Division of Clinical Nutrition

Bruce R. Bistrian, MD, PhD, Chief

Overview

The Division of Clinical Nutrition has become primarily a research division since 2002 when the clinical activities of the Nutrition Support Service at Beth Israel Deaconess Medical Center was discontinued, including the fellowship program which trained more than 100 fellows over a period of 26 years.

Research Activities

The Nutrition/Infection Laboratory directed by Dr. Bruce Bistrian has been investigating the pathophysiology of protein calorie malnutrition, the interactions of nutrition and infection, the development of immune-enhancing enteral feeding formulas and novel parenteral fats including medium chain triglycerides, structured lipids, and marine oils. Pei-Ra Ling, MD is a long-time research collaborator of Dr. Bistrian involved in animal studies of systemic inflammation due to infection, burn injury, or endotoxin exposure. The laboratory has also been involved in collaborative laboratory and clinical research with investigators at Tufts University and at Children's Hospital in the role of fish oil supplementation orally to reduce the consequences of HAART in HIV patients and parenterally to treat liver failure in neonates requiring long-term total parenteral nutrition, respectively.

More recently with David Driscoll, PhD, who is widely recognized as the leading expert in particle size technology as it relates to the stability of lipid emulsions employed in feeding solutions and as drug vehicles, substantial research has been conducted in small animals demonstrating oxidative injury when some commercially available emulsions are infused. In part as a result of this work Dr. Driscoll was appointed Vice Chairman of Parenteral Products Committee of the United States Pharmacopeia and co-directed the creation of a Sterile Products (797) chapter that deals with infusion safety. These guidelines are enforceable by the Food and Drug Administration. Dr. Driscoll published the first validated method for establishing the stability and subsequent safety of intravenous lipid emulsion infusions in the US based on this research. This has led to the completion of the Official USP Monograph, Chapter 729, that details the specifications for safe lipid emulsions. This Chapter was accepted in 2007 and is enforceable by the Food and Drug Administration as of January 2008.

Research Funding • AY'07

Other Direct	979,329
Other Indirect	23,660

Awards and Honors

Dr. Bistrian has been on the editorial board of the *Harvard Health Letter* and the *Women's Health Watch* for more than 10 years and is also on the Editorial Boards of *Critical Care Medicine* and is Vice Chairman of the International Editorial Advisory Board of the *European Journal of Clinical Nutrition.* He is the former President of the American Society for Clinical Nutrition, the American Society for Parenteral and Enteral Nutrition and the Federation of American Societies for Experimental Biology. Dr. Bistrian was also reappointed for 2007-2010 to the Committee on Military Nutrition Research of the Institute of Medicine.

Selected Publications

Ling PR, Smith RJ, Bistrian BR. Acute effects of hyperglycemia and hyperinsulinemia on hepatic oxidative stress and the systemic inflammatory response in rats. *Crit Care Med* 2007; 35:555-60.

Driscoll DF, Silvestri AP, Bistrian BR, Mikrut BA. Stability of total nutrient admixtures with lipid injectable emulsions in glass versus plastic packaging. *Am J Health Syst Pharm* 2007; 64:396-403.

David Driscoll, PhD, in the Laboratory of Nutrition/ Infection.

Faculty

Bruce R. Bistrian, MD, PhD
Pei-Ra Ling, MD
David Driscoll, PhD
Karen McCowen, MD

Driscoll DF, Ling PR, Bistrian BR. Physical stability of 20% lipid injectable emulsions via simulated syringe infusion: effects of glass vs plastic product packaging. *J Parenter Enteral Nutr* 2007; 31:148-53.

Bistrian B. Nutritional Assessment. In Cecil and Loeb Textbook of Medicine. 23rd Ed. Saunders, Philadelphia. 2008

Bistrian B, Driscoll D. Enteral and Parenteral Nutrition. In Harrison's Principles of Internal Medicine, McGraw Hill. 2008

Pazirandeh S, Ling PR, Ollero M, Gordon F, Burns DL, Bistrian BR. Supplementation of arachidonic acid plus docosahexaenoic acid in cirrhotic patients awaiting liver transplantation: a preliminary study. *J Parenter Enteral Nutr* 2007; 31:511-6.

Bistrian B. Systemic response to inflammation. *Nutr Rev* 2007; 65:S170-2.

Martin CR, Dumas GJ, Shoaie C, Zheng Z, Mackinnon B, Al-Aweel I, Bistrian BR, Pursley DM, Driscoll DF. Incidence of hypertriglyceridemia in critically ill neonates receiving lipid injectable emulsions in glass versus plastic containers: a retrospective analysis. *J Pediatr* 2008; 15:232-6.

You YQ, Ling PR, Qu JZ, Bistrian BR. Effects of medium-chain triglycerides, long-chain triglycerides, or 2-monododecanoin on fatty Acid composition in the portal vein, intestinal lymph, and systemic circulation in rats. *J Parenter Enteral Nutr* 2008; 32:169-75.

Strijbosch RA, Lee S, Arsenault DA, Andersson C, Gura KM, Bistrian BR, Puder M. Fish oil prevents essential fatty acid deficiency and enhances growth: clinical and biochemical implications. *Metabolism* 2008; 57:698-707.