

NHS BLOOD AND TRANSPLANT

BOWEL ADVISORY GROUP

PERFORMANCE REPORT OF THE NATIONAL BOWEL ALLOCATION SCHEME: JULY 2013 – FEBRUARY 2014

SUMMARY

INTRODUCTION

- 1 On 22 July 2013, an electronic scheme for allocating donor bowels to intestinal failure patients requiring a transplant in the UK was introduced (the National Bowel Allocation Scheme (NBAS)). Donors after brain death (DBD) aged ≤ 55 years and weighing ≤ 80 kg, with consent for bowel donation, who donated at least one organ in the UK are considered potential bowel donors (PBDs). When such a donor becomes available a matching run is instigated whereby intestinal failure patients listed for transplantation are ranked according to the rules of the NBAS.
- 2 On 28 August 2013 the electronic allocation scheme was suspended due to identification of a system error. The allocation of bowels was reverted back to the previous manual scheme based on waiting time only, until 30 October when a fix to the NBAS was implemented. This paper presents some initial findings from the period between 22 July 2013 and 28 February 2014 when the NBAS was in operation.

DATA ANALYSIS

- 3 Between 22 July 2013 and 28 February 2014, excluding the period 29 August - 30 October 2013, there were 127 PBDs. The bowels of three of these donors were accepted for super-urgent intestinal failure patients. In 102 cases (82%) of the 124 remaining PBDs, an elective intestinal failure matching run was instigated. This led to patient offering in 94 instances (92%), which, in 22 cases (23%), took place without the liver because the liver was accepted for a super-urgent liver patient.
- 4 Six of the 94 bowels from PBDs that were offered through the NBAS were accepted and transplanted and an additional liver only intestinal failure transplant was achieved through the NBAS. Generally speaking, donor bowels were not accepted for top ranked patients in the electronic scheme.

ACTION

- 5 No comparison between pre- and post- introduction of the NBAS has been made in this paper due to the short amount of time that has elapsed. By the Autumn BAG meeting there should be sufficient data to allow for comparisons. Members are requested to indicate whether either of the regular papers produced for the Autumn meeting (Summary of Registrations and Transplant Activity and Potential Bowel Donors and Location) should be re-structured to assess whether the NBAS has had any effect on intestinal organ offering and transplant activity in the UK.

Sally Rushton
March 2014

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BACKGROUND

- 1 On 22 July 2013, an electronic scheme for allocating donor bowels to intestinal failure patients requiring a transplant in the UK was introduced (the National Bowel Allocation Scheme (NBAS)). On this date, an electronic system for offering livers to super-urgent liver patients, based solely on waiting time, was also implemented and super-urgent intestinal failure patients requiring a liver and a bowel were incorporated into this system.
- 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. When such a donor becomes available, if there are no suitable super-urgent patients, a matching run is instigated whereby all blood group compatible patients who are active on the elective intestinal failure list are ranked according to a point score. This ranking determines the order by which organ offering is made. This 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). If the donor liver is accepted for a super-urgent liver patient then only those elective intestinal failure patients not requiring a liver are considered in the matching run. If the donor liver and bowel are accepted for a super-urgent intestinal failure patient then no elective matching run is implemented.
- 3 In August 2013 an error was identified with the calculation of waiting time points for these allocation schemes in instances where a patient is relisted for a second or subsequent transplant of these types. It was shown that no patient was unfairly disadvantaged as a result of this error but on 28 August 2013 these electronic schemes were suspended to safeguard against the potential for misallocation. After rectification of the error and substantial system testing these schemes went live again on 30 October 2013, after agreement from the Bowel Advisory Group. Between 28 August and 30 October 2013, allocation was performed manually for these patient groups and was based only on blood group compatibility and waiting time.
- 4 This paper presents some initial findings from the period between 22 July 2013 and 28 February 2014 when the NBAS was in operation.

DATA

- 5 Matching run results from the NBAS and bowel offering data were extracted from the UK Transplant Registry (UKTR) on 27 March 2014, for the period 22 July 2013 to 28 February 2014, excluding the period 29 August - 30 October 2013. These sources were analysed primarily for potential bowel donors (PBDs). PBDs were defined as DBD donors aged ≤ 55 years and weighing ≤ 80 kg, with consent for bowel donation, who donated at least one organ for the purposes of transplantation in the UK.
- 6 Patients who required an intestinal failure transplant and who received an intestinal failure transplant between 22 July 2013 and 28 February 2014, excluding the period 29 August - 30 October 2013, were also extracted from the UKTR.
- 7 No comparison was made in this paper between a period of time before 22 July 2013 when the old, manual allocation scheme was used for intestinal failure patients and the period during which the NBAS was in operation. It was felt that not enough time has elapsed during which the NBAS has been consistently applied for any results to be meaningful.

RESULTS

- 8 Between 22 July 2013 and 28 February 2014, excluding the period 29 August - 30 October 2013, there were 127 PBDs. The bowels of three of these donors were accepted for super-urgent intestinal failure patients. In 102 cases (82%) of the 124 remaining PBDs, an elective intestinal failure matching run was instigated. This led to patient offering in 94 instances (92%), which, in 22 cases (23%), took place without the liver because the liver was accepted for a super-urgent liver patient. In the cases where a matching run was not instigated or a matching run was instigated but no offering took place the donor was deemed unsuitable for bowel donation.
- 9 Elective intestinal failure matching runs were instigated for 98 other donors in the time period, in addition to the 127 PBDs above. Twenty four of these runs led to patient offering but these offers were declined in all instances (these donors were either outside of the donor criteria for bowel donation, were from overseas or did not end up donating any organs for the purposes of transplantation in the UK).
- 10 **Table 1** summarises the 94 PBDs whose bowels were offered through the NBAS. Six of these bowels (6%) were accepted and transplanted. Details of these transplants and the offering sequence are shown in **Table 2**. Note that there was an additional liver only intestinal failure transplant in the time. This patient was ranked second in the bowel matching run and the left lobe was accepted. The bowel was declined for the top ranked patient on size and was not offered on as all remaining patients required a liver.
- 11 Twenty eight patients required an elective intestinal failure transplant between 22 July 2013 and 28 February 2014, excluding the period 29 August - 30 October 2013. Twenty five of these patients were included in at least one of the 94 matching runs that led to offering, from the PBDs in the time period. Of these 25 patients, 11 were ranked first at least once. Details of these 11 patients and the matching runs they were included in are shown in **Table 3**.

ACTION

- 12 By the Autumn BAG meeting there should be sufficient data to allow for comparisons between pre- and post- introduction of the NBAS. Members are requested to indicate whether either of the regular papers produced for the Autumn meeting (Summary of Registrations and Transplant Activity and Potential Bowel Donors and Location) should be re-structured to assess whether the NBAS has had any effect on intestinal organ offering and transplant activity in the UK.

Sally Rushton
Statistics and Clinical Studies

March 2014

Table 1 Demographics of PBDs¹ whose bowel was offered through the NBAS between 22 July 2013 and 28 February 2014 (excluding 29 August – 30 October 2013)

Donor demographics		No. donors N	Bowels transplanted	
			N	%
Blood group	O	44	4	9
	A	40	1	3
	B	10	1	10
	AB	0	0	-
Weight (kg)	≤50	7	2	29
	>50-80	87	4	5
Age (years)	0-15	7	1	14
	16-35	24	3	13
	36-55	51	2	4
	51-55	12	0	0
Total		94²	6	6

¹ DBD donors aged ≤ 55 years and weighing ≤ 80 kg, with consent for bowel donation, who donated at least one organ in the UK

² Includes one donor whose left liver lobe was transplanted into a liver only intestinal failure patient. This patient was offered to through the NBAS.

Table 2 Details of the six transplants resulting from the 94 PBDs¹ whose bowels were offered through the NBAS between 22 July 2013 and 28 February 2014 (excluding 29 August – 30 October 2013)

Transplant number	Transplant unit	Transplant type	Recipient age group	Recipient blood group	Rank position in matching run that led to their transplant	Offering details
1	Cambridge	Bowel only	Adult	B	3rd of 3	Birmingham had first two ranked patients but declined for both on size (donor weight 50 kg)
2	Oxford	Bowel only	Adult	O	4th of 13	Cambridge had first three ranked patients but declined for all on size (donor weight 65 kg)
3	Cambridge	Multivisceral	Adult	O	5th of 13	Cambridge declined for top ranked patient as donor not suitable, Birmingham declined for second ranked patient on size, Cambridge received offers for next three ranked patients and accepted for the third ranked patient
4	Cambridge	Bowel only	Adult	B	1st of 2	Bowel offered without liver (as taken for super-urgent recipient) and accepted on first offer
5	Cambridge	Liver, bowel and pancreas	Adult	B	4th of 9	Cambridge declined for top ranked patient as donor not suitable, Birmingham declined for second ranked patient on size, Cambridge accepted for third ranked patient but then declined as recipient unfit so used in fourth ranked patient
6	Cambridge	Modified multivisceral	Adult	A	1st of 1	Bowel offered without liver (as taken for hepatoblastoma recipient) and accepted on first offer

¹ DBD donors aged ≤ 55 years and weighing ≤ 80 kg, with consent for bowel donation, who donated at least one organ in the UK

Table 3 Top ranking patients in the 94 matching runs between 22 July 2013 and 28 February 2014 (excluding 29 August – 30 October 2013) using PBDs¹

Patient number	No. times patient was ranked first	Average no. competing patients over runs where patient ranked first	Patient age group	Transplant type required	Patient transplanted as at 27 March 2014?
1	27	3	Paediatric	Liver, bowel and pancreas	No
2	25	10	Adult	Multivisceral	No
3	9	1	Paediatric	Liver, bowel and pancreas	No
4	9	4	Adult	Modified multivisceral	Yes, after being included in 14 matching runs using PBDs
5	7	3	Adult	Modified multivisceral	No
6	5	5	Paediatric	Liver only	Yes, after being included in 9 matching runs using PBDs
7	4	1	Adult	Modified multivisceral	Yes, after being included in 26 matching runs using PBDs
8	3	3	Paediatric	Bowel and pancreas	No
9	2	2	Paediatric	Bowel only	Yes, during the period when the NBAS was not in operation
10	2	1	Paediatric	Bowel only	No
11	1	3	Paediatric	Multivisceral	No

¹ DBD donors aged ≤ 55 years and weighing ≤ 80 kg, with consent for bowel donation, who donated at least one organ in the UK