

NHS BLOOD AND TRANSPLANT
MULTI-VISCERAL AND COMPOSITE TISSUE ADVISORY GROUP
POTENTIAL BOWEL DONORS

SUMMARY

BACKGROUND

- 1 Potential donors after brain death (DBD) who meet the following criteria are considered for bowel donation:
 - Age < 56 years
 - Weight < 80 kg
- 2 Potential bowel donors were defined as DBD donors who donated at least one solid organ for the purpose of transplantation, who met the criteria for bowel donation and whose family gave consent for bowel donation. This paper examines the pathway from identification of potential bowel donors to transplantation of the bowel and the points at which potential bowel donors are “lost”.

KEY MESSAGES

- 3 The last financial year, 2018/19, was analysed. In this period there were 961 UK DBD donors, of which 308 (32%) met the criteria for bowel donation. Of these, consent for bowel donation was given in 254 (82%) donors and the bowels of 166 (65%) were offered to intestinal transplant centres. 19 (11%) of those offered were accepted for transplantation.
- 4 Over the past three financial years, the number of DBD donors has increased by 16%, but the increase was mainly in those not meeting the potential bowel donor criteria. Nonetheless there was an 11% increase in those meeting the bowel donor criteria from 277 in 2016/17 to 308 in 2018/19. The offered rate fell in 2018/19 due to the implementation of maximum donor weight criteria, however this did not affect the transplanted rate (11% of those offered in 2018/19 compared to 7% in 2016/17).
- 5 Of the 147 bowels that were offered and declined, only 6 (4%) were from donors weighing < 50 kg which were declined for a variety of reasons. Of the 308 donors meeting the potential bowel donor criteria, 11 (4%) weighed less than 30 kg. Four of these particularly small potential donors were not offered, four were offered and declined, and three were offered, accepted and the bowel was transplanted.
- 6 There were 12 non-UK donors offered to the UK for bowel donation in 2018/19 and in 11 cases, only the bowel was available. Two were not offered to centres due to lack of availability of other organs required for the patients listed and none were accepted for transplant.

ACTION

- 7 Members are asked to note these results and discuss any actions required.

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BACKGROUND

- 1 Potential donors after brain death (DBD) who meet the following criteria are considered for bowel donation:
 - Age < 56 years
 - Weight < 80 kg
- 2 This paper examines the pathway from identification of potential bowel donors to transplantation of the bowel and the points at which potential bowel donors are “lost”. Small potential bowel donors (weight < 50 kg) are examined in more detail as these have the greatest potential. The geographical distribution of potential bowel donors is also examined.

DATA AND METHODS

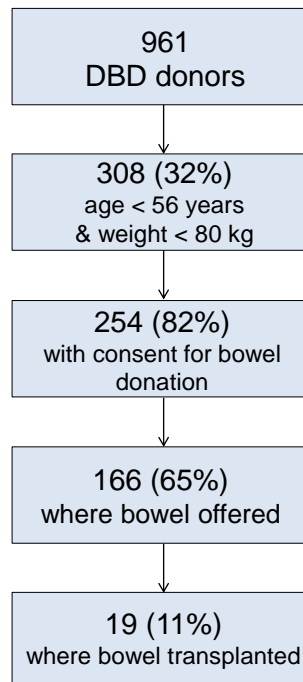
- 3 Potential bowel donors were defined as DBD donors who donated at least one solid organ for the purposes of transplantation, who met the criteria for bowel donation and whose family gave consent for bowel donation.
- 4 Data on 961 DBD donors who died in the UK between 1 April 2018 and 31 March 2019 were extracted from the UK Transplant Registry (UKTR) on 20 September 2019. Data from the previous two years were also extracted for comparison.
- 5 Reasons for the non-use of bowels from potential bowel donors were analysed. The reasons were reported by NHS Blood and Transplant Hub Operations or Specialist Nurses in Organ Donation in cases where no offering took place and by the centres themselves in cases where offering did take place. Donors were classed as not having consent for bowel donation if the reason recorded for non-use was that the family refused consent or consent was not sought for that organ.
- 6 Data on bowel offers to the UK from non-UK donors between 1 April 2018 and 31 March 2019 were also extracted from the UKTR. The outcome of these offers, along with other organs available are presented.

RESULTS

The pathway to bowel donation

- 7 Of the 961 DBD donors in the time period, 308 (32%) met the criteria for bowel donation. Of these, consent for bowel donation was gained from the donor family in 254 cases (82%). Of these 254 potential bowel donors, the bowels of 166 (65%) were offered to intestinal transplant centres and 19 (11%) bowels were transplanted. A flow diagram of this pathway is shown in **Figure 1**. An equivalent figure for donors aged <18 years is shown in **Appendix I**.

Figure 1 Flow diagram of the pathway from DBD donors during 2018/19 to bowel donors



- 8 These rates are compared with the corresponding rates in the previous two financial years and presented in **Figure 2** and **Table 1**. The consent rate has fallen over the time period (from 86% to 82%). An equivalent figure and table just for donors aged <18 years is shown in **Appendix II** and **Appendix III** respectively.
- 9 The number of DBD donors has increased by 16% since 2016/17, and the proportion not meeting the potential bowel donor criteria has increased slightly from 67% to 68%. As a result, the number meeting the criteria has increased by 11% from 277 in 2016/17 to 308 in 2018/19. The consent rate was lower in 2018/19 compared with 2016/17, and the offering rate was relatively low (65% compared to 81% in 2016/17).
- 10 In March 2018, a change was implemented to bowel offering meaning recipients would not appear on the matching run for a donor if the donor's weight was greater than the maximum donor weight specified on the recipient's registration form. This has increased the number of occasions where no recipients appeared on the matching run, resulting in the low offering rate for 2018/19. This has also meant a drop in the number of offers to paediatric patients as they are no longer being offered inappropriately sized donors.

Figure 2 The pathway from DBD donors between 1 April 2016 and 31 March 2019 to bowel donors, by financial year

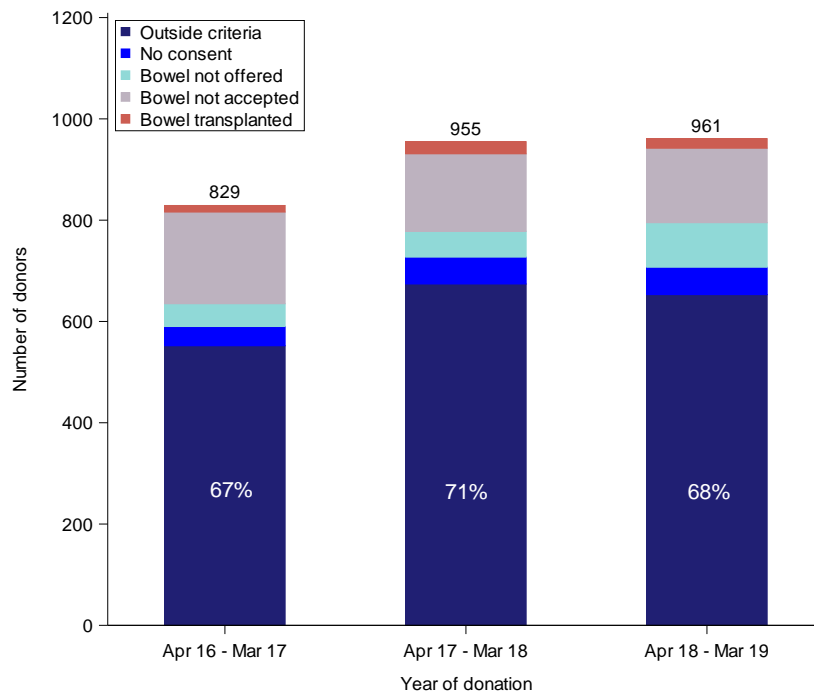


Table 1 The pathway from DBD donors between 1 April 2016 and 31 March 2019 to bowel donors, by financial year

		Financial year		
		2016/17	2017/18	2018/19
DBD donors	N	829	955	961
Met criteria for bowel donation (age < 56 years & weight < 80 kg)	N	277	281	308
	% of previous	33	29	32
Consent given for bowel donation	N	239	228	254
	% of previous	86	81	82
Bowel offered	N	194	177	166
	% of previous	81	78	65
Bowel transplanted	N	13	24	19
	% of previous	7	14	11

Potential bowel donors

- 11 The reasons for not offering the bowels of 88 potential bowel donors between 1 April 2018 and 31 March 2019 are presented in **Table 2**. The most common reasons given were no suitable recipients on the list for that donor (61%) and donor history (18%).

Reasons for not offering	Donor bowels not offered	
	N	%
Donor reasons		
History	16	18
Poor function	5	6
Age ¹	2	2
Logistical reasons		
No suitable recipients ²	54	61
Other organs required were not available ³	5	6
Permission refused by coroner	5	6
Donor type ⁴	1	1
Total	88	100
¹ Ages of these donors were 52 years, 55 years ² Blood group or HLA incompatible ³ For example liver accepted for super-urgent liver recipient and no blood group compatible intestinal recipients not requiring a liver ⁴ Donor started as DCD but proceeded as DBD after offering began		

- 12 The total number of patient specific offers associated with the 166 donor bowels that were offered was reported to be 236, with adult centres receiving 217 (92%) of the offers and paediatric centres receiving 19 (8%). Adult centres accepted and transplanted 16 donor bowels (7% of offers made to them) and paediatric centres accepted and transplanted 3 donor bowels (16% of offers made to them).

Small potential bowel donors (< 50 kg)

- 13 Of the 147 bowels that were offered and declined, 6 (4%) were from donors weighing < 50 kg. The details of why these bowels were not used are shown in **Table 3 (removed as patient specific)**.

Particularly small potential bowel donors (< 30 kg)

- 14 Of the 308 donors who met criteria for bowel donation, 11 (4%) were less than 30kg. Four were not offered: two did not have family consent for bowel donation, one did not have coroner consent, and one was not offered due to past history. Four were offered and declined (donors 1, 3, 4, and 6 in **Table 3**), and three were offered and the bowel was transplanted.

Large potential bowel donors (≥ 50 kg and < 80 kg)

- 15 The 141 declined bowels from donors who weighed ≥ 50 kg corresponded to 6 paediatric offers and 191 adult offers. Paediatric centres declined on size and other donor reasons. The most common reasons for decline cited by adult centres were donor virology (20%) and donor history (20%).

Organs transplanted from potential bowel donors

16 **Table 4** shows summary statistics on the 166 potential bowel donors where bowel offering occurred, by whether the liver, pancreas, or bowel was transplanted. Note that these are not mutually exclusive groups. Note also that those livers that went to super-urgent liver only recipients have been shown for additional information. 152 (92%) livers and 61 (37%) pancreases were transplanted compared with just 19 (11%) bowels. 27 of the livers that were transplanted were used in super-urgent liver only recipients but these were from the heavier donors.

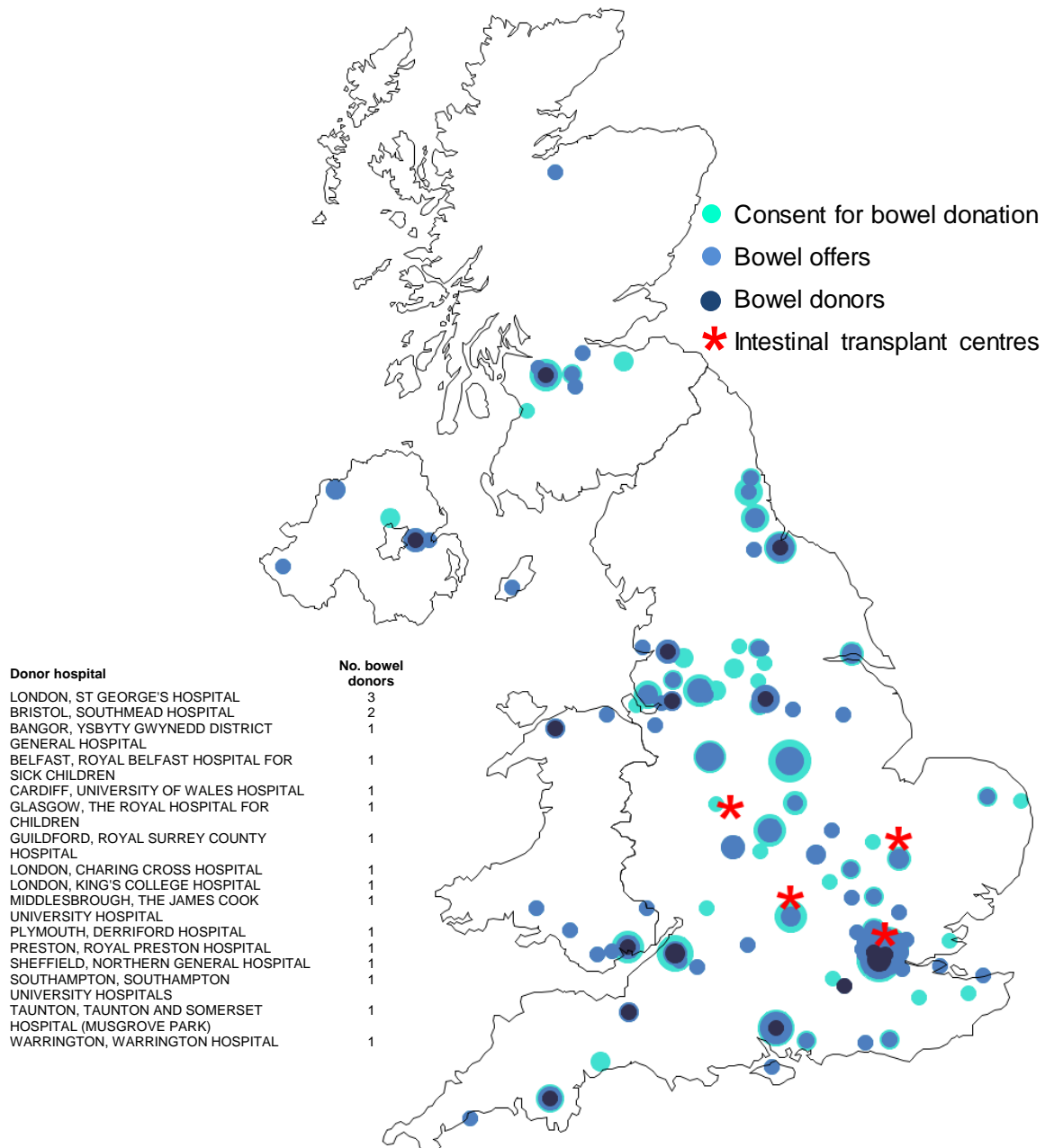
	No. donors N	Liver		Organs transplanted (Liver only super-urgent transplants)* (N) (% of donors)		Pancreas		Bowel	
		N	% of donors	N	% of donors	N	% of donors	N	% of donors
Donor blood group									
O	96	92	95.8	(21)	(21.9)	35	36.5	12	12.5
A	60	51	85.0	(5)	(8.3)	23	38.3	6	10.0
B	8	7	87.5	(1)	(12.5)	3	37.5	1	12.5
AB	2	2	100.0	(0)	(0.0)	0	0.0	0	0.0
Donor weight (kg)									
<20	7	2	28.6	(0)	(0.0)	2	28.6	3	42.9
20-<35	1	1	100.0	(0)	(0.0)	1	100.0	1	100.0
35-<50	4	4	100.0	(0)	(0.0)	3	75.0	2	50.0
50-<80	154	145	94.2	(27)	(17.5)	55	35.7	13	8.4
Donor BMI (kg/m²)									
<18.5	20	14	70.0	(2)	(10.0)	8	40.0	5	25.0
18.5-<25	100	93	93.0	(18)	(18.0)	41	41.0	13	13.0
25+	46	45	97.8	(7)	(15.2)	12	26.1	1	2.2
Donor age (years)									
0-15	13	8	61.5	(0)	(0.0)	7	53.9	6	46.2
16-35	53	51	96.2	(12)	(22.6)	25	47.2	8	15.1
36-50	66	62	93.9	(11)	(16.7)	22	33.3	5	7.6
51-55	34	31	91.2	(4)	(11.8)	7	20.6	0	0.0
Total	166	152	91.6	(27)	(16.3)	61	36.8	19	11.5

* This is a subset of the "Liver" column, showing those that were transplanted into super-urgent liver only recipients

Location of potential bowel donors

17 **Figure 3** shows the location of the 254 potential bowel donors (those meeting the criteria and with consent) during the time period, using the location of the donor hospital. Overlaid on the potential bowel donors (●) are the donors where bowel offering occurred (●) and overlaid on those are the donors where the bowel was transplanted (●). See **Appendix IV** for a comparison of the geographical distribution of liver offers and bowel offers.

Figure 3 Geographical distribution of potential bowel donors during 2018/19



- 18 **Table 5** shows the distribution of the 254 potential bowel donors with consent for both bowel and liver donation by Organ Donation Services Team, with the number of these donors who had the liver and bowel offered. Of the 254 donors, 248 (98%) had the liver offered and 166 (65%) had the bowel offered.

Organ Donation Services Team	No. donors	Livers offered		Bowels offered	
		N	%	N	%
A	18	17	94	11	61
B	44	43	98	37	84
C	24	26	96	15	56
D	32	31	97	20	63
E	17	16	94	9	53
F	10	10	100	8	80
G	17	17	100	9	53
H	20	20	100	12	60
I	21	20	95	15	71
J	10	10	100	8	80
K	19	19	100	11	58
L	19	19	100	11	58
Total	254	248	98	166	65

Non-UK offers

- 19 In 2018/19, there were 12 bowel offers to the UK from non-UK donors, with none progressing to transplant. **Table 6** summarises what was offered and the outcome.

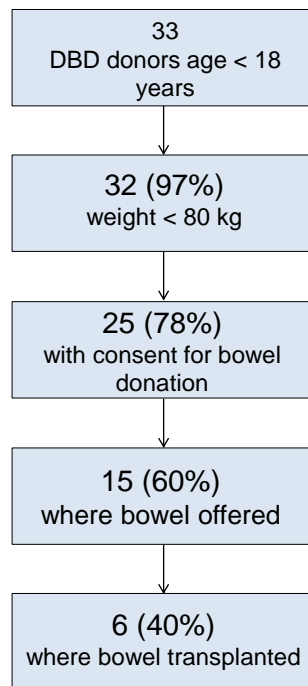
Table 6 Details of 12 non-UK donors where the bowel was offered to the UK in 2018/19

Donor	Donor country	Blood group	Organs available	Offered to centres	Outcome	Reason for non-use/Organs transplanted
1	Europe ¹	A	Bowel only	Yes	Not accepted	Declined by King's College on weight
2	Europe ¹	O	Bowel only	Yes	Not accepted	Declined by Oxford on logistics
3	Europe ¹	A	Bowel only	No	Not accepted	Recipients on matching run required other organs
4	Europe ¹	B	Bowel only	Yes	Not accepted	No response from centres
5	Europe ¹	A	Bowel only	Yes	Not accepted	Declined by Birmingham on size, declined by Cambridge and King's College due to no suitable recipients
6	Switzerland	A	Bowel and pancreas	Yes	Not accepted	Birmingham declined on size
7	Europe ¹	O	Bowel only	No	Not accepted	Recipients on matching run required other organs
8	Europe ¹	O	Bowel only	Yes	Not accepted	Birmingham declined on logistics
9	Europe ¹	O	Bowel only	Yes	Not accepted	Birmingham declined on logistics
10	Europe ¹	A	Bowel only	Yes	Not accepted	Initially accepted by Birmingham but declined on logistics. King's College declined on logistics.
11	Switzerland	A	Bowel only	Yes	Not accepted	Oxford declined on unknown CMV status
12	Europe ¹	A	Bowel only	Yes	Not accepted	Birmingham declined on size

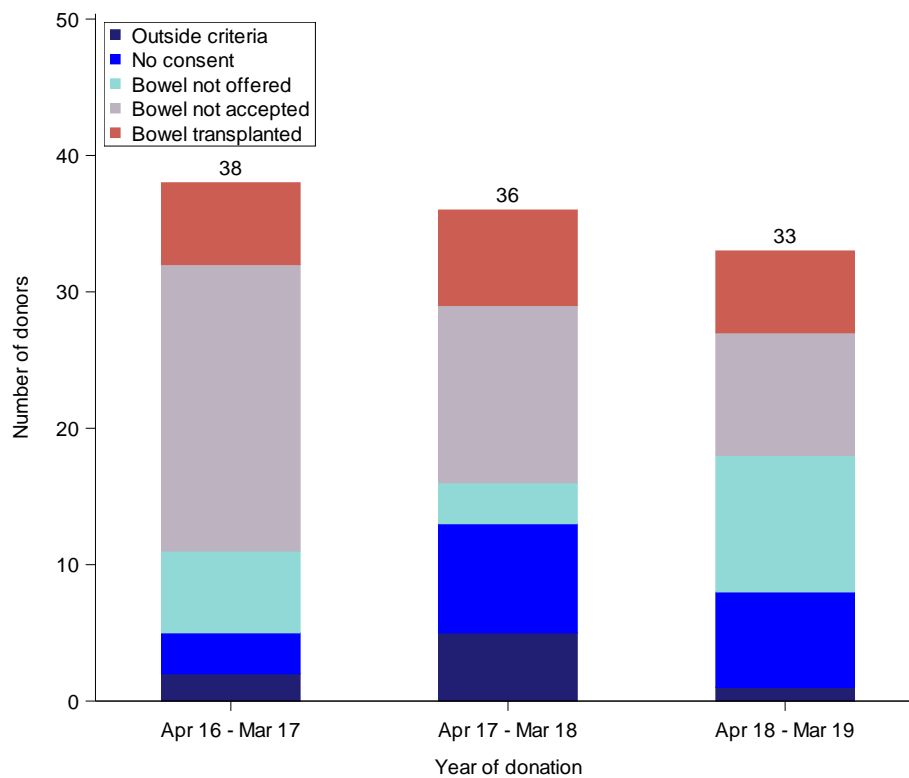
¹ Exact country of donor is not known

APPENDIX

Appendix I Flow diagram of the pathway from DBD donors aged < 18 years during 2018/19 to bowel donors



Appendix II The pathway from DBD donors aged <18 years between 1 April 2016 and 31 March 2019 to bowel donors, by financial year



Appendix III The pathway from DBD donors aged < 18 years between 1 April 2016 and 31 March 2019 to bowel donors, by financial year

		Financial year		
		2016/2017	2017/2018	2018/2019
DBD donors	N	38	36	33
Met criteria for bowel donation (weight < 80 kg)	N	36	31	32
	% of previous	95	86	97
Consent given for bowel donation	N	33	23	25
	% of previous	92	74	78
Bowel offered	N	27	20	15
	% of previous	82	87	60
Bowel transplanted	N	6	7	6
	% of previous	22	35	40

Appendix IV Geographical comparison of liver offers and bowel offers from DBD donors during 2018/19 using location of donor hospitals (note that the bowel offers are restricted to donors meeting the criteria for bowel donation while there is no restriction on the liver offers)

