



Disease Bulletin

Hepatitis C Virus Infection: The Silent Killer

Hepatitis C virus (HCV) is a leading cause of mortality from liver disease and is the leading indication for liver transplants in the United States. In some cases, HCV infection results in acute illness that resolves, but in up to 85% of infected persons, HCV persists as a chronic infection. Chronic HCV infection often goes unnoticed for decades and is a major cause of liver damage and permanent disability and cirrhosis. HCV is a blood-borne pathogen with eleven major genotypes (designated 1–11) and about 100 different strains. The influence of viral genotype on liver disease is controversial; however, genotype is important in the prediction of response to antiviral treatment. Genotype 1 is the most common HCV genotype in the United States.

In the United States, an estimated 2.7–3.9 million people have chronic hepatitis C infection and an estimated 45%–85% are unaware of their infection status. The majority of infections are among persons born during 1945 through 1965. “Baby boomers” born during these two decades are considered at increased risk because the highest rates of new HCV infections occurred during the 1970s and 1980s. The CDC now recommends testing anyone born during 1945 through 1965 at least once, regardless of presence of risk factors for HCV, and screening for HCV in persons with prior or ongoing risk factors for HCV, regardless of year of birth. Risk factors include any history of injection drug use (even if just once), receiving a blood transfusion or organ transplant prior to 1992 or clotting factors before 1987, being a current sexual partner of an HCV and HIV-infected person, any evidence of liver disease of unknown etiology, having had an accidental needle stick exposure to HCV-positive blood, anyone who has ever been on hemodialysis, any HIV-positive individual, and children born to HCV-positive mothers.

Several sequential blood tests are performed to test for HCV infection (Figure). For more information on how to interpret HCV test results, see http://www.cdc.gov/hepatitis/hcv/pdfs/hcv_graph.pdf. Genotyping is helpful in defining the epidemiology of hepatitis C and in determining treatment. Once the genotype is identified, further genotype testing is not required as genotypes do not change during the course of infection; however, infection

with more than one genotype, although rare, can occur if risk behaviors for HCV infection continue. Prior infection with HCV does not protect against later infection with the same or different genotypes.

Appropriate screening for HCV infection is now more important than ever as treatment for this condition has gone through a dramatic paradigm shift over the last five years. Until recently, treatment for HCV infection has been pegylated interferon and ribavirin, with the possible addition of protease inhibitors. Patients with genotypes 2 and 3 were almost three times more likely than patients with genotype 1 to respond to therapy with alpha interferon or the combination of alpha interferon and ribavirin. In 2013, the Food and Drug Administration approved two new direct acting antiviral drugs to treat chronic HCV infection. Sofosbuvir (Sovaldi™) is a nucleotide analogue inhibitor of the hepatitis C virus (HCV) NS5B polymerase enzyme, which plays an important role in HCV replication, and is approved for two chronic hepatitis C indications: 1) in combination with pegylated interferon and ribavirin for treatment-naïve adults with HCV genotype 1 and 4 infections, and, 2) in combination with ribavirin for adults with HCV genotypes 2 and 3 infection. The latter indication is the first approval of an interferon-free regimen for the treatment of chronic HCV infection. Treatment duration is 12 or 24 weeks, depending on HCV genotype. See prescribing information at http://www.gilead.com/-/media/Files/pdfs/medicines/liver-disease/sovaldi/sovaldi_pi.pdf. Simeprevir (Olysio™) is a protease inhibitor that blocks a specific protein needed by HCV to replicate. It is used in a combination antiviral treatment regimen with peginterferon-alfa and ribavirin for genotype 1 or 4 infections only, and in combination with sofosbuvir in HCV genotype 1 infections only. See prescribing information at <http://www.olyzio.com/shared/product/olyzio/prescribing-information.pdf>. Treatment duration is 24–48 weeks depending on prior treatment history and response to treatment.

For more information on the epidemiology of HCV and screening and treatment guidelines, see <http://www.cdc.gov/hepatitis/hcv/hcvfaq.htm>. A Guide to Comprehensive Hepatitis C Counseling and Testing for health-

BUREAU OF COMMUNICABLE DISEASE PREVENTION

Contributing Staff

CHRISTINE G. HAHN, MD
State Epidemiologist

KATHRYN TURNER, PhD, MPH
Bureau Chief

LESLIE TENGELSEN, PhD, DVM
State Public Health Veterinarian

JARED BARTSCHI, MHE
Epidemiologist

KRIS CARTER, DVM, MPVM
Career Epidemiology Field Officer

SCOTT HUTTON, MPH
Epidemiologist

AHMED KASSEM, MBBCH, MPH, PhD
Epidemic Intelligence Service Officer

care professionals is available at <http://www.cdc.gov/hepatitis/resources/professionals/pdfs/counselingandtestingpc.pdf>.

In September 2015, researchers reported that the mortality rate for white non-Hispanic Americans aged 45–54 years increased significantly during 1999 through 2013.¹ Deaths in this age group were attributed primarily to three main causes: drug and alcohol related poisonings; suicides; and chronic liver disease and cirrhosis. The rising mortality rate observed in this age group in the United States was surprising and contrary to that in many other developed countries, where mortality rates in this age group have continued to decline over this period. The research findings certainly apply to Idaho’s population which is primarily white non-Hispanic, is not immune to problems related to drug and alcohol abuse, and has one of the highest suicide rates in the country (7th highest nationally in 2014, and 47% higher than the national average).

References

¹ Case A and Deaton A. Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. Proceedings of the National Academy of Sciences of the United States of America. Accessed November 9, 2015 from <http://www.pnas.org/content/early/2015/10/29/1518393112.full.pdf>.

Idaho Disease Bulletin

Idaho Department of Health and Welfare
Division of Public Health
P.O. Box 83720
Boise, ID 83720-0036

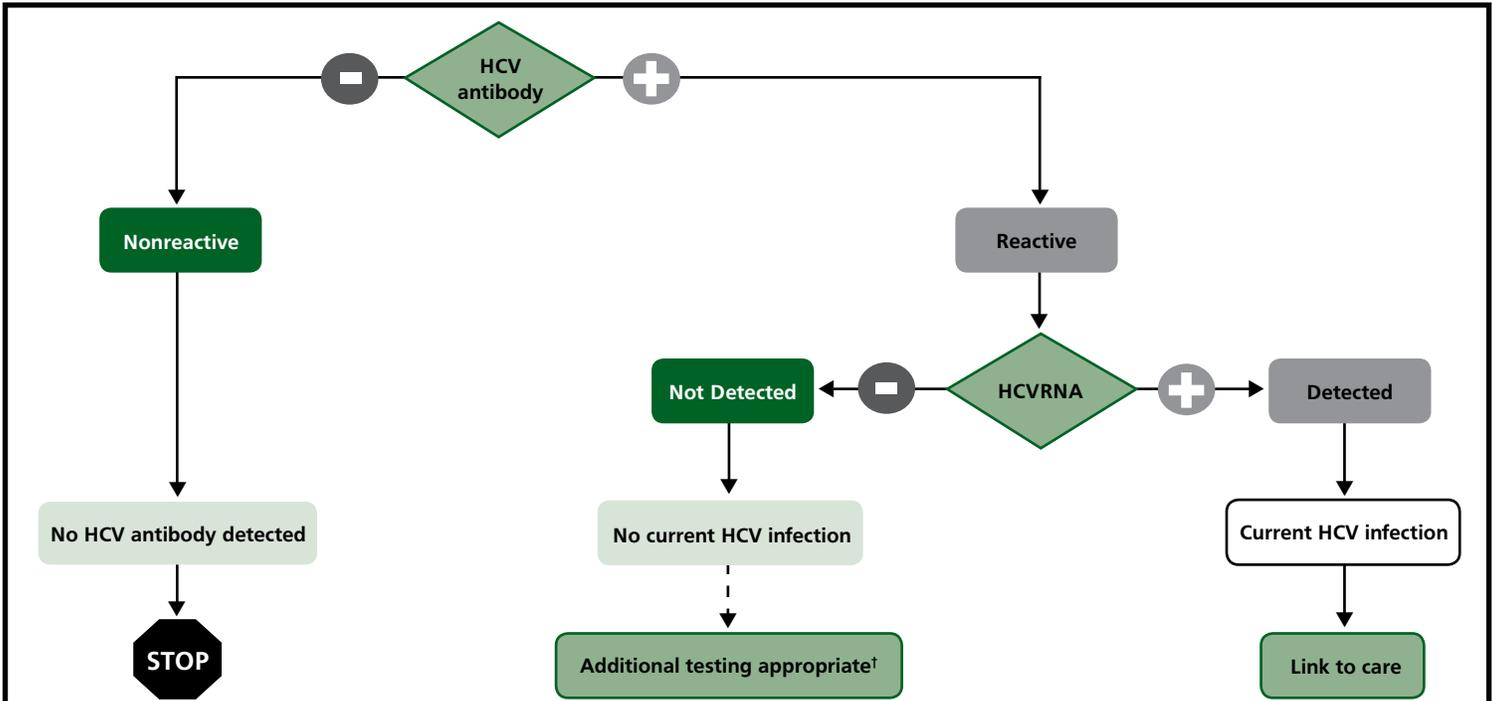
PRSRT STD
U.S. Postage
PAID
Permit No. 1
Boise, ID

**ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927**

**EMERGENCY 24-Hour
Reporting Line
1.800.632.8000**

An electronic version of the Idaho Reportable Diseases Rules may be found at <http://admin-rules.idaho.gov/rules/current/16/0210.pdf>.
Current and past issues are archived online at www.idb.dhw.idaho.gov.

Figure. Recommended Testing Sequence for Identifying Current Hepatitis C Virus (HCV) Infection



* For persons who might have been exposed to HCV within the past 6 months, testing for HCV RNA or follow-up for HCV antibody is recommended. For persons who are immunocompromised, testing for HCV RNA can be considered.

† To differentiate past, resolved HCV infection from biologic false positivity for HCV antibody, testing with another HCV antibody assay can be considered. Repeat HCV RNA testing if the person tested is suspected to have had HCV exposure within the past 6 months or has clinical evidence of HCV disease, or if there is concern regarding the handling or storage of the test specimen.

Source: CDC. Testing for HCV infection: An update of guidance for clinicians and laboratorians. MMWR 2013, 62(18).