

A Meta-Analysis of the Effect of Combinations of Immune Modulating Nutrients on Outcome in Patients Undergoing Major Open Gastrointestinal Surgery

Marimuthu K, Varadhan KK, Ljungquist O, Lobo DN

Ann Surg. 2012;225(6):1060-1068

Objective

Evaluate the impact of immune modulating nutrition (IMN) combinations on postoperative infectious and noninfectious complications, length of hospital stay (LOS), and mortality in patients undergoing major open gastrointestinal surgery.

Methods

Meta-analysis consisting of 26 randomized controlled trials (RCTs) (n=2496) comparing enteral nutrition containing at least two IMN components (L-arginine, L-glutamine, omega-3 fatty acids, and nucleotides) against isocaloric, isonitrogenous, standard enteral diet on postoperative outcomes in a relatively homogeneous group of adult patients undergoing gastrointestinal surgery. The IMN formulas included IMPACT[®], STRESSON[®], RECONVAN[®], and ALITRA Q. The study and control groups had similar timing for the initiation of feeding, amount of formula provided, and duration of time on the formula (minimum of 5 days preoperatively, perioperatively, and postoperatively).

Outcome measures included postoperative infectious complications (i.e. general infections, wound-related infections, and organ-specific infections), postoperative noninfectious complications, length of hospital stay, and mortality. Overall results were analyzed as well as sub-analyses comparing pre-, peri- and post-operative IMN vs. standard formula.

Results

- Infectious Complications: IMN resulted in a 36% reduction in risk of postoperative complications when compared with standard enteral formula. This reduction was statistically significant overall (0.00001) and in all subgroups: preoperatively (52%; P=0.001), perioperatively (47%; P=0.0004), and postoperatively (32%; P<0.00001)
- Noninfectious Complications: Patients who received IMN had an 18% lower risk of noninfectious complications overall. This reduction reached statistical significance in the postoperative group (P=0.006), but not in the other subgroups.
- Length of Stay: Patients who received IMN had statistically significant (P=0.0004) shorter LOS (-1.88 days) than those who received standard enteral nutrition. The perioperative and postoperative subgroups reached statistically significant reductions in LOS (P=0.00001 and P=0.009, respectively), whereas the preoperative group did not.
- Postoperative Mortality: The postoperative mortality was similar in both groups.

Conclusion

IMN is beneficial in reducing postoperative infectious and noninfectious complications and shortening hospital stay in patients undergoing major open gastrointestinal surgery as compared to a standard enteral formula.

Summary prepared by Nestle Health Science. The abstract and links to the complete article can be accessed at <http://www.ncbi.nlm.nih.gov/pubmed/22549749>.