Proceedings of the Nutrition Society (2010), **69 (OCE2)**, E198 doi:10.1017/S0029665109993946

Malnutrition Matters, Joint BAPEN and Nutrition Society Meeting, 13–14 October 2009, Cardiff

A randomised controlled trial of early enteral nutrition versus standard management for patients undergoing major resection for upper gastrointestinal malignancy – a comparison of costs

R. C. Barlow[1,2], P. E. Price[1], W. Lewis[2] and M. C. A. Puntis[1]
[1]*Cardiff University, Cardiff CF14 5XW, UK and* [2]*Department of Surgery, University Hospital of Wales, Cardiff CF14 5XW, UK*

In today's economic climate with a focus on limiting public spending, the provision of effective and efficient care has never been more important. Traditional management of patients post-operatively has typical involved a period of nil by mouth[(1)]; however, early enteral nutrition (EEN) has become increasingly popular over recent years[(2)]. A Randomised Controlled Trial (RCT) by Barlow *et al.*[(3)] concluded that the use of EEN reduced length of hospital stay (LOHS) by 3 days (16 versus 20 days; $P<0.05$) and improved clinical outcomes. It is assumed that patients who have a reduced LOHS decrease healthcare expenditure[(4)].

The aim of this study was to determine the costs of two differing treatment arms of an RCT; the use of EEN and traditional management which relied on a period of nil by mouth and intravenous fluid therapy.

This was a prospective, RCT recruiting consecutive patients who were admitted between 2004 and 2006 for major re-sectional surgery for UGI malignancy. All patients entered into the study gave their informed written consent pre-operatively. Patients were randomised to either immediate post-operative EEN via a needle catheter jejunostomy or traditional management of nil by mouth for 5–7 days. The costs of the differences in length of hospital stays, and the costs of treating the statistically significant different major complications were calculated for both groups. All other costs attributed to the development of non-significant complications were assumed to be similar for the two randomised groups.

Ninety-six patients were studied, 54 patients in the EEN group and 42 patients in the traditional group. The total costs of treating the significantly higher level of complications in the standard group were £29 965.80–£179 151.24. This equates to £713.47–£4265.51 per patient in the standard group. The major contributor to this cost is the expenditure associated with treating the patients who developed anastomotic leaks. These patients remained in hospital for a total of 142 additional days as a result of this major complication. This averaged 3.4 days for every patient in the standard group. The cost of treating major complications in the enteral nutrition group was £4480–£13 680. This equates to £82.30 to £253.33 per patient in the enteral nutrition group. Once again the variation in costs is attributed to the cost of treating the one patient who developed an anastomotic leak in the enteral nutrition group. The cost difference of treating the major complications between the groups was £631.17 to £4012.18, if enteral nutrition was used. The total costs for both LOHS and major complications are summarised in the Table below.

Table. Summary of cost analysis calculation

Cost per patient of treating major complications £713.47–£4265.51 in the standard group
Cost of LOHS = £4400 (IQ range £3245–£6160)
Total cost for standard group per patient = £5113.47 (£3958.47–10 425.51)
Cost per patient of treating major complications = £82.30–£253.33 per enteral nutrition patient
Cost of LOHS per patient = £3520 (IQ range £2860–£4840)
+
Cost of providing EEN for intervention period = £270.11
Total costs for EEN group per patient = £3872.41 (£3130.11–£5110.11)
COST SAVING FROM USING EEN = £1241.06 (£828.36–£5,315.40 PER PATIENT)

This study has indicated that the use of EEN when compared to traditional management, improves clinical outcome, reduces LOHS and could provide a cost benefit in the region of £650–£4000 per patient.

1. Lewis SJ *et al*. (2001) *BMJ* **323**, 773–776.
2. National Institute for Health and Clinical Excellence (2006). *Nutrition Support in Adults: Oral Nutrition Support: Enteral Tube Feeding and Parenteral Nutrition. Clinical Guidelines: CG32*. London: NICE.
3. Barlow RC (2008) A RCT of early enteral nutrition versus standard management for patients undergoing major resection. PhD Thesis, Cardiff University.
4. Kalish RL *et al*. (1995) *Am J Med Qual* **10**, 48–54.