

Analyzing trends and patterns of vaccine-preventable illnesses in patients with cirrhosis: where we need to do better



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PURPOSE / OBJECTIVES

Cirrhosis, characterized by progressive hepatic fibrosis, is **an immunocompromised state** due to altered innate and adaptive immunity.

- These patients have an **elevated risk of developing infections**, including vaccine-preventable viral infections.
- Despite recommendations for hepatitis A/B, influenza, pneumococcus, and herpes zoster vaccines, coverage remains suboptimal, increasing the risk of hepatic decompensation.
- Aim: To analyze trends and patterns of vaccine-preventable illnesses in patients with cirrhosis from 2016 to 2020, highlighting the need for improved vaccination strategies and identifying areas of progress in prevention efforts.

MATERIAL & METHODS

We utilized the **National Readmission Database (2016-2020)** to sample adult hospitalized patients with cirrhosis.

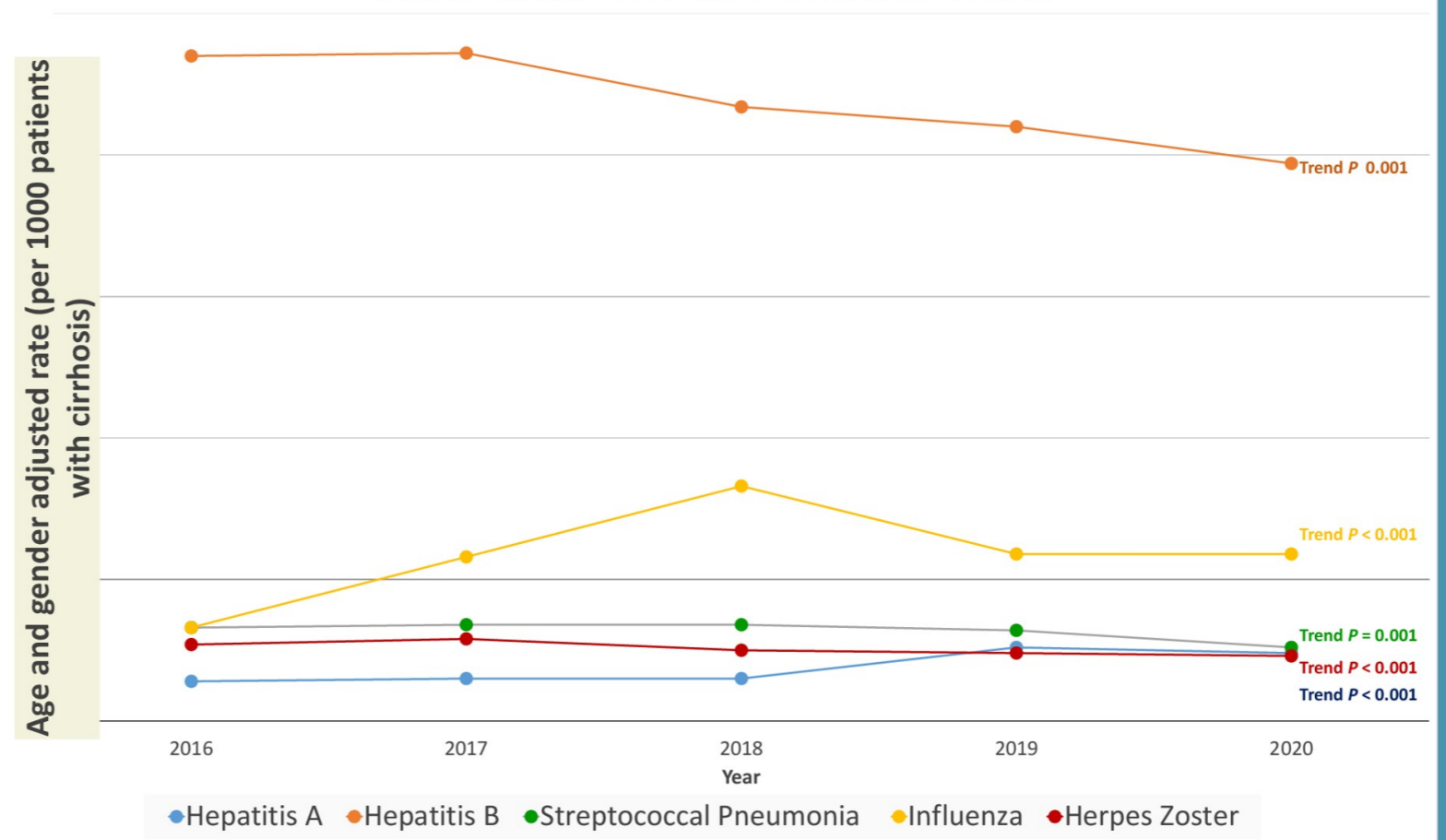
- Linear trends were examined for vaccine-preventable infections using the Mantel-Haenszel linear trend test after adjusting for age and gender.
- Rates were calculated per 1000 patients with cirrhosis

We used Stata, version 14.2, to perform the analyses, considering a two-sided P value of less than 0.05 as statistically significant.

RESULTS

The analysis encompassed data on **3,728,985 patients with cirrhosis**, with a mean age of 61.18 years.

Trends of Vaccine Preventable Illnesses in Cirrhosis



- The rate of **hepatitis A** increased from 1.4 cases per 1,000 in 2016 to 2.4 cases per 1,000 in 2020 (trend $p < 0.001$).
- Similarly, rates of **influenza infection** increased from 3.3/1,000 cases in 2016 to 5.9/1,000 in 2020 (trend $p < 0.001$).
- Conversely, the rates of **hepatitis B** declined over the same period from 23.5/1000 to 19.9/1000 (trend $p < 0.001$).
- A downward trend was observed for **streptococcal pneumonia** (from 3.3/1000 cases in 2016 to 2.6/1000 in 2020 (trend $p = 0.001$)).
- **Herpes zoster** rates declined (from 2.7/1,000 cases in 2016 to 2.3/1,000 in 2020; trend $p < 0.001$).

DISCUSSION

Our study reveals significant trends in vaccine-preventable infections among patients with cirrhosis. The observed increase in hepatitis A and influenza infections highlights the need for enhanced vaccination strategies and improved coverage in this vulnerable population. Conversely, the declining rates of hepatitis B, streptococcal pneumonia, and herpes zoster infections suggest some progress in preventative efforts.

SUMMARY / CONCLUSION

These findings underscore the importance of targeted interventions to increase vaccine uptake and highlight the need for ongoing vigilance in protecting cirrhosis patients against preventable infections. Further research is warranted to understand the factors contributing to these trends and to develop more effective vaccination programs for this high-risk group.