Still searching for the magic food*

Since Dudrick et al. (1) demonstrated that beagle puppies could be kept alive with intravenous feedings, medical personnel that believe nutrition plays a major role in overcoming critical illness have been searching for the best formula for the critically ill or injured. Initially, the goal was to simply provide adequate calories, fatty acids, and nitrogen to meet the needs of the patient. However, multiple investigators have attempted to show that supplementation with specific nutrients can have what is essentially a pharmacologic effect, resulting in alterations in protein synthesis or immune function. Some have even shown an impact on length of stay (2–6).

In this issue of Critical Care Medicine, Dr. Wichmann and colleagues (7) present the results of a trial in which patients receiving total parenteral nutrition were randomized to receive their fatty acids in the form of either 100% long-chain triglycerides (Intralipid) or a combination of 50% medium-chain triglycerides, 40% long-chain triglycerides, and 10% fish oil (Lipoplus). The study is well designed and well executed. In addition to looking at clinical outcomes, the authors assessed leukotriene synthetic capacity and the fatty acid content of plasma phospholipids. The authors were able to demonstrate that the patients who received Lipoplus had a statistically significantly shorter length of stay than the control group. Intensive care unit length of stay was not statistically significantly different between the groups. The mortality rate was slightly higher in the Lipoplus group (4.7% vs. 1.6%), but it did not reach statistical significance (p = .14) as defined by p < .05.

The impact of nutritional supplementation on mortality has plagued many publications that demonstrate an improvement in a clinical or laboratory parameter with no significant difference in mortality. This was best demonstrated when a meta-analysis of immune-enhancing enteral formula use was performed (8). Although no significant difference was seen in mortality in individual reports, when the data were pooled the immune-enhancing formulas were seen to have increased mortality. Although Lipoplus is an intravenous nutritional supplement, the results of the current trial place it squarely in this body of literature.

The real question for critical care practitioners is “Should I use a nutritional supplement that has been shown to reduce hospital length of stay but may increase mortality?” At this point, that question is best answered by reading the manuscript and other associated literature to see where this, or any immune-enhancing supplement, would fit into the care of patients at a given institution. At our institution, we have seen a handful of patients die of complications of nutrition support during the past decade. It is hard to justify a mortality from a feeding tube or central venous catheter complication when the product to be delivered has not been shown to save lives. Thus, our approach has become one of “Because the literature does not show many lives are being saved with any given intravenous or enteral formula, the key to good nutritional support is to administer it safely.”

In the future, nutritional support research needs to be performed in a way that answers mortality questions. The need for improved nutrition support scientific research is recognized by leaders in the field (9, 10). Multicenter trials that accumulate enough patients to reach statistical significance if a real difference exists are needed. Unfortunately, this is not likely to occur in the current research milieu as the corporations that make nutrition support products are not nearly as well funded as the pharmaceutical companies. The quest for the ultimate nutritional support formulation will likely continue for the foreseeable future.

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REFERENCES


*See also p. 700.
Key Words: immune-enhancing; nutrition; mortality; outcome
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DOI: 10.1097/01.CCM.0000257466.91850.62

Crit Care Med 2007 Vol. 35, No. 3

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