■ Article

# A Pilot Study Comparing the Neutropenic Diet to a Non-Neutropenic Diet in the Allogeneic Hematopoietic Stem Cell Transplantation Population

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**Background:** Historically, dietary restrictions imposed on patients undergoing hematopoietic stem cell transplantation (HSCT) were severe and limited to prevent exposure to foodborne organisms. With improvements in supportive care and anti-infective agents, the necessity of the neutropenic diet for this population has been in question.

**Objectives:** This study aimed to determine whether the incidence of infection differs and to analyze the nutritional status in patients undergoing myeloablative allogeneic HSCT with a neutropenic diet as compared to those with a diet without restrictions.

**Methods:** This study was a randomized, controlled prospective pilot study beginning within the first 24 hours of the start of the conditioning regimen. Patients were randomized to receive a neutropenic diet or a diet without restrictions. All patients received care in a high-efficiency particulate air-filtered room on the inpatient adult blood and marrow transplantation unit (ABMTU). All patients received antibacterial and antifungal prophylaxis. Patients were followed until the end of neutropenia (defined as absolute neutrophil count of greater than 500 for three days) or until discharge from the inpatient ABMTU.

**Findings:** In 46 evaluable patients, no significant difference was found between infection rates or nutritional status. The neutropenic diet did not offer a protective effect against infection in patients undergoing myeloablative allogeneic HSCT. No differences were found in nutritional status between the two groups.

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Each year, thousands of individuals undergo allogeneic stem cell transplantation for hematologic disorders (Tomblyn et al., 2009). For many individuals, receiving stem cells from another person is the only chance for cure or longer-term survival; however, the procedure is risky and has a potentially high mortality rate depending on the type of transplantation, donor source, and patient risk factors. The major complication of allogeneic stem cell transplantation is infection.

Patients undergoing myeloablative allogeneic hematopoietic stem cell transplantation (HSCT) develop a period of pancytopenia, during which occurs an increased risk of infection. In addition, conditioning regimens contain alkylating chemotherapy agents and total body irradiation that increase the development of stomatitis and mucositis. Mucositis enables microorganisms native to the endogenous intestinal flora to translocate from the intestine to the lymphoid tissue and blood (Boeckh, 2012). When mucositis and pancytopenia occur simultaneously, the risk of infection is even higher. Bloodstream infections by gram-negative bacilli and yeasts are an important cause of serious infections that cause considerable morbidity (van Tiel et al., 2007).

The physiologic basis of the neutropenic diet provides a theoretical basis for this topic. The primary function of the immune system is to recognize and destroy antigens in the body. This nonspecific immune response is promoted by polymorphonuclear