

## Hepatic Sinusoidal Obstruction Syndrome in Patients Undergoing Hematopoietic Stem Cell Transplant

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**Purpose/Objectives:** To provide a comprehensive review of hepatic sinusoidal obstruction syndrome (HSOS) in patients receiving a hematopoietic stem cell transplant and to describe the implications for nursing care.

**Data Sources:** Published research articles, reviews, case reports, and books.

**Data Synthesis:** Disagreement exists regarding the precise cause of HSOS. Prevention and treatment strategies have emerged based on these causative theories. Few published resources are available for nursing assessment and intervention specific to HSOS, although symptom management strategies derived from other disease etiologies can be used successfully.

**Conclusions:** HSOS is a complex consequence of myeloablative chemoradiotherapy. Although the overall incidence is declining, research continues to explore better methods for prophylaxis and develop more efficacious treatment options.

**Implications for Nursing:** Nurses caring for patients receiving a hematopoietic stem cell transplant must comprehend the proposed etiologies for HSOS and be familiar with the manifestations of the syndrome. Symptom management requires a thorough understanding of affected organ systems.

### Key Points . . .

- ▶ Hepatic sinusoidal obstruction syndrome (HSOS), also referred to as hepatic veno-occlusive disease, is a potentially life-threatening consequence of high-dose chemotherapy used in hematopoietic stem cell transplant that results in jaundice, weight gain, and painful hepatomegaly.
- ▶ HSOS can result in damage to the cardiovascular, pulmonary, renal, gastrointestinal, integumentary, and neurologic systems.
- ▶ Nurses need to understand the sequelae of hepatic damage and the rationale for current methods of preventing and treating these complications.
- ▶ Patients with HSOS require tremendous physical and psychosocial support.

### Hepatic Anatomy and Physiology

The liver is a highly vascular organ that receives its blood supply from two sources: approximately 30% from the hepatic artery and 70% from the portal vein (Jakubik, Cockerham, Altmann, & Grossman, 2003). Blood is filtered through the sponge-like structure of the hepatic parenchyma before entering the hepatic vein and returning to the vena cava. The liver is responsible for a number of crucial physiologic functions (see Figure 1), and disruption of these functions produces many of the signs and symptoms associated with HSOS.

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Digital Object Identifier: 10.1188/08.ONF.385-397

**M** yeloablative hematopoietic stem cell transplant (HSCT) involves the administration of supralesional doses of chemotherapy with or without radiotherapy, followed by the infusion of peripheral blood stem cells, bone marrow, or umbilical cord blood. In addition to the expected hematologic toxicities, high-dose chemoradiotherapy can cause a potentially fatal liver condition referred to as hepatic sinusoidal obstruction syndrome (HSOS).

#### Goal for CNE Enrollees

To enhance nurses' knowledge regarding hepatic sinusoidal obstruction syndrome (HSOS).

#### Objectives for CNE Enrollees

1. Define HSOS and identify risk factors for patients.
2. Recognize the symptoms of HSOS.
3. Identify nursing measures to support patients with HSOS.