

# The ABCs of Hepatitis – for Health Professionals

	<b>HEPATITIS A</b> is caused by the hepatitis A virus (HAV)	<b>HEPATITIS B</b> is caused by the hepatitis B virus (HBV)	<b>HEPATITIS C</b> is caused by the hepatitis C virus (HCV)
<b>U.S. Statistics</b>	<ul style="list-style-type: none"> <li>Estimated 6,700 new infections in 2017</li> </ul>	<ul style="list-style-type: none"> <li>Estimated 22,200 new infections in 2017</li> <li>Estimated 862,000 people living with chronic HBV infection in 2016</li> </ul>	<ul style="list-style-type: none"> <li>Estimated 44,700 new infections in 2017</li> <li>Estimated 2.4 million people living with HCV infection in 2016</li> </ul>
<b>Routes of Transmission</b>	<p>Fecal-oral route.</p> <p>HAV is transmitted through:</p> <ul style="list-style-type: none"> <li>Close person-to-person contact with an infected person</li> <li>Sexual contact with an infected person</li> <li>Ingestion of contaminated food or water</li> </ul> <p>Although viremia occurs early in infection, bloodborne transmission of HAV is uncommon.</p>	<p>Percutaneous, mucosal, or nonintact skin exposure to infectious blood, semen, and other body fluids. HBV is concentrated most highly in blood, and percutaneous exposure is an efficient mode of transmission.</p> <p>HBV is transmitted primarily through:</p> <ul style="list-style-type: none"> <li>Birth to an infected mother</li> <li>Sexual contact with an infected person</li> <li>Sharing contaminated needles, syringes, or other injection drug equipment</li> </ul> <p>Less commonly through:</p> <ul style="list-style-type: none"> <li>Needle-sticks or other sharp instrument injuries</li> <li>Organ transplantation and dialysis</li> <li>Interpersonal contact through sharing items such as razors or toothbrushes or contact with open sores of an infected person</li> </ul>	<p>Direct percutaneous exposure to infectious blood. Mucous membrane exposures to blood can also result in transmission, although this route is less efficient.</p> <p>HCV is transmitted primarily through:</p> <ul style="list-style-type: none"> <li>Sharing contaminated needles, syringes, or other equipment to inject drugs</li> </ul> <p>Less commonly through:</p> <ul style="list-style-type: none"> <li>Birth to an infected mother</li> <li>Sexual contact with an infected person</li> <li>Unregulated tattooing</li> <li>Needle-sticks or other sharp instrument injuries</li> </ul>
<b>Incubation Period</b>	15–50 days (average: 28 days)	60–150 days (average: 90 days)	14–182 days (average range: 14–84 days)
<b>Symptoms of Acute Infection</b>	<p>Symptoms of all types of viral hepatitis are similar and can include one or more of the following:</p> <ul style="list-style-type: none"> <li>Jaundice</li> <li>Fever</li> <li>Fatigue</li> <li>Loss of appetite</li> <li>Nausea</li> <li>Vomiting</li> <li>Abdominal pain</li> <li>Joint pain</li> <li>Dark Urine</li> <li>Clay-colored stool</li> <li>Diarrhea (HAV only)</li> </ul>		
<b>Likelihood of Symptomatic Acute Infection</b>	<ul style="list-style-type: none"> <li>&lt;30% of children &lt;6 years have symptoms (which typically do not include jaundice)</li> <li>&gt;70% of older children and adults have jaundice</li> </ul>	<ul style="list-style-type: none"> <li>Most children &lt;5 years do not have symptoms</li> <li>30%–50% of people ≥5 years develop symptoms</li> <li>Newly infected immunosuppressed adults generally do not have symptoms</li> </ul>	<ul style="list-style-type: none"> <li>Jaundice might occur in 20%–30% of people</li> <li>Nonspecific symptoms (e.g., anorexia, malaise, or abdominal pain) might be present in 10%–20% of people</li> </ul>
<b>Potential for Chronic Infection after Acute Infection</b>	None	<p>Chronic infection develops in:</p> <ul style="list-style-type: none"> <li>90% of infants after acute infection at birth</li> <li>25%–50% of children newly infected at ages 1–5 years</li> <li>5% of people newly infected as adults</li> </ul>	Chronic infection develops in over 50% of newly infected people



	HEPATITIS A	HEPATITIS B	HEPATITIS C
Severity	<ul style="list-style-type: none"> <li>Most people with acute disease recover with no lasting liver damage; death is uncommon but occurs more often among older people and/or those with underlying liver disease</li> </ul>	<ul style="list-style-type: none"> <li>Most people with acute disease recover with no lasting liver damage; acute illness is rarely fatal</li> <li>15%–25% of people with chronic infection develop chronic liver disease, including cirrhosis, liver failure, or liver cancer</li> </ul>	<ul style="list-style-type: none"> <li>Approximately 5%–25% of persons with chronic hepatitis C will develop cirrhosis over 10–20 years</li> <li>People with hepatitis C and cirrhosis have a 1%–4% annual risk for hepatocellular carcinoma</li> </ul>
Serologic Tests for Acute Infection	<ul style="list-style-type: none"> <li>IgM anti-HAV</li> </ul>	<ul style="list-style-type: none"> <li>HBsAg, plus</li> <li>IgM anti-HBc</li> </ul>	<ul style="list-style-type: none"> <li>No serologic marker for acute infection</li> </ul>
Serologic Tests for Chronic Infection	<ul style="list-style-type: none"> <li>Not applicable—no chronic infection</li> </ul>	<p>Tests for chronic infection should include 3 HBV seromarkers:</p> <ul style="list-style-type: none"> <li>HBsAg</li> <li>anti-HBs</li> <li>Total anti-HBc</li> </ul>	<ul style="list-style-type: none"> <li>Assay for anti-HCV</li> <li>Qualitative and quantitative nucleic acid tests (NAT) to detect and quantify presence of virus (HCV RNA)</li> </ul>
Testing Recommendations for Chronic Infection	<ul style="list-style-type: none"> <li>Not applicable—no chronic infection</li> </ul> <p>Note: testing for past acute infection is generally not recommended</p>	<ul style="list-style-type: none"> <li>All pregnant women should be tested for HBsAg during an early prenatal visit in each pregnancy</li> <li>Infants born to HBsAg-positive mothers (HBsAg and anti-HBs are only recommended)</li> <li>People born in regions with intermediate and high HBV endemicity (HBsAg prevalence <math>\geq 2\%</math>)</li> <li>People born in U.S. not vaccinated as infants whose parents were born in regions with high HBV endemicity (<math>\geq 8\%</math>)</li> <li>Household or sexual contacts of people who are HBsAg-positive</li> <li>Men who have sex with men</li> <li>People who inject, or have injected, drugs</li> <li>Patients with alanine aminotransferase levels (<math>\geq 19</math> IU/L for women and <math>\geq 30</math> IU/L for men) of unknown etiology</li> <li>People with end-stage renal disease including hemodialysis patients</li> <li>People receiving immunosuppressive therapy</li> <li>People with HIV</li> <li>Donors of blood, plasma, organs, tissues, or semen</li> </ul>	<ul style="list-style-type: none"> <li>All adults aged 18 years and older, at least once</li> <li>All pregnant women during each pregnancy</li> <li>People who currently inject drugs and share needles, syringes, or other drug preparation equipment (routine periodic testing)</li> <li>People who ever injected drugs</li> <li>People with HIV</li> <li>People who receive maintenance hemodialysis (routine periodic testing)</li> <li>People who ever received maintenance hemodialysis</li> <li>People with persistently abnormal ALT levels</li> <li>Prior recipients of transfusions or organ transplants, including: <ul style="list-style-type: none"> <li>people who received clotting factor concentrates produced before 1987</li> <li>people who received a transfusion of blood or blood components before July 1992</li> <li>people who received an organ transplant before July 1992</li> <li>people who were notified that they received blood from a donor who later tested positive for HCV infection</li> </ul> </li> <li>Healthcare, emergency medical, and public safety personnel after needle sticks, sharps, or mucosal exposures to HCV positive blood</li> <li>Children born to mothers with HCV infection</li> <li>Any person who requests hepatitis C testing should receive it</li> </ul>

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	HEPATITIS A	HEPATITIS B	HEPATITIS C
Treatment	<ul style="list-style-type: none"> <li>No medication available</li> <li>Best addressed through supportive treatment</li> </ul>	<ul style="list-style-type: none"> <li>Acute: no medication available; best addressed through supportive treatment</li> <li>Chronic: regular monitoring for signs of liver disease progression; antiviral drugs are available</li> </ul>	<ul style="list-style-type: none"> <li>Acute: AASLD/IDSA recommend treatment of acute HCV without a waiting period</li> <li>Chronic: over 90% of people with hepatitis C can be cured regardless of HCV genotype with 8–12 weeks of oral therapy</li> </ul>
Vaccination Recommendations	<ul style="list-style-type: none"> <li>All children at age 1 year</li> <li>People experiencing homelessness</li> <li>People traveling to or working in countries that have high or intermediate endemicity of hepatitis A</li> <li>Men who have sex with men</li> <li>People who use or inject drugs</li> <li>People with clotting-factor disorders</li> <li>People who work with HAV-infected primates or with HAV in a research laboratory</li> <li>People with chronic liver disease</li> <li>Household members and other close personal contacts of recent adoptees from countries with high or intermediate hepatitis A endemicity</li> <li>People with direct contact with anyone who has hepatitis A</li> <li>Anyone else seeking long-term protection</li> </ul>	<ul style="list-style-type: none"> <li>All infants</li> <li>All unvaccinated children and adolescents aged &lt;19 years</li> <li>Sex partners of HBsAg-positive persons</li> <li>Sexually active people who are not in a mutually monogamous relationship</li> <li>Anyone seeking evaluation or treatment for a sexually transmitted infection</li> <li>Men who have sex with men</li> <li>Anyone with a history of current or recent injection drug use</li> <li>Household contacts of people who are HBsAg-positive</li> <li>Residents and staff of facilities for developmentally disabled people</li> <li>Health care and public safety personnel with reasonably anticipated risk for exposure to blood or blood-contaminated body fluids</li> <li>Hemodialysis, predialysis, peritoneal dialysis, and home dialysis patients</li> <li>People with diabetes mellitus aged &lt;60 years and people with diabetes mellitus aged ≥60 years at the discretion of the treating clinician</li> <li>International travelers to countries with high or intermediate levels of endemic HBV infection (HBsAg prevalence of ≥2%)</li> <li>People living with hepatitis C</li> <li>People with chronic liver disease (including cirrhosis, fatty liver disease, alcoholic liver disease, autoimmune hepatitis, and an ALT or AST level greater than twice the upper limit of normal)</li> <li>People living with HIV</li> <li>People who are incarcerated</li> <li>Pregnant women who are identified as being at risk for HBV infection during pregnancy</li> <li>Anyone else seeking long-term protection</li> </ul>	<ul style="list-style-type: none"> <li>There is no hepatitis C vaccine</li> </ul>
Vaccination Schedule	<ul style="list-style-type: none"> <li>Single-antigen hepatitis A vaccine: 2 doses given 6–18 months apart depending on manufacturer</li> <li>Combination HepA-HepB vaccine: typically 3 doses given over a 6-month period</li> </ul>	<ul style="list-style-type: none"> <li>Infants and children: 3–4 doses given over a 6- to 18-month period depending on vaccine type and schedule</li> <li>Adults: 2 doses, 1 month apart; or 3 doses over a 6-month period (depending on manufacturer)</li> </ul>	<ul style="list-style-type: none"> <li>No vaccine available</li> </ul>