Confirmatory Laboratory Results
For Denton County

The following table describes the confirming lab results for each of the notifiable diseases. Furthermore, it also states whether these tests are preformed at the Texas Department of State Health Services (TDSHS) Laboratories and any relevant diagnostic, or special specimen or procedures requested by TDSHS. Finally there is some information on the necessary public health response associated with each disease.
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<td><strong>Acquired immune deficiency syndrome (AIDS)</strong></td>
<td>Enzyme Assay / Western Blot to detect antibodies for infectious agents.</td>
<td>Yes</td>
<td>Yes</td>
<td>Test for infections by opportunistic organisms are offered</td>
<td>Immediate investigation of cases without known risk factors</td>
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| **Amebiasis** | *Intestinal amebiasis:*  
  - Demonstration of cysts or trophozoites of *E. histolytica* in stool, or  
  - Demonstration of trophozoites in tissue biopsy or ulcer scrapings by culture or histopathology  
*Extraintestinal amebiasis:*  
  - Demonstration of *E. histolytica* trophozoites in extraintestinal tissue | Yes | Yes | Fecal specimens must be sent in fresh (< 5 hours from being passed) or PVA and formalin for concentration and trichrome staining. Referred material accepted from hospital, private, and reference laboratories. | Investigate cluster of cases and cases with no travel or other risk factors. |
| **Anthrax** |  
  - Isolation of *Bacillus anthracis* from a clinical specimen, or  
  - Detection of *B. anthracis* antigens in tissues by Immunohistochemistry using both *B. anthracis* cell wall and capsule monoclonal antibodies; or  
  - Evidence of four-fold rise in antibodies or antigen between acute and convalescent sera using CDC IgG ELISA testing; or  
  - Documented anthrax environmental exposure AND evidence of *B. anthracis* DNA.  
Note: All *Bacillus anthracis* isolates must be submitted to the DSHS laboratory. | Yes | Yes | Denton County Health Department (DCHD) approval and coordination required. | Immediate investigation to determine source of infection and all persons potentially exposed. |
| **Aseptic Meningitis** | *Laboratory Confirmation:*  
  - A viral isolate from cerebrospinal fluid, or  
  - A viral isolate from blood with physician diagnosis of aseptic meningitis  
*Supportive of Clinical Diagnosis:*  
  - No growth in CSF or blood cultures  
  - CSF with test results characteristic of viral meningitis | Yes | Yes | | Investigate clusters of cases to determine source of infection |
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| Arbovirus infection Encephalitis:  
- Cache Valley Encephalitis, Infectious  
- California Serogroup  
- Eastern Equine (EEE)  
- Powassan  
- St Louis (SLE)  
- Venezuelan Equine (VEE)  
- Western Equine (WEE)  
- West Nile Fever | *Level One Criteria*  
- Four-fold or greater change in virus-specific serum antibody titer, or  
- Isolation of virus from or demonstration of specific viral antigen or genomic sequences in tissue, blood, CSF, or other body fluid, or  
- Virus-specific immunoglobulin M (IgM) antibodies demonstrated in CSF by antibody-capture enzyme immunoassay (EIA), or  
- Virus-specific IgM antibodies demonstrated in serum by antibody-capture EIA and confirmed by demonstration of virus-specific serum immunoglobulin G (IgG) antibodies in the same or a later specimen by another serologic assay (e.g., neutralization or hemagglutination inhibition)  
*Level Two Criteria*  
- Stable (less than or equal to a two-fold change) but elevated titer of virus-specific serum antibodies, or  
- Virus-specific serum IgM antibodies detected by antibody-capture EIA but with no available results of a confirmatory test for virus-specific serum IgG antibodies in the same or a later specimen | Yes, with level one lab result | Yes | Mosquitoes are accepted only from health officials who have been trained in the Texas Department of State Health Services state surveillance program. | Investigate to determine 1-month travel history and possible source of exposure. Initiate appropriate mosquito control. |
| Asbestosis | Clinical diagnoses supported by occupational history | | | | Investigate occupational exposure. |
| Botulism, foodborne, infant, wound, and other | *Detection of botulinum toxin in serum, stool, or patient's food, or*  
*Isolation of Clostridium botulinum from stool*  
*Note: All Clostridium botulinum isolates must be submitted to the DSHS laboratory.* | Yes | Yes | Denton County Health Department (DCHD) approval and coordination required. | Immediate investigation to determine source of intoxication and all persons potentially exposed. Request for antitoxin through CDC. |
| Brucellosis | *Isolation of Brucella spp. from a clinical specimen, or*  
*Fourfold or greater rise in Brucella agglutination titer between acute- and convalescent-phase serum specimens obtained greater than or equal to 2 weeks apart and studied at the same laboratory*  
*Note: All Brucella species isolates must be submitted to the DSHS laboratory.* | Yes | Yes | Serum specimens should be collected 14 days apart. Brucella species is one of the organisms of the agents of Bioterrorism, but it also occurs sporadically. | Investigate to determine source of infection and additional exposures. |
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<td>Campylobacteriosis</td>
<td>Isolation of <em>Campylobacter</em> from any clinical specimen</td>
<td>Yes</td>
<td>Yes</td>
<td>Rectal swab must be sent in Cary and Blair medium</td>
<td>Investigate cluster of cases to determine source of infection and additional exposures.</td>
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<td>Chancroid</td>
<td>Isolation of <em>Haemophilus ducreyi</em> from clinical specimen (scrapings from genital lesions)</td>
<td>Yes</td>
<td>Yes</td>
<td>DCHD approval and coordination required.</td>
<td>Investigate cluster of cases to determine source of infection and additional exposures.</td>
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| Chickenpox (varicella)        | • Isolation of varicella-zoster virus (VZV) from a clinical specimen, or  
• Direct fluorescent antibody (DFA), or  
• Polymerase chain reaction (PCR), or  
• Significant rise in serum varicella immunoglobulin G (IgG) antibody level by any standard serologic assay | Yes                                           | Yes                           | Isolation is done in conventional tube culture and shell vial culture. If characteristic CPE is observed in the tube culture or after a 2-4 day incubation of the shell vial culture, immunofluorescence tests are performed using VZ-specific monoclonal antibody. Serum specimens are to be collected 10-14 days apart. | Nosocomial cases should be investigated to determine which patients should be isolated and which employees should be excluded. |
<p>| Chlamydia trachomatis infection | Detection of nucleic acids using a genetic probe from PACE specimen collection kits. | Yes                                           | Yes                           | Genetic probe is available only to those in STD and Family Planning Programs and to adolescent THSteps (EPSDT) patients for whom collectors are provided. Specimen requirements: Female endocervical, male urethral and conjunctival swabs using the appropriate Gen-Probe PACE Specimen Collection Kit. Only swabs contained in the PACE specimen collection kit can be used to collect patient specimens. Insert one collection swab only into the Gen-Probe transport tube. Avoid collecting grossly bloody specimens, which may interfere with performance of this test. Urine is an acceptable specimen for amplified test procedure only. **Culture is the ONLY recommended procedure for diagnosing chlamydial infection in cases of suspected child abuse. | Personal interview and contact tracing in selected instances. |</p>
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<td>Creutzfeldt-Jakob disease (CJD)</td>
<td>Neuropathology is necessary for the confirmation of CJD: the use of cerebral biopsy in living patients is to be discouraged unless its purpose is to arrive at an alternative diagnosis of a treatable disorder. Autopsy (or postmortem biopsy of the brain where autopsy is not possible) is strongly encouraged and is necessary to accurately diagnose any suspect case of CJD.</td>
<td>Yes</td>
<td>Yes</td>
<td>Physicians must coordinate with DCHD to confirm the diagnosis of CJD by arranging for an autopsy following the death of the person suspected of having CJD. This is especially important if the person had an onset at age less than 55. Please contact The National Prion Disease Pathology Surveillance Center (NPDPSC) for assistance or specimen submission. <a href="http://www.cjdsurveillance.com/">http://www.cjdsurveillance.com/</a></td>
<td>Immediate investigation to differentiate between CJD and CJD (Var) and arrangement for autopsy at NPDPSC.</td>
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| Cryptosporidiosis | Detection of a member of the genus Cryptosporidium by one of the following methods:  
- Organisms in stool, intestinal fluid, or tissue samples or biopsy specimens, or  
- Antigens in stool or intestinal fluid, or  
- Nucleic acid by PCR in stool, intestinal fluid, or tissue samples or biopsy specimens | Yes | Yes | Fecal specimens must be sent in formalin. Specimens are accepted from public health officials. Referred material accepted from hospital, private, and reference labs. | Investigate cluster of cases to determine source of infection and additional exposures. |
| Cyclosporiasis | Detection—in symptomatic or asymptomatic persons— of Cyclospora:  
- Oocysts in stool by microscopic examination, or in intestinal fluid or small bowel biopsy specimens, or  
- Demonstration of sporulation, or DNA (by polymerase chain reaction) in stool, duodenal/jejunal aspirates or small bowel biopsy specimens | Yes | Yes | Fecal specimens must be sent in formalin. Specimens are accepted from public health officials. Referred material accepted from hospital, private, and reference labs. | Investigate cluster of cases to determine source of infection and additional exposures. |
<p>| Cysticercosis | Presumptive diagnosis of neurocysticercosis is usually made by MRI or CT brain scans. Blood tests are available to help diagnose an infection, but may not always be accurate. If surgery is necessary, confirmation of the diagnosis can be made by demonstrating the cysticercus in the tissue involved | Yes |  | DCHD approval and coordination required. A Nonreactive serological result does not rule out the disease. Rare cross-reactions occur. | Investigate cluster of cases to determine source of infection and additional exposures. |</p>
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| Dengue                         | ● Isolation of dengue virus from tissue, blood, CSF, or other body fluid, or  
● Demonstration of specific dengue virus antigen or genomic sequences in tissue, blood, CSF, or other body fluid by PCR, IHC or IFA, or  
● Seroconversion from negative dengue IgM in an acute phase specimen (<5 days after symptom onset) to positive IgM in a convalescent-phase specimen (collected >5 days after symptom onset), or  
● Demonstration of a >4-fold rise in IgG antibody titer or hemagglutination inhibition (HAI) titer to dengue virus antigens in paired acute and convalescent serum samples, or  
● Demonstration of a >4-fold rise in a plaque reduction neutralization test (PRNT) end point titer between dengue viruses and other flaviviruses tested in a convalescent serum sample, or Dengue-specific IgM antibodies demonstrated in CSF | Yes | Yes | These assays detect IgM and IgG antibodies against all four Dengue fever types. Except for very early IgM responses, the immune response to Dengue fever is not type specific. While a single serum may be tested, a second serum collected 10-14 days later may be required for best evidence for current infection. Paired sera are especially important when the acute phase sample is taken within the six days following onset of symptoms. In most patients, Dengue antibodies are detectable after the sixth day. Cross-reactions occur with Yellow Fever immunization and other arboviruses are known to occur, but the extent and degree of cross-reaction varies. | Investigate to determine 1-month travel history and possible source of exposure. Initiate mosquito control measures. Educate the public regarding mosquito control. |
| Diphtheria                     | ● Isolation of *Corynebacterium diphtheriae* from a clinical specimen, or  
● Histopathologic diagnosis of diphtheria | Yes | Yes | Swabs should be submitted on Loeffler’s Slant or in Amies or Stuart transport medium. DCHD approval and coordination required. | Immediate investigation to determine need for vaccination and antibiotic prophylaxis of contacts. |
| Ehrlichiosis                   | ● Demonstration of a four-fold change in IgG-specific antibody titer to *E. chaffeensis* antigen by indirect immunofluorescence assay (IFA) in paired serum samples (one taken in first week of illness and a second taken 2-4 weeks later), or  
● Detection of *E. chaffeensis* DNA in a clinical specimen by PCR, or  
● Demonstration of ehrlichial antigen in a biopsy/autopsy sample by IHC, or  
● Isolation of *E. chaffeensis* from a clinical specimen in cell culture.  
● Detection of *E. ewingii* DNA in a clinical specimen by PCR | Yes | Yes | Human ehrlichiosis is a tick-borne disease caused by rickettsial-like agents. Sera are tested for presence of antibodies to *Ehrlichia chaffeensis*. Single IgG IFA titers of 1:64 or greater indicate exposure. Ideally, acute and convalescent-phase serum specimens, drawn at least 4 weeks apart, should be submitted. Specimens demonstrating a four-fold rise in IgG titers between acute and convalescent samples suggest recent or current infection. | Investigate to determine location of tick exposure. Educate the public to avoid tick exposure. |
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| *Escherichia coli*, enterohemorrhagic | Isolation of Shiga toxin-producing *Escherichia coli* from a clinical specimen.  
- *Escherichia coli* O157:H7 isolates may be assumed to be Shiga toxin-producing; for all other *E. coli* isolates, Shiga toxin production or the presence of Shiga toxin genes must be determined to be considered STEC.  
- Shiga-toxin producing - detection of Shiga toxin, Shiga-like toxin, verotoxin, or Shiga toxin genes in stool or enrichment broths by EIA (enzyme immunoassay), PCR, or cell culture methods | Yes | Yes | Stool specimens should be collected in the acute phase of the illness and submitted on ice packs within 24 hours of collection. | Investigate to determine source of infection and possible relationships to child-care facility or food service establishment. |
| Gonorrhea | Detection of nucleic acids using a genetic probe from PACE specimen collection kits. | Yes | Yes | Microscopic screening by gram-stain is not offered. Genetic probe preferred detection method unless medicolegal or under 13 years of age. Genetic probe available only to those in STD and Family Planning Programs and to adolescent THSteps (EPSDT) patients for whom collectors ready. | Contact personal interviews and contact tracing in selected instances. |
| *Haemophilus influenzae* type b infections, invasive | Isolation of *H. influenzae* type b from a normally sterile site (e.g., blood or cerebrospinal fluid [CSF] or, less commonly, joint, pleural, or pericardial fluid)  
*Note:* *Haemophilus influenzae* that is not typed or is not type b is not reportable as H. flu type b. | Yes | Yes | *H. influenzae* strains are typed only when from sterile sources. *H. influenzae* strains from critical sources are sent to the CDC if untypeable. At present, all *H. influenzae* isolated from > 5 years of age are submitted to the CDC for special studies. | Immediate investigation to determine need for antibiotic prophylaxis of household and child-care facility contacts. |
<p>| Hansen’s disease (leprosy) | Acid-fast bacilli in skin scraping or biopsy – a means of estimating the number of acid-fast bacteria present, reported as the Bacterial Index (BI) | | | Skin scrapings, smears, and biopsy material go to: National Hansen’s Disease Programs/Clinical Lab, Baton Rouge, Louisiana. DCHD approval and coordination required. | Individual cases and contact follow up required |</p>
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<td>Hantavirus infection</td>
<td>Diagnosis is made by the demonstration of specific IgM antibodies by using ELISA, Western blot or strip immunoblot techniques. Most patients have IgM antibodies at the time of hospitalization. PCR analysis of autopsy or biopsy tissues and immunohistochemistry are also established diagnostic techniques in specialized laboratories</td>
<td>Yes</td>
<td>Yes</td>
<td>Sin nombre hantavirus is a major cause of hantavirus pulmonary syndrome, a severe and often fatal form of adult respiratory distress. Sera are tested for the presence of IgG and IgM antibodies specific for Sin Nombre virus. Recent infection is indicated by the presence of IgM antibody. Further investigation can be done on tissue specimens or specimens from rodents at the CDC.</td>
<td>Investigate to determine source of infection. Educate the public about rodent control procedures and avoidance of contact with rodent droppings.</td>
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| Hemolytic Uremic Syndrome (HUS) | The following are both present at some time during the illness:  
- Anemia (acute onset) with microangiopathic changes (i.e., schistocytes, burr cells, or helmet cells) on peripheral blood smear and  
- Renal injury (acute onset) evidenced by either hematuria, proteinuria, or elevated creatinine level (i.e., greater than or equal to 1.0 mg/dL in a child aged less than 13 years or greater than or equal to 1.5 mg/dL in a person aged greater than or equal to 13 years, or greater than or equal to 50% increase over baseline)  
Note: A low platelet count can usually, but not always, be detected early in the illness, but it may then become normal or even high. If a platelet count obtained within 7 days after onset of the acute gastrointestinal illness is not less than 150,000/mm3, other diagnoses should be considered. | | | | Immediate investigation to determine source of infection and all persons potentially exposed. |
| Hepatitis A (acute) | ● Immunoglobulin M (IgM) antibody to hepatitis A virus (anti-HAV) positive  
● ALT and AST results | Yes | Yes | Tests are available only to Department’s epidemiologists to investigate outbreaks. | Immediate investigation particularly child-care associated cases and food handler, to see if contacts need immune globulin or hepatitis. |
| Hepatitis B (acute) | ● IgM antibody to hepatitis B core antigen (anti-HBc) positive, or  
● Hepatitis B surface antigen (HBsAg) positive and anti-HAV IgM negative (if done)  
● ALT and AST results | Yes | Yes | | Investigate to determine whether contacts need hepatitis B immune globulin or hepatitis B vaccine, especially neonates born to high-risk mothers. |
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<td>Hepatitis B (acute &amp; chronic) identified prenatally or at delivery</td>
<td>Hepatitis B surface antigen (HBsAg) positive</td>
<td>Yes</td>
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<td></td>
<td>Administer HBIG and HB vaccine to infant within 12 hours of birth. Complete HB vaccination series. Test for anti-HBs, HbsAg, and anti-Hbc 1-3 months after completion of series. Investigate contacts to determine if HBIG or HB vaccine is needed.</td>
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<td>Hepatitis C (acute)</td>
<td>• Anti-HCV screening-test-positive with a signal to cut-off ratio predictive of a true positive as determined for the particular assay defined and listed by CDC at <a href="http://www.cdc.gov/hepatitis/HCV/LabTesting.htm#section1">http://www.cdc.gov/hepatitis/HCV/LabTesting.htm#section1</a> or • Recombinant immunoblot assay (HCV RIBA) positive, or • Nucleic acid testing for hepatitis C virus (NAT for HCV RNA) positive; And meets the following two criteria • IgM antibody to hepatitis A virus (IgM anti-HAV) negative, and • IgM antibody to hepatitis B core antigen (IgM anti-HBc) negative • ALT and AST results</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>Immediate investigation to determine source of infection and all persons potentially exposed.</td>
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<td>Human immunodeficiency virus (HIV) infection</td>
<td>HIV-1 • Enzyme Assay used for screening, all positive or borderline results require validation by the Western Blot Confirmatory procedure • Western Blot detect HIV-1 antibodies HIV -2 • Serological – Forwarded by TDSHS to CDC for testing</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>Undertake measures to reduce or prevent risk of transmission in the community. Interview case to determine additional exposures.</td>
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| **Influenza-associated pediatric mortality** | Laboratory testing for influenza virus infection may be done on pre- or post-mortem clinical specimens, and include identification of influenza A or B virus infections by a positive result by at least one of the following:  
- Influenza virus isolation in tissue cell culture from respiratory specimens;  
- Reverse-transcriptase polymerase chain reaction (RT-PCR) testing of respiratory specimens;  
- Immunofluorescent antibody staining (direct or indirect) of respiratory specimens;  
- Rapid influenza diagnostic testing of respiratory specimens;  
- Immunohistochemical (IHC) staining for influenza viral antigens in respiratory tract tissue from autopsy specimens;  
- Four-fold rise in influenza hemagglutination inhibition (HI) antibody titer in paired acute and convalescent sera | Yes | Yes | Specimens are inoculated onto cell culture monolayers. If characteristic CPE or hemadsorption is observed, confirmation of identification will be performed. Typing is based on immunofluorescence test using influenza A and influenza B monoclonal antibodies. | Identification of nosocomial transmission to identify target groups for vaccination. |
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| Lead, child and adult blood, any level | Blood Lead 10- 14 μg/dL (Class II A)  
- Test every 3 to 4 months until two consecutive tests are <10.0 μg/dL or three consecutive tests are <15 μg/dL | Yes | Yes | Preferred Specimen: Venous anti-coagulated whole blood in EDTA (purple top tube). Collect whole blood specimens in specified DSHS blood collection tubes (BD Capillary or Venous purple top tubes). | Provide immediate environmental follow-up services for children with blood lead levels of ≥ 20 mcg/dl. For adults investigate occupational exposure. |
|                               | Blood Lead 15- 19 μg/dL (Class II B)  
- Confirm capillary results with a venous blood specimen  
- Conduct an environmental assessment interview (TDSHS form M-100)  
- If two consecutive follow-up tests, 3 to 4 months apart remain in this range, the parents have been counseled, and the interview completed, proceed according to actions for 20-44 μg/dL. If a follow-up BLL is in this range at least 3 months after initial venous test or BLL’s increase, a home visit may be indicated to assess the environment for lead contaminants.  
- An environmental investigation is needed only when the interview and home visit have failed to identify the source of lead. | Blood Lead 20- 44 μg/dL (Class III)  
- The repeat venous sample should be done within one week. If confirmed to be ≥ 20 μg/dL; conduct a complete medical evaluation: physical exam, including but not limited to growth assessment, blood pressure, hearing acuity, peripheral nerve function; developmental assessment; and laboratory assessment. Check for serum iron, iron-binding capacity, and ferritin should be measured.  
- A blood lead ≥ 40 μg/dL should prompt a serum creatinine to assess renal function. | | | |
|                               | Blood Lead 45- 69 μg/dL (Class IV)  
- Begin medical treatment and environmental assessment and remediation within 48 hours.  
- Pharmacologic treatment is indicated and should be conducted under the guidance of a physician experienced in the treatment of lead poisoning. | | | | |
|                               | Blood Lead ≥ 70 μg/dL (Class V)  
- Considered a medical emergency. Medical treatment and environmental assessment/remediation. | | | | |
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| Legionellosis               | • Isolation of any *Legionella* organism from respiratory secretions, lung tissue, pleural fluid, or other normally sterile fluid, or  
  • Detection of *Legionella pneumophila* serogroup 1 antigen in urine using validated reagents, or  
  • Demonstration of seroconversion by a fourfold or greater rise in specific serum antibody titer between paired acute and convalescent phase serum specimens to *Legionella pneumophila* serogroup 1 using validated reagents. | Yes                                               | Yes                           | Environmental samples are accepted only from health officials in the study of multi-case outbreaks. | Investigate cluster of cases to determine source of infection. |
| Leishmaniasis              | • Microscopic identification of the nonmotile, intracellular form (amastigote) in stained specimens from lesions, or  
  • Culture of the motile, extracellular form (promastigote) on suitable media, or  
  • An intradermal (Montenegro) test with leishmanin, an antigen derived from the promastigotes is usually positive in established disease, or  
  • Serological (IFA or ELISA) may be useful for diagnosis of mucosal leishmaniasis | Yes                                               | DCHD approval and coordination required. | Investigate to determine source and institute appropriate vector control activities. |                       |
| Listeriosis                | • Isolation of *L. monocytogenes* from a normally sterile site, e.g., blood or cerebrospinal fluid (CSF) or, less commonly, joint, pleural, or pericardial fluid), or  
  • In the setting of miscarriage or stillbirth, isolation of *L. monocytogenes* from placental or fetal tissue, or  
  • In the setting of infection present at birth, isolation of *L. monocytogenes* from mother’s blood | Yes                                               | Yes                           | Isolates from outbreaks are sent to the CDC for typing. Molecular typing performed at DSHS Request molecular typing by indicating PFGE on submission form Request serotyping on submission form and include clinical history to be forwarded to the CDC. | Investigate cluster of cases to determine source of infection. Cases usually seen in pregnant women or immunosuppressed individuals. |
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| Lyme disease                  | ● Positive culture for *Borrelia burgdorferi*, or  
● Demonstration of IgM or IgG antibodies to *B. burgdorferi* in serum or cerebrospinal fluid (CSF) using a two-tiered approach - a sensitive enzyme immunoassay (EIA) or immunofluorescence assay (IFA) test, followed by Western Blot confirmatory test. | Yes (Not required if Erythema Migrans is present, greater than 5cm) | Yes | Yes | The *B. burgdorferi* antibody EIA detects both IgG and IgM antibodies. IgM-specific titers usually peak 4 to six weeks after the onset of infection and may persist in the presence of disease. IgG levels tend to rise above background levels about 2-3 weeks after infection and may remain elevated in cases of prolonged disease. Seronegative cases of Lyme Disease have been reported. Serum from patients with other spirochetal diseases, mononucleosis, and some autoimmune diseases may give false positive results. Since elimination of cross-reactive syphilitic serum from syphilis patients, increases the test specificity to 97%, all lyme reactive specimens are tested for the presence of regains and treponemal specific antibodies. Patients with early lyme disease may have undetectable antibody levels. Treatment with antibiotics early after onset of ECM can also prevent development of antibodies. | Educate the public that the disease is endemic in Texas. Educate the public to avoid tick exposure. |
| Malaria                       | ● Demonstration of malaria parasites in blood films  
● Detection of malaria parasite (*Plasmodium* species) -specific nucleic acid by PCR | Yes | Yes | If blood films are negative but evidence for malaria is strong then serum is sent to the CDC. Serology is by prior arrangement only, DCHD approval and coordination required. Once cleared, serum specimens are sent to the CDC. Antibody may persist for years, so that an elevated titer cannot be used as evidence for current infection. Emphasis is placed on blood films. A detailed patient history is required. | Investigate to determine six-month travel history and source of exposure. Notify blood bank if transfusion-associated. |
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<td>Measles (rubeola)</td>
<td>Positive serologic test for measles immunoglobulin M antibody, or Significant rise in measles antibody level by any standard serologic assay, or Isolation of measles virus from a clinical specimen, or Detection of measles-virus-specific nucleic acid by PCR</td>
<td>Yes</td>
<td>Yes</td>
<td>A significant rise in rubella-specific IgG antibody level on paired sera collected 10-14 days apart or the presence of significant Rubella-specific IgM antibody level in single sera is evidence of current infection. Single serum for determination of Rubella-specific IgM level should be collected 3 days after onset.</td>
<td>Immediate investigation. Vaccinate susceptible contacts within 72 hours of exposure or administer immune globulin within 6 days.</td>
</tr>
<tr>
<td>Meningitis (specify type)</td>
<td>Isolation of virus, bacterial agent or fungal agent from CSF or blood.</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>Investigate clusters of cases to determine source of infection.</td>
</tr>
<tr>
<td>Meningococcal infections, invasive</td>
<td>Isolation of <em>Neisseria meningitidis</em> from a normally sterile site Isolation of <em>Neisseria meningitidis</em> from purpuric lesions</td>
<td>Yes</td>
<td>Yes</td>
<td>Isolation of <em>N. meningitidis</em> will be serogrouped and the report will be called within 24 hours of isolation. Molecular typing on isolates at TDSHS upon request.</td>
<td>Immediate investigation to determine source of infection and need for antibiotic prophylaxis of family or child-care contacts.</td>
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<tr>
<td>Mumps</td>
<td>Isolation of mumps virus from clinical specimen, or Significant rise between acute- and convalescent-phase titers in serum mumps immunoglobulin G (IgG) antibody level by any standard serologic assay, or Positive serologic test for mumps immunoglobulin M (IgM) antibody, or Detection of mumps-virus-specific nucleic acid by PCR Note: An elevated serum amylase is not confirmatory for mumps</td>
<td>Yes</td>
<td>Yes</td>
<td>Specimens are inoculated onto a variety of cell cultures. If characteristic CPE or hemadsorption is observed, confirmation of identification will be performed.</td>
<td>Investigate cluster of cases to determine need for vaccination of contacts.</td>
</tr>
<tr>
<td>Pertussis</td>
<td>Isolation of <em>Bordetella pertussis</em> from clinical specimen or Positive polymerase chain reaction (PCR) assay for <em>B. pertussis</em> Note: Pertussis cannot be confirmed with DFA or serology (IgM or IgG).</td>
<td>Yes</td>
<td>Yes</td>
<td>Detection of DNA by real-time PCR. Absence of DNA does not necessarily indicate lack of infection and could be due to collection error.</td>
<td>Immediate investigation to determine need for antibiotic prophylaxis and/or vaccination of contacts.</td>
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<tr>
<td>Pesticide poisoning, acute occupational</td>
<td>Call the Bureau of Epidemiology at 800-588-1248 for appropriate tests.</td>
<td></td>
<td></td>
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<td>Investigate occupational exposure.</td>
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| Plague                       | ● Isolation of *Yersinia pestis* from a clinical specimen, or  
● Fourfold or greater change in serum antibody titer to *Y. pestis* F1 antigen | Yes                             | Yes                           | DCHD approval and coordination required. Cultures must be held for 14 days before reporting as negative. Local and State health authorities must be immediately notified of suspected and presumptive cases of plague. *Yersinia pestis* is a pathogen in biohazard risk group III and should be handled in a containment laboratory. Blood cultures should be taken (at least 3 in a 24 hour period). | Isolate patient if pneumonic plague. Immediate investigation to determine source and provide antibiotic prophylaxis to exposed individuals. |
| Poliomyelitis, acute paralytic | Isolation of wild-type poliovirus type 1, 2, or 3 from a clinical specimen (stool or CSF) | Yes                             | Yes                           | Serological-Complement Fixation Test no longer performed at DSHS | Immediate investigation to identify exposure. |
| Q fever                      | ● Serological evidence of a fourfold change in IgG-specific antibody titer to *C. burnetii* Phase II antigen by IFA between paired serum samples (one taken during the first week of illness and a second 3-6 weeks later), or  
● Detection of *C. burnetii* DNA in a clinical specimen by polymerase chain reaction (PCR) assay, or Demonstration of *C. burnetii* antigen in a clinical specimen by immunohistochemical (IHC) methods, or  
● Demonstration of *C. burnetii* antigen in a clinical specimen by immunohistochemical (IHC) methods, or  
● Isolation of *C. burnetii* from a clinical specimen in cell culture | Yes                             | Yes                           | Serum specimens should be collected at least 3 weeks apart. | Investigate clusters of cases to determine source of infection. |
| Rabies, human                | ● Detection by direct fluorescent antibody of viral antigens in a clinical specimen (preferably the brain or the nerves surrounding hair follicles in the nape of the neck), or  
● Isolation (in cell culture or in a laboratory animal) of rabies virus from saliva, cerebrospinal fluid (CSF), or central nervous system tissue, or  
● Identification of a rabies-neutralizing antibody titer greater than or equal to 5 (complete neutralization) in CSF or the serum of an unvaccinated person | Yes                             | Yes                           | Human specimen testing must be coordinated through DCHD. Whole animal carcasses are not accepted, except for bats and similar very small mammals. | Isolate patient. Begin post exposure prophylaxis if appropriate. Attempt to locate the animal. Immediate investigation of suspect cases to confirm diagnosis and immunize contacts. |
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| Relapsing fever               | ● Demonstration of the infectious agent (*Borrelia* spp) in dark-field preparations of fresh blood or stained thick or thin blood films, or  
● Isolation of *Borrelia* spp by:  
  - Intraperitoneal inoculation of laboratory rats or mice with blood taken during the febrile period or;  
  - Blood culture in special media. | Yes | Yes | The test procedure is used for investigational use and clinical history of the patient is required. Sera are forwarded to the CDC with prior approval. | Investigate to determine location of exposure. Educate the public to avoid tick exposure. |
| Rubella (including congenital) | ● Isolation of rubella virus, or  
● Significant rise between acute- and convalescent-phase titers in serum rubella immunoglobulin G (IgG) antibody level by any standard serologic assay, or  
● Positive serologic test for rubella immunoglobulin M (IgM) antibody, or  
● Detection of rubella-virus-specific nucleic acid by PCR  
● Infant rubella antibody level that persists at a higher level and for a longer period than expected from passive transfer of maternal antibody (i.e., rubella titer that does not drop at the expected rate of a twofold dilution per month), | Yes | Yes | VERO cell monolayers are inoculated in addition to the variety of cell cultures routinely inoculated. Multiple passages may be required before a final result is available. Identification tests using rubella-specific monoclonal antibody are done at routine intervals during the isolation process. | Investigate and notify exposed pregnant women. Immunize susceptible. Pregnant contacts (especially those in the first trimester) should be tested for susceptibility (IgG antibody) and advised accordingly. |
<p>| Salmonellosis, including typhoid fever | Isolation of <em>Salmonella</em> from a clinical specimen | Yes | Yes | Fecal specimens are accepted only from public health officials. | Immediate investigation of cluster of cases to determine source of infection, and possible relationship to child-care facility or eating establishment. Follow-up stool cultures are indicated if the patient is a food handler or works in a child-care facility. |</p>
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| **Severe Acute Respiratory Syndrome (SARS)** | ● Detection of any of the following by a validated test, with confirmation in a reference laboratory:  
- Serum antibodies to SARS-CoV in a single serum specimen, or  
- A four-fold or greater increase in SARS-CoV antibody titer between acute- and convalescent-phase serum specimens tested in parallel, or  
- Negative SARS-CoV antibody test result on acute-phase serum and positive SARS-CoV antibody test result on convalescent-phase serum tested in parallel, or  
● Isolation in cell culture of SARS-CoV from a clinical specimen, with confirmation using a CDC validated test, or  
● Detection of SARS-CoV RNA by RT-PCR validated by CDC, with confirmation in a reference laboratory, from  
- Two clinical specimens from different sources  
- Two clinical specimens collected from the same source on two different days | Yes | Yes | Report Severe Acute Respiratory Syndrome (SARS) immediately to DCHD. One case of SARS is considered a public health emergency. | Immediate investigation to identify source and isolate contacts. |
<p>| <strong>Shigellosis</strong> | Isolation of <em>Shigella</em> from a clinical specimen | Yes | Yes | Fecal specimens are accepted only from public health officials. All <em>Shigella</em> species isolated are serotyped. Fecal/rectal swabs must be submitted in Cary and Blair medium. | Immediate investigation of cluster of cases to determine source of infection, and possible relationship to child-care facility or eating establishment. Follow-up stool cultures are indicated if the patient is a food handler or works in a child-care facility. |
| <strong>Silicosis</strong> | Clinical diagnosis supported by occupational history. | | | | Investigate occupational exposure. |</p>
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| Smallpox                      | • Polymerase chain reaction (PCR) identification of variola DNA in a clinical specimen, or  
<br>• Isolation of smallpox (variola) virus from a clinical specimen (Level D laboratory only; confirmed by variola PCR) | Yes | Yes | Report Smallpox immediately to DCHD. One case of Smallpox is considered a public health emergency. | Immediate investigation to determine source of infection and all persons potentially exposed. |
| Spotted fever group rickettsioses | • Serological evidence of an elevation (fourfold change) in immunoglobulin G (IgG)-specific antibody titer reactive with Rickettsia rickettsii or other spotted fever group antigen* between paired serum specimens (one taken in the first week of illness and a second 2-4 weeks later), as measured by a standardized indirect immunofluorescence assay (IFA), or  
<br>• Demonstration of spotted fever group antigen in a biopsy/autopsy specimen by IHC, or  
<br>• Detection of *R. rickettsii* or other spotted fever group DNA in a clinical specimen by the polymerase chain reaction (PCR assay), or  
<br>• Isolation of *R. rickettsii* other spotted fever group from a clinical specimen in cell culture | Yes | Yes | The most convincing evidence of recent rickettsiae infection of a four-fold rise in titer between the acute serum and the convalescent serum. Single titers of 1:128 are considered the minimum for significant titers. Serum specimens must be collected 14 days apart. | Investigate to determine location of tick exposure. Educate the public to avoid tick exposure. |
| *Staph. aureus*, vancomycin-resistant (VISA and VRSA) | • Isolation of *Staphylococcus aureus* from any body site, and  
<br>• VRSA - High-level resistance of the *Staphylococcus aureus* isolate to vancomycin (MIC: ≥16 μg/ml), detected and defined according to CLSI approved standards and recommendations  
<br>• VISA - Intermediate-level resistance (MIC: 4-8 μg/ml) of the *Staphylococcus aureus* isolate to vancomycin, detected and defined according to CLSI approved standards and recommendations | Yes | Yes | Phage typing is no longer performed and has been replaced by molecular analysis. PFGE for strain relatedness is performed at TDSHS. VRSA is considered a public health emergency. | Immediate investigation and contact isolation. |
<p>| Streptococcal disease (group A, B, S. pneumo), invasive | Isolation of Group A <em>Streptococcus</em> (<em>Streptococcus pyogenes</em>) or B streptococci (<em>Streptococcus agalactiae</em>) or <em>S. pneumoniae</em> species by culture from a normally sterile site (e.g., blood or cerebrospinal fluid, or, less commonly, joint, pleural, or pericardial fluid) | Yes | Yes | Strains from sterile sites resulting in systemic cases and associated with a fatality are sent to the CDC for emm typing. Prior approval from the CDC is required before isolate can be shipped to the CDC. Molecular typing such as PFGE is of little value in determining relatedness of strains and should not be utilized to determine outbreak relatedness. | Investigate cluster of cases to determine source of infection. |</p>
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| **Syphilis**                  | - The rapid plasma reagin (RPR) card test is a macroscopic, non-treponemal flocculation test for the qualitative and semi- qualitative serological detection of syphilis.  
- Serodia *Treponema pallidum* - Particle Agglutination (TP-PA) is a qualitative gelatin particle agglutination assay for the detection of *Treponema pallidum* antibodies in human serum  
- The Fluorescent Treponemal Antibody Absorbed (FTA-ABS) is a specific treponemal assay to detect antibody to *T. pallidum*.  
- *Treponema pallidum* - Particle Agglutination (VDRL) is a non-treponemal test to detect lipoidal antigen to *T. pallidum*. | Yes | Yes | RPR-Card test is a screening test and without some other evidence for the diagnosis of syphilis, a reactive non-treponemal test does not confirm *T. pallidum* infection. The RPR-Card test does not distinguish between syphilis and other treponematoses such as yaws, pinta and bejel. The semi- qualitative RPR-Card Test may be used as a method to follow response to treatment. TP-PA is run only if the RPR Card test results performed at TDSHS are reactive. The FTA-ABS becomes reactive 4-6 weeks after infection. Reactive VDRL test on CSF, free of blood or other contaminants, almost always indicates past or present syphilis infection of the central nervous system. | Conduct personal interviews and identify contacts in need of treatment. |
<p>| <strong>Taenia solium and undifferentiated Taenia infection</strong> | Infection with an adult tapeworm is diagnosed by identification of proglottids (segments), eggs or antigens of the worm in the feces or on anal swabs. Eggs of <em>T. Solium</em> and <em>T. saginata</em> cannot be differentiated morphologically. Specific diagnosis is based on the morphology of the scolex (head) and/or gravid proglottids. | Yes | Yes | Fecal specimens must be submitted fresh (less than five hours) or in formalin. Submit proglottid in ethyl alcohol. Referred material from hospital, private, and reference labs. Examination of proglottids can help to determine species of Taenia infection. | Investigate to determine source of infection. |
| <strong>Tetanus</strong>                   | Clinical diagnosis            |                                                   |                               |                                                     | Vaccinate patients prior to release from the hospital. If neonate, determine place of delivery. |</p>
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| Trichinosis                  | ● Demonstration of *Trichinella* larvae in tissue obtained by muscle biopsy, or  
                               ● Positive serologic test for *Trichinella* | Yes                              |                              | DCHD approval and coordination required. A detailed patient history is required. Serum specimens are forwarded to the CDC. An excretory-secretory antigen is employed to reduce non-specific reactivity; however, cross-reactivity with other parasitic antigen (strongyloides, filarial, malaria) may occur. This cross-reactivity is usually associated with results in the equivocal range. The suspicion of trichinellosis (trichinosis), based on clinical symptoms and eosinophilia. | Investigate to determine source of infection and additional cases/exposures. |
| Tuberculosis (includes all *M. tuberculosis* complex) | ● Isolation and identification of *Mycobacterium tuberculosis* from sputum or normally sterile site. Or  
                               ● Positive AFB smear, or  
                               ● Demonstration of *M. tuberculosis* by DNA probe or mycolic acid pattern on high-pressure liquid chromatograph. | Yes                              | Yes                          | Nucleic acid amplification testing for *M. tuberculosis* complex may be performed on positive AFB smear initial pulmonary specimens if Direct HPLC testing is inconclusive. | Investigate to determine source of infection and need for prophylaxis of contacts. |
| Tularemia                    | ● Isolation of *F. tularensis* in a clinical specimen, or  
                               ● Fourfold or greater change in serum antibody titer to *F. tularensis* antigen | Yes                              | Yes                          | Culture for isolation must be held 21 days before the specimen can be reported as negative. | Immediate investigation of cluster of cases to determine need for vaccination of contacts. |
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| **Typhus**                    | Fourfold or greater rise in antibody titer to *Rickettsia typhi* or *Rickettsia felis* antigen by IFA, complement fixation (CF), latex agglutination (LA), microagglutination (MA), or indirect hemagglutination antibody (IHA) test in acute – and convalescent – phase specimens ideally taken at least 3 weeks apart, or  
Positive PCR assay to *R. typhi* or *R. felis*, or  
Demonstration of positive IF of skin lesion (biopsy) or organ tissue (autopsy), or  
Isolation of *R. typhi* or *R. felis* from clinical specimen  
In South Texas areas where murine typhus is endemic, clinically compatible cases with IgM titers of ≥1:1024 are considered confirmed cases. IgG results alone will not be considered. | Yes | Yes | The rickettsial micro IFA test is a standard two-step sandwich immunofluorescence technique. In the first stage the *Rickettsia typhi* (murine typhus) antigen is overlaid with dilutions of human serum. In the second stage, the antigen is overlaid with a fluorescein-conjugates antihuman globulin, so that the antigens are rendered fluorescent by positive sera. The most convincing evidence of recent rickettsiae infection of a four-fold rise in titer between the acute serum and the convalescent serum. Single titers of 1:128 are considered the minimum for significant titers. Serum specimens must be collected 14 days apart. | Investigate to determine source of exposure and potential for additional cases. Ectoparasite and/or animal control measures may be indicated. |
| **Vibrio infection, including cholera** | Isolation of toxigenic (i.e., cholera toxin-producing) *Vibrio cholerae* O1 or O139 from stool or vomitus, or  
Serologic evidence of recent infection  
Or  
Isolation of *Vibrio vulnificus* or *V. vulnificus* or other *Vibrio* spp. from a clinical specimen, or  
Identification of $10^5$ or more organisms per gram of an epidemiologically incriminated food (usually seafood) | Yes | Yes | Pure cultures should NOT be refrigerated. *Vibrio cholerae* will be serotyped for O1 and O139 serotypes. Requests for Toxin testing are forwarded to CDC. Prior approval must be secured before submitting culture. | Investigate to determine source of exposure. |
| **Viral hemorrhagic fever** | Detection of VHF viral antigens in blood by enzyme-linked immunosorbent assay (ELISA) antigen eetion  
Isolation of VHF virus in cell culture for blood or tissues  
Detection of VHF viral genes using reverse transcriptase with polymerase chain reaction amplification (RT-PCR) from blood or tissues  
Detection of VHF viral antigens in tissues by immunohistochemistry | Yes | Report Viral hemorrhagic fever immediately to DCHD. | Isolate patient. Immediate investigation of suspect cases to confirm diagnosis. |
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| **Yellow fever**             | • Fourfold or greater rise in yellow fever antibody titer in a patient who has no history of recent yellow fever vaccination and  
• Cross-reactions to other flaviviruses have been excluded, or  
• Demonstration of yellow fever virus, antigen, or genome in tissue, blood, or other body fluid | Yes | DCHD approval and coordination required. Serum specimens are to be collected at least 14 days apart, and will be submitted to the CDC when accompanied by immunization, travel, and clinical history. A fourfold titer increase is evidence of current infection. Cross-reactions occur with Dengue Fever and immunization. | Immediate investigation to determine 1-month travel history. Mosquito control measures may be indicated in areas surrounding case. |
| **Yersiniosis**              | Isolation of *Yersinia* (except *Y. pestis*) in a clinical specimen | Yes | Yes | Intestinal yersiniosis may present in three clinical forms: enteritis, terminal ileitis or mesenteric lymphadenitis causing "pseudoappendicitis", and septicemia. | Investigate cluster of cases to determine source of exposure. |
| **Outbreaks Exotic Diseases** | In addition to specified reportable conditions, any outbreak, exotic disease, or unusual group expression of disease that may be of public health concern should be reported by the most expeditious means available. | | | | |