

# LOCAL HEALTH DEPARTMENT DISEASE INVESTIGATION STEPS

NC REPORTABLE DISEASE/CONDITION	INFECTIOUS AGENT (S)
<b>BRUCELLOSIS</b>	<b><i>Brucella abortus, melitensis, suis or canis</i></b>
<b>PREPARING FOR INVESTIGATION</b>	
<b>KNOW THE DISEASE/CONDITION</b>	<ul style="list-style-type: none"> <li>• Read about Brucellosis in the CD Manual.</li> <li>• See the case definition for Brucellosis in the CD Manual.</li> <li>• Study APHA <i>Control of Communicable Diseases Manual</i>, 19<sup>th</sup> ed., pp 87 - 90.</li> <li>• Refer to CDC <i>MMWR</i>: Public Health Consequences of a False-Positive Laboratory Test Result for <i>Brucella</i> - Florida, Georgia and Michigan, 2005. June 6, 2008; 57(22); pp 603-605. Available from: <a href="http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5722a3.htm">http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5722a3.htm</a></li> <li>• Print and review reporting forms:  <i>Part 1: Confidential Disease Report (DHHS 2124)</i> <i>Part 2: Brucellosis (DHHS/EPI #5)</i></li> </ul>
<b>BIOTERRORISM POTENTIAL</b>  <b>CATEGORY B</b>	<b><i>Brucella spp.</i> is a potential bioterrorism agent. Investigate first as a naturally occurring event; if bioterrorism is suspected, notify local law enforcement and state public health officials.</b>
<b>CONDUCTING INVESTIGATION</b>	
<b>COLLECT CLINICAL INFORMATION</b>	<ul style="list-style-type: none"> <li>• If patient hospitalized for this disease, obtain medical record (admission note, progress note, lab report(s), and discharge summary).</li> <li>• Obtain healthcare provider clinical notes from date(s) of service for this disease/condition.</li> <li>• Look for evidence in the medical record that supports clinical findings described in the case definition.</li> <li>• See cautionary note in "Review Laboratory Information" section regarding EIA/ELISA tests performed by commercial laboratories. If the case has been reported based on a positive EIA/ELISA test, contact the attending physician and make him/her aware of the low specificity (high false positive rate) associated with these tests. Inform him/her that a confirmatory BMAT (<i>Brucella</i> microagglutination test) is available through the SLPH and is recommended. Refer to: <a href="http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5722a3.htm">http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5722a3.htm</a></li> </ul>

	<ul style="list-style-type: none"> <li>• Inquire if the patient had a clinically compatible illness and if the patient's history is positive for any of the following risk factors associated with brucellosis cases diagnosed in North Carolina: <ul style="list-style-type: none"> <li>○ Hispanic ethnicity</li> <li>○ recent immigration from, travel to, or military deployment to a brucellosis-endemic country</li> <li>○ consumption of unpasteurized milk, cheese or other dairy products</li> <li>○ work in a slaughterhouse, veterinary practice or laboratory</li> <li>○ killing, skinning, consuming game animals such as buffalo, elk, feral hogs, wild boar, etc.</li> </ul> </li> <li>• Presently, NC is considered a brucellosis free state for domestic swine and cattle, so exposure to <i>B. suis</i> or <i>B. abortus</i> via domestic swine and cattle although possible, is unlikely.</li> <li>• Before contacting the patient, verify what information the healthcare provider has shared with the patient/family.</li> </ul>
<b>REVIEW LABORATORY INFORMATION</b>	<ul style="list-style-type: none"> <li>• Review laboratory report(s) specific to this disease.</li> <li>• Evaluate laboratory results to determine if requirements of the case definition are satisfied.</li> <li>• Contact healthcare provider if further testing of the patient is indicated.</li> <li>• Note: Evidence of <i>Brucella</i> antibody by non-agglutination-based tests (e.g., EIA/ELISA) does not meet the current case definition for brucellosis. The CDC laboratory has observed that specimens found positive using EIA tests were negative when tested by the BMAT (<i>Brucella</i> microagglutination test). Results of EIA tests must be confirmed by a reference method such as BMAT, which is quantitative and provides evidence of rising antibody titers when paired sera are tested.</li> <li>• BMAT may be obtained by submission of a blood sample to the Special Serology Section of the SLPH using the form in the SLPH section (below) and requesting <i>Brucella</i>-BMAT. Refer to: <a href="http://slph.ncpublichealth.com/Forms/DHHS-3445.pdf">http://slph.ncpublichealth.com/Forms/DHHS-3445.pdf</a>.</li> </ul>
<b>APPLY THE CASE DEFINITION</b>	<ul style="list-style-type: none"> <li>• Use the case definition to determine if clinical and laboratory findings meet the case definition criteria.</li> </ul>
<b>IMPLEMENTING CONTROL MEASURES</b>	
<b>ATTEMPT TO IDENTIFY SOURCE OF EXPOSURE</b>	<ul style="list-style-type: none"> <li>• Review clinical records for potential source(s) of exposure.</li> <li>• If potential environmental or occupational source of exposure is not evident in clinical information, interview patient or other knowledgeable person(s) for potential sources of exposure: <ul style="list-style-type: none"> <li>○ travel (including travel associated with military deployment)</li> <li>○ consumption of unpasteurized milk, cheese, or other dairy products</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ animal exposure (especially slaughter or other close contact with cattle, swine (domestic or feral), goats, dogs, buffalo, elk)</li> <li>○ work in a slaughterhouse, veterinary practice or laboratory.</li> <li>• If source of exposure is suspected to be livestock, unpasteurized milk/dairy products, or slaughterhouse, the North Carolina Department of Agriculture (NCDA) must be notified. The county agricultural extension agent may be an additional resource to consider. The state public health veterinarian can assist with contacting these agencies (919) 733-3419.</li> </ul>
<b>IMPLEMENT CONTROL MEASURES TO PREVENT DISEASE AND ADDITIONAL EXPOSURES</b>	<ul style="list-style-type: none"> <li>• Consider chemoprophylaxis of laboratorians or others potentially exposed who may have worked with the agent prior to its identification as <i>Brucella spp.</i> After a potential laboratory exposure, all individuals classified as high-risk should begin PEP. PEP should be discussed with laboratory workers with low-risk exposures. For additional recommendations, refer to: <a href="http://www.cdc.gov/ncidod/dbmd/diseaseinfo/brucellosis_g.htm#recommendations">http://www.cdc.gov/ncidod/dbmd/diseaseinfo/brucellosis_g.htm#recommendations</a>.</li> <li>• Use the CDC website <a href="http://www.cdc.gov">www.cdc.gov</a> to teach at risk people about the disease.</li> <li>• CD nurses should work with their environmental health specialists and other public health partners to stop distribution of any potentially contaminated products or foods, evaluate the environmental risk, identify contaminated areas and the need for personal protective equipment, restrict access to contaminated areas, ensure disinfection of contaminated areas, and properly dispose of animal carcasses (no necropsy).</li> </ul>
<b>REPORTING INVESTIGATION</b>	
<b>REPORT TO NC COMMUNICABLE DISEASE BRANCH (CD)</b>	<ul style="list-style-type: none"> <li>• Enter Part 1 and Part 2 Communicable Disease Reports into NC EDSS as a new event, or update the existing event if already entered.</li> <li>• Assign event to State Disease Registrar when case investigation complete.</li> </ul>
<b>CASE FINDING</b>	<ul style="list-style-type: none"> <li>• During the course of the investigation, interview other exposed individuals for symptoms of illness.</li> <li>• Refer symptomatic individuals to healthcare provider for evaluation.</li> <li>• If two or more cases are epidemiologically linked, report as an outbreak of Brucellosis.</li> </ul>

<b>SPECIAL CONSIDERATIONS</b>	
<b>STATE LABORATORY OF PUBLIC HEALTH (SLPH) TESTING</b>	<ul style="list-style-type: none"> <li>• In high profile or questionable cases, consider verifying the laboratory test results by sending specimen(s) to the SLPH/CDC for reference testing. (Examples of high profile cases include imminent health hazard, work in a slaughterhouse, laboratory or other high risk occupation, closing a business operation, sale of illegal products, hospitalized patients, outbreaks, etc.)</li> <li>• May also consider reference lab testing by SLPH/CDC for cases with a high degree of suspicion for Brucellosis where commercial test results do not satisfy the CDC case definition.</li> <li>• If sending a clinical specimen to the SLPH for confirmatory testing, specify on serology form <a href="#">DHHS Form #3445</a> to test for <i>Brucella</i>. Use the following link for information and forms: <a href="http://slph.state.nc.us/Microbiology/default.asp">http://slph.state.nc.us/Microbiology/default.asp</a>.</li> <li>• When sending isolates for confirmation/speciation specify <i>Brucella</i>. Use the following link for information and forms: <a href="http://slph.state.nc.us/microbiology/Special-Bacteriology/default.asp">http://slph.state.nc.us/microbiology/Special-Bacteriology/default.asp</a></li> <li>• If BT origin suspected, inform SLPH by calling the BT Duty pager at (919) 310-4243 or cell phone at (919) 807-8600.</li> </ul>
<b>PUBLIC HEALTH PREPAREDNESS AND RESPONSE (PHPR)</b>	<ul style="list-style-type: none"> <li>• If bioterrorism event likely: <ul style="list-style-type: none"> <li>○ inform local Preparedness Coordinator.</li> <li>○ call the PHPR 24/7 pager (877) 236-7477.</li> </ul> </li> </ul>
<b>PERSONAL PROTECTIVE MEASURES</b>	<ul style="list-style-type: none"> <li>• If bioterrorism event, crime control and public safety will direct on-site environmental investigation.</li> <li>• If non-bioterrorism event, public health workers should exercise caution in doing environmental investigations.</li> <li>• Personal protective equipment (including respiratory protection) is indicated if entering any area contaminated with <i>Brucella</i> or when handling any material potentially contaminated with <i>Brucella</i>.</li> </ul>
<b>RISK COMMUNICATION</b>	<ul style="list-style-type: none"> <li>• Consider using risk communication tools conservatively if this is a low profile, naturally-occurring case.</li> <li>• Outbreaks of even naturally-occurring cases will need NC HAN alerts, EPI-X reports, MD alerts, and probably a press release.</li> <li>• In a bioterrorism event, pre-existing crisis communication plans should be enacted.</li> <li>• NC DHHS Public Information Office (919) 733-9190 is available to assist local health departments as needed.</li> </ul>