



Acute Hepatitis B and C

Public Health Investigation 'Quicksheet'

Clinical symptoms

Signs and symptoms of acute hepatitis B virus (HBV) and hepatitis C virus (HCV) infection are indistinguishable and include subacute illness with non-specific symptoms (anorexia, nausea, malaise), clinical hepatitis with jaundice, or fulminant hepatitis. Development of clinical symptoms is highly age dependent with asymptomatic infection most common in young children.

Modes of transmission

HBV may be transmitted by parenteral or mucosal exposure to body fluids (particularly blood and serous fluids) of an infected person. Common modes of transmission include sharing or using nonsterile needles or syringes, sexual contact with an infected person and perinatal exposure to an infected mother. Person-to-person transmission of HBV can also occur in settings involving interpersonal contact over extended periods (e.g., households). Transmission may also occur from sharing inanimate objects, such as fingerstick devices and glucometers or razors and toothbrushes. HBV can survive in the environment for 1 week or longer.

HCV is most often transmitted by percutaneous exposure to blood. Most new HCV infections in the U.S. are related to illicit injection drug use. Some infections are due to healthcare exposures (e.g., unsafe medical injections). Transmission through sexual contact with an infected person and perinatal transmission is uncommon, although these modes of transmission are more common in the presence of HIV infection.

Incubation period

HBV: 45 to 160 days (average, 90 days)

HCV: 2 weeks to 6 months (average, 6 to 7 weeks)

Period of Communicability

An individual should be considered infectious any time hepatitis B surface antigen (HBsAg) or HCV RNA is present in the blood. HBsAg can be found in the blood and body fluids of infected persons for 1-2 months before and anytime after symptom onset.

HCV RNA can be detected in the blood or plasma within 1 to 2 weeks after exposure to the virus and weeks before the onset of symptoms.

CDC Case Definitions

Clinical case definition:

An acute illness with:

- Discrete onset of symptoms; **and**
- Jaundice or elevated serum aminotransferase levels*[†]

*For HBV infection, elevations in the concentration of ALT and AST up to 1000 to 2000 IU/L are typically seen during the acute phase infection with ALT being higher than AST. Minimally elevated results are unlikely to be related to acute infection.

[†]For HCV infection, an elevated ALT level is defined as >400 IU/L.

Confirmed acute HBV case definition:

A case that meets the clinical case definition **and** is laboratory confirmed as **either**

- IgM anti-HBc positive[‡] **or**
- HBsAg positive, IgM anti-HAV negative (if done)

[‡]IgM anti-HBc positivity may occur in individuals who are chronically infected with hepatitis B and this may lead to erroneous reports of acute hepatitis.

Confirmed acute HCV case definition:

A case that meets the clinical case definition **and** has one or more of the following three laboratory criteria:

- anti-HCV positive with a signal to cut-off ratio predictive of a true positive as determined by the particular assay[§] **or**
- HCV RIBA positive **or**
- Nucleic Acid Test for HCV RNA positive **and** meets the following two criteria:
 - IgM anti-HAV negative **and**
 - IgM anti-HBc negative

[§]For a guide to the signal-to-cutoff ratios for various commercially available assays, visit the CDC website: <http://www.cdc.gov/hepatitis/HCV/LabTesting.htm>

Investigation Guidelines

- 1) Verify the diagnosis to determine if case meets the case definition and is indeed acute. Review clinical presentation and relevant laboratory information.
- 2) Complete Acute Hepatitis B/C Case Report Form. Interview patient to determine risk factors and possible exposures, including:
 - Behavioral risk factors
 - Household exposures
 - Healthcare-related exposures
- 3) If behavioral or household exposures are identified, refer contacts for testing, follow-up and postexposure prophylaxis, as appropriate.||
- 4) If behavioral or household exposures are not identified, contact CDPH for guidance or assistance with investigation.
- 5) Ascertain all healthcare exposures during the incubation period. Identify all settings in which the patient had percutaneous exposures or other medical or surgical procedures. Examples include injections, infusions, or flush procedures, glucose monitoring, endoscopy, dialysis and dental surgery.¶
 - If multiple exposures occurred, prioritize investigation based on timing and nature of exposures (i.e., higher priority given to exposures that occurred in the median incubation period, that involved repeated parenteral exposure, or that have been previously associated with transmission).
- 6) Review infection control practices related to index patient's procedures, particularly those involving dialysis, injections, infusions, flush procedures or glucose monitoring.**
- 7) Review records to identify infected patients who could be possible sources of infection (especially those who might have shared parenteral medications/solutions or equipment/devices).
- 8) Look for additional cases that may be healthcare-associated.
 - Review provider records for other acute cases in the previous months.
 - Review State/LHD acute disease reports for previous months.
- 9) Identify staff involved in any percutaneous procedures and consider reviewing their HBV/HCV status.
- 10) Identify and save all serologic specimens (both before and after medical procedures) for further testing. If none available, collect specimens from index case and possible source patients/staff.
- 11) If lapses in infection control practices and potential source patients/staff are not identified:
 - End active investigation, but continue to monitor surveillance data to ensure that no additional cases are identified.
- 12) If lapses in infection control practice are identified:
 - Depending on nature and severity of infection control lapse, consider doing a targeted lookback/epidemiologic study (particularly if potential source patients are identified) or a general patient notification.
- 13) If potential source patients/staff are identified:
 - Examine genetic relatedness of virus between potential source and index case.
 - For HCV, compare genotype/subtype and, possibly, relatedness in NS5B region especially for genotype 1a/1b matches since these are very common.
 - For HBV, compare subtype and, possibly, genetic sequences.

Reporting Guidelines

All cases of hepatitis B and hepatitis C are reportable using a CMR. Additionally, the Immunization Branch requests submission of a CDPH Acute Hepatitis B/C Case Report Form for acute cases. Additional information and case report forms can be found on the CDPH website at:

<http://ww2.cdph.ca.gov/pubsforms/forms/Pages/CD-Report-Forms.aspx>

|| Hepatitis B prevention:

http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5516a1.htm?_cid=rr5516a1_e

¶ Safe injection practices are part of Standard Precautions:

<http://www.cdc.gov/injectionsafety/>
<http://www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.html>

**Recommended practices for safe glucose monitoring:

<http://www.cdc.gov/injectionsafety/blood-glucose-monitoring.html>

Hemodialysis infection control guidance:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5732a3.htm>