



# Gastroenterología y Hepatología

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## REVIEW

### Evaluation and treatment of the critically ill cirrhotic patient<sup>☆,☆☆</sup>

Q2 Javier Fernández<sup>a</sup>, Carles Aracil<sup>b</sup>, Elsa Solà<sup>a</sup>, Germán Soriano<sup>c</sup>,  
 Maria Cinta Cardona<sup>d</sup>, Susanna Coll<sup>e</sup>, Joan Genescà<sup>f</sup>, Manoli Hombrados<sup>g</sup>,  
 Rosa Morillas<sup>h</sup>, Marta Martín-Llahí<sup>i</sup>, Albert Pardo<sup>j</sup>, Jordi Sánchez<sup>k</sup>, Victor Vargas<sup>f</sup>,  
 Xavier Xiol<sup>l</sup>, Pere Ginès<sup>a,\*</sup>

<sup>a</sup> Liver Unit, Hospital Clínic, Universitat de Barcelona, Institut d'Investigacions Biomèdiques August Pi i Sunyer, CIBERehd, Barcelona, Spain

<sup>b</sup> Servei de Digestiu, Hospital Universitari Arnau de Villanova, Lleida, Spain

<sup>c</sup> Servicio de Patología Digestiva, Hospital de la Santa Creu i Sant Pau, CIBERehd, Instituto de Salud Carlos III, Barcelona, Spain

<sup>d</sup> Servicio de Digestivo, Hospital de Tortosa Verge de la Cinta, Tortosa, Tarragona, Spain

<sup>e</sup> Servicio de Digestivo, Hospital del Mar, Barcelona, Spain

<sup>f</sup> Servicio de Medicina Interna-Hepatología, Hospital Universitari Vall d'Hebron, Institut de Recerca Vall d'Hebron (VHIR), Universidad Autónoma de Barcelona CIBERehd, Barcelona, Spain

<sup>g</sup> Servicio de Aparato Digestivo, Hospital Dr. Josep Trueta, Facultat de Medicina, Universitat de Girona, Girona, Spain

<sup>h</sup> Servicio de Hepatología, Hospital Universitari Germans Trias i Pujol, Badalona, Barcelona, Spain

<sup>i</sup> Servei de Digestiu, Hospital de Sant Joan Despí Moisès Broggi, Sant Joan Despí, Barcelona, Spain

<sup>j</sup> Servicio de Aparato Digestivo, Hospital Universitari de Tarragona Joan XXIII, Tarragona, Spain

<sup>k</sup> Corporació Sanitària Parc Taulí, Sabadell. CIBERehd, Instituto de Salud Carlos III, Sabadell, Barcelona, Spain

<sup>l</sup> Servicio de Aparato Digestivo, Hospital Universitari de Bellvitge, Hospitalet de Llobregat, Barcelona, Spain

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Severe sepsis;  
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 Prognosis

**Abstract** Cirrhotic patients often develop severe complications requiring ICU admission. Grade III–IV hepatic encephalopathy, septic shock, acute-on-chronic liver failure and variceal bleeding are clinical decompensations that need a specific therapeutic approach in cirrhosis. The increased effectiveness of the treatments currently used in this setting and the spread of liver transplantation programmes have substantially improved the prognosis of critically ill cirrhotic patients, which has facilitated their admission to critical care units. However, gastroenterologists and intensivists have limited knowledge of the pathogenesis, diagnosis and treatment of these complications and of the prognostic evaluation of critically ill cirrhotic patients. Cirrhotic patients present alterations in systemic and splanchnic haemodynamics, coagulation

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\* Corresponding author.

E-mail address: [pgines@clinic.cat](mailto:pgines@clinic.cat) (P. Ginès).

and immune dysfunction what further increase the complexity of the treatment, the risk of developing new complications and mortality in comparison with the general population. These differential characteristics have important diagnostic and therapeutic implications that must be known by general intensivists. In this context, the Catalan Society of Gastroenterology and Hepatology requested a group of experts to draft a position paper on the assessment and treatment of critically ill cirrhotic patients. This article describes the recommendations agreed upon at the consensus meetings and their main conclusions.

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## PALABRAS CLAVE

Sepsis grave;  
Insuficiencia renal;  
Encefalopatía  
hepática;  
Hemorragia variceal;  
Fracaso hepático  
agudo sobre crónico;  
Pronóstico

## Evaluación y tratamiento del paciente cirrótico crítico

**Resumen** Los pacientes cirróticos presentan frecuentemente complicaciones graves de su enfermedad que requieren ingreso en la UCI. La encefalopatía hepática grado III-IV, el shock séptico, el fracaso agudo sobre crónico y la hemorragia variceal son descompensaciones que precisan un tratamiento intensivo específico en el paciente cirrótico. La mayor eficacia de los tratamientos empleados en cuidados intensivos y la generalización de los programas de trasplante hepático han mejorado de manera sustancial el pronóstico del paciente cirrótico crítico, hecho que ha facilitado su ingreso en las unidades de terapia intensiva. Sin embargo, el conocimiento de digestólogos e intensivistas sobre la patogenia, diagnóstico y tratamiento de estas complicaciones y sobre la evaluación pronóstica del paciente cirrótico crítico es limitado. Las alteraciones hemodinámicas y en la coagulación características de estos pacientes y la disfunción inmune que presentan aumentan la complejidad del tratamiento, el riesgo de presentar nuevas complicaciones y su mortalidad en comparación con la población general. Estas características diferenciales tienen implicaciones diagnósticas y terapéuticas clínicamente relevantes que deben ser conocidas por los intensivistas generales. En este contexto, la Sociedad Catalana de Digestología encomendó a un grupo de expertos la redacción de un documento de posicionamiento sobre la evaluación y el tratamiento del paciente cirrótico crítico. El presente artículo describe las recomendaciones acordadas en las reuniones de consenso y sus principales conclusiones.

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## Introduction

The evaluation and treatment of patients with cirrhosis and severe complications of the disease have been evolving very rapidly in recent years. The spread of liver transplantation programmes (not only for patients with “stable” cirrhosis but also for those who present severe disease complications), improved efficacy of the intensive treatments used in critical care units, and early detection and treatment of severe complications of cirrhosis, among other factors, has led to substantial improvements in the prognosis of critically ill cirrhotic patients. Nevertheless, there are still many areas for improvement in terms of entities for which there is as yet no specific treatment (such as acute-on-chronic liver failure [ACLF]) or in which current treatment is only moderately effective (hepatic encephalopathy [HE] or hepatorenal syndrome [HRS]), and of current limitations on the admission of cirrhotic patients to intensive care units (ICU). It is also important that the medical team (gastroenterologists, internists, intensivists, surgeons) and nursing staff attending these patients have adequate knowledge of the severe complications that occur in cirrhosis. In this context, the Catalan Society of Gastroenterology and

Hepatology requested a group of experts on the assessment and treatment of critically ill cirrhotic patients to draft a position paper. Although the critically ill cirrhotic patient often presents several decompensations simultaneously, in the interests of organisation and comprehension, this paper has been divided into 6 sections: (1) Severe sepsis and septic shock, (2) Acute renal failure, (3) Hepatic encephalopathy, (4) Gastrointestinal (GI) bleeding due to gastro-oesophageal varices, (5) ACLF, (6) Prognostic evaluation and futility rules. This article describes the recommendations agreed at the consensus meetings and their main conclusions.

## Severe sepsis and septic shock

Sepsis is the result of the host’s reaction to infection, and is characterised by the release of various inflammatory mediators, such as pro- and anti-inflammatory cytokines and procoagulant substances.<sup>1,2</sup> These mediators are responsible for the systemic response to infection, which is stronger in patients with cirrhosis compared to patients with infection but no cirrhosis. This means a higher risk of developing sepsis, severe sepsis (i.e. organ failure or tissue hypoperfusion), septic shock (hypotension refractory to fluid resuscitation,

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