

HRS-1: Earlier Identification and Treatment May Impact Patient Outcomes—A Consensus Statement Review

Hepatorenal syndrome type 1 (HRS-1) is a rapidly progressing form of acute kidney injury (AKI) occurring in patients with advanced cirrhosis and ascites.¹ HRS-1 is associated with significant morbidity and mortality.^{2,3} Historically, the accepted definition for HRS-1 included increased serum creatinine (SCr) above a threshold of 1.5 mg/dL within 2 weeks.^{1,4} **Recent evidence suggests that more subtle changes in SCr also have negative prognostic implications for patient outcomes.**⁵

The Importance of Prompt HRS-1 Patient Identification
HRS-1 is a diagnosis of exclusion that is made after assessment for other causes of kidney dysfunction.^{4,6} That assessment can take up to 48 hours.⁴ Prompt identification of patients with HRS-1 is critical in order to institute treatment rapidly and to maximize the potential for improved outcomes.¹

Changes in the Diagnostic and Management Consensus Recommendations
Whereas previous diagnostic criteria for HRS-1 included SCr increased over a set threshold of 1.5 mg/dL within 2 weeks,^{1,4} **the 2015 International Club of Ascites (ICA) consensus guidelines recommend monitoring patient SCr levels closely and tracking subtle changes from a baseline measurement.**⁴ The ICA adapted the latest Kidney Disease Improving Global Outcomes (KDIGO)/Acute Kidney Injury Network (AKIN) definitions in its consensus.⁴

According to the latest recommendations, in addition to other clinical criteria, the diagnosis of HRS-1 is based on the following SCr measurements⁴:

- Increase in SCr ≥0.3 mg/dL within 48 hours or a percentage increase in SCr ≥50% from baseline that is known or presumed to have occurred within the prior 7 days
- Baseline SCr is defined as a value obtained in the previous 3 months, when available, or, for patients with more than one value within the previous 3 months, the value closest to the admission should be used

The staging of AKI is defined as follows⁴:

- Stage 1: increase in SCr ≥0.3 mg/dL or increase in SCr ≥1.5-fold to 2-fold from baseline
- Stage 2: increase in SCr >2-fold to 3-fold from baseline
- Stage 3: increase in SCr >3-fold from baseline or SCr ≥4.0 mg/dL with an acute increase of ≥0.3 mg/dL or initiation of renal replacement therapy



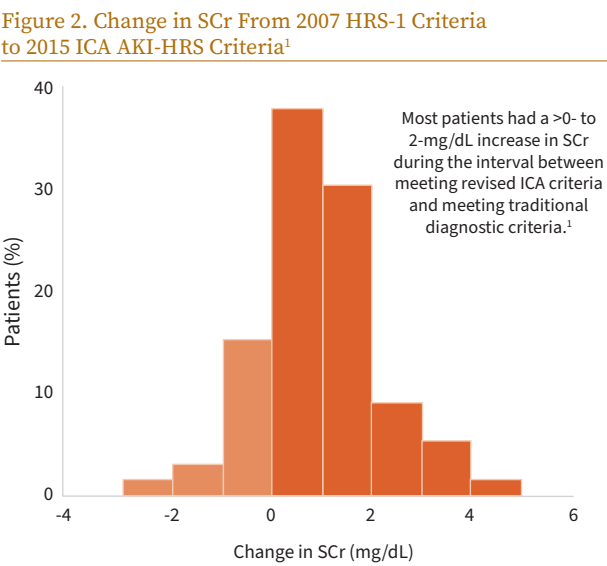
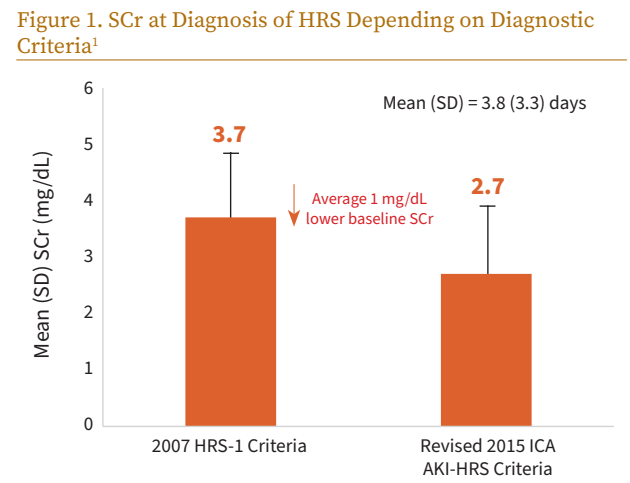
“Outcomes [for HRS-1] may be improved when patients are managed in accordance with the 2015 ICA criteria for diagnosis and treatment.”



HRS-1 was renamed as AKI-HRS in the revised classification, which does not define a set threshold for SCr for diagnosis. These recommendations allow for a shortened period for changes in SCr to become evident.¹

According to the ICA Recommendations, once the AKI stage is determined, intervention such as albumin infusion is recommended. Diuretics also should be withdrawn, and precipitating factors sought and eliminated, before the full differential diagnosis of AKI-HRS is complete. Initial management recommendations are based on AKI staging.⁴

Impact of the 2015 Revised ICA Consensus Recommendations on AKI-HRS Treatment Timing and Patient Outcomes
A retrospective analysis was conducted of 196 patients with AKI-HRS. The number of days between diagnosis using the revised criteria and traditional criteria was determined. In addition, SCr at AKI-HRS diagnosis (using the revised 2015 criteria) was compared with SCr at diagnosis of HRS-1 (using traditional diagnostic criteria) to estimate the effect of the revised criteria on SCr on the potential start of therapy. **The mean (SD) SCr levels at diagnosis were lower than those with the traditional criteria applied (Figure 1 and Figure 2).**¹



This retrospective analysis showed that a total of 24 out of 141 patients (17%) had a decrease or no change in SCr (mean decrease: 0.5 mg/dL) during a mean interval of 2.3 days. A total of 117 out of 141 (83%) had an increase in SCr (mean increase: 1.7 mg/dL) during a mean interval of 4.0 days (Table 1).¹

Table 1. Change in SCr Level During the Interval Meeting the Revised ICA AKI-HRS Criteria and Traditional HRS-1 Criteria¹

Increase in SCr, AKI-HRS to HRS-1 Criteria	% of Patients (n=117)
>1- to <1.5-fold	53
1.5- to 2.0-fold	22
>2.0-fold	25

The application of the 2015 revised ICA diagnostic criteria, rather than the traditional diagnostic criteria for intervention, demonstrated improved outcomes that result from¹

- **Earlier treatment initiation by ~4 days**
- **Initiation of treatment when patient SCr levels were, on average, ~1.0 mg/dL lower**
- **Recommendation of treatment before a further ≥1.5-fold increase in SCr**

Outcomes may be improved when patients are managed in accordance with the 2015 ICA criteria for diagnosis and treatment.¹

References

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