



Massachusetts Department of Public Health

Acute Hepatitis C Investigations For Local Boards of Health

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Overview

- Characteristics of hepatitis C, and how it is transmitted
- The epidemic in Massachusetts
- Public health investigation of suspected acute hepatitis C infections

The ABCs of Viral Hepatitis

- Hepatitis A – (fecal-oral transmission; vaccine available)
- Hepatitis B – (blood-borne transmission; vaccine available)
- **Hepatitis C – (blood-borne transmission; no vaccine available)**
- Hepatitis D – (blood-borne transmission; requires existing infection with hepatitis B)
- Hepatitis E – (fecal-oral transmission; rare in the U.S.)

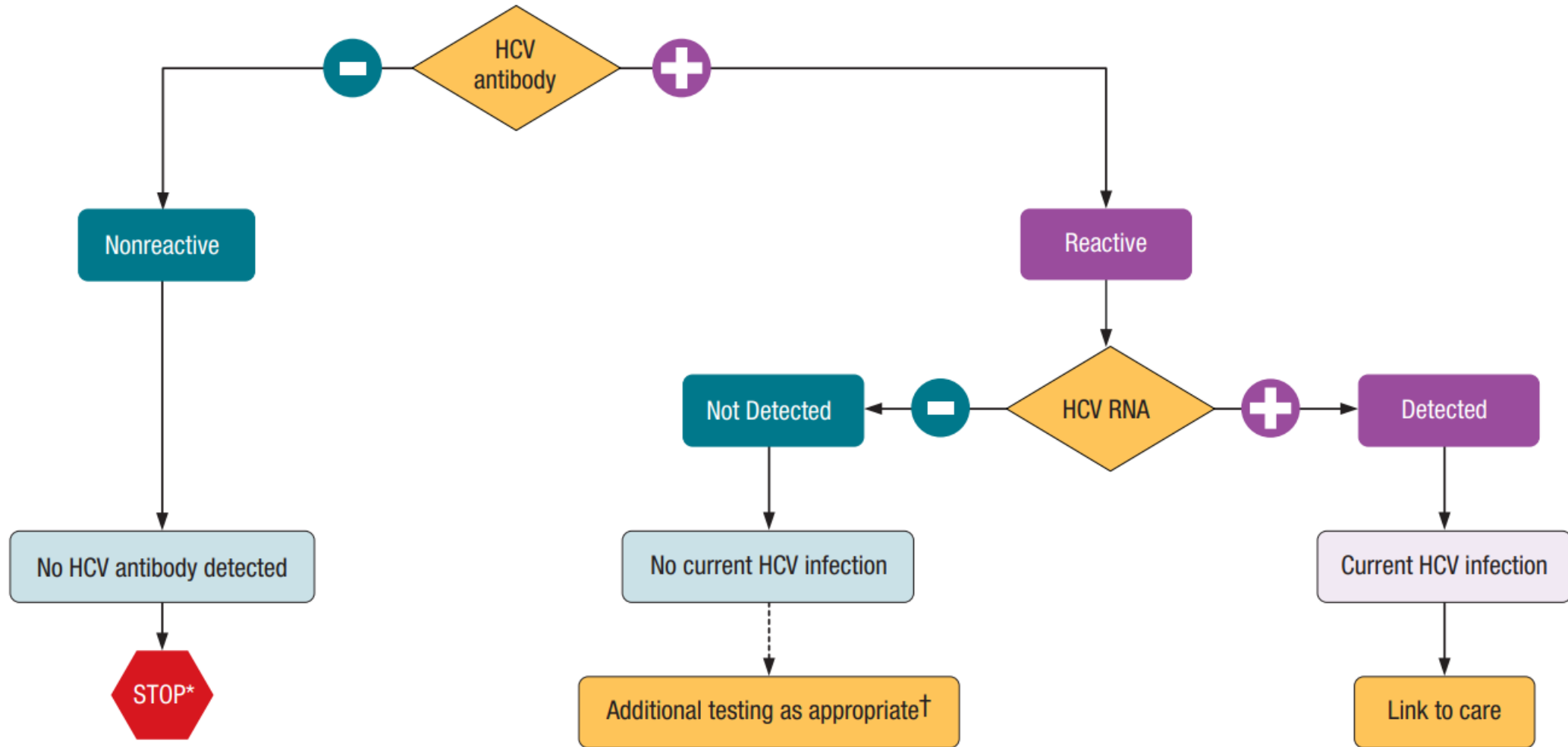
Key characteristics of hepatitis C

- Currently, there is no vaccine against hepatitis C infection
- Infection can be cured – highly effective courses of treatment, 8-12 weeks long
- Most people exposed go on to develop chronic infection
- Can lead to cirrhosis, liver cancer, and death
 - Deaths due to hepatitis C are increasing
- Two epidemics in the US
 - Baby boomers (born between 1945-1965)
 - Younger people who inject drugs

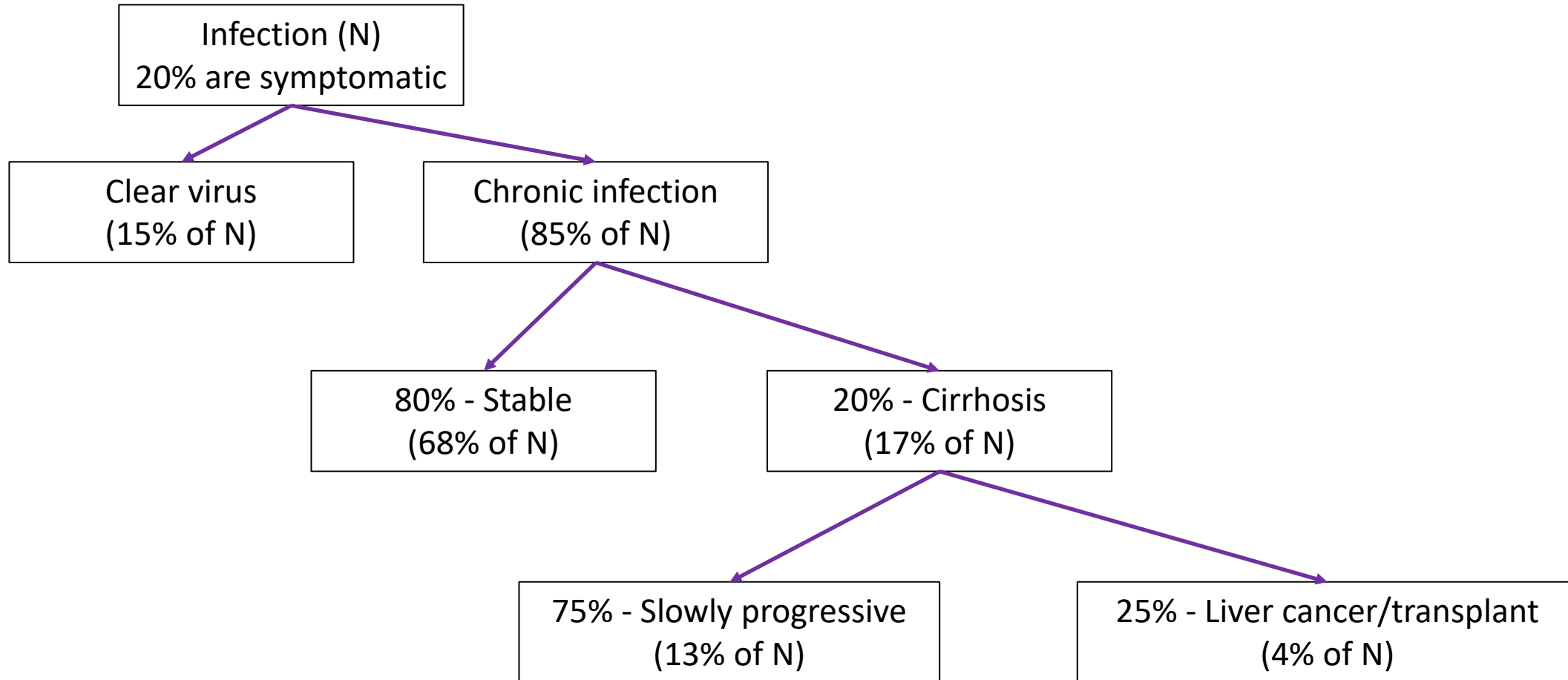
Hepatitis C Transmission

- Currently, the most common mode of exposure is sharing drug injection equipment
 - Not just the needle, but also syringes, cookers, cottons, rinse water, etc.
- Prior to 1992, many people were exposed through blood transfusions, clotting factors, and organ transplants
- Other modes of exposure:
 - Sexual transmission – inefficient, but does occur
 - Vertical transmission – occurs in 4-7% of births to infected gestational parents
 - More common if HIV co-infected
 - Sharing personal/household items contaminated with blood
 - Intranasal drug use
 - Tattoos and body piercings – nonsterile practices

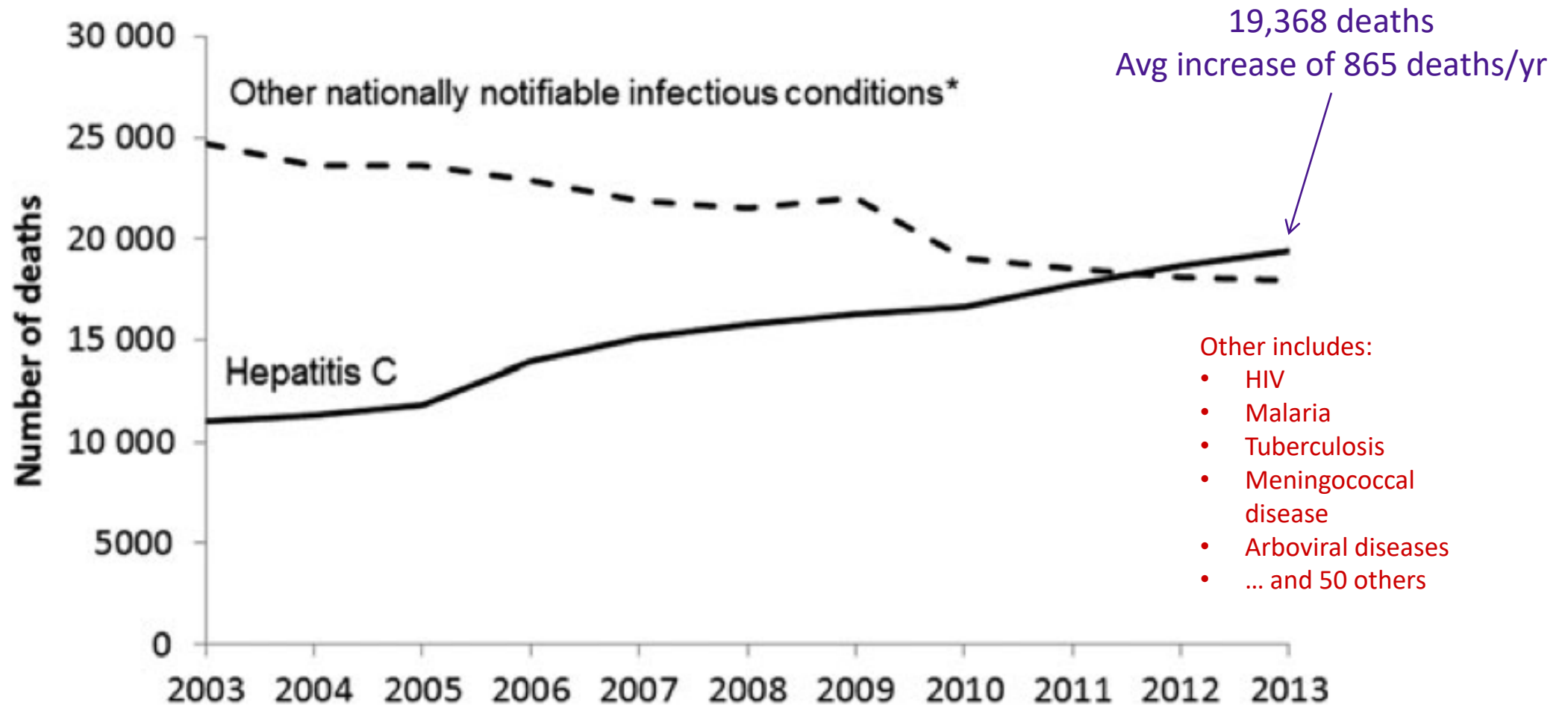
Testing for Hepatitis C



Natural Course of HCV Infection



Rising hepatitis C mortality in the US



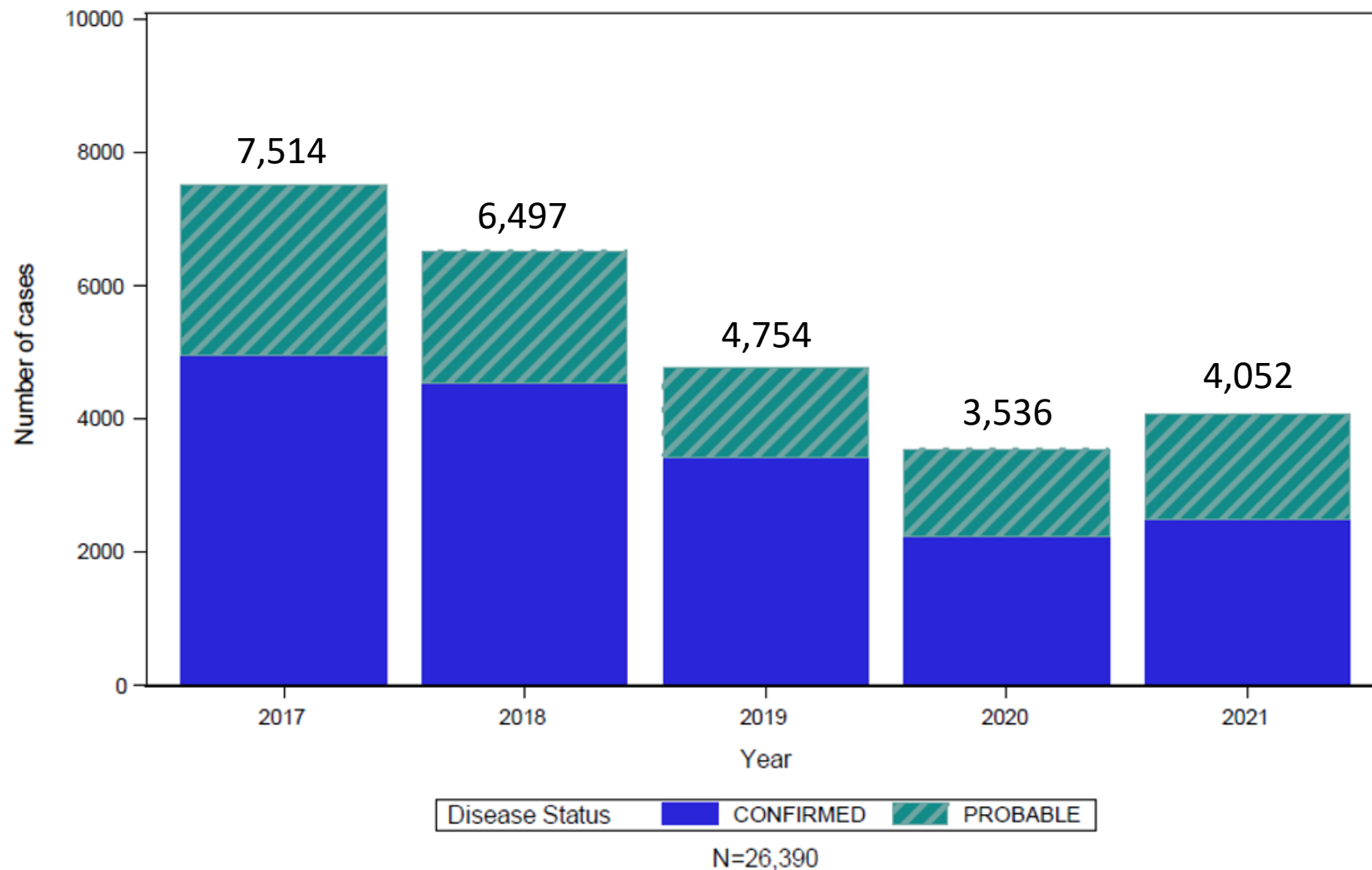
Ly KN, Hughes EM, Jiles RB, Holmberg SD. Rising Mortality Associated With Hepatitis C Virus in the United States, 2003-2013. *Clinical Infectious Diseases*. 2016:1287–1288.

The Epidemiology of HCV in Massachusetts

- Nationally:
 - Up to 75% of prevalent HCV cases are among people born between 1945 and 1965¹
 - HCV prevalence is changing, but the “baby boomer” birth cohort still comprises up to 73% of mortality associated with HCV infection
- In Massachusetts:
 - HCV has been reportable since 1992
 - Between 3,000-8,000 cases have been newly reported annually since 2007
 - Estimates of HCV prevalence: 200,000+; incidence: 2,000+
 - In 2007, an increasing proportion of cases reported under the age of 25 were identified
 - In 2021, 1,872 cases were reported between the ages of 15 and 39

1. Centers for Disease Control and Prevention (CDC). Last updated September 2017.
<https://www.cdc.gov/hepatitis/populations/1945-1965.htm>. Accessed August 20, 2018

Number of Confirmed and Probable HCV Cases Reported by Year, Massachusetts, 2017-2021

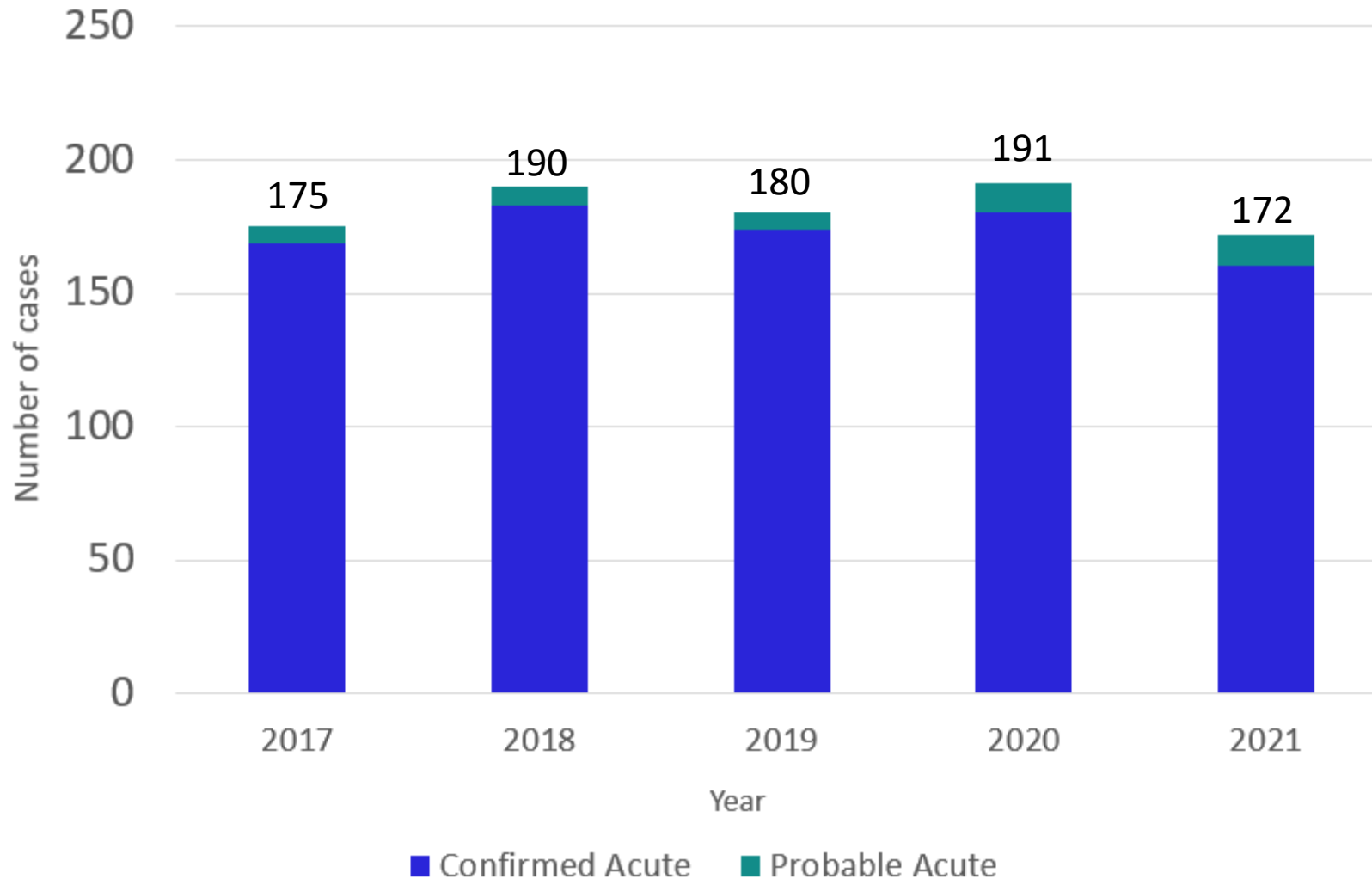


Decreases:

- 13.5% from 2017 to 2018
- 27% from 2018 to 2019
- 15% from 2019 to 2021

Data are current as of September 28, 2022 and are subject to change

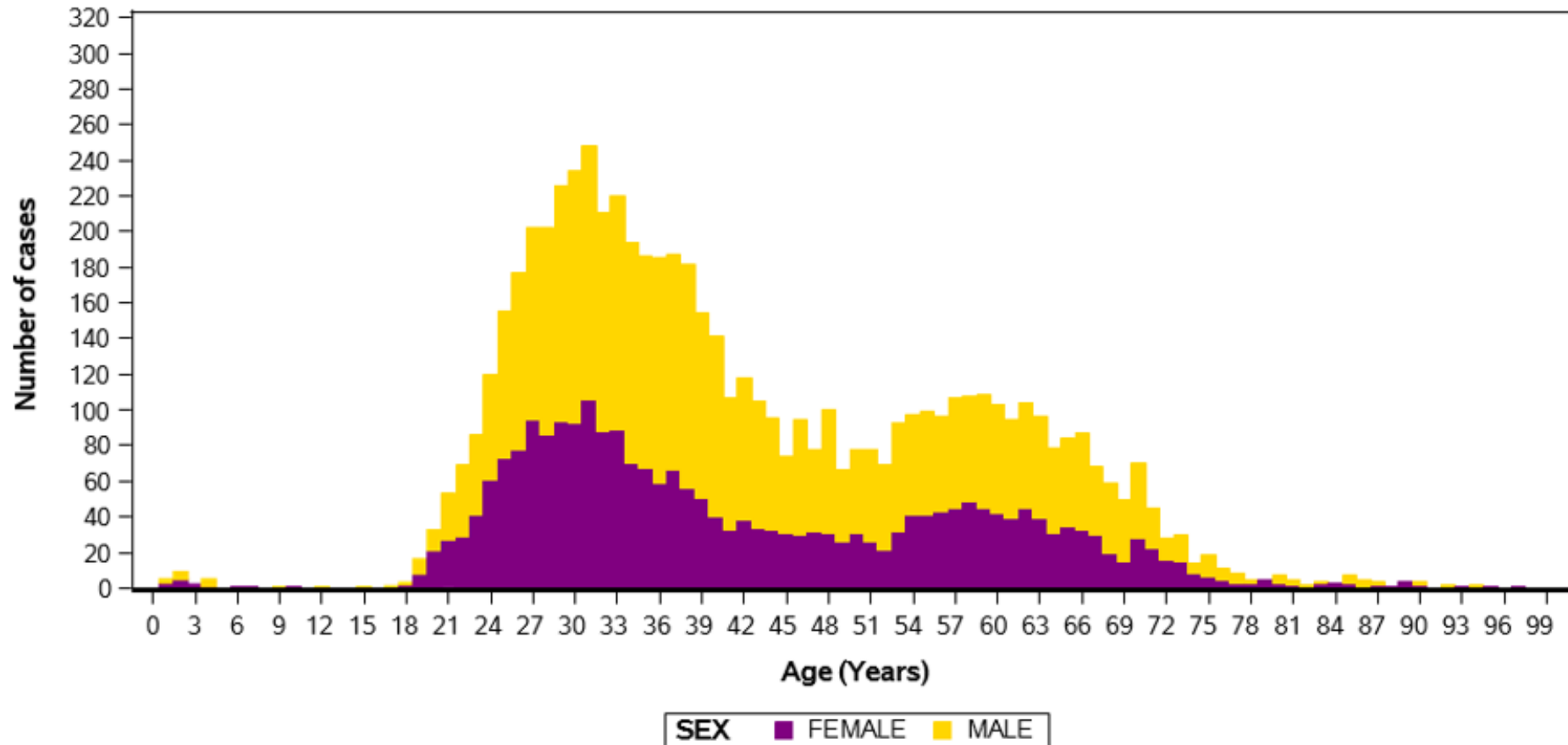
Number of Confirmed and Probable Acute HCV Cases Reported by Year, Massachusetts, 2017-2021



Data are current as of 9/28/2022 and subject to change.

Bimodal Curve

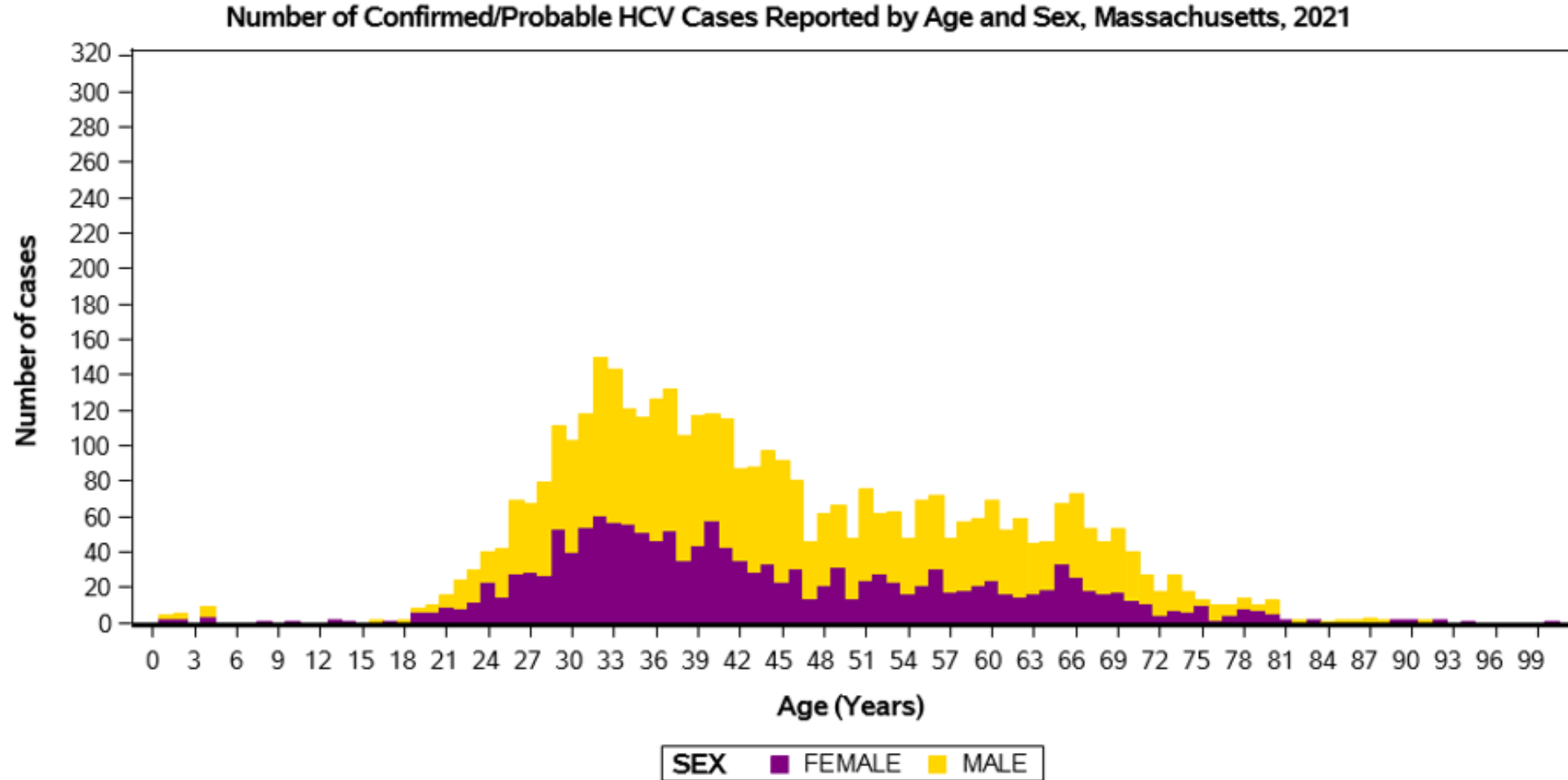
Number of Confirmed/Probable HCV Cases Reported by Age and Sex, Massachusetts, 2018



N=6,395 | 118 cases with missing age and/or sex were excluded from analysis.
Cases reported as transgender (N=5) are not depicted separately due to small numbers. Note the number of transgender individuals is likely an underestimate due to underreporting of current gender.

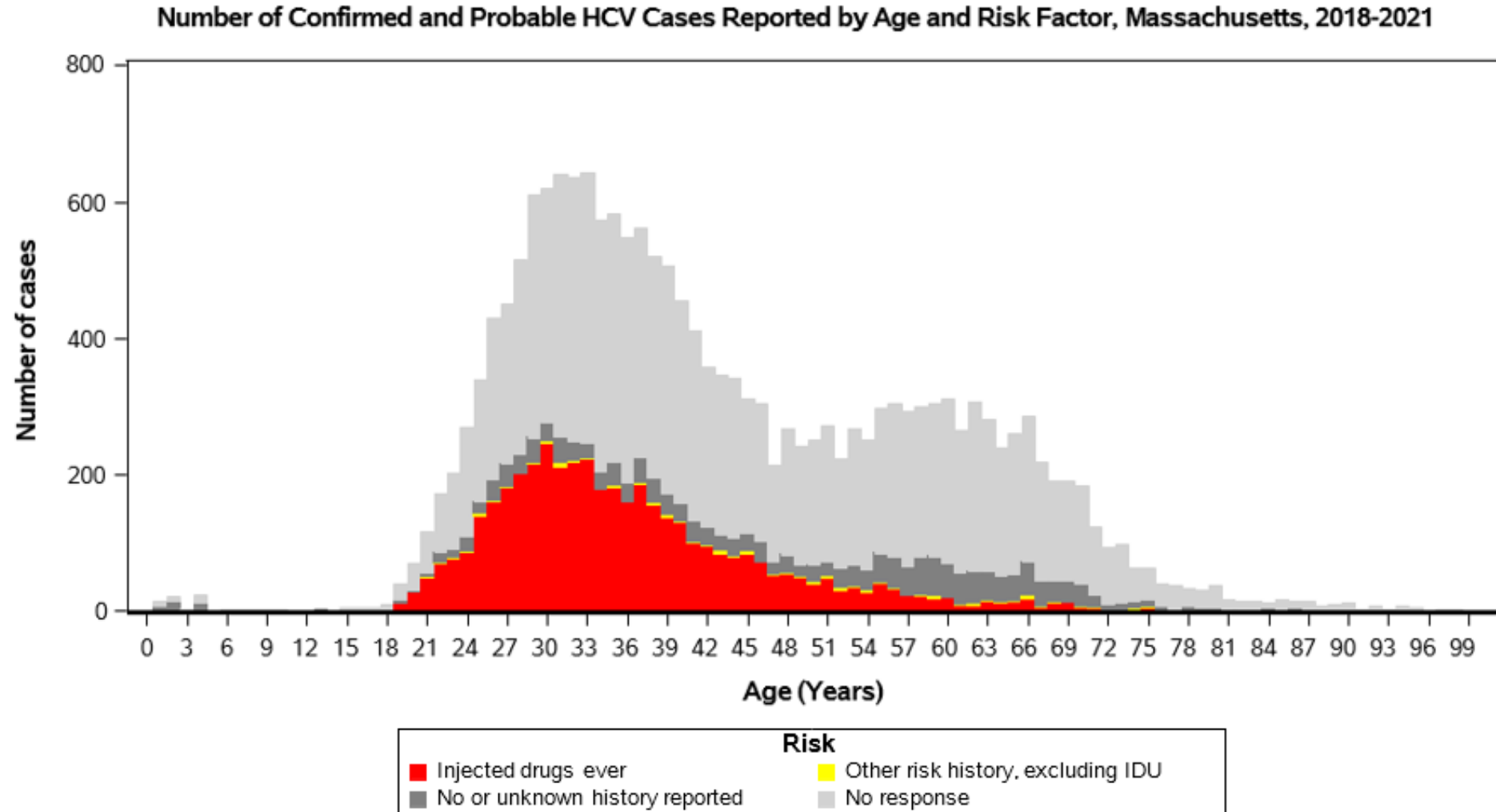
Data are current as of September 28, 2022, and are subject to change

Bimodal Curve



N=3,997 | 64 cases with missing age and/or sex were excluded from analysis.
Cases reported as transgender (N=7) are not depicted separately due to small numbers.
Note the number of transgender individuals is likely an underestimate due to underreporting of current gender.
Data are current as of September 28, 2022 and are subject to change

Reported cases

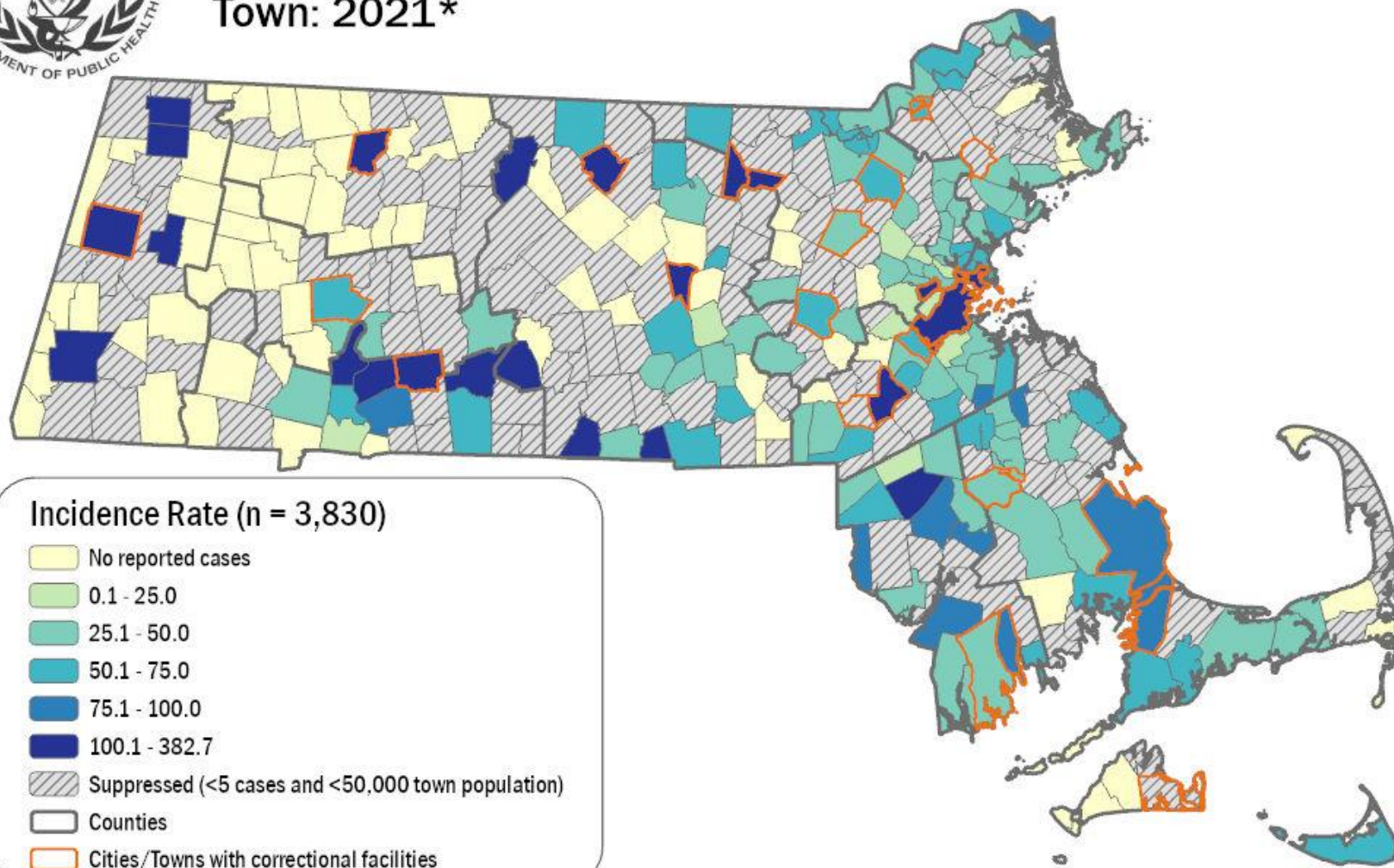


N=18,653 | 223 cases with missing age were excluded from analysis.

Data are current as of September 28, 2022, and are subject to change



Rate of Newly Reported Confirmed and Probable Hepatitis C Cases per 100,000 Town Population by Massachusetts City/Town: 2021*

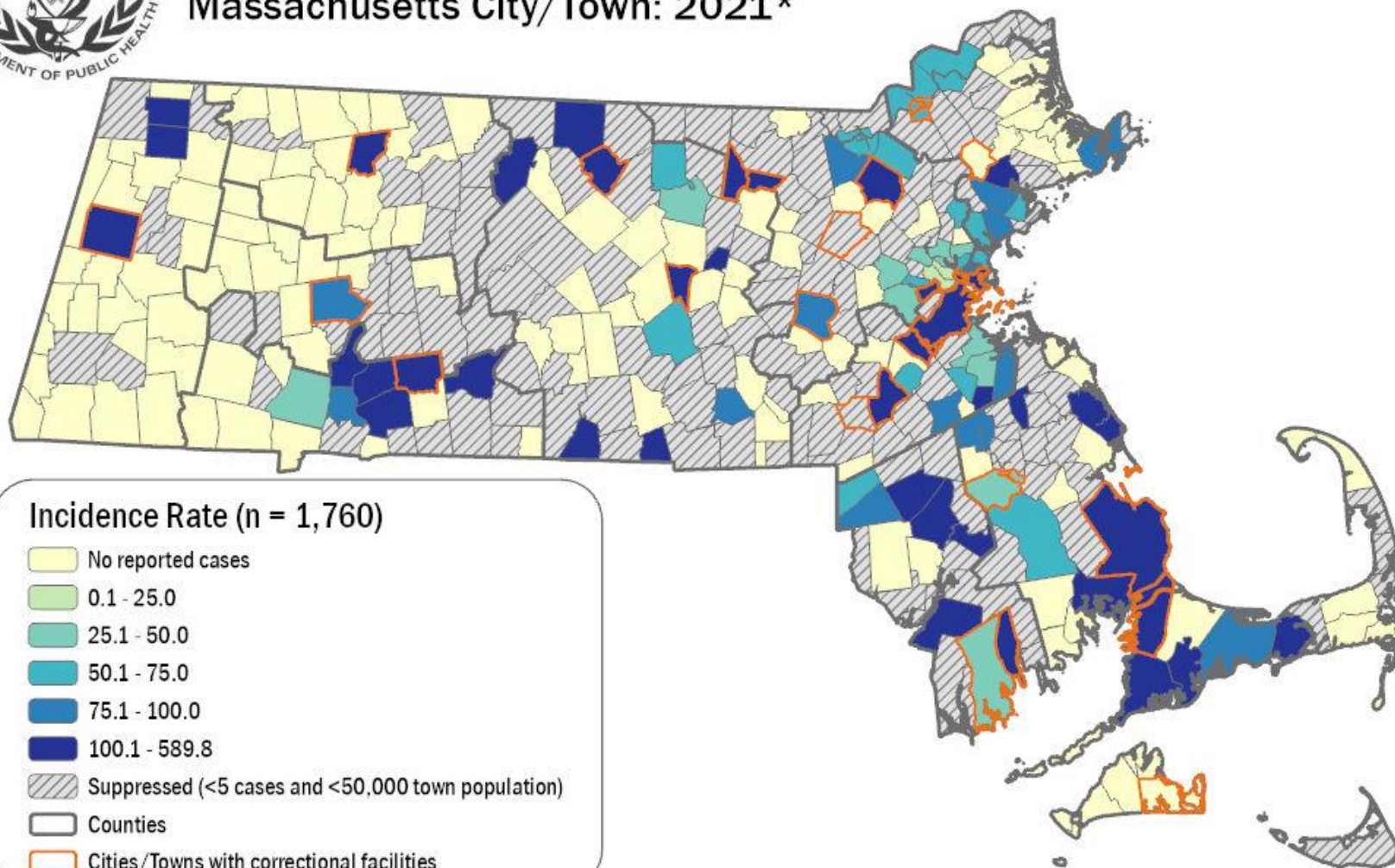


*231 cases have no city or town listed and are not reflected on this map. City/town is based on the patient's residence and may not reflect the geography of infection. Orange outline indicates a correctional institution in this community. The location of this institution may be associated with increased rates of HCV infection reported from this community.

Data are current as of October 2022 and are subject to change. Created by the Bureau of Infectious Disease and Laboratory Sciences. The COVID-19 pandemic has had measurable impacts on infectious disease surveillance. Data from 2020-2021 should be interpreted with caution.



Rate of Newly Reported Confirmed and Probable Hepatitis C Cases (15-39 Years of Age) per 100,000 Town Population by Massachusetts City/Town: 2021*

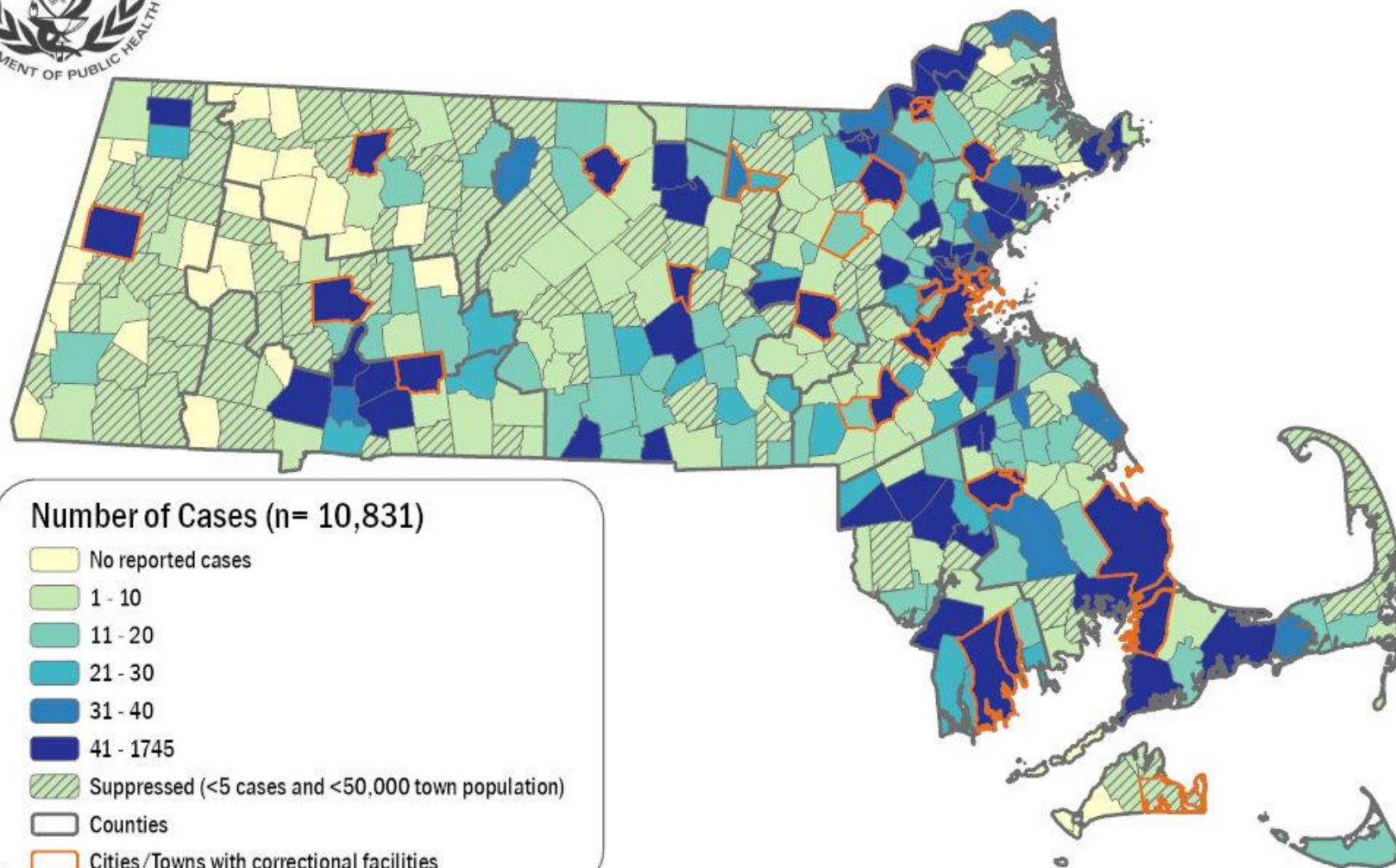


* 112 cases have no city or town listed and are not reflected on this map. City/town is based on the patient's residence and may not reflect the geography of infection.
Orange outline indicates a correctional institution in this community. The location of this institution may be associated with increased rates of HCV infection reported from this community.

Data are current as of October 2022 and are subject to change.
Created by the Bureau of Infectious Disease and Laboratory Sciences.
The COVID-19 pandemic has had measurable impacts on infectious disease surveillance. Data from 2020-2021 should be interpreted with caution.



Number of Individuals with Recent Evidence of Hepatitis C Infection by Massachusetts City/Town: 2017-2021*



*780 cases have no city or town listed and are not reflected on this map. City/town is based on the patient's residence and may not reflect the geography of infection.
Orange outline indicates a correctional institution in this community. The location of this institution may be associated with increased rates of HCV infection reported from this community.

RNA results are from January 1, 2017-December 31, 2021.
Data are current as of October 2022 and are subject to change.
Created by the Bureau of Infectious Disease and Laboratory Sciences.
The COVID-19 pandemic has had measurable impacts on infectious disease surveillance. Data from 2020-2021 should be interpreted with caution.

Goals of Acute Hepatitis C Investigations

- Obtain accurate and actionable data to inform prevention practices and policies
- Identify potential clusters of hepatitis C infection
- Prevent transmission and additional cases
- Improve outcomes for people with hepatitis C infection

Role of LBOH

- Collect information on individuals' symptoms, their demographics, and risk history in the six months prior to event date
- Provide health education to the individual
- Provide referrals to local clinical and support services

How Cases are Assigned

Given the high volume of reported cases, follow-up must be triaged.

We use the following criteria when assigning out cases. Note that if labs are associated with a substance use disorder treatment facility, the case will not be assigned out for follow-up.

Criteria:

- A case first reported within the last year with a positive hepatitis C laboratory result and *at least one* of the following:
 - Jaundice
 - Seroconversion (e.g. a negative hepatitis C antibody result, followed within 12 months by a positive hepatitis C antibody result, or a positive hepatitis C RNA result)
 - Elevated ALT values (≥ 200 U/L)
 - Elevated total bilirubin (≥ 3.0 mg/dL)
 - Reported as having been tested specifically due to signs or symptoms of acute hepatitis C infection
 - Evidence from medical record reporting of acute hepatitis C infection (applies to participating facilities)

Hepatitis C events requiring investigation will appear in the “LBOH Notification for Routine Disease Workflow”

Preparing for Case Interview

Understand why we're asking what we're asking.

- Risk factors associated with hepatitis C (injection drug use, sexual exposures, tattoos, hemodialysis, etc.)
- Potential healthcare-associated infections (must be reported to MDPH)
- Demographic information (race/ethnicity, employment, gender identity, sexual orientation)
- Clinical information (symptoms, year first diagnosed, hospitalization)

Don't make assumptions.

- Everyone has biases.
- Ask questions in a non-judgmental way.
- Ask open ended questions.

Case Investigation

Step 1 – Familiarize yourself with the Acute Hepatitis C Investigation Wizard

Updated Case Investigation Wizard

- Focus on collecting only the information most critical to the case investigation
- Reworked some questions to be more consistent with requests from CDC
- Retired questions that are no longer as important
- Categorized questions and reordered them to improve flow of interview

Question Packages			
Question Package	Person	Last Update	
1. Administrative	Event ID	09/02/2023	
2. Demographic		08/23/2023	
3. Clinical		09/02/2023	
5. Risk/Exposure/Control & Prevention		08/23/2023	
6. Epi-linked and Outbreak Information		08/16/2023	
8. ECR Information		08/16/2023	
9. Electronic Case Reporting		08/16/2023	
9. Sequencing Information		08/16/2023	

View Question Package

Wizards:

Acute Hepatitis C Investigation Wizard

View Wizard

Diagnosis/Clinical Information

Diagnosis date:

mm/dd/yyyy



Did case have symptoms?



Does the case have a more likely diagnosis than acute hepatitis C accounting for their presentation?



Was the case pregnant during illness?



Is the case diabetic?



The following question relates to hospitalization as a result of illness

Was case hospitalized?



Outcome:



In the 12 months prior to diagnosis, did this patient have a documented negative hepatitis C antibody result?



The following question relates to supplementary lab testing done (for example, ALT, AST, or total bilirubin) that is not already captured in the lab tab.

Test type:



Demographic Information

Place of birth (country):

Primary language

Race:

What is your ethnicity? (You can specify one or more)

Is case Hispanic, Latinx or Spanish origin?

Occupation: What kind of work does the person do? [?]

Current housing status [?]

What is your current gender identity? Check all that apply regardless of sex assigned at birth.

- ☐ Male
- ☐ Female
- ☐ Nonbinary or Genderqueer or not exclusively male or female
- ☐ I am questioning/not sure of my gender identity
- ☐ I dont understand what this question is asking
- ☐ I prefer not to answer

Assigned Sex at Birth

Transgender Experience

Sexual orientation

Risk Information

Note: The incubation period for hepatitis C infection can be up to six months. Generally, the questions below pertain to the six months prior to infection, unless the question specifically inquires about EVER having occurred.

Potential exposures related to the workplace

During the incubation period, was the case employed as a public safety worker (firefighter, law enforcement, correctional officer) having direct contact with blood?

During the incubation period, was case employed in a medical or dental field involving direct contact with human blood or other body fluids?

During the incubation period, did the case have an accidental stick/puncture with a needle or other object contaminated with blood?

Potential exposures related to health care and medical procedures

Supervised care settings include but are not limited to: long-term care facilities, nursing homes, assisted living facilities, daycare or day health programs, and group homes.

Employed or attend a supervised care setting?

Was case hospitalized during incubation period?

Did case have surgery during incubation period?

During the incubation period did the case undergo hemodialysis?

Was the case ever on long-term hemodialysis?

Has case received blood transfusion, tissue products or organ transplant?

Did the case have dental work during incubation period?

During the incubation period, did the case receive any IV infusions and/or injections in the outpatient setting?

Potential exposures related to personal behaviors

During the incubation period, did the patient report any sexual activity?

As it pertains to hepatitis C transmission, a contact could be someone with whom the patient lives, has sex, shares drugs, or engages in other behaviors/activities where exposure to blood is possible.

Was the patient a contact of a person with confirmed or suspected hepatitis C virus infection?

Was the case incarcerated for longer than 24 hours during incubation period?

During the incubation period, did the case inject drugs not prescribed by a doctor?

Has the case ever injected drugs not prescribed by a doctor even if only once or a few times?

During the incubation period, did the case use drugs not prescribed by a doctor intranasally?

During the incubation period, did the case use any drugs (not injection or intranasal) not prescribed by a doctor?

During incubation period did case receive any tattoos?

During the incubation period, did the case receive any body piercings?

Case investigation

Step 2 – Contacting the ordering provider

- Fill out Steps 1-3 at the bottom of the Wizard as needed, and add your own information to Step 3.
- Always contact the ordering provider first.
 - If you can't get a hold of the provider, and the case was tested at a hospital, remember that infection preventionists can be helpful ([contact list](#) available in MAVEN Help section).
- Ensure that the provider has notified the case of the hepatitis C diagnosis. Encourage the provider to tell the patient that someone from the LBOH will be reaching out to them.
- Determine if the provider has additional lab results available that are not in MAVEN, and have them fax those to MDPH at 617-983-6813.
- Review clinical information with the provider.
- Obtain risk history information from the provider – this is essential to inform whether additional public health intervention is needed.
 - For cases with unusual risk histories, particularly those indicative of a potential healthcare-associated infection, notify MDPH at 617-983-6800.

Case investigation


Step 3 – Contacting the case

- Complete the remainder of the Acute Hepatitis C Investigation Wizard with the case.
- Provide health education on hepatitis C transmission, prevention, and how they can protect their liver.
 - An important part of this is getting vaccinated for hepatitis A and hepatitis B. Discuss with the individual where they can get vaccinated locally.
 - Remind them that hepatitis C can be cured with highly effective antivirals.
- Provide referrals for the case to medical and other support services.
 - MassHealth will cover hepatitis C screening and treatment without restrictions like fibrosis score, substance use, or prescriber specialty.
 - People who inject drugs can reduce their risk of getting and transmitting blood-borne pathogens by using a sterile needle and syringe for every injection. Find out about [syringe service programs](#) near you.
 - MDPH support [Integrated Testing and Linkage Services sites](#), which provide an array of services including testing, treatment, and overdose prevention.

Case investigation

Step 3 – Contacting the case

- Attempt to contact the case at least three times, documenting each attempt in the notes section.
 - Try calling at different times of the day.
 - Try sending a text message.
 - Contact the ordering provider for a working phone number if the number is missing or inactive.
 - Consider other sources of contact information available to you.
- If the case is truly lost to follow-up, complete the Acute Hepatitis Investigation Wizard with as much information as you have been able to gather, and note in the Wizard that the case report form was not completed because the patient was lost to follow-up.

Step 4 - Case Report Form Completed:	Case Report Form complete date:
<div>No</div>	<div>09/02/2023</div> <div></div>
Primary reason:	
<div><div></div><div>Patient lost to follow-up</div><div>Physician not reachable</div></div>	

Case investigation

Step 4 – Complete the investigation

- Once you have completed the investigation, mark the Acute HCV Investigation Status field as *Complete*, and fill out the remaining Steps 4 & 5 at the bottom of the Acute Hepatitis C Investigation Wizard.

Disease Status Information
Acute HCV Investigation Status: <input type="text"/>
Local Health and Investigation Steps (1-5)
Step 1 - LBOH acknowledged: <input type="text"/>
Step 2 - Investigation started: <input type="text"/>
Step 3 - LBOH/Agency Investigator: Assign To Me <input type="text"/>
Step 4 - Case Report Form Completed: <input type="text"/>
Step 5 - LBOH final review: <input type="text"/>



Questions?

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www.mass.gov/hepc

617-983-6800