When diagnosing hepatorenal syndrome type 1 (HRS-1)

THE KIDNEYS CAN'T WAIT

SOONER IS BETTER FOR HRS-1

The latest ICA consensus recommendations eliminate a serum creatinine (SCr) threshold for the diagnosis of HRS-1.[1]

The application of these recommendations enabled:

- Earlier treatment by approximately 4 days[2]
- Initiation of treatment when SCr levels were, on average, approximately 1 mg/dL lower[2]
- Treatment before a further ≥1.5-fold increase in SCr (in 47% of patients)[2]

Get the latest news on HRS-1 & a digital HRS-1 Diagnosis and Treatment Algorithm

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1. Angeli P, Ginès P, Wong F, et al. Diagnosis and management of acute kidney injury in patients with cirrhosis: revised consensus recommendations of the International Club of Ascites. *Gut.* 2015;64(4):531-537.

2. Wong F, Pappas SC, Vargas HE, Frederick RT, Sanyal A, Jamil K. Diagnosis of hepatorenal syndrome (HRS): how much does use of the 2015 revised consensus recommendations affect earlier treatment and serum creatinine (SCr) at treatment start? Poster presented at: International Liver Congress™ of the European Association for the Study of the Liver; April 10-14, 2019; Vienna, Austria. Poster SAT-141.

Algorithm for Diagnosis and Treatment of HRS-1, including Acute Kidney Injury Based on 2015 ICA Consensus Recommendations[1]

Confirm Diagnosis of Cirrhosis with Ascites

Determine Stage of Kidney Injury

- Acute kidney injury (AKI) is defined as an increase in SCr ≥0.3 mg/dL (≥26.5 µmol/L) within 48 hours; OR a percentage increase in SCr ≥50% from baseline, which is known or presumed to have occurred within the prior 7 days.
- A serum creatinine value from the previous 3 months can be used as baseline SCr. In patients where more than one SCr value is available, the value closest to hospital admission should be used.

STAGE 1 AKI*

- Increase in SCr ≥0.3 mg/dL within 48 hours
- Increase in SCr ≥1.5-fold (50%) to 2-fold from baseline

STAGE 2 AKI*

- Increase in SCr >2-fold to 3-fold from baseline

STAGE 3 AKI*

- Increase of SCr >3-fold from baseline or SCr ≥4.0 mg/dL with an acute increase ≥0.3 mg/dL or initiation of renal replacement therapy

- Close monitoring
- Remove risk factors
  - Withdrawal of nephrotoxic drugs, vasodilators, and NSAIDs
  - Decrease/withdrawal of diuretics
  - Treatment of infections† when diagnosed
- Plasma volume expansion with albumin in case of hypovolemia

- Withdrawal of diuretics (if not withdrawn already)
- Volume expansion with albumin (1g/kg) for 2 days

Resolution → **Close follow-up**

Stable → **Further treatment of AKI decided on a case-by-case basis§**

Progression‡ → Withdrawal of diuretics + Volume expansion with albumin (1g/kg) for 2 days

Response

- **No** → Complete the Differential Diagnosis for HRS-1
- **Yes** → **Close follow-up**

Complete the Differential Diagnosis for HRS-1

ADDITIONAL CRITERIA FOR HRS-1

- Absence of shock
- No current use of nephrotoxic drugs (NSAIDs, aminoglycosides, iodinated contrast media, etc)
- No macroscopic signs of structural kidney injury‖ defined as:
  - absence of proteinuria (>500 mg/day)
  - absence of microhematuria (>50 RBCs per high power field)
  - normal findings on renal ultrasonography

Meets criteria of HRS

- **Yes** → **Vasoconstrictors and albumin**
- **No** → **Specific treatment for other AKI phenotypes**

This document is intended as an information reference only and is not intended to replace your independent judgment. You are ultimately responsible for determining the appropriate diagnosis and treatment for each patient.

*Initial AKI stage is defined as AKI stage at the time of first fulfillment of the AKI criteria.
†Treatment of spontaneous bacterial peritonitis should include albumin infusion according to current guidelines.
‡Progression of AKI to a higher stage and/or need for renal replacement therapy (RRT).
§No global consensus was reached on this point.
‖Patients who fulfill these criteria may still have structural damage, such as tubular damage. Urine biomarkers will become an important element in making a more accurate differential diagnosis between HRS and acute tubular necrosis.

NSAIDs=non-steroidal anti-inflammatory drugs; RBCs=red blood cells.

Reference: 1. Angeli P, Ginès P, Wong F, et al. Diagnosis and management of acute kidney injury in patients with cirrhosis: revised consensus recommendations of the International Club of Ascites. *Gut.* 2015; 64(4):531-537.