

## Solutions to [Hepatorenal Syndrome Anagrams](#)

1. PORTAL HYPERTENSION: Evidence suggests that the main cause of decreased kidney function in HRS is a drop in renal perfusion from reduced systemic vascular resistance caused by splanchnic circulation vasodilatation. The primary event that initiates this is portal hypertension. [Figure 2 in Fagundes and Ginès's article](#) summarizes this concept clearly.

2. LARGE VOLUME PARACENTESIS: Bacterial infections and spontaneous bacterial peritonitis are the leading triggers. Gastrointestinal bleeding and large volume paracentesis (over 5 liters without albumin infusion) are other causes. The risk of paracentesis causing HRS is around 15% of the cases. Other triggers are diuretic use and hypovolemia.

3. TERLIPRESSIN: Administration of vasoconstrictors is considered the best therapy for managing type 1 HRS. They lead to improved arterial filling, increased flow to the renal vessels and improved GFR. One such vasoconstrictor is the vasopressin analogue terlipressin, which acts on V1 vasopressin receptors in vascular smooth muscle cells. Results from randomized controlled studies and systematic reviews show that treatment with terlipressin and albumin is associated with reversal of HRS in 40%-50% of patients, making this approach the preferred initial therapy. Response to treatment with terlipressin and albumin is associated with a progressive decrease in serum creatinine. Please review [Box 3 from the article](#) for more on treatment of HRS.

4. ALBUMIN: In patients with cirrhosis and spontaneous bacterial peritonitis, [a study published in 1999](#) showed that intravenous administration of albumin (1.5 g/kg body weight at diagnosis and 1 g/kg 48 hours later) can greatly reduce this risk of HRS. Another analysis of that study suggested albumin should be administered to all patients with spontaneous bacterial peritonitis until proven otherwise.

Long-term oral treatment with norfloxacin has also been shown to prevent HRS and improve survival by preventing bacterial translocation and suppressing cytokines. Other preventive options include pentoxifylline.