## The ABCs of Hepatitis – for Health Professionals

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<th>Hepatitis Type</th>
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<tr>
<td><strong>Hepatitis A</strong></td>
<td>Caused by the hepatitis A virus (HAV)</td>
<td>• Estimated 6,700 new infections in 2017</td>
<td>Fecal-oral route. HAV is transmitted through: • Close person-to-person contact with an infected person • Sexual contact with an infected person • Ingestion of contaminated food or water Although viremia occurs early in infection, bloodborne transmission of HAV is uncommon.</td>
<td>15–50 days (average: 28 days)</td>
<td>Symptoms of all types of viral hepatitis are similar and can include one or more of the following: • Jaundice • Fever • Fatigue • Loss of appetite • Nausea • Vomiting • Abdominal pain • Joint pain</td>
<td>• &lt;30% of children &lt;6 years have symptoms (which typically do not include jaundice) • &gt;70% of older children and adults have jaundice</td>
<td>None</td>
</tr>
<tr>
<td><strong>Hepatitis B</strong></td>
<td>Caused by the hepatitis B virus (HBV)</td>
<td>• Estimated 22,200 new infections in 2017 • Estimated 862,000 people living with chronic HBV infection in 2016</td>
<td>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. HBV is transmitted primarily through: • Birth to an infected mother • Sexual contact with an infected person • Sharing contaminated needles, syringes, or other injection drug equipment Less commonly through: • Needle-sticks or other sharp instrument injuries • Organ transplantation and dialysis • Interpersonal contact through sharing items such as razors or toothbrushes or contact with open sores of an infected person</td>
<td>60–150 days (average: 90 days)</td>
<td></td>
<td></td>
<td>Chronic infection develops in: • 90% of infants after acute infection at birth • 25%–50% of children newly infected at ages 1–5 years • 5% of people newly infected as adults</td>
</tr>
<tr>
<td><strong>Hepatitis C</strong></td>
<td>Caused by the hepatitis C virus (HCV)</td>
<td>• Estimated 44,700 new infections in 2017 • Estimated 2.4 million people living with HCV infection in 2016</td>
<td>Direct percutaneous exposure to infectious blood. Mucous membrane exposures to blood can also result in transmission, although this route is less efficient. HCV is transmitted primarily through: • Sharing contaminated needles, syringes, or other equipment to inject drugs Less commonly through: • Birth to an infected mother • Sexual contact with an infected person • Unregulated tattooing • Needle-sticks or other sharp instrument injuries</td>
<td>14–182 days (average range: 14–84 days)</td>
<td></td>
<td></td>
<td>Chronic infection develops in over 50% of newly infected people</td>
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### U.S. Statistics

- **Hepatitis A**:
  - Estimated 6,700 new infections in 2017
- **Hepatitis B**:
  - Estimated 22,200 new infections in 2017
  - Estimated 862,000 people living with chronic HBV infection in 2016
- **Hepatitis C**:
  - Estimated 44,700 new infections in 2017
  - Estimated 2.4 million people living with HCV infection in 2016

### Routes of Transmission

- **Hepatitis A**:
  - Fecal-oral route.
  - HAV is transmitted through:
    - Close person-to-person contact with an infected person
    - Sexual contact with an infected person
    - Ingestion of contaminated food or water
  - Although viremia occurs early in infection, bloodborne transmission of HAV is uncommon.

- **Hepatitis B**:
  - 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.
  - HBV is transmitted primarily through:
    - Birth to an infected mother
    - Sexual contact with an infected person
    - Sharing contaminated needles, syringes, or other injection drug equipment
  - Less commonly through:
    - Needle-sticks or other sharp instrument injuries
    - Organ transplantation and dialysis
    - Interpersonal contact through sharing items such as razors or toothbrushes or contact with open sores of an infected person

- **Hepatitis C**:
  - Direct percutaneous exposure to infectious blood. Mucous membrane exposures to blood can also result in transmission, although this route is less efficient.
  - HCV is transmitted primarily through:
    - Sharing contaminated needles, syringes, or other equipment to inject drugs
  - Less commonly through:
    - Birth to an infected mother
    - Sexual contact with an infected person
    - Unregulated tattooing
    - Needle-sticks or other sharp instrument injuries

### Incubation Period

- **Hepatitis A**: 15–50 days (average: 28 days)
- **Hepatitis B**: 60–150 days (average: 90 days)
- **Hepatitis C**: 14–182 days (average range: 14–84 days)

### Symptoms of Acute Infection

- Symptoms of all types of viral hepatitis are similar and can include one or more of the following:
  - Jaundice
  - Fever
  - Fatigue
  - Loss of appetite
  - Nausea
  - Vomiting
  - Abdominal pain
  - Joint pain
  - Dark Urine
  - Clay-colored stool
  - Diarrhea (HAV only)

### Likelihood of Symptomatic Acute Infection

- **Hepatitis A**:
  - <30% of children <6 years have symptoms (which typically do not include jaundice)
  - >70% of older children and adults have jaundice

- **Hepatitis B**:
  - Most children <5 years do not have symptoms
  - 30%–50% of people ≥5 years develop symptoms
  - Newly infected immunosuppressed adults generally do not have symptoms

- **Hepatitis C**:
  - Jaundice might occur in 20%–30% of people
  - Nonspecific symptoms (e.g., anorexia, malaise, or abdominal pain) might be present in 10%–20% of people

### Potential for Chronic Infection after Acute Infection

- **Hepatitis A**: None
- **Hepatitis B**: Chronic infection develops in:
  - 90% of infants after acute infection at birth
  - 25%–50% of children newly infected at ages 1–5 years
  - 5% of people newly infected as adults
- **Hepatitis C**: Chronic infection develops in over 50% of newly infected people

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<tr>
<td><strong>Severity</strong></td>
<td>• 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</td>
<td>• Most people with acute disease recover with no lasting liver damage; acute illness is rarely fatal</td>
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<td></td>
<td>15%–25% of people with chronic infection develop chronic liver disease, including cirrhosis, liver failure, or liver cancer</td>
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<tr>
<td><strong>Serologic Tests for Acute Infection</strong></td>
<td>• IgM anti-HAV</td>
<td>• HBsAg, plus</td>
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<td></td>
<td></td>
<td>• IgM anti-Hbc</td>
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<tr>
<td><strong>Serologic Tests for Chronic Infection</strong></td>
<td>• Not applicable—no chronic infection</td>
<td>Tests for chronic infection should include 3 HBV seromarkers:</td>
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<tr>
<td></td>
<td></td>
<td>• HBsAg</td>
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<tr>
<td></td>
<td></td>
<td>• anti-HBs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Total anti-Hbc</td>
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<tr>
<td><strong>Testing Recommendations for Chronic Infection</strong></td>
<td>• Not applicable—no chronic infection</td>
<td>All pregnant women should be tested for HBsAg during an early prenatal visit in each pregnancy</td>
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<td>Note: testing for past acute infection is generally not recommended</td>
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<td>Infants born to HBsAg-positive mothers (HBsAg and anti-HBs are only recommended)</td>
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<td>People born in regions with intermediate and high HBV endemicity (HBsAg prevalence ≥2%)</td>
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<td>People born in U.S. not vaccinated as infants whose parents were born in regions with high HBV endemicity (≥8%)</td>
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<td>Household or sexual contacts of people who are HBsAg-positive</td>
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<tr>
<td></td>
<td></td>
<td>Men who have sex with men</td>
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<td></td>
<td></td>
<td>People who inject, or have injected, drugs</td>
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<td></td>
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<td>Patients with alanine aminotransferase levels (≥19 IU/L for women and ≥30 IU/L for men) of unknown etiology</td>
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<td></td>
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<td>People with end-stage renal disease including hemodialysis patients</td>
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<td>People receiving immunosuppressive therapy</td>
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<td></td>
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<td>People with HIV</td>
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<td>Donors of blood, plasma, organs, tissues, or semen</td>
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| **Treatment** | • No medication available  
• Best addressed through supportive treatment | • Acute: no medication available; best addressed through supportive treatment  
• Chronic: regular monitoring for signs of liver disease progression; antiviral drugs are available | • Acute: AASLD/IDSA recommend treatment of acute HCV without a waiting period  
• Chronic: over 90% of people with hepatitis C can be cured regardless of HCV genotype with 8–12 weeks of oral therapy |
| **Vaccination Recommendations** | **Children**  
• All children aged 12–23 months  
• Unvaccinated children and adolescents aged 2–18 years | **People at increased risk for HAV infection**  
• International travelers  
• Men who have sex with men  
• People who use injection or noninjection drugs  
• People with occupational risk for exposure  
• People who anticipate close personal contact with an international adoptee  
• People experiencing homelessness  
**People at increased risk for severe disease from HAV infection**  
• People with chronic liver disease  
• People with human immunodeficiency virus infection  
**Other people recommended for vaccination**  
• Pregnant women at risk for HAV infection or severe outcome from HAV infection  
• Any person who requests vaccination | **Infants**  
• All infants  
• All unvaccinated children and adolescents aged <19 years  
• Sex partners of HBsAg-positive people  
• Sexually active people who are not in a mutually monogamous relationship  
• Anyone seeking evaluation or treatment for a sexually transmitted infection  
• Men who have sex with men  
• Anyone with a history of current or recent injection drug use  
• Household contacts of people who are HBsAg-positive  
• Residents and staff of facilities for developmentally disabled people  
• Health care and public safety personnel with reasonably anticipated risk for exposure to blood or blood-contaminated body fluids, hemodialysis, predialysis, peritoneal dialysis, and home dialysis patients;  
• People with diabetes mellitus aged <60 years and people with diabetes mellitus aged ≥60 years at the discretion of the treating clinician  
• International travelers to countries with high or intermediate levels of endemic HBV infection (HBsAg prevalence of ≥2%)  
• People living with hepatitis C  
• 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)  
• People living with HIV infection  
• People who are incarcerated  
• Pregnant women who are identified as being at risk for HBV infection during pregnancy  
• Anyone else seeking long-term protection | **There is no hepatitis C vaccine** |
| **Vaccination Schedule** | **Single-antigen hepatitis A vaccine**: 2 doses given 6–18 months apart depending on manufacturer  
**Combination HepA-HepB vaccine**: typically 3 doses given over a 6-month period | **Infants and children**: 3–4 doses given over a 6- to 18-month period depending on vaccine type and schedule  
**Adults**: 2 doses, 1 month apart; or 3 doses over a 6-month period (depending on manufacturer) | **No vaccine available** |