

**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, 2017/18, was analysed. In this period there were 955 UK DBD donors, of which 281 (29%) met the criteria for bowel donation. Of these, consent for bowel donation was given in 231 (82%) donors and the bowels of 176 (76%) were offered to intestinal transplant centres. 24 (14%) of those offered were accepted for transplantation.
- 4 Over the past two financial years, the number of DBD donors has increased by 22%, 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 253 in 2015/16 to 281 in 2017/18. The conversion from offered to transplanted was higher in 2017/18 than previous years, however the consent rate was highest during 2016/17.
- 5 Of the 152 bowels that were offered and declined, only 9 (6%) were from donors weighing < 50 kg of which most were declined on size. Of the 281 donors meeting the potential bowel donor criteria, 9 (3%) weighed less than 30 kg, with 6 having consent for bowel donation. Five of these 6 donors were accepted and the bowel transplanted.
- 6 There were 7 non-UK donors offered to the UK for bowel donation in 2017/18 and in 5 cases, only the bowel was available. Three were not offered to centres due to lack of availability of other organs required for the patients listed. Of the 4 offered to centres, 1 had no response, 2 were initially accepted but later declined before retrieval, and 1 (without organ restrictions) was accepted and transplanted.

**ACTION**

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

**Rachel Hogg and Sally Rushton**  
**Statistics and Clinical Studies**

**September 2018**

## NHS BLOOD AND TRANSPLANT

### MULTI-VISCERAL AND COMPOSITE TISSUE ADVISORY GROUP

#### POTENTIAL BOWEL DONORS

#### 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

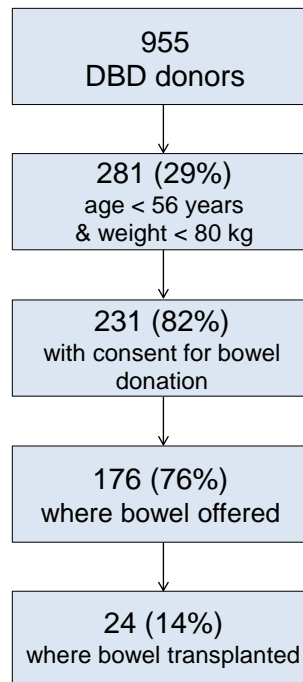
- 3 Potential bowel donors were defined as DBD donors who donated at least one solid organ for the purposes of transplantation, who met the criteria for bowel donation and whose family gave consent for bowel donation.
- 4 Data on 955 DBD donors who died in the UK between 1 April 2017 and 31 March 2018 were extracted from the UK Transplant Registry (UKTR) on 3 September 2018. 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 2017 and 31 March 2018 were also extracted from the UKTR. The outcome of these offers, along with other organs available are presented.

#### RESULTS

##### The pathway to bowel donation

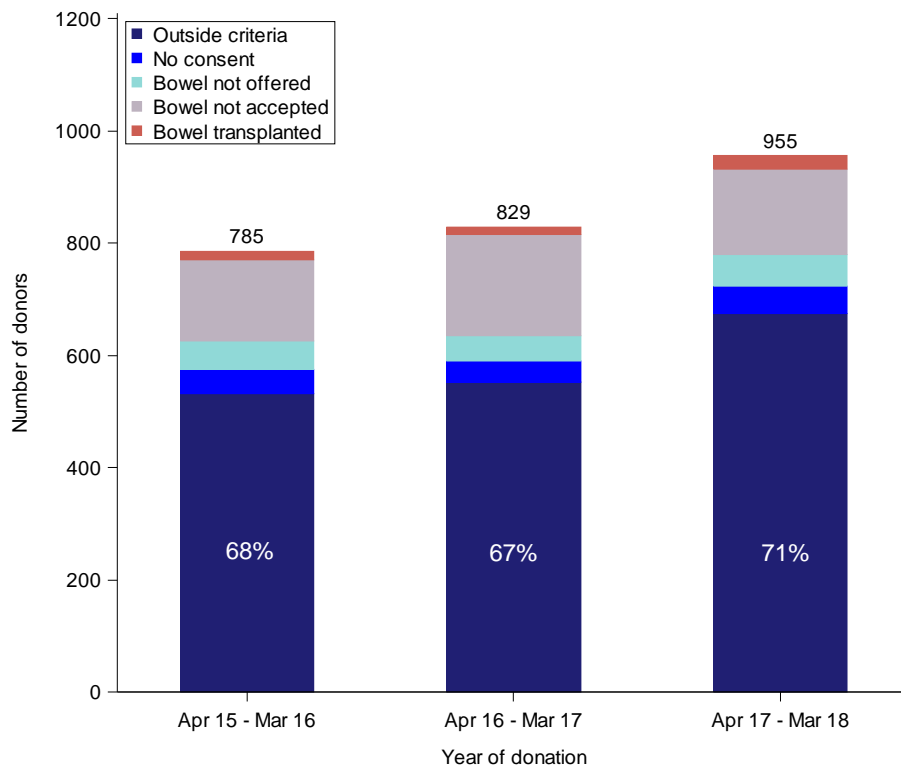
- 7 Of the 955 DBD donors in the time period, 281 (29%) met the criteria for bowel donation. Of these, consent for bowel donation was gained from the donor family in 231 cases (82%). Of these 231 potential bowel donors, the bowels of 176 (76%) were offered to intestinal transplant centres and 24 (14%) bowels were transplanted. A flow diagram of this pathway is shown in **Figure 1**. Note that there were an additional two intestinal transplants carried out in the time period, one from a living donor and one from a non-UK donor.

**Figure 1** Flow diagram of the pathway from DBD donors during 2017/18 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 remained relatively stable in the time period (ranging 82% to 87%) however, the offering rate did decrease in 2017/18 compared to previous years. An equivalent figure and table just for donors weighing < 50 kg is shown in **Appendix I** and **Appendix II** respectively.
- 9 The number of DBD donors has increased by 22% since 2015/16, however the proportion not meeting the potential bowel donor criteria has increased from 68% to 71%. As a result, the number meeting the criteria has only increased by 11% from 253 in 2015/16 to 281 in 2017/18. The consent and offering rates were relatively low in 2017/18 compared with previous years, however the conversion from offered to transplanted was relatively high (14%).

**Figure 2** The pathway from DBD donors between 1 April 2015 and 31 March 2018 to bowel donors, by financial year



**Table 1** The pathway from DBD donors between 1 April 2015 and 31 March 2018 to bowel donors, by financial year

		Financial year		
		2015/16	2016/17	2017/18
DBD donors	N	785	829	955
Met criteria for bowel donation (age < 56 years & weight < 80 kg)	N	253	277	281
	% of previous	32	33	29
Consent given for bowel donation	N	211	239	231
	% of previous	83	87	82
Bowel offered	N	159	194	176
	% of previous	75	81	76
Bowel transplanted	N	15	13	24
	% of previous	9	7	14

## Potential bowel donors

- 10 The reasons for not offering the bowels of 55 potential bowel donors between 1 April 2017 and 31 March 2018 are presented in **Table 2**. The most common reasons given were no suitable recipients on the list for that donor (40%) and donor history (21%).

Reasons for not offering	Donor bowels not offered	
	N	%
<b>Donor reasons</b>		
History	12	22
Poor function	1	2
Infection	1	2
Size <sup>1</sup>	1	2
Age <sup>2</sup>	5	9
<b>Logistical reasons</b>		
No suitable recipients <sup>3</sup>	22	40
Other organs required were not available <sup>4</sup>	5	9
Permission refused by coroner	4	7
Donor type <sup>5</sup>	3	5
Centre criteria not achieved	1	2
<b>Total</b>	<b>55</b>	<b>100</b>
<sup>1</sup> Weight of this donor was 45 kg		
<sup>2</sup> Ages of these donors were 51 years, 52 years, 54 years, 55 years		
<sup>3</sup> Blood group or HLA incompatible		
<sup>4</sup> For example liver accepted for super-urgent liver recipient and no blood group compatible intestinal recipients not requiring a liver		
<sup>5</sup> Donor started as DCD but proceeded as DBD after offering began		

- 11 The total number of patient specific offers associated with the 176 donor bowels that were offered was reported to be 545, with adult centres receiving 241 (44%) of the offers and paediatric centres receiving 304 (56%). Adult centres accepted and transplanted 18 donor bowels (7% of offers made to them) and paediatric centres accepted and transplanted 6 donor bowels (2% of offers made to them).

***Small potential bowel donors (< 50 kg)***

- 12 Of the 152 bowels that were offered and declined, 9 (6%) 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)***

- 13 Of the 281 donors who met criteria for bowel donation, 9 (3%) were less than 30kg. Three of these donors did not have family consent for bowel donation (in one case consent was not sought), one was declined due to a history of bowel surgery, and five were offered and the bowel was transplanted.

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

- 14 The 143 declined bowels from donors who weighed ≥ 50 kg corresponded to 261 paediatric offers and 204 adult offers. 95% of the offers declined by paediatric centres were declined on size. The most common reasons for decline cited by adult centres were donor size (36%) and donor history (18%).

***Organs transplanted from potential bowel donors***

- 15 **Table 4** shows summary statistics on the 176 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. 159 (90%) livers and 82 (47%) pancreases were transplanted compared with just 24 (14%) bowels. 22 of the livers that were transplanted were used in super-urgent liver only recipients but these were mainly the heavier donors.

**Table 4 Transplants performed using organs from potential bowel donors where bowel offering occurred, during 2017/18**

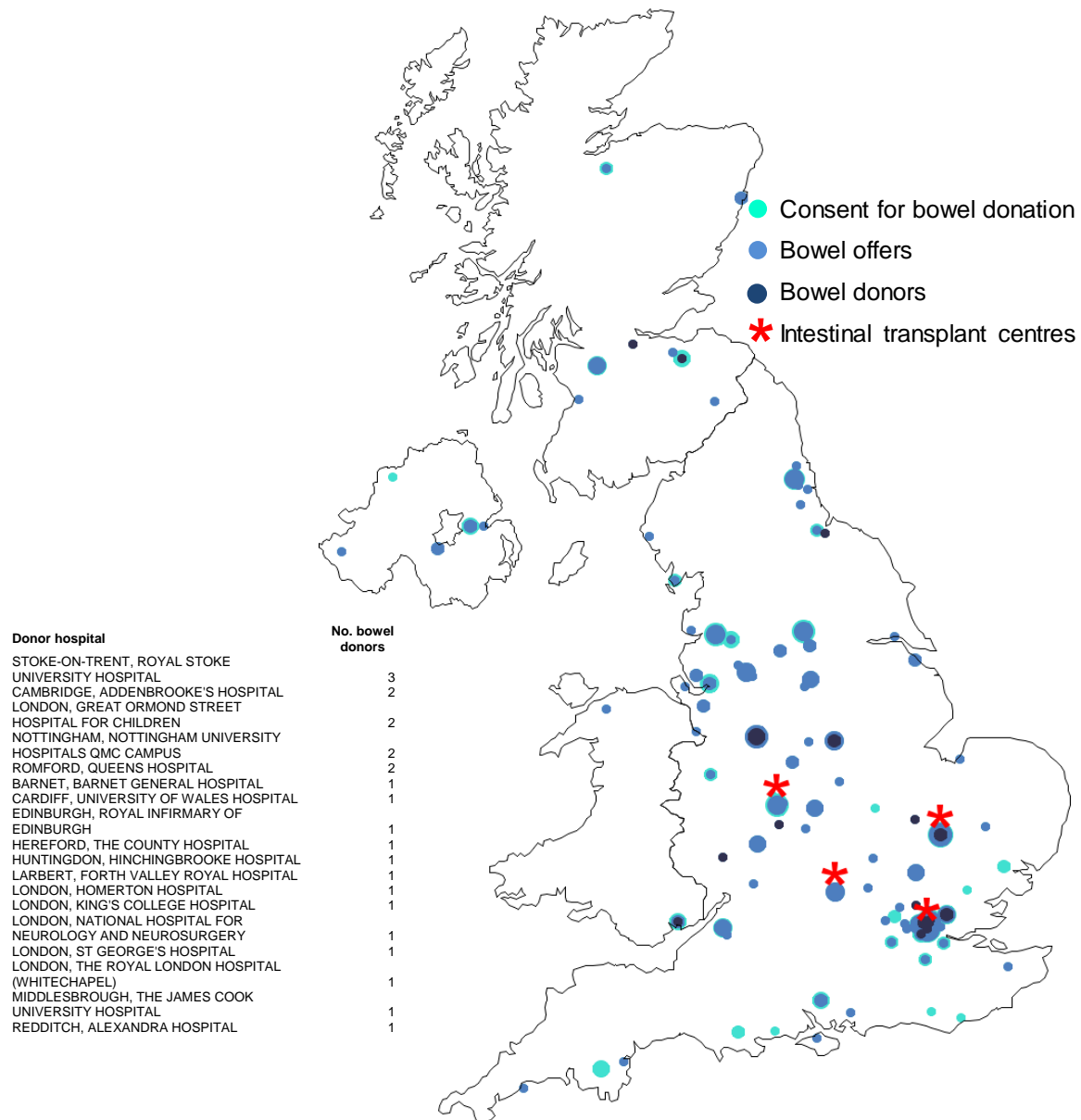
	No. donors	Organs transplanted							
		Liver		(Liver only super-urgent transplants)*		Pancreas		Bowel	
		N	% of donors	(N)	(% of donors)	N	% of donors	N	% of donors
<b>Donor blood group</b>									
O	101	92	91.1	(20)	(19.8)	48	47.5	16	15.8
A	65	57	87.7	(2)	(3.1)	29	44.6	8	12.3
B	9	9	100.0	(0)	(0.0)	5	55.6	0	0.0
AB	1	1	100.0	(0)	(0.0)	0	0.0	0	0.0
<b>Donor weight (kg)</b>									
<20	4	3	75.0	(0)	(0.0)	3	75.0	4	100.0
20-<35	3	3	100.0	(0)	(0.0)	2	66.7	1	33.3
35-<50	8	7	87.5	(2)	(25.0)	3	37.5	1	12.5
50-<80	161	146	90.7	(20)	(12.4)	74	46.0	18	11.2
<b>Donor BMI (kg/m<sup>2</sup>)</b>									
<18.5	16	13	81.3	(1)	(6.3)	9	56.3	5	31.3
18.5-<25	114	105	92.1	(17)	(14.9)	58	50.9	19	16.7
25+	46	41	89.1	(4)	(8.7)	15	32.6	0	0.0
<b>Donor age (years)</b>									
0-15	13	11	84.6	(0)	(0.0)	10	76.9	6	46.2
16-35	62	56	90.3	(9)	(14.5)	38	61.3	10	16.1
36-50	66	59	89.4	(7)	(10.6)	42	36.4	7	10.6
51-55	35	33	94.3	(6)	(17.1)	25	28.6	1	2.9
<b>Total</b>	<b>176</b>	<b>159</b>	<b>90.3</b>	<b>(22)</b>	<b>(12.5)</b>	<b>82</b>	<b>46.6</b>	<b>24</b>	<b>13.6</b>

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

### Location of potential bowel donors

16 **Figure 3** shows the location of the 231 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 III** for a comparison of the geographical distribution of liver offers and bowel offers.

**Figure 3 Geographical distribution of potential bowel donors during 2017/18**





**Non-UK offers**

17 In 2017/18, there were 7 bowel offers to the UK from non-UK donors, with one progressing to transplant. **Table 5** summarises what was offered and the outcome.

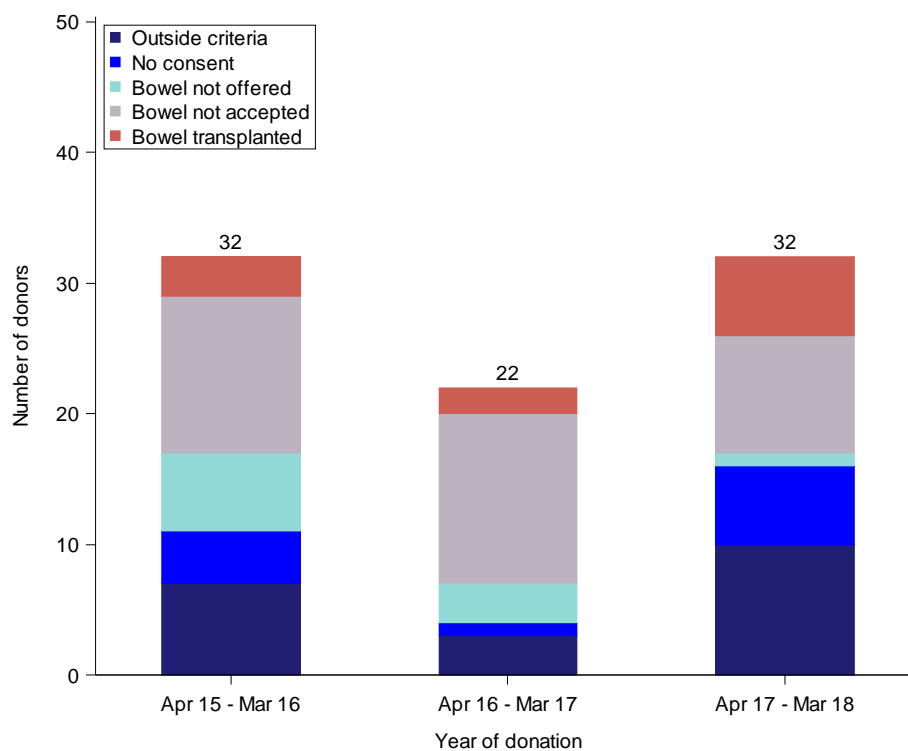
**Table 5** Details of 7 non-UK donors where the bowel was offered to the UK in 2017/18

Donor	Donor country	Blood group	Organs available	Offered to centres	Outcome	Reason for non-use/Organs transplanted
1	Germany	O	Bowel only	No	Not accepted	Recipients on matching run required other organs
2	Europe <sup>1</sup>	O	Bowel only	No	Not accepted	Recipients on matching run required other organs
3	Germany	A	Bowel only	No	Not accepted	Recipients on matching run required other organs
4	France	O	No restrictions	Yes	Transplanted	Received bowel, liver, pancreas, stomach, and colon
5	Europe <sup>1</sup>	O	Bowel only	Yes	Not used	Accepted initially but then declined by Oxford due to logistics
6	Hungary	AB	Bowel and liver	Yes	Not used	Accepted initially but then declined by King's College on logistics
7	Hungary	A	Bowel only	Yes	Not accepted	Fast track offer but no response

<sup>1</sup> Exact country of donor is not known

## APPENDIX

**Appendix I The pathway from DBD donors weighing < 50 kg between 1 April 2015 and 31 March 2018 to bowel donors, by financial year**



**Appendix II The pathway from DBD donors weighing < 50 kg between 1 April 2015 and 31 March 2018 to bowel donors, by financial year**

		Financial year		
		2015/16	2016/17	2017/2018
DBD donors	N	32	22	32
Met criteria for bowel donation (age < 56 years)	N	25	19	22
	% of previous	78	86	69
Consent given for bowel donation	N	21	18	16
	% of previous	84	95	73
Bowel offered	N	15	15	15 <sup>1</sup>
	% of previous	71	83	94
Bowel transplanted	N	3	2	6
	% of previous	20	13	40

<sup>1</sup> The details of why 9 of these bowels were not used are shown in **Table 3**.

Appendix III Geographical comparison of liver offers and bowel offers from DBD donors during 2017/18 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)

