

# Enteral nutrition reduced postoperative complications but increased minor adverse effects in gastrointestinal cancer

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**QUESTION:** In malnourished patients having elective surgery for gastrointestinal cancer, does enteral nutrition reduce postoperative complications when compared with parenteral nutrition?

## Design

Randomised [allocation concealed]\*, unblinded, controlled trial with follow up to discharge.

## Setting

10 centres in Italy.

## Patients

317 patients who were  $\geq 18$  years of age (mean age 64 y, 58% men) and had weight loss  $\geq 10\%$  of usual body weight in the previous 6 months, histologically confirmed gastrointestinal cancer, and major planned elective surgery. Exclusion criteria were hepatic, renal, or cardiac dysfunction; Karnofsky performance status  $< 60$ ; pregnancy; ongoing infection; or intestinal anastomosis of the large bowel without a diverting stoma. Follow up was complete.

## Intervention

Patients were allocated to enteral (n=159) or parenteral (n=158) nutrition. Patients in the enteral nutrition group had a jejunostomy feeding catheter or nasojejunal feeding tube placed during surgery. All patients had a central venous catheter placed during surgery. Both nutrition regimens were started the morning after surgery and were continued until patients were able to tolerate adequate oral food intake.

## Main outcome measures

Postoperative complications. Secondary outcome measures were length of postoperative hospital stay, adverse events, and treatment switchover.

## Main results

Analysis was by intention to treat. Fewer patients in the enteral nutrition group than the parenteral nutrition group had postoperative complications (p=0.005); the mean length of hospital stay was shorter in the enteral nutrition group (p=0.009) (table). More patients in the enteral nutrition group than the parenteral nutrition group had adverse events (p<0.001) (table), such as abdominal distension or cramps, and more switched treatments (8.8% v 0%, p<0.001), mostly because of complications such as tube displacement.

## Conclusion

In malnourished patients having elective surgery for gastrointestinal cancer, jejunal enteral feeding reduced postoperative complications and hospital stay relative to parenteral nutrition but increased minor adverse effects such as abdominal cramping and distension.

\*Information provided by the author

Enteral nutrition (EN) v parenteral nutrition (PN) for malnourished patients having surgery for gastrointestinal cancer†

Outcomes at discharge	EN	PN	RRR (95% CI)	NNT (CI)
Overall postoperative complications	34%	49%	31% (10 to 48)	7 (4 to 22)
			RRI (CI)	NNH (CI)
Adverse events	35%	14%	153% (64 to 294)	5 (4 to 9)
			Mean difference (95% CI)	
Mean length of postoperative stay (d)	13.4	15.0	1.6 (0.5 to 2.7)	

†Abbreviations defined in glossary; RRR, RRI, NNT, NNH, mean difference, and CI calculated from data in article.

## COMMENTARY

Controversy over the benefits of early enteral feeding in postoperative and critically ill patients results from inconsistent findings in small studies of patients with heterogeneous medical problems, pre-existing conditions, and varying feeding routes and solutions.<sup>1 2</sup> Here, in a larger randomised controlled trial, Bozzetti *et al* control for many of the factors that have resulted in previous discrepancies. Their research provides an important contribution by identifying one patient population (gastrointestinal cancer with preoperative malnutrition) who experience fewer postoperative complications and have a shorter length of stay when they receive early enteral compared with parenteral nutrition. Similar energy and nitrogen quantities in the formulas limit the comparison to route of administration. Clear definitions of complications used as outcome measures make comparison studies possible. Identification of complications by staff not involved in the study overcomes concern of bias because the researchers were not blinded. The 7 days of follow up indicated no difference in recovery after discharge as a result of the enteral feeding and earlier discharge.

Cost savings are implied through decreased length of stay and reduced complications, but costs were not measured. These findings are compelling, but careful cost analysis is necessary to evaluate the effect of implementation. Standard enteral formulas are less expensive than parenteral formulas. However, specialised enteral formulas, use of jejunal feeding tubes, and staff time to administer enteral feeding may increase costs. Additional staff time to decontaminate feeding tubes and manage patients' adverse events such as diarrhoea, nausea, or vomiting are considerations.

These considerations do not detract from the positive outcomes shown for this population through a decrease in expensive, potentially life threatening complications and length of stay. Although adverse effects (ie, abdominal distension, abdominal cramps, diarrhoea, and vomiting) occurred more frequently in enterally fed patients, these were generally mild and should not limit implementation. Application of these findings will create practices (eg, protocols) that will improve outcomes through early nutrition assessment and postoperative intervention in selected patient groups.

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