

UNDERSTANDING VENO-OCCLUSIVE DISEASE (VOD)



Hepatic veno-occlusive disease (VOD), also known as sinusoidal obstruction syndrome (SOS), is a potentially devastating complication that can occur following hematopoietic stem-cell transplant (HSCT).¹ In up to half of all cases, VOD progresses to VOD with multi-organ dysfunction (VOD with MOD), which has been shown to be deadly in 84% of patients.^{1,2}

MOD = renal or pulmonary dysfunction



Vigilance

over patients at risk for VOD

INCIDENCE & RISKS³⁻⁷



Patient-related

- Age
- Preexisting hepatic disturbance or dysfunction
 - Liver fibrosis
 - Previous liver disease
- Elevated pre-HSCT AST/ALT
- Hepatotoxic medication



Transplant-related

- Allogeneic transplant
- HLA mismatch
- Previous myeloablative HSCT
- High-intensity conditioning regimens
 - Oral busulfan
 - Busulfan, in combination with cyclophosphamide
- Total body irradiation (high or single dose)



Observation

for signs and symptoms of VOD progression

SIGNS & SYMPTOMS^{8,9}



Right upper quadrant pain/hepatomegaly



Weight gain



Elevated bilirubin



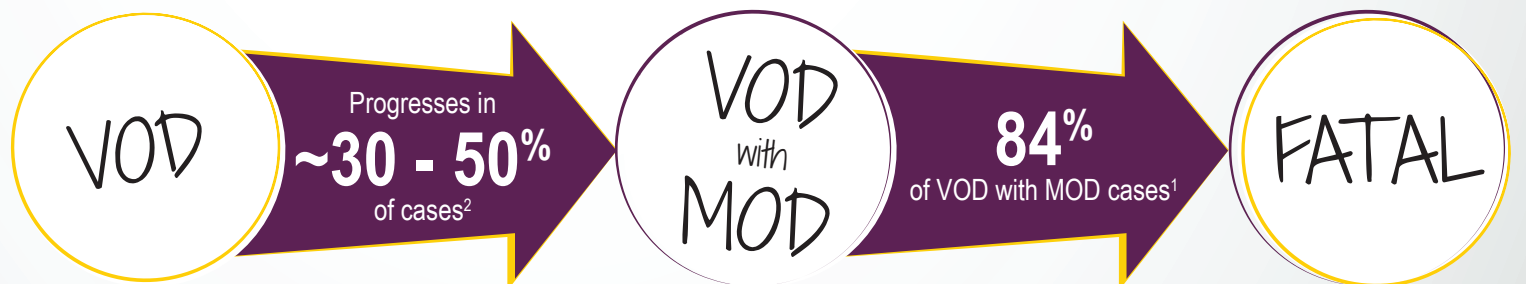
First 21 days signs and symptoms emerge

Monitor starting at Day 0 following HSCT for signs and symptoms of VOD, such as:^{2-4,9}

- Weight gain
- Fluid retention
- Edema and ascites
- Hepatomegaly
- Jaundice
- Abdominal discomfort



IMPACT



Detection/Diagnosis

of VOD progression as soon as possible

REFERENCES

1. Coppel JA, Richardson PG, Soiffer R, et al. Hepatic veno-occlusive disease following stem cell transplantation: incidence, clinical course, and outcome. *Biol Blood Marrow Transplant.* 2010;16(2):157-168.
2. Carreras E, Díaz-Beyá M, Rosiñol L, et al. The incidence of veno-occlusive disease following allogeneic hematopoietic stem cell transplantation has diminished and the outcome improved over the last decade. *Biol Blood Marrow Transplant.* 2011;17(11):1713-1720.
3. Tsigotis PD, Resnick IB, Avni B, et al. Incidence and risk factors for moderate-to-severe veno-occlusive disease of the liver after allogeneic stem cell transplantation using a reduced intensity conditioning regimen. *Bone Marrow Transplant.* 2014;49(11):1389-1392.
4. Carreras E. Early complications after HSCT. In: Apperley J, Carreras E, Gluckman E, et al, eds. *The EBMT Handbook*. 6th ed. Paris, France: European School of Haematology; 2012:176-195.
5. Carreras E, Bertz H, Arcese W, et al; European Group for Blood and Marrow Transplantation Chronic Leukemia Working Party. Incidence and outcome of hepatic veno-occlusive disease after blood or marrow transplantation: a prospective cohort study of the European Group for Blood and Marrow Transplantation. *Blood.* 1998;92(10):3599-3604.
6. Dullley FL, Kanfer EJ, Appelbaum FR, et al. Venocclusive disease of the liver after chemoradiotherapy and autologous bone marrow transplantation. *Transplantation.* 1987;43(6):870-873.
7. Dignan FL, Wynn RF, Hadzic N, et al. BCSH/BSBMT guideline: diagnosis and management of veno-occlusive disease (sinusoidal obstruction syndrome) following haematopoietic stem cell transplantation. *Br J Haematol.* 2013;163(4):444-457.
8. Carreras E. How I manage sinusoidal obstruction syndrome after haematopoietic cell transplantation. *Brit J Haematol.* In press.
9. Mohy M, Malard F, Abecassis M, et al. Sinusoidal obstruction syndrome/veno-occlusive disease: current situation and perspectives—a position statement from the European Society for Blood and Marrow Transplantation (EBMT). *Bone Marrow Transplant.* 2015;50(6):781-789.