

6.3 Enteral Nutrition (Other): Continuous vs. Other methods of administration

June 28th, 2005

Recommendation:

There are insufficient data to make a recommendation on enteral feeds given continuously vs. other methods of administration in critically ill patients.

Discussion: The committee noted the lack of treatment effect in 2 studies. Concern was also expressed about the safety of bolus feeds given the probability of harm associated with aggressive, early enteral nutrition via bolus feeds as illustrated in a recent pseudorandomized study (1).

(1) Ibrahim EH, Mehringer L, Prentice D, Sherman G, Schaiff R, Fraser V, Kollef M. Early versus late enteral feeding of mechanically ventilated patients: Results of a clinical trial. JPEN 2002;26:174-181.

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
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	2+
Homogeneity	similar direction of findings among trials--a higher score indicates greater similarity of direction of findings among trials	0
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+

6.3 Enteral Nutrition (Other): Continuous vs. other methods of administration?

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Question: Does continuous administration of enteral nutrition compared to other methods of administration result in better outcomes in critically ill patients?

Summary of evidence: There was one level 2 study reviewed that compared continuous enteral feeding (started at 25 ml/hr and increased by 25 ml increments every 12 hrs) to bolus (started with a bolus of 125 mls by gravity over 15 minutes every 4 hrs and increased by 125 ml increments every 12 hrs). One level 2 study compared continuous feeds (over 24 hrs) to intermittent feeds (over 18 hrs).

Mortality: One study reported on mortality and found no difference between the groups receiving continuous or intermittent feeds.

Infections: One study reported on infections and found no difference between the groups receiving continuous or intermittent feeds (RR 0.67, 95 % confidence intervals 0.27, 1.64). Incidence of aspirations detected was not significantly different between the groups receiving continuous and intermittent (RR 0.33, 95 % confidence intervals 0.02- 7.24).

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LOS & Ventilator days: Not reported.

Other complications: There were no significant differences in the number of patients with diarrhea (RR 0.40, CI 0.10-1.55), the frequency of interrupted feeds (RR 0.60, 95 % confidence intervals 0.20-1.8) or the % goal feeds achieved between the groups receiving continuous feeds and bolus feeds. Patients receiving continuous feeds received larger amounts of feeds than those receiving intermittent feeds and tolerated the feeds better (Bonten).

Conclusion:

There are no differences in diarrhea, frequency of interrupted feeds or % goal feeds achieved between patients receiving enteral feeds via continuous vs. other methods of administration.

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 continuous enteral nutrition vs. other methods of administration in critically ill patients

Study	Population	Methods (score)	Intervention	Mortality # (%)		RR (CI)**	Infections # (%)		RR (CI)**
				Continuous	bolus		Continuous	bolus	
1) ID # 89 Steevens 2002	Multiple trauma patients, surgical, medical ICU's N = 18	C.Random: not sure ITT: yes Blinding: no (8)	Continuous enteral nutrition (started @ 25 ml/hr and ↑ by 25 mls q 12 hrs)vs bolus (started with a bolus of 125 mls by gravity over 15 minutes q 4 hrs and ↑ by 125 mls q 12 hrs.	NA	NA	NA	0/9 (0)	1/9 (11)	0.33 (0.02-7.24)
2) ID # 92 Bonten 1996	Mixed ICU's Mechanically ventilated N=60	C.Random: not sure ITT: yes Blinding: no (8)	Continuous feeds (24hrs) vs. intermittent feeds (18 hrs)	6/30 (20)	9/30 (30)	0.67 (0.27-1.64)	5/30 (17)	5/30 (17)	1.00 (0.32-3.10)

Study	LOS days		Ventilator days		Cost		Other		RR (CI)**
	Continuous	bolus	Continuous	bolus	Continuous	bolus	Continuous	bolus	
ID # 89 Steevens 2002	NA	NA	NA	NA	NA	NA	2/9 (22)	5/9 (56)	0.40 (0.10-1.55)
							3/9 (33)	5/9 (56)	0.60 (0.20-1.8)
							87 %	86.8 %	
ID # 92 Bonten 1996	NA	NA	NA	NA	NA	NA	2/30 (7)	5/30 (17)	0.40 (0.08-1.90)

C.Random: concealed randomization NA: not available * RR = relative risk CI= confidence intervals ITT: intent to treat

TOPIC: 6.3 Continuous vs. other methods of administration

(Reviewers: Sabrina Martin & Dominique Michaud)

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.

ID #	Author	Journal	I	E	why rejected	
89.	1.	Steevens	Nutrition in Clinical Practice 2002	√		
92.	2.	Bonten	Am J Resp & CCM 1996	√		
	3.	Hiebert	JPEN 1981		√	No significant outcomes
	4.	Kocan	J Neuros Nurs 1986		√	No significant outcomes
	5.	Ciocan	JPEN 1992		√	Not ICU patients
	6.	Spilker	Chest 1993		√	Not RCT

I = included, E = excluded