BAPEN
Putting patients at the centre of good nutritional care

# Top Tips in Adult Intestinal and Multivisceral Transplantation Referral

## What, who, when, where and how?

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On average 15 intestine containing transplant operations are performed in the UK in adults each year. Outcomes of intestine, liver and intestine and 'modified multivisceral' transplants (stomach, pancreas, intestine, colon without liver) are equivalent, but are inferior to full liver-containing multivisceral transplants. Around 75% of patients receiving a non-liver containing graft in the UK can expect to be alive after 5 years, compared to approximately one third of patients receiving a full multivisceral transplant. Nevertheless, the longest currently surviving UK adult intestinal recipient received a full multivisceral organ transplant, including kidney, in 1998. The majority of patients (>95%) are liberated from parenteral and enteral nutrition or fluid support post-transplant, usually within 4 weeks. Quality of life can be significantly improved post-transplant after an uncomplicated course and when very poor beforehand. However, post-operative complications and the side effects of medications can still impair subsequent quality of life. Nevertheless, given current survival rates from isolated intestinal grafts, quality of life needs to be considered on an individual basis in the decision to transplant.

### WHAT operations are available?

Intestine containing grafts include:

- Isolated intestinal transplant (ITx).
- Liver and intestine (LITx).
- Modified multivisceral including stomach (MMVTx).
- Multivisceral (MVTx) including stomach and liver.

Pancreas is usually included with intestinal grafts for anatomical rather than functional reasons, and the ileocaecal valve and a segment of colon are usually included for improved fluid and electrolyte absorption. Patients usually require a stoma which can be reversed between 6 months and 1-year post-transplant.

### WHO should be referred?

- Patients at risk of life-threatening complications of home parenteral nutrition (HPN):
  - Impending loss of vascular access.
  - Recurrent life-threatening catheter-related blood stream infections.
  - Progressive or severe liver disease (intestinal failure-associated or exacerbation of pre-existing liver disease).
- Patients in whom HPN support is inadequate:
  - Extreme fluid losses (with acute kidney injury [AKI] and chronic kidney disease [CKD]) or ultra-short bowel.
  - Significant impairment of quality of life.
- Patients requiring other organ transplants who require intestine for anatomical or functional reasons:
  - Severe porto-mesenteric thrombosis at risk of fatal haemorrhage or requiring liver transplant without identifiable graft portal inflow.
  - Patients requiring renal transplantation who are also supported with intravenous fluids.
- Patients with acute or impending mesenteric vascular compromise:
  - Intestinal desmoid tumours requiring extensive resection.
  - Acute loss of mesenteric blood flow (i.e. thromboembolic disease, fibromuscular dysplasia).

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## WHEN should patients be considered for transplantation referral?

- Preferably before the development of significant physical and psychological co-morbidity.
- Waiting times are generally short for intestine only – but may be prolonged by graft size consideration and if patients have been significantly sensitised by previous blood transfusions, hence early referral and discussion is appropriate.
- There is no formal age limit but outcomes are worse in the over 60s.
- ***For loss of vascular access***, as soon as 2 out of the 4 major supra-diaphragmatic routes have been lost *(NB central vascular access is still required for the operation – above and below the diaphragm for liver containing grafts).*
- ***For progressive IF-associated liver disease***, during early stages of fibrosis before the onset of cirrhosis, therefore before the need for liver and intestinal transplant as early liver disease can be reversed by isolated intestinal transplant *(NB patients with <20cm of small intestine may reach this point within 1-3 years of HPN therefore best to refer early; fibroscan and blood tests are not adequate for assessment which still requires liver biopsy).*
- Whilst HPN remains first line treatment for intestinal failure (IF), we recommend that IF/HPN centres continually consider the suitability of their patients for transplantation to avoid inadvertently missing the opportunity (by development of liver disease or loss of vascular access).

## WHERE do intestinal transplant operations take place?

- There are two adult intestinal transplant centres – Oxford and Cambridge but Oxford does not offer liver containing grafts.

## HOW should patients be referred for transplantation?

- All patients are discussed at a 2-monthly National Small Intestinal Transplant (NASIT) meeting and referring centres are welcome to attend in person or by video link.
- Referrals can be made directly to NASIT, the adult transplant centres (Cambridge or Oxford) or via the national IF centres (St Mark's or Salford Royal).
- Urgent referrals should be made directly to the transplant centre by email or telephone. Contact details:
  - Cambridge:
    - Tel: **01223 349461**
    - Email: **add-tr.sbtransplant@nhs.net**
  - Oxford:
    - Tel: **01865 228657**
    - Email: **Heather.Howe@ouh.nhs.uk**

### Suggested reading


- NHS Blood and Transplant (2018). Annual Report on Intestine Transplantation. Report for 2017/2018 (1 April 2008 – 31 March 2018): https://nhsbtdbe.blob.core.windows.net/umbraco-assets-corp/12283/nhsbt-intestine-transplantation-annual-report-2017-18.pdf
- Vianna RM, Mangus RS (2009). Present prospects and future perspective of intestinal and multivisceral transplantation. Curr Opin Clin Nutr Metab Care.;12(3): 281-286.
- Sudan D (2010). Long term outcomes and quality of life after intestine transplantation. Curr Opin Organ Transplant.; 15(3): 357-360.