

**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, 2020/21, was analysed. In this period there were 766 UK DBD donors, of which 285 (37%) met the criteria for bowel donation. Of these, consent for bowel donation was given in 245 (86%) donors and the bowels of 128 (52%) were offered to intestinal transplant centres. 12 (9%) of those offered were accepted for transplantation.
- 4 Between 2018/19 and 2019/20, the number of DBD donors fell slightly by 2%, and a larger decrease was seen to 2020/21 due to the COVID-19 pandemic. Both the offered and transplanted rate dipped slightly in 2020/21, however the consent rate increased from 83% in 2018/19 to 86% in 2020/21.
- 5 Of the 116 bowels that were offered and declined, only 9 (8%) were from donors weighing < 50 kg which were declined for a variety of reasons. Of the 285 donors meeting the potential bowel donor criteria, 5 (2%) weighed less than 30 kg. One of these particularly small potential donors was not offered, two were offered and declined, and two were offered, accepted and the bowel was transplanted.
- 6 There were 17 non-UK donors offered to the UK for bowel donation in 2020/21 and in 7 cases, only the bowel was available. All were offered to centres but all were declined.

**ACTION**

- 7 Members are asked to note these results and discuss any actions required. Additionally, members are asked to review the contents of this report and whether any of the content is no longer required.

**Chloe Brown**  
**Statistics and Clinical Research**

**October 2021**

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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**

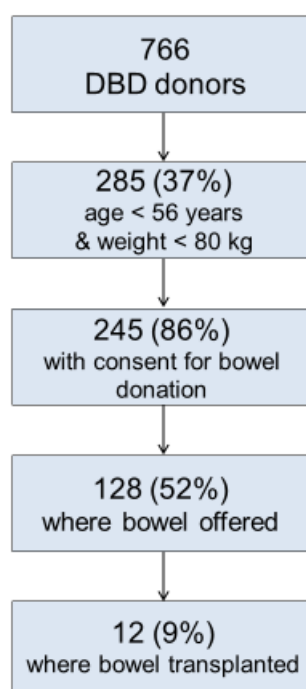
- 3 Potential bowel donors were defined as DBD donors who donated at least one solid organ for the purposes of transplantation, who met the criteria for bowel donation and whose family gave consent for bowel donation.
- 4 Data on 766 DBD donors who died in the UK between 1 April 2020 and 31 March 2021 were extracted from the UK Transplant Registry (UKTR) on 21 September 2021. 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 2020 and 31 March 2021 were also extracted from the UKTR. The outcome of these offers, along with other organs available are presented.
- 7 The COVID-19 pandemic has led to unprecedented challenges for UK transplantation. Concerns about the ability to care for transplant recipients, lack of access to resource because it is being used for patients in the pandemic, and the risk versus benefit for immunosuppressed transplant recipients, have resulted in a reduction in the number of organ transplants undertaken. The pandemic has also impacted on the number of donors.

## RESULTS

### The pathway to bowel donation

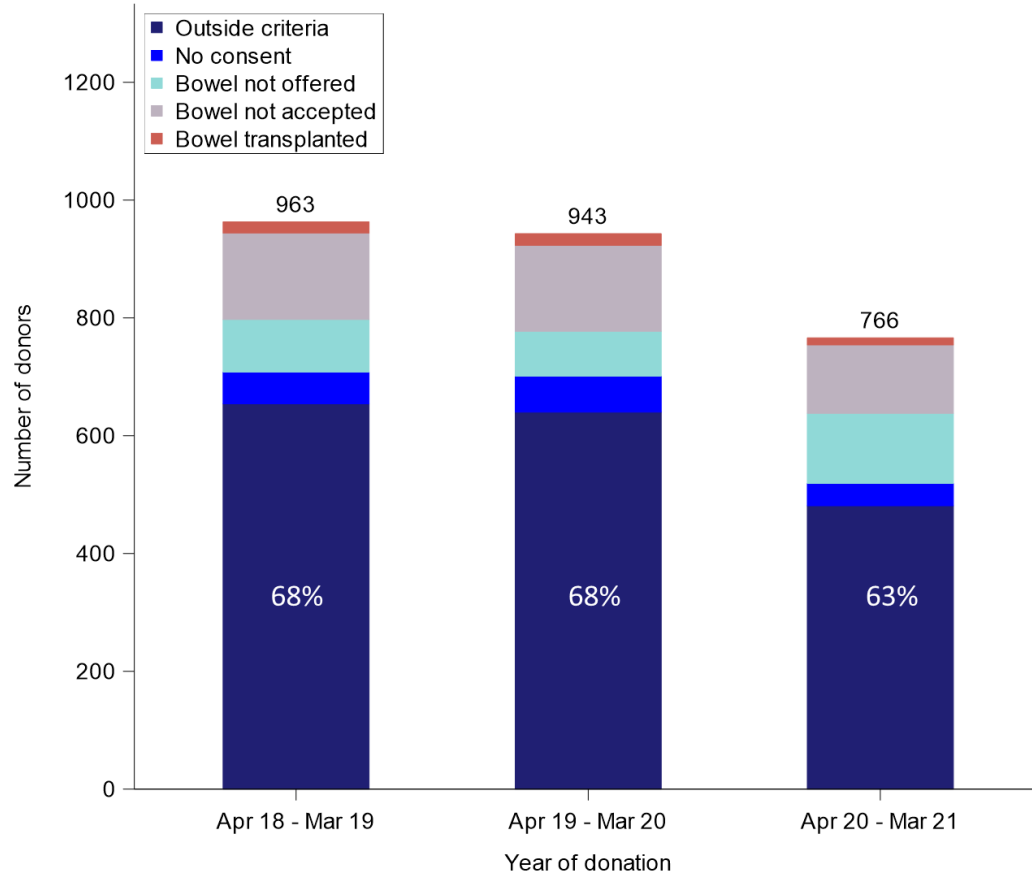
- 8 Of the 766 DBD donors in the time period, 285 (37%) met the criteria for bowel donation. Of these, consent for bowel donation was gained from the donor family in 245 cases (86%). Of these 245 potential bowel donors, the bowels of 128 (52%) were offered to intestinal transplant centres and 12 (9%) 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 2020/21 to bowel donors



- 9 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 increased from 83% in 2018/19 to 87% in 2020/21. An equivalent figure and table just for donors aged <18 years is shown in **Appendix II** and **Appendix III** respectively.
- 10 The number of DBD donors in 2020/21 is lower than in previous years due to the impact of the COVID-19 pandemic. The proportion not meeting the potential bowel donor criteria has fallen slightly from 68% to 63% and the number meeting the criteria has decreased by 8% from 309 in 2018/19 to 285 in 2020/21. The consent rate has increased slightly from 83% in 2018/19 to 86% in 2020/21, and the offering rate was relatively low (52% in 2020/21 compared to 65% in 2018/19).
- 11 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. 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 2018 and 31 March 2021 to bowel donors, by financial year



**Table 1** The pathway from DBD donors between 1 April 2018 and 31 March 2021 to bowel donors, by financial year

		Financial year		
		2018/19	2019/20	2020/21
DBD donors	N	963	943	766
Met criteria for bowel donation (age < 56 years & weight < 80 kg)	N	309	303	285
	% of previous	32	32	37
Consent given for bowel donation	N	255	242	245
	% of previous	83	80	86
Bowel offered	N	166	166	128
	% of previous	65	69	52
Bowel transplanted	N	19	20	12
	% of previous	11	12	9

## Potential bowel donors

- 12 The reasons for not offering the bowels of 117 potential bowel donors between 1 April 2020 and 31 March 2021 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%).

<b>Table 2 Reasons for not offering bowels from potential bowel donors during 2020/21</b>		
Reasons for not offering	Donor bowels not offered	
	N	%
<b>Donor reasons</b>		
History	23	20
Poor function	1	1
Donor unstable	4	3
Virology	1	1
Cause of death	1	1
Medical reason	1	1
<b>Logistical reasons</b>		
No suitable recipients <sup>1</sup>	74	63
Other organs required were not available <sup>2</sup>	4	3
Permission refused by coroner	5	4
Donor type <sup>3</sup>	2	2
Other	1	1
<b>Total</b>	<b>117</b>	<b>100</b>
<sup>1</sup> Blood group, HLA, or size incompatible		
<sup>2</sup> For example liver accepted for super-urgent liver recipient and no blood group compatible intestinal recipients not requiring a liver		
<sup>3</sup> Donor started as DCD but proceeded as DBD after offering began		

- 13 The total number of patient specific offers associated with the 128 donor bowels that were offered was reported to be 207, with adult centres receiving 186 (90%) of the offers and paediatric centres receiving 21 (10%). Adult centres accepted and transplanted 6 donor bowels (3% of offers made to them) and paediatric centres accepted and transplanted 6 donor bowels (29% of offers made to them).

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

- 14 Of the 116 bowels that were offered and declined, 9 (8%) were from donors weighing < 50 kg. The details of why these bowels were not used are shown in **Table 3**.

**Table 3** Details of why 9 bowels from potential bowel donors weighing < 50 kg during 2020/21 were declined by centres

Donor	Blood group	Height (cm)	Weight (kg)	Age (years)	Details of the decline of the donor bowel
1	A	108	14.0	3	Declined by King's on retrieval as the bowel was ischaemic
2	O	144	30.0	11	Declined by Cambridge on virology and better match required and by King's on function
3	O	165	33.0	16	Declined by Birmingham on past history
4	A	152	45.0	30	Declined by Cambridge on virology
5	O	176	45.0	55	Declined by Cambridge on past history, by Oxford on age and by Birmingham on size
6	A	118	24.8	6	Declined by Birmingham on past history and by Cambridge on size
7	B	155	35.0	11	Declined by Cambridge due to no beds being available
8	O	164	47.0	41	Declined by Birmingham on size and by Cambridge on no beds/staff/theatre
9	O	167	48.0	19	Declined by Cambridge on function and by Birmingham on size

***Particularly small potential bowel donors (< 30 kg)***

- 15 Of the 285 donors who met criteria for bowel donation, 5 (2%) were less than 30kg. One was not offered as permission was refused by the coroner. Two were offered and declined (donors 1 and 6 in **Table 3**), and two were offered and the bowel was transplanted.

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

- 16 The 107 declined bowels from donors who weighed ≥ 50 kg corresponded to 8 paediatric offers and 149 adult offers. Paediatric centres declined mostly on size and other donor reasons. The most common reasons for decline cited by adult centres were donor history (25%) and virology (21%).

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

- 17 **Table 4** shows summary statistics on the 128 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. 116 (91%) livers and 40 (31%) pancreases were transplanted compared with just 12 (9%) bowels. 20 of the livers that were transplanted were used in super-urgent liver only recipients but these were from the heavier donors.

**Table 4 Transplants performed using organs from potential bowel donors where bowel offering occurred, during 2020/21**

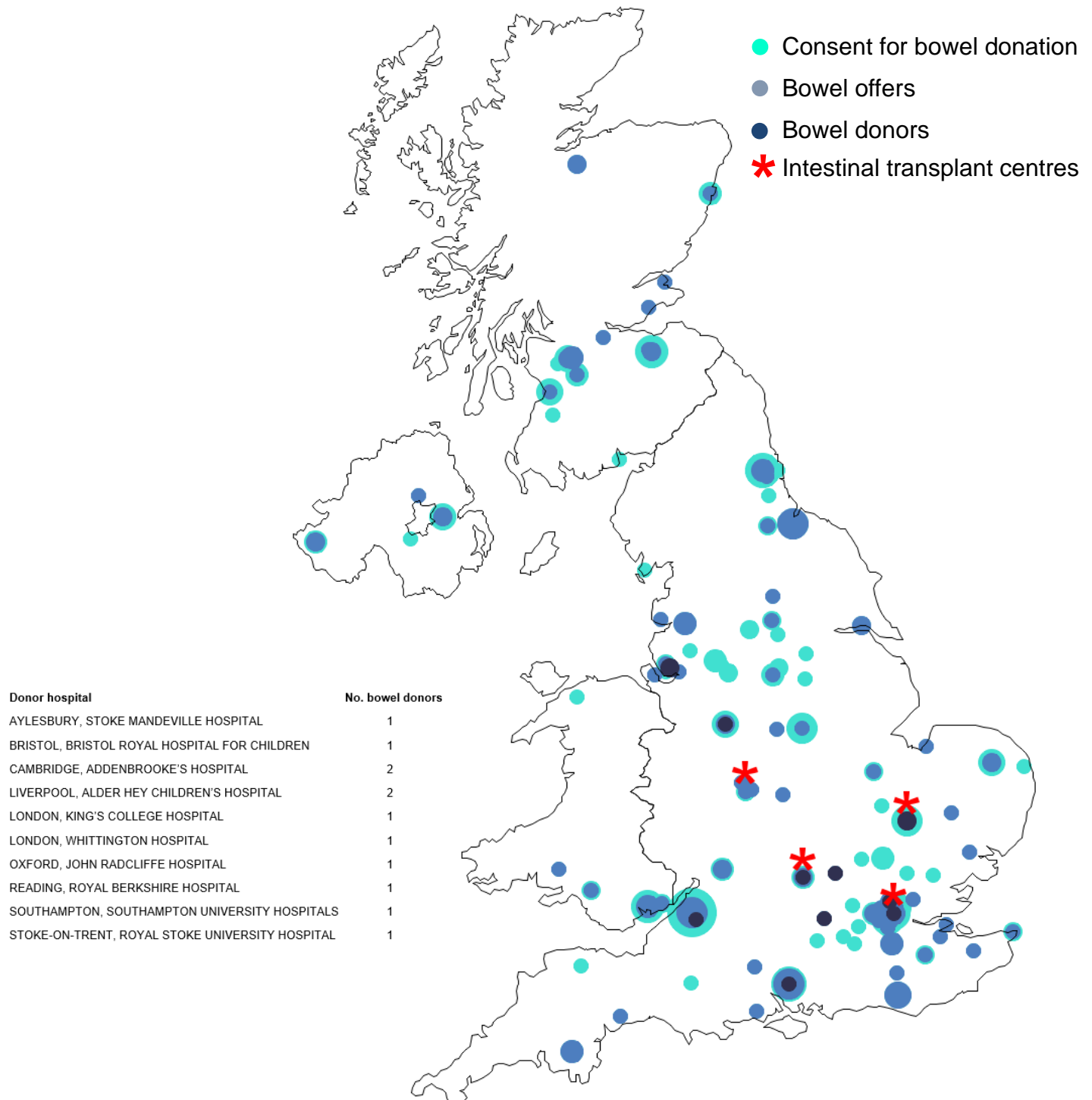
	No. donors	Liver		Organs transplanted (Liver only super-urgent transplants)*		Pancreas		Bowel	
		N	% of donors	(N)	(% of donors)	N	% of donors	N	% of donors
Donor blood group									
O	71	65	91.6	(16)	(22.5)	22	31.0	8	11.3
A	45	40	88.9	(4)	(8.9)	15	33.3	4	8.9
B	10	9	90.0	(0)	(0.0)	2	20.0	0	0.0
AB	2	2	100.0	(0)	(0.0)	1	50.0	0	0.0
Donor weight (kg)									
<20	3	3	100.0	(0)	(0.0)	2	66.7	2	66.7
20-<35	5	4	80.0	(1)	(20.0)	1	20.0	2	40.0
35-<50	5	5	100.0	(1)	(20.0)	1	20.0	0	0.0
50-<80	115	104	90.4	(18)	(15.7)	36	31.3	8	7.0
Donor BMI (kg/m²)									
<18.5	15	14	93.3	(3)	(20.0)	4	26.7	3	20.0
18.5-<25	91	81	89.0	(15)	(16.5)	30	33.0	8	8.8
25+	22	21	95.5	(2)	(9.1)	6	27.3	1	4.6
Donor age (years)									
0-15	10	9	90.0	(1)	(10.0)	4	40.0	4	40.0
16-35	48	44	91.7	(6)	(12.5)	16	33.3	5	10.4
36-50	46	42	91.3	(8)	(17.4)	16	34.8	3	6.5
51-55	24	21	87.5	(5)	(20.8)	4	16.7	0	0.0
Total	128	116	90.6	(20)	(15.6)	40	31.3	12	9.4

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

## Location of potential bowel donors

- 18 **Figure 3** shows the location of the 245 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 2020/21





- 19 **Table 5** shows the distribution of the 245 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 245 donors, 234 (96%) had the liver offered and 128 (52%) had the bowel offered.

<b>Table 5 Liver and bowel offering from consented potential bowel donors in 2020/21, by Organ Donation Services Team</b>					
<b>Organ Donation Services Team</b>	<b>No. donors</b>	<b>Livers offered</b>		<b>Bowels offered</b>	
		<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>
A	23	21	91	9	39
B	22	21	95	13	59
C	17	16	94	10	59
D	25	23	92	9	36
E	18	17	94	10	56
F	10	10	100	6	60
G	32	32	100	16	50
H	17	17	100	12	71
I	31	30	97	19	61
J	11	11	100	6	55
K	23	22	96	12	52
L	16	14	88	6	38
<b>Total</b>	<b>245</b>	<b>234</b>	<b>96</b>	<b>128</b>	<b>52</b>

### Non-UK offers

- 20 In 2020/21, there were 17 bowel offers to the UK from non-UK donors, with none retrieved or progressing to transplant. **Table 6** summarises what was offered and the outcome.

**Table 6** Details of 17 non-UK donors where the bowel was offered to the UK in 2020/21

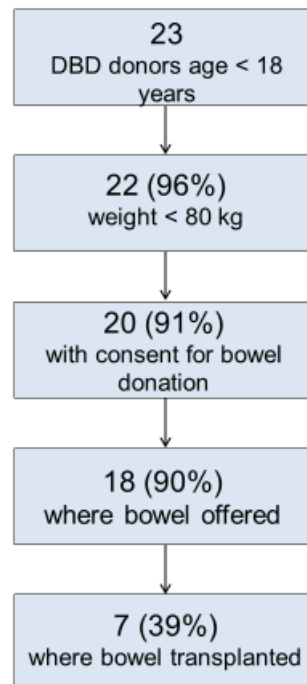
Donor	Donor country	Blood group	Organs available	Offered to centres	Outcome	Reason for non-use/Organs transplanted
1	Europe <sup>1</sup>	A	Bowel only	Yes	Declined	Size
2	Europe <sup>1</sup>	O	Bowel only	Yes	Declined	No interest in offer from centres
3	Netherlands	AB	Bowel and multivisceral organs	Yes	Declined	Size and no suitable recipients
4	Switzerland	O	Bowel only	Yes	Declined	Size and no suitable recipients
5	Germany	O	Bowel only	Yes	Declined	Logistics and anatomy
6	Germany	O	Bowel and multivisceral organs	Yes	Declined	Logistics and no suitable recipients
7	Germany	A	Bowel and multivisceral organs	Yes	Declined	Size and no suitable recipients
8	Europe <sup>1</sup>	B	Bowel and multivisceral organs	Yes	Declined	No suitable recipients
9	Germany	O	Bowel and multivisceral organs	Yes	Declined	No suitable recipients
10	Germany	O	Bowel and multivisceral organs	Yes	Declined	Size
11	Germany	A	Bowel only	Yes	Declined	Size and no suitable recipients
12	Switzerland	O	Bowel and multivisceral organs	Yes	Declined	Size
13	Switzerland	O	Bowel only	Yes	Declined	Logistics and COVID risk to staff
14	Germany	A	Bowel and multivisceral organs	Yes	Declined	No suitable recipients
15	Croatia	B	Pancreas, bowel and multivisceral organs	Yes	Declined	No suitable recipients
16	Switzerland	B	Bowel only	Yes	Declined	No suitable recipients
17	Germany	B	Pancreas and bowel	Yes	Declined	Size and no suitable recipients

Multivisceral organs - Stomach, colon, abdominal wall, and other tissue

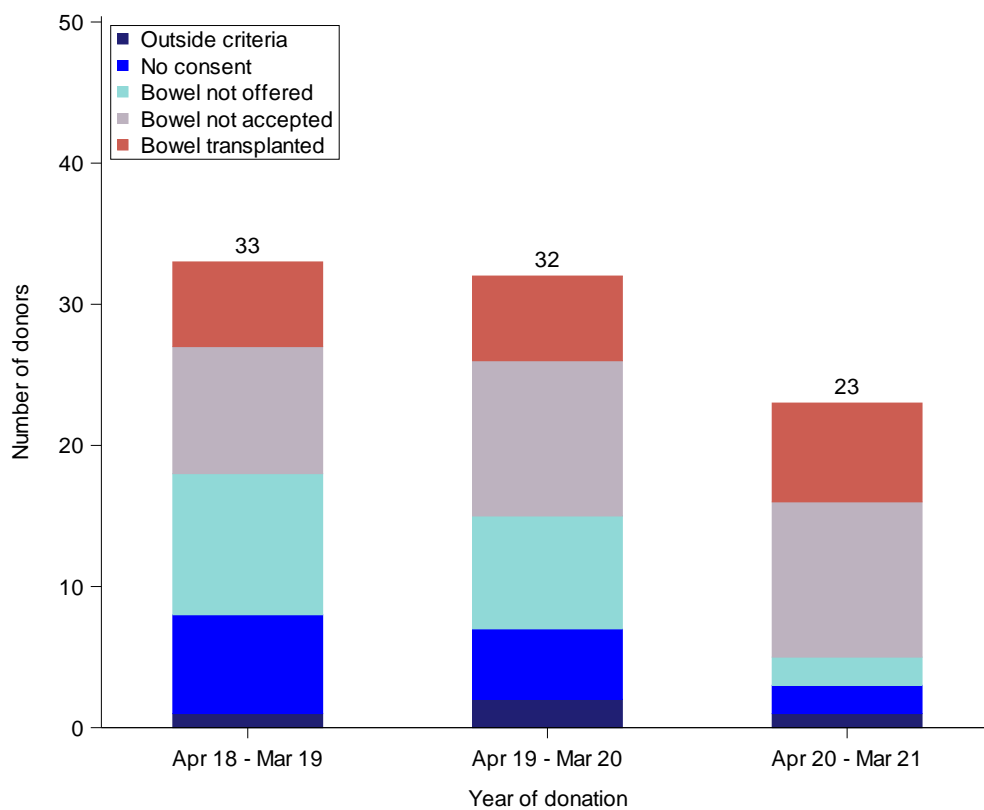
<sup>1</sup> Exact country of donor is not known

## APPENDIX

**Appendix I** Flow diagram of the pathway from DBD donors aged < 18 years during 2020/21 to bowel donors



**Appendix II** The pathway from DBD donors aged <18 years between 1 April 2018 and 31 March 2021 to bowel donors, by financial year



**Appendix III      The pathway from DBD donors aged < 18 years between  
1 April 2018 and 31 March 2021 to bowel donors, by financial year**

		Financial year		
		2018/2019	2019/2020	2020/2021
DBD donors	N	33	32	23
Met criteria for bowel	N	32	30	22
donation (weight < 80 kg)	% of previous	97	94	96
Consent given for bowel	N	25	25	20
donation	% of previous	78	83	91
Bowel offered	N	15	17	18
	% of previous	60	68	90
Bowel transplanted	N	6	6	7
	% of previous	40	35	39

**Appendix IV Geographical comparison of liver offers and bowel offers from DBD donors during 2020/21 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)**

