

NHS BLOOD AND TRANSPLANT

MULTI-VISCERAL AND COMPOSITE TISSUE ADVISORY GROUP

ALIGNING TRANSPLANT TYPE DEFINITIONS WITH THE INTERNATIONAL REGISTRY: PATIENT SURVIVAL OUTCOMES

INTRODUCTION

1. It has been noted that the current transplant type definitions used in data collection within the UK differ to those used in the International Registry. This can pose challenges when presenting patient survival outcomes and comparing outcomes following intestinal transplantation in the UK compared to other countries. This paper reports on patient survival following deceased donor intestinal transplantation, using the International Registry transplant type definitions.

DATA ANALYSIS

2. Data on elective intestinal transplants carried out in first time recipients in the UK between 1 January 2007 to 31 December 2022 were extracted from the UK Transplant Registry (UKTR) and analysed. During the time period, 273 elective intestinal transplants were performed. Follow-up data were available on the UKTR as at 13 March 2023 for 269 (99%) patients. Note that this report excludes one living donor transplant performed at King's College in 2017.
3. Transplant types were assigned based on the definitions outlined in **Table 1**.

Table 1	Transplant type definitions applied	
Transplant type	Mandatory organs	Optional organs
Small bowel	Small bowel, pancreas	+ one or more of kidney, spleen, abdominal wall, colon
Liver small bowel	Small bowel, pancreas, liver	+ one or more of kidney, spleen, abdominal wall, colon
Multivisceral	Small bowel, pancreas, liver, stomach	+ one or more of kidney, spleen, abdominal wall, colon
Modified multivisceral	Small bowel, pancreas, stomach	+ one or more of kidney, spleen, abdominal wall, colon

4. Kaplan-Meier survival curves were produced separately for paediatric and adult patients and within these cohorts, by transplant type. 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.
5. The key messages are:
 - **Table 2** shows the 90 day, 1 year, 3 year, and 5 year survival rate estimates for paediatric recipients. Small bowel and multivisceral transplants appear to have superior outcomes compared with liver small bowel in the paediatric analysis, when analysed to 90 days post-transplant. There were no significant differences in outcome at 1 year between the transplant types. The survival rates at 3 and 5 years post-transplant should be interpreted with caution due to the low number of patients entering the interval alive, which may produce unstable estimates. Please note that there were too few paediatric modified multivisceral transplants to be included in **Table 2** and **Figure 1**.
 - **Table 3** shows the 90 day, 1 year, 3 year, and 5 year survival rate estimates for adult recipients. In the adult analysis, when analysed out to 90 days post-transplant, small bowel transplants appear to have superior outcomes compared with the other transplant types.

There were no significant differences in outcome at 1 year between the transplant types. However, when analysed to three years post-transplant, liver small bowel and small bowel transplants appeared to have superior outcomes (**Table 3**).

ACTION

6. 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.
7. Members are asked to consider how to take this data forwards.

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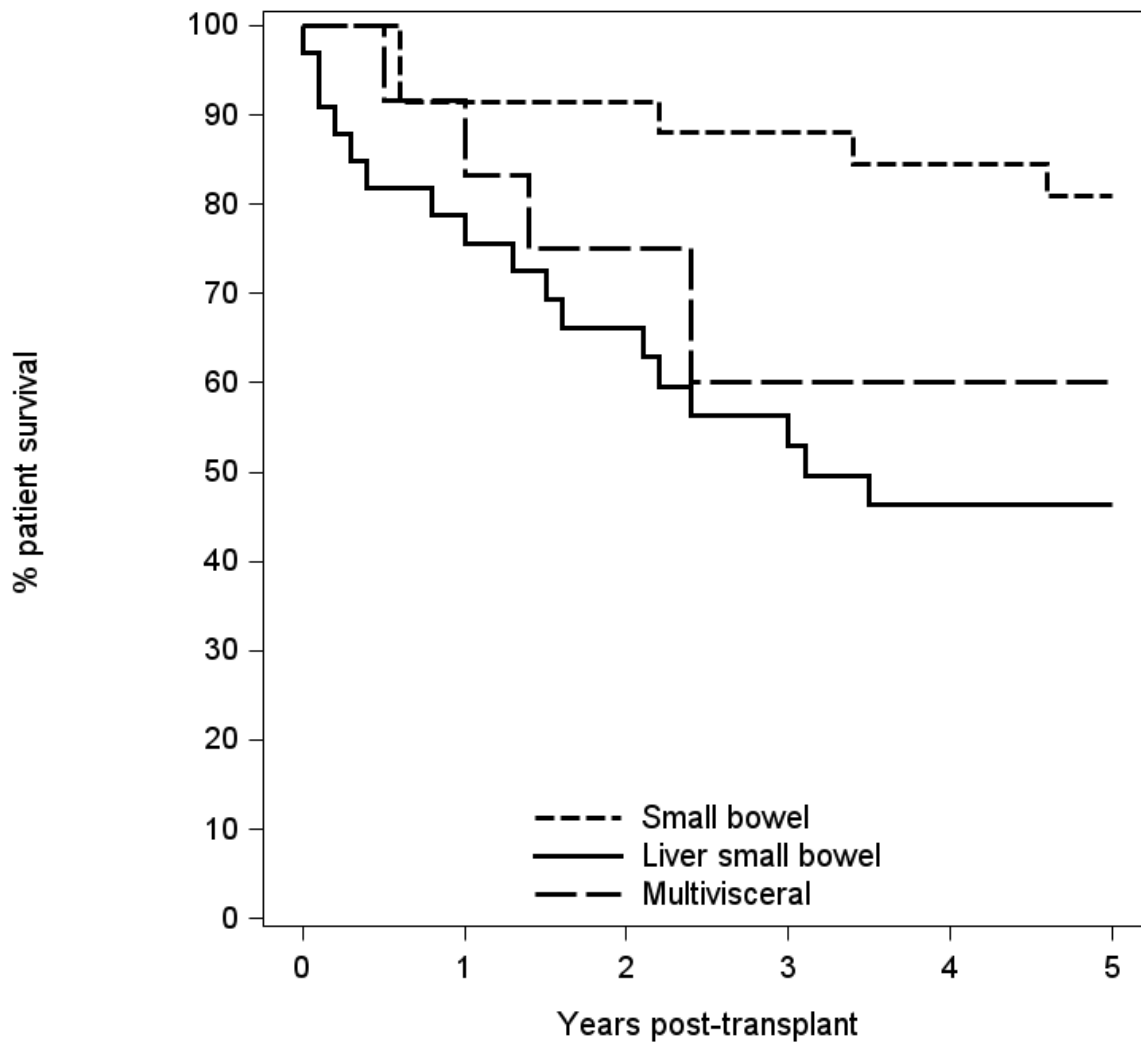
PAEDIATRIC PATIENTS

Table 2 Paediatric patient survival for first intestinal transplants between 1 January 2007 and 31 December 2022, by transplant type

Transplant type	No. of patients	% 90 day survival (95% CI)		% 1 year survival (95% CI)		% 3 year survival (95% CI)		% 5 year survival (95% CI)	
Small bowel	35	100	-	91.4	75.7 – 97.2	88.0	71.1 – 95.4	80.8	62.0 – 91.0
Liver small bowel	33	87.9	70.9 – 95.3	75.6	57.1 – 87.0	56.3	37.5 – 71.4	46.3	28.4 – 62.5
Multivisceral	13	100	-	91.7	53.9 – 98.8	60.0	22.6 – 83.9	60.0	22.6 – 83.9
Log-rank p-value		0.05		0.13		0.02		0.01	

Survival rates at 3 and 5 years should be interpreted with caution due to the low number of patients entering the interval alive, which may produce unstable estimates.

Figure 1 5 year paediatric patient survival following intestinal transplantation, by transplant type



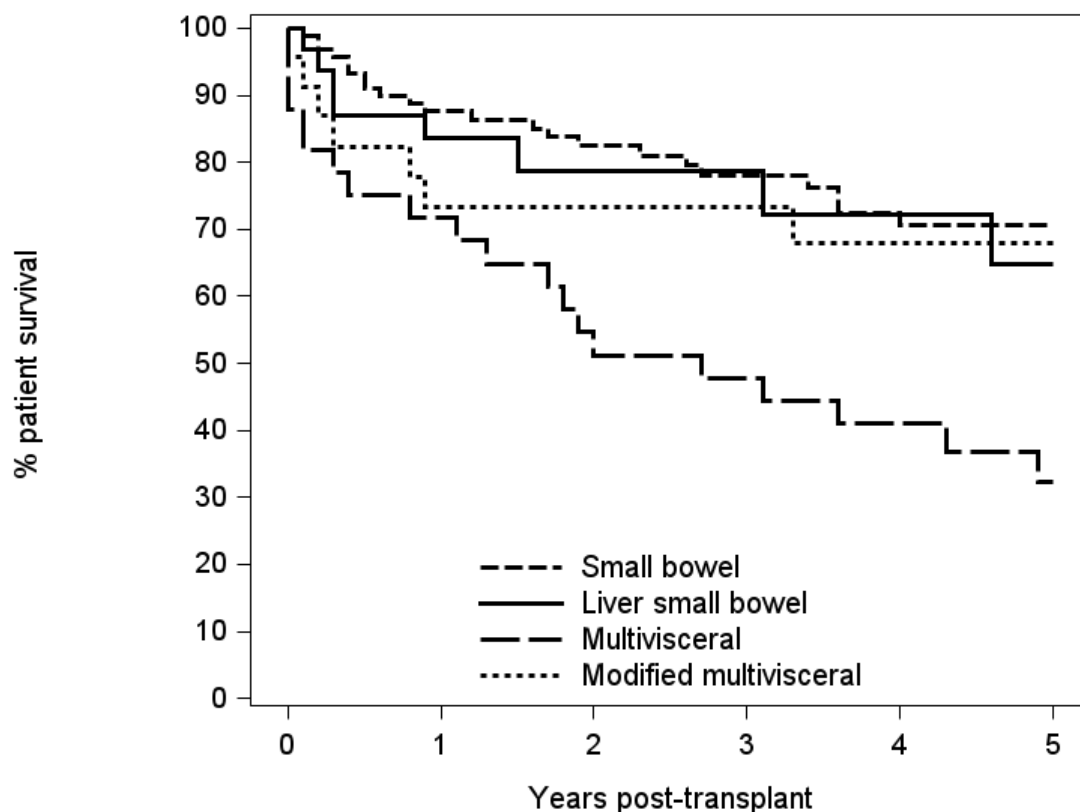
Small bowel	35	29	25	21
Liver small bowel	33	24	17	11
Multivisceral	13	11	4	3

ADULT PATIENTS

Table 3 Adult patient survival for first intestinal transplants between 1 January 2007 and 31 December 2022, by transplant type

Transplant type	No. of patients	% 90 day survival (95% CI)		% 1 year survival (95% CI)		% 3 year survival (95% CI)		% 5 year survival (95% CI)	
Small bowel	94	96.8	90.4 – 99.0	87.6	78.7 – 92.9	78.0	67.3 – 85.6	70.6	58.2 – 79.8
Liver small bowel	32	93.8	77.3 – 98.4	83.6	64.9 – 92.8	78.7	57.9 – 90.0	64.9	39.3 – 81.9
Multivisceral	33	81.8	63.9 – 91.4	71.7	52.6 – 84.2	47.8	29.4 – 64.1	32.3	16.0 – 49.7
Modified multivisceral	23	87.0	64.8 – 95.6	73.2	49.8 – 87.0	73.2	49.8 – 87.0	68.0	44.1 – 83.4
Log-rank p-value		0.02		0.08		0.005		0.001	

Survival rates 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 2 5 year adult patient survival following intestinal transplantation, by transplant type

Small bowel	94	71	43	31
Liver small bowel	32	17	12	8
Multivisceral	33	21	14	5
Modified multivisceral	23	16	14	10