Delaying hepatitis B birth vaccines increases infant infection risks

Cornell University, New York, USA

Delaying hepatitis B vaccination after birth increases infections among newborns and decreases their survival rates and quality of life, according to a new Cornell University study.

The paper, "Economic evaluation of delaying the infant hepatitis B vaccination schedule," is under embargo until 11am EST on April 27, 2026 in *JAMA Pediatrics*.

The longer the delay, the study found, the higher the cost in human life and health care, with costs ranging from $16 million to $370 million depending on the age at first vaccination and adherence to vaccination schedules.

Chronic hepatitis B is a leading cause of cirrhosis, liver failure, liver cancer and death, affecting 2.4 million people in the United States. Newborns have the highest risk: 90% of newborns who contract hepatitis B virus (HBV) will develop chronic infections and 25% will die prematurely from cirrhosis or liver cancer.

"Preventing HBV transmission at birth is a cornerstone of hepatitis B elimination efforts," said Noele Nelson, professor of practice in the Department of Public and Ecosystem Health, the senior author of the study.

In December 2025, the federal Advisory Committee on Immunization Practices (ACIP) voted to delay the first dose of HBV vaccine for infants whose birth parent tests negative for the virus – a reversal of a 2018 recommendation to administer the vaccine to all infants within 24 hours of birth.

Using probabilistic models built on published scientific data on hepatitis B vaccine efficacy

In this study, Nelson and her team used probabilistic models built on published scientific data about hepatitis B vaccine efficacy, transmission rates and disease progression to estimate the number of infections and health care costs various vaccine scenarios would incur.

Nelson compared models where vaccination is given at birth or delayed to age 2 months, 7 months, 4 years or 12 years, in children of HBV-negative birth parents, unknown birth parent infection status or both. Their models also consider cases where all children received all three recommended doses, or incomplete vaccination.

All projections showed that, in unvaccinated groups, more individuals progressed to chronic infection or serious complications like cirrhosis and liver cancer. This effect was amplified in scenarios where children do not receive all three doses as prescribed.

Importantly, our study underestimates the costs and health outcomes associated with delays to administering the hepatitis B vaccine birth dose. Our model assumptions were

conservative. For example, we didn't include the increasing risk of getting HBV infection from members of their household or community, which could happen if the number of people with HBV infection increases."

Noele Nelson, professor of practice, Department of Public and Ecosystem Health

The latest ACIP recommendation was, in part, based on low HBV infections. Nelson argues that the low incidence of HBV infection in the United States is a direct result of the successful vaccination programs.

"Multiple studies have shown that the later children receive their first hepatitis B vaccination, the lower the probability they will complete their routine vaccination course," Nelson said. "This policy may reverse this progress towards hepatitis B elimination."

The recent ACIP decision also cited concerns about the safety of the hepatitis B vaccine and speculation that harms might outweigh the benefits of vaccination. Reviewing four decades of studies, including recent comprehensive safety reviews, Nelson did not find any evidence of serious adverse reactions such as seizures, other neurological disorders, infections or mortality.

"We found that over 35 years of data demonstrate long-term immunogenicity and likely lifetime protection from hepatitis B vaccines," Nelson said. "We don't find any advantage in delaying the first dose of this vaccine, and our findings favor maintaining a policy of universal hepatitis B vaccination at birth."

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