Hepatitis A, B, and C: Learn the Differences

<table>
<thead>
<tr>
<th>Hepatitis A</th>
<th>Hepatitis B</th>
<th>Hepatitis C</th>
</tr>
</thead>
<tbody>
<tr>
<td>caused by the hepatitis A virus (HAV)</td>
<td>caused by the hepatitis B virus (HBV)</td>
<td>caused by the hepatitis C virus (HCV)</td>
</tr>
</tbody>
</table>

**How is it spread?**
- HAV is found in the stool (feces) of HAV-infected persons. HAV is usually spread from person to person by putting something in the mouth (even though it may look clean) that has been contaminated with the stool of a person with hepatitis A. This can happen when people don't wash their hands after using the toilet and then touch other people's food.
- HBV is found in blood and body fluids. It is spread when a person comes into contact with blood or body fluids from an infected person who is not immune. HBV spreads through having sex with an infected person without a condom, sharing needles or "works" when "shooting" drugs, needlestick injuries, or sharp exposures on the job, or from an infected mother to her baby during birth.
- HCV is found in blood and certain body fluids. It is spread when blood or body fluids from an infected person enters the body of a person who is not immune. HCV is spread through sharing needles or "works" when "shooting" drugs, through needlesticks or sharps exposures on the job, or sometimes from an infected mother to her baby during birth.

**Who is at risk?**
- Men who have sex with men
- Persons traveling to countries where hepatitis A is common (everywhere except Canada, Western Europe, Japan, Australia, and New Zealand)
- Men who have sex with men
- Injecting and non-injecting drug users
- Household contacts of infected persons
- Persons, especially children, living in regions of the U.S. with consistently elevated rates of hepatitis A during 1987–1997*
- Persons traveling to countries where hepatitis A is common (everywhere except Canada, Western Europe, Japan, Australia, and New Zealand)
- Men who have sex with men
- Injecting and non-injecting drug users
- Households of immigrants from areas with high HAV rates
- Household contacts of infected persons
- Infants born to infected mothers
- Infants/children of immigrants from areas with high HBV rates
- Health care and public safety workers who are exposed to blood
- Health care and public safety workers who are exposed to blood
- Recipients of clotting factors made before 1987
- Recipients of clotting factors made before 1987
- Recipients of clotting factors made before 1987
- Health care and public safety workers
- Recipients of blood/solid organs before 1992
- Recipients of blood/solid organs before 1992
- Recipients of blood/solid organs before 1992
- Health care and public safety workers
- Recipients of blood/solid organs before 1992
- Recipients of blood/solid organs before 1992
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- Recipients of blood/solid organs before 1992
- Health care and public safety workers

**Incubation period:**
- 15 to 50 days.
- 45 to 160 days, average 90 days.
- 14 to 180 days, average 45 days.

**What if you are infected?**
- HBV-infected persons should have a medical evaluation for liver disease every 6–12 months. Alpha-interferon, lamivudine, and adalimum are the three drugs currently licensed for the treatment of persons with chronic hepatitis B. These drugs are effective in up to 40% of patients. Liver transplant is the last resort, but livers are not always available.
- Chronic HCV-related liver disease is the leading indication for liver transplant.

**Who should be tested for HCV?**
- People with increased risk of HCV infection include:
  - Injecting drug users
  - Health care and public safety workers
  - People who have had risk of HCV infection include:
  - Injecting drug users
  - Recipients of clotting factors made before 1987
  - Hemodialysis patients
  - Reactions of clotting factors made before 1987
  - Recipients of clotting factors made before 1987
  - Hemodialysis patients

**More information to help you prevent hepatitis A and hepatitis C:**
- Don't share personal care items that might have blood on them, such as razors, toothbrushes, and washcloths.
- Consider the risks if you are thinking about getting a tattoo or body piercing. You might get infected if the tools or dye have someone else's blood on them. If the artist or piercer does not follow good sterilization practices.
- Health care and public safety workers should always follow routine barrier precautions and safely handle needles and other sharps. In addition, they should be vaccinated against hepatitis B.
- If you have had HBV or HCV infection, you should not donate blood, organs, or tissue.
- Don't shout drugs. If you do, try to stop by getting into a treatment program. If you can't stop, never share needles, syringes, water, or "works." Get vaccinated against hepatitis A and B.

**Who is at risk?**
- Infants born to HAV-infected mothers
- Infants born to HBV-infected mothers
- Infants born to HCV-infected mothers
- Persons with more than one steady sex partner should use latex condoms correctly and for every sexual encounter.
- Some people with HCV may develop symptoms of liver disease every 6–12 months. Interferon, pegylated interferon, and ribavirin are the only drugs licensed for the treatment of chronic hepatitis C. Interferon can be taken alone or in combination with ribavirin. Combination therapy is currently the treatment of choice and can eliminate the virus in up to 40% of patients.
- Get vaccinated against hepatitis A, and ask your doctor if you need hepatitis B vaccine as well.
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**What to do next?**
- Adults Only Vaccination: A Step-by-Step Guide
- Immunization Action Coalition
-www.immunize.org
-www.immunize.org
## Hepatitis A & B Vaccines

**Be sure your patient gets the correct dose!**

### Recommended dosages and schedules of hepatitis A vaccines

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age group</th>
<th>Dose Volume</th>
<th># Doses</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Havrix</td>
<td>2–18 years</td>
<td>720 El.U.*</td>
<td>0.5 ml</td>
<td>2, 0, 6–12 mos.</td>
</tr>
<tr>
<td></td>
<td>19 years and older</td>
<td>1440 El.U.*</td>
<td>1.0 ml</td>
<td>2, 0, 6–12 mos.</td>
</tr>
<tr>
<td>Vaqta</td>
<td>2–18 years</td>
<td>10 U**</td>
<td>0.5 ml</td>
<td>2, 0, 6–18 mos.</td>
</tr>
<tr>
<td></td>
<td>19 years and older</td>
<td>50 U**</td>
<td>1.0 ml</td>
<td>2, 0, 6–12 mos.</td>
</tr>
</tbody>
</table>

*El. U. = Elisa Units **U = Units

### Recommended dosages and schedules of hepatitis B vaccines

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age group</th>
<th>Dose Volume</th>
<th># Doses</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engerix-B</td>
<td>0–19 years</td>
<td>10 µg/0.5 ml</td>
<td>3</td>
<td>Infants: birth, 1–4, 6–18 mos. of age</td>
</tr>
<tr>
<td></td>
<td>20 years &amp; older</td>
<td>20 µg/1.0 ml</td>
<td>3</td>
<td>0, 1, 6 mos.</td>
</tr>
<tr>
<td>Recombivax HB</td>
<td>0–19 years</td>
<td>5 µg/0.5 ml</td>
<td>3</td>
<td>Infants: birth, 1–4, 6–18 mos. of age</td>
</tr>
<tr>
<td></td>
<td>11 thru 15 yrs.</td>
<td>10 µg/1.0 ml</td>
<td>2</td>
<td>0, 4–6 mos.</td>
</tr>
<tr>
<td></td>
<td>20 years &amp; older</td>
<td>10 µg/1.0 ml</td>
<td>3</td>
<td>0, 1, 6 mos.</td>
</tr>
</tbody>
</table>

*The schedule for hepatitis B vaccination is flexible and varies. Consult the ACIP statement on hepatitis B (11/91), AAP’s 2000 Red Book, or the package insert for details.

Note: For adult dialysis patients, the Engerix-B dose required is 40µg/2.0ml (use the adult 20µg/ml formulation) on a schedule of 0, 1, 2, and 6 months. For Recombivax HB, a special formulation for dialysis patients is available. The dose is 40µg/1.0ml and it is given on a schedule of 0, 1, and 6 months.

### Combinations using hepatitis A and/or hepatitis B vaccines

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age group</th>
<th>Antigens used</th>
<th>Volume</th>
<th># Doses</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comvax®</td>
<td>6 weeks</td>
<td>Recombivax HB (5 µg) combined</td>
<td>0.5 ml</td>
<td>3</td>
<td>2, 4, 12–15 mos. of age</td>
</tr>
<tr>
<td></td>
<td>thru 4 yrs.</td>
<td>with PedvaxHib</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediarix®</td>
<td>6 weeks</td>
<td>Engerix-B (10 µg), Infanrix (D TaP), and IPV</td>
<td>0.5 ml</td>
<td>3</td>
<td>2, 4, 6 mos. of age</td>
</tr>
<tr>
<td></td>
<td>thru 6 yrs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Twinrix®</td>
<td>18 years &amp;</td>
<td>Havrix (720 El.U.) combined with Engerix-B (20 µg)</td>
<td>1.0 ml</td>
<td>3</td>
<td>0, 1, 6 mos.</td>
</tr>
<tr>
<td></td>
<td>older</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Licensed combination vaccines may be used whenever any component of the combination is contraindicated: (CDC. Recommended Childhood Immunization Schedule—United States. MMWR 2003; 52) 2

The use of licensed combination vaccines is preferred over separate injection of their equivalent component vaccines. (“Combination Vaccines for Childhood Immunization.” MMWR, 1999; [RR-6] 2)

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To access the current, ready-to-copy version of this piece, visit [www.immunize.org/catg.d/2081ab.pdf](http://www.immunize.org/catg.d/2081ab.pdf)
Hepatitis B Facts: Testing and Vaccination

Who needs hepatitis B vaccine?  
People in the groups listed below are at moderate or high risk for hepatitis B virus (HBV) infection and should be vaccinated.  
- Immigrants/refugees from areas of high HBV endemicity (Asia, Sub-Saharan Africa, Amazon Basin, Eastern Europe, Middle East) as well as children born in the United States to persons from these areas  
- Alaska Natives and Pacific Islanders  
- Household contacts and sex partners of people with chronic HBV infection  
- People who have had a recent sexually transmitted disease  
- People with more than one sex partner in six months  
- Men who have sex with men  
- Users of illicit injectable drugs and their sex partners  
- Health care workers and public safety workers who have contact with blood  
- Adopted children from countries where HBV is endemic  
- Clients and staff of institutions for the developmentally disabled  
- Inmates in long-term correctional facilities  
- Certain international travelers  

Hepatitis B vaccination is recommended for all children 0–18 years of age.

Who needs serologic testing?  
Serologic testing prior to vaccination may be recommended depending on the specific level of risk and/or likelihood of previous exposure. If you decide to test, draw the blood first, and then give the first dose of vaccine at the same office visit. Vaccination can then be continued, if needed, based on the results of the tests. If you are not sure who needs screening, call your liver disease consultant or your state or local health department for details. It is especially important to screen individuals who have emigrated from endemic areas.

When people with chronic HBV infection are identified, offer them appropriate disease management. In addition, their household members and intimate contacts should be screened and, if found susceptible, vaccinated. General guidelines on hepatitis B risk groups, testing, and vaccination can be found in the 1991 ACIP statement “Hepatitis B Virus: A Comprehensive Strategy for Eliminating Transmission in the United States through Universal Childhood Vaccination: Recommendations of the ACIP.” You can get a copy of the ACIP statement by calling CDC’s Immunization Information Hotline at (800) 232-2522 or by visiting IAC’s website at: www.immunize.org/acip

Interpreting the hepatitis B panel

<table>
<thead>
<tr>
<th>Tests</th>
<th>Results</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBsAg</td>
<td>anti-HBs</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>positive</td>
<td>negative</td>
</tr>
<tr>
<td>anti-HBs</td>
<td>negative</td>
<td>positive</td>
</tr>
<tr>
<td>HBcAb</td>
<td>IgM anti-HBc</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>anti-HBc</td>
<td>positive</td>
</tr>
<tr>
<td></td>
<td>IgM anti-HBc</td>
<td>negative</td>
</tr>
<tr>
<td>HBsAg</td>
<td>anti-HBs</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>IgM anti-HBs</td>
<td>positive</td>
</tr>
<tr>
<td></td>
<td>anti-HBs</td>
<td>negative</td>
</tr>
</tbody>
</table>

*Postvaccination testing, when it is recommended, should be performed 1–2 months after the last dose of vaccine. Infants born to HBsAg-positive mothers should be tested 3–9 months after the last dose.

1. May be recovering from acute HBV infection
2. May be distinctly immune and the test is not sensitive enough to detect a very low level of anti-HBs in serum
3. May be susceptible with a false positive anti-HBs test
4. May be chronically infected and have an undetectable level of HBsAg present in the serum