A collaborative effort- an investigation of suspect canine brucellosis

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Brucellosis

- Brucellosis is a zoonotic disease caused by infection with *Brucella* bacteria. The species of *Brucella* that infect humans are *B. abortus, B. melitensis, B. suis*, and, rarely, *B. canis*
- Reservoirs can include cattle, swine, goats and sheep and less commonly in dogs

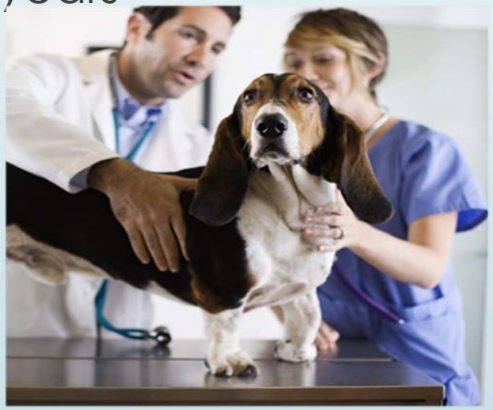
- Brucellosis is spread through direct contact (of mucosal surfaces and cuts and abrasions of the skin) with secretions of living or dead infected animals, including their tissues, blood, urine, vaginal discharges, aborted fetuses, and placentas. Most commonly, it can be spread through ingestion of raw milk and dairy products (e.g., unpasteurized cheese) from infected animals.
- The incubation period for brucellosis is highly variable, ranging from five days to 5 months; illness most commonly occurs two to four weeks after exposure

An Overview of *Brucella canis*

- Etiologic agent & reser
- Clinical symptoms
- Modes of transmission
- Incubation period
- Clinical manifestation

Canine Brucellosis

- Transmitted through dogs by mucosal contact with infected material
- Dogs can remain bacteremia for at least 5 years



- **Clinical manifestations:**
  - Lethargy
  - Swollen lymph nodes
  - Stillborn puppies
  - Spontaneous abortion
  - Swollen or shrunken testicles
  - Vaginal discharge
  - Difficulty walking

Reporting Requirements

- **Immediately reportable (suspect or confirmed) zoonotic disease in humans and/ or canines**

Reporting Requirements for Communicable Diseases in Domestic Companion Animals*

To protect public health, certain diseases and conditions are required to be reported in a timely manner by specific individuals (see New Jersey Administrative Code Title 8, Chapter 57)

People required to report: veterinarians, certified animal control officers, and managers of animal facilities.

1. **Report to the local health department** in which the animal or animal facility is located. To find the local health department, go to: http://nj.gov/health/lh/directory/lhdselectcounty.shtml
2. If unable to reach the local health department, contact the NJ Department of Health and Senior Services at: **609-826-4872** (regular business hours). The emergency number is **609-392-2020** (holidays/off hours).

* "Domestic companion animal" means any domestic dog, cat, ferret, bird, reptile, rodent, rabbit not raised for food or fur, or other animal kept primarily as a household pet for personal appreciation and companionship; excluding livestock, wildlife, and research animals.

Reportable Diseases

- Anthrax *(Bacillus anthracis)*
- [illegible]iosis *(Chlamydophila psittaci)*
- *Brucella canis*
- [illegible]teriosis *(Campylobacter spp.)*
- *Escherichia coli* shiga toxin producing strains (STEC) only
- Leishmaniasis
- Leptospirosis
- Lymphocytic choriomeningitis
- *Mycobacterium tuberculosis*
- Plague *(Yersinia pestis)*
- Q Fever *(Coxiella burnetti)*
- Rabies, suspected or confirmed
- Salmonellosis *(Salmonella spp.)*
- Tularemia *(Francisella tularensis)*
- Any outbreak or suspected outbreak

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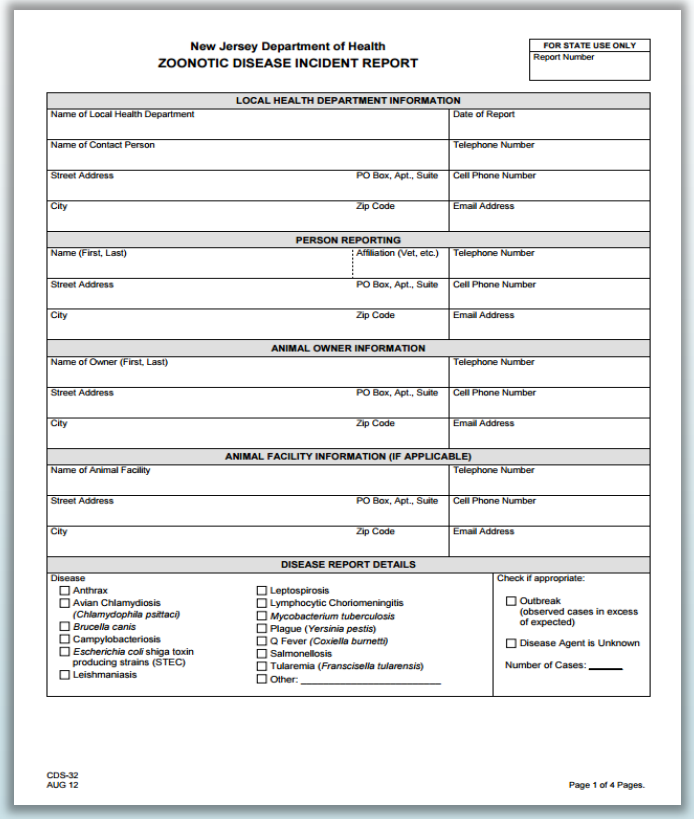

New Jersey Department of Health
ZOONOTIC DISEASE INCIDENT REPORT

FOR STATE USE ONLY
Report Number

LOCAL HEALTH DEPARTMENT INFORMATION

Name of Local Health Department		Date of Report
Name of Contact Person		Telephone Number
Street Address	PO Box, Apt., Suite	Cell Phone Number
City	Zip Code	Email Address

PERSON REPORTING

Name (First, Last)	Affiliation (Vet, etc.)	Telephone Number
Street Address	PO Box, Apt., Suite	Cell Phone Number
City	Zip Code	Email Address

ANIMAL OWNER INFORMATION

Name of Owner (First, Last)		Telephone Number
Street Address	PO Box, Apt., Suite	Cell Phone Number
City	Zip Code	Email Address

ANIMAL FACILITY INFORMATION (IF APPLICABLE)

Name of Animal Facility		Telephone Number
Street Address	PO Box, Apt., Suite	Cell Phone Number
City	Zip Code	Email Address

DISEASE REPORT DETAILS

Disease

- ☐ Anthrax
- ☐ Avian Chlamydiosis *(Chlamydophila psittaci)*
- ☐ *Brucella canis*
- ☐ Campylobacteriosis
- ☐ *Escherichia coli* shiga toxin producing strains (STEC)
- ☐ Leishmaniasis
- ☐ Leptospirosis
- ☐ Lymphocytic Choriomeningitis
- ☐ *Mycobacterium tuberculosis*
- ☐ Plague *(Yersinia pestis)*
- ☐ Q Fever *(Coxiella burnetti)*
- ☐ Salmonellosis
- ☐ Tularemia *(Franscisella tularensis)*
- ☐ Other: _____

Check if appropriate:

- ☐ Outbreak (observed cases in excess of expected)
- ☐ Disease Agent is Unknown

Number of Cases: _____

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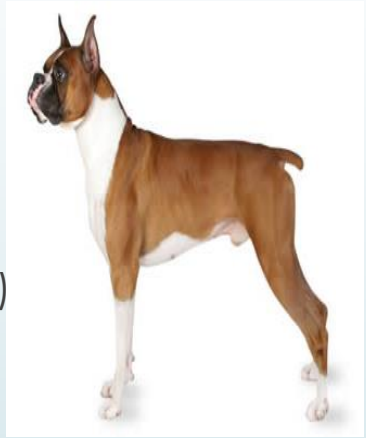
Warren County Case Review

- Phone call from veterinarian 1/11/17
- Received zoonotic disease incident report via fax (also sent to NJDOH)
- Local family bred their two pet boxers
  - 2 y/o female and 7 y/o male – pregnant (November 2016)
  - Female presented with vaginal discharge and neck pain (1/11/17)
  - Spontaneous abortion of litter
  - Rapid test + for *B. canis*
    - *Confirmatory testing to be performed at Cornell University Diagnostic Laboratory*
- Vet recommended euthanasia for the female dog – female clinical presentation was "textbook" definition for *B. canis*



NJDOH Recommendations for LHD

Human Surveillance

- Identify exposed individuals in household
  - Exposed individuals should be advised to follow-up with HCP if symptomatic and for further medical recommendations
- Contact HCP to discuss identified exposures and explain clinical recommendations and testing recommendations for Brucellosis.
  - Provider to report test results to LHD
- Advise household contacts of dog to use contact precautions (i.e. gloves) to prevent transmission

Canine Surveillance

- NJDOH supported veterinarian's recommendation for euthanasia of female dog based on clinical assessment and preliminary test result– owner declined
- Female and male dog were neutered to prevent transmission and were treated with antibiotics
- LHD recommended testing male dog and repeat testing on female if confirmatory test result was positive
- Dogs to be quarantined on premises indefinitely if positive.

WCHD Response

- Options for pet owner
  - Euthanasia for both dogs
  - Further testing
  - Treatment (including spay/neuter) and isolation
- Visited home
  - Evaluated exposure during time when dog was aborting
  - Confirmed that both dogs were being treated with antibiotics
  - Made control precaution; cleaning and disinfection recommendations
  - Reinforced education regarding future exposure and handling of dogs
- Spoke with PCP
  - Add Brucellosis to differential diagnosis possibilities moving forward

Canine Lab results- Female

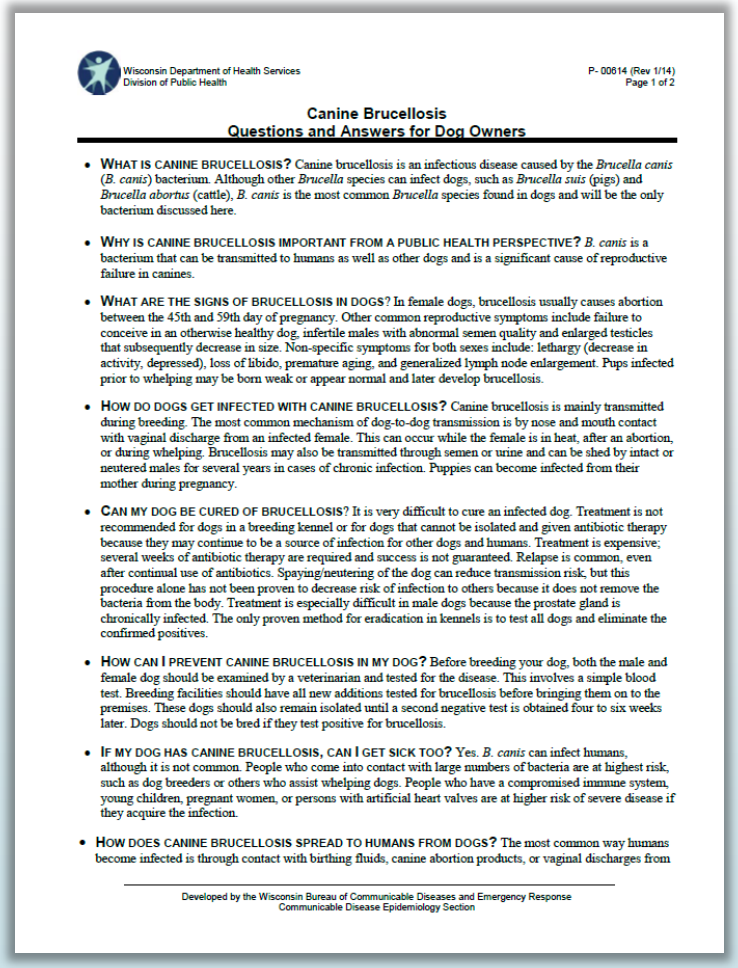
Organism/ Agent	Lab Result	Type of Test Performed	Specimen Type	Date Obtained	Result Date	Test Location
Brucella canis	Positive	RSAT	Serum	1/11/17	1/11/17	Veterinary Service location
B. canis	Positive	2ME-TAT	Serum	1/11/17	1/11/17	Veterinary Service location
B. canis	Negative	RSAT; AGID	Serum	1/11/17	1/26/17	Cornell University Diagnostic Laboratory
B. canis	Negative	Culture	Uterus	1/11/17	1/26/17	Cornell University Diagnostic Laboratory

Conclusion

- Bacterial culture came back negative – no further surveillance or precautions needed
- Due to no identified human cases- no input into CDRSS required
- Owner had elected treatment and isolation of dogs
  - Given OK to resume "normal" life with dogs
  - Called family PCP to inform of negative test result for dogs

Resources

- NJDOH Communicable Disease Chapter
- Zoonotic Disease Incident Report Form
- Canine Brucellosis: *Brucella Canis* (College of Veterinary Medicine, Iowa State University, 2012): http://www.cfsph.iastate.edu/Factsheets/pdfs/brucellosis_canis.pdf
- Canine Brucellosis: Questions and Answers for Dog Owners (Wisconsin Department of Health Services, Division of Public Health, 2014): https://www.dhs.wisconsin.gov/publications/p0/p00614.pdf
- Public Health Implications of *Brucella canis* Infections in Humans (National Association of State Public Health Veterinarians, 2012): http://nasphv.org/Documents/BrucellaCanisInHumans.pdf



Wisconsin Department of Health Services
Division of Public Health

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Canine Brucellosis
Questions and Answers for Dog Owners

- **WHAT IS CANINE BRUCELLOSIS?** Canine brucellosis is an infectious disease caused by the *Brucella canis* (*B. canis*) bacterium. Although other *Brucella* species can infect dogs, such as *Brucella suis* (pigs) and *Brucella abortus* (cattle), *B. canis* is the most common *Brucella* species found in dogs and will be the only bacterium discussed here.
- **WHY IS CANINE BRUCELLOSIS IMPORTANT FROM A PUBLIC HEALTH PERSPECTIVE?** *B. canis* is a bacterium that can be transmitted to humans as well as other dogs and is a significant cause of reproductive failure in canines.
- **WHAT ARE THE SIGNS OF BRUCELLOSIS IN DOGS?** In female dogs, brucellosis usually causes abortion between the 45th and 59th day of pregnancy. Other common reproductive symptoms include failure to conceive in an otherwise healthy dog, infertile males with abnormal semen quality and enlarged testicles that subsequently decrease in size. Non-specific symptoms for both sexes include: lethargy (decrease in activity, depressed), loss of libido, premature aging, and generalized lymph node enlargement. Pups infected prior to whelping may be born weak or appear normal and later develop brucellosis.
- **HOW DO DOGS GET INFECTED WITH CANINE BRUCELLOSIS?** Canine brucellosis is mainly transmitted during breeding. The most common mechanism of dog-to-dog transmission is by nose and mouth contact with vaginal discharge from an infected female. This can occur while the female is in heat, after an abortion, or during whelping. Brucellosis may also be transmitted through semen or urine and can be shed by intact or neutered males for several years in cases of chronic infection. Puppies can become infected from their mother during pregnancy.
- **CAN MY DOG BE CURED OF BRUCELLOSIS?** It is very difficult to cure an infected dog. Treatment is not recommended for dogs in a breeding kennel or for dogs that cannot be isolated and given antibiotic therapy because they may continue to be a source of infection for other dogs and humans. Treatment is expensive; several weeks of antibiotic therapy are required and success is not guaranteed. Relapse is common, even after continual use of antibiotics. Spaying/neutering of the dog can reduce transmission risk, but this procedure alone has not been proven to decrease risk of infection to others because it does not remove the bacteria from the body. Treatment is especially difficult in male dogs because the prostate gland is chronically infected. The only proven method for eradication in kennels is to test all dogs and eliminate the confirmed positives.
- **HOW CAN I PREVENT CANINE BRUCELLOSIS IN MY DOG?** Before breeding your dog, both the male and female dog should be examined by a veterinarian and tested for the disease. This involves a simple blood test. Breeding facilities should have all new additions tested for brucellosis before bringing them on to the premises. These dogs should also remain isolated until a second negative test is obtained four to six weeks later. Dogs should not be bred if they test positive for brucellosis.
- **IF MY DOG HAS CANINE BRUCELLOSIS, CAN I GET SICK TOO?** Yes. *B. canis* can infect humans, although it is not common. People who come into contact with large numbers of bacteria are at highest risk, such as dog breeders or others who assist whelping dogs. People who have a compromised immune system, young children, pregnant women, or persons with artificial heart valves are at higher risk of severe disease if they acquire the infection.
- **HOW DOES CANINE BRUCELLOSIS SPREAD TO HUMANS FROM DOGS?** The most common way humans become infected is through contact with birthing fluids, canine abortion products, or vaginal discharges from

Developed by the Wisconsin Bureau of Communicable Diseases and Emergency Response
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Acknowledgments

NJDOH- Zoonotic Disease Team

- State Public Health Veterinarian: Colin Campbell, DVM, CPM
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Warren County Health Department

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Questions?