



ELSEVIER

Contents lists available at ScienceDirect

## Best Practice & Research Clinical Gastroenterology



11

### Enteral approaches in malabsorption



Yaron Avitzur, Associate Professor,  
Department of Paediatrics, University of Toronto <sup>a, b, c, d, \*</sup>,  
Glenda Courtney-Martin, MSc., PhD, RD.,  
Assistant Professor, Faculty of Kinesiology & Physical  
Education, University of Toronto <sup>a, b, c, e</sup>

<sup>a</sup> Research Institute, The Hospital for Sick Children, Toronto, Canada

<sup>b</sup> Group for Improvement of Intestinal Function and Treatment (GIFT), The Hospital for Sick Children, Toronto, Canada

<sup>c</sup> Transplant Centre, The Hospital for Sick Children, University of Toronto, Toronto, Canada

<sup>d</sup> Division of Gastroenterology, Hepatology and Nutrition, Department of Pediatrics, The Hospital for Sick Children, University of Toronto, Toronto, Canada

<sup>e</sup> The Faculty of Kinesiology and Physical Education, University of Toronto, Toronto, Canada

#### Keywords:

Enteral nutrition  
Intestinal failure  
Short bowel syndrome  
Children  
Formula  
G-tube  
J-tube  
Solid food

#### A B S T R A C T

Enteral autonomy and freedom from parenteral nutrition dependency is the ultimate therapeutic goal in children with intestinal failure. This can be achieved following attainment of bowel adaptation in conditions such as short bowel syndrome. Enteral nutrition is a major therapeutic cornerstone in the management of children with intestinal failure. It promotes physiological development, bowel adaptation and enhances weaning from parenteral nutrition. The optimal method of delivery, type of nutrients, timing of initiation, promotion of feeds and transition to solid food in children with short bowel syndrome are debated. Lack of high quality human data hampers evidence based conclusions and impacts daily practices in the field. Clinical approaches and therapeutic decisions are regularly influenced by expert opinion and

*Abbreviations:* IF, intestinal failure; TPN, total parenteral nutrition; PN, parenteral nutrition; EN, enteral nutrition; GI, gastro-intestinal; GERD, gastroesophageal reflux disease.

\* Corresponding author. Division of Gastroenterology, Hepatology and Nutrition, The Hospital for Sick Children, 555 University Avenue, Toronto, ON M5G 1X8, Canada.

E-mail address: [aron.avitzur@sickkids.ca](mailto:aron.avitzur@sickkids.ca) (Y. Avitzur).

<http://dx.doi.org/10.1016/j.bpg.2016.03.009>

1521-6918/© 2016 Elsevier Ltd. All rights reserved.

center practices. This review summarizes the physiological principles, medical evidence and practice recommendations on enteral nutrition approaches in short bowel syndrome and provides a practical framework for daily treatment of this unique group of patients. Oral and tube feeding, bolus and continuous feeding, type of nutrients, formulas, trace elements and solid food options are reviewed. Future collaborative multicenter, high quality clinical trials are needed to support enteral nutrition approaches in intestinal failure.

© 2016 Elsevier Ltd. All rights reserved.

---

## Introduction

Intestinal failure (IF) is characterized by the inability of the intestine to absorb sufficient nutrients and fluids to maintain normal energy balance and growth in children. It results from a reduction in the functional capacity of the intestine, secondary to critical reduction in intestinal mass as in short bowel syndrome (SBS), poor tolerance of feeds due to motility disorders or abnormal enterocyte function and structure in congenital diarrheas [1]. Total parenteral nutrition (TPN) is required in patients with IF to maintain normal fluid and electrolyte balance and adequate nitrogen and energy balance. However, prolonged use of TPN may be associated with severe complications and poor quality of life. As a result, weaning of TPN and attainment of enteral autonomy is the ultimate goal in the treatment of patients with IF. Early initiation and ongoing promotion of enteral feeding is a therapeutic cornerstone in intestinal rehabilitation with the goal of enteral autonomy. Despite the central role of enteral feeding in the treatment of IF, high quality data in the form of randomized controlled clinical trials and carefully conducted clinical observations to support therapeutic decisions are largely lacking. Clinical approaches to enteral feeding represent in many cases expert opinion and medical center practices and should be acknowledged as such. Uncertainties remain for the ideal feeding technique (continuous vs. bolus feeding), route of entry (oral vs. tube feeding; G-tube vs. J-tube), the optimal formula feed and the pathways to enteral autonomy in terms of rate of progression of enteral feeding and transition to solid food. Nevertheless, utilization of gut physiology principles, clinical experience and some data on enteral nutrition in short bowel syndrome provide a basis for clinical practice and therapy.

Short bowel syndrome, the most common cause for IF [2] results from extensive surgical resections in congenital defects such as intestinal atresia and gastroschisis, necrotizing enterocolitis, mid-gut volvulus and thrombotic/ischemic events. Initiation and promotion of enteral feeding in SBS is dependent on the anatomy and physiology of the residual bowel and is influenced by the small bowel length, remaining jejunum or ileum and the presence of colon in continuity, ileo-cecal valve and stoma. Distal resection with loss of ileum and creation of jejunostomy is associated with higher losses of fluids, electrolyte and reduced absorptive capacity which translate into prolonged parenteral nutrition (PN) use and slower gut adaptation [1,3,4]. Factors contributing to this clinical presentation include reduced absorptive capacity of large volume secretions from the stomach and proximal intestine, loss of bile acids and loss of the 'ileal brake' effect. Proximal resection and 'takeover' of jejunal roles such as fat, fluid and electrolyte absorption by the ileum will be better tolerated by patients and is associated with faster and more efficient adaptation. Colon in continuity provides improved fluid and electrolyte absorption and improved energy balance secondary to production of short chain fatty acids from undigested complex carbohydrates. Additional factors will influence tolerance of enteral feeding and the duration of bowel adaptation and PN weaning. These include abnormal bowel motility, bacterial overgrowth and PN related complications such as intestinal failure associated liver disease or frequent infections. These factors should be considered when devising a feeding plan as they influence the type, volume and tolerance of enteral feeds.

The following general approach to enteral feeding can be used as broad guiding principles.

Download English Version:

<https://daneshyari.com/en/article/3254130>

Download Persian Version:

<https://daneshyari.com/article/3254130>

[Daneshyari.com](https://daneshyari.com)