

Source of Data

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April 11, 2016

Introduction and Background

Lipid emulsions are a means to provide nutrients to patients that are unable to eat due to severe trauma or prolonged sedation by delivering essential fatty acids intravenously¹. Lipid emulsions have also proved an effective therapy for cardiovascular collapse onset by an overdose of local anesthetic². Previous studies establish that lipid emulsions can increase the risk for complicating infections for small prospectively selected cohorts of patients by as much as a factor of five^{1, 3, 4}. This study seeks to establish if lipid emulsions should be withheld as a therapy of last resort.

The negative side effects of lipid emulsions manifest themselves in different ways. The mechanisms range from acting as an immunosuppressant in patients with severe trauma^{3, 5} to rendering patients hyperglycemic, which is well correlated with increased infection risk⁴. The lipid emulsion formula can promote the growth of blood based, gastrointestinal, repertory, and skin site bacterial infections^{1, 6, 7}. Infection rates can differ based on the formulation of the emulsion, whether it be soy based, coconut based, olive based, or fish based⁵. The flow rate of an emulsion also may affect infection rates⁴.

The state of current research establishes that the use of a lipid emulsion, its chemical composition, and its flow rate all may play a factor in patient complications. This study aims to answer how the use of soy based lipid emulsion affects the rates of acquiring different etiological categories of infection. It will also explore the extent to which the flow rate of an emulsion affects infection rate.

To come, last paragraph of intro on methods

Source of Data

These data are a retrospective look at hospital patients, from the years 2001 to 2005, who had a stay in the surgical intensive care unit (SICU) of three or more days.

The following were datapoints collected and available for the analysis. There were no missing data for any of the variables except for 59 unrecorded values for race.

Variable	Description
avgexp	Average amount of soybean oil IVFE received by the patient during the first 3 days of their SICU stay
maxexp	Maximum daily IVFE received by the patient during the first 3 days of their SICU stay
age	Age in years
gender	Gender
race	Race
bmi	Body mass index (weight divided by height squared)
apache2	Apache 2 score at admission; a disease severity score
glucose	Blood glucose level at admission
hosp.los	Hospital length of stay
hosp.death	Indicator of death in the hospital
unit.los	Length of stay in the surgical ICU
unit.death	Indicator of death in the surgical ICU
ventdays.hosp	Days spent on ventilator while in hospital

Variable	Description
ventdays.unit	Days spent on ventilator while in surgical ICU
ventfree.unit	Days not on the ventilator while in the surgical ICU
bsi.inf	Bloodstream infection
eent.inf	Eye, ear, nose, throat infection
gi.inf	GI infection
lri.inf	Lower respiratory infection
pneu.inf	Pneumonia
ssi.inf	Surgical site infection
sst.inf	Skin structure infection
sys.inf	Systemic infection
uti.inf	Urinary tract infection

For the outcomes of blood and gastro-intestinal infection, total ventilator days and length of stay are potential confounders. This is due to the nature of hospital transmitted diseases[CITATION]. For lower resperatory infection ventilator days was considered a confounder.

Potential confounders for infection outcomes: total ventilator days (blood, gastrointestenstinal, lower-resperatory, pnuemonia), length of stay (blood, gastrointestenstinal), unit length of stay (pnuemonia), hospital length of stay (Urinary Tract).

This is a sample paragraph that needs a citation (Wanten and Calder 2007)

References

Wanten, Geert JA, and Philip C Calder. 2007. "Immune Modulation by Parenteral Lipid Emulsions." *The American Journal of Clinical Nutrition* 85 (5). Am Soc Nutrition: 1171–84.