

Program Element #24: Multnomah County Hepatitis C Surveillance (MCHS)

1. **Purpose of MCHS.** Funds provided under the Agreement for this Program Element may only be used, in accordance with and subject to the requirements and limitations set forth below, to establish and conduct a population-based surveillance of persons in Multnomah County diagnosed with the hepatitis C virus (“HCV”), as reported to LPHA by medical laboratories in Multnomah County, to:
 - a. Describe the demographic and clinical characteristics of and risk factors for HCV in persons reported to the Multnomah County Health Department;
 - b. Conduct enhanced surveillance for HCV in the subset of patients aged 15-30 years to improve ascertainment of acute cases of HCV and better describe recent transmission patterns;
2. **Definitions Specific to MCHS:**
 - a. **ORPHEUS:** a database developed and maintained by the Department for use by LPHAs to report cases of communicable diseases electronically to the Department.
 - b. **Confirmed Hepatitis C Chronic Case:** an individual with one of the following:
 - 1) Anti-HCV positive by EIA with a signal to cut-off ratio predictive of a true positive as determined for the particular assay; or
 - 2) RIBA positive; or
 - 3) PCR (qualitative, quantitative, or genotype) positive; or
 - 4) previously reported as acute HCV (or presumptive chronic HCV) with a subsequent positive RIBA, PCR or genotype result >6 months later.
 - c. **Presumptive Hepatitis C Chronic Case:** An individual who is anti-HCV positive (repeat reactive) by EIA, and has ALT or SGPT valued above the upper limit of normal, but the EIA has not been verified by a more specific assay and the signal to cut-off ratio is unknown. If the signal to cut-off ratio is low (and no other testing has been done) the individual is not considered to have HCV.
3. **Procedural and Operational Requirements.** LPHA’s MCHS must be conducted in accordance with the following procedural and operational requirements:
 - a. LPHA must assign adequate staff to conduct the work. The only staff that may be assigned to the work are:
 - i. Assigned case investigator (REA1, REA2, REA Sr., DIS or CHN up 1.00 FTE) who will be assigned to conduct interviews of individuals 15 – 30 years of age diagnosed with HCV, and to attempt to obtain minimal demographic and clinical data from each patient’s health care provider for individual diagnosed with HCV,
 - ii. Infection control professional (as needed) with certification in infection control (CIC) who must be assigned to assist with investigations into possible cases of viral hepatitis acquired in healthcare settings, provided a CIC certified infection control professional is in the employ of LPHA at the time such assistance is requested by the Department. Absent an infection control professional with CIC, support can be provided by a

registered nurse with at least two of the last four years of professional work as an infection control practitioner.

- iii. Office Assistant or Health Assistant (OA1, OA2, OA Sr., HA1, or HA2 as needed up to 0.2 FTE) who could be assigned to assist with data entry of the large volume of HCV cases received by Multnomah County, and with support functions like the physical faxing of forms to providers.
 - iv. Data Analyst, Sr (as needed up to 0.05 FTE) to assist with data quality reviews and budget estimates as requested by state staff.
 - v. Program Supervisor (as needed up to 0.05 FTE) to supervise the work of the REA1, including performance reviews as required by county Human Resources; and to coordinate the response to requests from state staff regarding elements of the work performed.
- b. LPHA must establish and maintain a general surveillance system for all individuals in Multnomah County newly-reported with confirmed or presumptive HCV, by:
- i. Confirming the diagnosis of HCV of individuals reported to LPHA by medical laboratories in Multnomah County.
 - ii. Attempting to obtain minimal demographic and clinical data from each patient's health care provider, using the form attached (Attachment 1)
- c. LPHA must attempt to interview all individuals aged 15-30 years in Multnomah County newly reported with confirmed or presumptive HCV, by:
- i. Identifying individuals aged 15-30 years reported to the LPHA each month with a confirmed HCV diagnosis. Contacting each patient's provider to verify the diagnosis and obtain clinical symptoms, reason for testing and consent to contact the patient. Consent is not needed for patients seen in emergency rooms, jail, blood donation centers, and employee health, or for those tested for the purpose of life insurance.
 - ii. Making at least 3 attempts to contact patients aged 15-30 years via phone, secure text message, or secure email. Interviewing each individual contacted to gather additional information as needed to complete the Department's case report form for cases of chronic HCV. LPHA must use the form attached hereto as Attachment 3 and incorporated herein by this reference, to interview the individual.
- d. LPHA shall report data on cases of HCV obtained under parts 3.b and 3.c. to Department using ORPHEUS.
- e. LPHA will assist in investigations of possible cases of viral hepatitis acquired in healthcare settings in Multnomah County, by having a certified infection control professional or other experienced staff as defined in 3.a.ii. assigned to assist with investigations in healthcare settings, following draft guidelines issued by CDC in Attachment 4, provided a certified infection control professional or other staff as defined is in the employ of LPHA at the time such assistance is requested by the Department.

4. **Reporting Obligations and Periodic Reporting Requirements.** In addition to the reporting obligations set forth in Section 8 of Exhibit E of this Agreement, LPHA shall participate in quarterly conference calls with Department to track interviewed cases and review quality of data.

HEALTH DEPARTMENT

TO:		FROM:		Date:	# of pages	Request	REPLY NEEDED	URGENT
FAX #:		X		1			X	
RE:								
DOB:								
Date of report:								
DX:		HEPATITIS C		FAX # 503-XXX-XXXX				

_____ County Health Department received a report on the referenced individual regarding **Hepatitis C** (HCV), as required by Oregon State Reporting laws **ORS 433.006; OAR 333-018-0000 TO 333-018-015**. In accordance with Communicable Disease ordinances we are requesting additional information on the referenced client. **YOU ARE BEING CONTACTED AS THE ORDERING PROVIDER/FACILITY LISTED BY THE REPORTING LAB. PLEASE COMPLETE THIS FORM AS MUCH AS POSSIBLE. AND RETURN TO OUR OFFICE IN A TIMELY MANNER. THANK YOU.**

<p>Are you the primary care provider for the above referenced individual? <input type="checkbox"/> Yes <input type="checkbox"/> No (if no, please provide PCP information below)</p> <p>Provider: _____ Phone: _____</p> <p>Is the client insured? <input type="checkbox"/> Private <input type="checkbox"/> Public <input type="checkbox"/> No insurance <input type="checkbox"/> UNK</p> <p>Has this client been notified of lab results? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Your diagnosis of HCV infection? <input type="checkbox"/> Acute <input type="checkbox"/> Chronic <input type="checkbox"/> Resolved <input type="checkbox"/> False + <input type="checkbox"/> Unknown <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Has this client been referred to a GI or Hepatologist? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Currently or previously received HCV treatment? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Does this client have cirrhosis? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Under evaluation <input type="checkbox"/> Unknown</p> <p>Patient contact information: Address: _____ Phone: _____</p> <p>Ethnicity: <input type="checkbox"/> Hispanic <input type="checkbox"/> Non-Hispanic Race: <input type="checkbox"/> White <input type="checkbox"/> Black <input type="checkbox"/> Asian/Pacific Islander <input type="checkbox"/> American Indian/Alaska Native <input type="checkbox"/> UNK Other: _____</p> <p>Country of Origin: <input type="checkbox"/> US <input type="checkbox"/> Other: _____ <input type="checkbox"/> Unknown</p> <p>Language: <input type="checkbox"/> ENG <input type="checkbox"/> Other: _____</p> <p>Occupation: _____ <input type="checkbox"/> Unknown</p> <p>Has client been provided education/ literature or counseling regarding HCV? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown</p>		<p>REASONS FOR TESTING</p> <p>Symptoms of acute hepatitis? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Screening of asymptomatic patient with reported risk factors? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Screening of asymptomatic patient with no reported risk factors (e.g., patient requested)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Prenatal screening? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Evaluation of elevated liver enzymes? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Blood/organ donor screening? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Follow up testing for previous marker of viral hepatitis? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK Other: _____</p> <p>Hep A and Hep B vaccination status: Received Hep A vaccine? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK If yes, date 1: _____ date 2: _____ Hx of HAV? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK Received Hep B vaccine? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK If yes, date 1: _____ date 2: _____ date 3: _____ Hx of HBV? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK Is client insured? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Is the patient a man who has ever (even only once) had sex with another man? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Indicate number of lifetime female sexual partners <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2-5 <input type="checkbox"/> >5 <input type="checkbox"/> UNK</p> <p>Indicate number of lifetime male sexual partners <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2-5 <input type="checkbox"/> >5 <input type="checkbox"/> UNK</p>		<p>RISK FACTORS FOR HCV INFECTION</p> <p>Received blood transfusion prior to 1992? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Received organ transplant prior to 1992? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Received clotting factor concentrates produced prior to 1987? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Ever on hemodialysis? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Employed in medical or dental field involving direct contact with human blood? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Ever a contact of a person who had hepatitis C? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK If yes, type of contact: <input type="checkbox"/> sexual <input type="checkbox"/> needle <input type="checkbox"/> household (non-sexual) <input type="checkbox"/> other: _____</p> <p>Ever injected drugs not prescribed by a doctor even if only one or a few times? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK If yes, year of most recent injection drug use: _____</p> <p>Ever incarcerated? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p> <p>Ever treated for a sexually transmitted disease? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> UNK</p>	
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MULTNOMAH COUNTY OREGON

HEALTH DEPARTMENT CLINICAL STANDARDS

SECTION: Community Health Services	NUMBER: ? PREVIOUS NUMBER:
CHAPTER: Communicable Disease Services	ORIGINATED: 01/10 LAST REVIEW DATE: 06/11
TITLE: Procedure for Chronic Hepatitis C Case Interviews in Communicable Disease Services	
APPROVED BY: Gary Oxman	CONTACT PERSON/S: S. Holden/G. Oxman
PAGE 1 OF 2	# Attachments: None
Applies to: CHNs, and REA1s in Communicable Disease Services	

PURPOSE STATEMENT:

Multnomah County Health Department Communicable Disease Services investigates all chronic hepatitis C cases in Multnomah County per [Oregon Administrative Rules](#). Beginning January 1st, 2010, presumptive and confirmed chronic hepatitis C cases between the ages of 18 to 30 will be interviewed according to [Oregon state investigative guidelines](#). Beginning July 1, 2011, the age range for cases to be interviewed will expand to persons 15 to 30 years of age.

GOALS:

- Define role of the REA1 and Communicable Disease (CD) Nurses in case interview process.
- Interview all chronic hepatitis C cases 15-30 years of age.
- Assure cases are offered results counseling and health education by a licensed clinician (STD clinicians and CD nurses)
- Assure case interviews are conducted in a timely, confidential, and empathic manner with client's consent.

PROCEDURE

Who is responsible?	Action
REA1	<ol style="list-style-type: none"> 1. Check for new cases in Orpheus after receiving daily ELRs 2. Repeat lab reports of existing cases: Link to existing cases 3. Follow state Investigative Guidelines and Forms for interviews and case follow-up. 4. PRIOR TO CASE INTERVIEW: <ol style="list-style-type: none"> a. Call provider to obtain the following info and document in case's report in Orpheus: <ol style="list-style-type: none"> i. Verify diagnosis status ii. Clinical symptoms if any, including jaundice and pregnancy

- iii. Reason for testing and
- iv. Consent to contact case and date ok to contact case
 - 1. Consent is not needed for patients seen in *emergency rooms, jail, blood donation centers & employee health or tested for the purpose of life insurance.*

5. ATTEMPTS TO CONTACT CASE FOR INTERVIEW:

- a. Three attempts will be made to contact a case using any of the following communication tools in the following order:
 - i. **Phone call:** Call client from a cell phone (make one attempt in evening or on a weekend)
 - ii. **Texting:** Texting is another important tool to reach cases for interviewing. Texting must comply with County policies to protect Private Health Information (PHI), which includes any information that identifies the client, the clinic, or anything considered PHI. Only use the following sample texts to send a client to request an interview:
 - 1. **“Important matter, please call.”** or
 - 2. **“Please call Mult Co staff to discuss recent tests.”**
 - iii. **Text Reply:** If client responds to phone call with a text, reply:
 - 1. “I am not able to give you the specific information in a text message, please call me” or
 - 2. I have confidential information for you, please call me”
 - iv. **Use of secure email:** Secure e-mails must be used when communicating with case, lab or their physician using County Google secure email only.
 - 1. **DO NOT** use personal email or regular County Google email.
 - 2. Follow County secure email procedures, as outlined in <http://mints.co.multnomah.or.us/health/hdpolicy/leg/leg.02.02a.pdf>
 - 3. Always remember: MCHD confidentiality policies and procedures apply for on-line communications.
 - 4. **Time of day and frequency to check e-mails:** Schedule yourself to be in the office for the first and last hour of each business day to both send and respond to e-mails. Check the Internet account for e-mails at least 3 times a day.
 - 5. **To respond to e-mail use the following:**
 - a. **Subject field:** Use one of the following: **“Important health matter”, “Please call Mult Co staff to discuss recent tests.”** Put case’s first name **ONLY** in the subject field.
 - b. **Body of the message:** use the following message

Dear _____,

I have been attempting to contact you regarding your recent hepatitis C laboratory test at _____(name of clinic).

This is an important matter that I need to discuss with you. Due to Multnomah County email and privacy policies, I cannot be more specific in this e-mail. I can provide more information when we talk by phone.

Please call me at 503-988-5090 extension 26759. If I don’t answer, please leave a message

with the best phone number and time to reach you. My voicemail is confidential, and I will call you as soon as possible.

I hope to talk with you soon.

Sincerely,

*Multnomah County Hepatitis C Program
426 SW Stark, 3rd floor
Portland, OR 97204*

v. As needed, check with Corrections if case is in custody.

- b. After three attempts at calling/texting or emailing and the case is still unreachable, the hepatitis C notification letter will be sent (Attachment A). If there is no address for the case, contact Department of Motor Vehicles (DMV) for address.

6. CASE INTERVIEW:

- a. When case is reached by phone for interview, verify case identity by asking the person to verify his/her name and birth date, approximate date of recent hepatitis C test, or name of provider/clinic that performed the test.
- b. Introduce yourself and why you are calling using this script *"This is _____ (name of staff member) and I work with Multnomah County Health Department. When your health care provider orders a hepatitis test, the laboratory doing the test routinely reports the results to the Health Department. We recently received a report that you had some hepatitis testing done. I'd like to see if you know the results of your hepatitis test?"*
- c. Specifically, verify the answer to the question below before proceeding with the case interview:
- i. *"Has a health care provider or nurse counseled you about your test results?"* If the answer is
1. NO: Offer the client the following sources of results counseling:
- a. Case may qualify for counseling services available through the Multnomah County STD Clinic. Contact the STD Clinic for current qualifications and service availability, and if qualified, case can make an appointment to see a health care provider for results counseling in-person.
- b. Case can be referred to speak with a communicable disease nurse. Inform case that a nurse will call him/her back to address his/her concerns. Inform client that the nurse can also vaccinate them for hepatitis A and B.
- i. Refer case to the CD Nurse of the Day.
- c. Ask case for consent to either answer interview questions now or after results counseling (see "d" below). Negotiate for interview date and time as appropriate.
2. YES: Proceed to "d" below unless case requests further health education/counseling first. Negotiate for interview date and

	<p>time as appropriate.</p> <p>d. Ask for interview consent: <i>“May I have a few minutes of your time to ask about your experience with chronic hepatitis C? This will include sensitive questions related to any history of drug use or sex practices. May I continue?”</i></p> <p>i. If case consents, proceed with interview questions per State guidelines using case report form.</p> <p>ii. Negotiate for an interview at a later time if case declines an interview at this time for different reasons.</p> <p>7. DOCUMENTATION:</p> <p>a. Document all attempts to contact cases/contacts in “Notes” section of Orpheus..</p> <p>i. Cut/paste emails into “Notes” to document all communications.</p> <p>b. Complete all relevant documentation from case interview into Orpheus case report and close case.</p> <p>c. File paper copy of case report per current protocols.</p>
Communicable Disease Nurse	<p>1. When cases are referred by REA1 for results counseling or health education (Q&A) about chronic hepatitis C, call case back to provide counseling services.</p> <p>a. Review case report prior to calling case</p> <p>b. Refer to CHS.01.04 Hepatitis C Counseling Testing & Referral for STD Program & HIV Hepatitis C Community Programs Table 4 for guidelines on providing information related to living with chronic hepatitis C.</p> <p>c. Refer to hepatitis C Oregon state investigative guidelines</p> <p>d. Document education provided in Orpheus case report.</p>

Attachment:

Hepatitis C Notification Letter

References:

1. Oregon Administrative Rules: <http://www.oregon.gov/DHS/ph/acd/oars/rules.shtml>
2. Oregon Investigative Guidelines for Hepatitis C:
<http://www.oregon.gov/DHS/ph/acd/reporting/guideln/hepc.pdf>

Last review date: June 2011

PATIENT'S NAME •

PATIENT HISTORY / RISK FACTORS

☐ patient could not be interviewed ☐ no risk factor identified ☐ no investigation required

yes no unk

- ☐ ☐ ☐ Received a blood transfusion prior to 1992
☐ ☐ ☐ Received an organ transplant prior to 1992
☐ ☐ ☐ Received clotting factor concentrates produced prior to 1987
☐ ☐ ☐ Ever on long-term hemodialysis
☐ ☐ ☐ Employed in a medical or dental field involving direct contact with human blood
☐ ☐ ☐ Ever a contact of a person who had hepatitis

If yes, type of contact:

- ☐ ☐ ☐ sexual
☐ ☐ ☐ household (non-sexual)
☐ ☐ ☐ other _____

yes no unk

- ☐ ☐ ☐ Ever injected drugs not prescribed by a doctor even if only once
 If yes, primary drug injected (select only one):
☐ Heroin ☐ Methamphetamine/Speed
☐ Cocaine ☐ Speedball (cocaine & heroin together)
☐ Other _____

Year of most recent injection drug use (if applicable): _____

- ☐ ☐ ☐ Ever incarcerated
☐ ☐ ☐ Ever had a sexually transmitted disease
☐ ☐ ☐ Is the patient a man who has ever (even if only once) had sex with another man (MSM)?

How many sex partners has the patient had (approximate lifetime)? _____

FOLLOW-UP

yes no unk

- ☐ ☐ ☐ Is the seeing a provider for their chronic hepatitis C infection?
☐ ☐ ☐ Has the patient ever taken any medications prescribed by a medical doctor for their chronic hepatitis C?

CASE-CONTACT MANAGEMENT

Case education provided? ☐ yes ☐ no ☐ unknown If yes, date ____/____/____

Ask about other potential contacts (sexual, needle-sharing, etc.) within the period of communicability.

☐ no other contacts identified

Name	Age	Relation to Case	Date Contacted	Located?	Education Provided:	Tested for HCV?
_____	_____	_____	____/____/____	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes by proxy If yes, date: ____/____/____	<input type="checkbox"/> referred to HCP <input type="checkbox"/> yes <input type="checkbox"/> no tested: ____/____/____

Name	Age	Relation to Case	Date Contacted	Located?	Education Provided:	Tested for HCV?
_____	_____	_____	____/____/____	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes by proxy If yes, date: ____/____/____	<input type="checkbox"/> referred to HCP <input type="checkbox"/> yes <input type="checkbox"/> no tested: ____/____/____

Name	Age	Relation to Case	Date Contacted	Located?	Education Provided:	Tested for HCV?
_____	_____	_____	____/____/____	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes by proxy If yes, date: ____/____/____	<input type="checkbox"/> referred to HCP <input type="checkbox"/> yes <input type="checkbox"/> no tested: ____/____/____

NOTES:

ADMINISTRATION

Chronic Hepatitis C January 2010

Completed by _____ Date Completed _____ Phone _____ Case report sent to OPHD on ____/____/____
 Investigation sent to OPHD on ____/____/____

Appendix 4-CDC Guidelines for Investigation of Hepatitis in Health Care Settings

How to investigate a reported/suspected case of a HBV or HCV infection that might be associated with delivery of healthcare

Step 1 - Verify the diagnosis to determine if index case is indeed acute

- Review clinical presentation to verify that case is consistent with being an incident infection or acute case
- Collect a history of previous relevant testing or other clinical history (e.g. ALT/AST for acute hepatitis C; CD4 count and viral load for HIV)
 - History of recent blood donation
 - Save/collect existing serologic specimens for possible future testing
 - If collecting new samples, aliquot into multiple 0.5mL aliquots and store frozen
 - Serum and plasma are generally acceptable, avoid heparinized (purple top) tubes

Step 2 - Assess community exposures during the incubation period

- If more than one potentially healthcare-related case identified, then rule out common exposures between patients outside healthcare setting
- Examine in depth all relevant community exposures that occurred during the incubation period to rule out other exposures (use Sentinel Counties/other questionnaires)
 - Consider serologic testing of sexual/household contacts

Step 3 - Assess in depth all healthcare exposures during the incubation period

- Identify all possible places that patient had percutaneous exposures or endoscopic procedures (including any injections, phlebotomy, and glucose monitoring, dialysis, invasive diagnostic procedures, or administration of parenteral medications)
 - Determine the nature and type of procedures performed for each healthcare encounter and what if any multiple dose vials were used (especially for narcotics) and if any equipment/devices could be shared between patients
 - If there are multiple potential exposures reported, consider prioritizing investigation based on their timing and nature; for example, exposures that occurred close to the median incubation period prior to onset or that involved repeated parenteral exposure (e.g., periodic injections or infusions) would get higher priority
 - Conduct review of infection control practices related to index patient's procedures especially those related to appropriate use of aseptic technique in the use of multiple dose vials/saline bags
 - Review practices related to handling and use of medications in multiple dose vials/saline bags that could have been used in other procedures prior to index patient procedures
 - Review available medical/surgical/occupational health records to determine if any incidents were reported during patient procedures
 - Consider having healthcare workers conduct mock procedures
 - Review records to identify patients who may have preceded the index case and could be possible sources of infection (especially those that might have had common multiple dose vial/saline bags or shared equipment/devices)
 - Are any patients preceding the index case known to be chronically infected?

- Cross match State/Local health department chronic disease registries (if available) to see if any patients preceding the index case are in the registry
- If in-patient setting, are there any known infected roommates/contacts? (Do not collect serologic samples for testing at this point, just review records to determine infection status)
- Identify staff involved in any percutaneous procedures.
 - Are any staff members known to be HBV/HCV infected? Any evidence of recent infection (e.g., jaundice episodes) among staff members? Any recent performance related staff turnover?
 - Do not collect serologic samples for testing at this point. While maintaining healthcare worker personnel's confidentiality, review records to determine infection status (and vaccination status for HBV investigations)

Step 4 - Look for additional cases that may be healthcare related

- Review hospital/healthcare provider records for other acute cases in the previous several months
- Review State/Local health department acute disease reports for past several months

If no additional cases are identified that are potentially healthcare related or no source patient is identified that is likely related (based on temporal association and results of viral genetic testing)

- If lapses in infection control practice are identified:
 - Depending on nature and severity of infection control lapse, consider doing targeted lookback/epidemiologic study (especially if potential source patients identified) or general patient notification
- If no lapses in infection control practices are identified and no potential source patients identified:
 - End investigation, but continue to monitor state/local health department surveillance data for next several months to ensure no additional cases identified
- If no lapses in infection control practices are identified and potential source patient(s) are identified:
 - Consider collecting serologic sample and examining genetic relatedness of virus between potential source and index case
 - For HCV, compare genotype/subtype and, possibly, relatedness in NS5B region especially for genotype 1a/1b matches since these are very common
 - For HBV, compare subtype and, possibly, genetic sequences
 - For HIV, compare genetic sequences
 - Depending on results of genetic relatedness of between potential source and index case, consider doing targeted lookback/epidemiologic study

If additional cases are identified that are potentially healthcare related or a source patient(s) is identified that is likely related (based on temporal association and results of viral genetic testing)

- Evaluate relationship between cases considering temporal and geographic factors and use of medications in multiple dose vials/saline bags that could have been used between cases and any potential source patients
- If lapses in infection control practice are identified,
 - Conduct targeted lookback or general patient notification depending on nature and severity of infection control lapse
 - Conduct targeted lookback/epidemiologic study
 - Collect serologic samples to perform diagnostic testing and examine genetic relatedness of virus between potential source(s) and case(s)

- For HCV, compare genotype/subtype and, possibly, relatedness in NS5B region especially for genotype 1a/1b matches since these are very common
 - Depending on results, consider examining relatedness of HCV quasispecies (HVR1)
- For HBV, compare subtype and, possibly, genetic sequences
- For HIV, For HIV, compare genetic sequences

Considerations in conducting a targeted lookback/epidemiologic investigation to determine if healthcare-related transmission of HCV/HBV/HIV has occurred

The purpose of a targeted lookback is to identify additional acute cases or source patients and examine potential factors associated with transmission. This should be done in the context of an epidemiologic investigation and results of this study should be used to determine if a general patient notification should be done. Targeted lookbacks should be highly focused with efforts to ensure high participation rates among targeted patients. For example, limiting follow-up to patients seen within several days of the index case(s) and occurring in the same operating room. A staged approach that permits expansion of the targeted patient population may be warranted.

- Which type of study design do you use (cohort/case-control/several cohorts)?
 - What exposure period do you use/how do you match in case-control study
 - How many days/hours to you go on either side of index cases (it is important to include patients seen after the index case in order to identify any “downstream” infections)
 - Establish case definitions (e.g. known/suspected acute or chronic HBV/HCV infection)
- What data do you collect?
 - Examples of data collection forms are available
 - For HBV, what about history of vaccination?
- Example letters to notify patients for serologic testing
- Lab considerations
 - Need for subtyping/genotyping vs. sequencing genome
 - How to store/ship specimens

Appropriate public health follow-up/intervention when evidence of healthcare related transmission or serious lapse in infection control practice is discovered (i.e. general patient notification)

The purpose of a general notification to inform patients deemed to be at some risk of infection due to delivery of healthcare. While data from a notification of patients can be used to examine the nature and extent of transmission, it is often best viewed as a separate undertaking from a lookback conducted as part of an epidemiologic study. This is primarily due to issues related to incomplete serologic testing of patients in the identified cohort (lack of complete denominator data) and the length of time it takes to complete general lookbacks.

- Provide example letters of patient notifications
- Assess the need to inform licensing authorities