

NHS BLOOD AND TRANSPLANT**BOWEL ADVISORY GROUP****PERFORMANCE REPORT ON THE NATIONAL
BOWEL ALLOCATION SCHEME: JANUARY 2014 – DECEMBER 2014****SUMMARY****INTRODUCTION**

- 1 The National Bowel Allocation Scheme (NBAS) has been in operation in the UK since 22 July 2013. This paper presents data on all donor bowels offered through the NBAS and all intestine transplant candidates during the 12 month period, 1 January 2014 to 31 December 2014.

DATA ANALYSIS

- 2 During 2014, 301 donor bowels were offered through the NBAS and 23 (8%) were transplanted. The subset of potential bowel donors with the highest utilisation rate was those aged less than 16 years (31%) and 7 out of 8 bowels that were transplanted from this group were into paediatric recipients and 1 was into an adult recipient. It was not very common for transplanted bowels to be used in the patient that was ranked first in that matching run. Offering details indicate that offering is often restricted to just intestine transplant candidates that do not require a liver due to the liver being accepted for a high-priority Super-Urgent or Hepatoblastoma patient (even if it is later declined). This is a likely cause of fewer patients requiring a liver being transplanted compared with those not requiring a liver (63% versus 86% in the 2014 data).
- 3 There were 33 patients who were active on the intestine transplant list at any time during 2014; 19 adults and 14 paediatrics. 79% of adults and 64% of paediatrics had been transplanted by the end of 2014. There was one death on the list by the end of 2014 and this was a paediatric patient (7% of all paediatrics). In comparison, registration outcome data for patients on the active intestinal transplant list at any time during 2012, pre-NBAS, indicated transplantation rates of 60% for adults and 32% for paediatrics and mortality rates of 20% for adults and 4% for paediatrics, by the end of 2012. These figures suggest that the NBAS has led to more favourable registration outcomes, however other factors, as well as random variation, will have influenced these statistics.

ACTION

- 4 This paper is to provide information to the BAG on the performance of the NBAS.

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February 2015

NHS BLOOD AND TRANSPLANT

BOWEL ADVISORY GROUP

PERFORMANCE REPORT ON THE NATIONAL BOWEL ALLOCATION SCHEME: JANUARY 2014 – DECEMBER 2014

BACKGROUND

- 1 The National Bowel Allocation Scheme (NBAS) has been in operation in the UK since 22 July 2013, apart from a short period of suspension in early-Autumn 2013. This paper presents data on all donor bowels offered through the NBAS and all intestine transplant candidates during the 12 month period, 1 January 2014 to 31 December 2014.
- 2 The bowels of donors after brain death (DBD) aged ≤ 55 years and weighing ≤ 80 kg, with consent for bowel donation are considered for donation (Potential Bowel Donors: PBDs). When such a donor becomes available, a matching run is instigated whereby all blood group compatible patients who are active on the elective intestine transplant list are ranked according to a point score. This ranking determines the order by which organ offering is made. The score is based on several factors, including donor-recipient age matching, waiting time, loss of intravenous line access, liver failure, diagnosis of malignancy, in-hospital status, additional organs required and sensitisation (full details of the score calculation can be found in the NHSBT Intestinal Allocation Policy: http://odt.nhs.uk/pdf/intestinal_allocation_policy.pdf).
- 3 If a donor liver is accepted for a super-urgent liver patient then only those elective intestine patients not requiring a liver are considered in the NBAS matching run. If the donor liver and bowel are accepted for a super-urgent liver and intestine patient then the NBAS is not instigated. Between 1 January 2014 and 31 December 2014 there were no super-urgent liver and intestine patients and therefore this report does not consider this group any further.

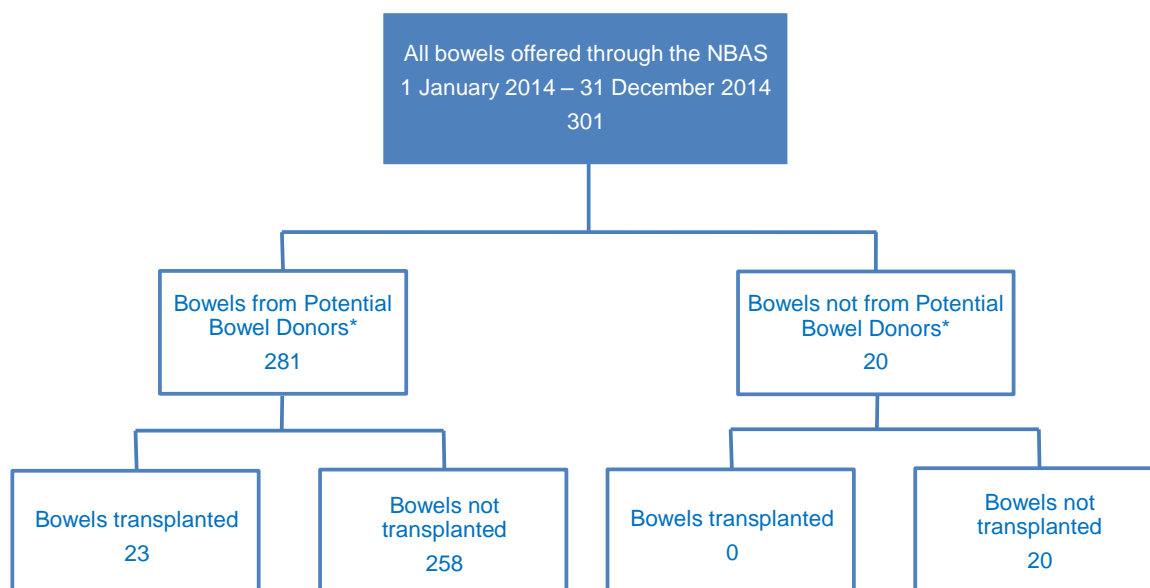
DATA AND METHODS

- 4 All donor bowels offered through the NBAS (including those offered from overseas) between 1 January 2014 and 31 December 2014 were analysed. Reasons for the decline of bowels that were offered but not transplanted were extracted.
- 5 Patients who were active on the elective intestine transplant list at any time between 1 January 2014 and 31 December 2014 were also analysed. NBAS matching run results and offering data were used to determine how many offers each patient had received and how often they had been ranked first in the scheme. Demographic and clinical details of these patients are provided for information.
- 6 The registration outcomes of patients who were on the active elective intestine transplant list at any time during 2014, at the end of 2014, were also investigated, as were corresponding data for 2012, before the NBAS was introduced, for comparison (data from 2013 was not considered due to the inconsistency in allocation rules during this period).

RESULTS

- 7 Between 1 January 2014 and 31 December 2014, 301 donor bowels were offered through the NBAS. The vast majority of these were from PBDs but a small number were from donors who weighed more than 80 kg, were older than 55 years, did not end up as DBDs or had no consent for bowel donation (none of these were transplanted). 9% of the 281 bowels from PBDs were transplanted. These data are summarised in **Figure 1**.

Figure 1 Bowels offered through the National Bowel Allocation Scheme, 1 January 2014 to 31 December 2014



* Potential DBD donors with age ≤ 55 years, weight ≤ 80 kg and consent for bowel donation

- 8 There were an additional 46 UK PBDs between 1 January 2014 and 31 December 2014 whose bowels were not offered. The main reasons reported for not offering were a lack of blood group compatible patients on the transplant list and donor history.
- 9 Demographics of the 281 PBDs whose bowels were offered through the NBAS, broken down by whether the bowel was transplanted or not and if so, into an adult or paediatric patient, are shown in **Table 1**. The subset of PBDs with the highest utilisation rate was those aged less than 16 years (31%) and 7 out of 8 bowels that were transplanted from this group were into paediatric recipients and 1 was into an adult recipient. Note that between 2011 and 2013, inclusive, there were 1 or 2 paediatric donor bowels transplanted into adult recipients per year.
- 10 The reasons reported for declining offers from the 258 bowels that were not transplanted are shown in **Appendix I** for adult centres and **Appendix II** for paediatric centres. The majority of offers declined by paediatric centres were due to donor size (89%) and the most common reasons for decline by adult centres were donor history (19%), size (19%) and virology (10%).

Table 1 Demographics of Potential Bowel Donors (PBDs)* whose bowels were offered through the National Bowel Allocation Scheme between 1 January 2014 and 31 December 2014

Donor demographics		All PBDs N	Bowels transplanted		
			All N	% of PBDs	Paediatric recipient N
Age (years)	0 - 15	26	8	31	7
	16 - 35	101	12	12	0
	36 - 55	122	3	2	1
	51 - 55	32	0	-	0
Blood group	O	142	15	11	5
	A	110	6	5	3
	B	25	2	8	0
	AB	4	0	-	0
Weight (kg)	≤30	16	7	44	6
	>30 - 50	18	2	11	1
	>50 - 80	247	14	6	1
BMI (kg/m ²)	≤18.5	28	7	25	6
	>18.5 - 25	171	16	9	2
	>25	82	0	-	0
Donor country	UK	251	21	8	6
	Overseas	30	2	6	2
Total		281	23	8	8

* Potential DBD donors with age ≤ 55 years, weight ≤ 80 kg and consent for bowel donation

- 11 There were 33 patients who were active on the intestine transplant list at any time between 1 January 2014 and 31 December 2014; 19 adults (58%) and 14 paediatrics (42%). Demographics and clinical indicators contributing to the NBAS for these patients are summarised by age group in **Table 2**. These data are presented on an individual patient level in **Appendix III (removed as patient specific)**, along with the number of times each patient was ranked first in a matching run, the number of offers declined on their behalf and their registration outcome as at the end of 2014.
- 12 The data in **Table 2** and **Appendix III (removed as patient specific)** show that there are some very long-waiting adult patients on the list (two patients registered before 2012 who have not been transplanted). These patients have a large number of waiting time points which is resulting in them being ranked at the top of most matching runs that they are included in.
- 13 The data in **Table 2** and **Appendix III (removed as patient specific)** also indicate that a slightly higher proportion of adults (79%) had been transplanted by the end of 2014 than paediatric patients (64%) and a lower proportion of patients requiring a liver (63%) had been transplanted than those not requiring a liver (86%).

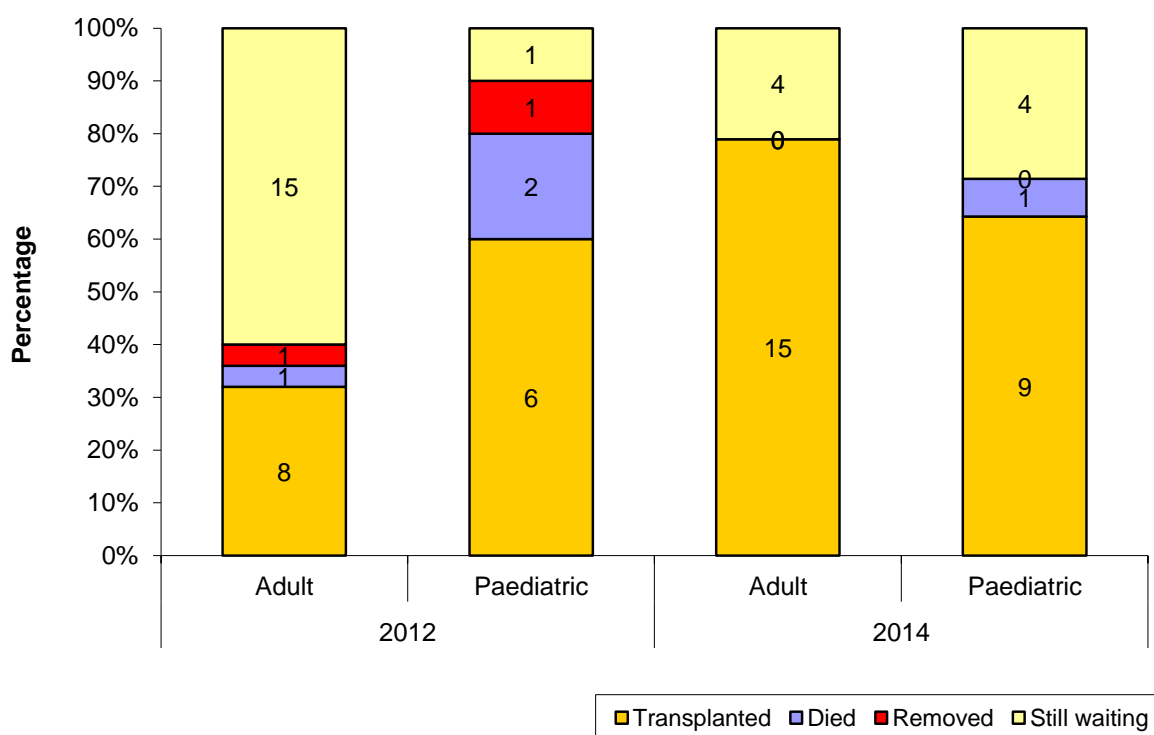
Table 2 Demographics and clinical indicators contributing to the National Bowel Allocation Scheme (NBAS) for patients who were active on the intestine transplant list at any time between 1 January 2014 and 31 December 2014

Patient demographics and clinical indicators contributing to the NBAS		Paediatric patients		(Txd by end-2014)	Adult patients		(Txd by end-2014)	All patients on the active list at any time in 2014		(Txd by end-2014)
		N	%	(N)	N	%	(N)	N	%	(N)
Age (years)	<18	14	100	(9)	0	0	(0)	14	42	(9)
	18-34	0	0	(0)	8	42	(7)	8	24	(7)
	35-49	0	0	(0)	6	32	(4)	6	18	(4)
	50+	0	0	(0)	5	26	(4)	5	15	(4)
Weight (kg)	≤35	13	93	(8)	0	0	(0)	13	39	(8)
	>35 - 50	1	7	(1)	3	16	(3)	4	12	(4)
	>50	0	0	(0)	16	84	(12)	16	48	(12)
Year of registration	2007	0	0	(0)	1	5	(0)	1	3	(0)
	2009	0	0	(0)	1	5	(0)	1	3	(0)
	2012	0	0	(0)	1	5	(1)	1	3	(1)
	2013	7	50	(4)	2	11	(2)	9	27	(6)
	2014	7	50	(5)	14	74	(12)	21	64	(17)
Blood group	O	7	50	(5)	9	47	(7)	16	48	(12)
	A	6	43	(4)	5	26	(5)	11	33	(9)
	B	1	7	(0)	4	21	(2)	5	15	(2)
	AB	0	0	(0)	1	5	(1)	1	3	(1)
Transplant type required*	BO	4	29	(3)	5	26	(4)	9	27	(7)
	LBP	6	43	(3)	0	0	(0)	6	18	(3)
	MV	4	29	(3)	9	47	(6)	13	39	(9)
	MMV	0	0	(0)	5	26	(5)	5	15	(5)
Loss of intravenous line access urgency points?	No	12	86	(8)	17	89	(14)	29	88	(22)
	Yes	2	14	(1)	2	11	(1)	4	12	(2)
Liver failure urgency points?	No	11	79	(8)	17	89	(14)	28	85	(22)
	Yes	3	21	(1)	2	11	(1)	5	15	(2)
Diagnosis of malignancy urgency points?	No	14	100	(9)	18	95	(14)	32	97	(23)
	Yes	0	0	(0)	1	5	(1)	1	3	(1)
In-hospital status urgency points?	No	7	50	(6)	11	58	(8)	18	55	(14)
	Yes	7	50	(3)	8	42	(7)	15	45	(10)
Sensitisation points?	No	12	86	(7)	16	84	(13)	28	85	(20)
	Yes	2	14	(2)	3	16	(2)	5	15	(4)
Total		14	100	(9)	19	100	(15)	33	100	(24)

* BO=Bowel Only, LBP=Liver, Bowel and Pancreas, MV=Multivisceral, MMV=Modified Multivisceral

- 14 **Figure 2** shows a comparison of the registration outcomes of the 33 patients who were active on the intestine transplant list at any time during 2014, as at 31 December 2014, with the registration outcomes of the 35 patients who were active on the intestine transplant list at any time during 2012, as at 31 December 2012, split by patient age group. In the adult group, 32% of the 25 patients in 2012 had been transplanted by the end of the year and 4% had died on the list, compared with 79% transplanted out of 19 in 2014 and none deceased. For paediatrics, 60% of the 10 patients in 2012 had been transplanted and 20% had died by the end of the year, compared with 64% transplanted of the 14 in 2014 and 7% deceased. Therefore, registration outcomes are more favourable in 2014, but this may be due to many factors, other than the introduction of the NBAS.

Figure 2 Registration outcomes at the end of the year for patients on the active elective intestine transplant list at any time between 1 January 2012 and 31 December 2012 and between 1 January 2014 and 31 December 2014, by patient age group



- 15 Overall, 24 (73%) of the 33 patients who were active on the intestine transplant list at any time during 2014 had been transplanted by the end of 2014. Details these patients and of the matching runs and offering that led to their transplants are shown in **Table 3 (removed as patient specific)**. The reason there is one additional transplant to the number shown in **Figure 1** is that one transplant occurred outside of the formal NBAS offering procedure (patient 13).

Appendix I **Reasons for the decline of bowel offers made to adult centres from Potential Bowel Donors* whose bowels were offered through the National Bowel Allocation Scheme but not transplanted, between 1 January 2014 and 31 December 2014**

Reason for decline	Centre				Total	
	Cambridge		Oxford			
	N	%	N	%	N	%
Donor reasons	220	67.9	75	58.6	295	65.3
History	76	23.5	11	8.6	87	19.2
Size	48	14.8	36	28.1	84	18.6
Donor unsuitable - virology	29	9.0	18	14.1	47	10.4
Poor function	31	9.6	3	2.3	34	7.5
Age	17	5.2	2	1.6	19	4.2
Infection	5	1.5	3	2.3	8	1.8
Cause of death	5	1.5	2	1.6	7	1.5
Medication	3	0.9	0	0.0	3	0.7
Clinical	2	0.6	0	0.0	2	0.4
Other disease	2	0.6	0	0.0	2	0.4
Donor arrested	1	0.3	0	0.0	1	0.2
Organ unsuitable for transplant	1	0.3	0	0.0	1	0.2
Other reasons	104	32.1	53	41.4	157	34.7
HLA/ABO type	13	4.0	17	13.3	30	6.6
Centre already retrieving/transplanting	27	8.3	2	1.6	29	6.4
Distance	12	3.7	3	2.3	15	3.3
Organ required not available	8	2.5	6	4.7	14	3.1
X-match positive	2	0.6	9	7.0	11	2.4
Centre criteria not achieved	10	3.1	0	0.0	10	2.2
No beds	0	0.0	10	7.8	10	2.2
Other	9	2.8	1	0.8	10	2.2
Logistics	9	2.8	1	0.8	10	2.2
No time	6	1.9	0	0.0	6	1.3
No suitable recipients	4	1.2	0	0.0	4	0.9
No beds/staff/theatre	0	0.0	2	1.6	2	0.4
Recipient unfit	1	0.3	1	0.8	2	0.4
Cold ischaemic time too long	0	0.0	1	0.8	1	0.2
Recipient did not need transplant	1	0.3	0	0.0	1	0.2
Transport difficulties	1	0.3	0	0.0	1	0.2
Zone team felt organ not viable	1	0.3	0	0.0	1	0.2
Total	324	100.0	128	100.0	452	100.0

* Potential DBD donors with age ≤ 55 years, weight ≤ 80 kg and consent for bowel donation

Appendix II **Reasons for the decline of bowel offers made to paediatric centres from Potential Bowel Donors* whose bowels were offered through the National Bowel Allocation Scheme but not transplanted, between 1 January 2014 and 31 December 2014**

Reason for decline	Centre				Total	
	Birmingham		King's College		N	%
	N	%	N	%		
Donor reasons	288	93.2	345	97.2	633	95.3
Size	262	84.8	327	92.1	589	88.7
History	10	3.2	14	3.9	24	3.6
Virology	8	2.6	1	0.3	9	1.4
Age	6	1.9	0	0.0	6	0.9
Poor function	1	0.3	2	0.6	3	0.5
Donor unstable	0	0.0	1	0.3	1	0.2
Infection	1	0.3	0	0.0	1	0.2
Other reasons	21	6.8	10	2.8	31	4.7
Recipient unfit	10	3.2	0	0.0	10	1.5
Other	5	1.6	3	0.8	8	1.2
Recipient did not need transplant	3	1.0	2	0.6	5	0.8
Distance	0	0.0	4	1.1	4	0.6
Organ required not available	2	0.6	0	0.0	2	0.3
Poor perfusion	1	0.3	0	0.0	1	0.2
No staff	0	0.0	1	0.3	1	0.2
Total	309	100.0	355	100.0	664	100.0

* Potential DBD donors with age \leq 55 years, weight \leq 80 kg and consent for bowel donation