

Mycobacterium bovis (Bovine Tuberculosis) in Humans

What is *Mycobacterium bovis*?

In the United States, the majority of tuberculosis (TB) cases in people are caused by *Mycobacterium tuberculosis* (*M. tuberculosis*). *Mycobacterium bovis* (*M. bovis*) is another *mycobacterium* that can cause TB disease in people.

M. bovis is most commonly found in cattle and other animals such as bison, elk, and deer. In people, *M. bovis* causes TB disease that can affect the lungs, lymph nodes, and other parts of the body. However, as with *M. tuberculosis*, not everyone infected with *M. bovis* becomes sick. People who are infected but not sick have what is called latent TB infection (LTBI). People who have LTBI do not feel sick, do not have any symptoms, and cannot spread TB to others. However, some people with LTBI go on to get TB disease.

How common is human disease with *M. bovis*?

M. bovis causes a relatively small proportion, less than 2%, of the total number of cases of TB disease in the United States. This accounts for less than 230 TB cases per year in the United States. *M. bovis* transmission from cattle to people was once common in the United States. This has been greatly reduced by decades of disease control in cattle and by routine pasteurization of cow's milk.

How are people infected with *M. bovis*?

People are most commonly infected with *M. bovis* by eating or drinking contaminated, unpasteurized dairy products. The pasteurization process, which destroys disease-causing organisms in milk by rapidly heating and then cooling the milk, eliminates *M. bovis* from milk products.

Infection can also occur from direct contact with a wound, such as what might occur during slaughter or hunting, or by inhaling the bacteria in air exhaled by animals infected with *M. bovis*. Direct transmission from animals to humans through the air is thought to be rare, but *M. bovis* can be spread directly from person to person when people with the disease in their lungs cough or sneeze.



How do I know if I've been infected with *M. bovis*?

Most people are at very low risk for being infected with *M. bovis*. People at higher risk include individuals who work with cattle, bison, or cervids (e.g., deer or elk), or products from these animals such as hides, milk, or meat. Examples of occupations or hobbies that might put people at increased risk include ranching, dairy farming, working in a slaughterhouse or as a butcher, and hunting. People who drink raw (unpasteurized) milk or consume dairy products made from raw milk are also at greater risk. People who might be at higher risk of *M. bovis* infection should talk to their healthcare providers about whether they should be regularly screened for TB infection. Screening tests include the tuberculin skin test (TST) and the interferon-gamma release assay (blood test).

What are the symptoms of *M. bovis* in people?

Not all *M. bovis* infections progress to TB disease, so there might be no symptoms at all. In people, symptoms of TB disease caused by *M. bovis* are similar to the symptoms of TB caused by *M. tuberculosis*; this can include fever, night sweats, and weight loss. Other symptoms might occur depending on the part of the body affected by the disease.

For example, disease in the lungs can be associated with a cough, and gastrointestinal disease can cause abdominal pain and diarrhea. If untreated, a person can die of the disease.

How is *M. bovis* treated in people?

M. bovis is treated similarly to *M. tuberculosis*. In fact, healthcare providers might not know that a person has *M. bovis* instead of *M. tuberculosis*. *M. bovis* is usually resistant to one of the antibiotics, pyrazinamide, typically used to treat TB disease. However, resistance to just pyrazinamide does not usually cause problems with treatment, because TB disease is treated with a combination of several antibiotics. Latent infection without disease is not treated with pyrazinamide.

Are all cattle infected with *M. bovis*?

No. The Cooperative State-Federal Tuberculosis Eradication Program, including the U.S. Department of Agriculture, state animal health agencies, and U.S. livestock producers, has nearly eliminated *M. bovis* infection from cattle in the United States. Inspectors test more than one million animals a year for TB and have taken steps to eradicate the disease. However, *M. bovis* can be found in wild animals such as bison, elk, and deer; uninfected cattle that come into contact with these wild animals can become infected.

Cattle outside the United States, particularly in developing countries, might not have the same level of inspection for *M. bovis* infection. Be cautious when consuming imported dairy products and ensure that the products have been properly pasteurized.

How can *M. bovis* infection be prevented?



The most commonly reported source of *M. bovis* infection in people is the consumption of unpasteurized dairy products. Unpasteurized dairy products, such as milk or cheese, should not be consumed: although *M. bovis* infection in U.S. domestic cattle is substantially reduced compared to the past, unpasteurized dairy product consumption still carries health risks. To make sure that dairy products are pasteurized, check the label and ingredients list and make sure that the word “pasteurized” is listed. Use caution when purchasing homemade dairy products such as cheeses or products that are sold without complete labeling of the ingredients.

People at risk for contact with body fluids or tissue from a wild bison or cervid (e.g., deer or elk) into a wound, such as hunters, should promptly seek medical attention and inform their healthcare providers about the exposure to a wild animal that might carry *M. bovis*.

People who spend extended periods in close contact with cattle or other animals that might carry *M. bovis*, such as dairy workers, should promptly seek medical attention for any illness with symptoms of TB disease as described above and ensure that their health care providers are aware that they work in close contact with animals.

Additional Information

- U.S. Department of Agriculture Bovine Tuberculosis fact sheet http://www.aphis.usda.gov/publications/animal_health/content/printable_version/faq_bovine_tb_.pdf
- State TB Control Offices <http://www.cdc.gov/tb/links/tboffices.htm>
- Signs and Symptoms of TB Disease <http://www.cdc.gov/tb/topic/basics/signsandSYMPTOMS.htm>

Division of Tuberculosis Elimination: <http://www.cdc.gov/tb>