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CDC Health Advisory

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**Third Case of Rifampin/Penicillin-Resistant Strain of
RB51 *Brucella* from Consuming Raw Milk**

Summary

The New York State Department of Health and Pennsylvania Department of Health are investigating *Brucella* RB51 exposures that may be connected to consuming raw (unpasteurized) milk from Miller's Biodiversity Farm in Quarryville, Pennsylvania. Symptoms of brucellosis can include fever, sweats, malaise, anorexia, headache, fatigue, muscle and joint pain, and potentially more serious complications (e.g., endocarditis, hepatomegaly, splenomegaly, and neurologic symptoms). In pregnant patients, *Brucella* infections can be associated with miscarriage. Symptom onset can occur anywhere from five days to six months following exposure. As of January 22, 2019, exposures have been identified in 19 states: Alabama, California, Connecticut, Florida, Georgia, Iowa, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, and Virginia.

Background

This investigation is associated with the third known case of brucellosis from *Brucella* RB51 due to raw milk acquired in the U.S., since August 2017. A New York resident, who drank raw milk purchased from Miller's Biodiversity Farm in Quarryville, Pennsylvania, was diagnosed with brucellosis in November 2018. Milk samples from the dairy tested positive for *Brucella* strain RB51. People who consumed raw milk or raw milk products from this dairy since January 2016 may have been exposed.

- Patients who are still **within six months** of the date they last consumed the raw milk are at an increased risk for brucellosis and appropriate post-exposure prophylaxis (PEP) is recommended, along with six months of symptom monitoring. Please see diagram below.
- If patients are **outside of the six-month window** following their last consumption of the raw milk and have or develop an illness consistent with brucellosis, a blood culture should be obtained prior to starting any treatment, preferably while the patient is symptomatic.

Brucella strain RB51 is a live-attenuated cattle vaccine strain, which can be shed in milk and can cause infections in humans. RB51 is resistant to rifampin and penicillin. There is no serological test available to detect RB51 infection. Blood culture is the recommended diagnostic test for exposed individuals who are symptomatic.¹

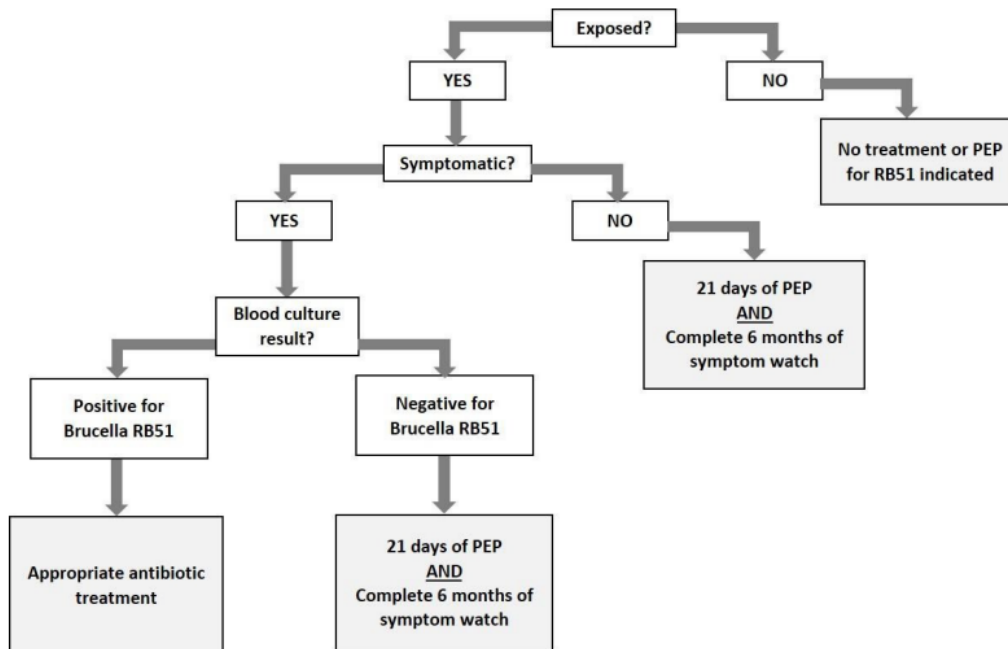
Recommendations

The Centers for Disease Control and Prevention (CDC) recommends the following:

1. A 21-day course of both doxycycline and trimethoprim/sulfamethoxazole for first-line PEP for RB51 exposure.² If brucellosis occurs despite prophylaxis, treatment should be pursued; alternative options should be considered for those with contraindications to the stated PEP and treatment regimens.² Please note that RB51 is resistant to rifampin and penicillin.
2. When ordering blood cultures to diagnose brucellosis, please advise the laboratory that blood culture may grow *Brucella* and that appropriate laboratory containment and precautions should be observed.³
3. Advise patients to discard any leftover or stored, raw milk or raw milk products from this dairy farm.

Please see the diagram below for information on developing an evaluation and treatment plan for patients who consumed raw milk or raw milk products from Miller's Biodiversity Farm since January 2016, and are **still within the six-month window following their last known exposure**.

Treatment Decision Tree for Patients Who Consumed Raw Milk or Raw Milk Products from Miller's Biodiversity Farm in Quarryville, Pennsylvania



Note: Testing for asymptomatic patients is not recommended.

References

¹Laboratory Diagnostics – RB51

- Schurig GG, Roop RM, 2nd, Bagchi T, Boyle S, Buhrman D, Sriranganathan N. Biological properties of RB51; a stable rough strain of *Brucella abortus*. Vet Microbiol. 1991 Jul;28(2):171-88.
- Cossaboom CM, Kharod GA, Salzer JS, Tiller RV, Campbell LP, Wu K, et al. Notes from the Field: *Brucella abortus* vaccine strain RB51 infection and exposures associated with raw milk consumption - Wise County, Texas, 2017. MMWR Morb Mortal Wkly Rep. 2018 Mar 9;67(9):286.

²Treatment of Brucellosis

- Ariza J *et al.* 2007. Perspectives for the treatment of brucellosis in the 21st century: the Ioannina recommendations. PLoS Med. 4(12): e317. <http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.0040317>
- Al-Tawfiq JA. 2008. Therapeutic options for human brucellosis. Expert Rev Anti Infect Ther. 6(1): 109-120. <http://www.ncbi.nlm.nih.gov/pubmed/18251668>
- Solera J. 2010. Update on brucellosis: therapeutic challenges. Intl J Antimicrob Agent. 36S, S18–S20. <http://www.ncbi.nlm.nih.gov/pubmed/20692127>

³Biosafety in Microbiological and Biomedical Laboratories

- <https://www.cdc.gov/biosafety/publications/bmb15/bmb1.pdf>

For More Information

- Risks from Unpasteurized Dairy Products <https://www.cdc.gov/brucellosis/exposure/unpasteurized-dairy-products.html>
- Exposure to RB51 through Raw Milk or Milk Products: How to Reduce Risk of Infection <https://www.cdc.gov/brucellosis/clinicians/rb51-raw-milk.html>
- Symptoms of Brucellosis <https://www.cdc.gov/brucellosis/symptoms/index.html>
- Brucellosis and Expecting Mothers <https://www.cdc.gov/brucellosis/exposure/expecting-mothers.html>
- Raw Milk Questions and Answers <https://www.cdc.gov/foodsafety/rawmilk/raw-milk-questions-and-answers.html>
- Brucellosis Reference Guide <https://www.cdc.gov/brucellosis/pdf/brucellosis-reference-guide.pdf>

For general, non-urgent inquiries during business hours (8:00 AM to 8:00 PM EST):
CDC-INFO <https://www.cdc.gov/cdc-info/index.html> or 1-800-232-4636

For emergencies, 24/7: CDC Emergency Operations Center (EOC) 770-488-7100

For clinicians and health departments during business hours (8:30 AM to 4:30 PM EST):
Bacterial Special Pathogens Branch bspb@cdc.gov or 404-639-1711

DHEC contact information for reportable diseases and reporting requirements

Reporting of *Brucella* is consistent with South Carolina Law requiring the reporting of diseases and conditions to your state or local public health department. (State Law # 44-29-10 and Regulation # 61-20) as per the DHEC 2019 List of Reportable Conditions available at: <https://www.scdhec.gov/sites/default/files/Library/CR-009025.pdf>

Federal HIPAA legislation allows disclosure of protected health information, without consent of the individual, to public health authorities to collect and receive such information for the purpose of preventing or controlling disease. (HIPAA 45 CFR §164.512).

Regional Public Health Offices – 2019

Mail or call reports to the Epidemiology Office in each Public Health Region

MAIL TO:

Lowcountry	Midlands	Pee Dee	Upstate
4050 Bridge View Drive, Suite 600 N. Charleston, SC 29405 Fax: (843) 953-0051	2000 Hampton Street Columbia, SC 29204 Fax: (803) 576-2993	145 E. Cheves Street Florence, SC 29506 Fax: (843) 915-6502	200 University Ridge Greenville, SC 29602 Fax: (864) 282-4373

CALL TO:

Lowcountry	Midlands	Pee Dee	Upstate
Berkeley, Charleston, Dorchester Phone: (843) 953-0043 Nights/Weekends: (843) 441-1091 Beaufort, Colleton, Hampton, Jasper Phone: (843) 549-1516 ext. 218 Nights/Weekends: (843) 441-1091 Allendale, Bamberg, Calhoun, Orangeburg Phone: (803) 268-5833 Nights/Weekends: (843) 441-1091	Kershaw, Lexington, Newberry, Richland Phone: (803) 576-2749 Nights/Weekends: (888) 801-1046 Chester, Fairfield, Lancaster, York Phone: (803) 286-9948 Nights/Weekends: (888) 801-1046 Aiken, Barnwell, Edgefield, Saluda Phone: (803) 642-1618 Nights/Weekends: (888) 801-1046	Chesterfield, Darlington, Dillon, Florence, , Marion, Marlboro Phone: (843) 661-4830 Nights/Weekends: (843) 915-8845 Clarendon, Lee, Sumter Phone: (803) 773-5511 Nights/Weekends: (843) 915-8845 Georgetown, Horry, Williamsburg Phone: (843) 915-8800 Nights/Weekends: (843) 915-8845	Anderson, Oconee McCormick Phone: (864) 260-5581 Nights/Weekends: (866) 298-4442 Abbeville, Greenwood, Cherokee, Greenville, Laurens Pickens, Spartanburg, Union Phone: (864) 372-3133 Nights/Weekends: (866) 298-4442

For information on reportable conditions, see <https://www.scdhec.gov/health-professionals/report-diseases-adverse-events/south-carolina-list-reportable-conditions>

DHEC Bureau of Disease Control
Division of Acute Disease Epidemiology
 2100 Bull St · Columbia, SC 29201
 Phone: (803) 898-0861 · Fax: (803) 898-0897
 Nights / Weekends: 1-888-847-0902

Categories of Health Alert messages:

Health Alert	Conveys the highest level of importance; warrants immediate action or attention.
Health Advisory	Provides important information for a specific incident or situation; may not require immediate action.
Health Update	Provides updated information regarding an incident or situation; unlikely to require immediate action.
Info Service	Provides general information that is not necessarily considered to be of an emergent nature.