

Screening for hepatitis B may be cost-effective for more of the population, analysis shows

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Hepatitis B virus (HBV) continues to be a major health issue in the United States despite prevention strategies.

Now, research at the University of Cincinnati (UC) provides evidence that current prevention and [screening](#) standards are worth the cost and may even need expansion to include more of the population, further helping prevent the spread of this life-threatening disease.

The findings are published in the May 3, 2011 advance online edition of the journal *Clinical Infectious Diseases*.

Mark Eckman, MD, UC Health physician and professor of medicine, and co-investigators Tiffany Kaiser, PharmD, research assistant professor of medicine, and Kenneth Sherman, MD, PhD, director of the UC [digestive diseases](#) division, found that the U.S. Centers for Disease Control and Prevention's guideline to screen populations with a prevalence of more than 2 percent is cost-effective.

"Furthermore, screening of adults in the United States in lower-prevalence populations is also likely to be cost-effective, which could mean that current health policy should be reconsidered," says Eckman.

HBV causes [liver injury](#). The infection can be spread through contact with the blood, semen, vaginal fluids and other body fluids of someone

who already has an HBV infection.

Most of the damage from the virus occurs because of the way the body responds to the infection. When the body's immune system detects the infection, it sends out cells to fight it off. However, these disease-fighting cells can lead to liver inflammation.

"The recent Institute of Medicine report on hepatitis and [liver cancer](#) notes that up to 2 million Americans are chronically infected with HBV, although 75 percent of people or more may not know their status and are diagnosed with the disease late; chronic HBV infection leads to cirrhosis, [liver failure](#) or liver cancer," Eckman and colleagues say. "While previous analyses have focused on prevention, the cost-effectiveness of treatment strategies and/or screening and vaccinating high-risk populations, none have evaluated the larger question of screening and treatment in the general adult population.

"In this analysis, we wanted to assess the cost-effectiveness of screening in populations with varying prevalence of HBV infection to see if current protocol was beneficial."

Eckman, Kaiser, and Sherman developed a Markov state transition decision model—a mathematical framework for modeling decision-making in situations where outcomes are partly due to chance and partly under the control of a decision maker. They used this to examine screening of outpatients with [hepatitis B](#) in the U.S. who are not experiencing symptoms.

"We used a standard computer program to build the model, analyze results and perform sensitivity analyses," Eckman says. "Our base case involved a hypothetical 35-year-old man living in a region with an HBV infection prevalence of 2 percent."

Researchers compared no screening for HBV to screening followed by treatment with one of four therapies: pegylated interferon-alpha 2a or a low-cost nucleoside or nucleotide agent with a high rate of developing viral resistance, both taken for 48 weeks, and a low-cost, high-resistance nucleoside or a high-cost nucleoside or nucleotide with a low rate of developing viral resistance, both taken for prolonged periods.

"Effectiveness was measured in quality-adjusted life years and costs in U.S. dollars for 2008," Eckman says.

Results showed that screening followed by treatment with a low-cost, high-resistance nucleoside or nucleotide was cost-effective at \$29,000 per quality-adjusted life year gained.

Due to controversy surrounding the use of high-resistance agents, researchers also analyzed the cost-effectiveness of screening followed by treatment with a low-resistance agent and found that this strategy was also cost-effective, at roughly \$44,000 per quality-adjusted life year gained compared with no screening.

"Current guidelines, such as those of the U.S. Preventive Services Task Force, do not recommend universal screening for HBV infection in the general population and utilize relatively high rates of prevalence in targeted populations," Eckman says. "Our analysis suggests that screening becomes cost-effective at a population prevalence as low as 0.3 percent—1.7 percent lower than current guidelines—with a cost at \$50,000 per quality-adjusted life years gained."

Eckman adds that the best practice for patients must also account for patient-to-patient variability in preferences for health outcomes and treatment side effects, as well as other factors like racial differences in the risk of liver cancer in HBV.

"While the most cost-effective treatment strategy for those found to be infected with HBV may evolve in the future, given newer and more effective agents or more complex therapies for patients who develop resistance, screening for [chronic HBV infection](#) is likely to be cost-effective, even in low-prevalence populations," he says. "These findings suggest that current health policy with regard to screening should be reconsidered, which could detect this life-threatening illness earlier, potentially saving more lives."

Provided by University of Cincinnati Academic Health Center

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