Introduction to Hepatitis A Case Investigations

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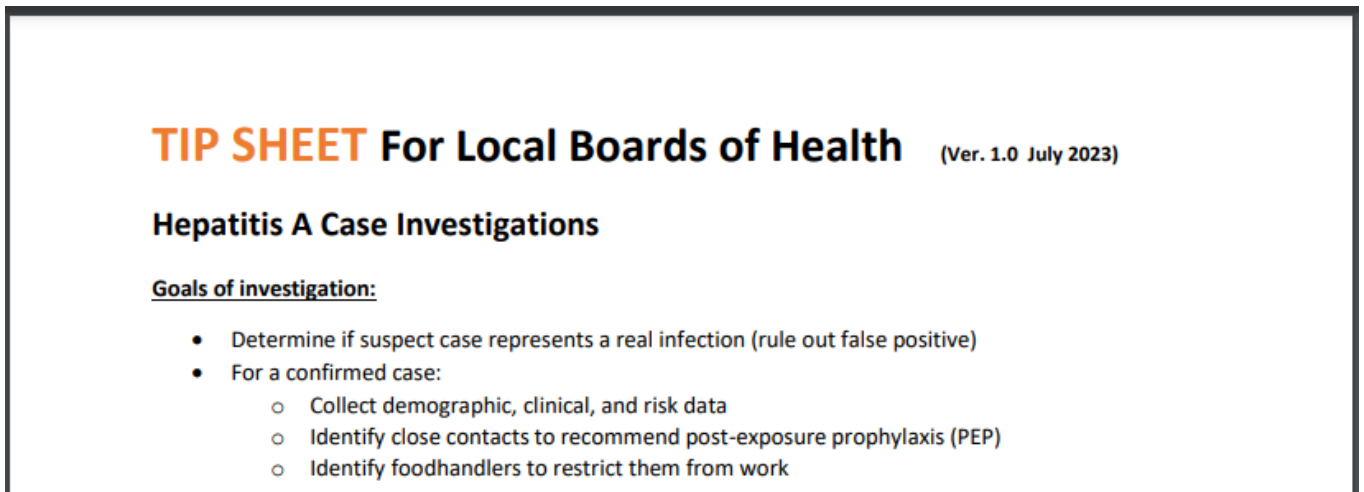
Learning Objectives

- Learn how to conduct hepatitis A virus (HAV) case investigations and understand best practices for interviewing the case, identifying close contacts, and gathering time-sensitive information
- Understand how to assess HAV false positives and how to speak with providers to determine the likelihood of a false positive result
- Become familiar with recent MAVEN changes, especially in the risk question package
- Understand the importance of data collection completeness to inform statewide preventative measures

New tip sheet on MAVEN Help!

http://www.maven-help.maventrainingsite.com/pdf/HAV%20Tip%20Sheet%202023.pdf

- Viral Hepatitis Resources
  - Presentations
  - Tip Sheets
    - TEMPLATE - Educational letter for providers about appropriate use of hepatitis A IgM test (false positives)_July2022 NEW
    - How to Investigate Acute Hepatitis C Cases
    - How to Investigate Suspect Hepatitis A Cases UPDATED
    - Hepatitis B Contact Investigation Tip Sheet for LBOH _ Ver 2.0 May 15, 2023 NEW



TIP SHEET For Local Boards of Health (Ver. 1.0 July 2023)

Hepatitis A Case Investigations

Goals of investigation:

- Determine if suspect case represents a real infection (rule out false positive)
- For a confirmed case:
  - Collect demographic, clinical, and risk data
  - Identify close contacts to recommend post-exposure prophylaxis (PEP)
  - Identify foodhandlers to restrict them from work

Hepatitis A Basics

- Transmission route: fecal-oral (person-to-person or contaminated food)
- Incubation period: 2-6 weeks
- Infectious period: 3 weeks
  - (2 weeks *before* symptom onset through 1 week *after* symptom onset – use jaundice onset date, if present, otherwise earliest related symptom)
- Symptoms: jaundice, dark urine, pale/clay colored stool, fever, abdominal pain, nausea, vomiting, diarrhea, fatigue
- Close contacts: anyone who would come in close contact with the infected person's hands or feces
  - Household members (sharing and preparing food for one another, shared bathrooms, hand-to-mouth contact)
  - Sexual contacts
- Acute illness only (no chronic infection), rarely fatal, no cure (just palliative care), once you recover you have lifelong immunity

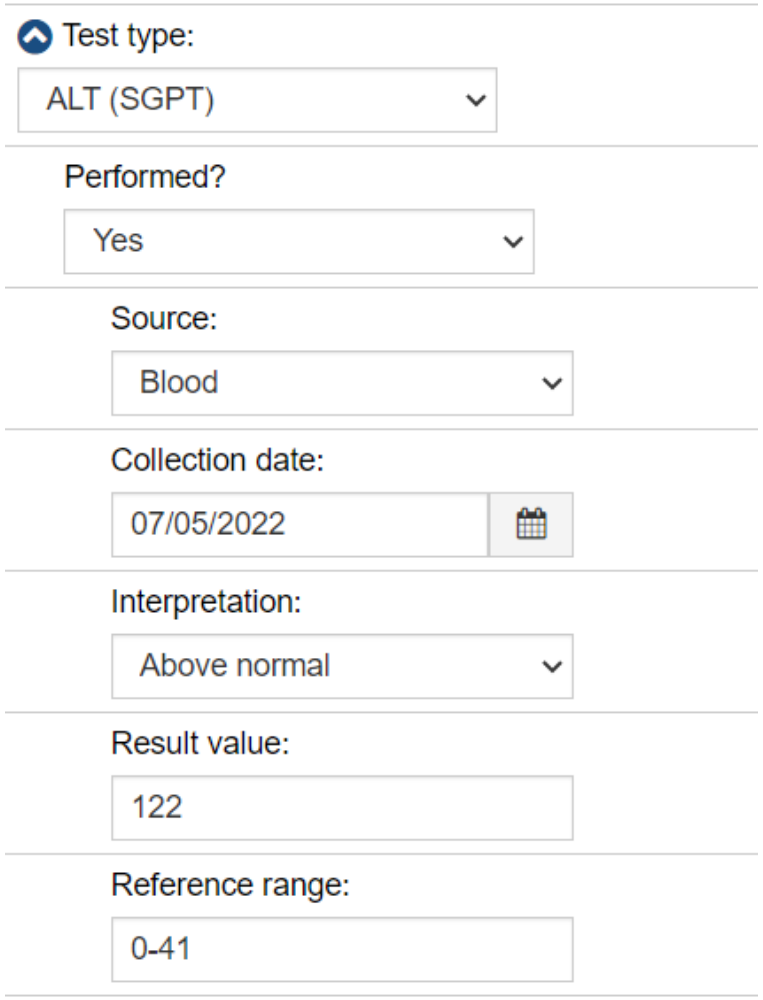
Hepatitis A Case Classification

- Discrete symptom onset with a symptom compatible with HAV AND either jaundice or total bilirubin ≥3.0 **or** ALT >200 AND absence of more likely diagnosis
  - Example: IgM+ with dark urine and ALT of 250 = confirmed
  - Example: IgM+ with jaundice and diarrhea but no LFTs available = confirmed
  - Example: IgM+ with diarrhea, vomiting and ALT of 33, no bilirubin = suspect

Event Name:	HEPA	
Event Time Period:	Lifelong	
Clinical Criteria (CSTE 2019)	An acute illness with a discrete onset of any sign or symptom consistent with acute viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, abdominal pain, or dark urine) **AND** a) jaundice or elevated total bilirubin levels ≥ 3.0 mg/dL, **OR** b) elevated serum alanine aminotransferase (ALT) levels >200 IU/L, **AND** c) the absence of a more likely diagnosis.	
CSTE Event Classification (2019):	*Confirmed*	• A case that meets the clinical criteria and is IgM anti-HAV positive §, **OR** • A case that has hepatitis A virus RNA detected by NAAT (such as PCR or genotyping), **OR** • A case that meets the clinical criteria and occurs in a person who had contact (e.g., household or sexual) with a laboratory-confirmed hepatitis A case 15-50 days prior to onset of symptoms. § And not otherwise ruled out by IgM anti-HAV or NAAT for hepatitis A virus testing performed in a public health laboratory.
Massachusetts Event Classification (2021):	*Suspect*	A case that is IgM anti-HAV positive in the absence of information on clinical criteria (symptoms and/or elevatyed serum amino transferase levels) or when these criteria are not compatible with HAV infection

Key Lab Tests for HAV Investigations

- Serology – IgM (cannot use total antibody)
- PCR – very rarely will see an RNA, but if we do, this is a confirmed case
- If it's not a PCR lab, we also need liver function tests (LFTs) to help in case determination:
  - Bilirubin, ALT, and AST – these can sometimes be recorded under the clinical question package



Goals of Follow-Up

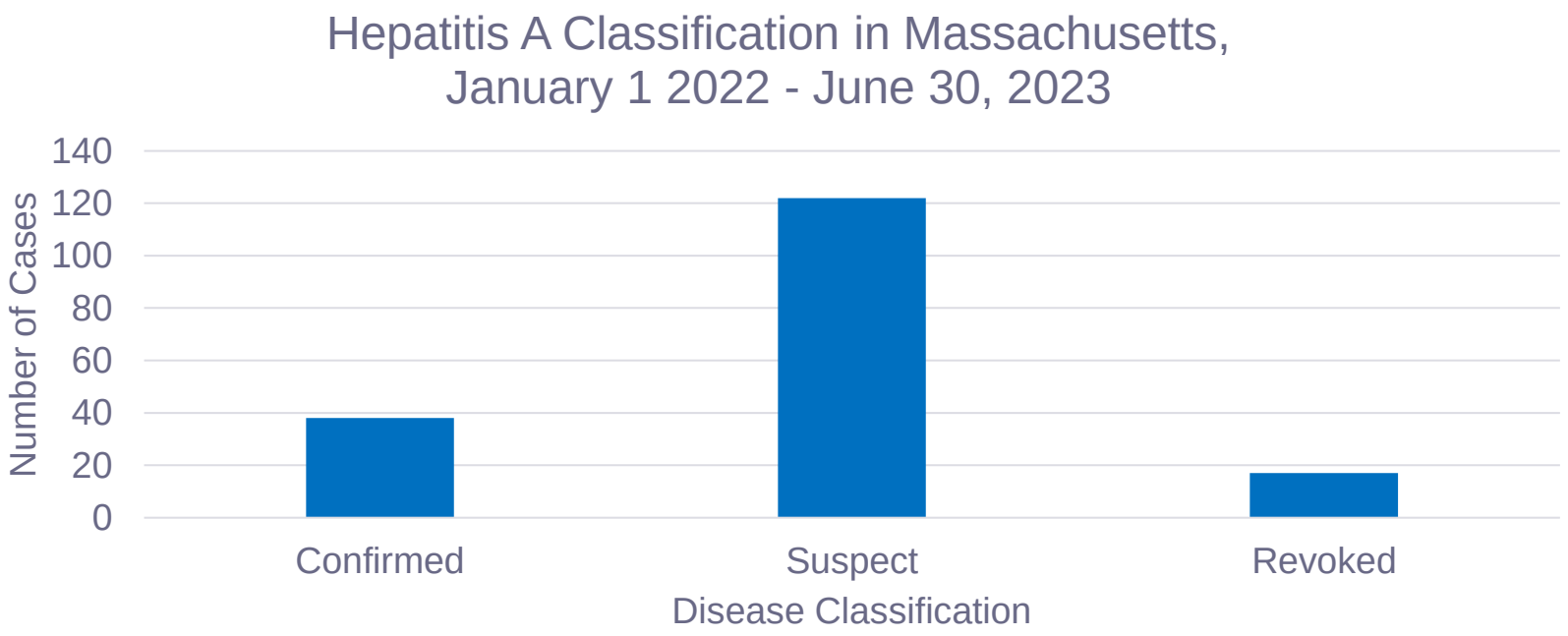
- Determine if it's a true case
  - Call Infection Preventionist or Provider
    - Do not call the case first – they may not be aware of diagnosis or this may not be a true case of HAV
- Collect clinical information
  - Symptoms and liver function tests: looking for ALT >200 or Bilirubin ≥3.0
  - If clinical picture isn't what you expect to see in an acute infection, then ask:
    - What was the reason for testing?
      - Red flag would be them saying "we were just running a routine blood panel" or "it's a new patient so we ran routine blood work"
    - Vaccination status/recently vaccinated?
    - Previous infection with HAV/recently recovered?
    - Look for Epi link: recently identified as a close contact, or other relevant risk history (e.g. international travel)?
    - Diagnosed with any other hepatitis infection? (could be causing cross-reactivity on tests)
- Identify close contacts to recommend post exposure prophylaxis (PEP), and identify any foodhandlers to restrict them from work

False Positives

- They have a positive IgM, but…
- Asymptomatic
  - An asymptomatic adult is very uncommon
    - 90% of older children and adults experience symptoms
    - BUT only 30% of children under 6 years old are symptomatic
- Symptoms are not specific to hepatitis infection:
  - Just reporting abdominal cramps or diarrhea, but no jaundice, or unusually dark urine, or pale stool
  - Could symptoms be due to another cause? Could jaundice be due to substance use or taking a medication?
- Their LFTs are not elevated or are only slightly out of the normal range.
  - With a true acute infection, we would expect to see ALTs >200 (we've seen them as high as 7,000!)
- No clear epi-link or known exposure to a confirmed case

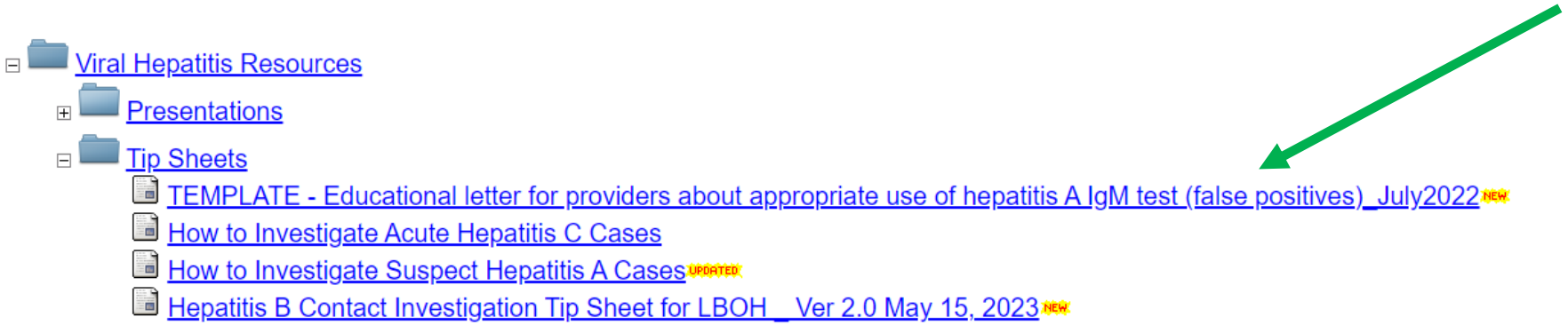
False Positives cont.

- In a non-outbreak time period, most IgM+ results are false positive
- From January 1, 2022-June 30, 2023, only 21% of reported cases were confirmed (most left as suspect)
  - Revoked classification is reserved for those with evidence of previous infection (can only have HAV infection once) or if a case is <u>total</u> anti-HAV positive and **IgM anti-HAV negative,** (and of course any out of state resident gets reported out and revoked)



False Positives cont.

- The provider should be queried as to the reason the individual was tested
  - If testing was for a reason other than acute symptom onset or recent exposure to HAV, it is likely a false positive result
  - Again, a red flag would be them saying “we were just running a routine blood panel” or “it’s a new patient so we ran routine blood work”
  - *Remember: children are often asymptomatic, so in those cases the reason for testing is especially important*
- Ordering providers don’t always fully understand how to interpret these lab results, so it can require educating
  - Sample script available in MAVEN Help:



True Cases

- If it is determined to be a true case:
  - Collect time-sensitive variables
    - Symptom onset to determine infectious period
    - Occupation: is the case a foodhandler? If so, collect where, and dates of work while infectious
      - If case is unemployed, confirm that was the case during their entire infectious period
      - Also important to identify potential volunteer work that involves foodhandling
  - Identify close contacts within infectious period to recommend PEP
    - HAV vaccine should be administered to all unvaccinated persons ≥12 y.o. (Immunoglobulin (IG) may also be recommended.)
    - PEP for HAV is 1 dose of vaccine. The second dose 6 months later is best for optimal protection, but not required for post-exposure protection purposes
    - **WARNING**: PEP is not known to be effective more than 2 weeks from date of exposure, so time is of the essence for prevention!

Close Contacts

- Close contacts are those who had contact with the case **during the infectious period:**
  - All household members
  - Any sexual contacts
  - Anyone sharing food, beverages, eating utensils, or cigarettes with the case (*think hand-to-mouth contact*)

A Reminder: Foodhandler Definition

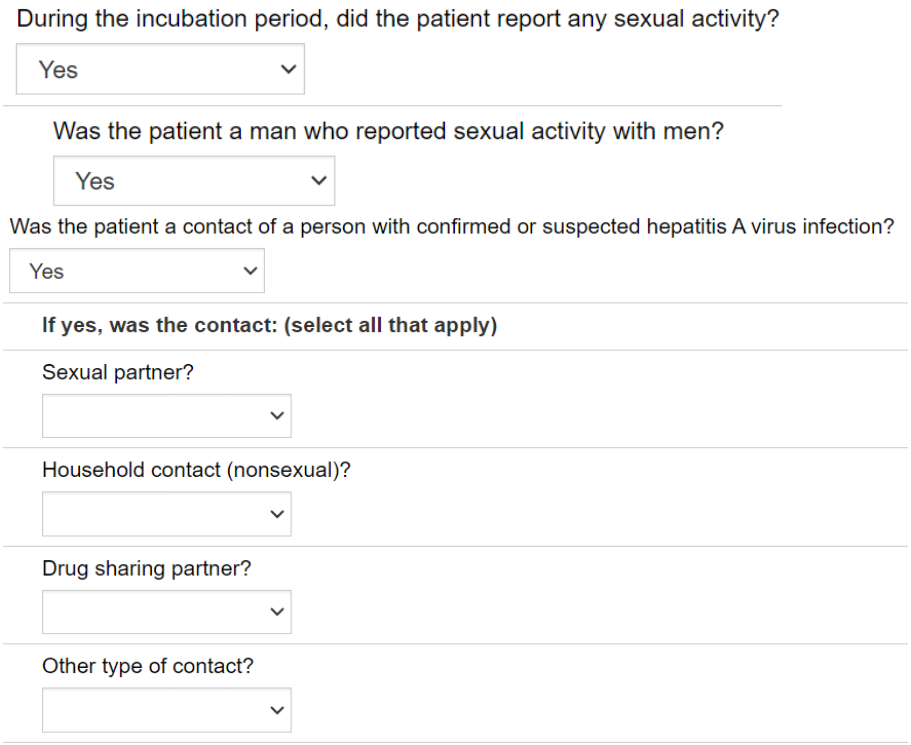
- (From 105 CMR 300)
- A foodhandler is defined as any person directly preparing or handling food; any person handling clean dishes or utensils; any person who dispenses medications by hand, assists in feeding, or provides mouth care.
  - **In healthcare:** this includes those who set up trays for patients to eat, feed or assist patients in eating, give oral medications or give mouth/denture care.
  - **In daycares, schools, and community residential programs:** this includes those who prepare food for clients to eat, feed or assist clients in eating, or give oral medications.

Case Investigation

- Step 1: Call the provider:
  - Collect clinical information (symptoms, LFTs, bilirubin)
  - Confirm this is a true case and that case is aware of diagnosis
- Step 2: Call the case:
  - Discuss who you are and why you know about their diagnosis.
  - Proceed to ask about close contacts and complete the MAVEN risk questions
    - Ask questions in a neutral, non-judgmental tone
    - Be aware of your biases!
      - What assumptions are you making about someone who is elderly? That they don't have sex or do drugs?
      - What assumptions are you making based on the way they speak? That they are straight/gay?
      - What assumptions are you making when someone tells you they're married? That they don't have multiple sex partners?

Risk Questions

- All risk questions now incorporated into question package (no more need to link to supplemental questionnaire)
- Risk questions focus on known risks for HAV exposure: travel, sexual activity, drug use, homelessness, incarceration, contact with known case
  - Also foodhandler status for case and contacts
- New questions about sexual activity and contact with a hep A case:



Risk Questions cont.

- If no clear risk identified (no international travel, no contact with a known case), please scroll down and complete Food History Questions section

Food History Questions

Please respond to the following questions about where food was purchased that you ate during the 2-6 weeks before becoming sick. Please note: the following food history section does not need to be completed if the case spent time outside the country or had contact with another Hepatitis A case during their incubation period.

List locations, dates, and items consumed for foods eaten away from home (i.e., restaurants, catered events)

...

Next I am going to ask you about foods you ate in the 2-6 weeks before you became sick. As I read each food, please answer as yes, no, may have eaten, or can't remember.

Ate raw shellfish?

Ate other raw seafood?

Drank unpasteurized juice or cider?

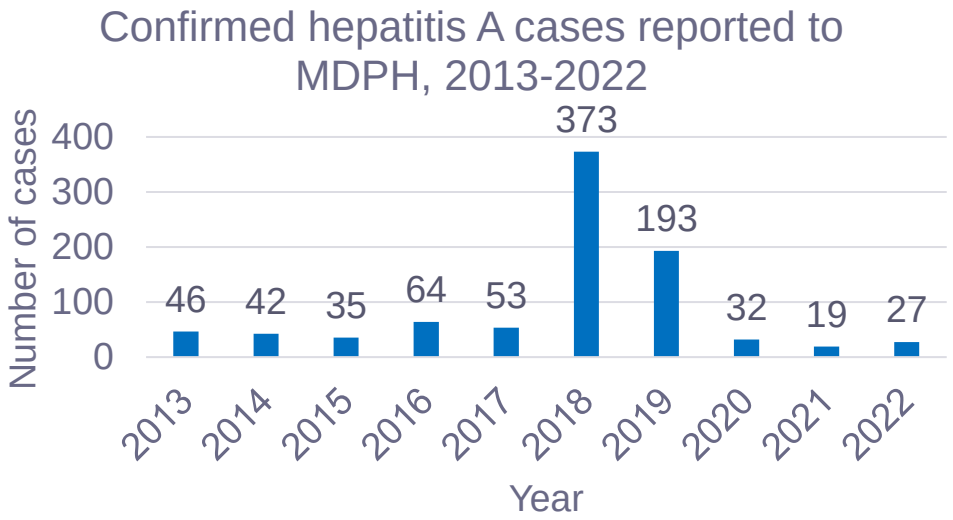
Ate uncooked leafy greens such as lettuce, kale, or spinach?

Ate food from a salad bar?

A FBI complaint only needs to be completed if the case reports raw shellfish consumption.

Risk Questions cont.

- Completion of risk variables critical!
- Risk data routinely analyzed to identify potential clusters, characterize trends in transmission, identify opportunities for public health intervention
- Between 2018 and 2020, there was a statewide hepatitis A outbreak among people using drugs and experiencing homelessness. We were able to detect an increase in cases among people experiencing homelessness and begin targeted vaccination efforts quickly.



Data as of 4/12/23

If Case is a Foodhandler

- A DPH Epidemiologist will provide LOTS of support in these instances
- Case must be excluded for one week past symptom onset or resolution of fever, whichever comes last
- Collect the following:
  - Where case worked during infectious period
  - Dates worked during infectious period
  - Specific job duties (what food did case have contact with, how was food handled)
  - Whether case experienced diarrhea and/or vomiting while working and on what dates
  - Whether the case handled ready-to-eat foods without gloves
  - Whether the case performed foodhandling duties at other facilities
  - Number of foodhandlers in the facility
  - Number of patrons on a daily basis for the facility (or number of children/clients if in a daycare or other LTCF)
  - Past record of inspections for facility (if available)

Foodhandler Follow-Up

- If foodhandler's place of work is in a different city/town from where they reside, notify the local health department for that jurisdiction
- Create a foodborne illness complaint (and link it to the case) to track follow-up
- If it is a food establishment, notify the DPH Food Protection Program (FPP) as soon as possible (617-983-6712)
- If a health care agency is the implicated facility, remind the infection control contact at the agency that they also need to contact the DPH Bureau of Health Care Safety and Quality to report the situation (617-753-8000)

Restaurant Investigations

- Contact FPP ***before*** an inspection or any onsite investigation is conducted
- Key inspection resources can be found within Chapter 8 of Foodborne Illness Reference and Control Manual https://www.mass.gov/lists/foodborne-illness-investigation-and-control-manual:
  - Focus on handwashing practices and restroom facilities, the types of foods and beverages that are served, and how these foods and beverages are handled
  - Obtain a very careful history of which days and shifts the infected person worked, exact duties, types of food handled, any use of disposable gloves, as well as an assessment of the employee's hygiene. Inquire about tasks performed by the infected employee during his/her infectious period which may have differed from normal job duties. Ascertain if food prepared on shift is carried over to the next shift or to the next day. Determine if other employees eat food prepared by the index case. Ask the case whether they worked while symptomatic with diarrhea or vomiting; if so, note the dates on which this occurred. Ask the case if they are a food employee at any other establishments
  - Institute rigorous handwashing and ensure that there is no bare-hand contact with ready-to-eat foods, including foods served raw or handled after the cooking process. High risk foods include, but are not limited to: lettuce, tomatoes and other vegetables put on sandwiches; ingredients of all salads, including fruits and vegetables on salad bars; sliced cooked foods which may become contaminated during deboning or slicing procedures; handling of cold cuts; cake icing or decorations; ice that is scooped by hand or with a possibly contaminated scoop; and condiments for drinks such as olives, lime or lemon wedges
  - Ensure that the ill food employee is excluded according to 105 CMR 300.000 Isolation and Quarantine Requirements
  - Obtain a complete list of all employees, survey other employees for symptoms consistent with hepatitis A, if other employees are symptomatic, they should also be excluded from work and tested for hepatitis A
- FPP might request additional documentation such as an employee illness policy, menu(s), etc. depending on the situation

Foodhandler Follow-Up cont.

- **The following guidelines are applied to other foodhandling employees at the same facility and close contacts of the case who are foodhandlers:**
- All foodhandlers **with HAV-consistent symptoms** must be excluded and tested for HAV unless they can provide documented proof of immunity (prior HAV infection or HAV vaccination)
  - Those with a negative test result must receive PEP prior to return
  - Those with a positive test result must remain excluded during their infectious period
  - If an employee refuses testing, they must be excluded for 28 days (one average incubation period) from their last exposure to the case while the case was infectious
- All **asymptomatic** foodhandlers in the facility must receive PEP within 14 days of exposure to the case during their infectious period, unless they provide proof of immunity
  - In most situations foodhandlers receiving PEP within 14 days of their last exposure is permitted (*The Isolation and Quarantine Regulations do not stipulate whether the 14 days are from the first or last exposure*)
  - Employee refuses to receive PEP and no proof of immunity? Must be excluded from foodhandling activities for 28 days
- As LBOH, you could consider facilitating PEP through a clinic or the employer
- Facility should continue surveillance for additional cases for **six weeks** from the last day that the case worked during their infectious period
  - Any symptoms should be reported immediately and managed as a symptomatic contact
  - During this six-week period special attention should be paid to appropriate foodhandling practices and heightened awareness of good hygiene on the part of the foodhanders

Foodhandler Follow-Up cont.

- Once a case has been identified as a foodhandler, the LBOH should…
- **Conduct an inspection of the establishment**
- **Considerations for patron notification**:
  - The decision to identify potentially exposed patrons is made on a case-by-case basis, using information obtained on the case and the establishment, with special regard to hygienic practices and the decision should be made with your assigned Epidemiologist
  - Since common-source transmission to patrons is unlikely, PEP administration to patrons typically is not indicated, but may be considered if:
    - the foodhandler worked during infectious period and both directly handled uncooked or cooked foods and had diarrhea or poor hygienic practices, **and**
    - patrons can be identified to receive PEP within the 2-week period after exposure
      - In settings in which repeated exposures to HAV might have occurred (e.g., LTCF cafeterias), stronger consideration of HAV vaccine or IG use could be warranted
- If both of the above criteria are met, the DPH Bureau of Infectious Disease Medical Director may recommend patron notification and would be coordinated jointly by DPH, the LBOH, and facility manager

Summary

- Call provider/IP to collect clinical information to determine if it's a true case or false positive
  - If false positive, then no further follow up required
- If true case, collect the time sensitive variables (symptom onset and occupation), conduct case interview, identify close contacts, recommend PEP to eligible contacts, and hope that the case or their close contacts aren't foodhandlers!
- If case is a foodhandler, then
  - Exclude foodhandler from work
  - LBOH conducts inspection of the facility, involve relevant parties (FPP)
  - Symptomatic employees – exclude, test, provide proof of immunity
  - Asymptomatic employees – receive PEP, proof of immunity, or exclude for 28 days
  - Consider if patron notification is necessary – if so, work with DPH to mobilize staff and other resources

Resources

- Case investigation tip sheet
  - http://www.maven-help.maventrainingsite.com/pdf/HAV%20Tip%20Sheet%202023.pdf
- Main page for hepatitis A information
  - https://www.mass.gov/hepatitis-a
- Link to resources for holding a vaccination clinic, and educational materials in multiple languages
  - https://www.mass.gov/info-details/hepatitis-a-outbreak-2018-2020
- HAV vaccination information
  - https://www.mass.gov/service-details/vaccine-administration-and-clinical-guidance
- Current guidelines for hepatitis A vaccination
  - https://www.cdc.gov/hepatitis/hav/havfaq.htm#B1
- MDPH 24/7 line to reach an Epidemiologist: 617-983-6800

QUESTIONS?