Follow-up for Positive COVID-19 Cases and their Close Contacts

Tools for LBOHs

June 5, 2020

Hillary Johnson, MHS, Infectious Disease Epidemiologist
Scott Troppy, MPH, PMP, CIC, Surveillance Epidemiologist
Bureau of Infectious Disease and Laboratory Sciences
MA Department of Public Health
Topics Today

• Immunization Updates Webinars – Reminder to register (we won’t conflict)
• Review of Dashboard and Reporting
• Review of Updated Serology Interpretation & Public Health Follow-up Guidance (June 1, 2020)
• Data Cleaning Tips
• Your Questions
Tuesday & Friday Webinars for LBOHs

Tuesdays & Fridays @ 11am

- Isolation of Cases and Quarantine of Contacts is the goal until that strategy changes/evolves.
- MAVEN is the main reporting source and where you should document your work.
  - Send Cases to CTC for follow-up if not:
    - Hospitalized, Deceased, or linked to a Cluster Facility
- Focusing on Priority Activities
- Clusters in Facilities in your community need your help.
  - Call Epi Program to create cluster events.

MAVEN Help has Guidance Documents and Previous Webinars:

**MDPH Epi Program:** 617-983-6800  
**MDPH MAVEN Help Desk:** isishelp@state.ma.us  
**MDPH Food Protection Program:** 617-983-6712  
**CTC Help Desk:** 857-305-2828
MAVEN Status Map as of 6/5/2020

Massachusetts Virtual Epidemiologic Network

Massachusetts Virtual Epidemiologic Network (MAVEN) is a web-based disease surveillance and case management system that enables MDPH and local health to capture and transfer appropriate public health, laboratory, and clinical data efficiently and securely over the Internet in real-time. The system interfaces with Electronic Laboratory Reporting (ELR) efforts, has automatic (24/7/365) notification of state and local officials of any event requiring their attention and geographic information system (GIS) activities. MAVEN will replace the current paper-based methods of data exchange between MDPH, local public health, and clinicians. For more information please contact ishelp@state.ma.us or by phone at (617)-383-6801.

This map displays 350 out of the 351 cities and towns in Massachusetts receiving disease notifications electronically through the MAVEN System as of May 27, 2020.

*Boston reporting data via BoSS MAVEN.

For more detailed information please zoom in on the map or click on town.

MAVEN Status May 2020

- Online (350)
- Offline (1)
2020 Immunization Updates

Webinar Training Calendar

- **2020 Immunization Schedule Updates** — Thurs., June 4; [Register]
- **Vaccine Storage & Handling and VFC Compliance** (earn your Certificate!) — Tues., June 9; [Register]
- **Vaccine Confidence - Communication Strategies for Providers** (new!) — Wed., June 17; [Register]
- **Vaccine-preventable Diseases in Massachusetts** — Tues., June 23; [Register]

All 2020 sessions will be held via webinar (in-person sessions have been canceled). All are free of charge.

All webinars run from noon -1 p.m.
For information on CME credits, click [here].

Our Tuesday MAVEN Case Management Webinars (Scott & Hillary) will end by 11:55 on June 9 & June 23, so you can attend both!
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Measure</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>COVID-19 positive test rate</td>
<td>●</td>
</tr>
<tr>
<td>2</td>
<td>Number of individuals who died from COVID-19</td>
<td>●</td>
</tr>
<tr>
<td>3</td>
<td>Number of patients with COVID-19 in hospitals</td>
<td>●</td>
</tr>
<tr>
<td>4</td>
<td>Healthcare system readiness</td>
<td>●</td>
</tr>
<tr>
<td>5</td>
<td>Testing capacity</td>
<td>●</td>
</tr>
<tr>
<td>6</td>
<td>Contact tracing capabilities</td>
<td>●</td>
</tr>
</tbody>
</table>

Legend:
- ● Positive trend
- ○ In progress
- 🔴 Negative trend

**Newly Reported Cases Today**: 471
**Total Cases**: 102,063

**Newly Reported Deaths Today**: 50
**Total Deaths**: 7,201

**New Patients Tested by Molecular Tests**: 7,115
**Total Patients Tested by Molecular Tests**: 621,248

**New Patients Tested by Antibody Tests**: 1,022
**Total Patients Tested by Antibody Tests**: 48,436
# Confirmed and Probable Case Breakdown

<table>
<thead>
<tr>
<th>Confirmed</th>
<th>Probable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newly Reported Confirmed Cases Today</td>
<td>Newly Reported Probable Cases Today</td>
</tr>
<tr>
<td>412</td>
<td>59</td>
</tr>
<tr>
<td>Total Confirmed Cases</td>
<td>Total Probable Cases</td>
</tr>
<tr>
<td>98,376</td>
<td>3,687</td>
</tr>
<tr>
<td>Newly Reported Deaths among Confirmed Cases</td>
<td>Newly Reported Deaths among Probable Cases</td>
</tr>
<tr>
<td>50</td>
<td>0</td>
</tr>
<tr>
<td>Total Deaths among Confirmed Cases</td>
<td>Total Deaths among Probable Cases</td>
</tr>
<tr>
<td>7,062</td>
<td>139</td>
</tr>
</tbody>
</table>

Patients with a positive molecular test for COVID-19 are counted as confirmed.
Patients with a positive serology/antibody test and either COVID-like symptoms or likely exposure to COVID-19 are counted as probable cases.
Patients who did not have a laboratory test but whose death certificate listed COVID-19 as a cause of death are counted as probable deaths.
Probable cases are included in all counts from March 1 onward.

Data Sources: COVID-19 Data provided by the Bureau of Infectious Disease and Laboratory Sciences, and the Registry of Vital Records and Statistics; Tables and Figures created by the Office of Population Health. Note: all data are current as of 10:00am.
Q. Many sites are asking – should you report both the confirmed and probable cases?

• **A.** That is a local decision. If you do decide to report probable cases, make sure to make distinctions from confirmed and note when you are reporting what.
  • Do not recommend parsing out your probable cases and reporting some but not all. That may prove difficult to remain consistent and you would not match state data if compared.
Updated Results Interpretation Guidance is here!

- Similar to last version, this table describes what test results likely mean, (combinations of PCR and antibody testing), and the corresponding public health response.

- **Big Update:** looking more closely at serology results and symptom timing to inform follow-up.
Table Review

- If you just have a positive serology (any combination of antibody result: IgM, IgG, total Ig)
  - Public Health Response is similar to before, however:
  - **Look for recent symptoms** – this informs actions.
  - New PCR can still trump serology.

<table>
<thead>
<tr>
<th>SARS-CoV-2 PCR Or Antigen Test</th>
<th>Antibody Test</th>
<th>Interpretation</th>
<th>Public Health Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IgM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IgG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Ig</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For patients with nasal swab not done or done at some point prior to blood draw

<table>
<thead>
<tr>
<th>Unknown, or Previously, PCR or Antigen Negative</th>
<th>+</th>
<th>- Or unknown</th>
<th>Likely recent infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>+</td>
<td></td>
<td>Likely recent or resolving infection</td>
</tr>
<tr>
<td>- Or unknown</td>
<td>+</td>
<td></td>
<td>Likely resolving or resolved infection</td>
</tr>
<tr>
<td>+</td>
<td></td>
<td></td>
<td>Infection at some undetermined point</td>
</tr>
</tbody>
</table>

Follow-up protocol:
- obtain symptom information and hospitalization status
- if never symptomatic OR asymptomatic for the last 14 days: no additional testing or follow-up needed
- if recently [within 14 days] appropriately* symptomatic: initiate isolation period based on symptom onset (10 days with at least 3 days fever free and improvement in respiratory symptoms)
  - can consider pursuing PCR testing, if negative can discontinue isolation
- identify contacts with exposure to case through end of isolation period and institute 14-day quarantine as appropriate
Positive Serology (with no current PCR result)

Follow-up protocol:

• Obtain symptom information and hospitalization status

• If never symptomatic OR asymptomatic for the last 14 days:
  • no additional testing or follow-up needed

• If recently (within 14 days) appropriately* symptomatic:
  • initiate isolation period based on symptom onset (10 days with at least 3 days fever free and improvement in respiratory symptoms)
    o can consider pursuing PCR testing, if negative can discontinue isolation

• Identify contacts with exposure to case through end of isolation period and institute 14-day quarantine as appropriate
Positive Serology (with no current PCR result)

- How is this different than the previous guidance?
  - A. Previously, all positive serology by default required isolation of cases and quarantine of contacts (only a PCR result could change that). Updated guidance now says if you have recent symptoms, you should isolate and contacts quarantine, but if you do not have recent symptoms, LBOH can interview case and be done.

- PCRs still trump serology testing. A positive PCR means a confirmed case. A negative PCR means not currently infectious and no isolation needed (but still Probable based upon positive serology).
Table Review

- If you have a new positive serology (And the case had a previous +PCR test a while ago)
  - This was a confirmed case before.
  - New positive results should just attach to the previous event.
  - No new isolation of case or quarantine of contacts required.
  - No New Action.

<table>
<thead>
<tr>
<th>SARS-CoV-2 PCR Or Antigen Test</th>
<th>Antibody Test</th>
<th>Interpretation</th>
<th>Public Health Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>IgM</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>IgG</td>
<td>Total Ig</td>
<td></td>
</tr>
</tbody>
</table>

For patients with nasal swab not done or done at some point prior to blood draw

<table>
<thead>
<tr>
<th>Previously PCR or Antigen Positive</th>
<th>+</th>
<th>-</th>
<th>+</th>
<th>+</th>
<th>-</th>
<th>+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpretation</td>
<td>Confirmed infection at time indicated by PCR or antigen result</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Health Response</td>
<td>No additional follow-up needed assuming appropriate follow-up done associated with original PCR/antigen positive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
  - If follow-up was not previously done, obtain symptom and hospitalization information |

*Appropriately symptomatic is defined as: either cough or shortness of breath, OR at least two of the following symptoms – fever, chills, shaking chills, headache, myalgia, sore throat and new...
Let’s Talk Data Cleaning

• We’ve all been scrambling for a couple months with cases and protocols flying at us left and right.
  • MAVEN Workflows were overtaxed with the volume so not all were working and able to assist in your case management as originally designed.

• As Summer Months are coming, this is as good a time as any to review old events and make sure you completed all known data fields, as well as signed off on events to move them through the workflows.
Data Cleaning Goals

• Think about the questions in the news about COVID-19.
• Think about the questions you’ve been asked by your towns and your community.
• The data that answers those questions comes from your investigations.
  • There is no magic data collection.

• Do we have certain populations that are being affected more by COVID-19?
  • Race & Ethnicity
  • Gender
  • Occupation
  • Associated with a cluster in a LTCF?

• What symptoms are we seeing in our residents?
• What clinical complications have we identified?
Data Cleaning Goals

For CASES

- Making sure no new labs/cases have been missed.
- Cleaning up workflows, wrapping up confirmed and probable events that are well past their infectious period.
- Removing old cases from EMS/First Responders Report.
- Entering any data into the question packages that is currently missing.

For CONTACTS

- Cleaning up workflows & wrapping up contact events that have completed their quarantine.
- Making sure we didn’t miss any contacts that became cases.
- Entering any data into the question packages that is currently missing.
What Must be Complete in MAVEN to Remove an Event from the Workflows?

**Administrative Question Package**
- Steps 1-5 move your case through the workflows.
- **COVID Assistance Requested & Steps 1-3** are your first actions.
  - Determines if LBOH is keeping case.
  - Acknowledges case and names investigator.
- **Conduct Follow-up & complete question Packages with all the information.**
- **Step 4** – Says investigator is done.
- **Step 5** – Opportunity for local supervisor review & sign off.

---

![MAVEN Workflow Diagram]

**LBOH Requests Assistance by selecting Yes**
- Step 1 removes event from immediate WF
- Step 2 - Investigation Started - can be Yes/No

**Step 3 LBOH completes information so we know who is requesting assistance**

**Step 4 removes from LBOH Pending WF and the Contact COVID WF**

**Step 5 removes from Final Review WF**
What Should LBOH Complete in MAVEN for Cases

Data Entry in MAVEN

- **Participants Tab (edit Person button)**
  - Gender
  - Address (confirm address is correct for facility residents. Confirm address is correct for HCWs that live elsewhere (not at facility)).

- **QP2 - Demographic**
  - Race
  - Is case Hispanic?
  - Employer Name & Occupation (for HCP or “retired” for residents, etc.)

- **QP3 – Clinical**
  - Symptom variables (onset date & symptoms)
  - Underlying illness
  - Clinical complications
  - Was case hospitalized?
    - Hospital Name
  - Outcome:
    - Died/Recovered. This is where deaths are captured.

- **Question Package 5: Risk/Exposure/Control & Prevention**
  - “Employed at, admitted to, or visited a healthcare Setting?”
    - Yes/No/Unk
    - Where is the facility located? (facility name & town OR facility name & full address?)
    - “Is case a healthcare worker?”
      - “Does the case have direct patient care responsibilities?”
      - “Worker type?”

- **Contact Monitoring Status in QP6 needs to be COMPLETED.**
  - This maven variable will need to be updated to Contact monitoring status: “completed” by LBOH once patient is no longer in isolation and no longer under Transmission Based Precautions.
  - All confirmed events will remain on the First Responders Reports until this variable is completed, indicating the patient is no longer infectious to others.

You don’t need to interview facility residents (most of the clinical information you can get from the facility staff).

You DO need to interview positive staff.
What’s linked? Go here to see/link to contacts or a cluster event.

Confirmed/Probable/Suspect/Contact

Lab Tab to see lab tests

Patient Person Details (address, phone)

Electronic Trail for this event. Who has entered data? Where did this case come from?

6 Question Packages

View Wizard
Antibody Testing (serology)

Where can we tell what kind of test a patient had?

A. Check the Lab Tab.

Test Types You May See:
- PCR Test: 2019-nCoV Real-time RT-PCR
- Rapid PCR Test: SARS coronavirus 2 RdRp gene
- Serology IgM specific: SARS-CoV-2 IgM
- Serology IgG specific: SARS-CoV-2 IgG
- Serology IgA specific: SARS-CoV-2 IgA
- Serology Antibody Type Unspecified: SARS-CoV-2 IgG + IgM

MAVEN Reports are the Key
Lots of tools for running reports on MAVEN Help.
Quick Focus Today: CASES

- STEP 1: To See your Confirmed and Probable Cases, run the COVID-19 Confirmed and Probable Case Line List Report
Running Report on Cases

**TIPS:**

- Start small on the dates. Run 1 month or ½ month at a time to make sure you catch all the events. (Start with Jan & Feb to be sure)

- Remember to put City in ALL CAPS.

- Do not select an option for Step 4. Leave it blank (so you get all Contact Events in your line list). If you select Yes or No, you won’t get any cases where Step 4 hasn’t been completed yet (which is really what you are getting at for this data cleaning).

- Disease Classification Status: even though all are available in the dropdown, only Probable and Confirmed will work. You could run Probable or Confirmed Separately or at the same time. Whatever is most helpful for your review.

- Output Type is the format you want the report. Select HTML for a quick look at the data, then you can run it again and do an excel (or CSV) file that will be a document you can sort, etc.
  - The benefit of the html is you can hyperlink to the various events from the MAVEN ID.
### Variables (Headings) that will show in report.

<table>
<thead>
<tr>
<th>Event ID</th>
<th>Location of death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create Date</td>
<td>Please Specify</td>
</tr>
<tr>
<td>Disease classification status</td>
<td>Contact monitoring status</td>
</tr>
<tr>
<td>Official City</td>
<td>Specify other status</td>
</tr>
<tr>
<td>Name</td>
<td>COVID Assistance Requested</td>
</tr>
<tr>
<td><strong>Step 1 - LBOH acknowledged</strong></td>
<td>Step Requested</td>
</tr>
<tr>
<td>LBOH acknowledged date</td>
<td>Investigation Status</td>
</tr>
<tr>
<td><strong>Step 2 - Investigation started</strong></td>
<td>Age (in years)</td>
</tr>
<tr>
<td><strong>Step 3 - LBOH/Agency Investigator</strong></td>
<td>Gender</td>
</tr>
<tr>
<td>LBOH/Agency</td>
<td>Calculated Race</td>
</tr>
<tr>
<td><strong>Step 4 - Case Report Form Completed</strong></td>
<td>Race</td>
</tr>
<tr>
<td>Completed by</td>
<td>What is your ethnicity? (You can specify one or more)</td>
</tr>
<tr>
<td><strong>Step 5 - LBOH final review</strong></td>
<td>Please specify</td>
</tr>
<tr>
<td>Was case hospitalized?</td>
<td>Is case Hispanic?</td>
</tr>
<tr>
<td>Outcome</td>
<td>Address</td>
</tr>
<tr>
<td>Date of death</td>
<td>Just a snapshot to give you a feel for what is missing, but there are more variables that should be completed within a case.</td>
</tr>
</tbody>
</table>
Things to Look For in Data Cleaning

**General Case Review:**

- Have any of these cases been missed for follow-up?
- One common possibility: Cases may have been missed due to multiple labs coming in at different points and updating an old negative event to a new positive. ISIS tries to update to the new positive test for event date. Not all are caught so some may still have the old event date. (ex. first lab was negative on 3/23, first positive lab was 5/26. The event date should be updated to 5/26.)
Things to Look For in Data Cleaning

- Check for big differences between Event Date and Create Date.

- Look for cases that are blank for:
  - Step 1 - LBOH acknowledged
  - Step 2 - Investigation started
  - Step 3 - LBOH/Agency Investigator

This may mean an event was missed or hasn’t been acknowledged yet. Follow-up may still be needed.

- Reviewing Data Completion (from looking at the report):
  - Do you have demographic data completed? (Race/Hispanic status?)
  - Was case hospitalized?
  - Outcome? (death?)
Confirmed & Probable Summary

- Complete Admin Question Package Steps 1-5 To Move out of Current Workflows.
- Contact Monitoring Status: Mark Complete if case has exited isolation (this will remove CONFIRMED cases from EMS reports).
- New labs should append to older events. Occasionally a new positive lab will append to a previously negative event. These new Confirmed events are more challenging to spot due to the old event date (from the first negative lab) which isn’t always updated (we try, occasionally some are missed). Check for these by identifying gaps in data (Steps 1-5 are not completed) or big time gaps between create date and event date.
- Review notes and make sure key variables were entered into the question packages.
  - If any events do not have the correct case classification status, (PCR+ should be confirmed, serology + should be probable) call Epi Program or email isishelp@state.ma.us for an update to the Case Classification Status.
  - Subsequent labs should just attach to the first event. If you see someone with two MAVEN events, email isishelp@state.ma.us with the MAVEN IDs to merge the events together.
Quick Focus Today: Contacts

• **STEP 1:** To See your Contact Events, Run the COVID-19 LBOH Contact Line List Report.
Running Reports on Contacts

**TIPS:**

- Run from 01/01/2020 to Tomorrow’s Date (to capture today)
- Remember to put City in ALL CAPS.
- Do not select an option for Step 4. Leave it blank (so you get all Contact Events in your line list). If you select Yes or No, you won’t get any cases where Step 4 hasn’t been completed yet (which is really what you are getting at for this data cleaning).
- Output Type is the format you want the report. Select HTML for a quick look at the data, then you can run it again and do an excel (or CSV) file that will be a document you can sort, etc.
- If that date range is too long, just start with Jan 1 – Feb 1, then do Feb 1 – Mar 1, etc. Until you have tackled these contacts one month at a time.
Things to Look For in Data Cleaning

• Look at your report extract. If you have pulled the data into Excel, sort by “Last potential exposure date” column. Contacts over 2 weeks from this date should be done with their 14 day quarantine period.

• For each Contact Event:
  • Does “Contact Monitoring Status” equal Completed or still blank?
  • Are Step 3 - LBOH/Agency Investigator & Step 4 - Case Report Form blank or are they completed?
  • These are the main data fields you need to complete to wrap up a contact event. If you see you have contact events with blank data for these fields, you need to go into the MAVEN events and complete the data.
Variables (Headings) that will show in report.

<table>
<thead>
<tr>
<th>Event ID</th>
<th>Create Date</th>
<th>Event date</th>
<th>Official City Name</th>
<th>Last potential exposure date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 3 - LBOH/Agency Investigator</td>
<td>LBOH/Agency</td>
<td>Step 4 - Case Report Form Completed</td>
<td>Completed by</td>
<td>Specify other status</td>
</tr>
</tbody>
</table>

Contact monitoring status

Just a snapshot to give you a feel for what is missing, but there are more variables that should be completed within a Contact Event.
Contact Events Data Cleaning Summary

CONTACT EVENT REVIEW CHECK-LIST (for older events)

• Hyperlink MAVEN ID & Look up in MAVEN.
• Check Lab Tab – Any positive labs? If so, report to ISIS for case classification update.
• Quickly review event notes.

• You can use the COVID-19 Wizard to View all the major Questions in one screen.

• Question Package #6 - Contact Monitoring.
  • Make sure Contact Monitoring Status= Completed. (or appropriate status, it but should not be Blank or In Progress.)

• Admin Question Package Steps 1-5.
  • Update Steps 1-5 as needed.
  • Note: Step 5 - LBOH final review was created to allow for local supervisor review at the LBOH. Confirm with your supervisor if there is a local process for completing this variable.
QUESTION:

DO YOU HAVE ANY QUESTIONS?