

10.3 Strategies to optimize Parenteral Nutrition: Mode of lipid delivery

January 31st 2009

Recommendation:

There are insufficient data to make a recommendation on the use of lipids in total nutrient admixtures (TNA) vs. piggyback in critically ill patients.

Discussion: Given the lack of a demonstrable treatment effect from the results of one study on total nutrient admixture (TNA) vs. piggyback lipids with feasibility concerns and potential concerns of safety and cost, the committee decided that a recommendation not be put forward.

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	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 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 presented 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 consistencies=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, heterogenous patients, diverse practice settings=3)	1
Low cost	Estimated cost of implementing the intervention listed--a higher score indicates a lower cost to implement the intervention in an average ICU	2
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: Does the mode of delivery of lipids affect outcomes in the critically ill adult patient?

Summary of evidence: There was 1 level 2 study reviewed. D'Angio et al 1992 compared infectious outcomes of lipids administered through a total nutrient admixture (TNA) for 24 hrs vs. lipids piggybacked into the PN solution for 12 hrs. This study did not report on mortality, LOS or ventilator days, only reported infections.

Mortality: Not reported.

Infections: No difference in infection rate between the group that received lipids in a TNA or piggybacked into PN.

LOS/Ventilator days: Not reported.

Conclusion:

No difference in infections between the groups receiving lipids via TNA or via piggyback.

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 mode of lipid delivery in critically ill patients

Study	Population	Methods (score)	Intervention	Mortality # (%)		RR (CI)**	Infections # (%)‡		RR (CI)**
							TNA	Piggyback	
1) D'Angio 1992	Critically ill N=96	C.Random: not sure ITT: no Blinding: no (6)	Lipid administration Total Nutrient Admixture (24 hrs) vs piggyback (12 hrs)	NA	NA	NA	7/44 (16)	7/52 (13)	1.18 (0.45-3.11)

Study	LOS days		Ventilator days		Cost		Other	
1) D'Angio 1992	NA	NA	NA	NA	NA	NA	NA	NA

C.Random: concealed randomization

ITT: intent to treat; NA: not available

TNA: Total Nutrient Admixtures

** RR= relative risk, CI= Confidence intervals

± () : mean ± Standard deviation (number)

± (-): median (range)

± ‡ refers to the # of patients with infections unless specified

TOPIC: 10.3 Mode of lipid delivery

Article inclusion log

Criteria for study selection

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

	Author	Journal	I	E	Why Rejected
1	D'Angio	Annals Pharma 1992	√		

I = included, E = excluded

Reference List

1. D'Angio RG, Riechers KC, Gilsdorf RB, Constantino JM. Effect of the mode of lipid administration on parenteral nutrition-related infections. *Ann Pharmacother.* 1992 Jan;26(1):14-7.