

# Enteral Versus Parenteral Nutrition

## Use in adult patients undergoing hematopoietic stem cell transplantation

Mary K. Reese, RD, and Susan Hewlings, PhD, RD

**BACKGROUND:** Pretransplantation chemotherapy and side effects of transplantation can cause reduced oral intake, contributing to malnutrition.

**OBJECTIVES:** The aim was to evaluate the current evidence comparing enteral nutrition (EN) to parenteral nutrition in the adult hematopoietic stem cell transplantation (HSCT) population.

**METHODS:** A systematic review was conducted in PubMed/MEDLINE®, CINAHL® Plus With Full Text (EBSCO), and Cochrane Library and produced 238 articles. Four articles met inclusion criteria.

**FINDINGS:** Three studies were observational; one was a randomized trial that ended prematurely. Outcomes included tolerance of EN, incidences of graft-versus-host disease (GVHD), rate of infection, and mortality. This limited information suggests that EN may have a protective mechanism against advanced stages of GVHD and contribute to decreased risk of infection-related death.

### KEYWORDS

hematopoietic stem cell transplantation; enteral nutrition; parenteral nutrition

### DIGITAL OBJECT IDENTIFIER

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**H**EMATOLOGIC CANCERS, INCLUDING LEUKEMIA, LYMPHOMA, AND MYELOMA, contributed to 174,250 new cancer diagnoses in 2018 (National Cancer Institute, n.d.). Almost 20,000 people a year will require a hematopoietic stem cell transplantation (HSCT) for remission or survival, with about 5,000 transplantsations coming from donated stem cells of a related or unrelated donor (U.S. Department of Health and Human Services, n.d.). Receiving stem cells from a donor, known as an allogeneic transplantation, poses a higher risk of complications to the recipient compared to receiving stem cells taken from the patients themselves. The risk of death within the first two years following allogeneic HSCT is high because of complications, including cancer relapse, graft-versus-host disease (GVHD), infection, and other complications attributed to the pretransplantation conditioning regimen or the transplantation itself (Martin et al., 2010; Wingard et al., 2011). The pretransplantation conditioning regimen of chemotherapy and radiation therapy is administered to reduce remaining disease and to suppress the recipient's immune system to prevent rejection of donated cells. This necessary treatment can lead to a decreased quality of life from symptoms of mucositis involving the gastrointestinal tract, as well as protracted nausea and vomiting. These gastrointestinal symptoms frequently contribute to malnutrition, which is associated with poor outcomes and increased risk of death (Barritta de Defranchi, Bordalejo, Cañueto, Villar, & Navarro, 2015; Le Blanc, Ringdén, & Remberger, 2003). The inability to meet caloric requirements by mouth may necessitate the use of enteral nutrition (EN) or parenteral nutrition (PN).

EN is the infusion of nutrients through a feeding tube into the gastrointestinal tract, and PN is a mixture of nutrients in their simplest form—glucose, amino acids, and lipids—that bypasses the gastrointestinal tract for absorption and is administered directly into veins. During the process of HSCT, the American Society for Enteral and Parenteral Nutrition recommends the use of EN in cases of malnutrition and when a patient is anticipated to be unable to meet nutrition needs with oral intake in the setting of a working gastrointestinal tract (August & Huhmann, 2009). EN