

This is the first email MDHHS has that documents then-MDCH staff knowledge and involvement. At the time of all these emails, the department is the Michigan Department of Community Health (MDCH) as the merger to create the Michigan Department of Health and Human Services (MDHHS) does not take place until mid-April, 2015.

From: Johnson, Shannon (DCH)

Sent: Monday, October 13, 2014 12:02 PM

To: Bohm, Susan (DHHS) <bohms@michigan.gov>; Fiedler, Jay (DHHS) <FiedlerJ@michigan.gov>; Collins, Jim (DHHS) <CollinsJ12@michigan.gov>

Cc: Bolen, Timothy (DHHS) <BolenT1@michigan.gov>; Tyndall Snow, Leigh (DHHS) <TyndallSnowL@michigan.gov>; Rudrik, James T. (DHHS) <rudrikj@michigan.gov>

Subject: Genesee Co. Legionnaire's outbreak

Hello,

I spoke with Tim late last week about the ongoing Legionnaire's increase in Genesee County. They've had 30 cases of Legionnaire's Disease reported into the MDSS from June-present this year, where in previous years (2009-2013) they've had a range from 2-9 cases reported during this same timeframe. Genesee initially thought the increase was associated with McLaren Flint Hospital as a source, but after Tim and I both reviewed the preliminary data it was pretty clear that many of the cases did not fit with this hypothesis. In addition, the picture has been clouded by the fact that most cases being reported did not have onset dates recorded. The current hypothesis is that the source of the outbreak may be the Flint municipal water. Tim informed me that Flint switched from the Detroit municipal water system to getting water from the Flint River last year. I ran 5-year epi curves for the 6 counties (Saginaw, Shiawassee, Livingston, Oakland, Lapeer, and Tuscola) surrounding Genesee and none of those counties are experiencing an increase similar to what Genesee is seeing. The other counties are at normal or below-normal levels of case counts for June-present. I spoke with the Genesee Epi, Shurooq, again today and she told me they have mapped their cases and found that nearly all of them are within the city of Flint and on the municipal water. They also found that the majority of cases are not occurring close to the treatment plant, but further down the line. This would not be surprising since chlorination and disinfection levels drop the further away you get from the treatment source. The LHD met with the city's water treatment department and confirmed they do not conduct any Legionella testing at the facility. I let Shurooq know that we could assist with and facilitate environmental testing, whether it be through our lab or DEQ. The LHD is meeting with the water dept. this week so she said she would let me know what their plan is. I also requested, again, that she let the area hospitals know if they see any new cases of illness to collect a respiratory culture in addition to the urine antigen test so that if environmental testing is done and Legionella is recovered, there is a clinical sample to compare it to. She let me know that McLaren conducted environmental testing on their system and found low levels of legionella bacteria and have since hyper-chlorinated their water to disinfect the system. McLaren receives its water from the Flint municipal system.

Tim and I have both tried to offer our services to Genesee and thus far have gotten very little information and/or willingness to receive assistance. As this very much appears to be confined to Genesee and not a multi-county issue, I'm not sure how much to push as it's solely their jurisdiction. We know it's only a matter of time until this hits the media though...

Tim- Please feel free to correct any details I have wrong, or add any others you might have.

Thanks,
Shannon Andrews Johnson, MPH
Infectious Disease Epidemiologist
Michigan Dept. of Community Health
201 Townsend St., CVB 5th Floor
Lansing, MI 48913
Phone: 517-335-8165
Fax: 517-335-8263

Shortly after a MDCH epidemiologist elevated this internally, MDCH was contacted by DEQ regarding Legionnaire's Disease in Genesee County.

From: Bohm, Susan (DCH)
Sent: Friday, October 17, 2014 4:31 PM
To: Johnson, Shannon (DHHS) <JohnsonS61@michigan.gov>
Cc: Fiedler, Jay (DHHS) <FiedlerJ@michigan.gov>; Collins, Jim (DHHS) <CollinsJ12@michigan.gov>
Subject: Query from DEQ re Genesee County Legionnaire's Disease Cluster

I received a call just now from the DEQ Chief of the Office of Drinking Water and Municipal Assistance, Liane Shekter Smith, about a call that came into her Office from the Genesee County Health Department re Legionnaire's Disease in Genesee County. Fortunately I had Shannon's great summary to work with. Liane was concerned this was a situation just breaking so I was able to tell her it had been under investigation by the Genesee County Health Department for several weeks. She was concerned that we were going to be making some announcement soon about the water being the source of infection, so I told her the Flint water was at this point just a hypothesis. She asked whether Genesee had the capability to test water and I replied that we would be working with Genesee to coordinate any water testing. **What she did share with me was interesting – that there have been numerous complaints about the Flint water, that the Governor's Office had been involved, and that any announcement by public health about the quality of the water would certainly inflame the situation.**

She gave me the name of Steve Busch, the Field Operations Acting Chief, District Supervisor for the Public Water Supply Program for the district that includes Genesee. Communications with DEQ about this investigation can go to Steve. His tel number is 517-643-2314. And she was pleased that we were aware of what was going on.

Susan

From: Johnson, Shannon (DCH)
Sent: Monday, October 13, 2014 12:02 PM
To: Bohm, Susan (DCH); Fiedler, Jay (DCH); Collins, Jim (DCH)
Cc: Bolen, Timothy (DCH); Tyndall, Leigh (DCH); Rudrik, James T. (DCH)
Subject: Genesee Co. Legionnaire's outbreak

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Lapeer, and Tuscola) surrounding Genesee and none of those counties are experiencing an increase similar to what Genesee is seeing. The other counties are at normal or below-normal levels of case counts for June-present. I spoke with the Genesee Epi, Shurooq, again today and she told me they have mapped their cases and found that nearly all of them are within the city of Flint and on the municipal water. They also found that the majority of cases are not occurring close to the treatment plant, but further down the line. This would not be surprising since chlorination and disinfection levels drop the further away you get from the treatment source. The LHD met with the city's water treatment department and confirmed they do not conduct any Legionella testing at the facility. I let Shurooq know that we could assist with and facilitate environmental testing, whether it be through our lab or DEQ. The LHD is meeting with the water dept. this week so she said she would let me know what their plan is. I also requested, again, that she let the area hospitals know if they see any new cases of illness to collect a respiratory culture in addition to the urine antigen test so that if environmental testing is done and Legionella is recovered, there is a clinical sample to compare it to. She let me know that McLaren conducted environmental testing on their system and found low levels of legionella bacteria and have since hyper-chlorinated their water to disinfect the system. McLaren receives its water from the Flint municipal system.

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Tim- Please feel free to correct any details I have wrong, or add any others you might have.

Thanks,
Shannon Andrews Johnson, MPH
Infectious Disease Epidemiologist
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Lansing, MI 48913
Phone: 517-335-8165
Fax: 517-335-8263

MDCH epidemiologist reaches out directly to the Genesee County Health Department Health officer and Medical Director. No record they ever responded.

From: Bohm, Susan (DCH)

Sent: Tuesday, October 21, 2014 9:47 AM

To: Valacak, Mark <mvalacak@gchd.us>; Johnson, Garry <gjohnson@gchd.us>

Cc: Fiedler, Jay (DHHS) <FiedlerJ@michigan.gov>; Johnson, Shannon (DHHS) <JohnsonS61@michigan.gov>; Bolen, Timothy (DHHS) <BolenT1@michigan.gov>

Subject: Legionnaire's Disease Cluster in Flint area

Good morning,

We have been contacted a couple of times now by the DEQ Chief of the Office of Drinking Water and Municipal Assistance, Liane Shekter Smith, about the Legionnaire's Disease cluster in the Flint area. We let her know that the cluster has been under investigation by the Genesee County Health Department for several weeks. She was concerned that an announcement was going to be made soon about the water as the source of infection; I told her the Flint water was at this point just a hypothesis. I would like to give Liane contact information of someone at the Genesee County Health Department to speak with directly about the investigation. Please let me know who that might be.

As always, should GCHD need any assistance with the investigation, we would be more than willing to assist. Thanks.

Susan Bohm, MS

Manager, Enteric & Respiratory Illnesses Epidemiology Unit

Surveillance and Infectious Disease Epidemiology

Division of Communicable Disease

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MDCH epidemiologist begins the process of facilitating questionnaire development with the Genesee County Health Department epidemiologist.

From: Johnson, Shannon (DCH)
Sent: Friday, January 23, 2015 10:38 AM
To: Collins, Jim (DHHS) <CollinsJ12@michigan.gov>; Fiedler, Jay (DHHS) <FiedlerJ@michigan.gov>
Subject: FW: Legionella Questions

From: Johnson, Shannon (DCH)
Sent: Friday, October 17, 2014 1:52 PM
To: 'Hasan, Shurooq'; Bolen, Timothy (DCH)
Cc: Cupal, Suzanne
Subject: RE: Legionella Questions

Hi Shurooq,

Great, thanks for sending that along. Attached is the extended questionnaire that we put together a number of years ago to use in conjunction with the MDSS form in order to collect additional exposure information when we're seeing a high number of cases. Perhaps once you look it over we can figure out a Genesee-specific version by combining some of the questions and adding any others that might be needed.

Thanks,
Shannon

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Infectious Disease Epidemiologist
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Lansing, MI 48913
Phone: 517-335-8165
Fax: 517-335-8263

From: Hasan, Shurooq [<mailto:shasan@gchd.us>]
Sent: Friday, October 17, 2014 1:44 PM
To: Johnson, Shannon (DCH); Bolen, Timothy (DCH)

Cc: Cupal, Suzanne
Subject: Legionella Questions

Hi,

The questions below are what we determined should be asked to those who are diagnosed with Legionella. Please share with us any suggestions or concerns you might have. Thanks!

- 1) What kind of water do you drink? (Well vs. City)
 - a. If city water, from what location?
- 2) Have you recently traveled/stayed in any hotels?
- 3) Do you use an air conditioner at home? A humidifier?
- 4) Do you have a pool, sauna or spa you use regularly use at home?
- 5) Has there been any recent remodeling in your house?
- 6) Do you have proper ventilation in your bathroom at home?

Shurooq

Shurooq Hasan, M.P.H
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(810) 257-3815
shasan@gchd.us

MDCH Supplemental Legionellosis Questionnaire

To be used in addition to the MDSS Legionellosis form

Health Status Risk Factors (please check all that apply):

- | | | |
|--|--|---|
| <input type="checkbox"/> Smoking- packs per day:_____ | <input type="checkbox"/> Emphysema | <input type="checkbox"/> Asthma |
| <input type="checkbox"/> Chronic lung disease (e.g. COPD) | <input type="checkbox"/> Cancer | <input type="checkbox"/> Diabetes |
| <input type="checkbox"/> Compromised immune system | <input type="checkbox"/> Liver disease | <input type="checkbox"/> Kidney problems |
| <input type="checkbox"/> Heart disease | <input type="checkbox"/> Oral steroid use | <input type="checkbox"/> Organ transplant |
| <input type="checkbox"/> Previous dx of pneumonia- when?:_____ | <input type="checkbox"/> Other- detail:_____ | |

Onset Date: _____ **Dates to consider for exposure (2 weeks prior to onset):** ____/____ - ____/____

During the 2 weeks prior to the onset of symptoms, did the patient do any of the following?:

Use respiratory equipment (e.g. nebulizer): ☐No / ☐Unk / ☐Yes - what? _____

Shower/ bathe outside of home: ☐No / ☐Unk / ☐Yes - where? _____

Use a hot tub or whirlpool: ☐No / ☐Unk / ☐Yes - where? _____

Use a public or private pool: ☐No / ☐Unk / ☐Yes - where? _____

Visit a splash pad or water park: ☐No / ☐Unk / ☐Yes - where? _____

Been near a lake or pond ☐No / ☐Unk / ☐Yes - where? _____

Been near a fountain: ☐No / ☐Unk / ☐Yes - where? _____

Been near a cooling tower: ☐No / ☐Unk / ☐Yes - where? _____

Visit a hospital or doctor's office: ☐No / ☐Unk / ☐Yes - where? _____

Visit a spa: ☐No / ☐Unk / ☐Yes - where? _____

Visit a grocery store: ☐No / ☐Unk / ☐Yes - where? _____

Visit a church: ☐No / ☐Unk / ☐Yes - where? _____

Visit a casino: ☐No / ☐Unk / ☐Yes - where? _____

Visit a movie theater: ☐No / ☐Unk / ☐Yes - where? _____

Visit a car wash: ☐No / ☐Unk / ☐Yes - where? _____

Visit a hair salon/ barber shop: ☐No / ☐Unk / ☐Yes - where? _____

Work in a garden: ☐No / ☐Unk / ☐Yes - where? _____

Fill your car's windshield washer fluid tank with water instead of washer solvent: ☐No / ☐Unk / ☐Yes

Additional Questions:

Patient's job title: _____ Name of worksite & location: _____

Do you have a window air conditioning unit: ☐ No / ☐Yes If yes, age of unit? _____

Are you aware of any other family members, friends, or co-workers who have similar symptoms or illness?

☐ No ☐Yes If yes, relationship to other ill person(s) _____

In the 2 weeks prior to the onset of your symptoms, what other stores, shopping malls, restaurants, and friends houses did you visit? _____

During the 2 weeks prior to the onset of your symptoms, did you do anything different from your normal everyday routine? _____

As epidemiologists continue to elevate this internally, the MDCH Communicable Disease Division Director makes another offer of assistance to the leadership of the Genesee County Health Department. We then identify a consistent point of contact within the local health department.

From: Collins, Jim (DCH)

Sent: Friday, January 23, 2015 11:40 AM

To: gjohnson@gchd.us; bchilds@gchd.us; jhenry@gchd.us; scupal@gchd.us; shasan@gchd.us; mvalacak@gchd.us

Cc: Tyndall Snow, Leigh (DHHS) <TyndallSnowL@michigan.gov>; Bohm, Susan (DHHS) <bohms@michigan.gov>; Johnson, Shannon (DHHS) <JohnsonS61@michigan.gov>; Fiedler, Jay (DHHS) <FiedlerJ@michigan.gov>; Miller, Corinne (DHHS) <MillerC39@michigan.gov>; McFadden, Jevon (DHHS) <McFaddenJ1@michigan.gov>

Subject: Legionella Investigations

Hello Colleagues,

I'm certainly aware of the pressures on your agency of late from the public and media alike around the water quality questions in Flint. Honestly, I really do not want to inconvenience you with this request, but it is one that we feel needs to be addressed.

As you know, there has been a marked increase in confirmed cases of Legionella infection in Genesee county (which likely represents the tip of the iceberg relative to the actual number of cases of illness). We believe that this increase warrants additional evaluation on the part of public health. Communicable Disease Division staff are certainly available to support that effort at your request. I've gotten some mixed messages around the level of follow-up that has been completed on these cases so far. It seems that, if complete follow up is taking place, the information is not being entered into the MDSS. This information can provide the critical first step toward directing environmental assessments of exposure, source identification and, hopefully, elimination (if a common source of these infections can be identified).

Can we provide any assistance (on site, or remotely) to your program for this investigation? Again, CD Division staff and our current CSTE fellow are ready to assist in any way that might lessen the burden on your staff.

I do look forward to scheduling a time for discussion next week and I think Shannon Johnson is working to that end.

Thank You,

Jim

Jim Collins MPH, RS
Director
Communicable Disease Division
Michigan Department of Community Health
201 Townsend St.
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Desk: 517-335-8586

Cell: 517-930-6932

After a phone call with Genesee County Health Department on 1/27/15 and internal discussion at MDCH led to the development of guidance for how the investigation needed to proceed and made specific offers of assistance to move a comprehensive investigation forward.

From: Johnson, Shannon (DCH)

Sent: Tuesday, January 27, 2015 3:45 PM

To: gjohnson@gchd.us; bchilds@gchd.us; scupal@gchd.us; jhenry@gchd.us; shasan@gchd.us; mvalacak@gchd.us

Cc: Collins, Jim (DHHS) <CollinsJ12@michigan.gov>; Fiedler, Jay (DHHS) <FiedlerJ@michigan.gov>; Bohm, Susan (DHHS) <bohms@michigan.gov>

Subject: Genesee Legionellosis Investigation

Greetings GCHD,

Thank you for the opportunity to speak with you this morning. After being updated on where GCHD is in the investigation process, we have identified some items that need additional details and/or may require additional data gathering efforts. In addition, we've listed areas where we can provide personnel to assist with data collection/analysis or aid in communication between the involved governmental departments during the outbreak investigation. At this point, the priorities in the public health investigation are to determine the scope of the outbreak and to define as clearly as possible the characteristics of the cases of Legionnaire's Disease and Pontiac Fever. These data will be critical to help inform and provide direction for the environmental side of the investigation.

Data being requested by MDCH and/or suggested data collection needs to be addressed:

- 1) Please provide the name of the primary point-of-contact for the overall GCHD legionellosis investigation.
- 2) The current copy of the GCHD Legionnaires Disease outbreak data collection line list is requested and updates sent to MDCH on a regular basis.
- 3) Onset dates or estimated onset dates need to be determined for all cases.
- 4) A current map of the municipal water system needs to be obtained and cases' residences mapped in relation to the water system.
- 5) The investigation needs a Genesee-specific supplemental questionnaire beyond the MDCH supplemental form and the 6 questions in the email message dated 10/17/14.
- 6) All previous cases (since 5/1/14) and new cases should be re-interviewed as soon as possible with the new outbreak-specific questionnaire. If cases are not available, then a proxy should be interviewed, ideally someone from the same household.
- 7) To look for cases of milder illness such as Pontiac Fever, the questionnaire should ask if there are other household members who have had a similar respiratory illness. Any household contacts with legionellosis-consistent illness should also be interviewed with the outbreak-specific questionnaire.
- 8) Clinical culture specimens, in addition to urine antigen testing, should be collected from all suspect cases where individuals are seeking medical care.
- 9) Hospitals should be queried to determine whether any previously diagnosed cases had respiratory cultures collected and whether any of these culture specimens were retained. If so, it should be requested that these samples be held until a determination on environmental testing can be made.

Assistance that MDCH can provide to Genesee to aid in the outbreak investigation:

- 1) MDCH can provide language to GCHD for distribution to the medical community regarding the request for clinical respiratory culture collection on all suspect cases of legionellosis (Legionnaire's Disease and Pontiac Fever).
- 2) MDCH staff is available to conduct medical record extraction, as needed.
- 3) MDCH staff can assist with data entry into MDSS, as needed.
- 4) MDCH staff can help with the development of a Genesee-specific outbreak questionnaire.
- 5) MDCH is willing to assist with supplemental questionnaire data collection by conducting case interviews (on previously and/or newly diagnosed cases) and also by assisting with data analysis, as needed.
- 6) MDCH can assist with the coordination and communication with MDEQ for specific data requests by GCHD.
- 7) The MDCH PIO can work with the GCHD PIO to develop a coordinated public health message to respond to public and media inquiries.

If there are other issues that we have not addressed where our assistance would be helpful, please do not hesitate to ask. We appreciate your efforts and recognize the delicate situation you are dealing during this investigation. We look forward to continued communication and collaboration with you.

Regards,
Shannon Johnson

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MDCH is forced to lay out exact steps to be taken with dates that we expect the Genesee County Health Department to complete tasks by in order to accomplish the work needed to be done by the locals.

From: Johnson, Shannon (DCH)

Sent: Wednesday, February 04, 2015 2:39 PM

To: Hasan, Shurooq <shasan@gchd.us>; Henry, James <jhenry@gchd.us>

Cc: Cupal, Suzanne <scupal@gchd.us>; Childs, Bonnie <BCHILDS@gchd.us>; Johnson, M.D., Gary <GJOHNSON@gchd.us>; Valacak, Mark <MVALACAK@gchd.us>; Fiedler, Jay (DHHS) <FiedlerJ@michigan.gov>; Bohm, Susan (DHHS) <bohms@michigan.gov>; Collins, Jim (DHHS) <CollinsJ12@michigan.gov>; Miller, Corinne (DHHS) <MillerC39@michigan.gov>

Subject: RE: Genesee Legionellosis Investigation

Dear GCHD,

Thank you all for your response. I have attached the Word document with additional MDCH answers to your questions (in blue). Moving forward, we've identified some next steps in our collaboration on the investigation. I spoke with Shurooq today and we made decisions on the division of labor for these points.

- 1) Genesee will send MDCH a copy of their current line list by this Friday, Feb 6th. We will use this as the master line list for the investigation.
- 2) Please provide an estimated date of when the HAN discussing clinical testing will be sent to providers in the community. We would appreciate seeing a copy of the final HAN prior to it being sent out. I discussed some points of clarification about the HAN language with Shurooq on the phone today. The hospitals will be following their own protocols for respiratory culture testing to attempt to isolate legionella. Genesee may want to include language in the HAN suggesting bronchial washes be used as they are more likely to contain sufficient bacteria for culture growth compared to a sputum specimen. If the legionella bacteria is identified at the hospital lab, those isolates will be sent along to the MDCH lab for additional testing.
- 3) We would like to have an outbreak-specific questionnaire finalized by the end of next week, Friday Feb 13th. Per Shurooq, Genesee is collaborating with Joan Rose from MSU on water system-specific questions. MDCH will begin creating a questionnaire template to be combined with Genesee's questions and a final version will be reviewed by both agencies.
- 4) MDCH has requested medical record access for the legionellosis investigation from Genesys, Hurley, and McLaren hospitals. After discussing with Shurooq, MDCH will begin to collect information on previous hospitalizations (dates, admission complaint, etc.) for cases.

- 5) Onset dates (or estimated onset dates) for all cases need to be determined. Genesee will work to collect this information on new cases (since 1/1/15). MDCH will review medical records in MDSS and contact hospitals as needed to determine onset dates for previous cases (6/1/14-12/31/14).
- 6) Considerations for defining the investigation. In this situation, the term outbreak is being used in the epidemiologic sense, meaning an increase in cases of above baseline. Based on this, the current Genesee outbreak began in June, 2014 with 5 reported cases. Until further information is collected and analyzed the definition will be general: Cases of legionellosis (Legionnaires' Disease and Pontiac fever) in Genesee County since 6/1/14. In the future, we may be able to refine the definition as additional data is obtained. If Genesee prefers, they may mark all cases in MDSS meeting the current definition as outbreak-associated and assign an outbreak ID. This is generally more useful when needing to search the MDSS for a subset of cases in the system. Since the outbreak currently includes all Genesee legionellosis cases since 6/1/14, it is not as urgent.

If there are other initial steps you would like to include please feel free to add them to the list.

Best wishes,
Shannon

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Fax: 517-335-8263

From: Cupal, Suzanne [<mailto:scupal@gchd.us>]

Sent: Friday, January 30, 2015 3:22 PM

To: Collins, Jim (DCH); Johnson, M.D., Gary; Childs, Bonnie; Henry, James; Hasan, Shurooq; Valacak, Mark

Cc: Fiedler, Jay (DCH); Bohm, Susan (DCH); Bolen, Timothy (DCH); Miller, Corinne (DCH); Johnson, Shannon (DCH)

Subject: RE: Genesee Legionellosis Investigation

Dear MDCH Colleagues,

We appreciated the opportunity to discuss the increase in legionellosis cases that Genesee County is experiencing. Collaboration is one of our core values as a local health department. MDCH has been a valued partner who brought resources and expertise to assist in solving some very challenging situations in the past. We look forward to the positive elements you can bring to this investigation.

As discussed during our call, we have concerns not only about legionellosis, but are involved in multiple investigations concerning the safety of local water. We were appreciative of the opportunity to share our investigation to date and our plans for continued investigative work. We are also appreciative of the opportunity to request MDCH's assistance in moving our investigation forward. We look forward to continued and improved communication and collaboration and appreciate your offers of assistance.

We appreciate your acknowledgment of the sensitive nature of our work in an environment of anxiety and suspicion. We do not want to jump to conclusions based upon very limited and inconclusive evidence and your assistance in filling some of the information gaps we have identified would be of great help. We specifically asked for your assistance in identifying someone at MDCH with expertise in type 1 water supplies and communicable disease. That was not reflected in your response. Please let us know if there is an identified resource for this at MDCH. In addition, we requested your support in identifying someone on your staff who could function as a liaison with your fellow state colleagues at MDEQ

since a number of questions have come up regarding the type 1 water supply where the state has regulatory authority and access to important data.

As we indicated in our call, we continue to identify and reach out to those that can inform our investigation and provide more information regarding water and legionellosis. The feedback that we are receiving has been very helpful in evolving our investigation. However, additional expertise is being sought as the investigation unfolds.

We have met internally and collaborated on our responses to your questions. In your response, you make reference to the scope of the outbreak. We encourage you to review the case notes in MDSS. If we are referring to this as an outbreak, we would like to request that we designate it as such and include an outbreak identifier in MDSS. We would also like to discuss criteria for inclusion for this outbreak. During our call, we informed you of our work in identifying close contacts of our cases that subsequently became cases themselves or tested positive but did not meet the case definition to be reported as a confirmed case. We also described the challenges in recording onset dates (see the notes). You have requested line listings on a regular basis. We would like to propose regular meetings via conference call to discuss details of how we record information in MDSS as well as to share our mutual findings. Based on our experiences regarding this investigation, we would also like to make recommendations regarding the reporting process.

We look forward to our collaborative process. We want to remind you that in addition to our legionellosis investigation, we are also investigating water related issues. As we continue to learn more through this process, we hope to be in a position to share our findings with others.

Your GCHD Colleagues

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scupal@gchd.us

From: Collins, Jim (DCH) [<mailto:CollinsJ12@michigan.gov>]

Sent: Friday, January 30, 2015 1:21 PM

To: Johnson, M.D., Gary; Childs, Bonnie; Cupal, Suzanne; Henry, James; Hasan, Shurooq; Valacak, Mark

Cc: Fiedler, Jay (DCH); Bohm, Susan (DCH); Bolen, Timothy (DCH); Miller, Corinne (DCH); Johnson, Shannon (DCH)

Subject: RE: Genesee Legionellosis Investigation

Importance: High

Good Afternoon All,

While you all at the Genesee County Health Department are reviewing Shannon's post from a couple of days ago (Copied below. We look forward to hearing your thoughts on this as well), I thought I'd go ahead and provide some additional information that we've compiled after the conference call.

During our conversation, there was a request for information about the public health outreach to the clinical community in response to an increase in legionella infections being reported from the metropolitan Detroit area and several other states (spring/summer 2013). Specifically, we discussed the text of a health alert message that was shared with the region's hospitals via the Michigan Health Alert Network (MIHAN) and any accompanying documentation.

I've got both to offer to you today.

I've attached the document, "**Legionellosis Guidance for Clinicians**" that was distributed with the following MIHAN message:

Text from SE Legionellosis increase HAN in 2013:

"Subject: Legionellosis in S.E. Michigan

Detroit City, Wayne and Macomb Counties have reported 35 cases of Legionellosis in June. This represents the highest number of Legionellosis cases for the month of June over the past decade and new cases continue to be identified in these jurisdictions. Most patients were or are still hospitalized (some in the ICU) and symptoms reported include fever, vomiting, abdominal pain, nausea and diarrhea. The CDC has also provided notification indicating an increase in Legionellosis cases in the Northeast (NY, DE, CT & PA).

Investigations are ongoing in Southeast Michigan to determine common sources of exposure. We are asking that the clinical community assist in this investigation through accurate identification, testing and reporting of all suspect cases of Legionellosis.

Attached, please find guidance that has been prepared to assist clinicians in case evaluation and facilitate specimen collection/testing as well as an updated "Supplemental Interview Form" for local health department use in evaluating reported cases."

Please note that in the attachment, there is introductory room to offer a local assessment of the situation and the rationale behind distributing the MIHAN message. We feel that GCHD is best positioned distribute a message to the healthcare community and to provide local context to that message but are certainly available to provide assistance to either function if you'd prefer.

Again, we do look forward to hearing your thoughts on Shannon's previous post and stand ready to assist in whatever capacity might best serve the investigation.

All My Best,
Jim

Jim Collins MPH, RS
Director
Communicable Disease Division
Michigan Department of Community Health
201 Townsend St.
Lansing, MI 48913
Desk: 517-335-8586
Cell: 517-930-6932

From: Johnson, Shannon (DCH)
Sent: Tuesday, January 27, 2015 3:45 PM
To: gjohnson@gchd.us; bchlds@gchd.us; scupal@gchd.us; jhenry@gchd.us; shasan@gchd.us; mvalacak@gchd.us
Cc: Collins, Jim (DCH); Fiedler, Jay (DCH); Bohm, Susan (DCH)
Subject: Genesee Legionellosis Investigation

Greetings GCHD,

Thank you for the opportunity to speak with you this morning. After being updated on where GCHD is in the investigation process, we have identified some items that need additional details and/or may require additional data gathering efforts. In addition, we've listed areas where we can provide personnel to assist with data collection/analysis or aid in communication between the involved governmental departments during the outbreak investigation. At this point, the priorities in the public health investigation are to determine the scope of the outbreak and to define as clearly as possible the characteristics of the cases of Legionnaire's Disease and Pontiac Fever. These data will be critical to help inform and provide direction for the environmental side of the investigation.

Data being requested by MDCH and/or suggested data collection needs to be addressed:

- 1) Please provide the name of the primary point-of-contact for the overall GCHD legionellosis investigation.
- 2) The current copy of the GCHD Legionnaires Disease outbreak data collection line list is requested and updates sent to MDCH on a regular basis.
- 3) Onset dates or estimated onset dates need to be determined for all cases.
- 4) A current map of the municipal water system needs to be obtained and cases' residences mapped in relation to the water system.
- 5) The investigation needs a Genesee-specific supplemental questionnaire beyond the MDCH supplemental form and the 6 questions in the email message dated 10/17/14.
- 6) All previous cases (since 5/1/14) and new cases should be re-interviewed as soon as possible with the new outbreak-specific questionnaire. If cases are not available, then a proxy should be interviewed, ideally someone from the same household.
- 7) To look for cases of milder illness such as Pontiac Fever, the questionnaire should ask if there are other household members who have had a similar respiratory illness. Any household contacts with legionellosis-consistent illness should also be interviewed with the outbreak-specific questionnaire.
- 8) Clinical culture specimens, in addition to urine antigen testing, should be collected from all suspect cases where individuals are seeking medical care.
- 9) Hospitals should be queried to determine whether any previously diagnosed cases had respiratory cultures collected and whether any of these culture specimens were retained. If so, it should be requested that these samples be held until a determination on environmental testing can be made.

Assistance that MDCH can provide to Genesee to aid in the outbreak investigation:

- 1) MDCH can provide language to GCHD for distribution to the medical community regarding the request for clinical respiratory culture collection on all suspect cases of legionellosis (Legionnaire's Disease and Pontiac Fever).
- 2) MDCH staff is available to conduct medical record extraction, as needed.
- 3) MDCH staff can assist with data entry into MDSS, as needed.
- 4) MDCH staff can help with the development of a Genesee-specific outbreak questionnaire.
- 5) MDCH is willing to assist with supplemental questionnaire data collection by conducting case interviews (on previously and/or newly diagnosed cases) and also by assisting with data analysis, as needed.
- 6) MDCH can assist with the coordination and communication with MDEQ for specific data requests by GCHD.
- 7) The MDCH PIO can work with the GCHD PIO to develop a coordinated public health message to respond to public and media inquiries.

If there are other issues that we have not addressed where our assistance would be helpful, please do not hesitate to ask. We appreciate your efforts and recognize the delicate situation you are dealing during this investigation. We look forward to continued communication and collaboration with you.

Regards,
Shannon Johnson

Shannon Andrews Johnson, MPH
Infectious Disease Epidemiologist
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Phone: 517-335-8165
Fax: 517-335-8263

Data being requested by MDCH and/or suggested data collection needs to be addressed:

- 1) Please provide the name of the primary point-of-contact for the overall GCHD legionellosis investigation. **Shurooq Hasan is lead on the CD investigation. Jim Henry is the lead on the water system investigation. Our entire CDIRT team is involved in both investigations.** Shannon Johnson will serve as the primary point-of-contact for MDCH. Shannon will coordinate directly with Shurooq and Jim at GCHD.
- 2) The current copy of the GCHD Legionnaires Disease outbreak data collection line list is requested and updates sent to MDCH on a regular basis. **Let us know the time table you are proposing. We would like to request a regular meeting schedule so we can discuss our mutual findings.** The Genesee line list will serve as the master line list for the outbreak investigation. The Genesee line list should be provided to MDCH weekly and any data gathered by MDCH will be added.
- 3) Onset dates or estimated onset dates need to be determined for all cases. **As discussed during our call, we can provide estimated onset dates. We would like your input...would you prefer we report the onset date reported by the patient, their primary care physician or the ID Physician consulting? There are differences. Please keep this in mind when reviewing the data.** For new cases, the onset date from the patient interview should be used. For older cases, the medical record should be used to assist in determining the estimated onset date. The Influenza Hospitalization Surveillance Project uses the following recommendations for determining estimated onset dates from medical records:
 - “In some cases you will need to calculate the date of onset based on notes in the Admission H&P or Discharge Summary that indicate that fever or cough began days earlier.
 - Couple of days = 2 days
 - Few days = 3 days
 - Several days = 5 days
 - Week = 7 days
 - For example if a patient is admitted 10/15 (Day 0) and the Admission H&P indicates the patient complained of fever/cough for “a few” days, then the earliest date of onset of respiratory symptoms is 10/12:

Date:	10/12	10/13	10/14	10/15
Day Number:	-3	-2	-1	0
	Onset			Admission

- If date of onset is provided as a range of dates, use the earliest date as date of onset of respiratory symptoms.
 - For example, if a date of onset is given as “3 to five days ago”, list the date corresponding to 5 days ago.”

Date:	10/10	10/11	10/12	10/13	10/14	10/15
Day Number:	-5	-4	-3	-2	-1	0
	Onset ←					Admission

- 4) A current map of the municipal water system needs to be obtained and cases’ residences mapped in relation to the water system. **As discussed in our call, we are experiencing difficulty in obtaining the information we have requested from DWP and MDEQ. We have sent the FOIA request for the current map of the municipal water system. As discussed during our call, we have mapped our cases to look for commonalities and to identify the proximity of the cases to the boil water advisories.**
MDCH will communicate with MDEQ about obtaining the water system map. If you have the information, please provide to MDCH a copy of the boil water advisories (or dates) and the areas they cover.
- 5) The investigation needs a Genesee-specific supplemental questionnaire beyond the MDCH supplemental form and the 6 questions in the email message dated 10/17/14. **As discussed in our call, GCHD has been identifying and reaching out to individuals with expertise with type 1 water supplies. During our call, we asked specifically if anyone at MDCH has this expertise. Please let us know if you have a staff member we can consult with. Also stated during our call, we requested the assistance of MDCH in creating our Genesee specific questionnaire....the questionnaire we are currently using. We are reaching out to water experts to assist in the updating of our questionnaire. In the limited conversations we have had so far, we have learned a great deal which will inform the questions we need to ask. We also look forward to additional conversations with our MDCH colleagues.**
MDCH does not have staff with expertise in type 1 water supplies, this falls under the purview of MDEQ and the local water authority. MDCH is able to advise specifically on legionella related to human illness. The compiled data provided by the cases on the questionnaire will be vital to directing the focus and scope of potential future environmental testing.
A general supplemental data form developed by MDCH was provided to Genesee on 10/17/14. MDCH will work with GCHD to develop a Genesee-specific questionnaire for the outbreak.
- 6) All previous cases (since 5/1/14) and new cases should be re-interviewed as soon as possible with the new outbreak-specific questionnaire. If cases are not available, then a proxy should be interviewed, ideally someone from the same household. **See me notes below...**
- 7) To look for cases of milder illness such as Pontiac Fever, the questionnaire should ask if there are other household members who have had a similar respiratory illness. Any household contacts with legionellosis-consistent illness should also be interviewed with the outbreak-specific questionnaire. **As discussed on the call in the review of our investigations, we have found this and, we have been reporting this... and have reported them in MDSS. This is the**

reason why we asked for testing of clinical samples not only of the patients, but, also of their close contacts.

- 8) Clinical culture specimens, in addition to urine antigen testing, should be collected from all suspect cases where individuals are seeking medical care. As discussed in our call, this is what we have requested from MDCH. In addition, we requested testing of close contacts, environmental testing of the patient home environments and potentially testing of key locations in the community with high heterotrophic plate counts. Based on the feedback from our consultations, this may be very helpful.
As detailed in the HAN language provided by MDCH to GCHD, hospitals should collect culture specimens in addition to the urine antigen test. If an isolate of Legionella is found from the culture, the hospital will send the isolate to the MDCH Bureau of Laboratories for further testing.
- 9) Hospitals should be queried to determine whether any previously diagnosed cases had respiratory cultures collected and whether any of these culture specimens were retained. If so, it should be requested that these samples be held until a determination on environmental testing can be made. This was discussed at our Bug Fuzz meeting on 1/22/15. We will also be requesting more information regarding previous years legionella testing. We suspect a significant increase in the numbers of tests conducted, particularly during August/September than in previous years. Remember, the hyperchlorination done at our hospital of interest was completed 10/4/15. That may also influence the number of tests conducted.

Assistance that MDCH can provide to Genesee to aid in the outbreak investigation:

- 1) MDCH can provide language to GCHD for distribution to the medical community regarding the request for clinical respiratory culture collection on all suspect cases of legionellosis (Legionnaire's Disease and Pontiac Fever). What we specifically requested was the specific testing protocols for sample collection, storage and transportation of clinical samples. We also requested testing of environmental samples from patient homes and key community sites. We would like the same protocol information for this type of testing as well. Jim's email covered some of this, but, we still have some questions.
Hospitals should be familiar with testing protocols for legionella culture specimens. If a legionella isolate is found by the hospital, the handling and shipment to BoL for additional testing is discussed in the language of the HAN.
- 2) MDCH staff is available to conduct medical record extraction, as needed. Medical records are attached in MDSS and we do not need assistance with this at this time.
- 3) MDCH staff can assist with data entry into MDSS, as needed. At this time, we do not need assistance with this. Please see the note below...
- 4) MDCH staff can help with the development of a Genesee-specific outbreak questionnaire. We welcome your participation in the revision of our Genesee specific questionnaire. We have already received some helpful feedback from our expert consultations.
We would like to have an outbreak-specific questionnaire finalized by the end of next week, Friday Feb 13th. Per Shurooq, Genesee is collaborating with Joan Rose from MSU on water

system-specific questions. MDCH will begin creating a questionnaire template to be combined with Genesee's questions and a final version will be reviewed by both agencies.

- 5) MDCH is willing to assist with supplemental questionnaire data collection by conducting case interviews (on previously and/or newly diagnosed cases) and also by assisting with data analysis, as needed. Our CD nurses can address newly diagnosed cases. We would like to discuss MDCH's assistance for conducting interviews with previously diagnosed/interviewed cases. MDCH staff members are available to assist with interviewing older cases. We can discuss this issue further after the questionnaire is completed.
- 6) MDCH can assist with the coordination and communication with MDEQ for specific data requests by GCHD. As discussed in our call, we are requesting MDCH assistance with obtaining information from MDEQ. GCHD has sent a FOIA letter requesting the information we have not been able to obtain regarding the water system. If we do not receive the information or have other challenges we would request MDCH assistance in obtaining the information. MDCH will communicate with MDEQ about obtaining the water system map.
- 7) The MDCH PIO can work with the GCHD PIO to develop a coordinated public health message to respond to public and media inquiries. As discussed in our call, the water system is an extremely sensitive topic. We are very careful in crafting messages. Should we need MDCH PIO assistance, we will request it.

This is one of the first times the Genesee County Health Department reaches out to the CDC, and the CDC directs them back to MDCH. CDC Subject Matter Expert Laurel Garrison is someone MDCH/MDHHS has worked extensively with and MDCH/MDHHS has ensured that CDC remains present on communications and conference calls throughout the investigation.

From: Johnson, Shannon (DCH)

Sent: Wednesday, February 11, 2015 9:21 AM

To: Collins, Jim (DHHS) <CollinsJ12@michigan.gov>; Fiedler, Jay (DHHS) <FiedlerJ@michigan.gov>; Bohm, Susan (DHHS) <bohms@michigan.gov>

Subject: RE: Legionella Investigation Guidance

I spoke with Laurel at CDC and gave her the background on this whole situation and our multiple attempts over the last 7 months to provide assistance and help to GCHD with this outbreak. She's going to reiterate in her response that Genesee should be working directly with us and that contact with CDC is normally from the state to CDC. She's going to CC me on any response to Shurooq and send along the questionnaire once she gets it. I told Laurel she's more than welcome to provide feedback on their questionnaire, but that we hadn't even seen it yet and that it was our understanding they were working on water system questions with a local waterborne illness academician while we developed the hypothesis generating template.

Fun way to start the day.

Thanks,
Shannon

Shannon Andrews Johnson, MPH
Infectious Disease Epidemiologist
Michigan Dept. of Community Health
201 Townsend St., CVB 5th Floor
Lansing, MI 48913
Phone: 517-335-8165
Fax: 517-335-8263

From: Collins, Jim (DCH)

Sent: Wednesday, February 11, 2015 8:38 AM

To: Johnson, Shannon (DCH); Fiedler, Jay (DCH)

Subject: RE: Legionella Investigation Guidance

Shannon,

Please thank the CDC person for looping us in. At the same time please provide a summary to date of Genesee's "efforts" on this investigation recommendations we've given, where we offered to assist and how that has been received.

Please take this document and request a copy of the tool they shared with the CDC.

Thanks

Jim

Jim Collins MPH, RS

Desk: 517-335-8586

Cell: 517-930-6932

From: Johnson, Shannon (DCH)
Sent: Wednesday, February 11, 2015 8:34 AM
To: Fiedler, Jay (DCH); Collins, Jim (DCH)
Subject: Re: Legionella Investigation Guidance

This is getting old real fast.

Shannon Andrews Johnson, MPH
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johnsons61@michigan.gov

From: Fiedler, Jay (DCH)
Sent: Wednesday, February 11, 2015 8:31:32 AM
To: Johnson, Shannon (DCH); Collins, Jim (DCH)
Subject: RE: Legionella Investigation Guidance

Wow...

From: Johnson, Shannon (DCH)
Sent: Wednesday, February 11, 2015 8:31 AM
To: Collins, Jim (DCH); Fiedler, Jay (DCH)
Subject: Re: Legionella Investigation Guidance

No, not their part of the questionnaire. They were supposedly working on questions about water systems with Joan Rose. We have a template almost finished on our end and the plan was to combine their questions with it.

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Fax: 517-335-8263
johnsons61@michigan.gov

From: Collins, Jim (DCH)
Sent: Wednesday, February 11, 2015 8:24:26 AM
To: Johnson, Shannon (DCH); Fiedler, Jay (DCH)
Subject: FW: Legionella Investigation Guidance

Have we seen the survey?

Jim Collins MPH, RS
Desk: 517-335-8586
Cell: 517-930-6932

From: Garrison, Laurel (CDC/OID/NCIRD) [<mailto:lee5@cdc.gov>]
Sent: Wednesday, February 11, 2015 8:12 AM
To: shasan@gchd.us
Cc: Collins, Jim (DCH); Johnson, Shannon (DCH)
Subject: RE: Legionella Investigation Guidance

Hi Shurooq,
Lauri isn't working on legionellosis anymore and she forwarded your email. I'm happy to help brainstorm and/or review your questionnaire. I'm also ccing my contacts at the state so they are in the loop. I didn't get the attachment...can you send again?
Best regards,
Laurel

Laurel Garrison, MPH
Legionellosis Surveillance & Outbreak Response
NCIRD/DBD/Respiratory Diseases Branch
Centers for Disease Control and Prevention
1600 Clifton Rd. MS C-25
Atlanta, GA 30333
Tel: 404.639.3424
Fax: 404.315.4680
E-mail: lee5@cdc.gov

From: Hicks, Lauri (CDC/OID/NCIRD)
Sent: Tuesday, February 10, 2015 5:05 PM
To: Garrison, Laurel (CDC/OID/NCIRD)
Subject: Fw: Legionella Investigation Guidance

Hi Laurel,
Any chance you could follow up?
Thanks,
L

From: Hasan, Shurooq [<mailto:shasan@gchd.us>]
Sent: Tuesday, February 10, 2015 02:25 PM Eastern Standard Time
To: Hicks, Lauri (CDC/OID/NCIRD)
Subject: Legionella Investigation Guidance
Hello Lauri,

Dr. Janet Stout referred me to you. We are currently experiencing a legionella outbreak in our county and are investigating multiple sources as potential causes for our increase. Since June 2014, we have had 47 cases of Legionella, almost four times the number of cases we had during 2013, and the highest number of cases per county in the state for 2014. We have investigated a hospital as a potential source for the disease, but have expanded our investigation to include the city water supply. Of our 47 cases, 25 cases have occurred within the city water supply distribution system. No common links or associations have been determined between the cases. The majority of our cases are home bound immune-compromised individuals who have not traveled and are not readily mobile. They are also unable to answer our questions when we investigate due to the severity of their conditions once hospitalized. We are in the process of developing a survey to implement for all new incoming cases as well as going back to all our previous cases. Dr. Stout mentioned your experience and knowledge with legionella and suggested we seek your input on the survey we have developed. We would really appreciate any feedback, or the opportunity to talk any time you are free. We are working on a tight deadline and we need to have our survey done by Friday. I have attached the survey and I am looking forward to hearing from you soon.

Thank You,
Shurooq

Shurooq Hasan, M.P.H
Epidemiologist
Genesee County Health Department
630 S. Saginaw Street
Flint, MI 48502
(810) 257-3815
shasan@gchd.us

MDCH epidemiologist sends the outbreak specific questionnaire that MDCH developed for the Genesee County Health Department. It is necessary to go back and interview every case that occurred in 2014, many of whom had never been contacted for an interview by the Genesee County Health Department.

From: Johnson, Shannon (DCH)

Sent: Friday, February 13, 2015 9:00 AM

To: 'shasan@gchd.us' <shasan@gchd.us>; jhenry@gchd.us

Cc: 'bchilds@gchd.us' <bchilds@gchd.us>; 'scupal@gchd.us' <scupal@gchd.us>; 'mvalacak@gchd.us' <mvalacak@gchd.us>; 'gjohnson@gchd.us' <gjohnson@gchd.us>; Bolen, Timothy (DHHS) <BolenT1@michigan.gov>; Bohm, Susan (DHHS) <bohms@michigan.gov>; Fiedler, Jay (DHHS) <FiedlerJ@michigan.gov>; Collins, Jim (DHHS) <CollinsJ12@michigan.gov>

Subject: Genesee County Draft Outbreak Questionnaire

Importance: High

Hi Shurooq and Jim,

I've attached the draft outbreak-specific questionnaire we put together. We'll need to use this tool to interview all the cases going back to June, 2014. Please respond to me with any comments or edits by Wednesday, Feb. 18th.

We can discuss the division of labor for conducting interviews on our next group call. Does Thursday, 2/19 at 9am work for everyone?

Thanks,
Shannon

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**Legionellosis Questionnaire
Genesee County, 2014-2015**

Interviewer Identification

Date of Interview: _____ Interviewer's Name: _____
Health Department: _____ Phone Number: _____ E-mail: _____

What was the patient's outcome? ☐ RECOVERED ☐ STILL ILL ☐ DIED

Patient Contact Information

Name: _____ Age: _____ Sex: ☐ M ☐ F
City: _____ State: _____ Zip: _____ County: _____
Daytime Phone: _____ Evening Phone: _____

Surrogate Contact Information <List surrogate contact information if patient is too unwell or has died>

Name: _____
Daytime Phone: _____ Evening Phone: _____
Relationship to Patient: _____

Hello, my name is _____ and I'm calling from _____ (health department).
We are investigating a cluster of respiratory illnesses in Genesee County. At this point, the source of these illnesses is still under investigation. We are hoping this interview will provide further information and answers about the illnesses. I'd like to ask you a few questions about your home and your exposures during the 2 weeks before you got sick. You do not have to answer any of the questions, but any assistance you can provide is appreciated. Do you have about 20 minutes to talk? If not now, when would be a good time for me to call back? _____

<If the case is from more than 1 month prior, the following text may be used: >

It might be helpful for you to collect documents such as a calendar, receipts, credit card or bank statements to jog your memory about your activities 2 weeks prior to getting sick. Would you like me to call you back after you have time to collect these materials? When would be a convenient day and time for me to call you back? _____

I have that your first symptom started on <insert onset date> _____. Is this correct?
☐ Yes ☐ No ☐ Not sure

If no, what was the first date you started feeling sick? _____

List dates of exposure period: from ____/____/____ to ____/____/____ <The exposure period includes the 2 weeks before the date of illness onset>

Illness Information

1.) During your illness, did you have any of the following symptoms?

	Check one:			If yes, when did this symptom start?	Are you still ill with this symptom?
	YES	NO	UNK		
Diagnosis of pneumonia					
Fever If yes, highest temp: _____					
Chills					
Cough					
Nausea					
Loss of appetite					
Vomiting					
Diarrhea					
Aches or muscle pains					
Chest pain					
Chest burning					
Shortness of breath					
Sore throat					
Headaches					
Other symptoms (<i>specify</i>)					

Exposure Information

2.) How long have you lived at your current residence? _____

<If they have moved since the listed exposure period, indicate that you are asking about the house they lived in prior to becoming sick>

a.) If you moved after the exposure period/illness, what was your previous residence address? _____

3.) Prior to your illness, did you make any recent plumbing changes or repairs at your residence?

☐ Yes ☐ No ☐ Not sure

a.) If yes, please describe the changes/repairs and give the dates the work was done.

4.) Prior to your illness, were there any water main breaks or other water line issues that affected the water at your residence?

☐ Yes ☐ No ☐ Not sure

a.) If yes, please describe the water main/line issues and give the dates they occurred.

5.) Where did you get your tap (drinking and other household use) water from between _____ and _____?

- ☐ 1. City of Flint Water
☐ 2. City of Flint Township Water
☐ 3. Other municipal water system
☐ 4. Private well
☐ 5. Unknown
☐ 6. Other _____

I'd like to ask you some questions about what you did during the 2 weeks before you got sick.

The time period I'm asking about is between _____ and _____. During this 2 week period, did you:

6.) Work or volunteer full or part time? ☐ Yes ☐ No ☐ Not sure

a.) If yes, complete the following table:

Job description	Company	Location	Any exposure to misty water?

7.) Spend any time in a hospital, doctor's office, clinic, or dentist office as a patient, visitor, employee, or volunteer? ☐ Yes ☐ No ☐ Not sure

a.) If yes, check all that apply:

	Date(s)	Name & City of Hospital/ Office/ Clinic	Reason for Visit	Name of Doctor
Inpatient <input type="checkbox"/>	Admission _____ Discharge _____			
Outpatient <input type="checkbox"/>				
Visitor <input type="checkbox"/>				
Employee <input type="checkbox"/>				
Volunteer <input type="checkbox"/>				

8.) Visit, reside, or work in a long term care facility, nursing home, assisted living facility, or senior living facility? ☐ Yes ☐ No ☐ Not sure

a.) If yes, complete the following table:

Exposure	Date(s)	Name & City of Facility
Resident <input type="checkbox"/>		
Visitor <input type="checkbox"/>		
Employee <input type="checkbox"/>		

9.) In the 2 weeks before you before you got sick (_____ to _____) did you spend any nights away from home (excluding healthcare settings)? ☐ Yes ☐ No ☐ Not sure

a.) If yes, complete the following table: <prompts: hotel, campground, cabin, cruise, second home, with family, etc.>

Accommodation Type/Name	Address Street, City, State	Floor/Room No.	Dates of Stay	
			Arrival	Departure

10.) In the 2 weeks before you before you got sick (_____ to _____), did you visit any of the following community venues?

Venue	Check one:			Date(s)	Name of Venue	Address
	YES	NO	UNK			
Hotel (<i>without</i> staying overnight – e.g. dinner, wedding)						
Auditorium						
Barbershop or Hair salon						
Car Wash						
Casino						
Church or Place of worship						
Gym or Work out facility						
Grocery store						
Home improvement store						
Spa or Nail salon						
Mall or Department store						
Movie theater						
Other (<i>specify</i>)						

11.) In the 2 weeks before you before you got sick (_____ to _____), did you have exposure to any of the following water sources, either **at home** or while **away from home**?

	Check one:				
Exposures at home	YES	NO	UNK	Dates (s)	Name (or Type)/Location
Shower					
Use a detachable shower head or hose					
Hot tub, whirlpool spa, Jacuzzi tub					
Sat NEAR a working hot tub or whirlpool spa but did not get in					
Steam room or wet sauna					
Humidifier (whole house or portable)					If yes, what type of water is used in device? <input type="checkbox"/> Bottled <input type="checkbox"/> Tap <input type="checkbox"/> Other:_____
Respiratory therapy machine (e.g. nebulizer, CPAP, BiPAP, etc.)					If yes, what type of water is used in device? <input type="checkbox"/> Bottled <input type="checkbox"/> Tap <input type="checkbox"/> Other:_____
Other (<i>specify</i>)					

Exposures away from home	YES	NO	UNK	Dates (s)	Name (or Type)/Location
Shower at gym, work, other location					
Use a detachable shower head or hose					
Hot tub, whirlpool spa, Jacuzzi tub					
Sat NEAR a working hot tub or whirlpool spa but did not get in					
Humidifier (whole house or portable)					If yes, what type of water is used in device? <input type="checkbox"/> Bottled <input type="checkbox"/> Tap <input type="checkbox"/> Other:_____
Pool/splash pad/waterpark					
Recreational or cooling misters					
Steam room or wet sauna					
Decorative fountain					
Outdoor watering hose or sprinkler					
Beach, lake, pond, river, creek, etc.					
Other (<i>specify</i>)					

Medical History

Now I'm going to ask a few questions about your medical history and health behaviors.

12.) Have you ever been told by a healthcare provider that you had any of the following conditions:

	Check one:			
Condition	YES	NO	UNK	Comments
Chronic kidney disease				
Weakened immune system (Cancer, Chemotherapy, Radiation therapy, Immuno-suppressive meds, HIV, organ transplant)				
Diabetes				
Chronic lung disease (COPD, emphysema)				
Asthma or chronic bronchitis				
Heart disease or congestive heart failure				
Liver disease				
Other conditions (<i>specify</i>)				

13.) Health behaviors:

	Check one:			
	YES	NO	Quantity per day (packs or drinks)	Duration (years)
Are you currently a smoker?				
Are you a former smoker?				
Do you drink alcohol?				

14.) Do you know anyone else with similar symptoms? ☐ Yes ☐ No ☐ Not sure

a.) If yes, complete the following table:

Name	Phone	State of Residence	Details of Shared Exposure

Additional Comments _____

Thank you so much for taking the time to answer these questions. Do you have any questions that I can help answer? If you have any questions or remember any further details later, please contact the _____ (health department) at phone: _____.

This is the first notification the Genesee County Health Department sends to the healthcare community. MDCH epidemiologists recommended in October 2014 that information be sent to local providers and that a Health Alert Network (HAN) notice be sent to the greater healthcare community in Genesee County. Instead the Genesee County Health Department sent it to select personnel in the 3 area hospitals.

From: Johnson, Shannon (DCH)
Sent: Friday, February 13, 2015 2:50 PM
To: Collins, Jim (DHHS) <CollinsJ12@michigan.gov>; Fiedler, Jay (DHHS) <FiedlerJ@michigan.gov>; Bohm, Susan (DHHS) <bohms@michigan.gov>; Tyndall Snow, Leigh (DHHS) <TyndallSnowL@michigan.gov>; Weinberg, Meghan (DHHS) <WeinbergM1@michigan.gov>
Subject: FW: Clinical Guidance for Legionellosis

FYI- copy of the message Genesee sent about testing. It wasn't sent as a HAN because the person who has access to sending capabilities wasn't in today, but as an email to the ICPs at the 3 hospitals. It went out to approximately 15 people.

From: Hasan, Shurooq [<mailto:shasan@gchd.us>]
Sent: Friday, February 13, 2015 1:57 PM
To: Cupal, Suzanne; Thornton, Venita; Miller, Colleen; Childs, Bonnie; Bolen, Timothy (DCH); anewell1@hurleymc.com; danielle.donovan@mclaren.org; dcharle2@hurleymc.com; Johnson, M.D., Gary; ehabte1@hurleymc.com; yrafee1@hurleymc.com; July, Jori; kari.wanless@mclaren.org; kimberly.tylenda@mclaren.org; kwarden@hamiltonchn.org; romara@genesys.org; sharlow@genesys.org; aarmor1@hurleymc.com; tsperry1@hurleymc.com; Wiskur, Lori; Henry, James; Hallwood, Dawn; Johnson, Shannon (DCH)
Subject: Clinical Guidance for Legionellosis

Hello,

Genesee County has reported over 45 cases of legionellosis since June 2014. This represents the highest number of legionellosis cases for this time frame over the past 5 years and new cases continue to be identified. Most patients were or are currently hospitalized (some in the ICU) and symptoms reported include fever, vomiting, abdominal pain, nausea and diarrhea.

Investigations are ongoing to determine common sources of exposure. We are asking that the clinical community assist in this investigation through accurate identification, testing and reporting of all suspect cases of legionellosis.

The guidance attached has been prepared to assist clinicians in case evaluation and facilitate specimen collection/testing. Also included are the Michigan Department of Community Health Bureau of Laboratories testing protocol and requisition form to be used when sending *Legionella* isolates for testing.

Please share this information with the appropriate contacts and departments within your hospital systems.

For additional information, please contact the Genesee County Health Department at 810-257-3815 or 810-257-1017

Thank You,
Shurooq

Shurooq Hasan, M.P.H
Epidemiologist
Genesee County Health Department
630 S. Saginaw Street
Flint, MI 48502
(810) 257-3815
shasan@gchd.us

Legionellosis Guidance for Clinicians

Legionella bacteria can be found in natural, freshwater environments, but they are generally present in insufficient numbers to cause disease. Water systems such as potable (drinking) water systems, whirlpool spas, and cooling towers provide the conditions needed for Legionella growth and transmission-heat, stasis, and aerosolization; therefore, these are common sources of outbreaks.

Epidemiologic Risk Factors for Legionellosis

- Recent travel with an overnight stay outside of the home (up to 14 days prior to symptom onset)
- Exposure to whirlpool spas
- Recent repairs or maintenance work on domestic plumbing
- Renal or hepatic failure
- Diabetes
- Systemic malignancy
- Smoking
- Immune system disorders
- Age > 50 years

Diagnosing Legionellosis

	Legionnaires' disease	Pontiac fever
Clinical features	Pneumonia, cough, fever	Flu-like illness (fever, chills, malaise) without pneumonia
Radiographic pneumonia	Yes	No
Incubation period	2-14 days after exposure	24-72 hours after exposure
Etiologic agent	<i>Legionella</i> species	<i>Legionella</i> species
Attack rate	< 5%	> 90%
Isolation of organism	Possible	Never
Outcome	Hospitalization common Case-fatality rate: 5-30%	Hospitalization uncommon Case-fatality rate: 0%

Source: <http://www.cdc.gov/legionella/clinicians.html>

Who to Test for Legionnaires' Disease

- Patients with pneumonia in the setting of a Legionellosis outbreak
- Patients who have failed outpatient antibiotic therapy
- Patients with severe pneumonia, in particular those requiring intensive care
- Immunocompromised host with pneumonia
- Patients with a travel history [Patients that have traveled away from their home within two weeks before the onset of illness.]
- Patients suspected of healthcare-associated pneumonia

Testing for Legionnaires' Disease

- Urinary antigen assay AND culture of respiratory secretions on selective media are the **requested** diagnostic tests for Legionnaires' disease
- Sensitivity varies depending on the quality and timing of specimen collection as well as technical skill of the laboratory performing the test

Advantages and Disadvantages of Diagnostic Tests

Test	Advantages	Disadvantages
Culture	<ul style="list-style-type: none">• Clinical & environmental isolates can be compared• Detects all species & serogroups• 100% specific	<ul style="list-style-type: none">• Technically difficult• Slow (>5 days to grow)• Sensitivity highly dependent on technical skill• May be affected by antibiotic treatment
Urine Antigen	<ul style="list-style-type: none">• 100% specific...• Rapid (same day)	<ul style="list-style-type: none">• ...but only for <i>L. pneumophila</i> serogroup 1 (Lp1) [which may account for up to 80% of cases]• Does not allow for molecular comparison to environmental isolates
Serology	<ul style="list-style-type: none">• Less affected by antibiotic treatment• 80-90% sensitive; 99% specific	<ul style="list-style-type: none">• Must have paired sera• 5-10% of population has titer 1:≥256. Single acute phase antibody titers of 1: ≥256 do not discriminate between cases of Legionnaires' disease and other causes of community-acquired pneumonia.
DFA	<ul style="list-style-type: none">• Can be performed on pathologic specimens• >95% specific	<ul style="list-style-type: none">• 25-75% sensitive
PCR	<ul style="list-style-type: none">• Rapid	<ul style="list-style-type: none">• Assays vary by laboratory and are not FDA-approved

Clinical Isolates and Shipping

Isolation of Legionella from respiratory secretions, lung tissue, pleural fluid, or a normally sterile site is still an important method for diagnosis, despite the convenience and specificity of urinary antigen testing.

Investigations of outbreaks of Legionnaires' disease rely on both clinical and environmental isolates.

Clinical and environmental isolates can be compared using monoclonal antibody and molecular techniques. Because Legionella are commonly found in the environment, clinical isolates are necessary to interpret the findings of an environmental investigation.

The Michigan Department of Community Health state laboratory will test clinical isolates of legionella shipped to the facility free of charge. Please avoid freezing and thawing of isolates. For labs shipping a clinical isolate, a BYCE plate is acceptable. NOTE: Plates do not generally travel well so a courier should be used if possible.

Treatment

Recommended treatment for Legionella pneumonia in most patients includes either a fluoroquinolone (e.g. levofloxacin 750 mg once daily) or a macrolide (e.g. azithromycin 1 gram on day one, followed by 500 mg once daily) for a total treatment duration of 10–14 days. Antibiotic regimen and treatment duration may vary depending on specific patient risk factors or comorbidities.

Reporting

Legionellosis is a reportable disease in Michigan. We are asking health care professionals to report both Legionnaires' disease and Pontiac fever cases via the Michigan Disease Surveillance System (MDSS) or directly to the Local Health Department. Physicians are requested to collect and record illness onset dates as part of the patient record. An accurate illness onset date is extremely important to determine the patient's potential environmental exposures and is vital to the investigation of an outbreak. In patients with chronic respiratory conditions, the first appearance of fever may be a useful indicator of legionellosis onset date.

For additional information, please contact:

Genesee County Health Department: 810-257-1017 or 810-257-3815



MICHIGAN DEPARTMENT OF COMMUNITY HEALTH
BUREAU OF LABORATORIES

Legionella spp. Isolation and Identification, Page 1 of 2



Rev. 3/6/12

***Legionella* spp. Isolation and Identification**

ANALYTES TESTED:

Suspected bacterial isolate or a clinical specimen. Environmental or water samples are accepted only after prior approval from epidemiology.

USE OF TEST:

For the isolation and identification of *Legionella* spp. from clinical specimens obtained from patients with illnesses compatible with legionellosis.

SPECIMEN COLLECTION AND SUBMISSION GUIDELINES:

Test Request Form [DCH-0583](#)

[Specimen Submission Guidelines](#)

Transport Temperature: Ambient

SPECIMEN TYPE:

Specimen Required:

Bronchoscopy; transtracheal aspirate; bronchial biopsy, bronchial washing, sputum, and brushing specimens.

For serological testing see Bacterial and Parasitic Serology.

Minimum Acceptable Volume:

Minimum of 1.0 ml or 1g tissue (prevent from desiccation using sterile water).

Container:

Shipping Unit: Unit 12

SPECIMEN REJECTION CRITERIA:

Critical Data Needed For Testing:

Patient Name

Patient Date of Birth

Specimen Source

Date Collected

Submitting Agency

TEST PERFORMED:

Methodology:



MICHIGAN DEPARTMENT OF COMMUNITY HEALTH
BUREAU OF LABORATORIES
Legionella spp. Isolation and Identification, Page 2 of 2



Rev. 3/6/12

Turn Around Time: Up to 14 days.

When Performed: Monday through Friday.

RESULT INTERPRETATION:

The presence of *Legionella* spp. in a clinical specimen obtained from a patient with clinical symptomatology suggestive of legionellosis constitutes laboratory diagnosis of the illness.

Reference Range: N/A

FEES: N/A

NOTES:

1. A direct fluorescent antigen test should be requested simultaneously on specimens submitted for culture for *Legionella* spp.
2. There is a much greater likelihood that *Legionella* spp. will be recovered from tissues, washings, or brushings obtained from deep within the respiratory tree than from sputum or tracheal aspirates. Growth of this bacterium may be inhibited by the normal flora of the upper respiratory tract.
3. Saline and salt-containing fluids are inhibitory to the *Legionella* spp.; therefore, exposure to these compounds should be limited as much as possible.
4. Specimens to be cultured for *Legionella* spp. should be held at refrigerator temperatures during transport to preserve viability.
5. Sputum specimens are not accepted for Legionella DFA.

ALIASES:

None

MICHIGAN DEPARTMENT OF COMMUNITY HEALTH • BUREAU OF LABORATORIES

MICROBIOLOGY/VIROLOGY TEST REQUISITION

P.O. Box 30035 • 3350 North Martin Luther King Jr. Blvd. • Lansing, Michigan 48909

Laboratory Records: (517) 335-8059 • Fax: (517) 335-9871 • Technical Information: (517) 335-8067 • Web: <http://www.michigan.gov/mdchlab>

DATE RECEIVED AT MDCH										MDCH SAMPLE #																			
AGENCY - SUBMITTER INFORMATION										ENTER STARLIMS AGENCY CODE																			
RETURN RESULTS TO																													
										PHONE (24/7)																			
										FAX																			
PHYSICIAN OF RECORD/LEGALLY AUTHORIZED PERSON ORDERING TEST										NATIONAL PROVIDER IDENTIFIER																			
PATIENT INFORMATION - NAME (Last, First, Middle Initial or Unique Identifier) Must Match Specimen Label Exactly																													
SUBMITTER'S PATIENT NUMBER (If Applicable)																													
PATIENT'S CITY OF RESIDENCE															ZIP CODE					GENDER <input type="checkbox"/> M <input type="checkbox"/> F									
RACE <input type="checkbox"/> Black/AA <input type="checkbox"/> White <input type="checkbox"/> Native American or Alaskan <input type="checkbox"/> Asian <input type="checkbox"/> Hawaiian/PI <input type="checkbox"/> Unknown <input type="checkbox"/> Other (Specify)																													
ETHNICITY <input type="checkbox"/> Hispanic <input type="checkbox"/> Arab Descent <input type="checkbox"/> UNKNOWN										DATE OF BIRTH (MM/DD/YYYY)					SUBSCRIBER INFORMATION <input type="checkbox"/> Medicaid <input type="checkbox"/> ADAP <input type="checkbox"/> DOC <input type="checkbox"/> Other:														
SUBSCRIBER NUMBER																													
SUBMITTER'S SPECIMEN NUMBER (If Applicable)																													
DATE COLLECTED (MM/DD/YYYY)										TIME COLLECTED					<input type="checkbox"/> AM <input type="checkbox"/> PM														
INDICATE SPECIMEN SOURCE										INDICATE TEST REQUESTED																			
<input type="checkbox"/> BRONCHIAL <input type="checkbox"/> CERVIX <input type="checkbox"/> CSF <input type="checkbox"/> GASTRIC <input type="checkbox"/> NASOPHARYNGEAL <input type="checkbox"/> ORAL MUCOSAL TRANSUDATE <input type="checkbox"/> PLASMA <input type="checkbox"/> SERUM <input type="checkbox"/> STOOL <input type="checkbox"/> SPUTUM <input type="checkbox"/> THROAT <input type="checkbox"/> URETHRA <input type="checkbox"/> URINE <input type="checkbox"/> WHOLE BLOOD <input type="checkbox"/> FOOD-Specify: <input type="checkbox"/> OTHER-Specify:										SEROLOGY SERUM STATUS - If Applicable <input type="checkbox"/> ACUTE <input type="checkbox"/> CONVALESCENT <input type="checkbox"/> ARBOVIRUS ENCEP PANEL (IgM) May-October Includes Eastern Equine, California, St. Louis and West Nile, CSF Only <input type="checkbox"/> <i>BRUCELLA</i> SEROLOGY <input type="checkbox"/> FUNGAL SEROLOGY COMPLEMENT FIXATION <input type="checkbox"/> FUNGAL IMMUNODIFFUSION <input type="checkbox"/> <i>FRANCISELLA</i> SEROLOGY <input type="checkbox"/> <i>LEGIONELLA</i> - HA <input type="checkbox"/> LYME DISEASE - EIA Complete #4 (reverse) <input type="checkbox"/> MEASLES IgG <input type="checkbox"/> MUMPS IgG <input type="checkbox"/> RABIES AB SEROLOGY Complete #3 (reverse) <input type="checkbox"/> RUBELLA IgG <input type="checkbox"/> TETANUS TOXIN EIA <input type="checkbox"/> VARICELLA ZOSTER IgG SYPHILIS TESTING <input type="checkbox"/> SYPHILIS (USR Test) <input type="checkbox"/> SYPHILIS VDRL - CSF Only <input type="checkbox"/> SYPHILIS DFA Complete #2 (reverse) <input type="checkbox"/> SYPHILIS FTA - ABS DS* <input type="checkbox"/> SYPHILIS TP-PA* <input type="checkbox"/> SYPHILIS IgM WESTERN BLOT* *Prior Approval Required										MICROBIOLOGY <input type="checkbox"/> AEROBIC ISOLATE ID Complete #5 (reverse) <input type="checkbox"/> AFB SLIDE/CULTURE-CLINICAL SPECIMEN <input type="checkbox"/> AFB IDENTIFICATION-ISOLATE ID <input type="checkbox"/> <i>E. COLI</i> (SLT) TOXIN & SEROLOGY <input type="checkbox"/> ENTERIC BACTERIAL CULTURE <input type="checkbox"/> FOODBORNE ILLNESS-Stool or Food Complete #6 (reverse) <input type="checkbox"/> FUNGAL IDENTIFICATION Isolate ID <input type="checkbox"/> <i>LEGIONELLA</i> CULTURE <input type="checkbox"/> <i>NEISSERIA GONORRHOEAE</i> -Isolation <input type="checkbox"/> <i>NEISSERIA</i> - REFERRED CULTURE <input type="checkbox"/> PARASITOLOGY - BLOOD <input type="checkbox"/> PARASITOLOGY - STOOL <input type="checkbox"/> PARASITOLOGY - WORM <input type="checkbox"/> <i>PERTUSSIS</i> PCR <input type="checkbox"/> <i>SALMONELLA/SHIGELLA</i> SEROTYPING-HUMAN VIROLOGY <input type="checkbox"/> ENTEROVIRUS PCR Complete #6 (reverse) <input type="checkbox"/> RESPIRATORY PCR PANEL <input type="checkbox"/> INFLUENZA (PCR/CULTURE) Complete #7 (reverse) <input type="checkbox"/> VIRAL CULTURE					TESTS THAT REQUIRE MDCH APPROVAL <input type="checkbox"/> BACTERIAL TYPING-PFGE Complete #6 (reverse) <input type="checkbox"/> BOTULISM TOXIN <input type="checkbox"/> MUMPS - PCR <input type="checkbox"/> MEASLES IgM <input type="checkbox"/> MUMPS IgM <input type="checkbox"/> NOROVIRUS PCR Complete #6 (reverse) <input type="checkbox"/> <i>PERTUSSIS</i> CULTURE <input type="checkbox"/> RUBELLA IgM <input type="checkbox"/> <i>SALMONELLA</i> SEROTYPING NON-HUMAN <input type="checkbox"/> TOXIC SHOCK TESTING <input type="checkbox"/> AFB NUCLEIC ACID AMPLIFICATION <input type="checkbox"/> OTHER _____ HEPATITIS TESTING <input type="checkbox"/> HEPATITIS C ANTIBODY <input type="checkbox"/> HEPATITIS B SURFACE ANTIGEN (HBsAg) Complete #1 (reverse) <input type="checkbox"/> HEPATITIS B ANTIBODY (Anti-HBsAg) <input type="checkbox"/> HEPATITIS A ANTIBODY (IgM)				
HIV TESTING <input type="checkbox"/> HIV Ag/Ab - Serum <input type="checkbox"/> HIV AB - Oral Mucosal Transudate <input type="checkbox"/> CD4/CD8 (EDTA whole blood) <input type="checkbox"/> HIV-1 VIRAL LOAD (EDTA plasma) <input type="checkbox"/> HIV-1 GENOTYPING (EDTA plasma) OTHER <input type="checkbox"/> AUTOCLAVE TEST STRIPS <input type="checkbox"/> <i>LEGIONELLA</i> - DFA <input type="checkbox"/> LYME DISEASE-IFA (Tick)																													

INSTRUCTIONS FOR COMPLETION: Completely fill in the appropriate box. For example, upon completion the box should appear as ■, rather than ☐.

INDICATE TEST REASON															
<input type="checkbox"/> Diagnosis <input type="checkbox"/> Surveillance <input type="checkbox"/> Outbreak (complete Section 6) <input type="checkbox"/> Other (Specify)															
1		FOR: HEPATITIS B REQUEST COMPLETE THIS SECTION													
<input type="checkbox"/> Pregnancy (HBsAg)				<input type="checkbox"/> Exposure to someone with Hepatitis B?											
2		FOR: SYPHILIS - DFA REQUEST COMPLETE THIS SECTION													
Duration of Lesion				<input type="checkbox"/> Days <input type="checkbox"/> Months <input type="checkbox"/> Years			Specify Site:								
3		FOR: RABIES ANTIBODY SEROLOGY REQUEST COMPLETE THIS SECTION													
Date of Last Rabies Vaccination				M	M	D	D	Y	Y	Y	Y				
4		FOR: LYME BORRELIOSIS REQUEST COMPLETE THIS SECTION													
Onset Date		M	M	D	D	Y	Y	Y	Y	State/County/Country of Exposure					
EARLY DISEASE										LATE DISEASE					
<input type="checkbox"/> Erythema Migrans (5 cm at least in diameter) <input type="checkbox"/> Symptoms (Example- Rash, Fever, Headache, Joint Pain)										<input type="checkbox"/> Neurologic <input type="checkbox"/> Cardiology <input type="checkbox"/> Rheumatologic					
5		FOR: AEROBIC CULTURE REQUEST COMPLETE THIS SECTION													
<input type="checkbox"/> Aerobe <input type="checkbox"/> Microaerophile Gram <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Variable <input type="checkbox"/> Rod <input type="checkbox"/> Coccus <input type="checkbox"/> Diplococcus Bacterial Growth Char.: MacConkey <input type="checkbox"/> Pos <input type="checkbox"/> Neg Oxidase <input type="checkbox"/> Pos <input type="checkbox"/> Neg Catalase <input type="checkbox"/> Pos <input type="checkbox"/> Neg Dextrose <input type="checkbox"/> Oxidation <input type="checkbox"/> Fermentation OTHER: _____ _____ _____															
6		FOR: OUTBREAK INVESTIGATION COMPLETE THIS SECTION													
Onset Date		M	M	D	D	Y	Y	Y	Y						
Outbreak Identifier															
Organism Suspected (If Applicable)															
MDCH Prior Approval: Name, Date or Code															
7		FOR: INFLUENZA TESTING REQUEST (PCR/CULTURE) COMPLETE THIS SECTION													
Date/Type of Last Influenza Vaccination				M	M	D	D	Y	Y	Y	Y	TYPE			
											<input type="checkbox"/> Flu Mist <input type="checkbox"/> Trivalent (Shot) <input type="checkbox"/> Other _____				
8		ADDITIONAL INFORMATION													

MDCH documents the division of labor and the start of the interviewing process. MDCH is also conducting medical record reviews on all cases to determine onset dates of illness as many of these were not completed by the Genesee County Health Department and are necessary for establishing timelines, clustering and identifying any association with healthcare facilities.

From: Johnson, Shannon (DCH)

Sent: Friday, February 20, 2015 11:31 AM

To: 'shasan@gchd.us' <shasan@gchd.us>; jhenry@gchd.us

Cc: 'scupal@gchd.us' <scupal@gchd.us>; Bolen, Timothy (DHHS) <BolenT1@michigan.gov>; Bohm, Susan (DHHS) <bohms@michigan.gov>; Fiedler, Jay (DHHS) <FiedlerJ@michigan.gov>; Collins, Jim (DHHS) <CollinsJ12@michigan.gov>

Subject: Final questionnaire and environmental sampling resource

Hi Shurooq and Jim,

I've attached the final version of the supplemental questionnaire. We'll be starting our interviews next week on the cases with 6/1/14-12/31/14 MDSS referral dates.

From our discussion yesterday, here's the CDC website that has environmental sampling information and protocols:
<http://www.cdc.gov/legionella/specimen-collect-mgmt/index.html>

Please let me know if there are any questions or there's anything else I can help with.

Thanks,
Shannon

Shannon Andrews Johnson, MPH
Infectious Disease Epidemiologist
Michigan Dept. of Community Health
201 Townsend St., CVB 5th Floor
Lansing, MI 48913
Phone: 517-335-8165
Fax: 517-335-8263

**Legionellosis Questionnaire
Genesee County, 2014-2015**

Interviewer Identification

Date of Interview: _____ Interviewer's Name: _____
Health Dept.: _____ Phone Number: _____ E-mail: _____

What was the patient's outcome? ☐ RECOVERED ☐ STILL ILL ☐ DIED ☐ UNK

Patient Contact Information

Name: _____ Age: _____ Sex: ☐ M ☐ F
Street address: _____ City: _____
State: _____ Zip: _____ County: _____
Daytime Phone: _____ Evening Phone: _____

Surrogate Contact Information <List surrogate contact information if patient is too unwell or has died>

Name: _____
Daytime Phone: _____ Evening Phone: _____
Relationship to Patient: _____

Hello, my name is _____ and I'm calling from _____ (health department). We are investigating a cluster of respiratory illnesses in Genesee County. At this point, the source of these illnesses is still under investigation. We are hoping this interview will provide further information and answers about the illnesses. I'd like to ask you a few questions about your home and your exposures during the 2 weeks before you got sick. You do not have to answer any of the questions, but any assistance you can provide is appreciated. Do you have about 20 minutes to talk? If not now, when would be a good time for me to call back? _____

<If the case is from more than 1 month prior, the following text may be used: >

It might be helpful for you to collect documents such as a calendar, receipts, credit card or bank statements to jog your memory about your activities and where you were in the 2 weeks prior to getting sick. Would you like me to call you back after you have time to collect these materials? When would be a convenient day and time for me to call you back? _____

I have that your first symptom started on <insert onset date> _____. Is this correct?
☐ Yes ☐ No ☐ Not sure

If no, what was the first date you started feeling sick? ____/____/____

List dates of exposure period: from ____/____/____ to ____/____/____ <The exposure period includes the 2 weeks before the date of illness onset>

Illness Information

1.) During your illness, did you have any of the following symptoms?

	Check one:				
	YES	NO	UNK	If yes, when did this symptom start?	Are you still ill with this symptom?
Diagnosis of pneumonia					
Fever If yes, highest temp: _____					
Chills					
Cough					
Nausea					
Loss of appetite					
Vomiting					
Diarrhea					
Aches or muscle pains					
Chest pain					
Chest burning					
Shortness of breath					
Sore throat					
Headaches					
Other symptoms (<i>specify</i>):					

Exposure Information

2.) How long have you lived at your current residence? _____

<If they have moved since the listed exposure period, indicate that you are asking about the house they lived in prior to becoming sick>

a.) If you moved after the exposure period/illness, what was your previous residence address? _____

3.) Where did you get your tap (drinking and other household use) water from between ____/____/____ and ____/____/____? *<Exposure period from above>*

- ☐ 1. City of Flint Water
☐ 2. City of Flint Township Water
☐ 3. Other municipal water system
☐ 4. Private well
☐ 5. Unknown
☐ 6. Other _____

4.) During the last year, has the water pressure at your residence changed? ☐ Yes ☐ No ☐ Not Sure

a.) If yes, did the water pressure: ☐ Increase ☐ Decrease

b.) If yes, when did the water pressure change occur? _____

5.) During the last year, has the water quality (appearance, taste, smell) at your residence changed?

☐ Yes ☐ No ☐ Not Sure

a.) If yes, please describe the change in the water quality: _____

b.) If yes, when did the water quality change occur? _____

6.) Prior to your illness, did you make any recent plumbing changes or repairs at your residence?

☐ Yes ☐ No ☐ Not sure

a.) If yes, please describe the changes/repairs and give the dates the work was done.

7.) Prior to your illness, were there any water main breaks or other water line issues that affected the water at your residence? ☐ Yes ☐ No ☐ Not sure

a.) If yes, please describe the water main/line issues and give the dates they occurred.

I'd like to ask you some questions about what you did during the 2 weeks before you got sick.

The time period I'm asking about is between ____/____/____ and ____/____/____. <Exposure period>

During this 2 week period, did you:

8.) Work or volunteer, either full or part time? ☐ Yes ☐ No ☐ Not sure

a.) If yes, complete the following table:

Job description	Company	Location	Any exposure to misty water?

9.) Spend any time in a hospital, doctor's office, clinic, or dentist office as a patient, visitor, employee, or volunteer? ☐ Yes ☐ No ☐ Not sure

a.) If yes, check all that apply:

Exposure	Date(s)	Reason for Visit	Name & City of Hospital/ Office/ Clinic	Name of Doctor
Inpatient <input type="checkbox"/>	Admission _____ Discharge _____			
Outpatient <input type="checkbox"/>				
Visitor <input type="checkbox"/>				
Employee <input type="checkbox"/>				
Volunteer <input type="checkbox"/>				

10.) Visit, reside, or work in a long term care facility, nursing home, assisted living facility, or senior living facility? ☐ Yes ☐ No ☐ Not sure

a.) If yes, complete the following table:

Exposure	Date(s)	Name & City of Facility
Resident <input type="checkbox"/>		
Visitor <input type="checkbox"/>		
Employee <input type="checkbox"/>		

11.) In the 2 weeks before you before you got sick (____/____/____ to ____/____/____), did you spend any nights away from home (excluding healthcare settings)? ☐ Yes ☐ No ☐ Not sure

a.) If yes, complete the following table: <prompts: hotel, campground, cabin, cruise, second home, with family, etc.>

Accommodation Type/Name	Address Street, City, State	Floor/Room No.	Dates of Stay	
			Arrival	Departure

12.) In the 2 weeks before you before you got sick (____/____/____ to ____/____/____), did you visit any of the following community venues?

Venue	Check one:			Date(s)	Name of Venue	Address
	YES	NO	UNK			
Hotel (<i>without</i> staying overnight – e.g. dinner, wedding)						
Auditorium						
Barbershop or Hair salon						
Car wash						
Casino						
Church or Place of worship						
Gym or Work out facility						
Grocery store						
Home improvement store						
Spa or Nail salon						
Mall or Department store						
Movie theater						
Other (<i>specify</i>)						

13.) In the 2 weeks before you before you got sick (____/____/____ to ____/____/____), did you have exposure to any of the following water sources, either **at home** or while **away from home**?

Exposures at home	Check one:			Dates (s)	Description: Name (or Type)/Location
	YES	NO	UNK		
Shower					
Use a detachable shower head or hose					
Hot tub, whirlpool spa, Jacuzzi tub					
Sat NEAR a working hot tub or whirlpool spa but did not get in					
Steam room or wet sauna					
Humidifier (whole house or portable)					If yes, specify type: If yes, what type of water is used in device? <input type="checkbox"/> Bottled <input type="checkbox"/> Tap <input type="checkbox"/> Other:_____
Respiratory therapy machine (e.g. nebulizer, CPAP, BiPAP, etc.)					If yes, specify type: If yes, what type of water is used in device? <input type="checkbox"/> Bottled <input type="checkbox"/> Tap <input type="checkbox"/> Other:_____
Other (<i>specify</i>)					

Exposures away from home	YES	NO	UNK	Dates (s)	Description: Name (or Type)/Location
Shower at gym, work, other location					
Use a detachable shower head or hose					
Hot tub, whirlpool spa, Jacuzzi tub					
Sat NEAR a working hot tub or whirlpool spa but did not get in					
Humidifier (whole house or portable)					If yes, specify type: If yes, what type of water is used in device? <input type="checkbox"/> Bottled <input type="checkbox"/> Tap <input type="checkbox"/> Other:_____
Pool/splash pad/waterpark					
Recreational or cooling misters					
Steam room or wet sauna					
Decorative fountain					
Outdoor watering hose or sprinkler					
Beach, lake, pond, river, creek, etc.					
Other (<i>specify</i>)					

Medical History

Now I'm going to ask a few questions about your medical history and health behaviors.

14.) Have you ever been told by a healthcare provider that you had any of the following conditions:

Condition	Check one:			Comments
	YES	NO	UNK	
Chronic kidney disease				
Weakened immune system (Cancer, Chemotherapy, Radiation therapy, Immuno-suppressive meds, HIV, organ transplant)				
Diabetes				
Chronic lung disease (COPD, emphysema)				
Asthma or chronic bronchitis				
Heart disease or congestive heart failure				
Liver disease				
Other conditions (<i>specify</i>)				

15.) Health behaviors:

	Check one:		Quantity per day (packs or drinks)	Duration (years)
	YES	NO		
Are you currently a smoker?				
Are you a former smoker?				
Do you drink alcohol?				

16.) Do you know anyone else with similar symptoms? ☐ Yes ☐ No ☐ Not sure

a.) If yes, complete the following table:

Name	Phone	State of Residence	Details of Shared Exposure

Additional Comments _____

Thank you so much for taking the time to answer these questions. Do you have any questions that I can help answer? If you have any questions or remember any further details later, please contact the _____ (health department) at phone: _____.

CDC again asks MDCH to reinforce the Local to State to Federal line of communication with the Genesee County Health Department.

From: Johnson, Shannon (DCH)
Sent: Thursday, April 02, 2015 4:26 PM
To: Garrison, Laurel (CDC/OID/NCIRD) <lee5@cdc.gov>
Cc: Collins, Jim (DHHS) <CollinsJ12@michigan.gov>; Miller, Corinne (DHHS) <MillerC39@michigan.gov>; Fiedler, Jay (DHHS) <FiedlerJ@michigan.gov>
Subject: RE: Community-wide Legionnaires' disease outbreak--Flint, MI

Hi Laurel,

Thanks so much for letting me know. I actually was in the process of writing you. I apologize for not responding to your last email sooner. My supervisor has unexpectedly been out of the office all week and I was hoping to discuss your email with her and with Genesee before I responded. She's going to be out until next week and we have a conference call set up with Genesee for early next week. Since technically this is Genesee's outbreak and they have jurisdiction, it's probably not appropriate for MDCH to make decisions about involving CDC without consulting Genesee first. I appreciate your offer of assistance and I think the way you framed it is probably the best approach for now. We'll consult with Genesee and if there are areas where we would like to request CDC's assistance, we'll get in touch with you. Either way, I'm more than happy to touch base with you occasionally to let you know where we're at in the investigation.

Best wishes,
Shannon

Shannon Andrews Johnson, MPH
Infectious Disease Epidemiologist
Michigan Dept. of Community Health
201 Townsend St., CVB 5th Floor
Lansing, MI 48913
Phone: 517-335-8165
Fax: 517-335-8263

From: Garrison, Laurel (CDC/OID/NCIRD) [<mailto:lee5@cdc.gov>]
Sent: Thursday, April 02, 2015 2:49 PM
To: Johnson, Shannon (DCH)
Cc: Collins, Jim (DCH); Miller, Corinne (DCH)
Subject: Community-wide Legionnaires' disease outbreak--Flint, MI

Hi Shannon,

Sorry to bother you again, but I wanted to let you know that the local health department reached out to CDC regarding assistance with a research study. Julia Gargano, epidemiologist in the Waterborne Disease Prevention Branch at CDC, mentioned today that she was in MI for a conference and someone from Flint approached her about this. I don't know if you are involved, but my suggestion to Julia was to tell the local HD to discuss with the state HD and state water quality folks first. After discussing internally, if you feel that CDC could assist in any way, please let us know. We would be happy to discuss further, but wanted to make sure you were aware and involved given the history and sensitivities.

Best regards,

Laurel

Laurel Garrison, MPH
Legionellosis Surveillance & Outbreak Response
NCIRD/DBD/Respiratory Diseases Branch
Centers for Disease Control and Prevention
1600 Clifton Rd. MS C-25
Atlanta, GA 30333
Tel: 404.639.3424
Fax: 404.315.4680
E-mail: lee5@cdc.gov

From: Fiedler, Jay (DCH)

Sent: Thursday, April 09, 2015 11:45 AM

To: scupal@gchd.us; GJOHNSON@gchd.us; jhenry@gchd.us; shasan@gchd.us; Valacak, Mark <MVALACAK@gchd.us>

Cc: Miller, Corinne (DCH) <MillerC39@michigan.gov>; Collins, Jim (DCH) <CollinsJ12@michigan.gov>; Bohm, Susan (DCH) <bohms@michigan.gov>; Johnson, Shannon (JohnsonS61@michigan.gov) <JohnsonS61@michigan.gov>; Bolen, Timothy (DCH) <BolenT1@michigan.gov>

Subject: Genesee County Inquiries 4/7/2015

Hello,

On our update call on 4/7/15 we covered the current status of the Legionnaires' Disease outbreak investigation.

- MDCH provided a summary of information on the cases that was shared with the group.
- Current status of interviews, contacts, and completion was reviewed.
- Shannon and Shurooq discussed the remaining 7 cases that need to be contacted and agreed to talk after the call to determine which cases would be contacted by which agency.
- An initial plan was discussed regarding the number of contact attempts that would be made and sending letters to cases that did not respond or were unreachable as a final attempt before declaring them LTF.
- A letter will be formalized as part of this process.

Additional requests were made by Genesee County for MDCH to facilitate:

- Genesee County would like to speak with MDCH EH, EPA, and CDC regarding additional drinking water concerns.

Regarding these requests, I have spoken with Corinne Miller the State Epidemiologist as to how MDCH would coordinate/facilitate. The recommendation is that GCHD contact DEQ as the lead state agency regarding drinking water concerns. MDCH EH will on occasion consult with DEQ, but is brought in at the request of DEQ. DEQ would also be the first step in reaching out to EPA if additional expertise is needed. Second, it is our understanding that GCHD has already reached out to Jonathan Yoder at CDC regarding drinking water concerns. He would be the best contact at CDC for additional questions.

We will continue to be in touch regarding our assistance with the Legionnaires' Disease outbreak investigation.

Thanks. -Jay

Jay Fiedler, MS
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