

**NHS BLOOD AND TRANSPLANT  
ORGAN DONATION AND TRANSPLANTATION DIRECTORATE**

**PANCREAS ADVISORY GROUP**

**ISLET TRANSPLANT ACTIVITY AND OUTCOME**

**INTRODUCTION**

- 1 Islet transplant data has been collected by NHSBT since the introduction of four transplant and follow-up forms in July 2010. Data were collected retrospectively for all transplants since 1 April 2008 to ensure a complete data set since the commissioning of islet transplantation in the UK.
- 2 The recent increase in transplant activity and the continued efforts to improve form return rates have contributed to a small, but emerging national islet transplant registry. This paper provides basic summaries of outcomes.

**DATA**

- 3 Data on 132 (86 routine and 46 priority) islet transplants performed in the UK where the routine transplant was performed between 1 April 2010 and 31 March 2015 were analysed from the UK Transplant Registry (UKTR). Outcome data are reported for all routine transplants. Where outcome data are unavailable from UKTR, data collected by the UKITC clinical research forms have been considered. This data has been provided by the Newcastle research group who collate and maintain the research data base.
- 4 All islet transplant outcome data reported are specific to the routine transplant.
- 5 The four key measures of islet transplant outcome are:
  - i. Graft function
  - ii. Reduction in HbA1c (mmol/mol)
  - iii. Reduction in annual rate of severe hypoglycaemic events
  - iv. Reduction in insulin dose

All outcomes are reported at one-year and three-years post routine transplant.

**Table 1 UK islet transplant activity between 1 April 2013 and 31 March 2016, by transplant type and financial year**

Transplant Centre	2013 - 2014						2014 - 2015						2015 - 2016					
	ITA	IAK	IAP	IAPK	Total		ITA	IAK	IAP	IAPK	Total		ITA	IAK	IAP	IAPK	Total	
					N	%					N	%					N	%
Newcastle	7 <sup>2</sup>	0	0	0	7	22	2 <sup>1</sup>	2	0	0	4	17	7	0	0	0	7	23
Royal Free	1 <sup>1</sup>	0	0	0	1	3	4 <sup>1</sup>	0	0	0	4	17	0	0	0	0	0	0
King's	4	0	0	0	4	13	0	0	0	0	0	0	1	0	0	0	1	3
Oxford	7	0	0	0	7	22	5	0	0	0	5	22	2	0	0	0	2	6
Bristol	0	0	0	0	0	0	1	0	0	0	1	4	1	0	0	0	1	3
Manchester	1	2	0	0	3	9	1	0	0	1	2	9	0	0	0	1	1	3
Edinburgh	9 <sup>1</sup>	1	0	0	10	31	6 <sup>1</sup>	0	0	1	7	30	18 <sup>3</sup>	1 <sup>1</sup>	0	0	19	61
<b>TOTAL</b>	<b>29</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>32</b>	<b>100</b>	<b>19</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>23</b>	<b>100</b>	<b>29</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>31</b>	<b>100</b>

ITA = Islet transplant alone    IAK = Islet after kidney    IAP = Islet after pancreas    IAPK = Islet after simultaneous kidney/pancreas  
<sup>1</sup> Includes 1 DCD transplant    <sup>2</sup> Includes 2 DCD transplants    <sup>3</sup> Includes 5 DCD transplants

**Table 2 UK islet transplant list, 31 March 2014 to 31 March 2016, by islet status and financial year**

Transplant Centre	31 March 2014				31 March 2015				31 March 2016			
	Routine	Priority	Total		Routine	Priority	Total		Routine	Priority	Total	
			N	%			N	%			N	%
Newcastle	6	0	6	18	4	2	6	17	1	4	5	18
Royal Free	1	0	1	3	0	0	0	0	0	0	0	0
King's	1	1	2	6	1	0	1	3	2	0	2	7
Oxford	0	2	2	6	4	0	4	11	5	0	5	18
Bristol	2	0	2	6	4	0	4	11	2	1	3	11
Manchester	9	1	10	30	2	1	3	8	1	1	2	7
Edinburgh	10	0	10	30	15	3	18	50	9	2	11	39
<b>TOTAL</b>	<b>29</b>	<b>4</b>	<b>33</b>	<b>100</b>	<b>30</b>	<b>6</b>	<b>36</b>	<b>100</b>	<b>20</b>	<b>8</b>	<b>28</b>	<b>100</b>

## RESULTS

- 1 **Table 1** shows the number of islet transplants performed by each centre in the UK for the last three calendar years between 1 April 2013 and 31 March 2016 by transplant type. **Table 2** shows the number of patients on the islet transplant list at 31 March 2014, 31 March 2015 and 31 March 2016 by islet status.
- 2 A Kaplan-Meier survival plot showing one-year graft survival is presented in **Figure 1**. Estimated one-year graft survival for routine only grafts is 78%, 95% CI (60 – 88) and for the routine and priority grafts is 96%, 95% CI (83-99). There were statistically significant differences between the two groups,  $p=0.01$ .
- 3 The median rate of severe hypoglycaemic events is presented in **Figure 2**. The median annual rate fell from 3 (IQ range: 0 to 34) at time of transplant, to none (IQ range 0 to 0) at both one-year and two-years post-transplant.
- 4 Fifty two patients, 75%, experienced no severe hypoglycaemic events during the first year following their routine transplant, whilst 16 patients experienced between 1 and 6 events. Of the 38 patients with recorded severe hypoglycaemia events at three years post-transplant, 28 (74%) had experienced no severe hypoglycaemia events during the year.
- 5 Median HbA1c is reported in **Figure 3**. Overall median HbA1c fell from 64mmol/mol (IQ range: 56 to 75) at time of transplant, to 52mmol/mol (IQ range: 43 to 58) at one year post-transplant. The median HbA1c at three years post-transplant was 54 (IQ range: 48 to 62.5).
- 6 Eleven patients, 13%, had HbA1c less than 53mmol/mol at time of transplant and 38 patients, 54%, had HbA1c less than 53mmol/mol at one-year post transplant. Of the 38 patients with HbA1c recorded at three years post-transplant, 16 (42%) had a HbA1c less than 53mmol/mol.
- 7 **Figure 4** shows the median insulin dose at transplant and 3 months, 6 months, one year, two years and three years post-transplant. The median insulin dose fell from 0.52 units/kg (IQ range: 0.35 to 0.60) at time of transplant to 0.30 units/kg (IQ range: 0.14 to 0.39) at 3 months post-transplant. This reduction in dose was maintained at one year, two years and three years post transplant (0.24 units/kg, 0.26 units/kg and 0.27 units/kg respectively).

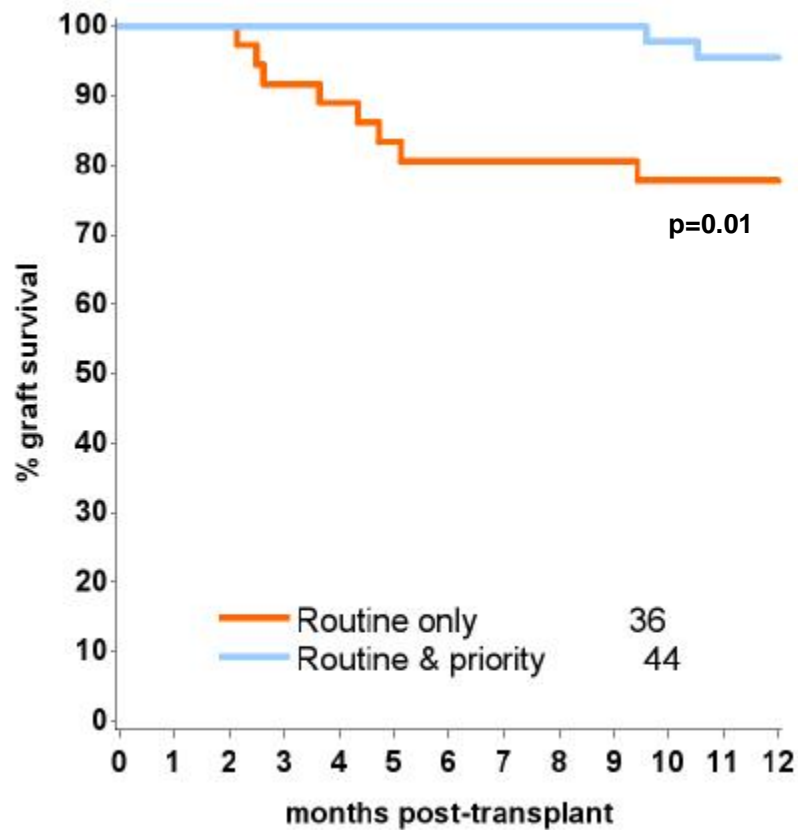
## SUMMARY

- 8 Graft function, reduction in rate of severe hypoglycaemic events, reduction in HbA1c and reduction in insulin dose at both one-year and three years post routine transplant have been reported.

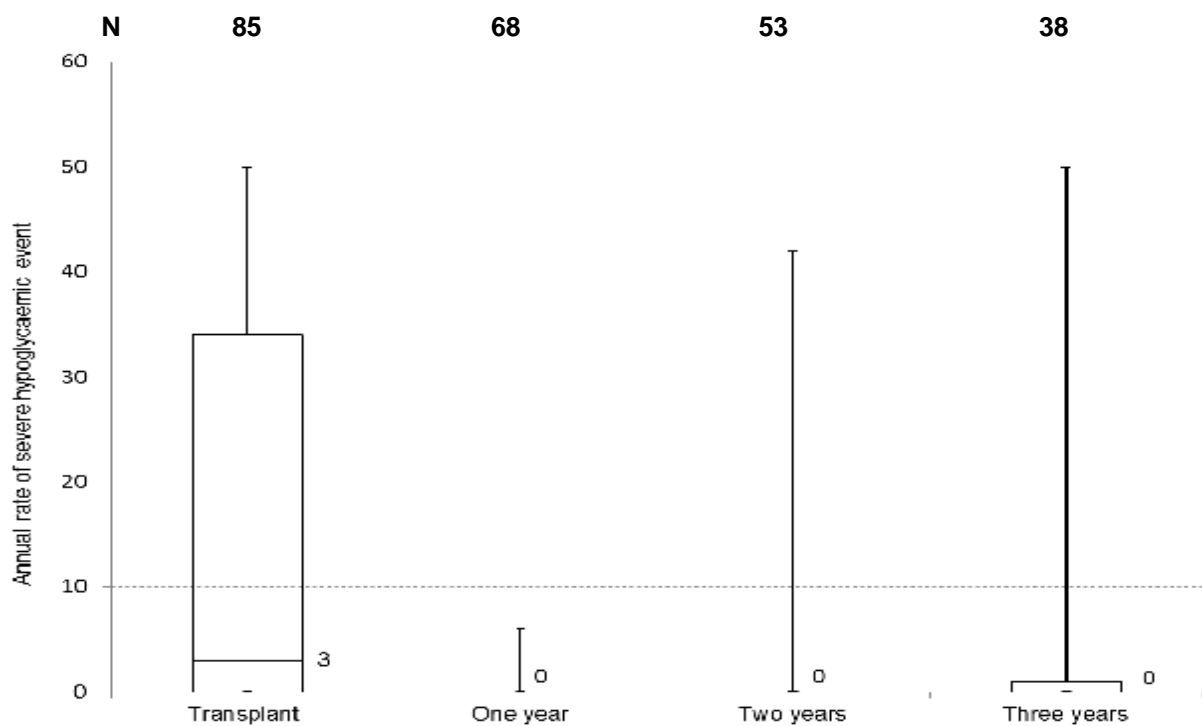
**Joanna Bunnett**  
**Statistics and Clinical Studies**

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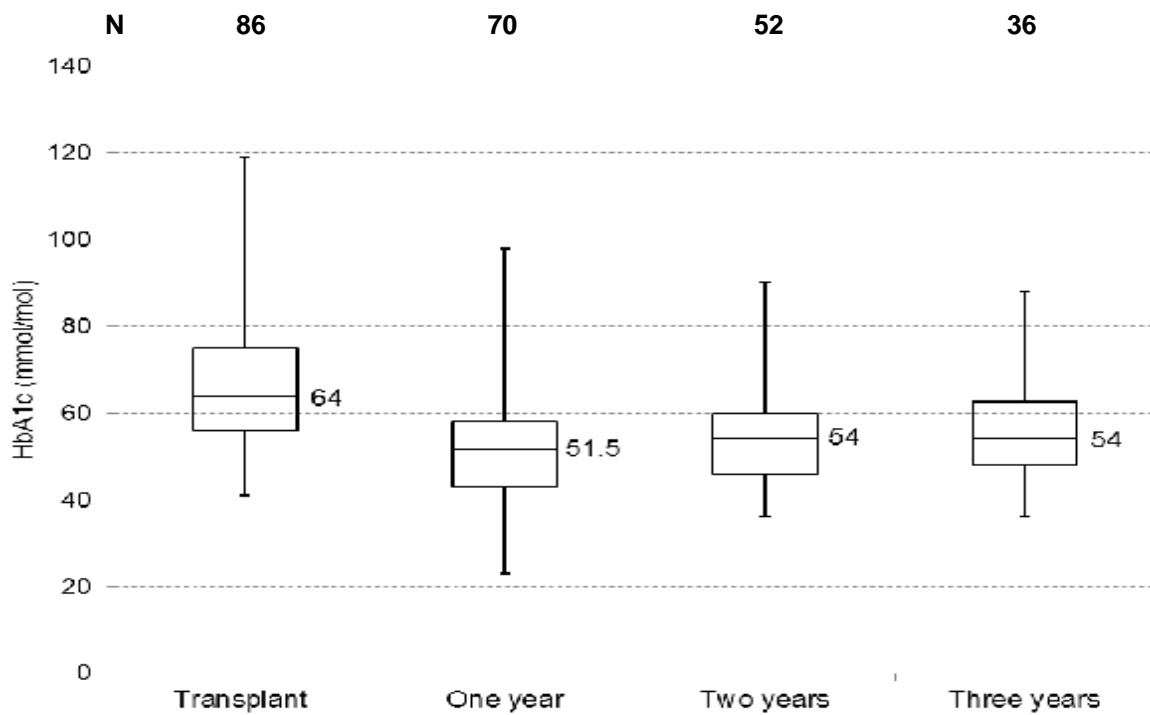
**Figure 1** One-year graft survival following islet transplant performed in the UK, 1 April 2010 – 31 December 2015



**Figure 2** Reduction in severe hypoglycaemic events three years post-transplant, 1 April 2010 – 31 March 2015



**Figure 3** Reduction in HbA1c three years post-transplant, 1 April 2010 – 31 March 2015



**Figure 4** Insulin dose three-years post-transplant, 1 April 2010 – 31 March 2015

