Enhanced Recovery After Surgery (ERAS) program attenuates stress and accelerates recovery in patients after radical resection for colorectal cancer: a prospective randomized controlled trial

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
This study assessed the cost-effectiveness of a programme for enhanced recovery after surgery (ERAS), compared with usual management before, during, and after radical resection for colorectal cancer. The authors concluded that the ERAS programme reduced surgical stress and improved recovery, without increasing morbidity or mortality. The analysis relied on a well-conducted randomised study. The authors’ conclusions appear to be valid, but the economic part of the study was not fully described.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study assessed the cost-effectiveness of a programme for enhanced recovery after surgery (ERAS), compared with the usual management before, during, and after radical resection for colorectal cancer.

Interventions
The ERAS programme prevented hypothermia during surgery, and aimed to reduce surgical stress, and to accelerate recovery of gastrointestinal function after surgery. Patients did not have regular mechanical bowel preparation and oral antibiotic before surgery; and compared with usual care, they received less fluids overall, with less colloids, and crystalloids during surgery and less daily fluid infusion after surgery.

This was compared with usual care, in which patients underwent intestinal cleansing and took an oral antibiotic, before surgery.

Location/setting
China/tertiary care.

Methods
Analytical approach:
The analysis was based on one study with a short time horizon, corresponding to the hospitalisation period. The perspective was not clearly stated.

Effectiveness data:
The clinical data were from a randomised controlled trial. Patients were randomised to intervention or control, using computer-generated random numbers. The data collectors and assessors were blinded to group allocation. There were 597 patients, with 298 in the control group (190 men; median age 61 years, range 21 to 80) and 299 in the ERAS group (178 men; median age 59 years, range 24 to 78). Various outcome measures were used, including the nutrition and metabolism index, the recovery index, and the stress index. The primary endpoint was the length of stay after surgery.

Monetary benefit and utility valuations:
Not considered.

Measure of benefit:
No summary benefit measure was used; the main endpoint was the length of stay after surgery.

Cost data:
The economic analysis included the costs incurred during the hospital stay, from before the operation to discharge. A breakdown of cost items was not given. All economic data were from the sample of patients enrolled in the clinical trial. The costs were expressed in Chinese yuan and US $.

Analysis of uncertainty:
Not considered.

Results
The mean length of stay after surgery was 5.7 days (SD 1.6) for the ERAS group and 6.6 days (SD 2.4) for the control group (p<0.001). Other endpoints were comparable or favoured the ERAS programme. For example, the ERAS programme improved albumin and prealbumin levels on one day after surgery, transferrin level five days after surgery, and stress indices. The complication rates were similar for the two groups.

The total cost of the procedure per patient was $2,441.2 (SD 405.1) for the ERAS group and $2,710.7 (SD 466.9) for the control group (p<0.001). Preoperative and surgical costs were similar between groups, while postoperative costs were $548.4 (SD 223.1) for the ERAS group and $804.0 (SD 288.7) for the control group (p<0.001).

Authors’ conclusions
The authors concluded that the ERAS programme reduced surgical stress and improved recovery, without increasing morbidity or mortality.

CRD commentary
Interventions:
The rationale for the selection of the comparators was clear; the proposed programme was compared with the usual management of patients undergoing surgery for colorectal cancer. The ERAS programme had been successfully implemented in European countries and it was extensively described. The study groups were well matched at baseline in their clinical and demographic features.

Effectiveness/benefits:
The clinical part of the analysis was satisfactorily carried out and presented. The main strength of the study was its randomised design, which should have reduced the impact of selection bias. The clinical efficacy was appropriately based on intention-to-treat analysis and the inclusion and exclusion criteria were clearly reported. An extensive description of each outcome was provided. Power calculations were made to determine the appropriate sample size to capture statistically significant differences in the primary endpoint. These factors should have ensured the internal validity of the clinical analysis.

Costs:
Little information was provided on the economic part of the study. The perspective was not stated, but might have been that of the hospital. The resource quantities were from the sample of patients included in the clinical study, and should be representative of the Chinese setting. The data are likely to have been collected carefully given the randomised design of the study. The sources for the unit costs were not provided and the price year not reported. The costs were not varied.

Analysis and results:
The results were extensively presented. A synthesis of the costs and benefits was not performed. The uncertainty was not investigated; no sensitivity analyses were carried out. The authors did not discuss the potential limitations of the analysis. The results were specific to the Chinese setting and are unlikely to be transferable to other settings.

Concluding remarks:
The analysis relied on a well-conducted randomised study. The authors’ conclusions appear to be valid, but the economic part of the study was not fully described.
Funding
Funding received from the Ministry of Health of China, the Shanghai Science and Technology Commission, and the National Natural Science Foundation of China.

Bibliographic details

PubMedID
22102090

DOI
10.1007/s00268-011-1348-4

Original Paper URL
http://www.springerlink.com/content/a3p2571k07447641/

Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Aged; Aged, 80 and over; China; Clinical Protocols; Colectomy; Colorectal Neoplasms /economics /surgery; Female; Hospital Costs; Humans; Length of Stay; Male; Middle Aged; Nutritional Status; Perioperative Care /economics /methods; Postoperative Complications; Prospective Studies; Recovery of Function; Single-Blind Method; Stress, Physiological; Treatment Outcome

AccessionNumber
22012019734

Date bibliographic record published
01/11/2012

Date abstract record published
05/11/2012