

HEPATITIS C VIRUS

Case Definition Does Not Distinguish Acute and Chronic HCV Infection

Background

This case definition was developed by the Armed Forces Health Surveillance Division (AFHSD) for the purpose of epidemiological surveillance of hepatitis C virus (HCV). The potential presence of HCV in the blood of volunteer donors increases the risks associated with emergency battlefield blood transfusions.¹ In the U.S. military, applicants with a documented history of HCV are considered medically ineligible for service “unless successfully treated and documentation of a cure 12 weeks after completion of a full course of therapy.”² Since 2012, the Navy and Marine Corps require all new applicants to undergo HCV screening prior to entering military service. The Army and Air Force do not require HCV screening at accession: these applicants may be able to enter service if they have no signs or symptoms of liver disease, or if they are unaware of, or do not report their infection status.

Clinical Description

Hepatitis C virus causes acute and chronic inflammation of the liver in affected individuals. The virus is transmitted by percutaneous or mucous membrane exposure to infected blood or body fluids. Risk factors include illegal injection drug use, poor infection control practices, (e.g., needle stick injuries), high-risk sexual activity, and birth to an infected mother. While acute HCV infections often have no or mild clinical symptoms, without treatment, the virus persists in the liver of 75-85 percent of infected individuals. Over time, and particularly when associated with alcohol use, chronic HCV infection may manifest as clinically significant liver disease, including cirrhosis, hepatocellular carcinoma, and liver failure. Treatment of HCV with antiviral medication is effective with most people achieving a “cure” in 8-12 weeks. At present, there is no available vaccine for HCV infection.^{3,4}

Case Definition and Incidence Rules

For surveillance purposes, a case of HCV is defined as:

- One record of a reportable medical event of a *confirmed* case of HCV; per the *Armed Forces Reportable Medical Events Guidelines and Case Definitions*, confirmatory evidence of HCV infection includes one or more of the following:⁷
 - Positive nucleic acid test (NAT) for HCV RNA, including qualitative, quantitative or genotype testing.

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¹ Armed Forces Health Surveillance Division. Viral Hepatitis C, Active Component, U.S. Armed Forces, 2011-2020. *MSMR*. 2022; 29(10): 2-5.

² Office of the Secretary of Defense. Department of Defense Instruction 6130.03:Medical Standards for Appointment, Enlistment, or Induction in the Military Services, April 28, 2010. [DoD Instruction 6130.03 Volume 1, "Medical Standards for Military Service: Appointment, Enlistment, or Induction," May 6, 2018; Incorporating Change 4 on November 16, 2022 \(whs.mil\)](#). Accessed: June 2023.

³ Centers for Disease Control and Prevention. Surveillance for acute viral hepatitis-United States, 2007. *Morbidity and Mortality Weekly Report (MMWR)*. 2009 May 22;58 (No.SS-3).

⁴ Alter MJ, Margolis HS, Krawczynski K, et al. The natural history of community-acquired hepatitis C in the United States. *N Engl J Med*. 1992;327:1899-1905.



Case Definition and Incidence Rules *(continued)*

- Positive HCV antigen test
- Anti-HCV test conversion (from negative to positive within a 12-month period)

Incidence rules:

For individuals who meet the case definition:

- The incidence date is considered the date of the first *confirmed* HCV infection documented in a reportable medical event report.
- An individual is considered an incident case *once per lifetime*.

Exclusions:

- Prevalent cases, (i.e., acute, chronic, and previously treated cases identified prior to the start of the surveillance period).

Codes

The following ICD9 and ICD10 codes are included in the case definition:

Condition	ICD-10-CM Codes	ICD-9-CM Codes
Hepatitis C	NA <i>See Development and Revisions and Comments sections below.</i>	NA

Development and Revisions

- In October 2022 the case definition was revised based on the findings and recommendations of a case definition validation study published in the September 2022 issue of the *Medical Surveillance Monthly Report (MSMR)*.⁵ Analyses revealed that the HCV case definition developed by the Armed Forces Health Surveillance Center (AFHSC) in 2011, and used in subsequent studies published in the *MSMR*, overestimated the burden of confirmed HCV by 39%.^{5,6} The study also found most service member cases of HCV were chronic, and acute versus chronic HCV infection was rarely specified in the Armed Forces Reportable Medical Event (RME) system.⁷

⁵ Mancuso J, Seliga N, Legg M, Stahlman S. Evaluation of the *MSMR* surveillance case definition for incident cases of hepatitis C. *MSMR*. 2022; 29(9):10-14

⁶ Legg M, Seliga N, Mahaney H, Gleeson T, Mancuso JD. Diagnosis of hepatitis C infection and cascade of care in the active component, U.S. Armed Forces, 2020. *MSMR* 2022; 29(2): 2-7

⁷ Armed Forces Reportable Medical Events Guidelines and Case Definitions. Armed Forces Health Surveillance Branch, Defense Health Agency, October 2022. <https://www.health.mil/Military-Health-Topics/Health-Readiness/AFHSD/Reports-and-Publications>; Accessed July 2023.



In response, the case finding criteria were updated to include only those individuals identified as a *confirmed* case via the RME system. The distinction between acute and chronic HCV infection was also removed. Investigators interested in distinguishing acute and chronic cases may wish to retain the case finding criteria in the original definition (see *Comments* section below).

- In June of 2014 the original case definition was updated to include ICD10 codes.

Case Definition and Incidence Rule Rationale

- Given this case definition does not use ICD10/ICD9 code-based case finding criteria, the sensitivity of the definition may be reduced if data in the RME system is inaccurate or incomplete.
- The case finding criteria in this definition will not capture individuals with a history of HCV who have achieved a sustained virologic response (SVR) or a “cure,” indicated by undetectable serum quantitative HCV RNA levels at 12 weeks post treatment with dual acting antiviral agents or by spontaneous resolution of infection. Given documented evidence of treatment implies a positive HCV test, even if the test is not present in the electronic health record, AFHSD is exploring the use of pharmacy data to capture these cases.

Code Set Determination and Rationale

- None

Reports

The AFHSD reports on HCV in the following reports:

- Periodic *MSMR* articles

Review

July 2023	Case definition revised by the AFHSD <i>MSMR</i> staff (Oct 2022); reviewed and adopted by the AFHSD Surveillance Methods and Standards (SMS) working group.
Nov 2018	Case definition reviewed and updated by the Armed Forces Health Surveillance Branch (AFHSB) SMS working group.
Jun 2014	Case definition reviewed and updated by the Armed Forces Health Surveillance Center (AFHSC) SMS working group.
Oct 2011	Case definition developed by AFHSC <i>MSMR</i> staff (Aug 2011); reviewed and adopted by the AFHSC SMS working group.

Comments

- Hepatitis C Virus is a reportable medical event in the *Armed Forces Reportable Medical Events* surveillance system.⁷

Original AFHSC Case Definition for Hepatitis C:

- The definition was developed in August 2011 by the *MSMR* staff for use in an article on hepatitis C.⁸ The case definition was developed based on reviews of the ICD9 codes, the scientific literature, and previous AFHSC analyses.

⁸ Armed Forces Health Surveillance Center. Viral Hepatitis C, Active Component, U.S. Armed Forces, 2000-2010. *MSMR*. 2011; 18(8): 10-14.



- A 90-day interval between the two outpatient was used to increase sensitivity because acute hepatitis C can take one to three months to resolve and repeat encounters are likely to occur within this time period. Further, the time interval permitted medical evaluations to distinguish prolonged courses of acute hepatitis C from chronic hepatitis C.

Case Definition and Incidence Rules

Applicable independently to cases of acute or chronic HCV

For surveillance purposes, a case of acute or chronic HCV is defined as:

- *One hospitalization* with a case defining diagnosis of acute or chronic HCV (see ICD9 and ICD10 code lists) in *any* diagnostic position; or
- *Two outpatient medical encounters*, occurring *within 90 days* of each other, with a case defining diagnosis of acute or chronic HCV (see ICD9 and ICD10 code lists) in *any* diagnostic position; or
- One record of a reportable medical event of a *confirmed* case of HCV.
- Individuals who have met the case definition of an acute case may be considered a subsequent chronic case after a single inpatient or outpatient diagnosis of chronic HCV.
- For individuals with diagnoses of both acute *and* chronic HCV recorded on the same day, all encounters on that day are considered chronic HCV.

Incidence rules:

For individuals who meet the case definition:

- The incidence date is considered the date of the first reportable medical event, hospitalization or outpatient medical encounter that includes a case defining diagnosis of acute or chronic HCV.
- An individual is considered an incident case *once per lifetime* for *acute* hepatitis C and *once per lifetime* for *chronic* HCV.

Exclusions:

- Individuals who met the case definition for *chronic* HCV prior to the surveillance period are excluded from being counted as cases of either acute or chronic hepatitis C during the surveillance period.
- Individuals who met the case definition for *acute* HCV prior to the surveillance period are excluded from being counted as cases of *acute* hepatitis C during the surveillance period: they may be counted as cases of chronic hepatitis C during the surveillance period.

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Codes

The following ICD9 and ICD10 codes are included in the case definition:

Condition	ICD-10-CM Codes	ICD-9-CM Codes
Hepatitis C (Acute)	<i>B17.1 (acute hepatitis C...)</i>	070.51 (acute viral hepatitis C without mention of hepatic coma)
	- B17.10 (<i>without hepatic coma</i>)	070.41 (acute viral hepatitis C with hepatic coma)
	- B17.11 (<i>with hepatic coma</i>)	
Hepatitis C (Chronic)	<i>B18.2 (chronic viral hepatitis C)</i>	070.44 (chronic viral hepatitis C with hepatic coma)
		070.54 (chronic viral hepatitis C without mention of hepatic coma)
	<i>B19.2 (unspecified viral hepatitis C...)</i>	070.70 (unspecified viral hepatitis C without hepatic coma)
	- B19.20 (<i>without hepatic coma</i>)	
	- B19.21 (<i>with hepatic coma</i>)	070.71 (unspecified viral hepatitis C with hepatic coma)
<i>Z22.52 (carrier of viral hepatitis C)</i>	V02.62 (hepatitis C carrier)	