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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

***Missouri healthcare providers and public health practitioners: Please contact your local public health agency or the Missouri Department of Health and Senior Services (DHSS) Office of Veterinary Public Health at 573-526-4780 or 800-392-0272 (24/7) with questions regarding this Advisory***

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**

1. **Exposed?**
   - **Yes**
     - Symptomatic?
       - **Yes**
         - Blood culture result?
           - **Positive for Brucella RB51**
             - Appropriate antibiotic treatment
           - **Negative for Brucella RB51**
             - 21 days of PEP AND Complete 6 months of symptom watch
       - **No**
         - 21 days of PEP AND Complete 6 months of symptom watch
   - **No**
     - No treatment or PEP for RB51 indicated

2. **Note:** Testing for asymptomatic patients is not recommended.

**References**

1. **Laboratory Diagnostics – RB51**

2. **Treatment of Brucellosis**

3. **Biosafety in Microbiological and Biomedical Laboratories**
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

Brucellosis Reference Guide

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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