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CDC HEALTH ADVISORY

Distributed via the CDC Health Alert Network
January 23, 2019 1430 ET (2:30 PM ET)
CDCHAN-00417

**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

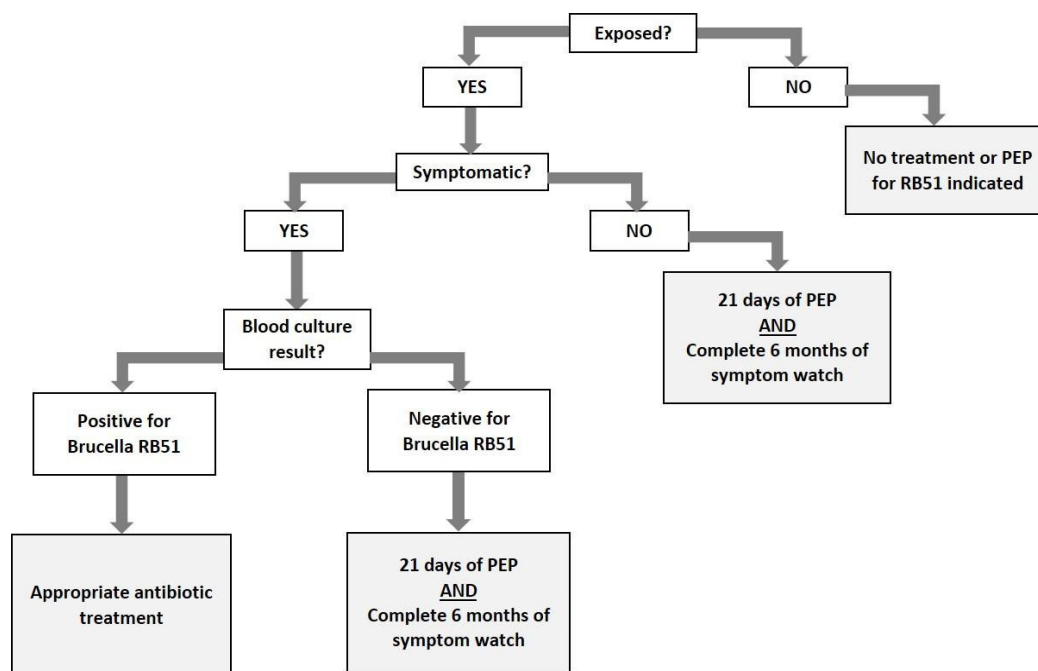
Recommendations

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/brucellosi-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

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