

NHS BLOOD AND TRANSPLANT
MULTI-VISCERAL AND COMPOSITE TISSUE ADVISORY GROUP
PATIENT SURVIVAL AFTER INTESTINAL TRANSPLANT

INTRODUCTION

1. This regular paper reports on patient survival following deceased donor intestinal transplantation for transplants performed nationally. The period analysed was 1 January 2005 to 31 December 2020, in which 244 elective intestinal transplants were carried out in first time recipients. Follow-up data were available on the UK Transplant Registry (UKTR) as at 10 February 2020 for 241 (99%) patients. Note that this report excludes one living donor transplant performed at King's College in 2017.

DATA ANALYSIS

2. Kaplan-Meier survival curves were produced separately for paediatric and adult patients and within these cohorts, by transplant type and era. Short/medium-term survival rates are displayed within the plots. The results are based on small numbers and are not risk-adjusted so for these reasons should be treated as guidance only. Ten-year survival rates are presented. Graft status is reported for patients, where available, with a failed graft is defined as bowel reported to have failed on follow-up form or patient received a bowel re-transplant.
3. The key messages are:
 - Ten year survival rate estimates for paediatric and adult elective intestinal transplant recipients are 53.0% and 36.8%, respectively (**Figure 1**). However, these rates should be interpreted with caution due to the low number of patients entering the interval alive, which may produce unstable estimates. **Table 1** shows the 90 day, 1 year, 5 year, and 10 year survival rate estimates. At each time point survival was not significantly different between adult and paediatric recipients.
 - Bowel only (BO) transplants appear to have superior outcomes compared with multivisceral (MV) or liver, bowel and pancreas (LBP) transplants and modified multivisceral (MMV) or bowel and pancreas (BP) transplants in both the paediatric and adult analyses, especially when analysed out to five years post-transplant (**Table 2, Table 3**). However, note that there were too few paediatric BP or MMV transplants to be included in **Table 2** and **Figure 2**.
 - Survival estimates by era have been removed as comparisons are not significant.
4. Additional information:
 - There have been seven super-urgent intestinal transplants performed in the UK to date in six different patients, with the last occurring in November 2017. No further deaths for these patients have been recorded since last report, details can be found in **Table 5 (removed as patient identifiable)**.
 - There have been 27 transplants including abdominal wall in the time period into 26 different adult patients: 16 bowel only and 11 MMV¹. Oxford performed 26 (96%) of these transplants with the remaining one at Cambridge. No further deaths for these patients have been recorded since last report. **Figure 4** and **Table 4** shows the Kaplan-Meier estimates for abdominal wall recipients where survival data are available (N=26), which is similar to the 5 year rate for all adult patients (**Table 1**).
 - A variety of causes of death have been reported to the UKTR for the 91 patients who are deceased within 10 years following intestinal transplantation (**Table 6** and **Table 7 (both removed as patient identifiable)**).
 - Of the 241 transplants considered, intestinal graft function status is available for 214 (89%). Of these, 38 (18%) have graft failure reported, with 18 alive at last report (11 without re-

¹ In addition, we are aware of at least two cases of abdominal wall only registrations in the time period. Transplant and outcome data are not available for this type of transplants in the UKTR.

transplant). **Table 8 (removed as patient identifiable)** shows the reasons reported for graft failure for the 38 cases.

ACTION

5. Members are asked to note the contents of this paper. Timely provision of three-month and annual follow-up data to NHSBT will aid more accurate estimation of outcomes following intestinal transplantation.

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Statistics and Clinical Studies

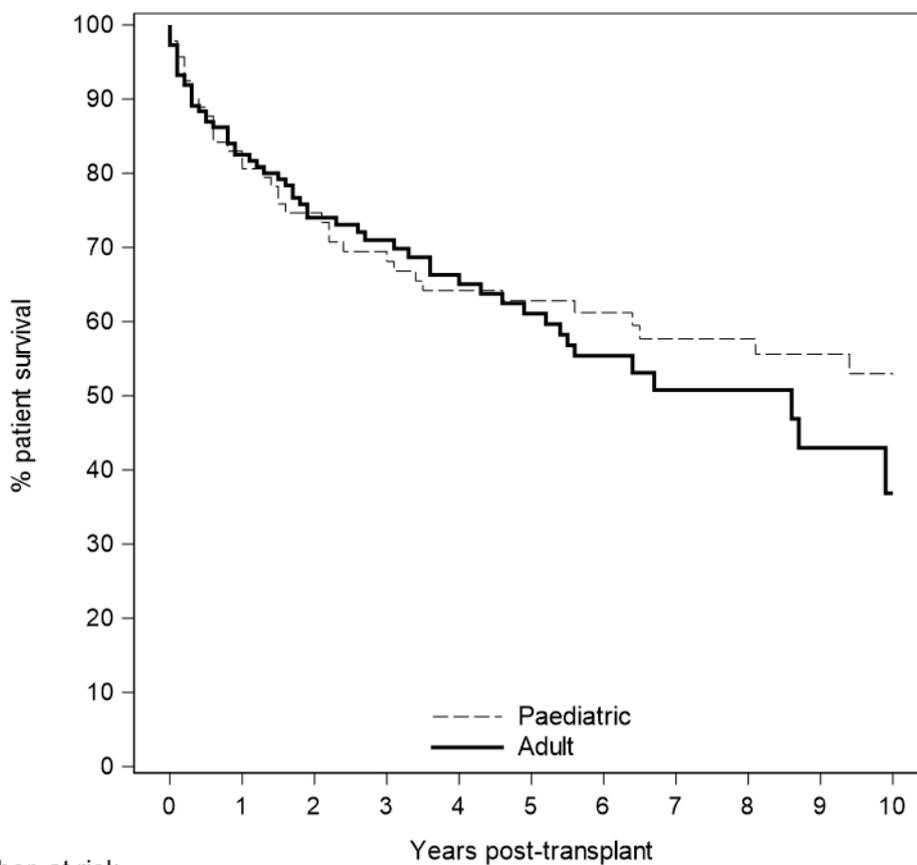
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ALL PATIENTS

Table 1 Patient survival for first intestinal transplants between 1 January 2005 and 31 December 2020, by age group

Age group	No. of patients	% 90 day survival (95% CI)		% 1 year survival (95% CI)		% 5 year survival (95% CI)		% 10 year survival (95% CI)	
Paediatric	93	92.5	84.8 – 96.3	81.8	72.0 – 88.5	62.8	51.3 – 72.3	53.0	40.3 – 64.1
Adult	148	91.9	86.2 – 95.3	82.5	75.2 – 87.8	61.1	51.0 – 69.7	36.8	21.2 – 52.5
Log-rank p-value		0.85		0.94		0.95		0.45	

Survival rates at 10 years should be interpreted with caution due to the low number of patients entering the interval alive, which may produce unstable estimates.

Figure 1 10 year patient survival following intestinal transplantation, by age group

Number at risk

Paediatric	93	69	42	17
Adult	148	100	44	6

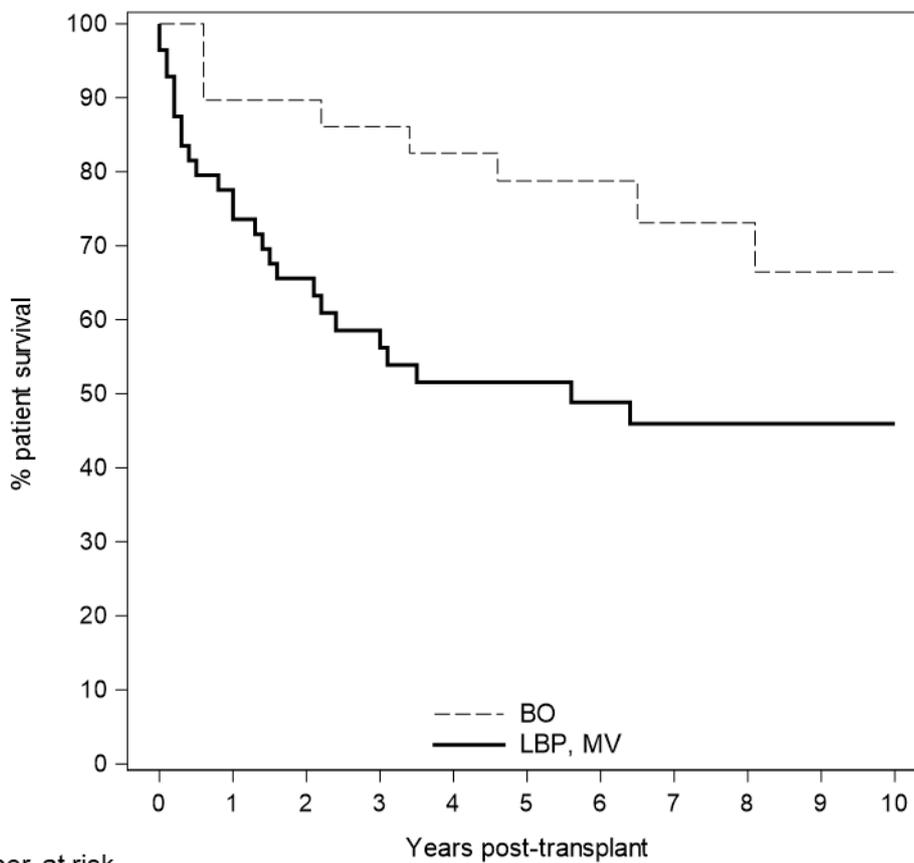
PAEDIATRIC PATIENTS

Table 2 Paediatric patient survival for first intestinal transplants between 1 January 2005 and 31 December 2020, by transplant type

Transplant type	No. of patients	% 90 day survival (95% CI)		% 1 year survival (95% CI)		% 5 year survival (95% CI)		% 10 year survival (95% CI)	
BO	32	100	-	89.7	71.3 – 96.5	78.7	58.6 – 89.9	66.5	42.2 – 82.4
LBP, MV	56	87.5	75.5 – 93.8	75.5	61.5 – 85.0	51.5	36.6 – 64.6	46.0	31.0 – 59.7
Log-rank p-value		0.04		0.09		0.01		0.02	

Survival rates at 10 years should be interpreted with caution due to the low number of patients entering the interval alive, which may produce unstable estimates.

Figure 2 10 year paediatric patient survival following intestinal transplantation, by transplant type



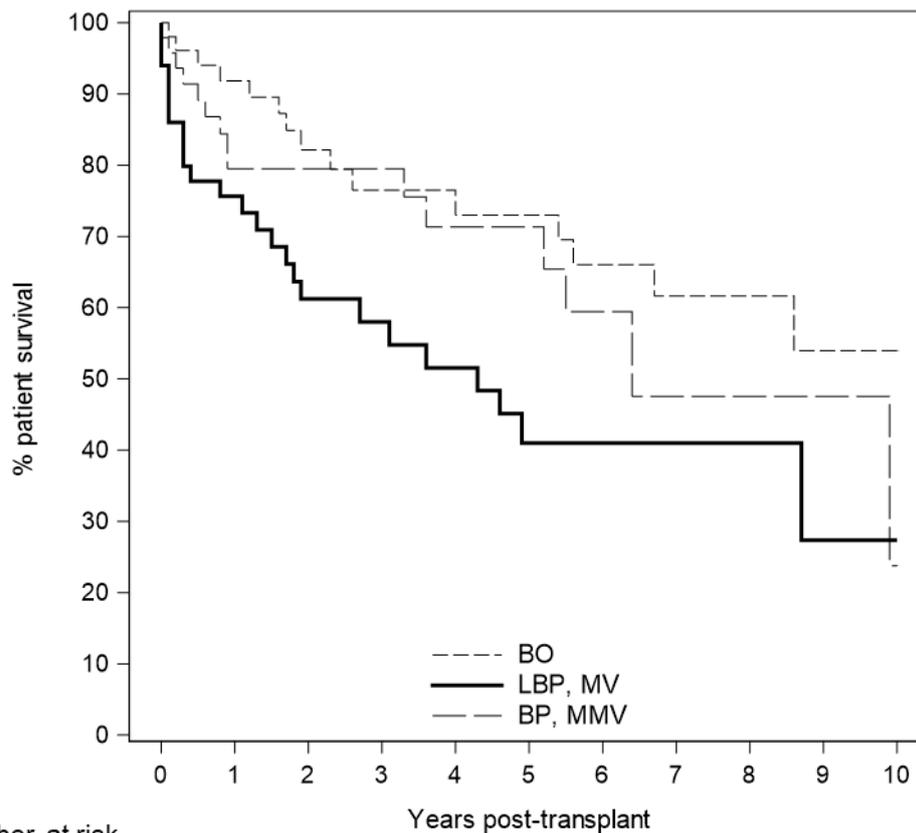
ADULT PATIENTS

Table 3 Adult patient survival for first intestinal transplants between 1 January 2005 and 31 December 2020, by transplant type

Transplant type	No. of patients	% 90 day survival (95% CI)		% 1 year survival (95% CI)		% 5 year survival (95% CI)		% 10 year survival (95% CI)	
BO	51	96.1	85.2 – 99.0	91.8	79.7 – 96.9	73.0	55.9 – 84.3	53.9	32.0 – 71.6
LBP, MV	50	86.0	72.9 – 93.1	75.7	61.1 – 85.4	41.0	24.7 – 56.7	27.3	7.5 – 52.2
BP, MMV	47	93.6	81.5 – 97.9	79.5	64.2 – 88.8	71.3	53.0 – 83.6	23.8	1.7 – 60.1
Log-rank p-value		0.14		0.08		0.007		0.03	

Survival rates at 10 years should be interpreted with caution due to the low number of patients entering the interval alive, which may produce unstable estimates.

Figure 3 10 year adult patient survival following intestinal transplantation, by transplant type

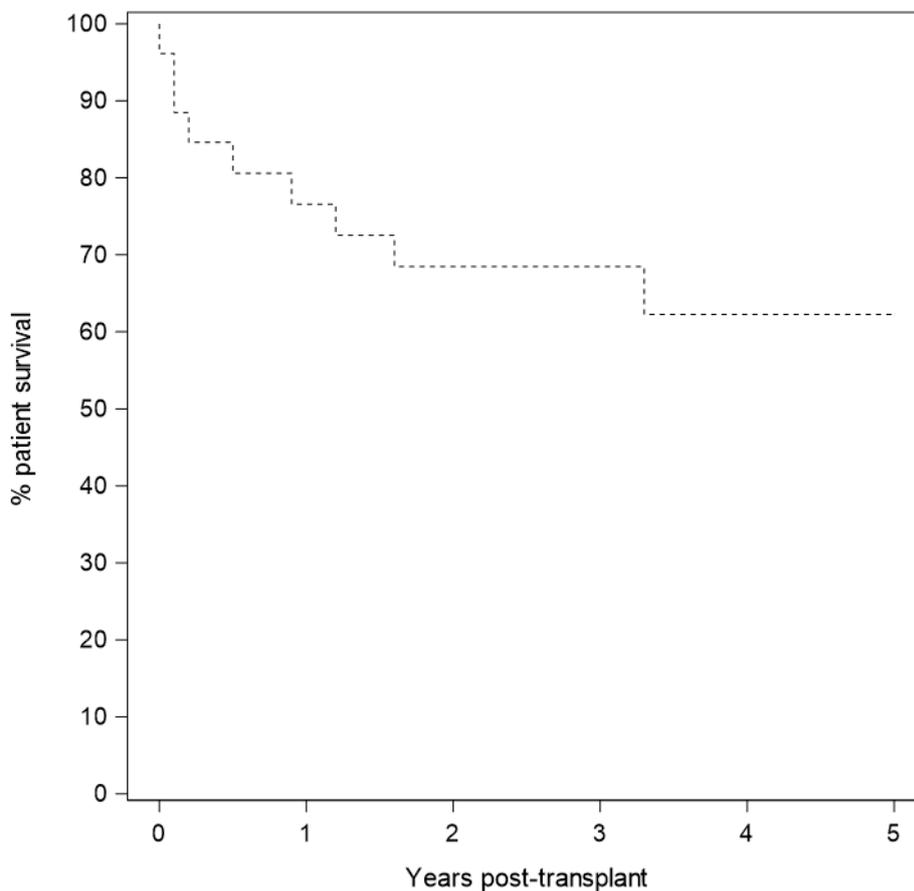


ABDOMINAL WALL PATIENTS

Table 4		Patient survival for first intestinal transplants containing abdominal wall, between 1 January 2005 and 31 December 2020					
No. of patients	% 90 day survival (95% CI)		% 1 year survival (95% CI)		% 5 year survival (95% CI)		
26	84.6	64.0 – 93.9	76.6	55.1 – 88.7	62.3	39.1 – 78.7	

The survival rate at 5 years should be interpreted with caution due to the low number of patients entering the interval alive, which may produce unstable estimates.

Figure 4 5 year adult patient survival following abdominal wall transplantation



Number at risk 26 19 7