

Hepatitis B and C Outbreaks in Healthcare Settings: A Brief Guide August 2022

1. BACKGROUND

[Between 2008 and 2019, 66 outbreaks of hepatitis B virus \(HBV\) and hepatitis C virus \(HCV\) associated with breaches of infection control](#) in healthcare settings were reported to the Centers for Disease Control and Prevention (CDC); of these, 62 (94%) occurred in non-hospital settings. Twenty-five outbreaks of HBV resulted in 183 outbreak-associated cases and 13,246 persons notified for screening, while the 43 reported HCV outbreaks led to 328 outbreak-associated cases, and >112,000 at-risk persons were notified for screening (two of the 66 outbreaks involved both HBV and HCV).

Many HBV outbreaks occurred in long-term care facilities (LTCFs). Hemodialysis facilities were the most common site of HCV outbreaks, followed by LTCFs. Four outbreaks occurred because of drug diversion by HCV-infected healthcare providers. Defined as [“any criminal act or deviation that removes a prescription drug from its intended path from the manufacturer to the patient,”](#) drug diversion by healthcare providers occurs when the provider tampers with medications to obtain injectable drugs for personal use (such as injecting themselves with prefilled syringes meant for patient care, refilling those same syringes and injecting patients) potentially exposes patients to blood-borne pathogens.

2. INITIAL STEPS IN A POTENTIAL HEALTHCARE SETTINGS OUTBREAK

2.1 Outbreak criteria

CDC and Council of State Territorial Epidemiologists (CSTE) has well-developed guidelines and toolkits to assist public health officials in investigating potential transmission of hepatitis in healthcare settings. Oregon Health Authority’s (OHA)

Viral Hepatitis Program (VHP) and Healthcare-Associated Infections (HAI) Program will typically use these resources (listed below) to guide our investigation. This brief guide provides an overview of how to initiate such an investigation and the roles of OHA public health staff in the investigation.

For community-associated outbreaks and healthcare-associated outbreaks involving many other pathogens, a cluster of three or more related cases or an increase in cases above historical rates triggers an outbreak investigation. In contrast, the impetus for initiating an investigation of HBV or HCV in healthcare settings is the appearance of a single acute case with healthcare exposure in the absence of another risk factor, or the report of a breach in infection control procedures.

2.2 A single case of acute HBV or HCV in a healthcare setting

A case of HBV or HCV in a healthcare setting will likely be identified through routine investigation of an acute case using the case report forms available in Orpheus ([Acute HBV Case Report Form](#), [Acute HCV Case Report Form](#)). Examples of potential healthcare exposures include the following: cases who have received an organ transplant or blood products; cases who underwent hemodialysis or regularly used a blood glucose monitor; cases who received any infusions in an inpatient or outpatient healthcare setting; cases who have been hospitalized or underwent surgery; and cases who have worked as a healthcare professional in the past six months. Other exposures or conditions of interest include the diagnosis of acute HBV or HCV (or documented seroconversion) occurring in a cancer patient, long-term care resident, a child in the absence of infected household members, or a routine blood donor. Local public health authorities (LPHAs) should report this type of exposure to the ACDP on-call epidemiologist, who will notify Acute and Communicable Disease Program (ACDP) VHP staff to review the case report form. If no other likely risk factor is identified, VHP staff will consult with the HAI Program on next steps and determine which program will support LPHA staff in conducting the investigation.

2.3 Report of a breach in infection control

The LPHA or OHA's HAI Program most commonly hear of breaches in infection control, including incidents of drug diversion, via reports directly from healthcare facilities. Upon notification, initial information that should be collected includes:

- What is the nature of the breach, type of procedure, and biological substances involved? How was the breach first recognized?
- What is the time frame of the breach and number of patients exposed?
- Are there exposed patients with evidence of infection with a bloodborne pathogen?
- Has any testing been done so far?
- Is there a plan for patient notification?

If the breach is associated with a possible case of drug diversion, initial questions include:

- What medication(s) were diverted? What was the formulation (pills,¹ tablets, injectable), and the methods of diversion?
- Do you know the identity of the person suspected of diversion, and is that person known to be infected with a bloodborne pathogen?
- What are the employment dates of the individual suspected of having diverted drugs? Employment dates should include employment at the healthcare facility where the drug diversion was identified and at other current healthcare facilities.
- What is the HBV vaccination status of the individual suspected of having diverted drugs?

In these cases, the HAI Program Manager or designee will review the initial report to determine the first steps in the investigation, and typically an HAI Program epidemiologist will provide technical assistance to a team that may include OHA VHP staff, Urgent Epi Response Team (UERT) staff, a regional infection preventionist, and LPHA staff.

RESOURCES

[CDC Healthcare Investigation Guide](#): Toolkit providing a framework for use by state and local health departments to investigate possible healthcare-associated viral hepatitis transmission events, particularly those involving only a single patient.

[CDC Guide to Evaluating an Infection Control Breach](#): Approach to an infection control breach with potential risk of bloodborne pathogen transmission.

[CDC Injection Safety Patient Notification Toolkit](#): Guidance for public health departments and healthcare facilities when notifying patients of potential exposure to an infectious pathogen or an infection control lapse in the healthcare setting.

[CSTE Healthcare-Associated Infections \(HAI\) Drug Diversion Planning and Response Toolkit for State and Local Health Departments](#): Toolkit providing best practices and resources for drug diversion response informed by past investigations, with recommendations for enhanced collaboration between public health agencies and partners representing regulatory affairs.

¹ Unless the medication diverted was injectable, the risk for transmission of a bloodborne pathogen is very small and OHA is unlikely to investigate further.