

**Title:**

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## Evaluation of a catch-up strategy for the vaccination in patients with hepatitis C virus

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Dear Editor,

Vaccination in patients with advanced chronic liver disease (ACLD) is an essential part of their comprehensive healthcare. These individuals may have impaired phagocytic function and diminished production of opsonizing antibodies, resulting in increased susceptibility to bacterial infections, particularly pneumococcal pneumonia<sup>1</sup>. Similarly, there is an increased risk of fulminant hepatitis due to hepatitis A and B viruses<sup>2</sup>. The Ministry of Health updated specific vaccination recommendations for this group in 2018<sup>3</sup>.

In order to enhance vaccine coverage against pneumococcus, hepatitis B, hepatitis A, and tetanus-diphtheria in individuals with ACLD, a catch-up strategy was developed for these patients in a Sanitary Area of the Principality of Asturias. For this purpose, individuals who had received antiviral treatment for hepatitis C virus were identified through Hospital Pharmacy. Thereafter, those with some degree of ACLD were selected, defined as stage F3

or F4 in transient elastography or with analytical scores suggestive of advanced fibrosis. Subsequently, training activities were conducted in Primary Care regarding the indications and vaccination guidelines, providing nurses a list of the selected patients for their active recruitment.

Evaluation of the strategy was conducted through comparisons of vaccine coverage against pneumococcus, hepatitis B, hepatitis A, and tetanus-diphtheria before and after catch-up. The deployment date was set as July 1, 2022. The non-parametric McNemar statistic for related samples was employed. Statistically significant differences were considered when the p-value was less than or equal to 0.050.

Out of the 170 patients who received treatment for hepatitis C, 59 patients with ACLD were identified. The mean age was 59.9 years ( $\pm 7.9$  years), with males comprising 62.7%. The main results are included in Table 1. Vaccination coverage improved for all evaluated vaccines, with the most significant increase observed in hepatitis B vaccination.

Proactive healthcare interventions are recommended by various international organizations and enhance healthcare practices<sup>4</sup>. Moreover, given their low risk and potential benefits, actively recommending vaccination in these patients becomes an ongoing practice to be considered. It is imperative to promote collaboration among healthcare teams, as these strategies emerge as elements that enhance community health by reducing vaccine hesitancy<sup>5</sup>.

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**Table 1. Vaccination coverage results before and after the catch-up strategy according to the type of vaccine antigen.**

N = 59	Pre catch-up coverage n (%)	Post catch-up coverage n (%)	Difference in coverage % (p-value)
Pneumococcal Conjugate Vaccine 13v	22 (37.3%)	29 (49.2%)	11.9% (0.016)
Pneumococcal Polysaccharide Vaccine 23v	20 (33.9%)	26 (44.1%)	10.2% (0.031)
Hepatitis A Virus Vaccine	3 (5.1%)	12 (20.3%)	15.3% (0.000)
Hepatitis B Virus Vaccine	15 (25.4%)	27 (45.8%)	20.3% (0.004)
Tetanus-Diphtheria Vaccine	20 (33.9%)	27 (45.8%)	11.9% (0.002)