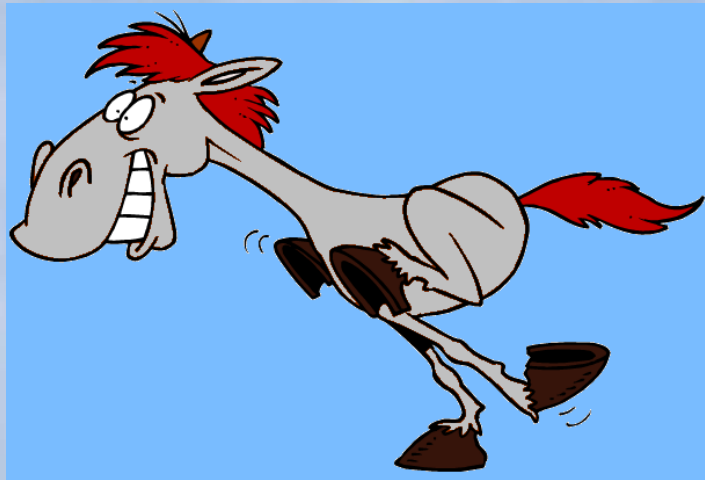


HPN and Liver Disease

Are Fat Emulsions the “Old Gray Mare”?



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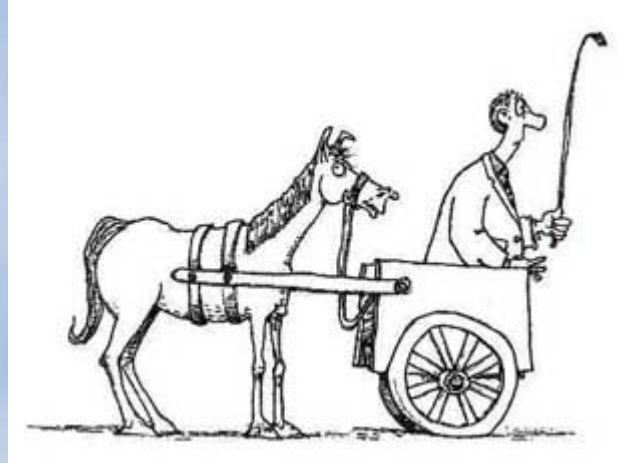
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Disclosures

None



HPN and Liver Disease



Conclusion:

Data are suggestive that the frequency of fat emulsion may be responsible for liver complications in patients on long term parenteral nutrition

HPN and Liver Disease

Brief History Review

1960s - TPN first introduced

No fat emulsion available

**Cover body in corn oil 1x per week
to prevent EFAD**

Study the past if you would define the future.... Confucius



HPN and Liver Disease

Why do we need fat anyway?

- **Good calorie source**
- **To prevent essential fatty acid deficiency (EFAD)**
 - **Dermatitis, alopecia, platelet problems, compromised neurologic development and growth in infants**

HPN and Liver Disease

**Late 60s-70s fat emulsions
became available**

BUT

**Medicare will only pay for 3 units of
250 ml per week**

HPN and Liver Disease

- **1980s Medicare changes reimbursement to cover daily fat**
- **Practice evolved for many to giving daily fat**



HPN and Liver Disease

- **1980s and 90s liver disease becomes a prominent complication of HPN!**

WHY???

HPN and Liver Disease

- **Studies by Clayton and Iyer et al., implicated the soybean and safflower oil based fat emulsions**



- **β -sitosterol is a plant sterol poorly cleared from the liver**

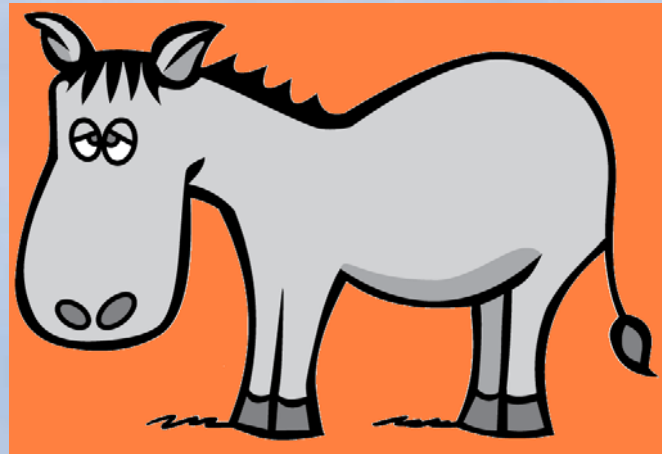
HPN and Liver Disease

- The plant sterols, contained in the soybean based lipid emulsion, are poorly cleared by the liver. (Nutr 14:158-164, 1998)
- Accumulation of plant sterols might be responsible for cholestatic liver abnormalities. (Clin Nutr 24:415-420, 2005)



HPN and Liver Disease

- **Soybean and safflower oil based fat emulsions are the ONLY products approved for use in this country at present**



HPN and Liver Disease

- In the late 90s, Mayo began reducing the frequency of fat emulsion in an attempt to reduce or prevent liver disease
- Liver disease – characterized by liver enzyme changes – seemed to return toward normal
 - Alkaline phosphatase, ALT (SGPT), AST (SGOT), bilirubin

HPN and Liver Disease

The possibility of an association between the frequency of soybean/safflower based lipid infusions and PN-associated liver dysfunction had not been explored

HPN and Liver Disease

Objective:

- **To test the hypothesis that increased frequency of soybean/safflower based lipid infusion is associated with abnormal liver enzymes in long-term home parenteral nutrition (HPN) patients**



HPN and Liver Disease

- **Retrospective review of records**
- **consumers who were receiving less than daily lipids - then increased to daily lipids**
- **consumers who were receiving daily lipids - then decreased to less frequent infusion**

HPN and Liver Disease

- **Alkaline phosphatase (AP) and aspartate aminotransferase (AST) were recorded for two years prior to and after the change of lipid frequency**



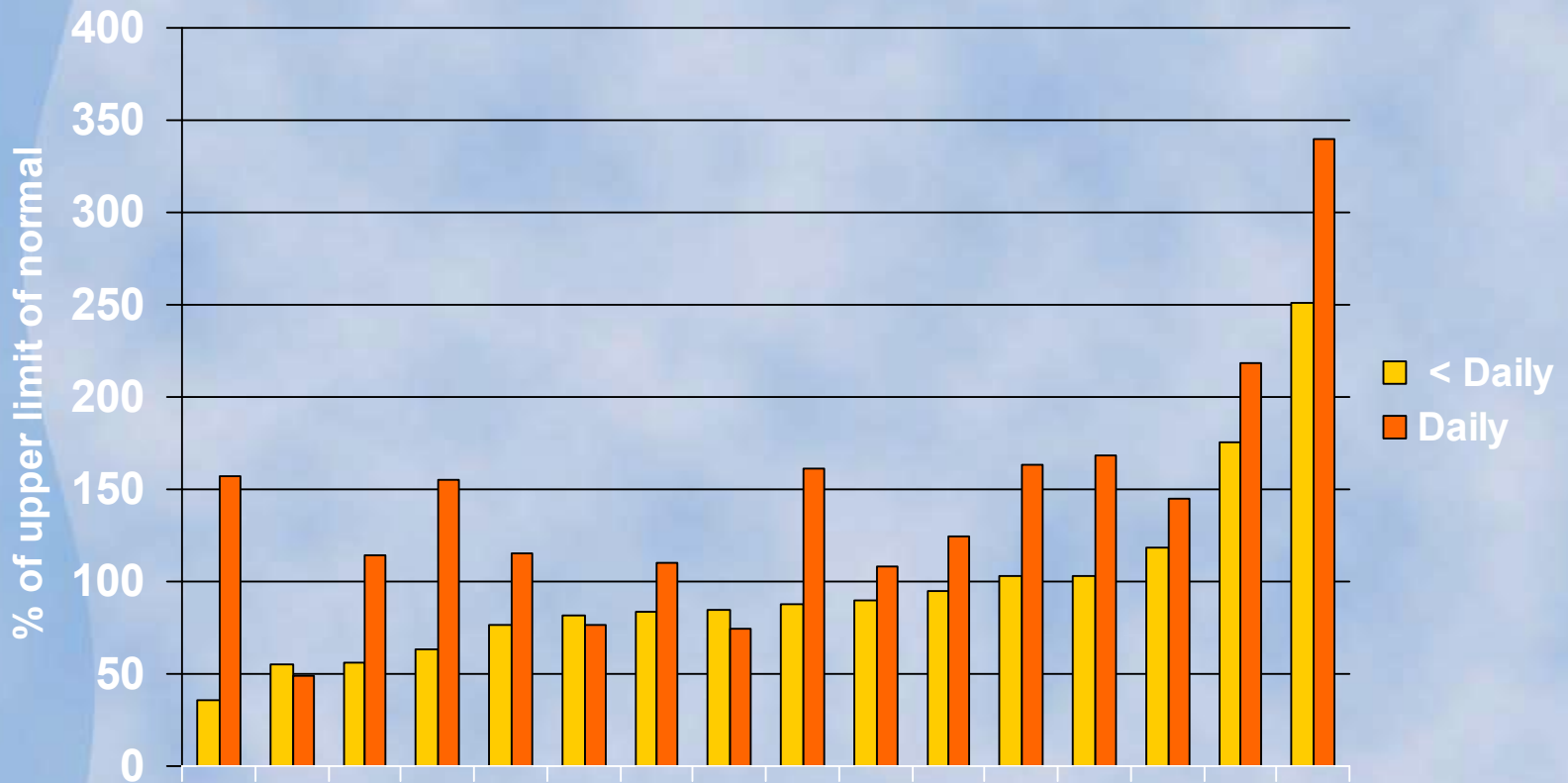
HPN and Liver Disease

Patient Characteristics

- **Mean age at initiation of HPN**
 - 40.4 years (Range 24.0 – 67.5)
- **Gender**
 - 5 males , 15 females
- **Underlying diagnoses**
 - 12 short bowel syndrome
 - 8 intestinal dysmotility

HPN and Liver Disease

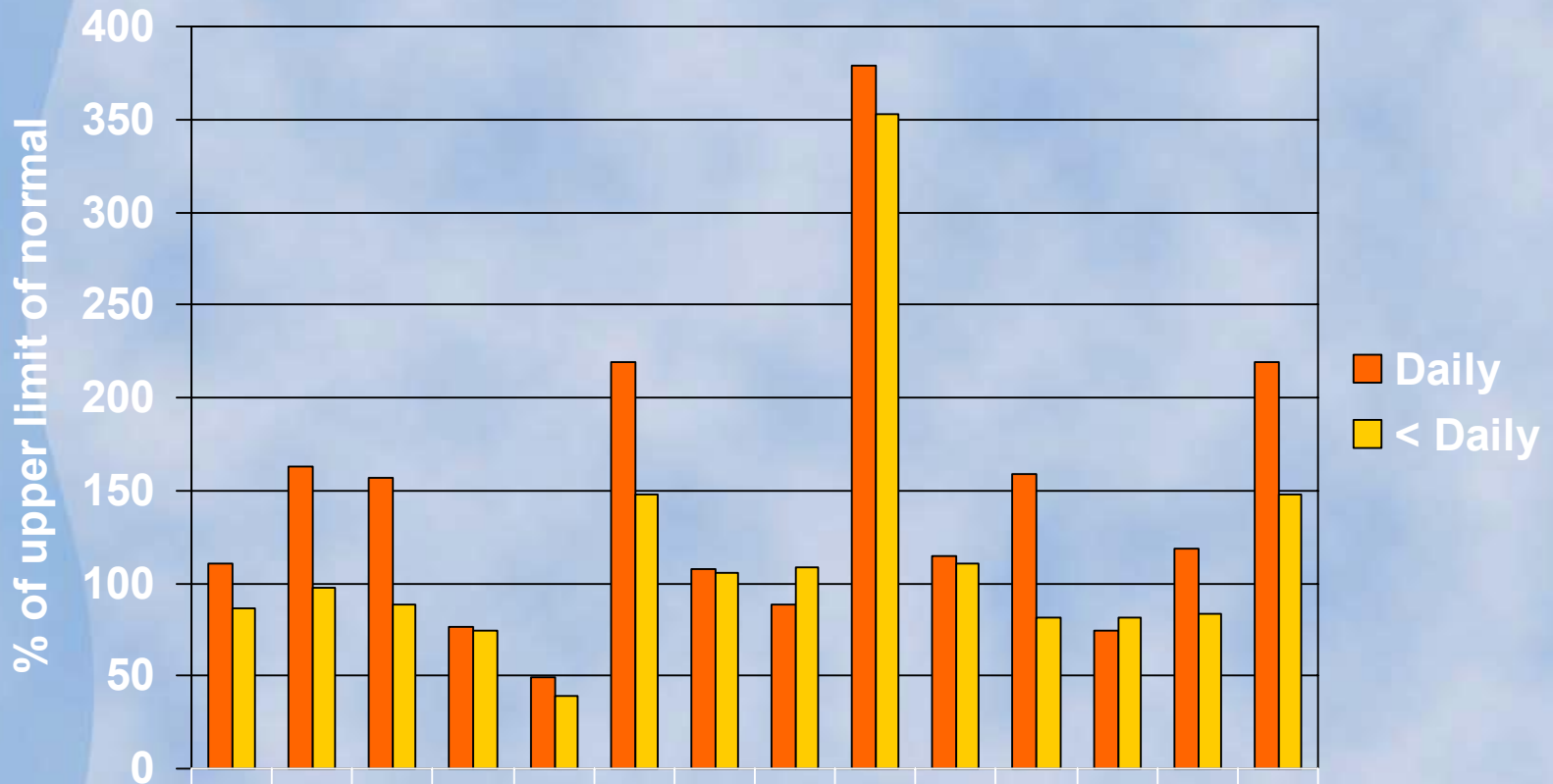
Effect of Increasing Lipid Infusion Frequency from < Daily to Daily on AP



n = 16 patients; p < 0.00013

HPN and Liver Disease

Effect of Decreasing Lipid Infusion Frequency from Daily to < Daily on AP



n = 14, p = 0.0044

HPN and Liver Disease

Conclusion

Data are suggestive that *the frequency* of fat emulsion may be responsible for liver complications in patients on long term parenteral nutrition

HPN and Liver Disease



American Society for Parenteral
and Enteral Nutrition



eNews

6-17-2010

Intravenous Fat Emulsion Shortage Update

Due to the current shortage of IV Fat Emulsion (IVFE) in the U.S., A.S.P.E.N. developed an A.S.P.E.N. Intravenous Fat Emulsion National Shortage Task Force. The Task Force has assessed the national supply and developed "Information to Use in the Event of an Intravenous Fat Emulsion Shortage." This paper can be accessed on A.S.P.E.N.'s [website](#).

The Task Force will remain in contact with IVFE suppliers and update supply information and the Information paper as needed.



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HPN and Liver Disease

- **If your prescriber wants to decrease your fat emulsion to less days per week – remember this data**
- **Good opportunity to look at alternative fat sources**
 - **Olive oil**
 - **Fish oil**