

Brucellosis Lab Exposure Guidance

Recommendations for risk assessment, post exposure prophylaxis and follow-up of laboratory personnel exposed to *Brucella abortus* vaccine strain RB51

In October 2007, the College of American Pathologists (CAP) distributed five unknown isolates as part of a laboratory preparedness survey (LPS) to approximately 1,300 participating sentinel and reference Laboratory Response Network (LRN) laboratories, including 40 Advanced Sentinel Laboratories in Oregon. Among these samples was RB51, a live attenuated bovine vaccine strain of *Brucella abortus*. Failure to work entirely within a class 2 biosafety cabinet or [using biosafety level 3 \(BSL 3\) precautions](#) (page 13) while handling this organism may result in exposure.

Compared to naturally occurring strains of *Brucella*, the *B. abortus* vaccine strain BR51 is considered to be much less virulent to humans. The strain is a live-attenuated strain present in a vaccine for cattle used in the U.S. The actual risk of infection is ill-defined, as is the clinical presentation and severity of illness due to the vaccine strain. Because of the unknown risk, the Centers for Disease Control and Prevention (CDC) recommends a conservative approach to exposure, similar to that for naturally occurring strains. The decision of whether or not to take post-exposure prophylaxis (PEP) is based on a physician-patient discussion of the estimated risk, underlying illness and medications, and the expected tolerance of the antibiotic.

The table below provides guidance for risk assessment and PEP for potential exposure to *Brucella abortus* vaccine strain RB51.

Risk level	Risk area	Definition defining risk	PEP** considerations
High	Individual	Individual working with RB51 specimen <ol style="list-style-type: none"> 1. Sniffed culture plate, 2. Mouth pipetted specimen material, OR 3. Worked in class II biosafety cabinet, but WITHOUT using BSL-3 precautions*** 	Recommended for the individual(s) working with RB51 specimen
	5 foot radius of work with RB51	Work (beyond that defined in "Individual" risk above) with RB51 outside of class II biosafety cabinet on an open bench BUT work DID NOT involve widespread aerosol generating procedures*	Recommended for those within 5 feet of the work with RB51 on open bench while the implicated work occurred
	Laboratory room	Work with RB51 outside of class II biosafety cabinet on an open bench INVOLVING widespread aerosol generating procedures*	Recommended for those present in laboratory room while widespread aerosol generating procedures involving RB51 specimen were conducted
Low	Laboratory room	Present in the lab at the time of manipulation of RB51 on an open bench, but who do not have high-risk exposures as defined above	May be offered to those present in laboratory room while work involving RB51 specimen was conducted
None	Laboratory room	Handling and testing of RB51 in a class II biosafety cabinet using BSL-3 precautions	None

* Widespread aerosol generating procedure include, but are not limited to, centrifuging without sealed carriers, vortexing, sonicating, and accidents resulting in spillage or splashes (i.e. breakage of tube

containing specimen). Other manipulations such as automated pipetting of a suspension containing the organism, grinding the specimen, blending the specimen, shaking the specimen or procedures for suspension in liquid to produce standard concentration for identification may require further investigation (i.e. inclusion of steps that could be considered major aerosol generating activities).

** Post-exposure prophylaxis should include doxycycline 100 mg orally twice daily for at least 21 days. For those with contraindication to doxycycline, trimethoprim-sulfamethoxazole 160 mg/800 mg orally twice daily for at least 21 days may be used. Persons with contraindications to these antimicrobial agents should consult with their health care provider for alternative post-exposure prophylaxis. RB51 is resistant to rifampin in vitro. Use of rifampin for post-exposure prophylaxis or treatment, a recommended choice for other pathogenic strains of *Brucella abortus*, will not be effective for RB51.

*** *Biosafety in Microbiological and Biomedical Laboratories (BMBL) 5th Edition*
(Section IV, Page 13: Laboratory Biosafety Level Criteria Biosafety Level 3)

Safety Equipment (Primary Barriers and Personal Protective Equipment)

<http://www.cdc.gov/OD/ohs/biosfty/bmb15/bmb15toc.htm>

Health monitoring

The incubation period for brucellosis is generally 2 to 4 weeks, but can be as long as 6 months. All laboratory personnel exposed to *B. abortus* vaccine strain RB51 should watch for symptoms of brucellosis, including fever (>100.4°F), chills, malaise, sweats, joint and lower back pain, lymphadenopathy, headaches, depression, anorexia, and fatigue for 6 months following exposure. Daily measurement of temperature for 2 to 4 weeks following exposure is recommended (see health monitoring log at end of this document). Any patient experiencing fever or symptoms described above should seek prompt medical attention.

A serological test specific for *B. abortus* vaccine strain RB51 infection is not available for humans. Although antibodies to RB51 may cross-react with existing serological tests for brucellosis, the use of these tests for serologic evaluation are not recommended as they are unlikely to assist in post-exposure management.

For specific questions on management of laboratory workers exposed to *B. abortus* vaccine strain RB51 please contact the Acute & Communicable Disease Program at 971-673-1111.

- [Additional information on brucellosis in humans \(CDC\)](#)
- [Brucellosis in livestock \(USDA, APHIS\)](#)

Health Assessment Form – *Brucella* exposure

Last exposure date: ____/____/____ + 28 days = ____/____/____

Please complete the health assessment form below for each day of contact with *Brucella abortus* until **28** days after your last exposure. If you develop fever within **28** days of your last exposure, contact your occupational health personnel immediately.

Last name: _____ First name: _____ Date of birth: ____/____/____
 Laboratory: _____ Work Phone: _____ Home phone: _____

| | Date
____/____/____
Circle one |
|---------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Fever | Yes No
Temp: _____°F |
| Chills | Yes No |
| Malaise* | Yes No |
| Headache | Yes No |
| Body aches | Yes No |
| Sweats | Yes No |
| Joint Pain | Yes No |
| Low Back Pain | Yes No |
| Swollen Lymph Nodes | Yes No |
| Fatigue | Yes No |
| Anorexia** | Yes No |
| Other _____ | Yes No |
| Other _____ | Yes No |
| Other _____ | Yes No |

*"Malaise": general feeling of being unwell, tired, fatigued, low appetite or lack of energy

** loss of appetite

Use additional pages as needed