

4.1 (b) Composition of Enteral Nutrition: Immune Enhancing Diets: Fish oils

June 28th, 2005

Recommendation:

Based on one level 1 study, the use of an enteral formula with fish oils should be considered in patients with acute respiratory distress syndrome (ARDS).

Discussion: While the effect size was modest, it was noted that the results came from one industry sponsored study. While this study had high internal validity, the choice of the control feed (high fat formula) and need for bronchoscopy to meet the inclusion criteria limits the application of study findings. The committee noted that the acquisition costs of this specialty formula are much higher than standard formula. The committee agreed that since the effects of fish oils cannot be distinguished from the effects of borage oil or antioxidants, this recommendation pertains to the product Oxepa ® and not to fish oils in general.

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	2+
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	3+
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	2+

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Question: Does the use of an enteral formula with fish oils (Oxepa ®) result in improved clinical outcomes in the critically ill adult patient?

Summary of evidence: There was one level 1 study (Gadek et al).

Mortality: There was a trend towards a reduction in mortality ($p = 0.165$) in patients receiving Oxepa ®.

Infections: Not reported.

LOS: There was a significantly lower ICU stay ($p = 0.016$) was seen although no difference in hospital stay ($p = 0.278$) was observed in the group receiving the intervention.

Ventilator days: The use of was associated with a significant reduction in ventilated days ($p = 0.027$).

Other complications: The use of Oxepa ® was associated with a significant reduction in # of new organ failures ($p = 0.018$); GI events: no difference between the groups was seen ($p = 0.82$).

Conclusion:

When compared to a high fat formula, the use of Oxepa ® (enteral formula with fish oil/borage oil and antioxidants i.e. Vit E, Vit C, beta-carotene, taurine, L- carnitine) may be associated with a trend towards lower mortality and a significant reduction in ICU LOS, ventilated days and organ failure 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 evaluating Oxepa ® (enteral formula with fish oils/borage oil and antioxidants) in critically ill patients

Study	Population	Methods (score)	Intervention	Mortality # (%)		RR (CI) **	Infections # (%)‡		RR (CI) **
				Fish oil	Standard		Fish oil	Standard	
ID # 26 Gadek 1999	ARDS patients, ICU's Multicentre trial N = 146	C.Random: yes ITT: yes Blinding: yes (13)	Fish oil, borage oil + antioxidants (vit. E, C, beta-carotene, taurine, L-carnitine vs standard high fat, low CHO (Pulmocare)	11/70 (16)	19/76 (25)	0.63 (0.32-1.23)	NA	NA	NA

Study	LOS days		Ventilator days		Cost		Other	
	Fish oil	Standard	Fish oil	Standard	Fish oil	Standard	Fish oil	Standard
ID # 26 Gadek 1999	11± 0.9 (70) ICU 27.9 ± 2.1 (70) hospital	14.8 ± 1.3 (72) ICU 31.1 ± 2.4 (72) hospital	9.6 ± 0.9 (70)	13.2 ± 1.4 (72)	NA	NA	Fish oil 7/70 (10)	Standard New organ failures 19/76 (25)

C.Random: concealed randomization

ITT: intent to treat

‡ refers to the # of patients with infections unless specified

± () : mean ± Standard deviation (number)

** RR= relative risk, CI= Confidence intervals

TOPIC: 4.1 (b) Composition of EN: fish oils/borage oil/antioxidants (Oxepa ®)
(Reviewers: Deborah Schroter-Noppe & Carmen Christman)

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
26.	1. Gadek	Crit Care Med 1999	√		
	2. Mayer (PN fish oils)	Am J Resp Care 2003		√	No significant outcomes
	3. Weiss (n 3 fatty acids)	Br J Nutr 2002		√	Surgery patients (periop)
	4. Wachter (PN n 3 fatty acids)	J Trauma injury, infection and critical care 1997		√	Elective Surgery patients
	5. Pacht	CC Medicine 2003		√	Subset of patients from the Gadek trial (see ID #26)

I = included, E = excluded

**Composition of Enteral Nutrition: Immune Enhancing Diets: OXEPA®
Reference List**

1. Gadek JE, DeMichele SJ, Karlstad MD et al. Effect of enteral feeding with eicosapentaenoic acid, gamma-linolenic acid, and antioxidants in patients with acute respiratory distress syndrome. *Critical Care Medicine* 1999;27:1409-20.