

INVESTMENT IN RESEARCH SAVES LIVES AND MONEY

Viral Hepatitis

Viral hepatitis is a type of infection that causes inflammation of the liver and can result in nausea and vomiting, diarrhea, stomach pain, and jaundice.¹ The most common strains of viral hepatitis in the United States are hepatitis A, B, and C. Each has its own modes of transmission and specific effects on the liver. The most common mode of transmission of hepatitis A is infected food and beverages, and the virus can have mild to severe effects on the liver that last from a few weeks to several months. Hepatitis B is spread through sexual transmission and contact with blood (for example, if injection drug equipment is shared). Hepatitis B can have a chronic impact on the liver. Hepatitis C is spread through contact with blood and, on occasion, sexual transmission. Hepatitis C often has a chronic impact and can cause serious liver problems. Hepatitis A and B can also be passed from a mother to her child during birth. Vaccines exist to prevent the spread of hepatitis A and B, and there are effective treatments for chronic hepatitis B and hepatitis C.²

TODAY

Between 2011 and 2017, the incidence rate of hepatitis A in the United States increased by

140%.³

Viral hepatitis was the cause of death for

5,611 people in the U.S. in 2017.⁴

Almost **11,000** new cases of hepatitis (A, B, and C) were reported in the U.S. in 2017.⁴

Research Delivers Solutions

Researchers developed the first vaccines against viral hepatitis A and B from inactive strains of the viruses, and these vaccines have been commercially available in the United States since the 1990s. Hepatitis A vaccines have the potential to reduce the incidence rate of hepatitis A infections by 94-97%.⁷ Hepatitis B vaccines are between 80 and 100% effective at preventing hepatitis B infections.⁸

In 2011, scientists developed the first direct-acting antiviral (DAA) therapies that could be used to treat hepatitis C infections. These treatments worked by inhibiting a protein produced by the hepatitis C virus that is needed for the virus to be able to replicate. However, there are different types of the hepatitis C virus, and these treatments were only effective against certain ones. In 2016, the Food and Drug Administration approved the first DAA treatment that is effective against all genotypes of the hepatitis C virus.⁹

Scientists are currently working on the development of a vaccine for hepatitis C. Vaccine development for hepatitis C is difficult because there are different types of the virus, and it is challenging to create a vaccine that protects against all of them. However, some investigators are researching potential vaccine candidates that would facilitate an immune response to prevent the persistence of hepatitis C infection and decrease morbidity and mortality rates.¹⁰

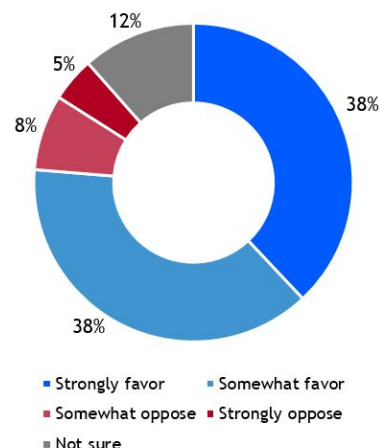
COST

The direct cost of inpatient care for one individual with hepatitis A infection is **\$6,590**, and the indirect cost due to lost productivity is **\$178.**⁵

As of 2015, the annual direct cost of hepatitis B infections in the United States is **\$170,100,000.**⁵

The total annual cost of chronic hepatitis C infections in the United States is expected to reach **\$9.1 billion** by 2024.⁶

Do you favor or oppose doubling federal spending on medical research over the next five years?



Source: A Research!America poll of U.S. adults conducted in partnership with Zogby Analytics in January 2020.

Viral Hepatitis

Then. Now. Imagine.

THEN

Before the 1990s, a chronic hepatitis C infection was considered an incurable disease.⁹

NOW

A hepatitis C infection is potentially curable in almost all those who have access to care.⁹

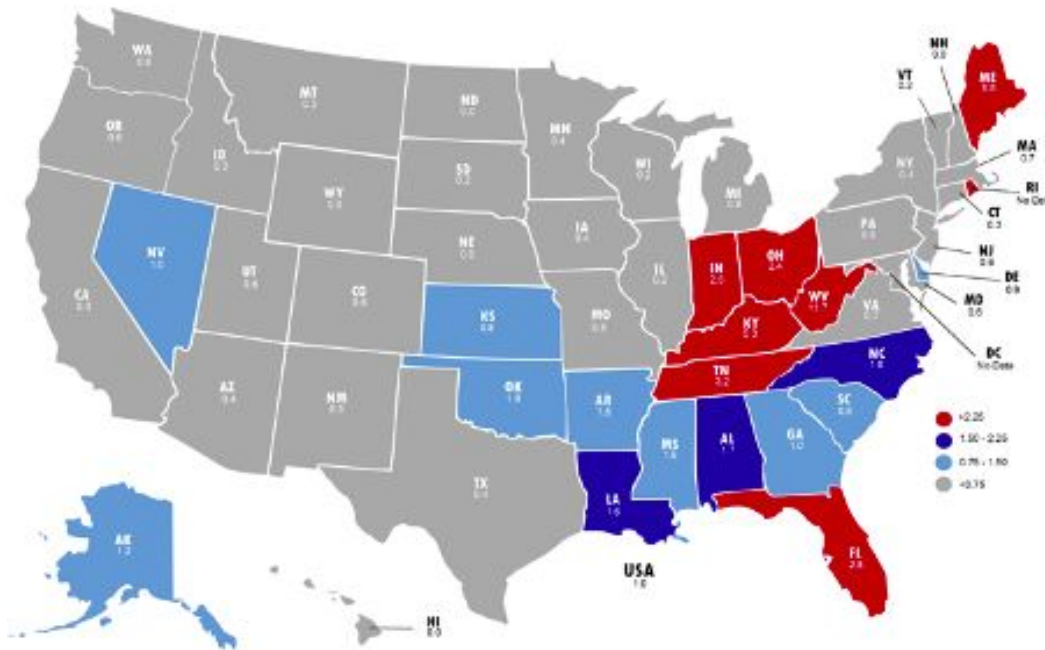
IMAGINE

A world without hepatitis.

Spotlight On: Hepatitis D and E

While hepatitis A, B, and C are the most common strains of viral hepatitis in the United States, two additional strains are known to exist. These strains are hepatitis D and E. The hepatitis D virus only infects people who are already infected with hepatitis B because the hepatitis D virus is an incomplete virus that must use parts of the hepatitis B virus to replicate. The hepatitis D virus can cause acute or chronic liver infections.¹¹ Hepatitis E infections are caused by contaminated drinking water and usually result in short-term infections.¹² However, the risk of a chronic infection is high in immunocompromised patients. Similar treatments to those that are used to combat hepatitis C infections can be used to treat hepatitis E infections, and researchers are investigating ways to make these treatments more effective against hepatitis E infections in particular.¹³

Rate of Hepatitis B Infection per 100,000 in 2017



Source: "Surveillance for Viral Hepatitis - United States, 2017." Centers for Disease Control and Prevention. 2019.

1. "Hepatitis." MedlinePlus, 2019.

2. "Learn the ABCs of Viral Hepatitis." Centers for Disease Control and Prevention, 2017.

3. "Surveillance for Viral Hepatitis - United States, 2017." Centers for Disease Control and Prevention. 2019.

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5. Ozawa et al. "Modeling The Economic Burden Of Adult Vaccine-Preventable Diseases In The United States." Health Affairs. 2016;35(11).

6. Razavi et al. "Chronic hepatitis C virus (HCV) disease burden and cost in the United States." Hepatology. 2013; 57(6).

7. Ogholikhan and Schwarz. "Hepatitis Vaccines." Vaccines (Basel). 2016; 4(1): 6.

8. "Hepatitis B." Centers for Disease Control and Prevention. 2019.

9. Burstow et al. "Hepatitis C Treatment: Where are We Now?" Int. J. Gen. Med. 2017;10:39-52.

10. Bailey et al. "Approaches, Progress, and Challenges to Hepatitis C Vaccine Development." Gastroenterology. 2019;156(2):418-430.

11. "Hepatitis D." Centers for Disease Control and Prevention. 2019.

12. "Hepatitis E." Centers for Disease Control and Prevention. 2020.

13. van der Valk. "Sofosbuvir shows antiviral activity in a patient with chronic hepatitis E virus infection." J. Hepatol. 2017;66(1):242-243.

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