

6.4 Enteral Nutrition (Other): Gastrostomy vs. Nasogastric feeding

January 31st, 2009

Recommendation:

There are insufficient data to make a recommendation on gastrostomy feeding vs. nasogastric feeding in the critically ill.

Discussion:

The committee noted that there was a large treatment effect of the use of percutaneous gastrostomy on the reduction of ventilator associated pneumonia from this one small study. However there were concerns regarding the risks associated with the use of a gastrostomy tube i.e. peritonitis, gastric perforation, wound infection and pneumoperitoneum. The committee also agreed that there were cost and feasibility issues associated with the use of percutaneous gastrostomy feeding.

Values	Definition	Score: 0, 1, 2, 3
Effect size	Magnitude of the absolute risk reduction attributable to the intervention listed--a higher score indicates a larger effect size	3 (infections)
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	2
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 or Reproducibility	Similar direction of findings among trials--a higher score indicates greater similarity of direction of findings among trials	0
Adequacy of control group	Extent to which the control group represented standard of care (large dissimilarities = 1, minor dissimilarities=2, usual care=3)	3
Biological plausibility	Consistent with understanding of mechanistic and previous clinical work (large inconsistencies =1, minimal inconsistencies =2, very consistent =3)	1
Generalizability	Likelihood of trial findings being replicated in other settings (low likelihood i.e. single centre =1, moderate likelihood i.e. multicentre with limited patient population or practice setting =2, high likelihood i.e. multicentre, heterogeneous patients, diverse practice settings =3.	1
Cost	Estimated cost of implementing the intervention listed--a higher score indicates a lower cost to implement the intervention in an average ICU	1
Feasible	Ease of implementing the intervention listed--a higher score indicates greater ease of implementing the intervention in an average ICU	1
Safety	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

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Question: Compared to nasogastric feeding, does feeding via a gastrostomy result in improved clinical outcomes in critically ill patients?

Summary of Evidence: There was one level 2 study that compared early enteral feeding via a percutaneous gastrostomy (within 24 hrs of intubation) to nasogastric feeds started within 48 hrs of intubation.

Mortality: There was no significant difference in ICU or hospital mortality between the groups.

Infections: There was a significant reduction in the incidence of ventilator associated pneumonia in the group receiving percutaneous enteral feeding when compared to nasogastric feeds ($p=0.036$) (RR=0.26, 95% CI 0.06,1.09).

LOS, Ventilator days: There were no differences in ICU length of stay or duration of mechanical ventilation between the groups.

Other: One patient in the gastrostomy feeding group developed pneumoperitoneum which resolved without any consequences.

Conclusions:

- 1) Early enteral feeding after intubation via percutaneous gastrostomy has no effect on mortality in critically ill patients.
- 2) Early enteral feeding after intubation via percutaneous gastrostomy is associated with a significant decrease in ventilator-associated pneumonia in critically ill patients.

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 comparing Gastrostomy vs. Nasogastric feeding

Study	Population	Methods (score)	Intervention	Mortality # (%)		Infections # (%)		Other	
				Experimental	Control	Experimental	Control	Experimental	Control
1) Kostadima 2005	Mechanically ventilated for stroke or head injury patients with GCS < 6 N = 41	C.Random: no ITT: yes Blinding: no (8)	Percutaneous gastrostomy feeds (PEG) within 24 hrs of intubation vs. nasogastric feeds 48 hrs after intubation. Both groups received continuous feeds at 60-80 ml/hr	4/20 (20) ICU	6/21 (29) ICU	Pneumonia 2/20 (10)	Pneumonia 8/21 (38)	ICU LOS 38.5 ± 14.2	38.5 ± 13.4
								Ventilation 37.3 ± 13.7	37.6 ± 12.8

GCS: Glasgow coma score

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Article inclusion log

Criteria for study selection

Type of study: RCT or Meta-analysis
Population: critically ill, ventilated patients (no elective surgery patients)
Intervention: 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.	Kostadima	Eur Respir J 2005	√		

I = included, E = excluded

Reference List

1. Kostadima E, Kaditis AG, Alexopoulos EI, Zakynthinos E, Sfyras D. Early gastrostomy reduces the rate of ventilator-associated pneumonia in stroke or head injury patients. *Eur Respir J*. 2005 Jul;26(1):106-11.