

Can we Improve the Nutritional Management of Bowel Obstruction?



Dr Alison Culkin, Lead Intestinal Failure & Rehabilitation Dietitian, Nutrition & Dietetic Department, St Mark's Hospital, Lindsey Allan, Macmillan Oncology Dietitian, Royal Surrey NHS Foundation Trust, and Nick Bergin, Specialist Nutrition Support Dietitian and Acute Team Leader, Airedale NHS Foundation Trust

Bowel obstruction (BO) is a common cause of admission to hospital for patients who have undergone abdominal surgery. It is a debilitating condition causing abdominal pain, nausea and vomiting which can lead to acute kidney injury. Life threatening complications such as perforation, ischaemia and aspiration pneumonia can accompany BO and patients need a rapid and well considered plan from senior clinicians. Guidelines currently exist for the management of BO but the decision whether to operate, or conservatively manage, a frail or elderly patient is complex.

Patients presenting to hospital with BO are usually placed nil by mouth (NBM) and supported with IV fluids. They often have a nasogastric tube (NGT) inserted to allow relief from vomiting. This period of conservative management can continue for days. Once a decision to operate is made, then postoperatively the patient can remain NBM until gut function improves. After the patient is discharged, oral intake can take weeks to recover, but the risk of obstruction remains. These factors put patients at increased risk of malnutrition.

Weight loss and malnutrition are strong prognostic factors of survival. Malnutrition is associated with increased morbidity and mortality, impaired immune response, delayed wound healing, a longer length of stay and increased healthcare costs.¹ However, detecting malnutrition can be problematic in patients with significant fluid shifts.

This article aims to describe the current status of the nutritional management of BO and to encourage readers to reflect on their own practice in relation to its management. Dr Alison Culkin, Lead Intestinal Rehabilitation Dietitian, St Mark's, describes the current issues.

In 2017 the National Audit of Small Bowel Obstruction (NASBO) published their findings which audited 2,431 patients. A third of patients were malnourished and half were unable to eat for more than five days. Patients at medium and severe risk of malnutrition were more likely to die or experience a major complication. Of those at severe risk, only 56% were reviewed by a dietitian after a mean of 4.5 days, representing a significant delay. A third did not receive any nutritional intervention, and of those that did only 29% received parenteral nutrition (PN).²

In 2020 the National Confidential Enquiry into Patient Outcome and Death (NCEPOD) published 'Delay in Transit. A review of the quality of care provided to patients aged over 16 years with a diagnosis of acute bowel obstruction'. The report highlighted areas of concern around nutrition and hydration. The report observed only half of patients had a Malnutrition Universal Screening Tool (MUST) score recorded with only 55% of those having a repeat MUST score.³

A MUST score can be difficult to determine accurately, and this is particularly true in BO in which fluid shifts and provision of IV fluids can influence weight. It is the author's experience that step 3, which is the acute disease severity score, is often not completed well. This asks: "If the patient is acutely unwell **and** there has been or is likely to be no nutritional intake for >5 days then a score of 2 is recorded which is referral to the dietitian."⁴ It is highly likely that patients with BO fit into this category. Education around step 3 may improve referrals to the appropriate staff such as dietitians and nutrition support teams. NCEPOD reported 76.7% of patients were on a surgical ward, and these wards should be targeted for training.⁵

In patients who underwent surgery (n=356) there were barriers to reinstating nutrition postoperatively in about a third. Reasons included postoperative ileus (n=54) and issues with NGT output (n=7) which indicate type 1 intestinal failure (IF), an indication for PN. Only 123 patients received nutrition support, with a third receiving enteral nutrition and two-thirds receiving PN. A third of patients (n=147) did not receive any nutritional advice on discharge.

Recommendations from the NCEPOD report included:

1. MUST on admission and at least weekly during hospital stay.
2. Review by a dietitian/nutrition team once diagnosis made.
3. MUST and if required a dietitian/nutrition team assessment at discharge.

However, there were no recommendations regarding when to start artificial nutrition support. The following clinical scenarios aim to highlight the difficulties in decision making around PN.

Mrs C is a 77-year-old who had a bowel resection and end ileostomy for diverticular disease six years ago. She had two further laparotomies for BO and one recent admission managed conservatively. She was admitted three days ago with abdominal pain, vomiting and a reduced stoma output. Her weight was stable prior to admission but she has lost 20% of her body weight in the last six months. Her BMI is 25 kg/m². CT scan indicates BO.

	Clinical scenario 1			Clinical scenario 2		
	Oral	NGT	Stoma	Oral	NGT	Stoma
Day 1	NBM	1.5L	Nil	NBM	1.5L	Nil
Day 2	NBM	1.5L	Nil	NBM	1.5L	Nil
Day 3	NBM	1.3L	Nil	800ml	1.2L	Passing flatus

Would you recommend PN for clinical scenario 1? What information and evidence are you using to come to your decision? Maybe we need to ask the following:

Is the patient malnourished or at risk of malnutrition?

MUST score of 4 due to >10% unplanned weight loss and she is acutely unwell and there has been, or is likely to be, no nutritional intake for more than five days. Therefore, she is malnourished.

Does the patient have Intestinal Failure?

Her GI function is compromised as she is in BO. She has type 1 IF.

What are the overall goals of treatment? What is the prognosis?

It is important to liaise with our surgical colleagues to discuss if there is a plan to operate as surgery is an additional metabolic stress which will affect her nutritional status, putting her at increased risk of poor clinical outcomes.

What are the benefits of PN?

There are no randomised controlled trials assessing the provision of PN in patients with BO which is why these decisions can be complex. However, we do know that patients undergoing surgery who are malnourished have increased morbidity and mortality.²

What are the risks of PN?

PN carries risks if not done well and can result in metabolic and infective complications.⁶ The importance of a non-touch technique when manipulating catheters used for PN is paramount. Patients receiving PN require close monitoring to minimise complications including daily weight, biochemistry including capillary blood glucose, accurate fluid balance and sepsis surveillance. Do you know the catheter related bloodstream infection rates in your hospital? Are some wards better than others?

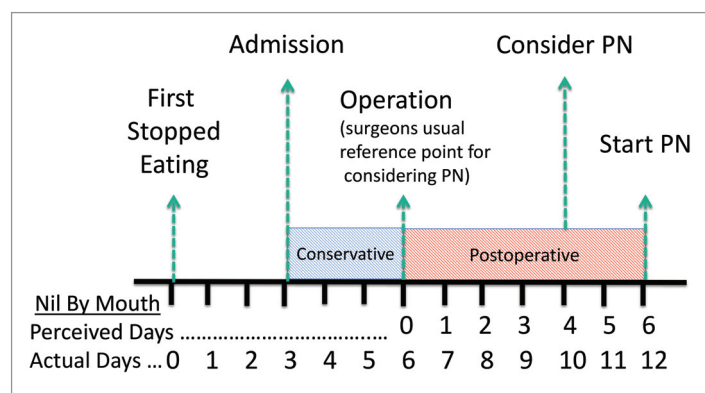
So, in my opinion the patient requires PN and will benefit from nutrition support.

How about clinical scenario 2, would you recommend PN?

She remains malnourished and the pros and cons of PN are the same, but does she have IF? Her NGT outputs remain high although reducing despite an increased oral fluid intake. She is passing flatus which may be indicative of resolving BO. If there is a plan to operate then she is still malnourished which puts her at risk of post-operative complications. Therefore, in my opinion she still has type 1 IF and requires PN.

The reason I feel she requires PN is due to a concept coined 'incremental oversight' by Dr Tim Wilson, Colorectal Surgeon, Doncaster and Bassetlaw Teaching Hospital, NHS Foundation Trust. If the surgical team consider the day of surgery as day 0 and then consider PN on day 4/5 then by the time an assessment is completed and access achieved, the patient may receive PN on the evening of day 5 or 6. However, if this was preceded by three days of conservative management and the history indicates the patient was not eating for three days before admission then day 6 is actually 11-12 days of no nutrition (Figure 1). The patient then becomes a high-risk surgical candidate.⁷

Figure 1: Incremental oversight (Tim Wilson, Doncaster and Bassetlaw Teaching Hospital, NHS Foundation Trust)



However, what if the patient has a malignant BO? Would this change your management?

Lindsey Allan, Macmillan Oncology Dietitian, Royal Surrey NHS Foundation Trust, will now discuss the dietary management in this scenario. Malignant BO is becoming increasingly common, affecting up to 50% of ovarian and 29% of bowel cancer patients.⁸ In a national audit 63% of patients presenting with malignant BO were at medium or severe risk of malnutrition.²

Patients with a poor prognosis, or who are not deemed appropriate candidates to receive PN, can be limited to sips of clear fluids which impacts adversely on nutritional status. This can be extremely distressing to the patient, their families as well as healthcare professionals.^{9,10} Little attention has been given to patients at risk of malignant BO who may be symptomatic but are not fully obstructed and capable of tolerating some oral intake.

Recommendations on the nutritional management of BO are based on low levels of evidence and dietary interventions are dependent on local practice.^{11,12} Surgical intervention is not always appropriate and nutrition support is challenging. Although there is limited research regarding the role of nutrition in BO, research in Crohn's disease (CD) has shown that exclusive enteral nutrition can achieve remission in 81.4% of patients.¹³ Subsequent studies have resulted in the development of guidelines advising the use of a low fibre diet in the presence of strictures or adhesions.¹⁴

Low fibre diets are recommended in cancer patients with strictures to reduce constipation, faecal loading, and recurrence of abdominal bloating, pain and early satiety.¹⁵

To date, no clinical trials have been conducted to support the use of low fibre diets in partial BO in the cancer setting. However, guidelines for CD could be applied to this patient group and have been shown anecdotally to reduce symptoms and enable patients to increase oral intake.

The use of oral nutritional supplements is recommended in patients whose intake is impaired and who struggle to meet nutritional requirements.¹⁴ The EDMOND multi-centre feasibility trial studied the effects of elemental diet in ovarian cancer patients with inoperable BO over a two-week period and found 68.4% tolerated the diet.¹⁶ There was a reduction in the incidence of vomiting from 72% to 23.5% and a reduction in pain from 96% to 76% at the end of week two. Further research is needed to establish the effect of polymeric oral nutritional supplements on symptoms and quality of life in BO cancer patients.

In the absence of clinical guidelines, and at the request of patients, the Royal Surrey dietitians have adapted the evidence for CD and applied it to develop a structured four-stage diet for use with patients who are able to tolerate food and fluids orally but who are symptomatic from BO (Table 1). Some patients are only able to drink liquids, while others may tolerate a purée or soft diet. All stages are low in fibre and bread products are restricted due to reports from patients that symptoms are worse after eating them.

If symptoms improve, patients are encouraged to increase the consistency of food by proceeding to the next stage, or if they become increasingly symptomatic, they are advised to return to clear fluids. Advice needs to stress the importance of progressing gradually from one stage to the next, to ensure that new foods do not cause symptoms, and patients should be reminded to chew food well.

The BOUNCED trial, a feasibility study of a four-stage bowel obstruction cancer diet, is in progress at the Royal Surrey (ISRCTN: 10518796). It aims to establish if the diet is well tolerated, easy to follow, can reduce symptoms and maintain quality of life. Following the results, a definitive multicentre trial is planned.

Nick Bergin, Specialist Nutrition Support Dietitian and Acute Team Leader, Airedale NHS Foundation Trust, now describes his involvement as a case reviewer in the NCEPOD report (2020).

Table 1: Royal Surrey four-stage bowel obstruction diet

Stage	Bowel obstruction diet	Current diet/symptoms at referral
Stage 1	Clear fluids only	Symptomatic on all food and fluids
Stage 2	ALL thin liquids	Tolerates liquids, symptoms on solids
Stage 3	Smooth or puréed foods only, low fibre (includes melt-in-the-mouth products)	Symptoms on a low fibre diet (including bread products)
Stage 4	Soft, sloppy foods, low fibre (no bread products)	Symptoms on a high fibre diet (including bread products)

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I saw an advert on the BDA's website asking for dietitians to become a 'Case Reviewer' for NCEPOD in identifying factors in the care of inpatients with BO. I was interested in being part of this study as this is a clinical area I have experience in, and I was keen to help improve standards of care for this patient group. Also, I have never worked on such a large national project so I felt this would be a great opportunity to develop my skills and experience. There was no requirement for a research background you just needed experience in working with patients with BO. I submitted my CV, and I was selected.

I attended training where the outline of the study was discussed. I then attended four meetings over a couple of months, where I reviewed medical notes. Each meeting was divided into different sessions with the expectation you would review two or three cases. This involved completing a questionnaire and discussing the management with other case reviewers.

During the meetings I was asked if the nutritional care of these patients was adequate, or not, and I could ask questions about the surgical and/or medical care. For example, another case reviewer might ask if a patient should have been considered for PN a lot earlier during their admission.

Although initially it felt daunting being in a room full of various health care professionals, we all soon started talking to each other. The opportunity to listen to other people's opinions was invaluable. It has made me think about the importance of teamwork, and allowed me to have some insight into how other departments work, such as radiology and the emergency department.

This has been a fantastic learning experience and I have certainly improved my knowledge of the management of BO. I used this opportunity to raise the awareness of how dietitians and nutrition support teams can help and highlighted the importance of appropriate nutrition support.

I would strongly encourage other dietitians to be involved in NCEPOD. We need to keep raising our profile, be involved in decision making at local, regional and national levels, and highlight why nutrition is so important and can no longer be overlooked.

Conclusion

It is imperative to screen for malnutrition on admission, avoid long periods of NBM, initiate nutrition support if malnutrition is present and refer to a dietitian for dietary manipulation and prevention of malnutrition and symptom management.

