

Safety of Using Enteral Nutrition Formulations Containing Dietary Fiber in Hospitalized Critical Care Patients: A Systematic Review and Meta-Analysis

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Journal of Parenteral and Enteral Nutrition 2021; 45:882-906

Introduction:

Because of accumulating evidence showing the beneficial effect of fiber in improving gastrointestinal (GI) and immune function, many enteral nutrition (EN) formulations contain fiber. Recent ASPEN/SCCM Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient reflect the conflicting nature of peer-reviewed scientific literature concerning this topic.

Objective:

The purpose of this systematic review and meta-analysis was to review and analyze the current available scientific literature on fiber-containing EN formulas used in critically ill patients.

Methods:

This PROSPERO-registered review followed the National Academy of Medicine's Standards for Systematic Reviews and the Cochrane Handbook for Systematic Reviews of Reviews of Interventions.

Results:

A total of 19 articles that were published between 1990 and 2020 were selected: 14 randomized controlled trials, two retrospective studies, a dual single-arm study, one case report and one case series of four patients. All studies were conducted in patients with critical illness. EN formulas were delivered via feeding tubes; two studies reported oral delivery of fiber. EN formulation and supplement interventions had single or multiple fibers, prebiotics or synbiotics.

Thirteen studies used soluble fiber interventions, four used mixed-fiber formulas (soluble and insoluble), the case report used insoluble fiber, and the case series used a formula with insoluble soy polysaccharide fiber. Diarrhea was the most

commonly reported adverse event. GI-related complications included abdominal distension, nausea/vomiting, constipation, gastric residuals, regurgitation/aspiration, bowel obstruction, flatulence and mortality.

No study reported significant group differences for cause of death attributed to EN, or mortality. All but one study showed no significant group differences in length of stay. All but three studies showed no group differences for EN intake measures. This review found no indication that using EN formulas with fiber was unsafe for patients with critical illness. Fiber-containing EN is safe for use in hemodynamically stable patients with critical illness. The authors suggest that use of fiber in patients who have critical illness and increased risk for bowel ischemia and severe dysmotility is not currently recommended. It was noted that there was insufficient evidence to assess fiber type by disease condition or severity.

Conclusions:

Based on current evidence, use of EN formulations with fiber are generally safe for patients with critical illness and may help reduce incidence and severity of diarrhea and GI complications.

The complete study may be accessed at:

aspenjournals.onlinelibrary.wiley.com/doi/epdf/10.1002/jpen.2210