

# Hypoglycemia

## Comparison of health status outcomes between patients after allogeneic hematopoietic cell transplantation

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**BACKGROUND:** Patients who have undergone hematopoietic cell transplantation (HCT) often face lengthy hospital stays. Hospitalized patients' compromised health status puts them at risk for complications to recovery when glucose is not controlled.

**OBJECTIVES:** This study aimed to investigate differences in outcomes in patients who experienced hypoglycemia compared to patients who did not experience hypoglycemia post-allogeneic HCT.

**METHODS:** A retrospective chart review and secondary data analysis were conducted. The sample consisted of 198 adult patients hospitalized for their first allogeneic HCT at the University of Minnesota Medical Center between August 2015 and December 2017. Hypoglycemic patients were compared with nonhypoglycemic patients until discharge or 100 hospitalization days post-transplantation.

**FINDINGS:** A total of 20 patients (10%) experienced hypoglycemic events during the study time frame. There were significant differences between the two groups. Hypoglycemia may be a marker for higher acuity illness in this population. Nurses should increase vigilance in managing the blood glucose levels of patients undergoing HCT with known comorbidities and complications.

### KEYWORDS

allogeneic; transplantation; hypoglycemia; glycemic monitoring

### DIGITAL OBJECT IDENTIFIER

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**HOSPITALIZED PATIENTS' COMPROMISED HEALTH STATUS** puts them at an increased risk for impaired healing, delayed recovery, and additional complications when blood glucose levels are not controlled. Several studies and recommendations have highlighted the advantages of maintaining normoglycemia in critically ill and noncritically ill patients in relation to mortality, reduced infections, and length of stay (American Diabetes Association, 2020; Egi et al., 2010; Finfer et al., 2009; Lansing & Umpierrez, 2016). However, hypoglycemia is also a significant concern, whether it is related to even small overcorrections of hyperglycemia or underlying conditions and treatments that can affect glucose levels. Renal disease, liver disease, heart failure, nutritional intake changes, malignancy, infection, and certain medications can all contribute to changes in blood glucose levels (Griffing, 2016). The incidence and prevalence of hypoglycemia in hospitalized patients, whether diabetic or not, is not known (Araque et al., 2018; Seaquist et al., 2013). Because of the potential harm from sustained hypoglycemia, providers, including nurses, should strive to quickly resolve hypoglycemia while avoiding overcorrection resulting in hyperglycemia (Jacobi et al., 2012).

According to the Health Resources and Services Administration (HRSA, 2020), more than 22,000 hematopoietic cell transplantations (HCTs) were performed in the United States in 2017. In addition, 49% of all HCTs were allogeneic, with about 18% of patients receiving related allogeneic transplantations and 22% receiving unrelated allogeneic transplantations (HRSA, 2020). Because patients receiving HCTs are acutely ill, are receiving aggressive interventions and complex medication regimens, and are at risk for significant complications, there are multiple potential causes for hypoglycemia among hospitalized patients undergoing HCT.

### Background

There are two basic types of HCT: autologous and allogeneic. In autologous transplantation, patients receive an infusion of high doses of chemotherapy to eradicate their cancer and then receive an infusion of their own stem cells to repopulate their hematopoietic system. In allogeneic transplantation, patients receive an infusion of high doses of chemotherapy to eradicate their cancer and immune system to prevent rejection of the transplantation. Donor stem cells in an allogeneic transplantation are matched as closely as possible to the patient's and given to repopulate the hematopoietic system and rebuild the immune system. However, in allogeneic transplantations,