Nursing Care of Adult Hematopoietic Stem Cell Transplant Patients and Families in the Intensive Care Unit

An Evidence-based Review

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KEYWORDS

- Hematopoietic stem cell transplant (HSCT) • Bone marrow transplant
- Intensive care unit (ICU) • Nursing care • Adult patients and their families
- ICU staff preparation for care

KEY POINTS

- There is limited evidence available addressing the unique needs and interventions for hematopoietic stem cell transplant (HSCT) patients in the intensive care unit (ICU), their families, and the non-HSCT specialized ICU care providers.
- ICU admission for the HSCT adult patients occurs when patients require a higher level of care than can be provided in a non-ICU environment.
- Identifying the relevant medical and nursing diagnoses on admission to the ICU is key.
- Three major areas of interventions are education, communication, and support for patients, families, and non-HSCT–trained providers in the ICU.

For individuals with a hematologic malignancy, a hematopoietic stem cell transplant (HSCT) can be a lifesaving option. HSCT has replaced the previous terminology of bone marrow transplant to reflect a broader and expanding range of cell sources and collection techniques.[1] HSCT treatment consists of chemotherapy followed by stem cell rescue from an autologous transplant (patient's own cells), an allogeneic transplant (stem cells from a donor), or an umbilical cord blood

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transplant. For the purpose of this article, allogeneic and autologous transplant are discussed.

HSCT patients are a growing population. In 2012, an estimated 20,000 people received blood/cell transplant in the United States.[1] Between the years 2008 and 2012, there was an incident rate of 13.2 per 100,000 of the US population for leukemia.[2] The incident rate was 19.2 per 100,000 for non-Hodgkin lymphoma.[3] In 2016, the most common reported[4] diagnoses indicating an HSCT included:

- Acute lymphoblastic leukemia (ALL)
- Acute myelogenous leukemia (AML)
- Chronic lymphocytic leukemia (CLL)
- Chronic myelogenous leukemia (CML)
- Lymphomas (Hodgkin and non-Hodgkin)

The numbers of new cases of leukemia and non-Hodgkin lymphoma in the year 2016 are estimated to be 60,140 and 20,150 respectively.[3] These statistics highlight the relevance of HSCT and the increasing patient population.

Depending on the type of transplant, acute and long-term outcomes may vary. The long-term cause of mortality for autologous transplants remains the primary hematologic disease.[2] For allogeneic transplant patients, specifically those receiving cells from an unrelated donor, the cause of mortality is often infections or organ failure.[2] Although both types of transplant go through similar experiences, more complications can arise during allogeneic transplant. Knowing this, nurses can individualize care for adult HSCT patients and their families and lead collaborative efforts for best practice between the multidisciplinary teams working with each patient. To achieve that goal, nurses need to understand the vulnerabilities of HSCT patients, be aware of what nursing and medical diagnoses are present, and cater to patient and family needs at different care transitions, especially before, during, and after an intensive care unit (ICU) experience.

Each transplant center is uniquely designed and has different infrastructure and available resources. In 2015, there were 108 adult centers offering HSCT programs in the United States.[2] Some HSCT programs operate as an inpatient unit located within a hospital. Others operate as a hybrid between inpatient and outpatient centers. Thus, a variety of practices in caring for and supporting patients through transplant occur because of available resources of infrastructure, personnel, and support.[2] The variability in HSCT centers affects the care that staff are able to provide HSCT patients and families.

Both types of transplants, autologous and allogeneic, have the potential of extending life; however, they both involve intense therapy with potentially life-threatening outcomes. The intensity of transplant creates unique health care needs. Acutely, patients are treated in a dynamic environment that spans outpatient, inpatient, and potential ICUs with a multidisciplinary team caring for them. It can be overwhelming for patients and their families to understand their disease, the HSCT treatment effects, and potential complications. This consideration is especially important during care transitions, because patients are fragile and vulnerable to adverse outcomes. This article addresses the unique needs of adult HSCT patients and their families and nonspecialized health care staff specifically when admitted to an ICU environment.

LITERATURE SEARCH

CINAHL Complete, Medline, Cochrane Library, and Center for International Blood and Marrow Transplant Research (CIBMTR) were the databases and sites searched for