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## REVIEW ARTICLE

# Chronic Liver Disease and the COVID Vaccine

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### BACKGROUND:

The systemic acute respiratory syndrome Coronavirus 2 (SARS-COV2) has rapidly and mercilessly spread around the globe causing the Coronavirus 2019 (COVID-19) pandemic.

Patients with chronic disease have been found to have the greatest morbidity and mortality rates, and those with chronic liver disease (CLD) with or without cirrhosis were no exception.

Patients with CLD are predisposed to severe COVID infection, with a high risk of decompensation (acute on chronic liver disease) and an increased death rate. Indeed, mortality rates among people with CLD have been observed to be fourfold those in the general population<sup>(1)</sup>.

Parallel to the destruction wrought by the contagion, unprecedented scientific efforts and human endeavors have been mobilized to save mankind, culminating in the development of a range of COVID vaccinations. Several manufacturers have created both messenger RNA (mRNA) and non-replicating adenovirus-based vaccines, and their safety and effectiveness have been shown in phase 2/3 clinical studies, motivating a global staged immunization campaign(2-5).

We summarize current guidelines and available evidence about the safety and effectiveness of COVID vaccinations in patients with CLD in this publication. Additionally, we discuss unique issues for this patient group, including knowledge gaps in the current set of literature as well as ongoing, promising initiatives to close them.

### What do we currently know?

The current international consensus is that patients with CLD should be vaccinated on a priority basis, since the vaccine's advantages exceed any potential negative effects, particularly considering the devastating impact the infection has had on this patient cohort worldwide. When receiving

immunizations, treatment for hepatitis B or C should also continue as planned (6-8).

### Special considerations in CLD patients

Patients with major chronic co-morbidities have been mostly excluded from trials evaluating the safety and effectiveness of COVID vaccinations. As a result, patients with CLD were significantly underrepresented in these studies, leaving several unanswered questions.

It is well established that patients with CLD develop a suboptimal immune response to nonCOVID vaccines such as hepatitis B and A immunizations as a result of an abnormal immunogenic response produced by a variety of factors. It is thus worthwhile to determine if this patient cohort's reaction to the COVID vaccination is comparable to that of the non-COVID vaccines. Such a question can only be answered by head-to-head clinical studies comparing individuals with and without CLD (1). Additionally, age, alcohol etiology, and Child-Pugh score have been found to influence the severity of COVID infection; are these same factors predictive of vaccine response, and if so, what modifications to current vaccination recommendations should be made to account for this patient group's altered immunogenicity (1). Numerous clinical studies are presently underway to address these concerns, and patients should continue to get vaccinations on a priority basis until then (9,10).

### Take-home points

- o Current guidelines state that patients with CLD should be immunized on a priority basis.
- o While our knowledge is rapidly advancing, we cannot afford to wait given the virus's catastrophic effect on this vulnerable group.
- o Until we get a complete picture, we should continue fighting with whatever weapons we have.

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