



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.

Both acute HBV and HCV infections can progress to chronic infections. Chronically infected persons are thought to be the main reservoir for new infections.

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, and perinatal transmission. Person-to-person transmission can also occur in settings involving interpersonal contact over extended periods (e.g., households). Transmission may also occur from sharing contaminated 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 illegal injection drug use. Some infections are due to healthcare exposures (e.g., unsafe medical injections). Infection via sexual contact or perinatal transmission is possible but uncommon; these modes of transmission are more common in the presence of HIV co-infection. HCV can survive in the environment for up to 3 weeks.

Incubation period

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

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

Period of Communicability

HBV: Any time hepatitis B surface antigen (HBsAg) is present in blood. HBsAg can be found in the blood and body fluids of infected persons for 1-2 months before and any time after symptom onset.

HCV: An individual is considered infectious anytime HCV RNA is present in the blood. HCV RNA can be detected in the blood or plasma 1 to 2 weeks after exposure and weeks before symptom onset.

Case Definitions

Confirmed Acute HBV: An acute illness with discrete onset of any sign or symptom* consistent with acute viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, abdominal pain); **AND**

- Either jaundice **OR** ALT levels > 100 IU/L; **AND**
- HBsAg positive; **AND**
- IgM anti-HBc positive (if done).

* A documented negative HBsAg laboratory test result <6 months prior to a positive HBsAg, HBeAg or HBV DNA result (seroconversion) does not require an acute clinical presentation to meet the surveillance case definition for a confirmed acute HBV case.

Acute HCV: An acute illness with discrete onset of any sign or symptom† consistent with acute viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, abdominal pain); **AND**

- Jaundice **OR** ALT levels >200 IU/L; **AND**
- Anti-HCV positive **or** HCV RNA positive **or** HCV antigen positive‡

Confirmed HCV: A case that meets the clinical criteria and is HCV RNA positive or HCV antigen positive.

Probable HCV: A case that meets the clinical criteria and has a positive HCV antibody test, but no reports of a positive HCV RNA or positive HCV antigen test.

† A documented negative HCV antibody, HCV antigen or HCV RNA laboratory test result <12 months prior to a positive test result (as described in the laboratory criteria for diagnosis) does not require an acute clinical presentation to meet the surveillance case definition for a confirmed acute HCV case.

‡ When and if an HCV antigen test is approved by FDA and available.

Initial Case Investigation

- 1) Confirm that case definition is met. Review clinical presentation and relevant laboratory information, including past hepatitis lab results.
- 2) Complete the “Acute Hepatitis B/C Case Report Form.” This form can be accessed at: <http://www.cdph.ca.gov/pubsforms/forms/CtrldForms/cdph8703.pdf>
- 3) Interview the case to identify risk factors and possible exposures <6 months of symptom onset, including:

- Traditional behavioral risk factors, e.g.
 - Infected household contact (HBV only)
 - Infected sexual contact, or
 - Injection drug use.
 - Healthcare exposures (outpatient procedures, hospitalization, etc.).
 - Cosmetic exposures (manicure/pedicure, tattoo, procedures involving instruments/injections).
- 4) If healthcare or cosmetic exposures are identified, document dates and facility names.
- 5) Provide education to patients and their contacts about disease and transmission risk.

If no traditional behavioral risk factors for infection are identified:

- For acute HBV cases: determine if household or sexual contacts are infected (also test for immunity and if uninfected and susceptible, provide 3-dose HBV vaccine series and post-vaccination serologic testing).
- Refer HBV contacts for follow-up, as appropriate. See: <http://www.cdc.gov/mmwr/PDF/rr/rr5516.pdf>
- For acute HCV cases: determine if sexual contacts are infected.

If no sexual or household contacts are infected (or it cannot be determined), and patient had healthcare or cosmetic exposures during the incubation period:

- 1) Identify and save all blood specimens (collected both before and after medical procedures, if available) for further testing. If no specimens available, collect specimen if patient still infected.
- 2) If a list of facilities named by other acute HBV and HCV cases in the jurisdiction is available, review it to identify any prior acute HBV and HCV cases who received care at the same facility.
- 3) Determine whether case has “red flags” for infection related to healthcare or cosmetic exposures
 - Age >50 years
 - High-risk healthcare exposures, e.g., care received in ambulatory care setting, glucose monitoring, receipt of pain medications
 - Patient or physician suspicion
 - Linked to facility named by other cases

If patient has red flags for infection related to healthcare or cosmetic exposures, contact the CDPH Immunization Branch.

The Immunization Branch, in collaboration with the CDPH Healthcare-Associated Infections Program, will provide guidance on whether and how to proceed with a facility investigation. Only general guidance is provided in this document.

Facility Investigations (general guidance only)

- If case had exposures at multiple facilities or multiple exposures at one facility, prioritize the investigation based on timing and nature of exposures. For example, give higher priority to exposures that:

- occurred during the median incubation period;
 - involved repeated parenteral exposures; or
 - have been previously associated with transmission, e.g., glucose monitoring.[§]
- Obtain list of patients/clients seen at the facility on the same day and an appropriate time period before and after the index case (typically 1-2 days before and 2 days after)
 - especially those who shared staff, parenteral medications, solutions or equipment and devices.
 - Identify staff involved in any of the case’s percutaneous procedures (testing to determine their HBV/HCV status may be considered).
 - Compare patient/client/staff list with previously reported acute or chronic HBV or HCV cases.
 - Review the facility’s infection control practices related to the case’s procedures, particularly those involving dialysis, injections, infusions, flush procedures or glucose monitoring.^{||, ¶, **}
 - An onsite inspection may be necessary.
 - 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 who received care at the facility are identified. Enter facility name into database.
 - 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.
 - If potential source patients/staff are identified:
 - If available, submit blood specimens from the potential source case and index case to CDC to examine the genetic relatedness of the virus.

Additional CDPH resources related to acute HBV and HCV investigations can be found online at: <http://www.cdph.ca.gov/HealthInfo/discond/Pages/AcuteHepatitisBandC.aspx>

Please contact the CDPH Immunization Branch at (510) 620-3737 for any additional assistance.

[§]**Healthcare-associated hepatitis outbreaks, 2008-2014:** <http://www.cdc.gov/hepatitis/outbreaks/pdfs/healthcareinvestigationtable.pdf>

[¶]**Hemodialysis infection control guidance:** <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5732a3.htm>

^{||}**Safe injection practices:** <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>