

For inmates, pricey hepatitis C drug could make financial sense

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New, significantly improved hepatitis C drugs have revolutionized how the disease is treated, but they are also expensive. One such drug, sofosbuvir, costs more than \$7,000 a week for 12 weeks of treatment.

That could amount to a hefty price tag for American prison systems, which house more than 500,000 people infected with hepatitis C, a [chronic viral infection](#) that causes liver damage and is spread via contact with infected blood. Government officials in some states have expressed concerns about the cost and are working to limit its use.

Nonetheless, a team of Stanford University researchers has found that treating inmates with sofosbuvir is cost-effective compared with other treatments approved by the U.S. Food and Drug Administration.

"It looks like the additional benefits of sofosbuvir are sufficiently large even in this high-risk population to justify its increased cost," said Jeremy Goldhaber-Fiebert, PhD, an assistant professor of medicine at the Stanford School of Medicine and senior author of the study. Inmates who use drugs or get unclean tattoos are at higher risk of reinfection. Goldhaber-Fiebert noted, however, that there are still concerns about affordability given the high drug price.

The study will be published Oct. 21 in the *Annals of Internal Medicine*. The lead author is Shan Liu, PhD, a former graduate student in management science and engineering at Stanford's School of Engineering.

The search for better treatments

Until a few years ago, hepatitis C patients depended on a 48-week, two-drug [treatment](#)—pegylated interferon and ribavirin—that caused a host of side effects, including fatigue, nausea and headache. The drugs knocked out the virus in less than 50 percent of recipients.

Then, in 2011, the FDA approved boceprevir, brand name Victrelis, that—when used with the two traditional drugs—was more effective, but also more expensive. Now, if available, patients receive a significantly more effective and even more costly drug like sofosbuvir in combination with the interferon and ribavirin. (Sofosbuvir, brand name Solvaldi, was approved for chronic hepatitis C treatment in December 2013.)

Goldhaber-Fiebert and his team created a computer model to compare the performance and cost of these two treatment options within a hypothetical prison population.

In one scenario, infected inmates received 12 weeks of sofosbuvir plus interferon and ribavirin; in the other, they received 28 weeks of boceprevir plus interferon and ribavirin. The researchers also compared the therapies to no treatment at all. The model accounted for the variations in inmates' sentence length and liver condition, as well as increased rates of reinfection in the inmate population.

They measured outcomes in quality-adjusted life years, or QALYs, which are used to gauge the effectiveness of a health intervention. For example, an intervention that adds an additional year of optimal health to a patient's life equals one QALY. An intervention that yields half that quality of health for an additional two years also would be counted as one QALY (each year equals 0.5 QALYs).

They found that the sofosbuvir treatment yielded an additional 2.1 QALYs at an additional cost of \$54,000 when compared with no

treatment. The boceprivir treatment added only 1.3 additional QALYs.

Upfront versus long-term costs

In accordance with standard practices for cost-effectiveness studies, this study examined the overall societal cost without accounting for where the money came from. In reality, a prison system that offers sofosbuvir will pay a high upfront cost. But the investment could save its health-care program and other taxpayer-supported health programs, such as Medicaid, from paying out even more in the future to treat the complications of long-term hepatitis C, such as liver failure.

"Overall, sofosbuvir is cost-effective in this population, though its budgetary impact and affordability present appreciable challenges," said Goldhaber-Fiebert, who is also a faculty member at Stanford's Center for Health Policy/Center for Primary Care and Outcomes Research, which is part of the university's Freeman Spogli Institute for International Studies.

Goldhaber-Fiebert called hepatitis C a "public health opportunity."

"Though often not the focus of health-policy research, HCV-infected inmates are a population that may benefit particularly from a highly effective, short-duration treatment," he said.

Provided by Stanford University Medical Center

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