

4.5 Composition of Enteral Nutrition: Fibre

June 28th, 2005

Recommendation:

There are insufficient data to support the routine use of fibre (pectin or soy polysaccharides) in enteral feeding formulas in critically ill patients.

Discussion: The committee noted the lack of a treatment effect with wide confidence intervals demonstrated by the 5 studies on soluble fibre and the one study on soy polysaccharides. Cost, feasibility and safety were not a concern.

Values	definition	Score: 0, +, ++, +++
Effect size	magnitude of the absolute risk reduction attributable to the intervention listed--a higher score indicates a larger effect size	0 (diarrhea)
Confidence interval	95% confidence interval around the point estimate of the absolute risk reduction, or the pooled estimate (if more than one trial)--a higher score indicates a smaller confidence interval	1+
Validity	refers to internal validity of the study (or studies) as measured by the presence of concealed randomization, blinded outcome adjudication, an intention to treat analysis, and an explicit definition of outcomes--a higher score indicates presence of more of these features in the trials appraised	3+
Homogeneity	similar direction of findings among trials--a higher score indicates greater similarity of direction of findings among trials	1+
Safe	estimated probability of avoiding any significant harm that may be associated with the intervention listed--a higher score indicates a lower probability of harm	2+
Feasible	ease of implementing the intervention listed--a higher score indicates greater ease of implementing the intervention in an average ICU	2+
Cost	estimated cost of implementing the intervention listed--a higher score indicates a lower cost to implement the intervention in an average ICU	3+

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Question: Do enteral feeds with fibre, compared to standard feeds result in better outcomes in the critically ill adult patient?

Summary of evidence: There were 6 level 2 studies reviewed, 5 looked at the effects of soluble fibres (Schultz et al: pectin; Spapen et al, Rushdi et al :hydrolyzed guar; Heather:pyllium; Hart: psyllium) and 1 study (Dobb) examined the effects of a formula containing soy polysaccharide (mainly insoluble fibre)

Mortality: Only one study reported mortality and found no difference between the groups.

Infections, LOS: There were no differences found between the groups.

Ventilator days: Not studied as an outcome

Other complications: No differences were seen in diarrhea between the groups receiving the fibre/pectin feeds (Jevity plus or Nepro + pectin) compared with placebo. Only in one study (Spapen), soluble fibre (hydrolyzed guar) was significantly associated with fewer diarrhea days ($p < 0.001$) and fewer # of patients with diarrhea (RR 0.50, CI 0.27- 0.93). Two studies did not report on the # patients with diarrhea and could not be included in the analysis. When the remaining 3 studies on soluble fibre were aggregated, there was no difference in # of patients with diarrhea between the groups (RR =0.79, 95% CI 0.43-1.45, $p = 0.4$) (see page 4.5-5). Soy polysaccharide containing formula (Enrich) had no effect on diarrhea.

Conclusions:

- 1) No differences in diarrhea found between the groups receiving the formula containing soy polysaccharide or standard formula.
- 2) No difference in diarrhea between standard formula and formulas containing soluble fibre.

Level 1 study: if all of the following are fulfilled: concealed randomization, blinded outcome adjudication and an intention to treat analysis.

Level 2 study: If any one of the above characteristics are unfulfilled

Table 1. Randomized studies evaluating enteral feeds with fibre in critically ill patients

Study	Population	Methods (score)	Intervention	Mortality # (%)†		RR (CI)**	Infections # (%)‡		RR (CI)**
				Enrich	Standard		Enrich	Standard	
1) Dobb 1990	ICU patients N = 91	C.Random: yes ITT: no Blinding: double (10)	Formula with soy polysaccharide (Enrich) vs standard (Ensure)	NA	NA	NA	NA	NA	NA
2) Schultz 2000	Critically ill patients receiving antibiotics N = 80	C.Random: yes ITT: no Blinding: double (10)	(A) Fibre/pectin vs (B) Fibre free/pectin vs (C) Fibre/placebo (D) Fibre free/placebo	NA	NA	NA	NA	NA	NA
3) Spapen 2001	Patients with severe sepsis, septic shock, ventilated N = 35	C.Random: yes ITT: no Blinding: double (11)	Formula with soluble fibre (partially hydrolyzed guar) vs No fibre (standard)	Soluble fibre 1/13 (8)	Standard 4/12 (33)	0.23 (0.03-1.79)	Soluble fibre 13/13 (100)	Standard 12/12 (100)	NA
4) Heather 1988	ICU CCU, general wards(ICU 41/49) Nutritionally compromised N = 49	C.Random: not sure ITT: no Blinding: no (3)	Standard formula (fibre free) + Hydrocil (psyllium) vs. standard formula (fibre free)	Psyllium NA	Standard NA	NA	Psyllium NA	Standard NA	NA
5) Hart 1988	ICU patients N = 68	C.Random: not sure ITT: yes Blinding: single (9)	Standard formula (Osmolite HN) + Fybogel vs. standard formula (Osmolite HN) + placebo	Fybogel NA	Standard NA	NA	Fybogel NA	Standard NA	
6) Rushdi 2005	ICU patients N = 30	C.Random: yes ITT: no Blinding: double (8)	Standard formula (Sandosource) + soluble Guar gum (Benefibre) vs. fibre-free formula (Propeptide)	Benefibre NA	Standard NA	NA	Benefibre NA	Standard NA	NA

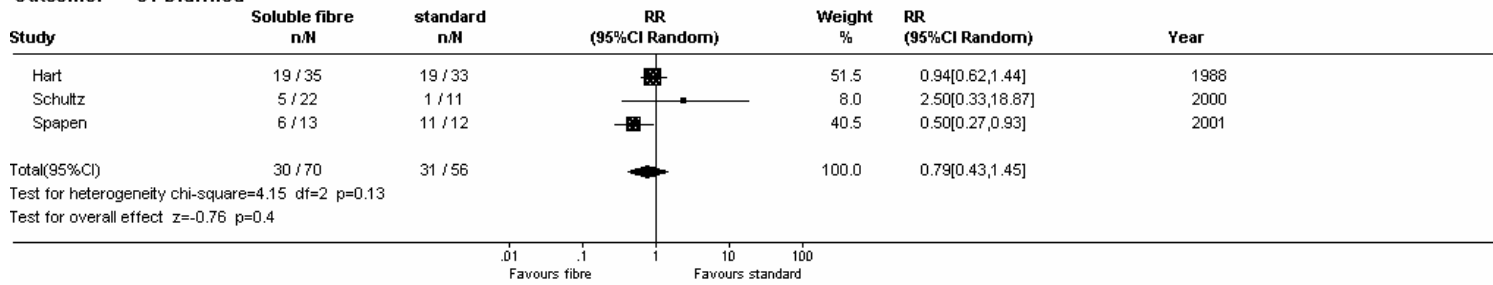
Table 2. Randomized studies evaluating enteral feeds with fibre in critically ill patients

Study	LOS days				Other				RR (CI)**
	Enrich NA	Standard NA	Enrich 16/45 (36)	Standard 13/46 (28)	Enrich 1/11 (9)	Standard 1/11 (9)	Enrich 4/11 (36)	Standard 6/11 (55)	
1) Dobb 1990					Diarrhea				1.26 (0.69-2.31)
2) Schultz 2000	(A) hospital 33.8 ± 22.1	(B) 22.4 ± 9	(C) 42.8 ± 3.3	(D) 34 ± 14.7	(A) 1/11 (9)	(B) 4/11 (36)	(C) 6/11 (55)	(D) 1/11 (9)	(A)+(B) VS (D)* 2.50 (0.33-18.9) (A)+(C) vs (D)*** 3.50 (0.49-25)
3) Spapen 2001	Soluble fibre ICU 19 (11-51)				standard 17 (10-30)				0.50 (0.27-0.93)
4) Heather 1988	Psyllium NA				Standard NA				NA
5) Hart 1988	Fybogel NA				Standard NA				0.94 (0.62,1.44)
6) Rushdi 2005	Benefibre NA				Standard NA				p < 0.01

C. Random: concealed randomization
 ITT: intent to treat
 NA: not available
 † presumed ICU mortality unless otherwise specified

* compared (A) + (B) to (D) for effect of pectin to placebo
 ** RR= relative risk, CI= Confidence intervals
 *** compared (A) + (C) to (D) for effect of fibre to placebo
 ‡ refers to the # of patients with infections unless specified

Comparison: 01 Soluble fibre vs. standard
Outcome: 01 Diarrhea



TOPIC: 4.5 Composition of EN: Fibre

(Reviewers: Voula Christofilos, Rupinder Dhaliwal, Chrstine McCleary)

Article inclusion log

Criteria for study selection

Type of study: RCT or Meta-analysis
Population: critically ill, ventilated patients (no elective surgery patients)
Intervention: TPN and /or EN
Outcomes: mortality, LOS, QOL, functional recovery, complications, cost. Exclude studies with only biochemical, metabolic or nutritional outcomes.

	Author	Journal	I	E	why rejected
1.	Dobb	Int Care Med 1990	√		
2.	Schultz	Am J Crit Care 2000	√		
3.	Spapen	Clinical Nutrition 2001	√		
4.	Homann	JPEN 1994		√	Not ICU patients
5.	Heather	Heart and Lung 1991	√		
6.	Hart	JPEN 1988	√		
7.	Frankenfield	Am J Clin Nutr 1989		√	Crossover RCT
8.	Rushdi	Clin Nutr 2004	√		

I = included, E = excluded