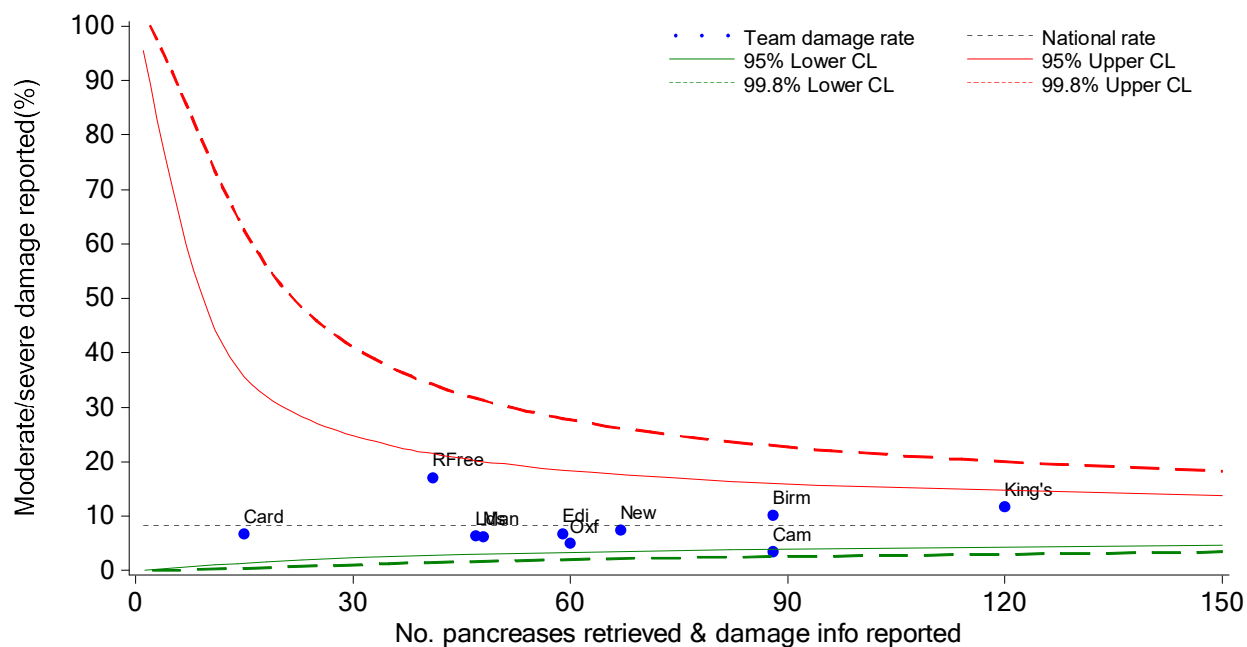


**Figure 4 DBD Livers, 1 April 2016 to 31 March 2018**



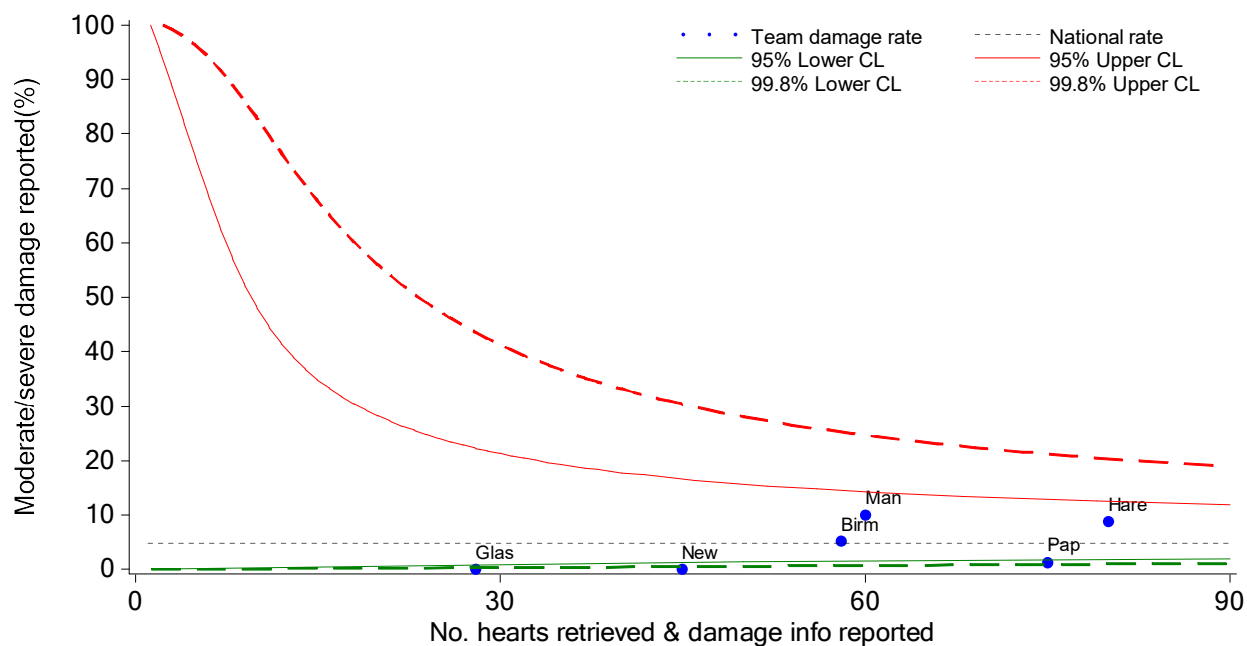
18 The DBD liver damage rates are shown in **Figure 4**. No team has a damage rate that is significantly different than the national rate, which was confirmed by the cross-validation analysis.

**Figure 5 DBD Pancreases, 1 April 2016 to 31 March 2018**



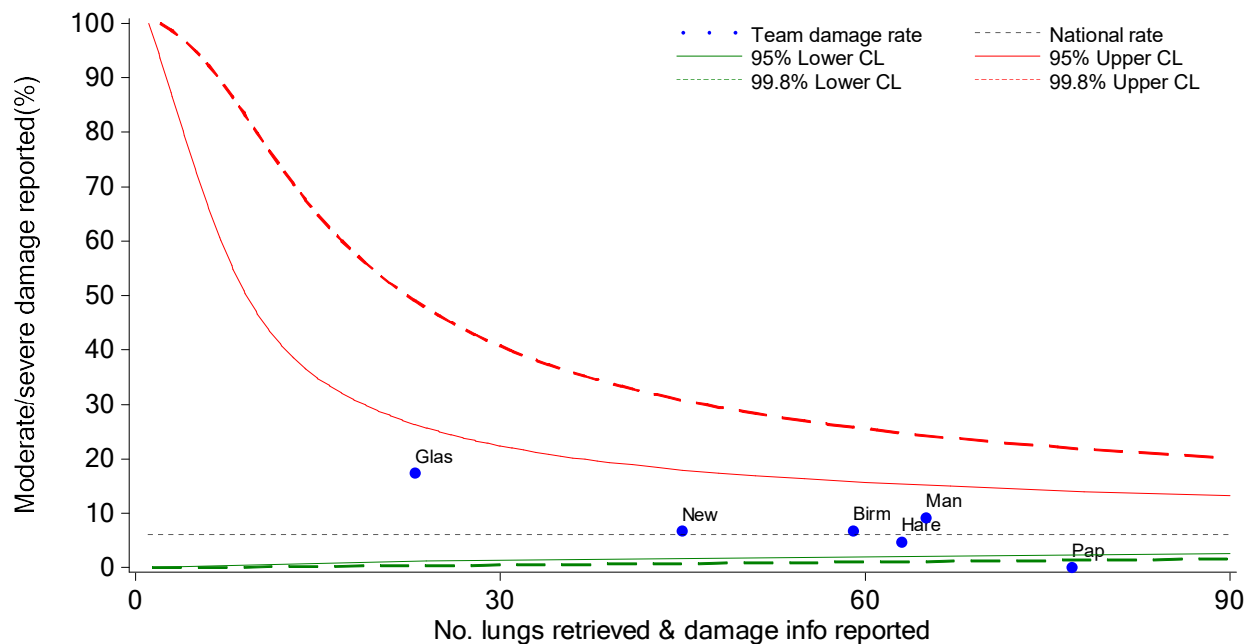
19 The DBD pancreas damage rates are shown in **Figure 5**. No team has a damage rate that is significantly different than the national rate, which was confirmed by the cross-validation analysis.

**Figure 6 DBD Hearts, 1 April 2016 to 31 March 2018**



20 The DBD heart damage rates are shown in **Figure 6**. Glasgow and Newcastle each had significantly low damage rates of 0%.

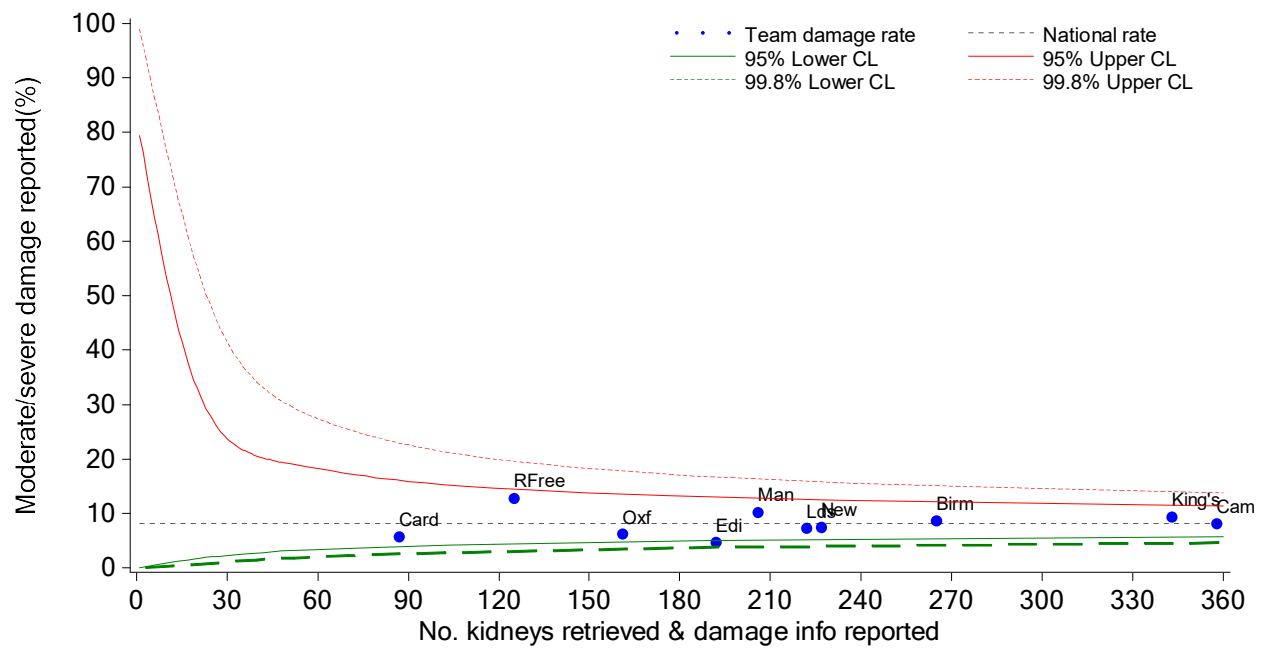
**Figure 7 DBD Lung, 1 April 2016 to 31 March 2018**



21 The DBD lung damage rates are shown in **Figure 7**. Papworth had a significantly low damage rate of 0% compared to the national rate, which was confirmed by the cross-validation analysis.

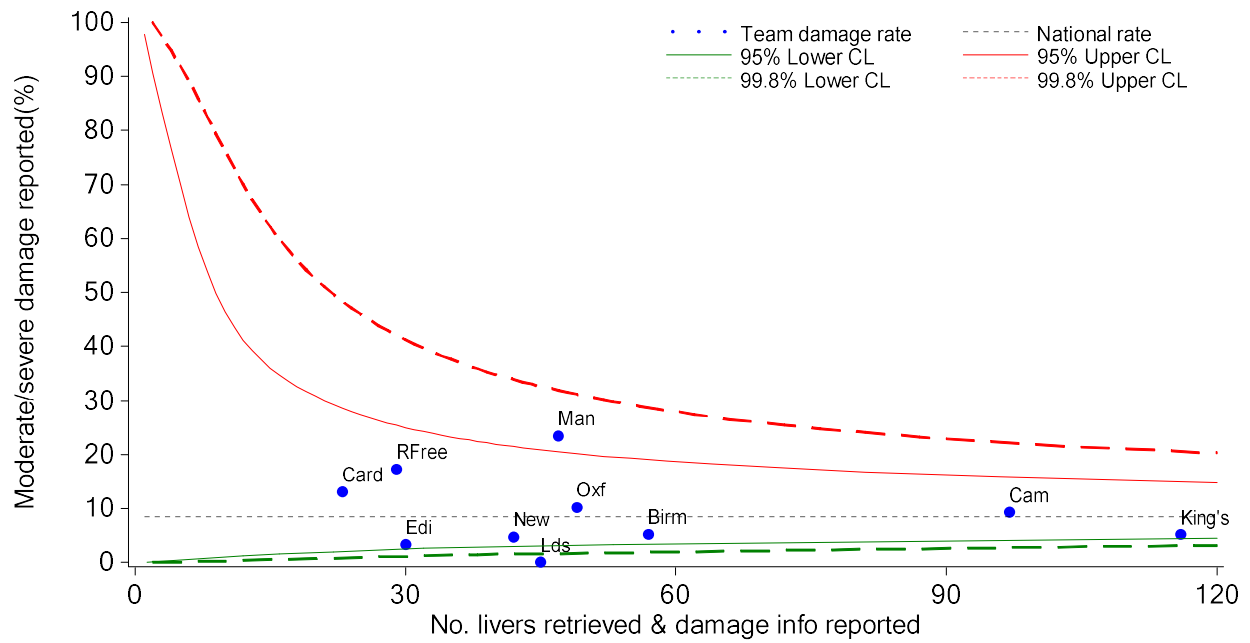
**Donors after circulatory death (DCD)**

**Figure 8      DCD Kidneys, 1 April 2016 to 31 March 2018**



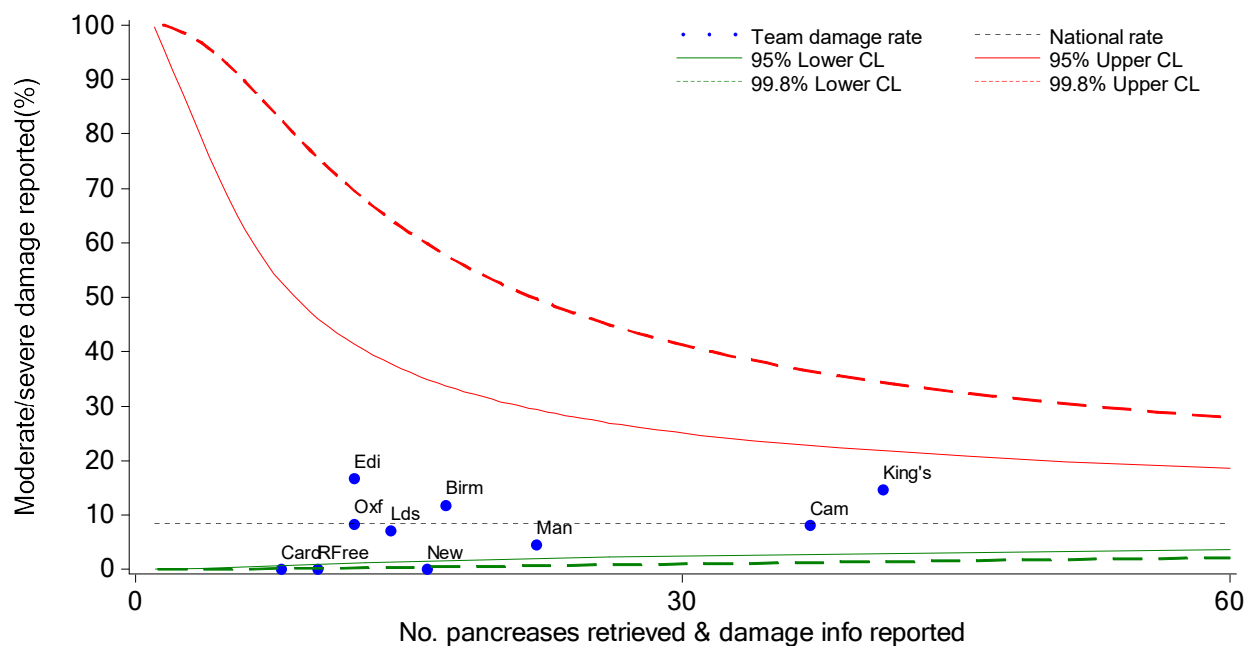
20    The DCD kidney damage rates are shown in **Figure 8**. No team has a damage rate that is significantly different than the national rate, which was confirmed by the cross-validation analysis.

**Figure 9      DCD Livers, 1 April 2016 to 31 March 2018**



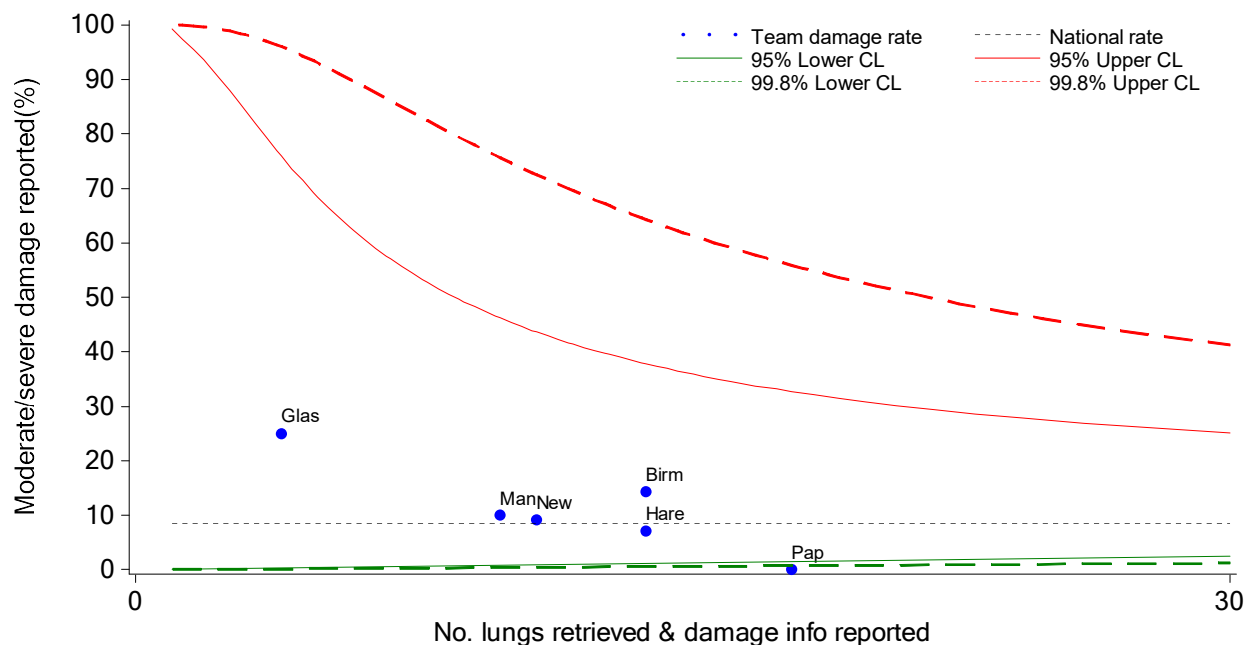
- 23 The DCD liver damage rates are shown in **Figure 9**. Leeds had a significantly low damage rate of 0%. Manchester had a significantly high damage rate when compared to the national rate, which was confirmed by the cross-validation analysis ( $p < 0.01$ ).

**Figure 10 DCD Pancreases, 1 April 2016 to 31 March 2018**



- 24 The DCD pancreas damage rates are shown in **Figure 10**. Cardiff, Royal Free and Newcastle each had significantly low damage rates of 0%, however the number of DCD pancreases retrieved by each team during this period is small.

**Figure 11 DCD Lungs, 1 April 2016 to 31 March 2018**



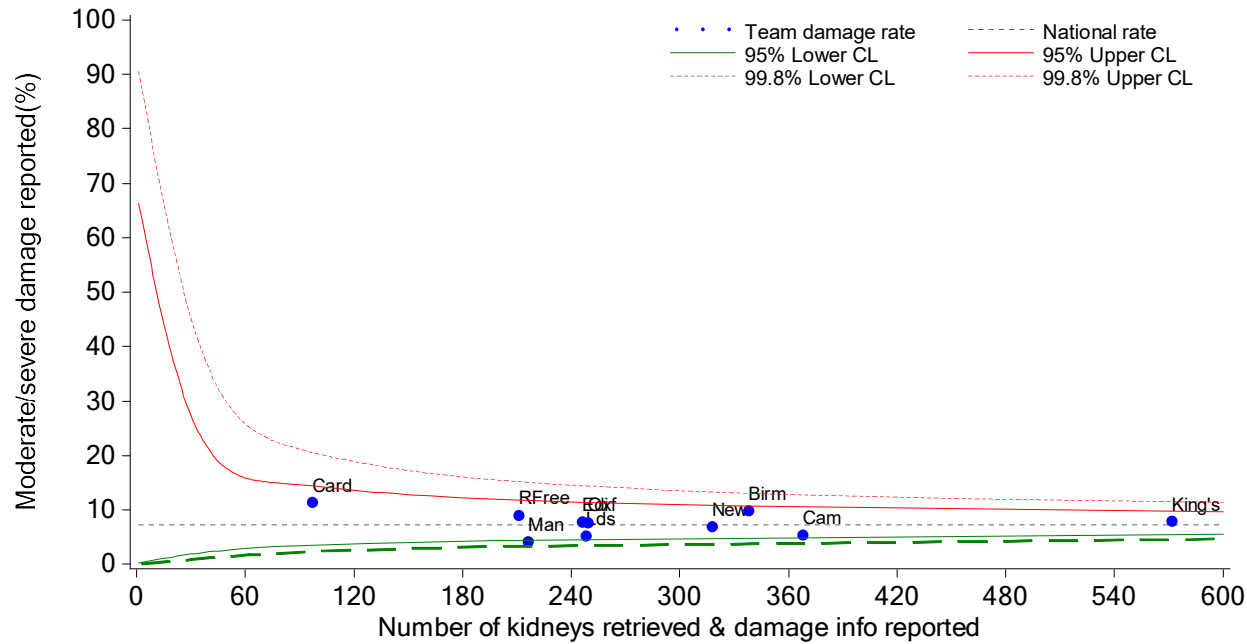
- 25 The DCD lung damage rates are shown in **Figure 11**. Papworth had a significantly low damage rate of 0%, however the number of DCD lungs retrieved by each team during this time period is small so these results should be interpreted with caution.

EXPORTED ORGANS ONLY

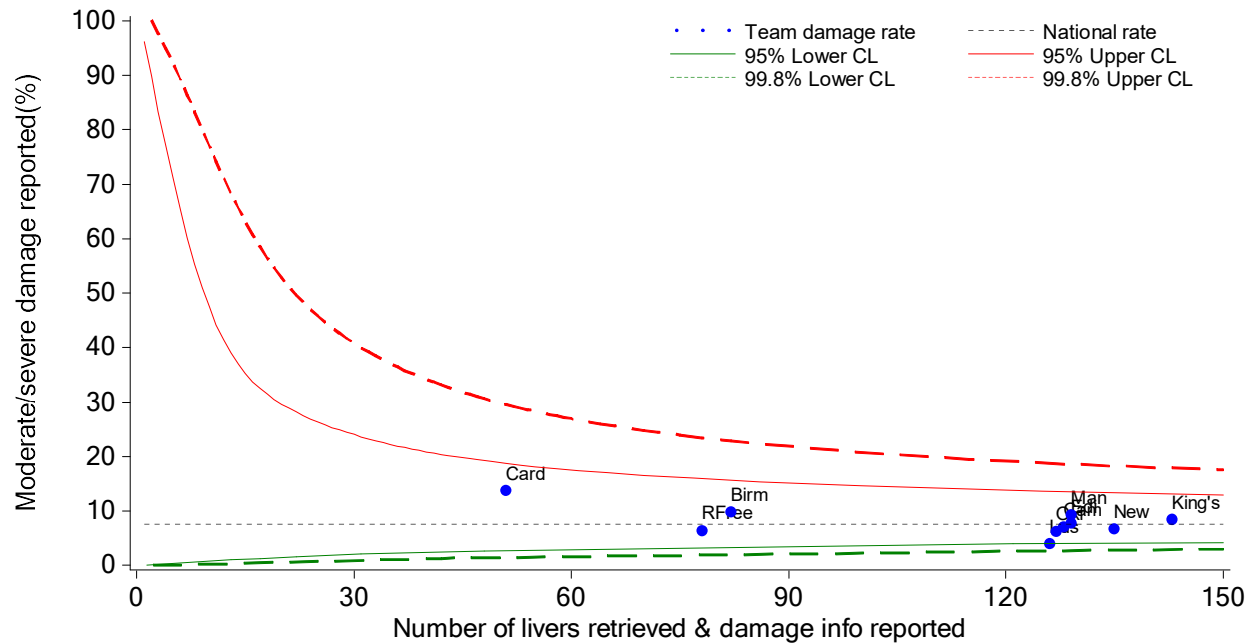
26    **Figures 12 to 19** show funnel plots for exported DBD and DCD organs. No differences were found between the all-organs analysis and the exported-organs analysis.

*Donors after brain death (DBD)*

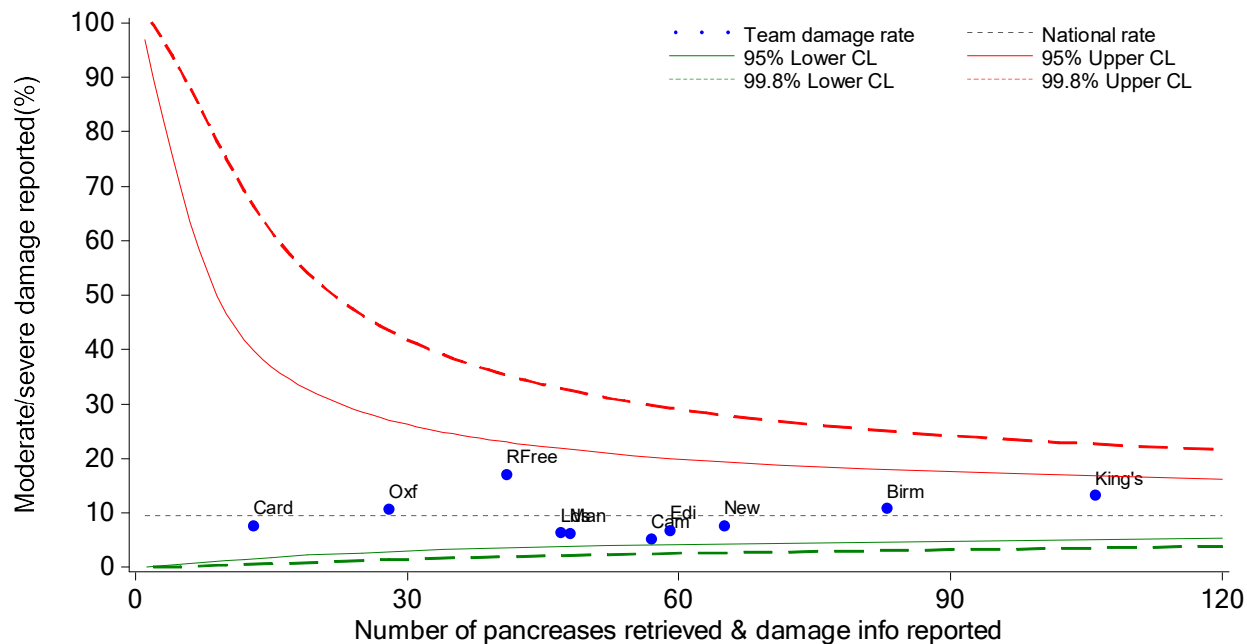
**Figure 12    Exported DBD Kidneys, 1 April 2016 to 31 March 2018**



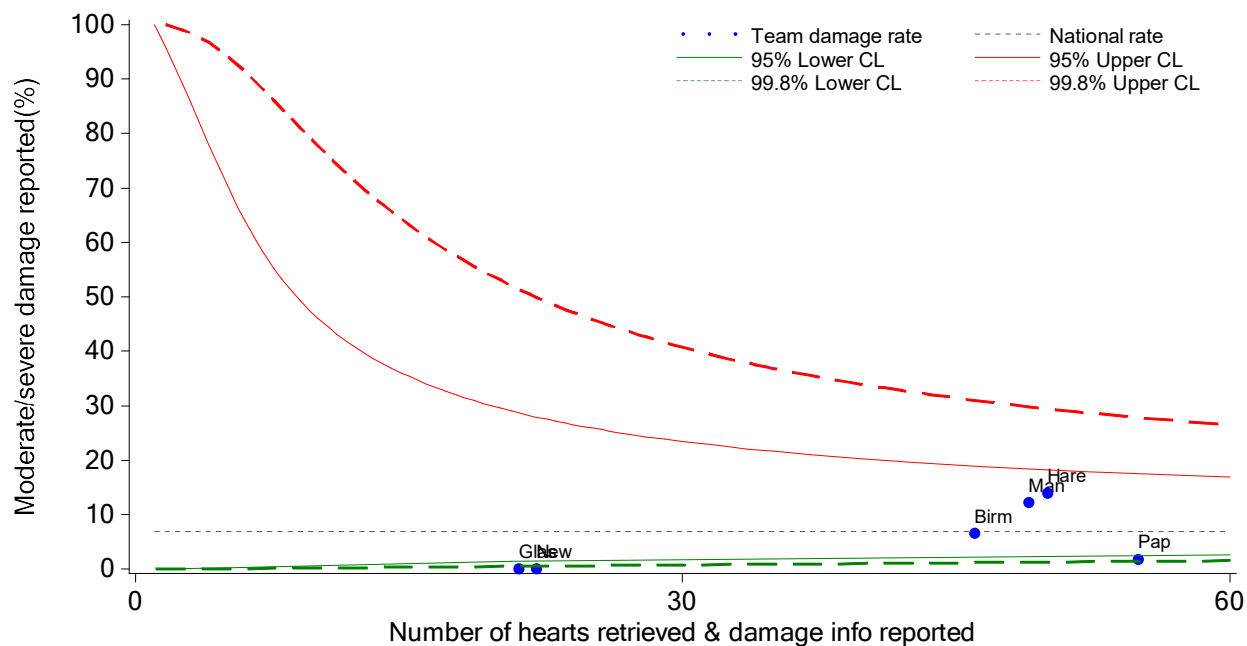
**Figure 13    Exported DBD Livers, 1 April 2016 to 31 March 2018**



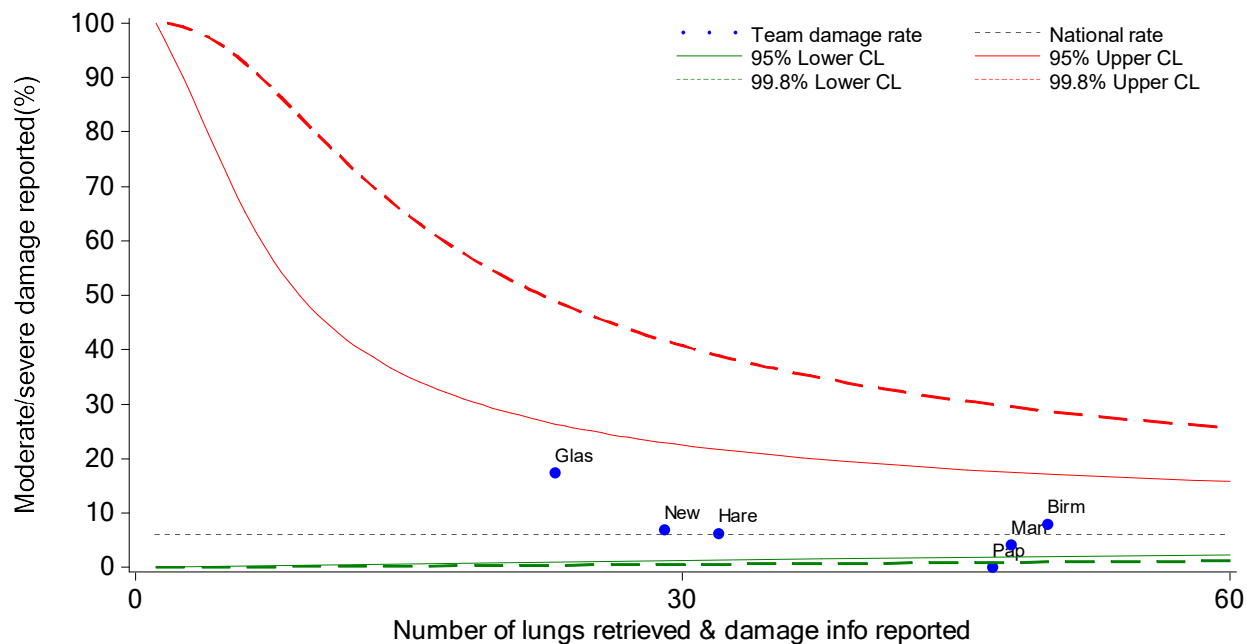
**Figure 14 Exported DBD Pancreases, 1 April 2016 to 31 March 2018**



**Figure 15 Exported DBD Hearts, 1 April 2016 to 31 March 2018**

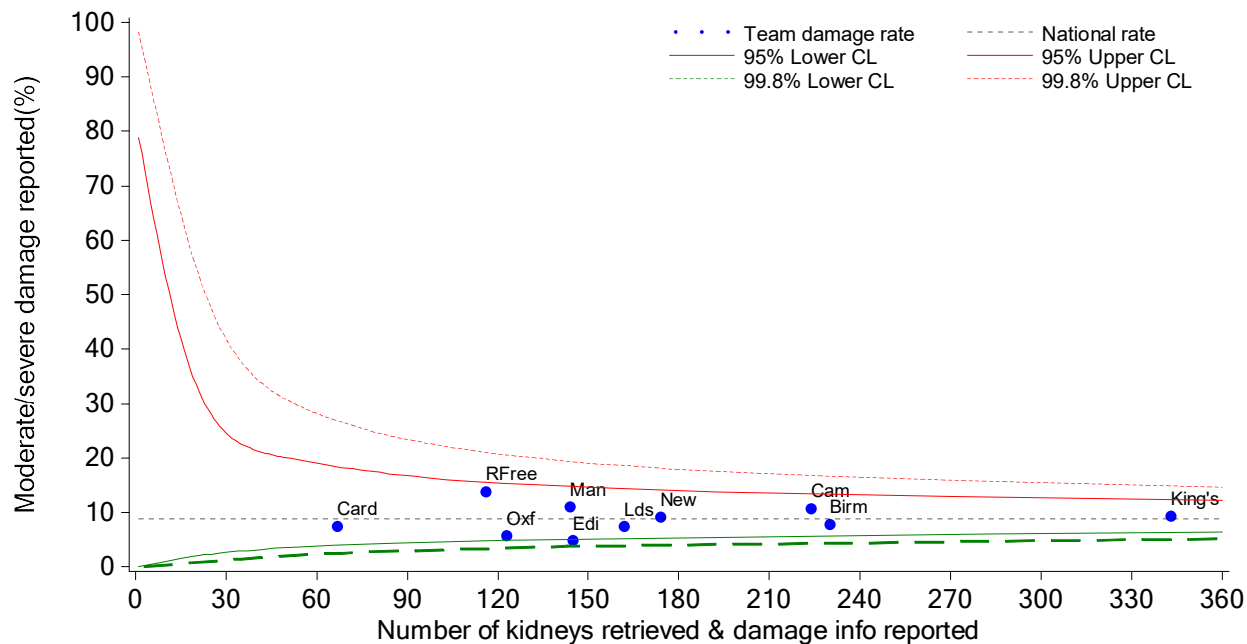


**Figure 16 Exported DBD Lung, 1 April 2016 to 31 March 2018**



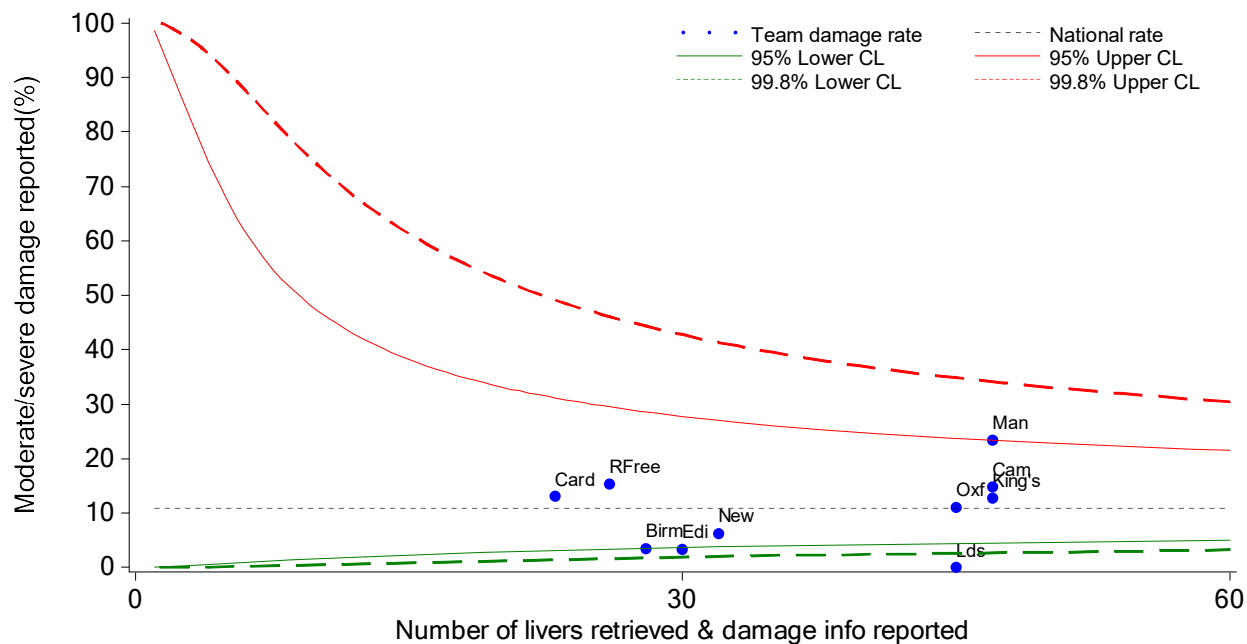
**Donors after circulatory death (DCD)**

**Figure 17 Exported DCD Kidneys, 1 April 2016 to 31 March 2018**

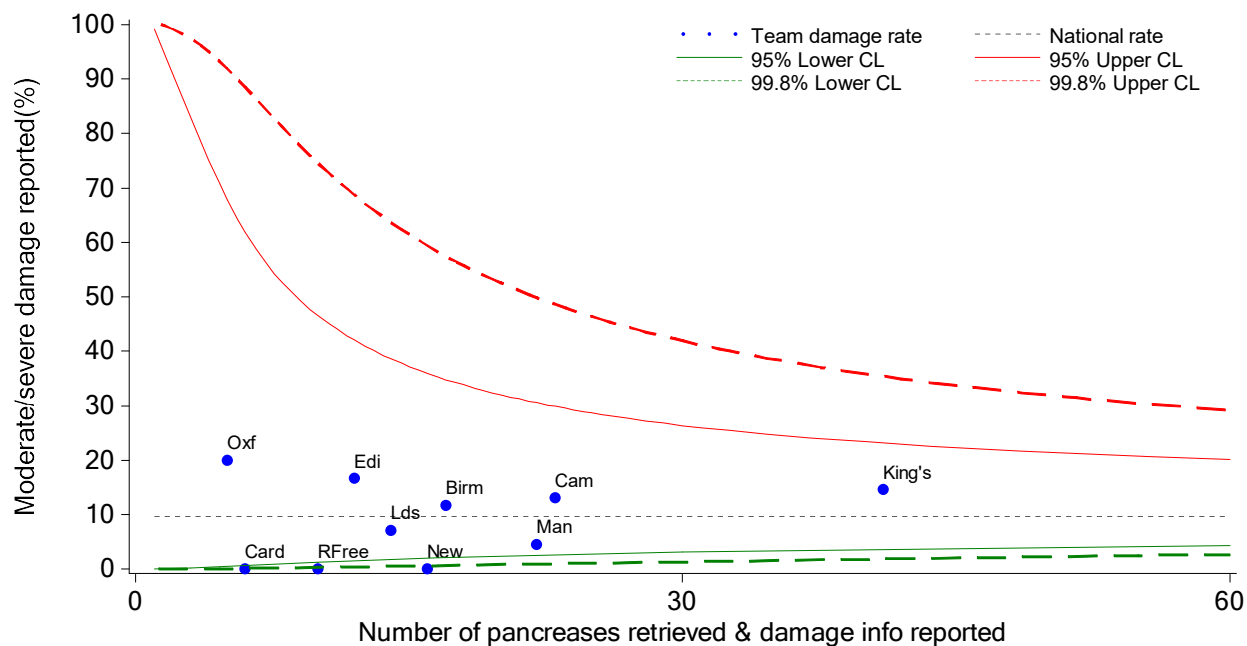




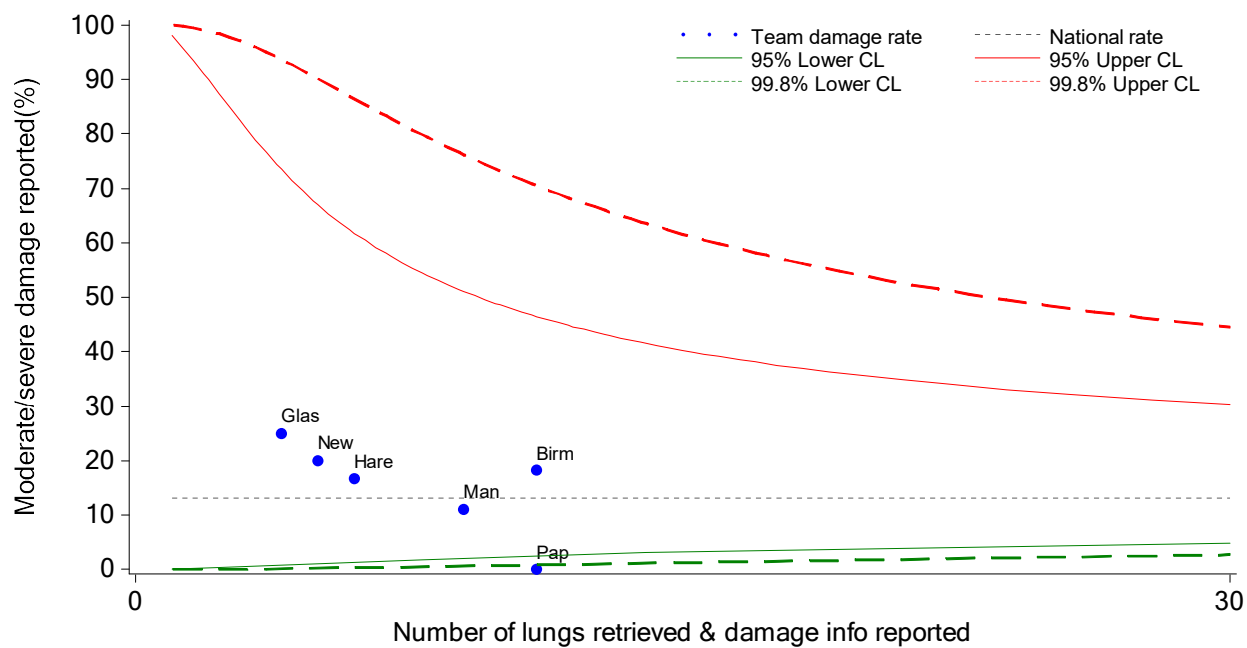
**Figure 18 Exported DCD Livers, 1 April 2016 to 31 March 2018**



**Figure 19 Exported DCD Pancreases, 1 April 2016 to 31 March 2018**



**Figure 20      Exported DCD Lungs, 1 April 2016 to 31 March 2018**



## Appendix I

**Table 4 Abdominal DBD organ damage as reported by RECEIVING surgeon, 1 April 2016 – 31 March 2018**

Retrieval team	Organ	No. of organs	Damage reported by receiving surgeon							
			None	Mild	Mod.	Sev.	Not expected *	No HTA/B form	% mod/sev damage	% severe damage
Birmingham	Kidney	397	317	28	30	6	6	10	9.4	1.6
	Liver	197	165	10	10	1	4	7	5.9	0.5
	Pancreas	96	75	4	4	5	4	4	10.2	5.7
Cambridge	Kidney	435	359	38	20	3	2	13	5.5	0.7
	Liver	208	176	15	10	0	4	3	5.0	-
	Pancreas	100	82	3	1	2	4	8	3.4	2.3
Cardiff	Kidney	105	76	14	9	2	0	4	10.9	2.0
	Liver	52	42	2	7	0	0	1	13.7	-
	Pancreas	19	14	0	0	1	3	1	6.7	6.7
Edinburgh	Kidney	281	238	18	19	1	2	3	7.2	0.4
	Liver	134	114	5	10	0	3	2	7.8	-
	Pancreas	73	53	2	2	2	11	3	6.8	3.4
King's	Kidney	610	489	49	36	9	8	19	7.7	1.5
	Liver	316	280	14	11	2	5	4	4.2	0.7
	Pancreas	137	95	11	4	10	11	6	11.7	8.3
Leeds	Kidney	275	233	21	8	7	1	5	5.6	2.6
	Liver	126	114	7	4	1	0	0	4.0	0.8
	Pancreas	55	41	3	1	2	3	5	6.4	4.3
Manchester	Kidney	265	223	22	9	2	1	8	4.3	0.8
	Liver	130	111	6	12	0	0	1	9.3	-
	Pancreas	56	42	3	2	1	7	1	6.3	2.1
Newcastle	Kidney	360	301	27	20	3	2	7	6.6	0.9
	Liver	172	140	11	8	1	7	5	5.6	0.6
	Pancreas	77	59	3	1	4	7	3	7.5	6.0
Oxford	Kidney	297	252	17	16	3	4	5	6.6	1.0
	Liver	138	111	11	8	1	2	5	6.9	0.8
	Pancreas	66	56	1	1	2	3	3	5.0	3.3
Royal Free	Kidney	242	190	19	20	0	1	12	8.7	-
	Liver	123	100	9	7	0	3	4	6.0	-
	Pancreas	43	29	5	1	6	1	1	17.1	14.6
<b>Total</b>	<b>Kidney</b>	<b>3267</b>	<b>2678</b>	<b>253</b>	<b>187</b>	<b>36</b>	<b>27</b>	<b>86</b>	<b>7.1</b>	<b>1.1</b>
	<b>Liver</b>	<b>1596</b>	<b>1353</b>	<b>90</b>	<b>87</b>	<b>6</b>	<b>28</b>	<b>32</b>	<b>6.1</b>	<b>0.4</b>
	<b>Pancreas</b>	<b>722</b>	<b>546</b>	<b>35</b>	<b>17</b>	<b>35</b>	<b>54</b>	<b>35</b>	<b>8.2</b>	<b>5.5</b>

Note: 1 kidney (retrieved by Manchester) and 3 livers (retrieved by Oxford, Edinburgh and Cambridge) were reported as severely damaged by the receiving surgeon but were still transplanted. The damage of these organs has been set to moderate throughout this report. None of the other severely damaged organs were transplanted. 8 double kidney transplants counted each as one kidney throughout this report.

\* Damage information not expected as the organ was declined before reaching the centre therefore a HTA-B form was not filled in.

**Table 5 Abdominal DCD organ damage as reported by RECEIVING surgeon,  
1 April 2016 – 31 March 2018**

Retrieval team	Organ	No. of organs	Damage reported by receiving surgeon							
			None	Mild	Mod.	Sev.	Not expected *	No HTA/B form	% mod/sev damage	% severe damage
Birmingham	Kidney	274	220	22	15	8	4	5	8.7	3.0
	Liver	67	50	4	3	0	6	4	5.3	-
	Pancreas	21	14	1	0	2	3	1	11.8	11.8
Cambridge	Kidney	370	309	20	26	3	2	10	8.1	0.8
	Liver	104	78	10	9	0	4	3	9.3	-
	Pancreas	45	32	2	1	2	5	3	8.1	5.4
Cardiff	Kidney	98	73	9	4	1	7	4	5.7	1.1
	Liver	30	20	0	3	0	6	1	13.0	-
	Pancreas	10	7	1	0	0	2	0	-	-
Edinburgh	Kidney	196	168	15	7	2	2	2	4.7	1.0
	Liver	33	27	2	1	0	2	1	3.3	-
	Pancreas	16	10	0	0	2	3	1	16.7	16.7
King's	Kidney	374	283	28	28	4	9	22	9.3	1.2
	Liver	122	106	4	6	0	3	3	5.2	-
	Pancreas	49	26	9	0	6	4	4	14.6	14.6
Leeds	Kidney	230	194	12	14	2	4	4	7.2	0.9
	Liver	49	42	3	0	0	2	2	-	-
	Pancreas	16	13	0	0	1	2	0	7.1	7.1
Manchester	Kidney	210	166	19	19	2	2	2	10.2	1.0
	Liver	57	29	7	8	3	6	4	23.4	6.4
	Pancreas	25	18	3	0	1	2	1	4.5	4.5
Newcastle	Kidney	237	195	15	9	8	8	2	7.5	3.5
	Liver	46	33	7	2	0	4	0	4.8	-
	Pancreas	28	14	2	0	0	6	6	-	-
Oxford	Kidney	169	136	15	10	0	2	6	6.2	-
	Liver	53	40	4	5	0	2	2	10.2	-
	Pancreas	15	9	2	0	1	2	1	8.3	8.3
Royal Free	Kidney	137	98	11	14	2	4	8	12.8	1.6
	Liver	33	22	2	5	0	3	1	17.2	-
	Pancreas	11	8	2	0	0	0	1	-	-
<b>Total</b>	<b>Kidney</b>	<b>2295</b>	<b>1842</b>	<b>166</b>	<b>146</b>	<b>32</b>	<b>44</b>	<b>65</b>	<b>8.1</b>	<b>1.5</b>
	<b>Liver</b>	<b>594</b>	<b>447</b>	<b>43</b>	<b>42</b>	<b>3</b>	<b>38</b>	<b>21</b>	<b>8.4</b>	<b>0.6</b>
	<b>Pancreas</b>	<b>236</b>	<b>151</b>	<b>22</b>	<b>1</b>	<b>15</b>	<b>29</b>	<b>18</b>	<b>8.5</b>	<b>7.9</b>

Note: None of the organs reported as severely damaged by the receiving surgeon were transplanted. 13 double kidney transplants counted each as one kidney throughout this report.

\* Damage information not expected as the organ was declined before reaching the centre therefore a HTA-B form was not filled in.

**Table 6 Cardiothoracic DBD organ damage as reported by RECEIVING surgeon,  
1 April 2016 – 31 March 2018**

Retrieval team	Organ	No. of organs	Damage reported by receiving surgeon						% mod/sev damage	% severe damage
			None	Mild	Mod.	Sev.	Not expected *	No HTA/B form		
Birmingham	Heart	60	54	1	3	0	0	2	5.2	-
	Lung	61	51	4	4	0	0	2	6.8	-
Glasgow	Heart	28	26	2	0	0	0	0	-	-
	Lung	32	18	1	3	1	6	3	17.4	4.3
Harefield	Heart	85	71	2	6	1	0	5	8.8	1.3
	Lung	74	56	4	3	0	2	9	4.8	-
Manchester	Heart	62	51	3	5	1	0	2	10.0	1.7
	Lung	72	58	1	6	0	1	6	9.2	-
Newcastle	Heart	46	45	0	0	0	0	1	-	-
	Lung	52	38	4	3	0	4	3	6.7	-
Papworth	Heart	78	72	2	1	0	0	3	1.3	-
	Lung	81	76	1	0	0	0	4	-	-
<b>Total</b>	<b>Heart</b>	<b>359</b>	<b>319</b>	<b>10</b>	<b>15</b>	<b>2</b>	<b>0</b>	<b>13</b>	<b>4.9</b>	<b>0.6</b>
	<b>Lung</b>	<b>372</b>	<b>297</b>	<b>15</b>	<b>19</b>	<b>1</b>	<b>13</b>	<b>27</b>	<b>6.0</b>	<b>0.3</b>

Note: 1 lung pair (retrieved by Harefield) was reported as severely damaged by the receiving surgeon but were still transplanted. The damage of this organ has been set to moderate throughout this report. None of the other severely damaged organs were transplanted. 14 heart lung block transplants counted each as one lung throughout this report. 287 lung pair transplants counted each as one lung throughout this report.

\* Damage information not expected as the organ was declined before reaching the centre therefore a HTA-B form was not filled in.

**Table 7 Cardiothoracic DCD organ damage as reported by RECEIVING surgeon,  
1 April 2016 – 31 March 2018**

Retrieval team	Organ	No. of organs	Damage reported by receiving surgeon						% mod/sev damage	% severe damage
			None	Mild	Mod.	Sev.	Not expected *	No HTA/B form		
Birmingham	Lung	16	12	0	2	0	0	2	14.3	-
Glasgow	Lung	4	2	1	1	0	0	0	25.0	-
Harefield	Lung	14	13	0	1	0	0	0	7.1	-
Manchester	Lung	12	9	0	1	0	0	2	10.0	-
Newcastle	Lung	12	9	1	1	0	1	0	9.1	-
Papworth	Lung	20	17	1	0	0	0	2	-	-
<b>Total</b>	<b>Lung</b>	<b>78</b>	<b>62</b>	<b>3</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>6</b>	<b>8.5</b>	<b>-</b>

Note: 68 lung pair transplants counted each as one lung throughout this report.

\* Damage information not expected as the organ was declined before reaching the centre therefore a HTA-B form was not filled in.

**Table 8 Abdominal DBD organ damage as reported by RETRIEVING surgeon,  
1 April 2016 – 31 March 2018**

		Damage reported by retrieving surgeon								
								No	%	
Retrieval team	Organ	No. of organs	None	Mild	Mod.	Sev.	Not reported	RTI form	mod/sev damage	% severe damage
Birmingham	Kidney	397	371	16	8	0	0	2	2.0	-
	Liver	197	175	19	1	0	1	1	0.5	-
	Pancreas	96	88	7	1	0	0	0	1.0	-
Cambridge	Kidney	435	421	10	4	0	0	0	0.9	-
	Liver	208	191	13	2	0	2	0	1.0	-
	Pancreas	100	91	5	1	0	2	1	1.0	-
Cardiff	Kidney	105	102	2	1	0	0	0	1.0	-
	Liver	52	46	5	1	0	0	0	1.9	-
	Pancreas	19	19	0	0	0	0	0	-	-
Edinburgh	Kidney	281	263	16	2	0	0	0	0.7	-
	Liver	134	117	13	4	0	0	0	3.0	-
	Pancreas	73	67	4	0	0	2	0	-	-
King's	Kidney	610	576	19	10	0	3	2	1.7	-
	Liver	316	280	26	7	1	1	1	2.5	0.3
	Pancreas	137	127	7	1	0	1	1	0.7	-
Leeds	Kidney	275	264	5	6	0	0	0	2.2	-
	Liver	126	121	2	3	0	0	0	2.4	-
	Pancreas	55	50	4	0	0	1	0	-	-
Manchester	Kidney	265	246	14	3	0	2	0	1.1	-
	Liver	130	117	9	4	0	0	0	3.1	-
	Pancreas	56	55	1	0	0	0	0	-	-
Newcastle	Kidney	360	345	8	7	0	0	0	1.9	-
	Liver	172	161	9	2	0	0	0	1.2	-
	Pancreas	77	73	2	1	0	1	0	1.3	-
Oxford	Kidney	297	282	11	4	0	0	0	1.3	-
	Liver	138	131	5	1	0	1	0	0.7	-
	Pancreas	66	61	0	0	0	5	0	-	-
Royal Free	Kidney	242	231	7	2	0	0	2	0.8	-
	Liver	123	112	8	2	0	0	1	1.6	-
	Pancreas	43	40	2	1	0	0	0	2.3	-
Total	Kidney	3267	3101	108	47	0	5	6	1.4	-
	Liver	1596	1451	109	27	1	5	3	1.8	0.1
	Pancreas	722	671	32	5	0	12	2	0.7	-

Note: 8 double kidney transplants counted each as one kidney throughout this report.

**Table 9 Abdominal DCD organ damage as reported by RETRIEVING surgeon,  
1 April 2016 – 31 March 2018**

Retrieval team	Organ	No. of organs	Damage reported by retrieving surgeon							
			None	Mild	Mod.	Sev.	Not reported	No RTI form	% mod/sev damage	% severe damage
Birmingham	Kidney	274	252	20	1	0	1	0	0.4	-
	Liver	67	54	11	2	0	0	0	3.0	-
	Pancreas	21	18	1	0	1	1	0	5.0	5.0
Cambridge	Kidney	370	352	10	4	2	0	2	1.6	0.5
	Liver	104	86	15	2	0	1	0	1.9	-
	Pancreas	45	39	3	0	1	1	1	2.3	2.3
Cardiff	Kidney	98	90	6	2	0	0	0	2.0	-
	Liver	30	25	3	2	0	0	0	6.7	-
	Pancreas	10	10	0	0	0	0	0	-	-
Edinburgh	Kidney	196	187	6	1	0	2	0	0.5	-
	Liver	33	30	3	0	0	0	0	-	-
	Pancreas	16	14	0	1	0	0	1	6.7	-
King's	Kidney	374	356	14	4	0	0	0	1.1	-
	Liver	122	104	17	1	0	0	0	0.8	-
	Pancreas	49	45	3	1	0	0	0	2.0	-
Leeds	Kidney	230	215	10	5	0	0	0	2.2	-
	Liver	49	43	4	2	0	0	0	4.1	-
	Pancreas	16	15	1	0	0	0	0	-	-
Manchester	Kidney	210	184	17	7	0	2	0	3.4	-
	Liver	57	50	6	0	1	0	0	1.8	1.8
	Pancreas	25	24	1	0	0	0	0	-	-
Newcastle	Kidney	237	216	20	1	0	0	0	0.4	-
	Liver	46	39	6	1	0	0	0	2.2	-
	Pancreas	28	28	0	0	0	0	0	-	-
Oxford	Kidney	169	158	9	2	0	0	0	1.2	-
	Liver	53	46	5	2	0	0	0	3.8	-
	Pancreas	15	14	0	0	0	1	0	-	-
Royal Free	Kidney	137	123	12	1	1	0	0	1.5	0.7
	Liver	33	28	5	0	0	0	0	-	-
	Pancreas	11	10	1	0	0	0	0	-	-
<b>Total</b>	<b>Kidney</b>	<b>2295</b>	<b>2133</b>	<b>124</b>	<b>28</b>	<b>3</b>	<b>5</b>	<b>2</b>	<b>1.4</b>	<b>0.1</b>
	<b>Liver</b>	<b>594</b>	<b>505</b>	<b>75</b>	<b>12</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2.2</b>	<b>0.2</b>
	<b>Pancreas</b>	<b>236</b>	<b>217</b>	<b>10</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>1.7</b>	<b>0.9</b>

Note: 13 double kidney transplants counted each as one kidney throughout this report.

**Table 10** Cardiothoracic DBD organ damage as reported by RETRIEVING surgeon,  
1 April 2016 – 31 March 2018

Retrieval team	Organ	No. of organs	Damage reported by retrieving surgeon							
			None	Mild	Mod.	Sev.	Not reported	No RTI form	% mod/sev damage	% severe damage
Birmingham	Heart	60	58	0	0	0	1	1	-	-
	Lung	61	60	0	0	0	0	1	-	-
Glasgow	Heart	28	27	0	1	0	0	0	3.6	-
	Lung	32	30	1	1	0	0	0	3.1	-
Harefield	Heart	85	80	1	1	1	1	1	2.4	1.2
	Lung	74	71	1	0	0	0	2	-	-
Manchester	Heart	62	56	2	4	0	0	0	6.5	-
	Lung	72	68	3	1	0	0	0	1.4	-
Newcastle	Heart	46	40	0	0	0	1	5	-	-
	Lung	52	46	1	0	0	0	5	-	-
Papworth	Heart	78	76	0	0	0	1	1	-	-
	Lung	81	80	1	0	0	0	0	-	-
<b>Total</b>	<b>Heart</b>	<b>359</b>	<b>337</b>	<b>3</b>	<b>6</b>	<b>1</b>	<b>4</b>	<b>8</b>	<b>2.0</b>	<b>0.3</b>
	<b>Lung</b>	<b>372</b>	<b>355</b>	<b>7</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0.5</b>	<b>-</b>

Note: 14 heart lung block transplants counted each as one lung throughout this report. 287 lung pair transplants counted each as one lung throughout this report.

**Table 11** Cardiothoracic DCD organ damage as reported by RETRIEVING surgeon,  
1 April 2016 – 31 March 2018

Retrieval team	Organ	No. of organs	Damage reported by retrieving surgeon							
			None	Mild	Mod.	Sev.	Not reported	No RTI form	% mod/sev damage	% severe damage
Birmingham	Lung	16	16	0	0	0	0	0	-	-
Glasgow	Lung	4	1	0	0	0	0	3	-	-
Harefield	Lung	14	14	0	0	0	0	0	-	-
Manchester	Lung	12	11	0	1	0	0	0	8.3	-
Newcastle	Lung	12	11	0	0	0	0	1	-	-
Papworth	Lung	20	20	0	0	0	0	0	-	-
<b>Total</b>	<b>Lung</b>	<b>78</b>	<b>73</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>1.4</b>	<b>-</b>

Note: 68 lung pair transplants counted each as one lung throughout this report.



**Table 12 Organ damage as reported by retrieving surgeon against damage reported by receiving surgeon, 1 April 2016 – 31 March 2018**

Damage reported by retrieving surgeon	Damage reported by receiving surgeon									
	None		Mild		Moderate		Severe		Not reported	
	N	%	N	%	N	%	N	%	N	%
<b>Kidney</b>										
None	4397	97.3	326	77.8	258	77.5	52	76.5	201	90.5
Mild	92	2.0	75	17.9	44	13.2	10	14.7	11	5.0
Moderate	15	0.3	16	3.8	30	9.0	6	8.8	8	3.6
Severe	3	0.1	-	-	-	-	-	-	-	-
Not reported	13	0.3	2	0.5	1	0.3	-	-	2	0.9
<b>Liver</b>										
None	1657	92.1	95	71.4	94	72.9	7	77.8	103	86.6
Mild	113	6.3	35	26.3	24	18.6	1	11.1	11	9.2
Moderate	23	1.3	2	1.5	11	8.5	-	-	3	2.5
Severe	-	-	-	-	-	-	1	11.1	1	0.8
Not reported	7	0.4	1	0.8	-	-	-	-	1	0.8
<b>Pancreas</b>										
None	661	94.8	48	84.2	14	77.8	46	92.0	119	87.5
Mild	21	3.0	9	15.8	4	22.2	2	4.0	6	4.4
Moderate	3	0.4	-	-	-	-	1	2.0	3	2.2
Severe	-	-	-	-	-	-	1	2.0	1	0.7
Not reported	12	1.7	-	-	-	-	-	-	7	5.1
<b>Heart</b>										
None	1657	92.1	95	71.4	94	72.9	7	77.8	103	86.6
Mild	113	6.3	35	26.3	24	18.6	1	11.1	11	9.2
Moderate	23	1.3	2	1.5	11	8.5	-	-	3	2.5
Severe	-	-	-	-	-	-	1	11.1	1	0.8
Not reported	7	0.4	1	0.8	-	-	-	-	1	0.8
<b>Lung</b>										
None	347	96.7	15	83.3	20	80.0	-	-	46	97.9
Mild	4	1.1	1	5.6	2	8.0	-	-	-	-
Moderate	-	-	-	-	2	8.0	1	100.0	-	-
Severe	-	-	-	-	-	-	-	-	-	-
Not reported	8	2.2	2	11.1	1	4.0	-	-	1	2.1

Note: 21 double kidney transplants counted each as one kidney throughout this report. 14 heart lung block transplants counted each as one lung throughout this report. 355 lung pair transplants counted each as one lung throughout this report.