North Carolina Viral Hepatitis Outbreak Response Plan

HIV/STD/Hepatitis Surveillance Unit
Division of Public Health
North Carolina Department of Health and Human Services
September 2025

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https://epi.dph.ncdhhs.gov/cd/diseases/hepatitis.html

https://epi.dph.ncdhhs.gov/cd/stds/factsheets.html

https://epi.dph.ncdhhs.gov/cd/stds/program.html

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Introduction

The Centers for Disease Control and Prevention (CDC) has provided funding via the Integrated Viral Hepatitis Surveillance and Prevention Funding for Health Departments (CDC-RFA-21-2103) to develop, implement, and maintain a Viral Hepatitis Outbreak Response Plan. This document is a collaboration between state and local staff, as well as multiple state agencies. Per Component 1: Core Viral Hepatitis Outbreak Response and Surveillance, this must be a plan to rapidly detect and respond to outbreaks for hepatitis A, hepatitis B, and hepatitis C. North Carolina receives funding from Division of Viral Hepatitis (DVH) for for hepatitis B and C activities and support of the outbreak response team, and therefore, this outbreak response plan will center around those two diseases. It will also include person-to-person transmission of hepatitis A.

This document will be separated by type of outbreak and includes the following sections:

- Routine review of surveillance data (and other data sources) to detect outbreaks
- Key departments / personnel to include on the outbreak investigation team
- Outbreak response management structure
- Laboratory testing
- Contact tracing and partner services, as applicable
- Prevention and control measures
- Linkage to case management and clinical care
- Communication plan with key stakeholders, media, and health department leadership
- Role of community-based organizations and partners
- Debrief, evaluations, and after-action report
- Case investigations forms, flowcharts, and other tools to expedite outbreak investigation

Purpose

The purpose of this outbreak response plan is to serve as a guide for coordinated efforts between the North Carolina Division of Public Health, local health departments (LHDs), community-based organizations (CBOs), and other government or non-government agencies when responding to a viral hepatitis outbreak in North Carolina. This plan incorporates guidance from multiple resources including North Carolina Division of Public Health's Communicable Disease Manual, the Centers for Disease Control and Prevention's (CDC) Viral Hepatitis Surveillance and Case Management: Guidance for State, Territorial, and Local Health Departments, and the CDC's National Prevention Information Network

(NPIN) guidance for Identifying and Reporting Outbreaks of Viral Hepatitis, Considerations for Health Departments.

As a state with decentralized health departments , the North Carolina Division of Public Health relies on close coordination with local health departments. In general, these organizations are responsible for investigating and responding to outbreaks of viral hepatitis. Viral hepatitis cases reported to the North Carolina Division of Public Health via NC EDSS are monitored by the HIV/STD/Hepatitis B and C Surveillance Unit (HSHSU) and the Medical Consultation Unit (MCU). HSHSU and MCU staff are available to provide guidance and technical assistance to LHDs as they investigate or respond to viral hepatitis in North Carolina.

Summary of an Outbreak Investigation:

Reasons to Investigate an Outbreak

- Identify the source (and eliminate it);
- Develop strategies to prevent outbreaks;
- Evaluate existing prevention strategies;
- Describe new diseases and learn more about known diseases; and
- Address public concern.[1]

When to Investigate (Consider the following factors)

- Severity of illness;
- Transmissibility;
- Unanswered questions;
- Ongoing illness/exposure; and
- Public concern.[1]

Principles of Outbreak Investigation

- Be systematic;
    - Follow the same steps for every type of outbreak
    - Write down case definitions
    - Ask the same questions of everybody
- Stop often to re-assess what you know;
    - Line list and epi curves provide valuable information; many investigations never go past this point
- Coordinate with partners.[1]

Other outbreak resources can be found in the North Carolina Communicable Disease Manual: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/outbreak.html

[1]Moore, Zack, M.D. Outbreak Investigations: The 10-Step Approach. North Carolina Division of Public Health (https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/training/Module_1_1.6_ppt_OutbreakInvestigation.pdf)

10 Steps of an Outbreak Investigation

Identify investigation team and resources	•Local epi team •State epi team •Other •Centers for Disease Control and Prevention (CDC) •Epi-Aids
Establish existence of an outbreak	•Increase in cases above what is expected in that population area
Verify the diagnosis	•Obtain medical records and lab reports •Contact local health department •Contact public health epidemiologists in hospitals and infection preventionists
Construct case definition	•Person (type of illness) •Place (location of suspected exposure) •Time (based on virus incubation period) •Risk of acquisition
Find cases systematically and develop line listing	•Clinical information (symptoms, onset dates/or times) •Demographic information •Exposure information •Use line list to summarize information
Peform descriptive epidemiology/develop hypotheses	•Person, place, time, and risk •Line lists and epi curves useful in developing hyphotheses
Evaluate hyphotheses/perform additional studies as necessary	•Types (cohort or case-control) •Designed to assess exposures equally among ill and non-ill
Implement control measures	•Can occur at any point during investigation •Isolation, cohorting, product recall •Balance between preventing further disease and protecting credibility and reputation of institution •Should be guided by epidemiologic results in conjuction with environmental investigation •Bring in community-based organizations (CBOs) or syringe service programs (SSPs)
Communicate findings	•Public and press are not aware of most outbreak investigations •Media attention desirable if public action is needed •Response to media attention important to address public concerns about outbreak •Results of investigations public information
Maintain surveillance	•Deciding if outbreak is over •Documenting effectiveness of control measures

Outbreak Investigation and Response Team Structure

The North Carolina Division of Public Health (NCDPH) uses the Incident Command System (ICS) outlined by the Federal Emergency Management Agency (FEMA). ICS is a standardized emergency management structure designed to enable effective and efficient response to incidents, including outbreaks of viral hepatitis, regardless of size or complexity. In response to a viral hepatitis outbreak, NCDPH's Communicable Disease Branch will be organized using the ICS structure. The structure's organization and the degree to which it is implemented will be adjusted based on situational needs.

Key Outbreak Investigation and Response Personnel

This table provides an overview of the key partners and personnel that may be included in the outbreak investigation and response team.

Table 1: Example List of Key Personnel Included in Outbreak Investigation and Response by Hepatitis Type

Response Personnel by Department or Organization	Hepatitis A	Hepatitis B	Hepatitis C
State Personnel (Communicable Disease Branch)			
Viral Hepatitis Epidemiologist	–	✓	✓
Viral Hepatitis Surveillance Nurse	–	✓	✓
Viral Hepatitis Program Manager	–	✓	✓
Viral Hepatitis Prevention Coordinator	–	✓	✓
Hepatitis C State Bridge Counselors	–	✓	✓
Viral Hepatitis Medical Director	–	✓	✓
Vaccine Preventable Disease Epidemiologist	✓	–	–
Vaccine Preventable Disease Nurse	✓	–	–
Epidemic Intelligence Service (EIS) Officer	○	○	○
HIV/STD/Hepatitis Director	–	✓	✓
HIV/STD Medical Director	–	○	○
VPD Medical Director	✓	○	–
Medical Consultation Unit Medical Director	○	○	○
HAI Epidemiologist or Nurse Consultant	○	○	○
Communicable Disease Branch Head	✓	✓	✓
State Epidemiologist	✓	✓	✓
Local Health Department Personnel			
LHD Communicable Disease Nurses	✓	✓	✓
LHD Nursing Supervisor	✓	✓	✓
Regional Epidemiologist	✓	✓	✓
LHD Health Director	✓	✓	✓
Other State Agencies			
North Carolina State Laboratory of Public Health (NC SLPH)	✓	✓	✓
Public Health Preparedness & Response (PHP&R)	○	○	○
Immunization Branch	✓	✓	–
Injury Violence and Prevention Branch	○	○	○
Women and Children's Branch	○	○	○
External Partners			

North Carolina Harm Reduction Coalition (NC HRC)	○	✓	✓
Local Agencies			
Community based organizations	✓	✓	✓
Syringe service programs	○	✓	✓
Local providers, clinics, EMS, and hospitals	✓	✓	✓
Mobile testing/vaccination units	✓	✓	✓
Education and outreach services (if outside LHD)	✓	✓	✓

Table 1 Legend:

Generally included	✓
Included in specific situations	○
Typically not included	–

Viral Hepatitis Surveillance

Public health disease surveillance is a fundamental tool for monitoring disease trends, providing insight into vulnerable populations, and identifying potential outbreaks. North Carolina law requires that diagnosis of certain communicable diseases, including viral hepatitis, be reported to the local and state health department. Within the NCDPH's Communicable Disease Branch, hepatitis A surveillance is managed by the Medical Consultation Unit (MCU); while hepatitis B and hepatitis C surveillance is managed by the HIV/STD/Hepatitis B and C Surveillance Unit (HSHSU). HSHSU and MCU epidemiologists monitor disease trends, classify viral hepatitis cases, and coordinate outbreak response and prevention activities with local health department partners.

Outbreak Detection

Please note: This section will primarily focus on hepatitis B and C detection strategies conducted by the HIV/STD/Hepatitis B and C Surveillance Unit (HSHSU). Hepatitis A surveillance is managed by the medical consultation unit (MCU); however, they also use similar strategies for outbreak detection.

Routine review of acute hepatitis B and acute hepatitis C data is conducted by the viral hepatitis epidemiologist and viral hepatitis surveillance nurse at the state. Unless required more frequently (e.g. due to another ongoing hepatitis outbreak), the viral hepatitis epidemiologist reviews acute case data from the North Carolina Electronic Disease Surveillance System (NC EDSS) at the beginning of each month using a semi-automated "hepatitis B/C outbreak check" SAS program. This SAS code identifies counties and regions with increased acute HBV and/or acute HCV activity by comparing county-level case counts over the last 12 months to average yearly count for the 36 months prior to that timeframe. Case counts exceeding the average yearly count by either a) a 25% increase or b) more than two standard deviations are flagged for review by HSHSU.

Figure 1: Example of County-Level Outbreak Check

County	Last 12 Months	Previous 3 Year Average	Y3:FEB23-JAN24	Y2: FEB22-JAN23	Y1: FEB21 JAN22	PCT Change	STDEV	Review Flag
County A	1	2.67	3	0	5	(62.5%)	-6.70	.
County B	1	1.00	2	1	0	0.0%	-2.00	.
County C	2	0.67	2	0	0	200.0%	-0.98	1

Figure 1 shows that County C is seeing both a more than 25% increase in hepatitis B incidence (% change) and more than two standard deviations from the average of the previous years. This county would be flagged for review. An in-depth case-level review is conducted for cases reported over the last 12 months for all counties that are flagged for review due to a significant increase in disease activity. During review the viral hepatitis epidemiologist and/or the viral hepatitis surveillance nurse will examine case data for trends in demographics, date of diagnosis, risk factors, coinfection status (particularly HIV, hepatitis A, or hepatitis C), and facility of diagnosis. In the event that cases are epidemiologically linked or have shared coinfections, exposures/risk factors, or contact networks then the cases should be sent to the viral hepatitis surveillance nurse and the State Hepatitis Outbreak Response Team should be notified and meet immediately to discuss the possibility of an outbreak (epi team is defined here).

If an outbreak is suspected, the viral hepatitis surveillance nurse should contact the LHD nurses to inform them of the potential outbreak of acute hepatitis B in their county. The LHD staff should meet with the State Hepatitis Outbreak Response Team as soon as possible, and the viral hepatitis epidemiologist and viral hepatitis surveillance nurse should create the outbreak's first Situation Report (SITREP). It will be up to the State Hepatitis Outbreak Response Team if the ICS structure needs to be activated at that time. For most hepatitis B and hepatitis C outbreaks, ICS will not be activated. It typically is only activated if the outbreak crosses multiple counties or a high number of cases.

If any case has a coinfection with either hepatitis A, B, or C, please go to this section of the outbreak response plan: Hepatitis Coinfection. If any case has HIV coinfection, please go to this section of the outbreak response plan: Hepatitis and HIV Coinfection. Lastly, if any of these cases are among people who use or inject drugs (PWUD or PWID), please to go this section of the outbreak response plan: Outbreaks among People who use or Inject Drugs (PWUD or PWID).

Hepatitis A Outbreak

Background

Hepatitis A is a vaccine-preventable, communicable disease of the liver caused by the hepatitis A virus (HAV). It is usually transmitted person-to-person through the fecal-oral route or consumption of contaminated food or water. Hepatitis A is a self-limited disease that does not result in chronic infection. Most adults with hepatitis A have symptoms, including fatigue, low appetite, stomach pain, nausea, and jaundice, that usually resolve within 2 months of infection; most children less than 6 years of age do not have symptoms or have an unrecognized infection. Antibodies produced in response to hepatitis A infection last for life and protect against reinfection. The best way to prevent hepatitis A infection is to get vaccinated. Vaccination with one dose of single-antigen hepatitis A vaccine has been shown to control outbreaks of hepatitis A and provides protective immunity in more than 95% of adults.

Large outbreaks of hepatitis A began occurring in multiple states in 2016 and 2017 and spread through person-to-person contact. Although North Carolina is not currently experiencing an outbreak of the same magnitude as some other states, an increased number of hepatitis A cases have been reported since April 2018, primarily affecting men who have sex with men and people who use drugs.

Although the incorporation of hepatitis A in the routine childhood immunization series and subsequent high coverage rates have resulted in decreased susceptibility and infections among children, the majority of adults in North Carolina and elsewhere remain susceptible. In 2016, only 9% of US adults had received a 2-dose series of hepatitis A vaccine.

The Communicable Disease Branch of the North Carolina Division of Public Health issued the first Communicable Disease Program Alert on this issue in November 2017 alerting partners to the national outbreaks and providing initial guidance. A range of actions described below have been implemented since that time in order to detect, prevent and respond to potential outbreaks of hepatitis A in North Carolina.

As a decentralized public health system, local public health agencies are the lead response unit. The role of the North Carolina Department of Health and Human Services (DHHS) is to support the local health agencies through distribution of vaccine and vaccine guidance, statewide educational campaigns, provider awareness initiatives, partner mobilization, data analysis and policy modifications to enhance vaccine coverage. North Carolina uses functional plans (outbreak investigation, communications, etc.) rather than disease specific plans. When necessary, the Communicable Disease Branch uses incident management teams, incident action plans, coordinating conference calls and situation reports to respond to public health events.

Hepatitis A Response Plan Objectives

- **Vaccinate:** Identify and implement strategies to increase hepatitis A vaccinations among those at high risk for infection or complications, including:

- Persons who use injection and non-injection drugs
- Men who have sex with men
- Persons who are experiencing homelessness
- Persons with chronic liver disease, including chronic hepatitis B and C
- Persons who are currently incarcerated in a county-owned facility/jail

- **Educate:** Provide education and increase awareness of hepatitis A among high-risk populations regarding:
  - Household exposures/risk factors to known cases
  - Diseases associated with drug use
  - High rates of hospitalizations, deaths associated with hepatitis A
  - Availability of prevention measures (vaccine) and control measures (HIV, HCV treatment)
  - Community services available
  - Harm reduction strategies

- **Collaborate:** Form sustainable partnerships for future public health collaborations
  - Collaborate with partners to increase vaccination coverage among high-risk populations
  - Roles for partners to help with response
    - Know the risk factors associated with outbreak
    - Collaborate with local health departments to increase adult hepatitis A vaccination
    - Provide education to patients
    - Refer patients for vaccination
  - Many partners identified, including:

CBOs	LHDs
Corrections	MH/DD/SAS
DPH	SEPs
FQHCs	Shelters
FBOs	VA System
Grindr	NC Coalition to End Homelessness

- **Track progress:**
  - Monitor trends in case rates of infections and vaccination coverage
  - Share these data and use them to guide and target intervention strategies

- **Sustain partnerships for future public health initiatives**

Selected Public Health Actions

- Form organizational structure for response

        - Create a hepatitis A "battle team" to coordinate all response activities, including representation from the Communicable Disease Branch, the Immunization Branch, Public Health Preparedness and Response, and the Injury and Violence Prevention Branch.
        - Create and widely disseminate weekly situation reports (SITREPs) to DPH and DHHS Management
        - Hold coordinating conference calls with newly affected counties
    - Communication
        - Develop press releases to increase public awareness and update as needed
        - Draft guidance for clinicians, local health departments and other partners
        - Formulate media and social media outreach efforts
    - Immunization
        - Provide vaccine and vaccine guidance for routine administration
        - Provide vaccine and IG for post-exposure prophylaxis in response to localized outbreaks
        - Conduct site visits and approve sites willing to provide hepatitis A vaccine as part of the outbreak response.
        - Expand the state vaccine coverage criteria
            - Initiate a "generous use" of state supplied vaccine for high-risk individuals regardless of insurance status or proof of vaccination status
        - Consult with CDC project officer and CDC vaccine advisor on vaccine allocations and possible increases in hepatitis A vaccine for outbreak response
        - Initiate weekly reporting to CDC
        - Conduct a statewide assessment of hepatitis A vaccine inventories in all VFC enrolled provider sites for baseline status for vaccine response
        - Submit weekly vaccine distribution and uptake reports to Communicable Disease Branch
    - Education
        - Conduct webinars for local health departments
        - Conduct tabletop exercises
        - Provide partner education in various venues
    - Laboratory testing
        - Assist with specimen logistics
        - Facilitate shipping to CDC for genotyping

Partner Roles and Responsibilities

- NC DHHS Division of State-Operated Healthcare Facilities
    - Increase provider awareness of outbreak
    - Incorporate vaccination into client treatment plan

- NC DHHS Division of Mental Health, Developmental Disabilities and Substance Abuse Services

  - Assist with education for their providers in LMEs, MCOs
  - Outreach with the local health departments for the communities they serve
  - Incorporate vaccination and education into treatment plans

- NC Department of Public Safety
  - Include NC state correctional facilities
  - Provide vaccination (using Twinrix) in the adult corrections system

- NC DHHS Office of Emergency Medical Services (OEMS)
  - Work to increase provider and responder awareness
  - Recognize EMS responders are sometimes the first to encounter persons experiencing homelessness or persons who use drugs

- NC DHHS Office of Communications
  - Review communication and educational materials
  - Assist with press releases, poster campaign
  - Support advertising campaign and NC Outbreak Website https://epi.publichealth.nc.gov/cd/hepatitis/hepa_outbreak.html

Hepatitis B Outbreak

This section will cover steps for a hepatitis B (acute infection) outbreak investigation. For information regarding routine surveillance and outbreak detection strategies please refer to this section of the outbreak response plan: Viral Hepatitis Surveillance. For helpful documents, including case definitions, investigation steps, and hepatitis B serology, please go to the hepatitis B manual: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/toc.html

Local Health Department Staff Notifies State

LHD communicable disease nurses observe or are notified by providers of increases in acute hepatitis B. If the LHD staff determine that this is an outbreak, the LHD nurses should notify the viral hepatitis surveillance nurse of the situation. The LHD nurses will send the event IDs of the cases in NC EDSS, and that information will be shared with the viral hepatitis epidemiologist to pull a line list and help the LHD nurses in an epidemiology capacity (as needed). Once a county declares an outbreak, the State Hepatitis Outbreak Response Team should meet immediately (epi team is defined here). The LHD staff should meet with the State Hepatitis Outbreak Response Team as soon as possible, and the viral hepatitis epidemiologist and viral hepatitis surveillance nurse should create the outbreak's first Situation Report (SITREP).

If any case has a coinfection with either hepatitis A or C, please go to this section of the outbreak response plan: Hepatitis Coinfection. If any case has HIV coinfection, please go to this section of the outbreak response plan: Hepatitis and HIV Coinfection. Lastly, if any of these cases are among people who use or inject drugs (PWUD or PWID), please to go this section of the outbreak response plan: Outbreaks among People who use or Inject Drugs (PWUD or PWID).

LHD Disease investigation steps for an acute hepatitis B outbreak can be found in the Communicable Disease Manual here: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/docs/LHD-DiseaseInvestigationSteps-AcuteandChronic-HBV.pdf Business rules for reporting hepatitis B in the North Carolina Electronic Disease Surveillance System (NC EDSS) can be found: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/docs/HepatitisB-BusinessRulesforInvestigationandReportinginNCEDSS.pdf

Key departments / personnel to include on the outbreak investigation team

For a description of involved departments and personnel in the State Hepatitis Coinfection Outbreak Response Team (Communicable Disease Branch), please refer to the Response Personnel by Department or Organization Table.

Laboratory testing

The State Hepatitis Outbreak Response Team should contact the NC SLPH and include them in any correspondence or meetings with the LHD staff about the outbreak. The LHD staff should follow-up with individuals involved in the outbreak to ensure they have been tested for hepatitis A, hepatitis C, HIV, syphilis, and, if possible, gonorrhea and chlamydia. LHD staff are responsible for transporting and storing

any specimens collected at hospital and arranging courier transport to the NC SLPH. Specimens collected from the LHD staff can be sent to the NC SLPH through normal means.

Hepatitis B serology and NC SLPH testing forms can be found here: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/serology.html

Contact tracing and partner services, as applicable

Contact tracing and partner services is performed by LHD staff. However, the state does have the capacity to help the LHD with this activity if the LHD asks for assistance. The two state hepatitis bridge counselors and viral hepatitis surveillance nurse from the State Hepatitis Outbreak Response Team will assist the LHD with any contact tracing or partner services activities, including getting contacts tested for hepatitis A, B, and C, HIV, and syphilis.

Prevention and control measures

Immunization Branch should be consulted for any vaccine distribution or vaccine events that the LHD would like to do as prevention measures for this outbreak. Hepatitis B vaccination resources can be found here: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/vaccination.html Syringe service programs (if in the area) can also be used as a resource for prevention, especially if the outbreak is among PWID. Control measures for hepatitis B can be found here: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/control.html

Outbreak in Blood or Plasma Center, Dialysis Center, or in a Healthcare Setting

If the hepatitis B outbreak is occurring at a blood or plasma center, dialysis center, or in a healthcare setting, the HAI surveillance and epi team would need to be pulled in. They typically handle all outbreak investigations at these settings. The State Hepatitis Outbreak Response Team is available to assist the HAI team, if needed.

For tools needed at a state and local level to investigate a hepatitis B outbreak in any of these settings, please go the "North Carolina Communicable Disease Manual for Hepatitis B: Investigation Steps and Case Management" (https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/investigation.html)

Linkage to case management and clinical care

The Communicable Disease Hepatitis B Manual has case management of index cases and their contacts in NC EDSS (https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/docs/CaseManagementofIndexCasesandTheirContacts.pdf).

Communication plan with key stakeholders, media, and health department leadership

If the ICS structure has been activated or an outbreak has been declared, regular briefing meetings will occur with updated IAPs (prepared by PHP&R) and SITREPs (prepared by the State Hepatitis Outbreak Response Team). If the ICS structure hasn't been activated, daily SITREPs should be sent out by the viral hepatitis surveillance epidemiologist/viral hepatitis surveillance nurse to the State Hepatitis Outbreak Response Team and LHD staff.

Once the outbreak has been declared, the viral hepatitis surveillance staff at the state should notify their Centers for Disease Control and Prevention (CDC) Division of Viral Hepatitis Project Officers that there is

an outbreak of acute hepatitis B. Further communication with the CDC DVH may occur throughout the outbreak.

All other communications are handled by the LHDs.

Role of community-based organizations and partners

During the calls with the LHD, CBOs and other partners in the area (like SSPs) should be included to discuss the outbreak. Typically, the LHD knows what partners are available to assist with vaccine or testing events, or outreach. The State Hepatitis Outbreak Response Team can serve as a liaison between CBOs and partners in the area if the LHD is unsure who is in the area. The LHD will make the call if they'd like to work with the CBOs or partners in the area.

Debrief, evaluations, and after-action report

If it appears that case counts are decreasing (i.e. no new cases or new links in the county) or vaccine events were successful, the State Hepatitis Outbreak Response Team and the LHD can decide that the outbreak is over. This will need to be a mutual decision between both the state and LHD. An after-action conversation will be held and report/SITREP disseminated to the State Hepatitis Outbreak Response Team, LHD, and CDC. This should be done within a week of closing an outbreak.

Hepatitis C Outbreak

This section will cover steps for a hepatitis C (acute infection) outbreak investigation. For information regarding routine surveillance and outbreak detection strategies please refer to this section of the outbreak response plan: Viral Hepatitis Surveillance. For helpful documents, including case definitions, investigation steps, and hepatitis C serology, please go to the Appendix B.

Local Health Department Staff Notifies State

LHD communicable disease nurses observe or are notified by providers of increases in acute hepatitis C. If the LHD staff determine that this is an outbreak, the LHD nurses should notify the viral hepatitis surveillance nurse of the situation. The LHD nurses will send the event IDs of the cases in NC EDSS, and that information will be shared with the viral hepatitis epidemiologist to pull a line list and help the LHD nurses in an epidemiology capacity (as needed). Once a county declares an outbreak, the State Hepatitis Outbreak Response Team should meet immediately (Response Team is defined here). The LHD staff should meet with the State's Hepatitis Outbreak Response Team as soon as possible, and the viral hepatitis epidemiologist and viral hepatitis surveillance nurse should create the outbreak's first Situation Report (SITREP).

LHD disease investigation steps for an acute hepatitis C outbreak can be found here: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/invest/HEPATITIS_C_ACUTE_LHD_STEPS_0419.pdf The hepatitis C business rules for reporting hepatitis C in the North Carolina Electronic Disease Surveillance System (NC EDSS).

Key departments / personnel to include on the outbreak investigation team

For a description of involved departments and personnel in the State Hepatitis Coinfection Outbreak Response Team (Communicable Disease Branch), please refer to the Response Personnel by Department or Organization Table.

Laboratory testing

The State Hepatitis Outbreak Response Team should contact the NC SLPH and include them in any correspondence or meetings with the LHD staff about the outbreak. The LHD staff should follow up with individuals involved in the outbreak to ensure they have been tested for hepatitis A, hepatitis B, HIV, syphilis, and, if possible, gonorrhea and chlamydia. LHD staff are responsible for transporting and storing any specimens collected at hospital and arranging courier transport to the NC SLPH. Specimens collected from the LHD staff can be sent to the NC SLPH through normal means.

Hepatitis B serology and NC SLPH testing forms can be found here: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/serology.html

Contact tracing and partner services, as applicable

Since North Carolina has a decentralized public health system, contact tracing and partner services is done by the LHD staff. However, the state does have the capacity to help the LHD with this activity if the LHD asks for assistance. The two state hepatitis bridge counselors and viral hepatitis surveillance nurse from the State Hepatitis Outbreak Response Team will assist the LHD with any contact tracing or partner services activities, including getting contacts tested for hepatitis A, B, and C, HIV, and syphilis.

Prevention and control measures

SSPs (if in the area) can also be used as a resource for prevention, especially if the outbreak is among PWUD or PWID. Control measures for hepatitis C can be found here: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/diseaseconds/ControlMeasuresHCV.pdf

Outbreak in Blood or Plasma Center or in a Healthcare Setting

If the hepatitis C outbreak is occurring at a blood or plasma center or in a healthcare setting, the HAI surveillance and epi team would need to be pulled in. They typically handle all outbreak investigations at these settings. The State Hepatitis Outbreak Response Team is available to assist the HAI team, if needed.

For tools needed at a state and local level to investigate a hepatitis C outbreak in any of these settings, please go the "North Carolina Division of Public Health Communicable Disease Manual" (https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/toc.html). The steps are the same for hepatitis B and C.

Linkage to case management and clinical care

The "North Carolina Division of Public Health Communicable Disease Manual" (https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/toc.html) has case management of index cases and their contacts in NC EDSS.

People newly diagnosed or newly reported with hepatitis C should be linked with a Hepatitis C State Bridge Counselor (SBC) to link them into hepatitis C care. There are hepatitis C treatment providers across the state, and the Hepatitis C SBCs will help navigate the referral process and make medical appointments with hepatitis C treatment providers.

Communication plan with key stakeholders, media, and health department leadership

If the ICS structure has been activated or an outbreak has been declared, regular briefing meetings will occur with updated IAPs (prepared by PHP&R) and SITREPs (prepared by the State Hepatitis Outbreak Response Team). If the ICS structure hasn't been activated, daily SITREPs should be sent out by the viral hepatitis surveillance epidemiologist/viral hepatitis surveillance nurse to the State Hepatitis Outbreak Response Team and LHD staff.

Once the outbreak has been declared, the viral hepatitis surveillance staff at the state should notify their Centers for Disease Control and Prevention (CDC) Division of Viral Hepatitis Project Officers that there is an outbreak of acute hepatitis C. Further communication with the CDC DVH may occur throughout the outbreak.

All other communications are handled by the LHDs.

Role of community-based organizations and partners

During the calls with the LHD, CBOs and other partners in the area (like SSPs) should be included to discuss the outbreak. Typically, the LHD knows what partners are available to assist with vaccine or testing events, or outreach. The State Hepatitis Outbreak Response Team can serve as a liaison between CBOs and partners in the area if the LHD is unsure who is in the area. The LHD will make the decision on whether they would like to work with the CBOs or partners in the area.

Debrief, evaluations, and after-action report

If it appears that case counts are decreasing (i.e. no new cases or new links in the county) or vaccine events were successful, the State Hepatitis Outbreak Response Team and the LHD can decide that the outbreak is over. This will need to be a mutual decision between both the state and LHD. An after-action report/SITREP should be disseminated to the State Hepatitis Outbreak Response Team, LHD, and CDC. This should be done within a week of closing an outbreak.

Hepatitis Coinfection Outbreak

This section covers an outbreak of hepatitis A and acute hepatitis B and/or acute hepatitis C.

Routine review of surveillance data (and other data sources) to detect outbreaks

Any case that is coinfected with additional hepatitis infection(s) will trigger a different outbreak response. The main difference is the people involved with the State Hepatitis Outbreak Response Team. It will be up to the State's Hepatitis Outbreak Response Team if the ICS structure needs to be activated at that time. For most hepatitis outbreaks, ICS will not be activated. It typically is only activated if the outbreak crosses multiple counties.

Key departments / personnel to include on the outbreak investigation team

For a description of involved departments and personnel in the State Hepatitis Coinfection Outbreak Response Team (Communicable Disease Branch), please refer to the Response Personnel by Department or Organization Table.

Laboratory testing

The State Hepatitis Outbreak Response Team should contact the NC SLPH and include them in any correspondence or meetings with the LHD staff about the outbreak. The LHD staff should follow up with individuals involved in the outbreak to ensure they have been tested for hepatitis A, B, C, HIV, syphilis, and, if possible, gonorrhea and chlamydia. LHD staff are responsible for transporting and storing any specimens collected at hospital and arranging courier transport to the NC SLPH. Specimens collected from the LHD staff can be sent to the NC SLPH through normal means.

Contact tracing and partner services, as applicable

Since North Carolina has a decentralized public health system, contact tracing and partner services are done by the LHD staff. However, the state does have the capacity to help the LHD with this activity if the LHD asks for assistance. The state hepatitis bridge counselor and viral hepatitis surveillance nurse from the State Hepatitis Outbreak Response Team will assist the LHD with any contact tracing or partner services activities, including getting contacts tested for hepatitis A, B, and C, HIV, and syphilis.

Prevention and control measures

Immunization Branch should be consulted for any vaccine distribution or vaccine events that the LHD would like to do as prevention measures for the outbreak. Hepatitis A and B vaccination resources can be found here: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/hepatitis/HepAandB_QuickImmunizationForm_wRiskFactorQuestions1.pdf and https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/vaccination.html SSPs (if in the area) can also be used as a resource for prevention, especially if the outbreak is among PWID.

Control measures for hepatitis B can be found here: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/control.html

Control measures for hepatitis C can be found here: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/diseaseconds/ControlMeasuresHCV.pdf

Outbreak in Blood or Plasma Center, Dialysis Center, or in a Healthcare Setting

If the hepatitis outbreak is occurring at a blood or plasma center, dialysis center, or in a healthcare setting, the HAI surveillance and epi team would need to be pulled in. They typically handle all outbreak

investigations in these settings. The State Hepatitis Outbreak Response Team is available to assist the HAI team, if needed.

For tools needed at a state and local level to investigate a hepatitis outbreak in any of these settings, please go the "North Carolina Division of Public Health Communicable Disease Manual" (https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/toc.html) and "North Carolina Communicable Disease Manual for Hepatitis B: Investigation Steps and Case Management" (https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/investigation.html).

Linkage to case management and clinical care

The "North Carolina Division of Public Health Communicable Disease Manual" (https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/toc.html) and the "North Carolina Communicable Disease Manual for Hepatitis B" (https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/docs/CaseManagementofIndexCasesandTheirContacts.pdf) has case management of index cases and their contacts in NC EDSS.

If someone is coinfected with hepatitis C (typically chronic hepatitis C), they should be linked with a Hepatitis C State Bridge Counselor (SBC) to link them to hepatitis C care/cure. There are hepatitis C treatment providers across the state, and the Hepatitis C SBCs will help navigate the referral process and make medical appointments with hepatitis C treatment providers.

Communication plan with key stakeholders, media, and health department leadership

If the ICS structure has been activated or an outbreak has been declared, regular briefing meetings will occur with updated IAPs (prepared by PHP&R) and SITREPs (prepared by the State Hepatitis Outbreak Response Team). If the ICS structure hasn't been activated, daily SITREPs should be sent out by the viral hepatitis surveillance epidemiologist/viral hepatitis surveillance nurse to the State Hepatitis Outbreak Response Team and LHD staff.

Once the outbreak has been declared, the viral hepatitis surveillance staff at the state should notify their Centers for Disease Control and Prevention (CDC) Division of Viral Hepatitis Project Officers that there is an outbreak involving hepatitis co-infection. Further communication with the CDC DVH may occur throughout the outbreak.

All other communications are handled by the LHDs.

Role of community-based organizations and partners

During the calls with the LHD, CBOs and other partners in the area (like SSPs) should be included to discuss the outbreak. Typically, the LHD knows which partners are available to assist with vaccine or testing events, or outreach. The State Hepatitis Outbreak Response Team can serve as a liaison between CBOs and partners in the area if the LHD is unsure who is in the area. The LHD will make the call if they'd like to work with the CBOs or partners in the area.

Debrief, evaluations, and after-action report

If it appears that case counts are decreasing (i.e. no new cases or new links in the county) or vaccine events were successful, the State Hepatitis Outbreak Response Team and the LHD can decide that the outbreak is over. This will need to be a mutual decision between both the state and LHD. An after-action conversation will be held and report/SITREP disseminated to the State Hepatitis Outbreak Response Team, LHD, and CDC. This should be done within a week of closing an outbreak.

Hepatitis and HIV Coinfection Outbreak

This section covers an outbreak of acute hepatitis B and/or acute hepatitis C and if even one person has HIV (either previously diagnosed HIV or newly diagnosed HIV). **The ICS structure will be activated for this type of outbreak.** Since HIV surveillance and case management is handled at the regional and state level, the local health department will be involved in the ICS structure, but the outbreak investigation and management will be held with the State.

If the outbreak is among people who use or inject drugs (PWUD or PWID), the Centers for Disease Control and Prevention (CDC) have published guidance for managing an outbreak of HIV and hepatitis C among this population. This resource can be found here: https://www.cdc.gov/hiv/pdf/programresources/guidance/cluster-outbreak/cdc-hiv-hcv-pwid-guide.pdf

Routine review of surveillance data (and other data sources) to detect outbreaks

Any hepatitis B or C case coinfected with HIV triggers a different outbreak response.

Key departments / personnel to include on the outbreak investigation team

For a description of involved departments and personnel in the State Hepatitis Coinfection Outbreak Response Team (Communicable Disease Branch), please refer to the Response Personnel by Department or Organization Table.

Laboratory testing

The State HIV/Hepatitis Outbreak Response Team should contact the North Carolina State Laboratory of Public Health (NC SLPH) and include them in any correspondence or meetings with the LHD staff about the outbreak. The Field Services Unit (FSU) staff (DIS and HIV SBCs) should follow up with individuals involved in the outbreak to ensure they have been tested for hepatitis A, B, C, HIV, syphilis, and, if possible, gonorrhea and chlamydia. LHD staff are responsible for transporting and storing any specimens collected at hospital and arranging courier transport to the NC SLPH. Specimens collected can be sent to the NC SLPH through normal means.

Contact tracing and partner services

Since the State is handling this outbreak investigation, contact tracing and partner services will be handled by the State's FSU staff and regional DIS. The State's EIS officer, other surveillance epidemiology staff, and the hepatitis C SBCs are available to help if needed. The FSU and DIS staff should follow up and interview all cases associated with the outbreak and get their contacts tested for hepatitis A, B, C, HIV, and syphilis.

Prevention and control measures

SSPs (if in the area) can also be used as a resource for prevention, especially if the outbreak is among PWID. Vaccination and testing events could be held in the area as well.

Control Measures for HIV can be found here: http://reports.oah.state.nc.us/ncac/title%2010a%20-%20health%20and%20human%20services/chapter%2041%20-%20epidemiology%20health/subchapter%20a/10a%20ncac%2041a%20.0202.html

Control measures for hepatitis B can be found here: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/control.html

Control measures for hepatitis C can be found here:
https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/diseaseconds/ControlMeasuresHCV.pdf

Linkage to case management and clinical care

HIV care status and viral suppression should be examined for all HIV cases associated with the outbreak. If someone is not in HIV care, the HIV SBCs should be utilized to re-engage the person into HIV care. If they are coinfected with hepatitis C, they should also be linked to a hepatitis C treatment provider, and the Hepatitis C SBCs should be consulted to help find a provider and link them into care.

If they are coinfected with HIV and either hepatitis A or hepatitis B, their primary care physician (PCP) should continue follow-up every six months.

Communication plan with key stakeholders, media, and health department leadership

Since the ICS structure has been activated, regular briefing meetings will occur with updated IAPs (prepared by PHP&R) and SITREPs (prepared by the State HIV/Hepatitis Outbreak Response Team).

Once the outbreak has been declared, the viral hepatitis surveillance staff at the state should notify their Division of Viral Hepatitis (DVH) Project Officer at the Centers for Disease Control and Prevention that there is an outbreak of acute hepatitis B or C with HIV coinfection. Further communication with the CDC may occur throughout the outbreak.

All other communications are handled by Public Information Officer.

Role of community-based organizations and partners

During the regular briefing calls with the ICS team, LHD, and regional staff, CBOs and other partners in the area should be available to discuss the outbreak (like SSPs).

Debrief, evaluations, and after-action report

If it appears that case counts are decreasing (i.e. no new cases or new links in the county) or vaccine events were successful, the State Hepatitis Outbreak Response Team and the LHD can decide that the outbreak is over. This will need to be a mutual decision between both the state and LHD. An after-action report/SITREP should be disseminated to the State Hepatitis Outbreak Response Team, LHD, and CDC. This should be done within a week of closing an outbreak.

Outbreak among People who Use or Inject Drugs (PWUD or PWID)

This section covers a hepatitis outbreak among people who use or inject drugs (PWUD or PWID). If any of the outbreak cases are coinfected with HIV, please use the "Hepatitis and HIV Coinfection Outbreak" section.

Routine review of surveillance data (and other data sources) to detect outbreaks

Whether the initial outbreak is determined by the state or LHD (see hepatitis A, hepatitis B, or hepatitis C sections), the State Hepatitis Outbreak Response Team should be activated. It will be up to the State Hepatitis Outbreak Response Team if the ICS structure needs to be activated at this time. For most hepatitis outbreaks, ICS will not be activated. It typically is only activated if the outbreak crosses multiple counties or if there are many cases or contacts needing follow-up.

There are some instances where a local SSPs could notify either the state or LHD of a potential outbreak/cluster, especially if they are testing for hepatitis and HIV at their SSP. If this is the case for the outbreak, the State Hepatitis Outbreak Response Team should be activated.

The Centers for Disease Control and Prevention (CDC) have published guidance for managing an outbreak of HIV and hepatitis C among people who inject drugs (PWID). This resource can be found here:

https://www.cdc.gov/hiv/pdf/programresources/guidance/cluster-outbreak/cdc-hiv-hcv-pwid-guide.pdf

Key departments / personnel to include on the outbreak investigation team

For a description of involved departments and personnel in the State Hepatitis Coinfection Outbreak Response Team (Communicable Disease Branch), please refer to the Response Personnel by Department or Organization Table.

Laboratory testing

The State Hepatitis Outbreak Response Team should contact the NC SLPH and include them in any correspondence or meetings with the LHD staff about the outbreak. The LHD staff should follow up with individuals involved in the outbreak to ensure they have been tested for hepatitis A, B, C, HIV, syphilis, and, if possible, gonorrhea and chlamydia. LHD staff are responsible for transporting and storing any specimens collected at hospital and arranging courier transport to the NC SLPH. Specimens collected from the LHD staff can be sent to the NC SLPH through normal means.

Contact tracing and partner services, as applicable

Since North Carolina has a decentralized public health system, contact tracing and partner services is done by the LHD staff. However, the state does have the capacity to help the LHD with this activity if the LHD asks for assistance. The state hepatitis bridge counselor and viral hepatitis surveillance nurse from the State Hepatitis Outbreak Response Team will assist the LHD with any contact tracing or partner services activities, including getting contacts tested for hepatitis A, B, and C, HIV, and syphilis.

Prevention and control measures

Immunization Branch should be consulted for any vaccine distribution or vaccine events that the LHD would like to do as prevention measures for this outbreak. Hepatitis A and B vaccination resources can be found here:
https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/hepatitis/HepAandB_QuickImmunizationForm_wRiskF

actorQuestions1.pdf and https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/vaccination.html SSPs (if in the area) can also be used as a resource for prevention and testing.

Control measures for hepatitis B can be found here:
https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/control.html

Control measures for hepatitis C can be found here:
https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/conference/legal_2012/hepC_apr2012_ncac.pdf

Linkage to case management and clinical care

The Communicable Disease Hepatitis B Manual has case management of index cases and their contacts in NC EDSS (https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/docs/CaseManagementofIndexCasesandTheirContacts.pdf).

If someone is coinfected with hepatitis C (typically chronic hepatitis C), they should be linked with a hepatitis C State Bridge Counselor (SBC) to link them into hepatitis C care. There are hepatitis C treatment providers across the state, and the hepatitis C SBCs will help navigate the referral process and make medical appointments with hepatitis C treatment providers.

Communication plan with key stakeholders, media, and health department leadership

If the ICS structure has been activated or an outbreak has been declared, regular briefing meetings will occur with updated IAPs (prepared by PHP&R) and SITREPs (prepared by the State Hepatitis Outbreak Response Team). If the ICS structure hasn't been activated, daily SITREPs should be sent out by the viral hepatitis surveillance epidemiologist/viral hepatitis surveillance nurse to the State Hepatitis Outbreak Response Team and LHD staff.

Once the outbreak has been declared, the viral hepatitis surveillance staff at the state should notify their Centers for Disease Control and Prevention (CDC) Division of Viral Hepatitis Project Officers that there is an outbreak of hepatitis among PWUD or PWID. Further communication with the CDC DVH may occur throughout the outbreak.

All other communications are handled by the LHDs.

Role of community-based organizations and partners

During the calls with the LHD, CBOs and other partners in the area (like SSPs) should be included to discuss the outbreak. Typically, the LHD knows what partners are available to assist with vaccine or testing events, or outreach. The State Hepatitis Outbreak Response Team can serve as a liaison between CBOs and partners in the area if the LHD is unsure who is in the area. The LHD will make the call if they'd like to work with the CBOs or partners in the area.

Debrief, evaluations, and after-action report

If it appears that case counts are decreasing (i.e. no new cases or new links in the county) or vaccine events were successful, the State Hepatitis Outbreak Response Team and the LHD can decide that the outbreak is over. This will need to be a mutual decision between both the state and LHD. An after-action report/SITREP should be disseminated to the State Hepatitis Outbreak Response Team, LHD, and CDC. This should be done within a week of closing an outbreak.

Appendix A: Case Investigation Forms, Flowcharts, and Other Tools to Expedite Outbreak Investigation

North Carolina Communicable Disease Branch Call Agenda Format

Outbreak or contact investigation calls with partners will be initiated with introductions followed by background of the event, causative agent, transmission, symptoms, severity of illness and usual control measures, followed by the items listed below. This format is an example and may be used by epi team members and modified to fit incident.

1. Surveillance
    a. Case definition
    b. Update case counts
    c. Line list and epi curve (have updated counts and epi curve on hand for call)
2. Clinical Investigation
    a. Case finding
    b. Number interviewed
    c. Number of clinical specimens collected
    d. Number of hospitalizations
    e. Number of deaths
3. Laboratory
    a. Number of clinical specimens sent
    b. Date/time results will be available?
4. Environmental investigation
    a. Facility findings
    b. Number of environmental specimens collected
    c. Date/Time results will be available?
5. Control measures
    a. Work or school exclusion/return criteria
    b. Infection prevention
    c. Ongoing surveillance
6. Partners
    a. Local, regional hospitals
    b. Emergency Management, EMS, other providers
    c. Community, faith-based organizations

   d. Other county, regional agencies, schools, day care

7. Public information
   a. Epi-X, HAN alert
   b. Press Release
   c. PIO contact information
   d. Calls from public
8. Case control study or other analysis
9. Resources
   a. LHD staff availability (epi team, ICS)
   b. NC DPH/Communicable Disease Branch staff availability
   c. Ongoing communication/notification

Other outbreak resources can be found in the North Carolina Communicable Disease Manual: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/outbreak.html

Tools for hepatitis A can be found in the North Carolina Communicable Disease Manual: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/reportable_diseases.html#F (go to Hepatitis A).

Tools for hepatitis A can be found in the North Carolina Communicable Disease Manual: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/reportable_diseases.html#F (go to Hepatitis B) and https://epi.dph.ncdhhs.gov/cd/lhds/manuals/hepB/toc.html

Tools for hepatitis C can be found in the North Carolina Communicable Disease Manual: https://epi.dph.ncdhhs.gov/cd/lhds/manuals/cd/reportable_diseases.html#F (go to Hepatitis C).

Appendix B: Seriously… Education Campaign, General Audience Sample

Seriously?

Did you know **HEPATITIS A** liver infections are on the rise in North Carolina? If you are experiencing homelessness, use drugs or are a man who has sex with men, you are most at risk.

Protect yourself.
Protect others.
Get vaccinated.

Seriously.

Hepatitis A is spread when small, undetectable amounts of feces (poop) get into your mouth. You can get hepatitis A:

- By swallowing food or drink contaminated with the virus.
- Through oral or anal sex.
- By touching surfaces or objects contaminated with the virus, then putting your hands in your mouth.

Hepatitis A can also be spread by sharing drug injection equipment.

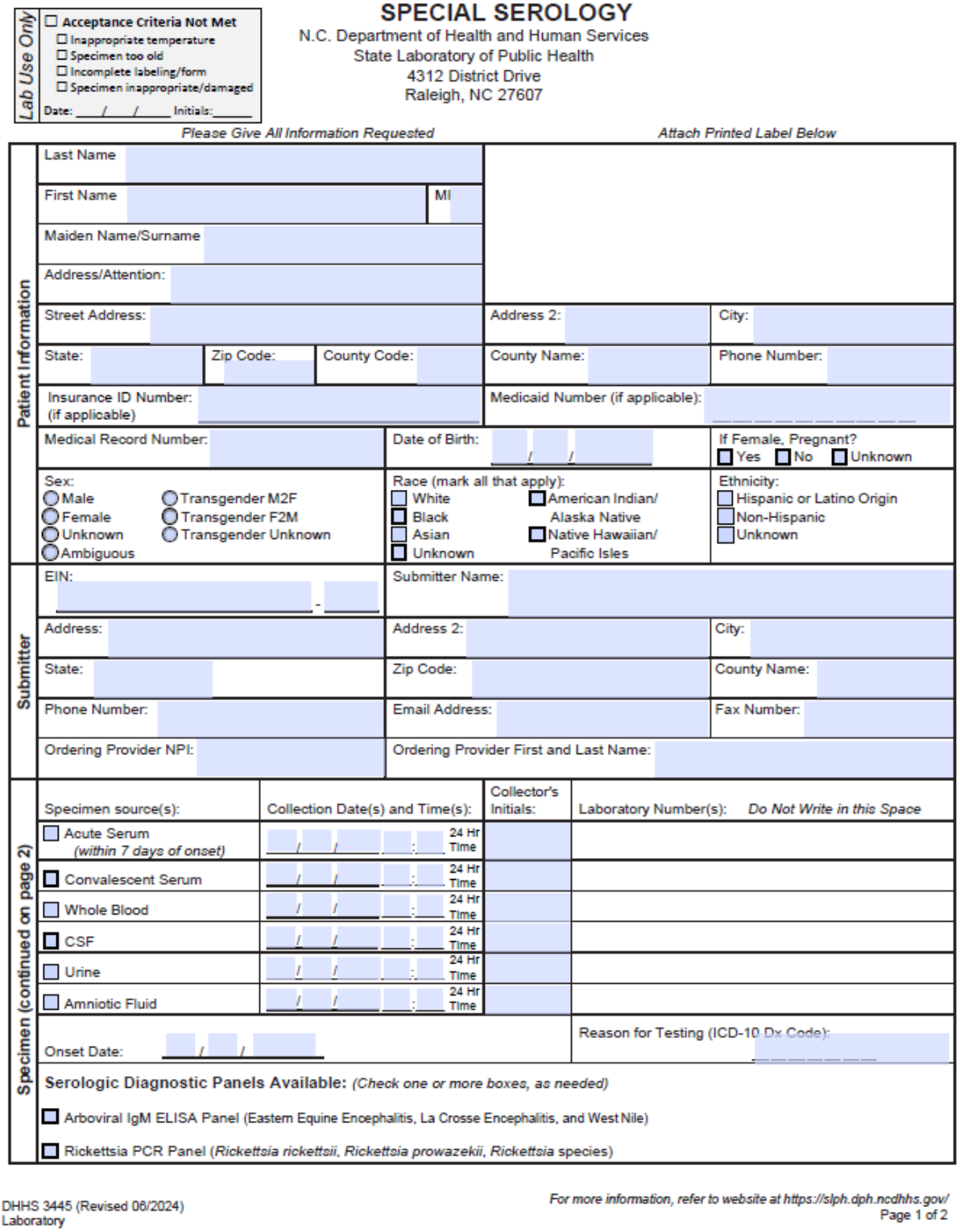
Ask your doctor or local health department about the hepatitis A vaccine.

Local Health Department Name Goes Here
919-555-5555 • www.google.com

Place a QR Code or a Logo Here

NC Department of Health and Human Services • Division of Public Health • Epidemiology Section • Communicable Disease Branch • https://epi.publichealth.nc.gov/cd/ • NCDHHS is an equal opportunity employer and provider. • 08/18

Appendix C: N.C. Department of Health and Human Services State Laboratory of Public Health Special Serology Form 3445



Lab Use Only
☐ Acceptance Criteria Not Met
☐ Inappropriate temperature
☐ Specimen too old
☐ Incomplete labeling/form
☐ Specimen inappropriate/damaged
Date: ___/___/___ Initials:_____

SPECIAL SEROLOGY
N.C. Department of Health and Human Services
State Laboratory of Public Health
4312 District Drive
Raleigh, NC 27607

Please Give All Information Requested — *Attach Printed Label Below*

Patient Information

Last Name
First Name | MI
Maiden Name/Surname
Address/Attention:
Street Address: | Address 2: | City:
State: | Zip Code: | County Code: | County Name: | Phone Number:
Insurance ID Number: (if applicable) | Medicaid Number (if applicable):
Medical Record Number: | Date of Birth: ___/___/___ | If Female, Pregnant? ☐ Yes ☐ No ☐ Unknown

Sex:
◯ Male ◯ Female ◯ Unknown ◯ Ambiguous ◯ Transgender M2F ◯ Transgender F2M ◯ Transgender Unknown

Race (mark all that apply):
☐ White ☐ Black ☐ Asian ☐ Unknown ☐ American Indian/ Alaska Native ☐ Native Hawaiian/ Pacific Isles

Ethnicity:
☐ Hispanic or Latino Origin ☐ Non-Hispanic ☐ Unknown

Submitter

EIN: _____ - _____ | Submitter Name:
Address: | Address 2: | City:
State: | Zip Code: | County Name:
Phone Number: | Email Address: | Fax Number:
Ordering Provider NPI: | Ordering Provider First and Last Name:

Specimen (continued on page 2)

Specimen source(s):	Collection Date(s) and Time(s):	Collector's Initials:	Laboratory Number(s): *Do Not Write in this Space*
☐ Acute Serum *(within 7 days of onset)*	___/___/___ ___:___ 24 Hr Time		
☐ Convalescent Serum	___/___/___ ___:___ 24 Hr Time		
☐ Whole Blood	___/___/___ ___:___ 24 Hr Time		
☐ CSF	___/___/___ ___:___ 24 Hr Time		
☐ Urine	___/___/___ ___:___ 24 Hr Time		
☐ Amniotic Fluid	___/___/___ ___:___ 24 Hr Time		

Onset Date: ___/___/___ | Reason for Testing (ICD-10 Dx Code): _____

Serologic Diagnostic Panels Available: *(Check one or more boxes, as needed)*

☐ Arboviral IgM ELISA Panel (Eastern Equine Encephalitis, La Crosse Encephalitis, and West Nile)

☐ Rickettsia PCR Panel (*Rickettsia rickettsii*, *Rickettsia prowazekii*, *Rickettsia* species)

DHHS 3445 (Revised 06/2024)
Laboratory

For more information, refer to website at https://slph.dph.ncdhhs.gov/
Page 1 of 2

Specimen (continued from page 1)

Exanthems: *(All suspect cases must be approved for testing by the Communicable Disease Branch (CDB) prior to submission of specimen to the State Lab. CDB can be reached at 919-733-3419. Testing will be sent to reference laboratory)*

☐ Measles ☐ Rubella ☐ Varicella Zoster, IgG ☐ Mumps, IgG

Single Agent Diagnostic Tests: (Check one or more boxes, as needed)

☐ Dengue IgM ELISA and PCR (if specimen collection is within 7 days of symptom onset)

☐ Chikungunya IgM ELISA and PCR (if specimen collection is within 7 days of symptom onset)

☐ Zika PCR ****The Physician Attestation (below) must be signed prior to testing.****

☐ Other: _____

☐ Prior approval/consultation received from: _____

☐ Please forward specimen to CDC for testing. (Attach a completed CDC 50.34 DASH form).

Other Patient Information

Patient Signs and Symptoms: *(Check all that apply)*

General	Rash	Respiratory	CNS	Cardiovascular
☐ Fever to___°F	☐ Macular	☐ Cough	☐ Seizures	☐ Chest Pain
☐ Headache	☐ Papular	☐ Pneumonia	☐ Meningitis	☐ Pericarditis
☐ Fatigue	☐ Vesicular	☐ Bronchitis	☐ Encephalitis	☐ Myocarditis
☐ Sore Throat	☐ Petechial	☐ Croup	☐ Nuchal rigidity	☐ Pleurodynia
☐ Jaundice	☐ Focal	☐ Pharyngitis	☐ Paralysis	
☐ Conjunctivitis	☐ Hemorrhagic			
☐ Arthralgia/Myalgia				
☐ Nausea/Vomiting				

If pregnant, due date: ___/___/_____

Recent Vaccination History:

Travel History:

Area(s): _____

Dates: _____

Physician Attestation for Zika Testing

Zika virus assays are intended for use with specimens collected from individuals meeting CDC Zika virus clinical criteria (e.g., clinical signs and symptoms associated with Zika virus infection) and/or CDC Zika virus epidemiological criteria (e.g., history of residence in or travel to a geographic region with active Zika transmission at the time of travel, or other epidemiologic criteria for which Zika virus testing may be indicated as part of a public health investigation).

NCSLPH provides testing to patients when the following criteria are met:

- A pregnant woman who:
  - Has ongoing possible Zika virus exposure
  - Has had prenatal ultrasound findings consistent with congenital Zika infection
- An individual with symptoms associated with Zika virus infection (rash, joint pain, fever, and/or conjunctivitis) who:
  - Spent time in an area with risk for Zika virus transmission, or
  - Had unprotected sex with a partner who spent time in an area with risk for Zika virus transmission

☐ I certify that the patient I am requesting Zika testing for meets the criteria outlined above.*

Physician Name (Print) _____

Physician Signature _____

*** For further guidance regarding eligibility for Zika testing, please visit the Zika Virus Testing page on the NCSLPH website at https://slph.dph.ncdhhs.gov/zika/**

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Laboratory

https://slph.dph.ncdhhs.gov/

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Appendix D: CDC HBV/HCV Exposure Information Gathering Tool

Sample data gathering tool *for patients with recent/new hepatitis B or C virus infection without known risk factors for viral hepatitis to help guide health departments in identifying potential healthcare exposures that may warrant further public health investigation*

Instructions: Gather available clinical and diagnostic data in Part 1 on pages 1-3. Use these data to calculate possible exposure period using guidance in Part 2 on pages 4-6. This time window may be used during the patient interview in Part 3 pages 7-16.

Part 1: Clinical and Diagnostic Data

Note: Clinical and Diagnostic Information may be transferred from the state department of health acute hepatitis case report form, and/or you may wish to review symptoms and dates with case patient during interview.

DATE laboratory report was received at Local Health Department __ __ / __ __ / __ __ __ __
(record results in next section)

REASON FOR TESTING: (Check all that apply)

__ Symptoms of acute hepatitis
__ Evaluate elevated liver enzymes
__ Screening of asymptomatic patient
__ Blood / organ donor screening
__ Follow-up testing for previous markers of viral hepatitis
__ Unknown
__ Other: specify: _____

DIAGNOSIS: (Check all that apply)

__ Hepatitis B: ___ acute ___chronic ___unknown

__ Hepatitis C: ___ acute ___chronic ___unknown

CLINICAL DATA:

Diagnosis date: __ __ / __ __ / __ __ __ __

a. Was patient symptomatic? ___ Yes ___ No ___ Unk If yes, onset date: __ __ / __ __ / __ __ __ __

b. Was patient jaundiced? ___ Yes ___ No ___ Unk If yes, onset date: __ __ / __ __ / __ __ __ __

c. Did the patient experience:

Loss of appetite ___ Yes ___ No ___ Unk

Nausea	___ Yes	___ No	___ Unk
Vomiting	___ Yes	___ No	___ Unk
Abdominal Pain	___ Yes	___ No	___ Unk
Fever	___ Yes	___ No	___ Unk
Dark Urine	___ Yes	___ No	___ Unk

Other, specify_____

d. Was the patient hospitalized for hepatitis? ___Yes ___No ___Unk

If yes, admission date: __ __ / __ __ / __ __ __ __ discharge date*: __ __ / __ __ / __ __ __ __

Did patient die during admission? __yes ___no ____unk

If, yes, date of death: __ __ / __ __ / __ __ __ __

Diagnostic tests. Check all that apply. If tested on more than one date record all test results and dates through (including) date of first positive test.

Note: Creating a spreadsheet to depict evolving serology over time may be particularly useful for hepatitis B (sample attached at end of document).

___ Hepatitis B surface antigen [HBsAg] __Pos __Neg __Unk Date(s): ___/___/___
__Pos __Neg __Unk Date(s): ___/___/___

___ Total antibody to hepatitis B core antigen [total anti-HBc] __Pos __Neg __Unk Date(s): ___/___/___
__Pos __Neg __Unk Date(s): ___/___/___

___ IgM antibody to hepatitis B core antigen [IgM anti-HBc] __Pos __Neg __Unk Date(s): ___/___/___
__Pos __Neg __Unk Date(s): ___/___/___

___ HBV DNA __Pos __Neg __Unk Date(s): ___/___/___
__Pos __Neg __Unk Date(s): ___/___/___

If positive, (specify viral load(s) if available _____

___ HBV Genotype result, if tested _____ Date: ___/___/___

___ Antibody to hepatitis C virus [anti-HCV] __Pos __Neg __Unk Date(s): ___/___/___
__Pos __Neg __Unk Date(s): ___/___/___

___ HCV RNA __Pos __Neg __Unk Date(s): ___/___/___
__Pos __Neg __Unk Date(s): ___/___/___

If positive, specify viral load(s) if available _____

___ HCV Genotype result, if tested _____ Date: ___/___/___

___ Antibody to hepatitis D virus [anti-HDV] __Pos __Neg __Unk Date(s): ___/___/___

LIVER ENZYME LEVELS AT TIME OF DIAGNOSIS

ALT [SGPT] Result _____ Upper limit normal_____ Date __ __ / __ __ / __ __ __ __

AST [SGOT] Result _____ Upper limit normal_____ Date __ __ / __ __ / __ __ __ __

if known PRIOR LIVER ENZYME LEVELS, with baseline and first elevated level(s)

ALT [SGPT] Result _____ Upper limit normal_____ Date __ __ / __ __ / __ __ __ __

AST [SGOT] Result _____ Upper limit normal_____ Date __ __ / __ __ / __ __ __ __

ALT [SGPT] Result _____ Upper limit normal_____ Date __ __ / __ __ / __ __ __ __

AST [SGOT] Result _____ Upper limit normal_____ Date __ __ / __ __ / __ __ __ __

Part 2. Determining likely time period of HBV/HCV exposure (exposure window) based on laboratory and clinical findings

Note: This general guidance may not encompass all possible scenarios. CDC Division of Viral Hepatitis staff are always available for consultation at viralhepatitisoutbreak@cdc.gov or CDC-INFO 1-800-232-4636 (ask for Division of Viral hepatitis subject matter expert) See: https://www.cdc.gov/hepatitis/contactus.htm

1. For patients with a history of negative nucleic acid tests (NAT) or serology (for HBV, HBsAg and/or total anti-HBc; for HCV, anti-HCV) prior to the recent positive test:

Note: On average about 3 weeks (possibly up to 12 weeks) may elapse between initial infection and HBsAg/HBV DNA detectability, up to 6 months before anti-HCV seroconversion, and on average about one week (up to 2 weeks) before HCV RNA detectability.
See: https://www.cdc.gov/hepatitis/outbreaks/toolkit.htm

a. fill in date(s) and type(s) of most recent negative test(s). Include all serologic and NAT results.
_____ Date(s) __/__/____
_____ Date(s) __/__/____
_____ Date(s) __/__/____
_____ Date(s) __/__/____

b. fill in date(s) and type(s) of first positive test(s). Include all serologic and NAT results.

_____ Date(s) __/__/____
_____ Date(s) __/__/____
_____ Date(s) __/__/____
_____ Date(s) __/__/____

c. The **possible HBV exposure window** may be estimated using NAT for HBV DNA and/or HBsAg tests. On average about three weeks (typical range 1-9 weeks, possibly up to 12 weeks) may elapse between initial infection and HBsAg/HBV DNA detectability.

Possible exposure window based on HBV DNA or HBsAg tests

Likely exposure window: ___/___/___ to ___/___/___

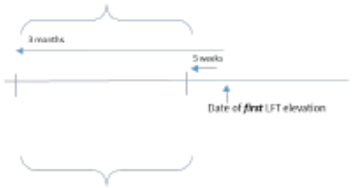
d. The **possible HCV exposure window** may be estimated using NAT for HCV RNA and/or anti-HCV tests. For NAT on average the exposure may have been as early as one-two weeks prior to the last negative HCV NAT result, through one-two weeks before the first positive HCV RNA result. Using anti-HCV results the exposure may have been as early as 6 months prior to the last negative anti-HCV result through eight to 11 weeks prior to the <u>first</u> positive anti-HCV result.

Possible exposure window based on HCV RNA tests

Possible exposure window based on anti-HCV tests

Likely exposure window: ___/___/___ to ___/___/___

e. Elevations in liver function tests when serial testing available, if noted and not clearly ascribed to other clinical comorbidites, may help to define the most likely time of exposure within the window defined by other lab tests. For HBV average time from exposure to <u>first</u> elevation is two months, range 40-90 days. For HCV the average time to first elevation can be as early as 2 weeks, degree and duration of ALT may be variable.



Most likely segment of HBV exposure window based on ***first*** (not highest) elevation in LFTs, if serial LFT data available

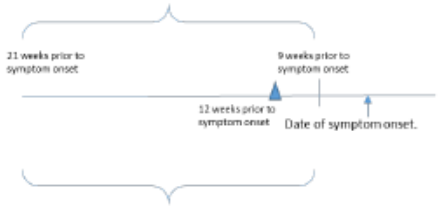
Most likely segment of HCV exposure window based on ***first*** (not highest) elevation in LFTs, if serial LFT data available

Likely exposure window: ___/___/___ to ___/___/___

2. For patients with discrete onset of signs/symptoms such as jaundice

Fill in date of onset and symptoms: _____ Date __/__/____

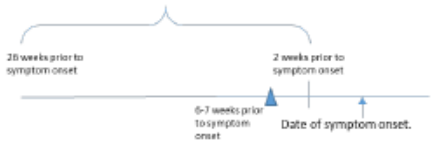
For HBV the average onset of signs/symptoms (when present) is at 12 weeks after exposure, with a range of 9-21 weeks.



Most likely segment of HBV exposure window based on onset of symptoms, when present

Likely exposure window: ___/___/___ to ___/___/___

For HCV the average onset of symptoms (when present) is 6-7 weeks after exposure with a range of 2-26 weeks.



Most likely segment of HCV exposure window based on onset of symptoms, when present

Likely exposure window: ___/___/___ to ___/___/___

3. For patients who have only a single positive test and no (or nonspecific) symptoms,

a. While an exact exposure window cannot be determined, recent potential healthcare exposures over a period of some months may be taken into consideration to determine possible times when exposure may have occurred that are most feasible for investigation.

Worksheet summarizing guidance for determining possible exposure window for persons with new HBV diagnosis

Options to Estimate First Date of Incubation Period	1) Fill in the Date of Test:	2) Subtract:	3) Equals Estimated First Date of Incubation Period	Options to Estimate Last Date of Incubation Period	4) Fill in the Date of Test:	5) Subtract:	6) Equals Estimated Last Date of Incubation Period
Last negative HBV DNA		12 weeks		First positive HBV DNA		1-3 weeks	
Last negative HBsAg		12 weeks		First positive HBsAg		1-3 weeks	
First elevation in ALT*		3 months		First elevation in ALT*		6 weeks	
Onset of symptoms		21 weeks		Onset of symptoms		9 weeks	
Single positive HBV DNA or HBsAg and no symptoms or prior test results		1 year^					
Summary Date(s):				Summary Date(s):			

*This assumes that serial ALT levels are collected in an ongoing fashion.

^ This recommendation should be considered in the context of all available evidence. If no other data are available, this is a reasonable option.

Options to estimate first date of exposure window	1) Fill in the date of test:	2) Subtract:	3) Equals estimated first date of exposure window	Options to estimate last date of exposure window	4) Fill in the date of test:	5) Subtract:	6) Equals estimated last date of exposure window
Last negative HCV RNA		1-2 weeks		First positive HCV RNA		1-2 weeks	
Last negative anti-HCV		6 months		First positive anti-HCV		8 weeks	
				First elevation in ALT*		2 weeks	
Onset of symptoms		26 weeks		Onset of symptoms		2 weeks	
Single positive HCV RNA or anti-HCV and no symptoms or prior test results		1 year^					
Summary Date(s):				Summary Date(s):			

*This assumes that serial ALT levels are collected in an ongoing fashion.
^ This recommendation should be considered in the context of all available evidence. If no other data are available, this is a reasonable option.

References

1. CDC. Healthcare notification and testing toolkit. Bloodborne Pathogens Testing. https://www.cdc.gov/hepatitis/outbreaks/toolkit.htm Accessed November 26, 2018.

2. CDC. Recommendations for Identification and Public Health Management of Persons with Chronic Hepatitis B Virus Infection. Morb Mortal Wkly Rpts 2008, 57 (RR08). **https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5708a1.htm**

3. CDC. Recommendations for Prevention and Control of Hepatitis C Virus (HCV) Infection and HCV-Related Chronic Disease. Morb Mortal Wkly Rpts 1998, 47 (RR19). **http://www.cdc.gov/mmwr/PDF/RR/RR4719.pdf**

4. CDC. Viral Hepatitis Serology training: **https://www.cdc.gov/hepatitis/resources/healthprofessionaltools.htm** Accessed 11/26/2018.

5. Association of Public Health Laboratories. Interpretation of Hepatitis C Virus Test Results: Guidance for Laboratories: https://www.aphl.org/aboutAPHL/publications/Documents/ID-2019Jan-HCV-Test-Result-Interpretation-Guide.pdf Accessed 1/28/2019.

Note that persons with past resolved HBV (HBsAg negative, total anti-HBc positive) or occult HBV infection (intermittent HBsAg positive with low-level or undetectable HBV DNA measurements; total anti-HBc positive) may reactivate to active HBV replication during periods of substantial immune compromise **https://www.cdc.gov/hepatitis/hbv/hbvfaq.htm**

Part 3. Sample PATIENT INTERVIEW

Note: questions for internal health department use only

Date Interview Completed (mm/dd/yy): _____/_____/_____ Interviewer _____

DEMOGRAPHIC INFORMATION

PRIMARY RESIDENCE: State: _____ County: _____

RACE (check all that apply):

__American Indian/Alaska Native
__Black or African American
__White
__Asian
__Native Hawaiian or Other Pacific Islander
__Other Race, specify: _____

ETHNICITY: Hispanic, Latino/a or Spanish origin? ___Yes ___No ___Unk

SEX: ___Male ___Female ___Unk

PLACE OF BIRTH: ___USA ___Other, specify:_____

DOB: __ __ / __ __ / __ __ __ __ **AGE:** ___ ___ (years)

MEDICAL INSURANCE:

___Private Insurance
___HMO
___Military
___Medicaid
___Medicare
___Uninsured
___Refused
___Unknown

OCCUPATION/SETTING:

___Food Service
___Day Care
___Health Care
___Student/School
___Corrections Works
___Other Occupation, specify:
____Unknown

PATIENT HISTORY

Note: encourage participants to have a calendar in front of them during the interview, and to gather other relevant paperwork, such as an appointment calendar, insurance statements, canceled checks or credit card statements. Some physicians also send email and text reminders for appointments and they may supply discharge instructions or after care instructions with a signature and date. Pill bottles will have date of prescription and might provide memory prompts if a prescription was written at the time of a procedure. Dates of holidays (July 4, Memorial Day, Thanksgiving ...) can also serve as memory prompts. Some physicians also have an electronic patient portal that may provide information on dates of procedures. Informal date estimates may be checked against medical records.

1. Before your recent illness were you ever diagnosed with hepatitis? ___Yes ___No ___Unk
   a. If yes, do you recall approximately when this occurred or what type of hepatitis it was (prompt: A, B, C, serum, infectious, autoimmune): type _____ year __ __ __ __
      If yes for hepatitis B or C: Did you develop chronic infection? ___Yes ___No ___Unk
   b. If no, did you ever have an illness marked by jaundice (yellowing of the skin or eyes)?
      ___Yes ___No ___Unk

2. Have you tried to donate blood any time since 1970? ___Yes ___No ___Unk
   If yes, (specify most recent year __ __ __ __)
   a. If yes, were you ever told that your blood could not be accepted or used? ___Yes ___No ___Unk
      If yes, please specify reason: _____

3. Did you ever receive hepatitis B vaccine? ___Yes ___No ___Unk
   If yes, how many shots? ___1 ___2 ___3+
   When was the last shot received? ___/___/_____

4. a. Do you have difficulty dressing, bathing, or getting around inside the home?
      ___Yes ___No ___Unk
   b. Do you have difficulty going outside the home alone to shop or visit a doctor's office?
      ___Yes ___No ___Unk

Read to patient: **"For the remaining questions, the time period we are interested in is the likely exposure window, that is, the period between** ***(fill in estimated dates)*** **___/____/____ and ___/____/____."**

5. During the exposure window were you a contact of a person who you were aware had acute or chronic hepatitis B or hepatitis C virus infection?

___Yes ___No ___Unk

If yes, specify type of contact:

___ Hepatitis B ___ Hepatitis C ___ hepatitis of unknown type

Household [Non-sexual]: ___Yes ___No ___Unk

Sexual: ___Yes ___No ___Unk

Other: _____

6. During the exposure window did you:

a. Receive a tattoo or body piercing? ___Yes ___No ___Unk

If yes, specify location (for example, commercial tattoo parlor, prison, from a friend, at a tattoo or piercing party): _____

b. Travel outside the United States or Canada? ___Yes ___No ___Unk

If Yes, specify locations (Country) and approximate dates:

1)_____ from ___/____/____ to ___/____/____

2)_____ from ___/____/____ to ___/____/____

3)_____ from ___/____/____ to ___/____/____

c. Work in a medical field involving contact with human blood or body fluids?

___Yes ___No ___Unk

d. Work in a dental field involving contact with human blood or body fluids?

___Yes ___No ___Unk

e. Work in any other setting where you possibly could have had contact with human blood or body fluids? ___Yes ___No ___Unk

If yes, specify setting: _____

If yes, specify body fluid: _____

f. Have an accidental stick or puncture with a needle or other object possibly contaminated with human blood or body fluids? ___Yes ___No ___Unk

If yes, specify the date: __/___/___, setting: _____

If yes, specify body fluid: _____

g. Reside (live in) a long term care facility? ___Yes ___No ___Unk

If yes, for how long_____

h. Receive medical care in your home from visiting nurses or certified health professional?

___Yes ___No ___Unk

If yes, specify:

1. Type of care provided _____

Frequency: ____ times/month or____ times/week

2. Type of care provided _____

Frequency: ____times/month or ____ times/week

3. Type of care provided _____

Frequency: ____ times/month or____ times/week

4. Type of care provided _____

Frequency: ____ times/month or ____ times/week

i. Receive medical care in your home from relatives or other persons? ___Yes ___No ___Unk

If yes, specify and *include dates on healthcare exposure table, final page*:

1. Type of care provided _____

Frequency: ____ times/month or____ times/week

2. Type of care provided _____

Frequency: ____times/month or ____ times/week

3. Type of care provided_____

Frequency: ____ times/month or____ times/week

4. Type of care provided _____

Frequency: ____ times/month or ____ times/week

j. Go to a doctor, nurse, or other healthcare provider for any reason? ___Yes ___No ___Unk

7. In the next section, we will review some different types of health care encounters you may have had during the exposure window. *(Note: if subject denies any healthcare whatsoever, explain that we still need to take a minute to review the following list because it includes some things that people sometimes don't think of as healthcare. Use explanation of procedure in parenthesis if participant is not familiar with procedure.)*

(Check all that apply)

PLEASE INDICATE WHETHER THE TREATMENT WAS RECEIVED AS A HOSPITAL INPATIENT (H), AT AN OUTPATIENT CLINIC (O), OR BOTH

___ 1. Dental work or visit a dentist
___ 2. Podiatry care (i.e., did you see a foot doctor)?
___ 3. Skin care procedure (i.e., from a dermatologist)?
___ 4. Cosmetic procedure (i.e. from a dermatologist or plastic surgeon)?
___ 5. Blood sugar [glucose] levels:
If yes, did you share any testing equipment with another person? ___Yes ___No ___Unk
If yes, specify: fingerstick device / lancet / meter / other _____
___ 6. Fingerstick for blood donor assessment or any other reason?
___ 7. Blood tests (i.e., have blood drawn)
___ 8. Dialysis *(Blood is pumped from the body into a filter (dialyzer) where waste products and extra fluid are removed. The filtered blood is then pumped back into the body)*
___ 9. Apheresis *(Blood is pumped from the body and a component of blood is removed from the blood. The blood is then pumped back into the body)*
___ 10. Flu shot or other vaccines
___ 11. Shots for arthritis or joint problems
___ 12. Steroid injections
___ 13. Injections for pain relief or other treatment at a pain clinic
___ 14. Allergy injections
___ 15. Vitamin injections (i.e. B_{12})
___ 16. Care from a traditional healer or herbalist
___ 17. Injections of any kind not already mentioned
___ 18. Acupuncture

___ *19.* Chelation therapy *(A chemical process in which a synthetic solution—EDTA is injected into the bloodstream to remove heavy metals and/or minerals from the body (used to treat lead poisoning)*

___ 20. Chemotherapy for cancer treatment

___ 21. Blood products including transfusion or platelets

___ 22. Intravenous (IV) fluids or medicines not already mentioned

___ 23. Radiation therapy

___ 24. X-rays

___ *25.* Imaging scans (including CAT-scans, PET-scans, MRI)

(CAT scan or Computer axial tomography uses X-rays and computers to produce an image of a cross-section of the body. Dye may be injected into a vein or taken orally so the radiologist can better see the body structures better)

(PET scan or Positron emission tomography is a test that combines computed tomography (CT) and nuclear scanning. During a PET scan, a radioactive substance called a tracer is combined with a chemical (such as glucose); this mixture is generally injected into a vein (usually in the arm) but on occasion may be inhaled.)

(MRI or Magnetic resonance imaging is a test that uses a magnetic field and pulses of radio wave energy to make pictures of organs and structures inside the body)

___ 26. Any other imaging exams, specify: _____

___ *27.* Injected Imaging Dye (From one of the above imaging tests or another imaging test)

Specify:_____

___ *28.* Vaginal ultrasound (*ASK FEMALES ONLY. A technician inserts a sonogram probe into the vagina and aims sound waves into the pelvic cavity to take pictures of reproductive organs)*

___ 29. Hospital emergency department visit

___ 30. Hospitalization requiring overnight stay

___ 31. Anesthesia *(Medicine to "put you to sleep" or make you numb to pain during a medical procedure)*

___ 32. Surgery or any operation as inpatient or outpatient

___ *33.* Biopsies as inpatient or outpatient *(A small sample of tissue is removed from an area of the body to test for cancers or other health conditions)*

___ 34. Wound care

___ *35.* Colonoscopy *(Colonoscopy is a test to look at the interior lining of the large intestine via a scope)*

___ 36. Sigmoidoscopy *(Similar to a colonoscopy but only shows the rectum and the lower third of the colon)*

___ *37.* Other endoscopy *(Endoscopy is a nonsurgical procedure used to examine a person's digestive tract)*

___ *38.* Laparoscopic procedures *(Laparoscopy is a surgical procedure that uses a thin, lighted tube called a laparoscope inserted through an incision in the abdominal wall to examine the abdominal organs or female pelvic organs)*

___ 39. Arthroscopic procedures *(Arthroscopy is a surgical procedure to look at the inside of a joint in the body through a thin viewing instrument called an arthroscope)*

___ 40. Any other procedure referred to as "scoping" such as cystoscopy and ureteroscopy (A cystoscopy or ureteroscopy is a procedure where your physician inserts a flexible scope through your urethra to see inside your bladder and/or urethra)
Specify: _____

___ *41.* Cardiac catheterization (*A thin flexible tube called a catheter is threaded through a blood vessel in your arm or groin and into your heart. Through the catheter, your doctor can measure pressures, take blood samples, and inject contrast material into the coronary arteries to trace the movement of blood through the arteries)*

___ *42.* Cataract or other eye surgery

___ 43. Laser procedures, specify: _____

___ 44. Medical procedure or operation not already mentioned

Note: If the respondent answered yes to any of the above, complete the Healthcare Event Table at the end.

SENSITIVE QUESTIONS:

I will now ask you several questions that may be of a sensitive nature, but which are important because these activities can explain why some people become infected with hepatitis B or C. Remember that all the information you share is confidential and you can refuse to answer any of the questions. However it would be helpful to have a complete response.

8. During exposure window, did you have any sexual partners? ___Yes ___No ___Unk

If Yes, a. How many female sex partners did you have? _____ (number of partners)

b. How many male sex partners did you have? _____ (number of partners)

9. During exposure window, did you

a. Inject with a needle any drug that was not prescribed by a doctor? ___Yes ___No ___Unk

b. Use street drugs but not inject with a needle (for example snorted)? ___Yes ___No ___Unk

c. Spend more than 24 hours in jail or prison? ___Yes ___No ___Unk

10. Have you ever in your life injected drugs with a needle not prescribed by a doctor?

___Yes ___No ___Unk

MISCELLANEOUS:

11. In the exposure window, were you involved in any situations that exposed you to someone else's blood that was not otherwise covered by this survey? ___Yes ___No ___Unk

If yes, specify: _____

12. How do you think you got hepatitis? _____

_____

_____

Thank you. I appreciate the information you provided.

Do you have any other questions about the interview, or hepatitis?

SAMPLE HEALTHCARE EXPOSURES TABLE

EVENT or PROCEDURE (cross-ref to listed events from interview)	Health Care Provider Name and Specialty	Address and Telephone of Event Office or Location	START DATE	END DATE	Frequency	Injections	Infusions	Notes
			/ /	/ /	1 2 3-5 6-10 10+	Y N #	Y N #	

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Example spreadsheet for tracking evolving HBV serology and clinical events over time

Date	12/21/2017	1/4/2018	1/9/2018	2/23/2018	3/12/2018	3/14/2018	4/3/2018	4/9/2018	4/13/2018	5/6/2018	5/23/2018	5/30/2018
Location	hospital in state x	outpatient dialysis facility in state x, # patients	"	outpatient dialysis facility in state y, # patients	"	"	"	"	"	"	"	"
Event	First-ever dialysis		HBV vaccine dose			started dialysis in isolation for first time						
Labs		HBsAg negative, anti-HBs negative, total anti-HBc negative		routine monthly HBsAg screen = positive, total anti-HBc negative,	HBsAg positive	HBV DNA = 7676 copies or IU/mL	HBeAg positive, HBsAg positive, HBV DNA positive, total anti-HBc negative	IgM anti-HBc negative	total anti-HBc negative	HBV DNA> 100 e^7, total anti-HBc negative, anti-HBs negative	HBsAg positive	total anti-HBc positive, HBsAg positive, anti-HBs negative
Notes (index case age, sex, race, state of residence, other medical conditions)				exposure would have been 1 to 12 weeks prior to this date		facility screens new pts for HBsAg and anti-HBs; every susceptible screened 2nd Tues each month. Note: no additional cases identified in 6 months of testing.		appears to have resolved acute IgM by this time		consistent with evolving acute infection		consistent with evolving acute infection

Appendix E: Sample Provider Letter

NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES
Division of Public Health

ROY COOPER • Governor
KODY H. KINSLEY • Secretary
MARK T. BENTON • Deputy Secretary for Health
KELLY KIMPLE • Acting Director, Division of Public Health

Dear Healthcare Provider,

The North Carolina Department of Health and Human Services (NC DHHS) is investigating an outbreak of Hepatitis B involving patients who resided at a long-term care facility in Elkin, North Carolina. Glucose monitoring was found to be the most likely mode of transmission and may have put patients at risk of acquiring hepatitis B.

NC DHHS recommends that all residents/patients who received glucose monitoring at the facility receive testing for hepatitis B, hepatitis C, and HIV. As you know, patients with hepatitis B virus, hepatitis C virus, and HIV infections may have experienced mild illness for which they never sought medical care, or they may have exhibited no symptoms at all. As a result, NC DHHS felt it was in the best interest of public health to recommend testing. While we believe the risk to residents/patients is exposure to hepatitis B, current recommendations suggest everyone should get tested for all three viruses at least once as part of routine healthcare.

If you determine that your patient should be tested, we are providing specific test names and codes for two commonly used laboratories. If your practice uses a different laboratory, please consult with your laboratory for equivalent tests and codes.

Labcorp –
Hepatitis B surface antigen – Test Code 006510
Hepatitis C Antibody with reflex to Quantitative Real Time PCR – Test Code 144050
HIV p24 Antigen/Antibody with reflex to confirmation – Test Code 083935

Quest -
Hepatitis B surface antigen – Test Code 498
Hepatitis C Antibody with reflex to Quantitative Real Time PCR – Test Code 8472
HIV 1/2 Antigen and Antibodies, Fourth Generation – Test Code 91431

Any positive laboratory results should be faxed to NC DHHS at (919) 733-0490. A communicable disease report should also be sent to the county health department for positive HIV or hepatitis B testing or hepatitis C positive testing with symptoms or labs consistent with acute hepatitis C. You can find a link to the communicable disease report form at this site: https://epi.dph.ncdhhs.gov/CD/docs/ConfidentialCommunicableDiseaseReport_Part1.pdf

NC DHHS has established an email address viralhepatitis@dhhs.nc.gov for patients with questions or concerns about their potential exposure and providers with questions related to this outbreak. Patients may also visit the NC DHHS website for information at https://epi.dph.ncdhhs.gov/cd/hepatitis/individuals.html.

Sincerely,

RGGM II, MD

Richard Moore II, MD
Viral Hepatitis Medical Director
North Carolina Department of Health and Human Services

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES • DIVISION OF PUBLIC HEALTH
LOCATION: 5605 Six Forks Road, Raleigh, NC 27609
MAILING ADDRESS: 1931 Mail Service Center, Raleigh, NC 27699-1931
www.ncdhhs.gov • TEL: 919-707-5000 • FAX: 919-870-4829
AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

Appendix F: Sample Patient Letter

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES
Division of Public Health

ROY COOPER • Governor
KODY H. KINSLEY • Secretary
MARK T. BENTON • Deputy Secretary for Health
KELLY KIMPLE • Acting Director, Division of Public Health

Dear Sir or Madam,

The North Carolina Department of Health and Human Services (NC DHHS) is investigating an outbreak of hepatitis B involving patients who resided at Pruitt Health Elkin, located at 560 Johnson Ridge Road, Elkin, NC 28621. Through the investigation, we identified an issue which could have exposed residents to hepatitis B.

This letter serves as notification that you have been identified by facility records as a former resident and at risk for possible exposure to an infection. **As a precaution and to take appropriate steps to protect your health, we recommend that you be tested for hepatitis C, hepatitis B, and HIV.** We are committed to providing you with support through every step of this process.

It is not possible to determine specifically who may have been exposed, however, **all patients who received blood glucose monitoring at the facility** are thought to be at an increased risk for exposure. As a result, we are notifying all people who received glucose monitoring at Pruitt Health Elkin between 3/7/2022 and 6/15/2024.

People infected with viruses such as hepatitis B, hepatitis C, or human immunodeficiency virus (HIV) may not have symptoms for many years, so you may have been infected and not know it. Even though you may not feel ill or remember getting sick, you should get a blood test to ensure you are not infected. Although testing cannot determine where you were infected (at the facility or at another location), knowing whether you are infected is important, so you can be treated if your test results are positive.

We recommend that you get tested at your healthcare provider's office, as they will be able to best advise you on what to do if your blood test reveals that you have been infected with hepatitis B, hepatitis C, or HIV. Your provider will also be able to advise whether the Hepatitis B vaccination would be recommended if you are not infected. For more information on the Hepatitis B vaccination please visit https://www.cdc.gov/vaccines/vpd/hepb/index.html. If you do not have a regular healthcare provider, you may receive testing at your local health department. To find information on a health department in North Carolina please visit https://www.dph.ncdhhs.gov/contact/LHD. Wherever you choose to be tested, be sure to bring this letter with you to give to your healthcare provider. Information for your provider is included at the end of this letter.

We understand that this may be an upsetting situation for you, and that you and/or your family may have additional questions or concerns about the information you have received. To help answer them, we have established an email address viralhepatitis@dhhs.nc.gov to send any questions you may have. You may also obtain additional information on the North Carolina Department of Health and Human Services website at https://epi.dph.ncdhhs.gov/cd/individuals.html.

Sincerely,

Richard Moore II, MD
Viral Hepatitis Medical Director
North Carolina Department of Health and Human Services

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