Virginia Department of Health
Brucellosis: Overview for Healthcare Providers

Organism	• *Brucella* spp. that infect humans: *B. abortus*, *B. melitensis*, *B. suis*, *B. canis; B. ceti and B. pinnepedalis.* • *Brucella* spp. are nonspore-forming, slow-growing, tiny, gram-negative coccobacilli.
Reporting to Public Health	Suspected or confirmed cases require immediate notification to the local health department (LHD). See www.vdh.virginia.gov/LHD/index.htm.
Infectious Dose	10 to 100 organisms
Occurrence	Worldwide, especially in Mediterranean Basin (Portugal, Spain, France, Italy, Greece, Turkey, North Africa), Mexico, South and Central America, Eastern Europe, Asia, Africa, Caribbean and Middle East. ~120 cases annually in US and ~1 case annually in Virginia.
Natural Reservoir	• *B. abortus* (cattle), *B. melitensis* (sheep, goats, camels), *B. suis* (pigs), *B. canis* (dogs); *B. ceti* (dolphins, porpoises, whales); *B. pinnepedialis* (seals, sea lions, walruses). • Infection might occur in other animals (e.g., bison, elk, coyotes, and some deer).
Route of Infection	Multiple routes of infection, including ingestion of unpasteurized dairy products or undercooked meat from infected animals; inhalation of aerosols; contact (through breaks in skin) with tissues, blood, urine, vaginal discharges, aborted fetuses and especially placentas of infected animals; and inoculation with animal vaccines (injection or spraying into wounds or eyes)
Communicability	Person-to-person transmission is rare, but has occurred through tissue transplantation, breast-feeding, and sexual contact.
Risk factors	Working at farm, slaughterhouse or meat-packing facility; consuming unpasteurized dairy products, especially if imported; handling infected animals or tissues (hunters, veterinarians, laboratorians); travel to endemic areas; rarely, *B. canis* in dog breeders
Case-fatality Rate	≤2% without treatment, usually from endocarditis caused by *B. melitensis*
Incubation Period	Highly variable, usually 5 to 60 days; can be several months or more
Clinical Description	• Fever (constant or intermittent), chills, sweats, malaise, anorexia, headache, arthralgia, myalgia, back pain, fatigue, weight loss, depression, pregnancy complications. • Musculoskeletal and genitourinary systems are commonly affected. • Illness may last a few weeks to several months or longer.
Differential Diagnosis	Numerous because of nonspecific presentation and varied complications
Radiography	Chest x-ray is often normal but might show lung abscesses, single or miliary nodules, bronchopneumonia, enlarged hilar lymph nodes, or pleural effusions
Specimen Collection and Laboratory Testing[†]	• Alert lab if brucellosis is suspected. • Culture of blood, bone marrow or tissue; paired serology (acute-phase ≤7 days after onset; convalescent >14 days after acute specimen) for *Brucella* microagglutination test; PCR testing also available. • Commercial serologic tests (e.g., EIA) can have high false positivity rates. • [†]If brucellosis is suspected, notify LHD immediately to discuss the case and laboratory testing. Specimens should be sent to Division of Consolidated Laboratory Services (DCLS) after LHD has been consulted and testing has been approved by LHD/DCLS. The DCLS Emergency Duty Officer can be reached 24/7 at (804) 335-4617.
Treatment* (uncomplicated cases in adults)	• Doxycycline (100 mg twice daily for 6 weeks) plus rifampin (600-900 mg daily for 6 weeks) or Doxycycline (100 mg twice daily for 6 weeks) plus gentamicin (5 mg/kg/day) IM for 7 days or Doxycycline (100 mg twice daily for 6 weeks) plus streptomycin (1g/day) IM for 2 to 3 weeks • ~10% of patients relapse; most relapses occur ≤1 year after completing treatment. • *For additional information on dosing, please consult with the package inserts. For complete treatment options, see http://www.cdc.gov/brucellosis/clinicians/index.html

Postexposure Prophylaxis*	• PEP is recommended for high-risk exposures and can be considered for low-risk exposures. • Doxycycline (100 mg twice daily for 3 weeks) plus rifampin (600 mg once daily for 3 weeks). • All exposed persons should be monitored for febrile illness for 6 months and with periodic serologic testing following last exposure. • *For additional information on dosing, please consult the package inserts. *B. abortus* RB51 is resistant to rifampin in vitro, so rifampin is not recommended for exposure to RB51 vaccine. Serologic testing is not available for RB51 or *B. canis* exposures.
Vaccine	• In US, a vaccine is licensed only for animals. • Self-inoculation with live vaccine has occurred in veterinarians. If this occurs, collect serum (baseline and convalescent specimen 2-3 weeks later); offer PEP (doxycycline, 100 mg twice daily for at least 21 days, and consider other suitable antibiotic); monitor for febrile illness for 6 months.
Infection Control	Use standard precautions; for patients with draining wounds, use contact precautions.