Hepatitis B and C could be eliminated as public health problems in US, says new report

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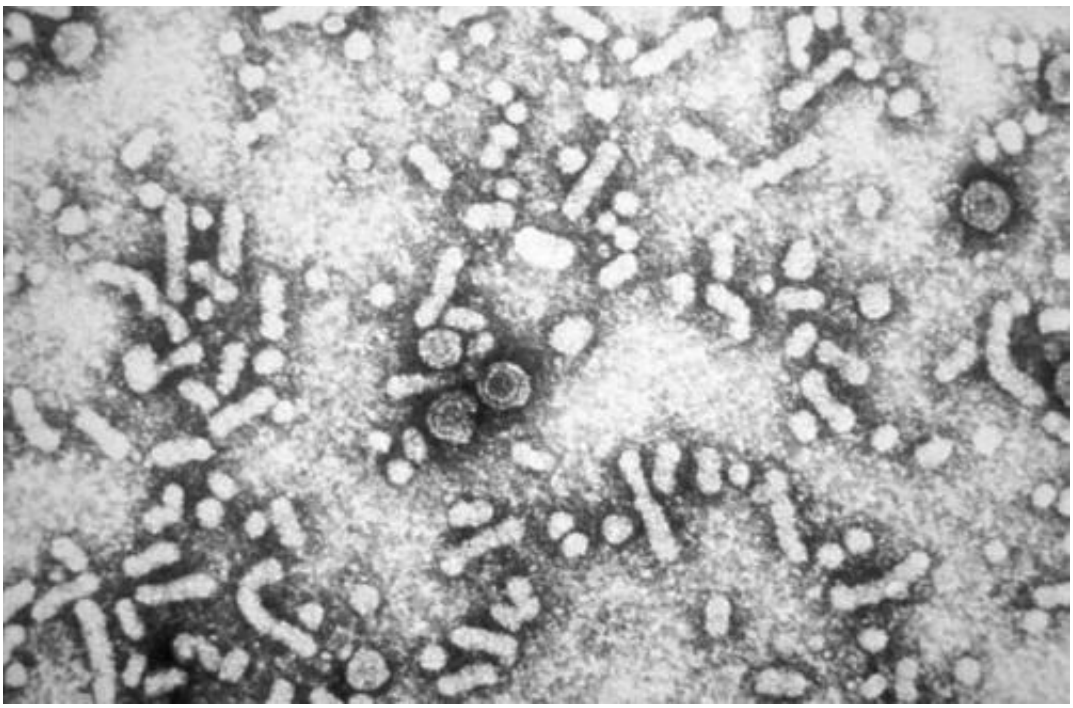

Electron micrograph of hepatitis B virus. Credit: Centers for Disease Control and Prevention

It is possible to end the transmission of hepatitis B and C and prevent further sickness and deaths from the diseases, but time, considerable resources, and attention to various barriers will be required, says a new report from the National Academies of Sciences, Engineering, and

Medicine. However, controlling the diseases by reducing the number of new and overall cases in the U.S. is more feasible in the short term. This is the first report of a two-phase study; the second report, to be released in early 2017, will outline a strategy for meeting the goals discussed in this report.

At least 700,000 to 1.4 million Americans have chronic hepatitis B, and between 2.5 million and 4.7 million have chronic hepatitis C. Together, the diseases kill approximately 20,000 people every year in the U.S. In the past, the term "disease elimination" often referred to complete termination of any new infections in a population, but eliminating a disease as a public health problem is a less absolute goal. The report describes a public health problem as a disease that commands attention as a major threat to the health of the community. In the case of hepatitis B and C, elimination of the diseases as public health problems would mean ending their transmission in the U.S., and for the infections that remain, preventing their undesirable signs and symptoms entirely.

Hepatitis B is transmitted three ways: from an infected mother to her child, from direct contact with infected blood, or from unprotected sex with an infected partner. The committee that carried out the study and wrote the report said the first step in eliminating hepatitis B is ending its transmission, which could be prevented with universal immunization. Administered in three doses, the hepatitis B vaccine confers long-lasting, 95 percent immunity. Although mother-to-child transmission of hepatitis B is rare in the U.S., 800 to 1,000 such infections occur every year. These infections could be avoided by better identifying infected pregnant women to allow for early treatment of their newborns; a dose of hepatitis B vaccine at birth and completion of the full vaccine series helps prevent these transmissions. There is also room for improvement in hepatitis B vaccination in children and adults in the U.S. Only about 64 percent of infants receive the hepatitis B vaccine within one day of birth, and approximately 72 percent receive it within the first three days.

Vaccination of adults is more complicated, because a comprehensive system for immunization after school age does not exist. Targeting people at elevated risk of contracting hepatitis B virus might be an efficient way to reach susceptible adults. For example, routine vaccinations could be given at prisons or in sexually transmitted disease clinics.

People with chronic hepatitis B require medical monitoring for their entire lives, the committee said. Although current therapies do not cure the infection, treatment prevents disease progression and deaths from cirrhosis and liver cancer.

Hepatitis C is transmitted through contact with infected blood and less commonly through sexual contact or from mother to child. No vaccine for hepatitis C exists, so prevention requires both reducing the likelihood that someone with the disease will transmit the virus and reducing the risk that someone uninfected will contract it, the committee said. Individuals born between 1945 and 1965 account for the majority of the chronic hepatitis C in the U.S., but most new infections are associated with unsafe drug injection. While hepatitis C can be cured and curing infected injection drug users could reduce transmission and elicit a drop in disease prevalence of 20 percent to 80 percent, reaching this population is difficult. Some evidence suggests that programs such as needle exchange could help reduce vulnerability to hepatitis C. Preventing substance use disorders in the first place also could lower transmission by reducing the number of people at risk for contracting the virus.

Ending illness and deaths from hepatitis C depends on both stopping the disease's progression in its early stages, and reversing the course of advanced disease, the committee said. Hepatitis C can be cured in eight to 12 weeks with new, direct-acting antiviral drugs—which can elicit sustained response in 94 percent to 99 percent of patients, likely

reducing the risk of cirrhosis of the liver and liver cancer. However, these treatment drugs are expensive. Curing a patient with chronic hepatitis C costs between $54,000 to $168,000 for just the drugs; actual treatment costs will vary. Both Medicaid and private insurers have responded to the cost by restricting access to only the sickest patients. Given the current prices, it is not possible to treat all Americans infected with chronic hepatitis C, the committee stated.

The high price of treatment also creates a tension in determining which patients should be a priority in receiving treatment, because those at most immediate risk of death are not necessarily those transmitting the virus. Hepatitis C infection substantially raises risk of death, especially when the infection has progressed to cirrhosis, the committee said. Those at risk for cirrhosis tend to be older people, who are less likely to pass on the virus through drug use or sexual contact and are usually beyond childbearing age.

Various barriers exist to eliminating the public health problem of hepatitis B and C in the U.S., and some of them affect both ending transmission and reducing the complications of chronic infection. One such barrier is that most state and local health offices are not able to identify infections, causing an incomplete understanding of the epidemics. For example, only five states and two large cities are funded for comprehensive viral hepatitis surveillance. Without a clear understanding of who is most affected by the diseases, it is difficult to form a strategy to combat them. Furthermore, viral hepatitis often carries a stigma for infected patients. Shame and fear of a positive test result can keep people away from testing and care, undermining any public health elimination effort.

Another barrier is that approximately two-thirds of those with chronic hepatitis B and half of people with chronic hepatitis C do not know they are infected. Both diseases are asymptomatic until the later stages. Most

new cases of chronic hepatitis B in the U.S. are in foreign-born people who may face language or social barriers to accessing care. Foreigners need to live in the U.S. for five years before qualifying for many states' Medicaid programs; the Affordable Care Act also restricts access to care for temporary residents and undocumented arrivals. People newly infected with hepatitis C tend to be poorer and less educated than average; many use injection drugs. Such patients can be hard to screen and have less contact with the health system. Prisons are a promising venue in which to treat hepatitis C, but treatment is an expensive obstacle for the prison system. The cost of the direct-acting antivirals is high, and the staff time required to manage an inmate in treatment often far exceeds the available resources.

The study was sponsored by the Centers for Disease Control and Prevention Office of Viral Hepatitis and the U.S. Department of Health and Human Services Office of Minority Health. The National Academies of Sciences, Engineering, and Medicine are private, nonprofit institutions that provide independent, objective analysis and advice to the nation to solve complex problems and inform public policy decisions related to science, technology, and medicine. The Academies operate under an 1863 congressional charter to the National Academy of Sciences, signed by President Lincoln.

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