Quick Surveillance Guide For Infectious Diseases 2015

WEST VIRGINIA Department of Health & Human Resources
BUREAU FOR PUBLIC HEALTH

Office of Epidemiology and Prevention Services
Division of Infectious Disease Epidemiology
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Preface

Complete data is critical to surveillance as it guides prevention and control strategies at the state and national level. Quality Improvement (QI) team members of the Division of Infectious Disease Epidemiology (DIDE) volunteered to participate in a disease surveillance data quality project due to the impact that incomplete surveillance data has on the ability to adequately detail the burden of infectious diseases in the State of West Virginia. The QI team evaluated the process used to collect, analyze and disseminate surveillance data to identify ways to increase data completeness. The project team used QI tools such as brainstorming and flow-charting to determine the root causes for some of the steps involved in the process.

To understand the current process and engage the local health department (LHD) staff that collect the data, a survey was conducted to assess what barriers exist to collecting surveillance data and what types of tools would be useful to assist staff in collecting the data. In November 2013, the QI team presented findings of the survey and solicited ideas for increasing data completeness from state, regional and local health representatives. Using the QI tools, the project team was able to identify potential solutions for a more efficient process to improve surveillance data quality. The QI team estimates that implementation of the solutions will result in an increase of completion rates in the surveillance indicators for selected diseases by at least 5% each year.

Based on the project, the team completed this quick surveillance guide (one page per disease) for LHDs. This guide provides surveillance indicators, pertinent lab tests and case ascertainment flow charts. The guide also contains other resources (contact numbers, links to the disease reportable rule, reportable disease wall charts) to facilitate timely reporting of the quality surveillance data. The team will assess the surveillance data quality after providing the surveillance guide to LHDs in the subsequent year.

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Having trouble getting in contact with patients?

1. Each LHD should have a written policy for managing "lost-to-follow-up" cases. The policy should be reviewed and approved by the local health officer and the local board of health. Here are some suggestions for your written policy:

   - Make at least three attempts to contact by phone.
   - Consider calling at different times of the day: in the morning, in the afternoon and the evening.
   - Leave a voicemail. Some people do not respond to unknown callers. Leave your name, your reason for calling and your contact number.
   - Are you sure you have the right contact information for the patient? Check patient's medical records to confirm you have the correct phone number and address.
   - If a patient is lost-to-follow-up, ask the provider or the hospital for the emergency contact information provided by the patient.
   - If an emergency contact is listed, attempt to call that person.
   - Contact DIDE if you think the Bureau for Public Health (BPH) can assist.
   - As a last resort, send a certified letter.

2. Follow your written policy.

3. Document all attempts to contact the patient, including the date and time of contact, type of contact (phone, voice mail, letter, home visit, etc.) and outcome.

Having trouble getting clinical information?

- Establish a working relationship with the person at the hospital or provider's office who is best able to provide you with clinical information. That person may be the infection control nurse, medical record staff, office manager, or healthcare provider.
- Educate providers about HIPAA and how it pertains to reportable diseases. Give each provider a copy of the HIPAA exemption letter. A copy of the letter can be located at **www.dhhr.wv.gov/oeps/disease**.
- Make multiple attempts to get in contact with providers at different times of the day.
- Make yearly site visits to providers. Educate them about the reportable disease rule and provide reportable disease wall charts. This not only establishes a relationship, but keeps them up-to-date on disease reporting in the State.
- Share surveillance data with providers so they know how their data is used and they understand the importance.
- When you are conducting an investigation and getting ready to call a provider to ask questions, be prepared. Review the information you already have and record it on the West Virginia Electronic Disease Surveillance System (WVEDSS) form or case report paper form. Information on various diseases is available at **www.dhhr.wv.gov/oeps/disease**. Review the case definition and the WVEDSS form to make sure you are familiar with the information you still need for the investigation. Ensure any control measures listed in each disease investigation protocol are taken at the appropriate time. That way, you will use your time and the provider's time wisely on the phone. You are less likely to get off the phone and realize you forgot an important detail.
- If a provider declines to give you needed clinical information, ask your local health officer for assistance. DIDE can also help if you need support (304-558-5358, ext. 1).

Important Phone Numbers	
Division of Infectious Disease Epidemiology (DIDE)	304-558-5358, ext. 1
WVEDSS Help Desk	877-408-8930
Office of Laboratory Services	304-558-3530
Office of Environmental Health Services	304-558-2981

Helpful Links and Other Information

HIPAA Privacy Rule - Providers are allowed to release personal health information (PHI) to public health officials without patient consent. A letter from the BPH Commissioner explaining details for you to send to providers is available at **www.dhhr.wv.gov/oeps/disease**.

FERPA - Federal Education Rights and Privacy Act - This rule is the equivalent of HIPAA for the education system. The Reportable Disease Rule (64CSR7, Section 14.3.b) explicitly states that investigation of an infectious disease or outbreak is classified as a "Health and Safety Emergency" under FERPA and allows the release of personally identifiable information (PII) to public health authorities.

Reportable Disease Rule, Reportable Disease Wall Charts and Other Resources can be found at **www.dhhr.wv.gov/oeps/disease**.

At Your Fingertips…

Resources for Disease Reporting and Investigation

WEST VIRGINIA Department of Health & Human Resources
BUREAU FOR PUBLIC HEALTH

Questions related to	Contact	Phone #
Infectious diseases & outbreaks ▪ Surveillance ▪ Investigation ▪ Reporting ▪ Response	DIDE	800-413-1271 304-558-5358 ext. 1 **www.dide.wv.gov**
WVEDSS technical issues: ▪ System error ▪ Login problems ▪ User account information	WVEDDS Help Desk	877-408-8930
Laboratory testing ▪ Request for test kits ▪ Specimen requirements and preparation ▪ Shipping and handling	Office of Laboratory Services (OLS)	304-558-3530
Environmental Health ▪ Food complaints ▪ Sewer issues ▪ Bed bugs ▪ Chemical exposure	Office of Environmental Health Services (OEHS)	304-558-2981
White Powder	Center for Threat Preparedness (CTP)	304-558-6900

Food and Water-borne Diseases

www.dhhr.wv.gov/oeps/disease

BOTULISM
(INFANT, FOODBORNE OR WOUND)

WHEN TO REPORT: IMMEDIATELY

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic information.
2. Proportion of cases with complete clinical severity information (hospitalization and death).
3. Proportion of cases with treatment information (administration of antitoxin).
4. Proportion of cases with complete risk factor information including:
   Consumption of honey (infant botulism only)
   Consumption of home-canned foods (foodborne botulism only)
   Consumption of dried, canned or fermented meat or fish (foodborne botulism only)
   Injection drug use (wound botulism only)
5. Proportion of cases with date of public health action (follow-up with exposed individuals) recorded.

PERTINENT LABORATORY TESTS

1. Detection of botulinum toxin in serum, stool, or patient's food.
2. Isolation of *Clostridium botulinum* from stool.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. For all cases of botulism, regardless of the type, the urgent need is the administration of antitoxin. Immediately notify DIDE of any suspected case of botulism so that consultation can be arranged to begin treatment.
2. For cases of foodborne botulism, quickly identify the possible source so it can be removed or discarded. Immediately notify DIDE if a commercial food product is the suspected source.
3. Provide disease prevention and control education to case and family.

Note: Treatment with antitoxin should not be delayed while laboratory testing is completed. The decision to administer treatment must be made on the clinical presentation and should be made as soon as botulism is suspected.

CAMPYLOBACTERIOSIS

WHEN TO REPORT: WITHIN 72 HOURS

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic information.
2. Proportion of cases with complete clinical severity information (hospitalization and death).
3. Proportion of cases with confirmatory lab testing.
4. Proportion of cases with complete exposure information including:
    a. Consumption of raw milk or products made from raw milk
    b. Consumption of untreated water
    c. Outdoor recreational activities (i.e. hiking, camping, swimming)
    d. Animal contact, including poultry
    e. Consumption of poultry
    f. Source of home water supply

PERTINENT LABORATORY TESTS

1. Culture of *Campylobacter* species from clinical specimen.
2. Presence of *Campylobacter* antigen by enzyme immune assay (EIA).

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Provide disease prevention and control education to case and family.
2. Ensure specimen submitted to OLS.

Note: Any symptomatic household contact is considered a probable case and should be investigated and entered into WVEDSS using the Campylobacteriosis Report Form.

CRYPTOSPORIDIOSIS

WHEN TO REPORT: WITHIN 72 HOURS

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic information.
2. Proportion of cases with complete clinical severity information (hospitalization and death).
3. Proportion of cases with complete exposure information including:
   a. Recreational water activities (i.e. swimming, waterparks, spray fountains)
   b. Untreated water consumption
   c. Travel history
   d. Animal/petting zoo contact

PERTINENT LABORATORY TESTS

1. Positive for Cryptosporidium organisms or DNA in stool, intestinal fluid, tissue samples, biopsy specimens, or other biological sample by direct fluorescent antibody (DFA) test, polymerase chain reaction (PCR), enzyme immunoassay (EIA), or light microscopy of stained specimen.
2. Positive for Cryptosporidium antigen by a screening test method, such as immunochromatographic card/rapid card test; or a laboratory test of unknown method.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Provide disease prevention and control education to case and family.

Note: Any symptomatic household contact is considered a probable case and should be investigated and entered into WVEDSS using the Cryptosporidiosis Report Form.

CYCLOSPORIASIS

WHEN TO REPORT: WITHIN 72 HOURS

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic information.
2. Proportion of cases with complete clinical severity information (hospitalization and death).
3. Proportion of cases with complete exposure information including:
   a. Fresh produce consumption
   b. Travel history

PERTINENT LABORATORY TESTS

1. Detection of *Cyclospora* organisms or DNA in stool, intestinal fluid/aspirate, or intestinal biopsy specimens.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Provide disease prevention and control education to case and family.

Note: Any symptomatic household contact is considered a probable case and should be investigated and entered into WVEDSS using the Cyclosporiasis Report Form.

GIARDIASIS

WHEN TO REPORT: WITHIN 72 HOURS

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic information.
2. Proportion of cases with complete clinical severity information (hospitalization and death).
3. Proportion of cases with complete exposure information including:
   a. Outdoor recreational activities (i.e. hiking, camping, swimming)
   b. Untreated water consumption
   c. Daycare contact
   d. Travel history
   e. Animal contact
   f. Water source

PERTINENT LABORATORY TESTS

1. Detection of *Giardia* organisms, antigen, or DNA in stool, intestinal fluid, tissue samples, biopsy specimens or other biological sample.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Provide disease prevention and control education to case and family.

Note: Any symptomatic household contact is considered a probable case and should be investigated and entered into WVEDSS using the Giardiasis Report Form.

HEPATITIS A

WHEN TO REPORT: WITHIN 24 HOURS

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic information.
2. Proportion of cases with complete clinical severity information (hospitalization and death).
3. Proportion of cases with high risk or sensitive occupation (food handler).
4. Proportion of cases with complete exposure information including:
    a. Travel history
    b. Contact of a confirmed or suspected hepatitis A case
    c. History of drug use
    d. Contact with a child in daycare
5. Proportion of cases with date of public health action (disease education) recorded.

PERTINENT LABORATORY TESTS

1. Positive IgM for hepatitis A (HAV) antibodies in serum.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. If case is a food handler:
    a. Contact DIDE immediately to complete a risk assessment and address the need for notification of patrons.
    b. Provide post exposure prophylaxis (PEP) for all other food handlers at the food establishment.
2. Conduct contact tracing for household and close contacts to provide PEP as needed. PEP must be administered within 14 days of last exposure to the case.
3. Provide disease prevention and control education to case and family.

Note: DIDE has Immune Globulin available for post exposure prophylaxis if needed.

LEGIONELLOSIS

WHEN TO REPORT: WITHIN ONE WEEK

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic information.
2. Proportion of cases with complete clinical severity information (hospitalization and death).
3. Proportion of cases with complete travel history (10 days prior to onset).
4. Proportion of cases with complete healthcare exposure information (10 days prior to onset).

PERTINENT LABORATORY TESTS

1. Positive urine antigen for *Legionella* serogroup 1.
2. Culture of *Legionella* species from respiratory specimen.
3. Acute and Convalescent serum specimens indicating a 4-fold rise in titer to *Legionella* species
    a. *L. pneumophila* serogroup 1 indicates confirmed case
    b. *L. pnemophila* other serogroups or multiple species from pooled antigen indicates suspect case
4. Positive Direct Fluorescent Antibody (DFA) or Immunohistochemistry (IHC).
5. Positive PCR.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Inquire about travel or healthcare exposure in the 10 days prior to onset.
2. Immediately notify DIDE of any possible travel or healthcare associated cases.
3. Provide disease prevention and control education to case and family.

Note: Although they are often requested, it is not necessary or recommended to conduct an environmental assessment/investigation for a single sporadic case of Legionellosis.

LISTERIOSIS

WHEN TO REPORT: WITHIN 72 HOURS

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic information.
2. Proportion of cases with complete clinical severity information (hospitalization and death).
3. Proportion of cases with complete exposure information including:
    a. Consumption of deli sliced meats or cheese
    b. Consumption of unpasteurized dairy products
    c. Consumption of cold deli salad (i.e. ham, tuna, egg, chicken salad)
4. Proportion of cases with CDC Listeria Initiative Questionnaire completed.

PERTINENT LABORATORY TESTS

1. Positive culture for *Listeria monocytogene*s from a sterile site.
2. Positive culture for *Listeria monocytogene*s from placental or fetal tissue in the setting of miscarriage or stillbirth.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Provide disease prevention and control education to case and family.
2. Ensure specimen submitted to OLS.

SALMONELLOSIS

WHEN TO REPORT: WITHIN 72 HOURS

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic information.
2. Proportion of cases with complete clinical severity information (hospitalization and death).
3. Proportion of cases with high risk or sensitive occupation.
4. Proportion of cases with antibiotic susceptibility results.
5. Proportion of confirmed cases with serotype available.
6. Proportion of cases with complete exposure information including:
   a. Exposure to eggs
   b. Exposure to raw poultry
   c. Exposure to fresh produce
   d. Animal contact

PERTINENT LABORATORY TESTS

1. Positive culture for *Salmonella* species from any site.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Provide disease prevention and control education to case and family.
2. Ensure specimen submitted to OLS.

Note: Any symptomatic household contact is considered a probable case and should be investigated and entered into the WVEDSS using Salmonellosis Report Form.

SHIGA TOXIN-PRODUCING *E.COLI* (STEC)

WHEN TO REPORT: WITHIN 24 HOURS

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic information.
2. Proportion of cases with complete clinical severity information (hospitalization and death).
3. Proportion of cases with confirmatory lab testing.
4. Proportion of cases with complete exposure information including:
   a. Animal contact
   b. Consumption of fresh produce
   c. Consumption of raw milk or products made from raw milk
   d. Consumption of undercooked beef
   e. Consumption of unpasteurized juice or cider
   f. Consumption of untreated water
   g. Outdoor recreational activities (i.e. hiking, camping, swimming)
   h. Raw meat handling
   i. Daycare contact
5. Proportion of cases with date of public health action (disease education) recorded.

PERTINENT LABORATORY TESTS

1. Culture of Shiga toxin-producing *E. coli* species from clinical specimen.
2. Presence of Shiga toxin by enzyme immune assay (EIA).
3. Elevated antibody titer to a known STEC serotype.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Immediately notify DIDE of any daycare associated cases or clusters.
2. Ensure specimen submitted to OLS.

Note: Any symptomatic household contact is considered a probable case and should be investigated and entered into WVEDSS using the STEC Report Form.

If the case developed hemolytic uremic syndrome (HUS), a second report must also be completed in WVEDSS as a case of HUS.

SHIGELLOSIS

WHEN TO REPORT: WITHIN 72 HOURS

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic information.
2. Proportion of cases with complete clinical severity information (hospitalization and death).
3. Proportion of cases with high risk or sensitive occupation.
4. Proportion of cases with antibiotic susceptibility results.
5. Proportion of cases with complete exposure information including:
    a. Contact with incontinent or diapered child
    b. Live in congregate setting
    c. Consumed untreated water

PERTINENT LABORATORY TESTS

1. Positive culture for *Shigella* species from any site.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. If reported case is in a young child (daycare or school age), immediately determine if the case attends daycare and do active surveillance for additional cases in the daycare or school. Outbreaks of Shigellosis historically occur among school children and daycare settings.
2. Counsel case and household contacts on the low infectious dose of *Shigella* and how easily it can be transmitted from person to person.
3. Provide disease prevention and control education to case and family.
4. Ensure specimen submitted to OLS.

Note: Any symptomatic household contact is considered a probable case and should be investigated and entered into WVEDSS using the Shigellosis Report Form.

VIBRIOSIS (NON-CHOLERAE SPECIES)

WHEN TO REPORT: WITHIN 72 HOURS

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic information.
2. Proportion of cases with complete clinical severity information (hospitalization and death).
3. Proportion of cases with complete travel history (7 days prior to onset).
4. Proportion of confirmed cases with serotype available.
5. Proportion of cases with complete risk factor information including:
   a. Consumption of seafood/shellfish
   b. Skin exposure to salt or brackish water

PERTINENT LABORATORY TESTS

1. Positive culture for *Vibrio* species (other than *Vibrio cholerae*) from any site.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Notify DIDE of seafood/shellfish consumption outside of West Virginia.
2. Collect shellfish tags from food establishment for shellfish bought/consumed in West Virginia.
3. Provide disease prevention and control education to case and family.
4. Ensure specimen submitted to OLS.

Note: The above applies to all Vibrio species except Vibrio cholerae. If you receive a report for Vibrio cholerae, or suspected Cholera infection, immediately contact DIDE.

www.dhhr.wv.gov/oeps/disease

HEPATITIS B

WHEN TO REPORT: WITHIN 24 HOURS

SURVEILLANCE INDICATORS

1. Proportion of acute cases with complete demographic information.
2. Proportion of acute cases with complete clinical information.
3. Proportion of acute cases with complete risk factor/exposure information.
4. Proportion of acute cases with complete vaccination history.
5. Proportion of acute cases that have received education and the date they were educated.
6. Proportion of acute cases reported to public health within the required timeframe.

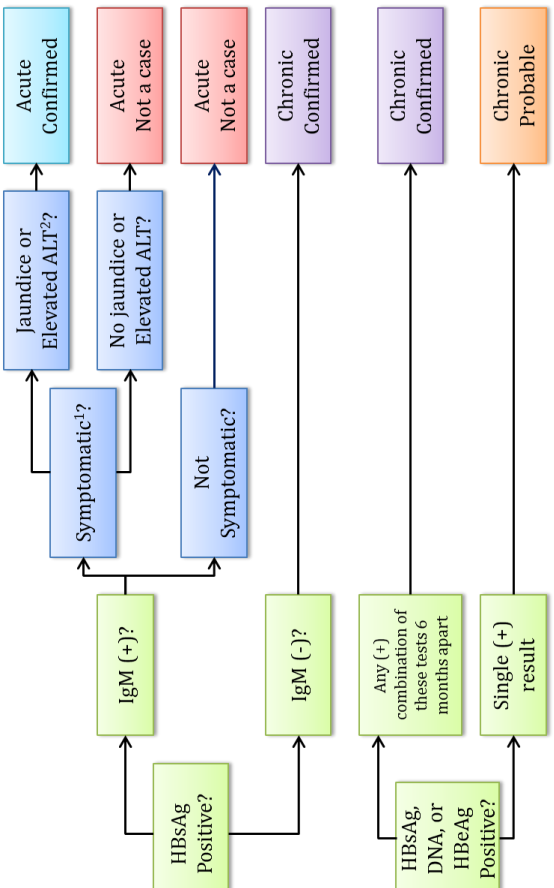
PERTINENT LABORATORY TESTS

1. HBsAg – Hepatitis B surface antigen
   - Presence indicates either an acute or chronic infection and is a marker of infectivity
2. IgM anti-HBc – IgM antibody to the hepatitis B core antigen
   - Positivity indicates recent infection with HBV (< 6 months)
3. HBeAg – Hepatitis B “e” antigen
   - It is a marker of a high degree of infectivity and a high level of viral replication
4. HBV-DNA – HBV Deoxyribonucleic acid
   - It is a marker of viral replication

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Notify DIDE within 24 hours of receiving a positive Hepatitis B lab result and send positive lab reports to DIDE.
2. Provide disease prevention and control education to patient and identify contacts of the positive case.
3. Provide post-exposure prophylaxis and testing to contacts:
   a. Sexual contacts – within 14 days of last sexual exposure.
   b. Needle sharing – within 7 days of last exposure.
   c. Household with known exposure – within 14 days.
4. Identify HBsAg pregnant women to ensure infants receive HBIG and hepatitis B vaccine within 12 hours of birth.

WHEN TO REPORT: WITHIN 24 HOURS



1. Symptoms of acute hepatitis include: nausea, vomiting, right upper quadrant pain, dark urine, clay colored stool, anorexia, malaise, headache & fever.
2. Elevated ALT levels = >100 IU/L.

WHEN TO REPORT: WITHIN ONE WEEK

SURVEILLANCE INDICATORS

1. Proportion of acute cases of hepatitis C with complete demographic information.
2. Proportion of acute cases of hepatitis C with complete information on risk factors.
3. Proportion of acute cases of hepatitis C who have been educated.
4. Proportion of past or present hepatitis C cases with complete demographic and locating information.

PERTINENT LABORATORY TESTS

1. Anti-HCV (antibodies to hepatitis virus in serum): HCV antibodies are produced when an individual is exposed to HCV and usually remain present for life. Signal-to-cut off (s/o) ratio is used in interpretation of the test results. A specific s/co ratio can be identified for each test that would predict a true antibody-positive result (as defined by the results of supplemental testing) ≥95% of the time.
2. HCV RNA: Hepatitis C Virus Ribonucleic Acid (genetic material). The molecular assays used to detect HCV RNA are categorized as qualitative or quantitative assays. The molecular HCV RNA assays are also referred to as nucleic acid tests (NAT) or nucleic acid amplification tests (NAAT).
3. ALT (Alanine transaminase)/SGPT (serum glutamic-pyruvic transaminase): Enzymes produced by the liver that when ‘elevated’ indicates liver damage.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Ensure the case is educated about hepatitis C transmission, prevention, and control.
2. A single case of possible healthcare associated hepatitis C (case who had an invasive medical procedure during the 2 weeks to 6 months prior to onset and no other risk factors for hepatitis C) is defined as an outbreak and should be investigated.

www.dhhr.wv.gov/oeps/disease

HAEMOPHILUS INFLUENZAE

WHEN TO REPORT: WITHIN 24 HOURS

SURVEILLANCE INDICATORS

1. Proportion of *H. influenzae* cases reported with complete information (clinical, demographic, specimen type, vaccine history, and serotype testing).
2. Proportion of *H. influenzae* cases among children younger than 5 years of age with complete vaccination history.
3. Proportion of *H. influenzae* cases among children younger than 5 years of age with serotyped isolate.
4. Proportion of cases reported to public health within the required timeframe.

PERTINENT LABORATORY TESTS

1. Bacterial culture: Isolation of *H. influenzae* from a normally sterile site (e.g., blood or cerebrospinal fluid [CSF] or, less commonly, joint, pleural, or pericardial fluid).
2. Detection of *H. influenzae*-specific nucleic acid in a specimen obtained from a normally sterile body site (e.g., blood, CSF, joint fluid, pleural fluid, pericardial fluid), using a validated polymerase chain reaction (PCR) assay.
3. Subtyping: *H. influenzae* isolates should be subtyped to determine need for chemoprophylaxis.
4. Antimicrobial susceptibility: All *H. influenzae* isolates should be tested for antimicrobial susceptibility.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Rapidly identify at-risk contacts of invasive Hib cases to ensure early administration of chemoprophylaxis and Hib vaccine, if needed, to household and childcare classroom contacts of case.
2. Forward isolates of *H. influenzae* from normally sterile sites to OLS for serotyping.

Note: *H. influenzae* type b-specific antigen in CSF by latex agglutination can only be used as evidence of a probable case. Positive antigen detection test results from urine or serum samples are unreliable.

MEASLES

WHEN TO REPORT: IMMEDIATELY

If measles is suspected, the case must present with acute illness with:

1. Generalized, maculopapular rash lasting ≥3 days; **and**
2. Temperature ≥101°F or 38.3°C; **and**
3. Cough, coryza, or conjunctivitis.

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic data.
2. Proportion of cases with adequate laboratory testing (serologic and PCR result).
3. Proportion of cases with complete vaccine information.
4. Proportion of cases with complete clinical information.
5. Proportion of cases with complete information on transmission setting.
6. Median days between rash onset date and the date reported to public health.

PERTINENT LABORATORY TESTS

1. Isolation of measles virus from a clinical specimen; or
2. Detection of measles-virus specific nucleic acid from a clinical specimen using PCR; or
3. IgG seroconversion or a significant rise in measles immunoglobulin G antibody using any evaluated and validated method; or
4. A positive serologic test for measles immunoglobulin M antibody.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Collect serum, NP swab and urine for testing through OLS.
2. Identify persons exposed to the case during the case's infectious period and provide post-exposure prophylaxis (PEP) to anyone who can not show proof of immunity, absent contraindications.
3. Immunization is the intervention of choice and MMR should be given within 72 hours of exposure.
4. Immune globulin (IG) can be given up to 6 days after exposure and is indicated for susceptible contacts (particularly contacts younger than 1 year of age, pregnant women & immunocompromised individuals).

MUMPS

WHEN TO REPORT: WITHIN 24 HOURS

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic data.
2. Proportion of mumps cases with complete vaccination history.
3. Proportion of mumps cases for which appropriate clinical specimens were obtained and submitted to OLS.
4. Proportion of cases with complete clinical information.
5. Proportion of cases with complete information on transmission setting.
6. Proportion of cases with complete epidemiologic information, including whether case is epi-linked to another case, whether the case is part of an outbreak, and whether contact tracing has been completed.
7. The interval between date of symptom onset and date of public health notification.
8. Proportions of reports with timely initiation of control measures.

PERTINENT LABORATORY TESTS

1. Isolation of *mumps virus* from a clinical specimen.
2. Detection of mumps nucleic acid (e.g., standard or real time RT-PCR assays).
3. Detection of mumps immunoglobulin M (IgM) antibody.
4. Demonstration of specific mumps antibody response in absence of recent vaccination, either a 4-fold increase in immunoglobulin G (IgG) titer as measured by quantitative assays, or a seroconversion from negative to positive using a standard serologic assay of paired acute and convalescent serum specimens.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Collect a buccal swab or NP swab (within 1 to 3 days of symptom onset) for testing through OLS.
2. Ensure the case is placed in droplet isolation until 5 days after the onset of parotitis.
3. Identify close contacts and vaccinate persons without evidence of immunity, absent contraindications.

NEISSERIA MENINGITIDIS, INVASIVE

WHEN TO REPORT: WITHIN 24 HOURS

SURVEILLANCE INDICATORS

1. Proportion of meningococcal cases with complete demographic, clinical and exposure information.
2. Proportion of meningococcal cases with complete vaccination history.
3. Proportion of meningococcal cases with known serogroup.
4. Proportion of meningococcal cases reported in a timely manner.
5. Proportion of meningococcal cases with timely initiation of control measures.

PERTINENT LABORATORY TESTS

1. Detection of *N. meningitidis*-specific nucleic acid in a specimen obtained from a normally sterile body site (e.g. blood or CSF), using a validated polymerase chain reaction (PCR) assay; or
2. Detection of *N. meningitidis* antigen:
   a. in formalin-fixed tissue by immunohistochemistry (IHC); or
   b. in CSF by latex agglutination
3. Isolation of *Neisseria meningitidis*:
   a. from a normally sterile body site (e.g., blood or cerebrospinal fluid; or less commonly, synovial, pleural, or pericardial fluid); or
   b. from purpuric lesions.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Forward isolates of *N. meningitidis* from normally sterile sites to OLS for serotyping.
2. Identify close contacts who were exposed to the case at any time during 7 days before the case's onset of symptoms and provide chemoprophylaxis.
3. If an outbreak of vaccine strain invasive meningococcal disease occurs, consider offering meningococcal vaccine.

PERTUSSIS

WHEN TO REPORT: WITHIN 24 HOURS

SURVEILLANCE INDICATORS

1. Proportion of cases with complete information (clinical, complications, antibiotic treatment, laboratory testing, vaccination history, and epidemiologic data).
2. Proportion of cases from which clinical specimens are obtained.
3. Proportion of probable and confirmed cases meeting the clinical case definition that are laboratory confirmed.
4. Proportion of cases confirmed by isolation of *B. pertussis* by culture.
5. Proportion of probable and confirmed cases with complete information on vaccination history.
6. Proportion of cases reported to public health within the required timeframe.
7. Proportion of cases for which control measure was initiated within the appropriate timeframe.

Suggested additional indicators to monitor:

- Proportion of probable cases that did not meet the clinical case definition because the cough duration was less than 14 days and the patient was coughing at follow-up.
- Median interval between onset of cough and notification of state or local public health authorities in probable and confirmed cases.

PERTINENT LABORATORY TESTS

1. Isolation of *B. pertussis* from a clinical specimen (pertussis culture).
2. Positive PCR for pertussis.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Collect NP swab for testing through OLS (obtain before initiation of treatment with antibiotics).
2. Identify close contacts exposed during the case's infectious period and provide chemoprophylaxis regardless of vaccination status.
3. Ensure the case is placed in droplet isolation or excluded from work or childcare until 5 days after the start of antimicrobial treatment.
4. Offer Tdap to contacts if indicated.

STREPTOCOCCUS PNEUMONIAE, INVASIVE

WHEN TO REPORT: WITHIN ONE WEEK

SURVEILLANCE INDICATORS

1. Proportion of children under 5 years of age who have *invasive pneumococcal disease* with*:*
    a. Complete vaccination history
    b. Isolates serotyped
    c. Isolates tested for antimicrobial resistance

PERTINENT LABORATORY TESTS

1. Isolation of *S. pneumoniae* from a normally sterile body site (e.g., blood, cerebrospinal fluid, or, less commonly, joint, pleural or pericardial fluid).
2. Subtyping: *S. pneumoniae* isolates should be subtyped to determine serotype.
3. Antimicrobial susceptibility: Test *S. pneumoniae* isolates for antimicrobial susceptibility.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Forward isolates of *S. pneumoniae* from normally sterile sites to OLS for serotyping and susceptibility testing.
2. Educate providers and the general public about the conjugate and polysaccharide pneumococcal vaccines.

Invasive Bacterial Disease

www.dhhr.wv.gov/oeps/disease

STREPTOCOCCAL DISEASE, INVASIVE GROUP B

WHEN TO REPORT: WITHIN ONE WEEK

SURVEILLANCE INDICATORS

1. Proportion of cases with complete demographic information.
2. Proportion of cases with type of infection and specimen source reported.
3. Proportion of cases with underlying medical conditions reported.
4. Proportion of cases with history of pregnancy and postpartum status.

PERTINENT LABORATORY TESTS

1. Isolation of group B Streptococcus (*Streptococcus agalactiae*) from a normally sterile body site (e.g., blood, cerebrospinal fluid, or, less commonly, joint, pleural or pericardial fluid).
2. Isolation of group B Streptococcus (*Streptococcus agalactiae*) from a non-sterile site such as placenta and/or amniotic fluid with fetal demise.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Educate providers about recommendations to screen all pregnant women and manage accordingly.

www.dhhr.wv.gov/oeps/disease

ANAPLASMOSIS/EHRLICHIOSIS

WHEN TO REPORT: WITHIN ONE WEEK

SURVEILLANCE INDICATORS

1. Proportion of probable or confirmed cases with onset date complete.
2. Proportion of probable or confirmed cases with complete demographic information (name, date of birth, ethnicity, race, address including county of residence).
3. Proportion of cases with risk factor information (i.e. history of potential tick exposure through recreational or occupational activities).

PERTINENT LABORATORY TESTS

Supportive

1. Serological evidence of elevated IgG or IgM antibody reactive with *Anaplasma phagocytophilum*/*Ehrlichia chaffeensis* by IFA, ELISA, or dot-ELISA.
2. Identification of morulae in the cytoplasm of monocytes or macrophages by microscopic examination.

Confirmed

1. Serological evidence of a 4-fold change in IgG-specific antibody titer to *A. phagocytophilum*/*Ehrlichia chaffeensis* by IFA, ELISA, or dot-ELISA.
2. Demonstration of ehrlichial/anaplasmal antigen in a biopsy or autopsy sample by immunohistochemical methods.
3. Isolation of *A. phagocytophilum*/*Ehrlichia chaffeensis* from a clinical specimen in cell culture.
4. Detection of *A. phagocytophilum*/*Ehrlichia chaffeensis*/*Ehrlichia ewingii* DNA in a clinical specimen via amplification of a specific target by PCR.

Note: For *E. ewingii*, PCR is the only test that fulfills the laboratory criteria.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Recommend environmental measures to case/family to reduce risk of tickborne diseases around the home.
2. Provide disease control and prevention education to case/family.

ANAPLASMOSIS/EHRLICHIOSIS

WHEN TO REPORT: WITHIN ONE WEEK

ANAPLASMA PHAGOCYTOPHILUM* AND *EHRLICHIA CHAFFEENESIS
CASE ASCERTAINMENT GUIDE

Patient

Has serologic evidence of elevated IgG or immunoglobulin M (IgM) antibody reactive with *R. rickettsii* antigen by IFA, enzyme-linked immunosorbent assay (ELISA), dot-ELISA, or latex agglutination?

Fever and any of the following: rash, headache, myalgia, anemia, thrombocytopenia, or any hepatic transaminase elevation?

Probable Case

-Serological evidence of a 4-fold change in IgG-specific antibody titer reactive with *Rickettsia rickettsii* antigen by indirect IFA between paired serum specimens (one taken in the first week of illness and a second 2-4 weeks later),
OR
-Detection of *R. rickettsii* DNA in a clinical specimen via amplification of a specific target by PCR assay,
OR
-Demonstration of spotted fever group antigen in a biopsy or autopsy specimen by IHC,
OR
-Isolation of *R. rickettsii* from a clinical specimen in cell culture?

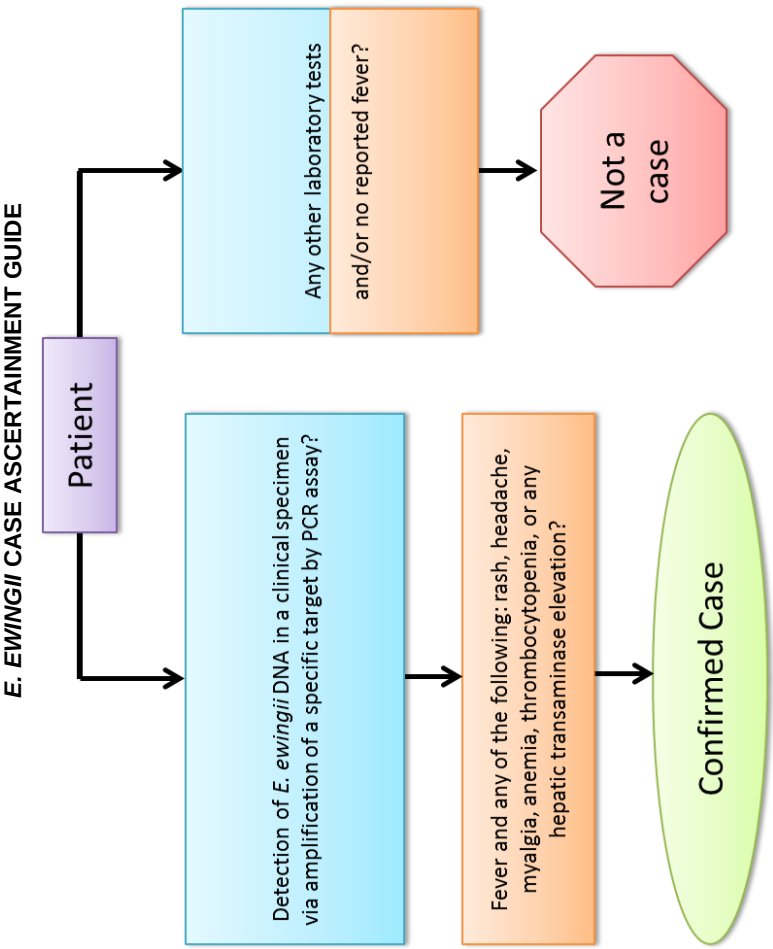
Fever and any of the following: rash, headache, myalgia, anemia, thrombocytopenia, or any hepatic transaminase elevation?

Confirmed Case

All other laboratory tests and/or no reported fever?

Not a case

WHEN TO REPORT: WITHIN ONE WEEK



ARBOVIRAL INFECTION

WHEN TO REPORT: WITHIN ONE WEEK

Arboviral diseases (not including Dengue virus) include West Nile Virus, La Crosse encephalitis, St. Louis Encephalitis, Eastern Equine Encephalitis Virus, Western Equine Encephalitis Virus, and Chikungunya virus. Powassan Virus is also an arbovirus, but is transmitted by ticks (not mosquitoes).

SURVEILLANCE INDICATORS

1. Proportion of probable or confirmed cases with onset date complete.
2. Proportion of probable or confirmed cases with complete demographic information (name, date of birth, ethnicity, race, address including county of residence).

PERTINENT LABORATORY TESTS

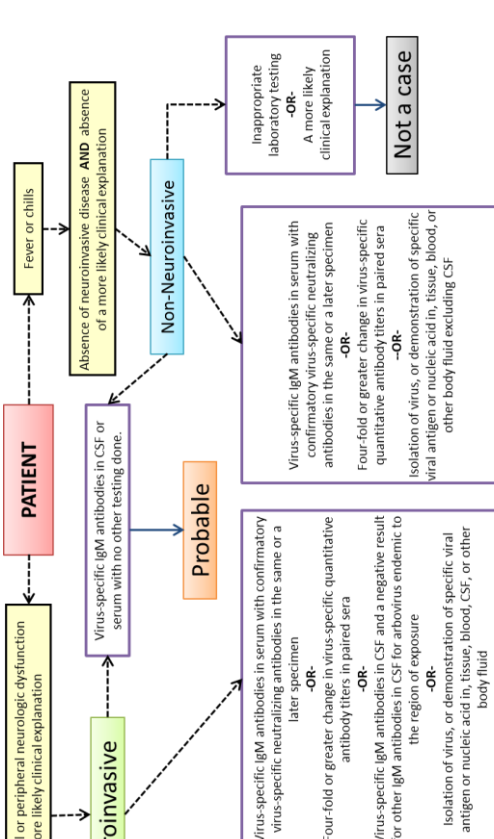
1. Isolation of virus from, or demonstration of specific viral antigen or nucleic acid in, tissue, blood, CSF, or other body fluid.
2. Virus-specific IgM antibodies in serum with confirmatory virus-specific neutralizing antibodies.
3. Virus-specific IgM antibodies in CSF or serum.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Recommend environmental measures to case/family to reduce risk of tickborne diseases around the home.
2. Provide disease control and prevention education to case/family.

ARBOVIRAL INFECTION

WHEN TO REPORT: WITHIN ONE WEEK



Central or peripheral neurologic dysfunction may include meningitis, encephalitis, acute flaccid paralysis or other acute signs such as myelitis, peripheral neuritis, and nerve palsies and abnormal reflexes or movements.

Assays for detection of IgM and IgG antibodies such as enzyme-linked immunosorbent assay (ELISA), microsphere (MIA), and immunofluorescence assay (IFA) provide a presumptive diagnosis and should have confirmatory testing performed. Confirmatory testing involves detection of arboviral-specific neutralizing antibodies utilizing such assays as the plaque reduction neutralization test (PRNT).

Note: Vaccination history, detailed travel history, date of onset of symptoms, and knowledge of potentially cross-reactive arboviruses known to circulate in the region of exposure should be considered when interpreting results.

LYME DISEASE

WHEN TO REPORT: WITHIN ONE WEEK

SURVEILLANCE INDICATORS

1. Proportion of cases with complete clinical information (i.e., physician-diagnosed EM or late manifestations).
2. Proportion of cases reported with physician-diagnosed erythema migrans (EM) that also contains information on county of exposure.
3. Proportion of cases with illness onset date complete.
4. Proportion of cases with risk factor information (i.e. history of potential tick exposure through recreational or occupational activities).

PERTINENT LABORATORY TESTS

1. Positive culture for *B. burgdorferi*, or
2. Two-tiered testing: EIA/IFA antibody screen, followed by IgM/IgG Western blot, or
3. Single-tier IgG Western blot, or
4. CSF antibody positive for *B. burgdorferi* by EIA/IFA, when the titer is higher than it was in serum.

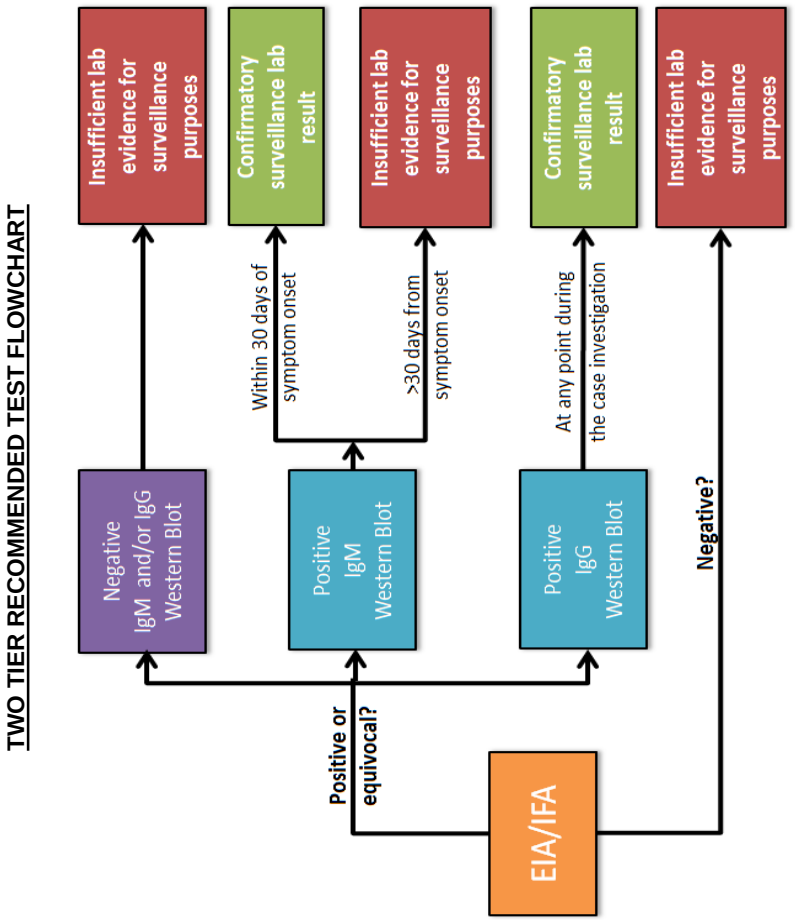
Note: The culture must be positive for *B. burgdorferi*. "*Borrelia* spp." or other *Borrelia species* are not acceptable for surveillance. Two-tier testing for Lyme disease is based on illness onset date (not diagnosis onset date) and the timeframe in which signs and symptoms appear. When an EIA/IFA is equivocal or positive, the appropriate Western blot(s) should be performed.

WHEN TO REPORT: WITHIN ONE WEEK

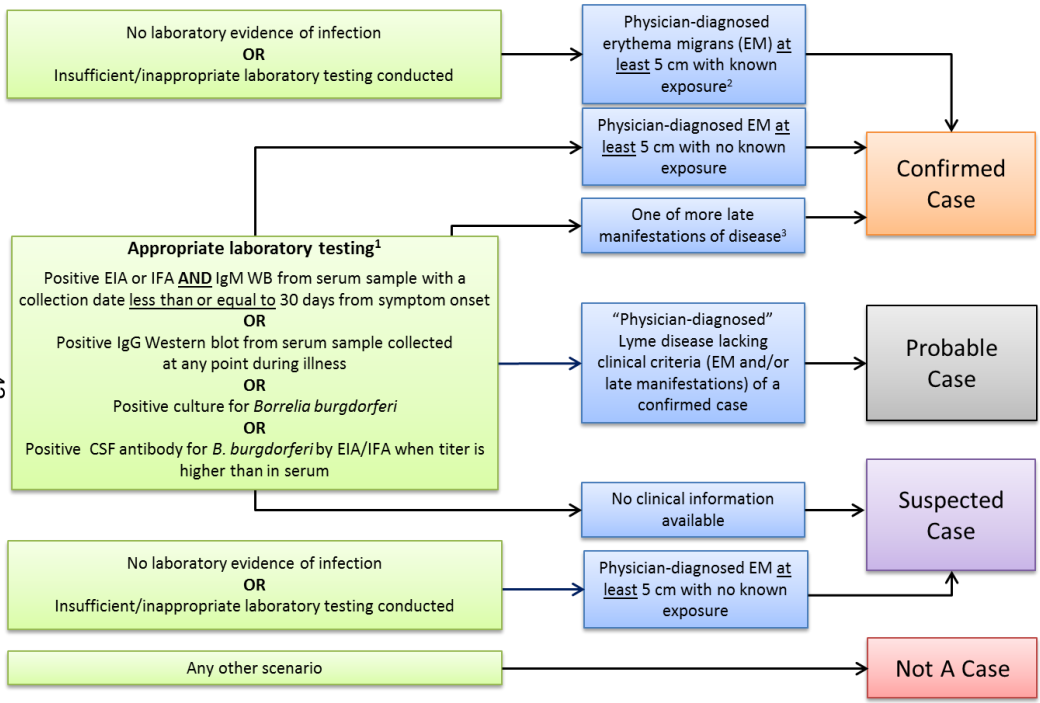
IMPORTANT PUBLIC HEALTH ACTION(S)

1. Conduct an environmental assessment of the case's residence which includes the following:
   a. Collect GPS coordinates of the residence
   b. Check for artificial water-holding containers
   c. Check for areas of standing water
   d. Check for poorly draining gutters
   e. Check for windows/door screens in disrepair
2. Notify blood/tissue bank or other facility if case was a donor.
3. Notify the case's obstetrician if the case is pregnant.
4. Recommend environmental measures to reduce the risk of arboviral infection around the home.
5. Provide disease control and prevention education to case/family/employer.

WHEN TO REPORT: WITHIN ONE WEEK



LYME DISEASE CASE ASCERTAINMENT GUIDE



[1] Laboratory tests in this guide are the only ones appropriate for Lyme disease (LD) case ascertainment.
[2] Exposure is defined as having been in a wooded, brushy, or grassy area less than 30 days before onset of EM in a county where LD is endemic (having greater than 2 confirmed cases that were acquired in the county or in which tick vectors infected with *B. burgdorferi* have been found). As of 2015, Berkeley, Hampshire, Hancock, Jefferson, Mineral, Morgan, and Wood Counties are considered endemic for LD.
[3] Late manifestations include musculoskeletal, nervous system, and cardiovascular signs of disease.

ROCKY MOUNTAIN SPOTTED FEVER

WHEN TO REPORT: WITHIN ONE WEEK

SURVEILLANCE INDICATORS

1. Proportion of probable or confirmed cases with onset date complete.
2. Proportion of probable or confirmed cases with complete demographic information (name, date of birth, ethnicity, race, address including county of residence).
3. Proportion of probable or confirmed cases with travel history documented.
4. Proportion of cases with risk factor information (i.e. history of potential tick exposure through recreational or occupational activities).

PERTINENT LABORATORY TESTS

1. IgG or IgM antibody reactive with *Rickettsia rickettsii* antigen IFA, ELISA, dot-ELISA, or latex agglutination.
2. Detection of *R. rickettsii* DNA in a clinical specimen via amplification of a specific target by PCR.
3. Demonstration of spotted fever group antigen in a biopsy or autopsy specimen by IHC (immunohistochemistry).
4. Isolation of *R. rickettsii* from a clinical specimen in cell culture.

IMPORTANT PUBLIC HEALTH ACTION(S)

1. Recommend environmental measures to case/family to reduce risk of tickborne diseases around the home.
2. Provide disease control and prevention education to case/family.

WHEN TO REPORT: WITHIN ONE WEEK