

# Chemomobilization

## Overview of an educational quality improvement project for recipients of autologous stem cell transplantation

Zandra R. Rivera, DNP, RN, ANP-BC, BMTCN®, Rachele Nurse, PhD, RN, WHNP-BC, Bryan Fellman, BS, MS, Nicole Brunelle, MSN, RN, NP-C, and Kelly J. Brassil, PhD, RN, AOCNS®, ACNS-BC, CNL

**BACKGROUND:** In preparation for an autologous stem cell transplantation, patients undergo chemomobilization; however, a dearth of standardized, evidence-based patient education on chemomobilization exists in the literature and in practice.

**OBJECTIVES:** The purpose of this quality improvement educational initiative is to identify an evidence-based approach to appraise the educational needs of patients and their caregivers and to enhance chemomobilization education.

**METHODS:** A review of the literature related to chemomobilization was conducted, as well as an informal survey of educational practices at five National Cancer Institute–designated comprehensive cancer centers. A 14-item survey was administered to 50 patients who underwent chemomobilization to assess their educational needs, experiences, and preferences.

**FINDINGS:** Patients prefer written information to review. Receiving verbal education from reliable healthcare providers in a structured format may enhance effective comprehension and retention. Patients identified timing, process, side effects, and expectations about chemomobilization as the most important topics to include in education.

### KEYWORDS

chemomobilization; autologous hematopoietic stem cell transplantation; education

### DIGITAL OBJECT IDENTIFIER

10.1188/17.CJON.E106-E113

**ABOUT 20,000 HEMATOPOIETIC STEM CELL TRANSPLANTATION (HSCT) PROCEDURES** are performed annually in the United States (Majhail et al., 2015). Of these, about 57% (n = 11,392) are autologous transplantations, harvesting and reinfusing a patient's own stem cells, typically following high-dose chemotherapy treatment that may result in prolonged immunosuppression (Center for International Blood and Marrow Transplant Research, 2016). Stem cells primarily exist in bone marrow and, therefore, must be mobilized for peripheral collection.

HSCT has evolved into a critical treatment option for patients with hematologic malignancies. HSCT is used to replace nonworking bone marrow harmed by disease, chemotherapy, or radiation. Hematopoietic progenitor cells can proliferate, repopulate the marrow spaces, and mature, allowing for the reestablishment of blood counts and immunity with HSCT (Ezzone, 2013). Moving an adequate number of hematopoietic stem cells into the peripheral blood is critical to regenerating full hematopoietic lineages and achieving engraftment after an autologous HSCT (Devine, Tierney, Schmit-Pokorny, & McDermott, 2010).

Mobilization, the process of increasing hematopoietic stem cells and forcing them from the bone marrow into peripheral blood, is achieved through one of two mechanisms, or a combination of the two. Stem cell mobilization and collection are complex processes that involve the coordination of numerous individuals and groups, such as patients, caregivers, transplantation programs, apheresis clinics, flow cytometers, and cell-processing laboratories. These include mobilization with hematopoietic growth factors, such as granulocyte-colony-stimulating factors (G-CSFs) alone or in combination with chemokine antagonists like plerixafor (Mozobil®), or chemomobilization using chemotherapy plus G-CSF administration (Ezzone, 2013; Giralt et al., 2014). This methodology can result in various symptoms and physiologic sequelae, including pancytopenia, mucositis, nausea, vomiting, diarrhea, alopecia, bone pain, and fatigue. Thoughtful evidence-based education for patients and caregivers can help with the recognition, preparation, and management of these side effects (Ezzone, 2013; Miceli et al., 2013).

About 10%–20% of patients with cancer undergo chemomobilization each year, depending on their disease type and provider preferences (Costa, Kumar, Stowell, & Dermer, 2015). However, robust, standardized education for patients and caregivers on chemomobilization, including its process and side effects, is lacking. At a National Cancer Institute