

Bovine Tuberculosis (TB) Fact Sheet

What is bovine tuberculosis?

Bovine TB is an infectious disease that is caused by the bacterium *Mycobacterium bovis* (*M. bovis*). Bovine TB primarily affects cattle, however, other animals may become infected. *M. bovis* causes a disease that can be transmitted between wildlife populations and food animals (e.g., cattle). Disease due to *M. bovis* in animals typically presents in the lungs but may also occur in the intestines and other parts of the body.



Tuberculosis in humans is usually caused by *Mycobacterium tuberculosis* (*M. tuberculosis*). *M. tuberculosis* is the single greatest cause of infectious disease in humans worldwide. In humans, tuberculosis is usually contracted by inhaling the bacteria and it occurs most often in the lungs. However, skin lesions can occur if the bacterium gets into a cut. Humans can be skin-tested to determine if they are infected with TB. These tests can be done at either the local health department or a private physician's office. A positive skin test, however, does not identify the type or source of the infection.

Has bovine tuberculosis (TB) been detected in Kentucky? In May 2010, bovine TB was found in a beef cattle herd in Fleming County. This was the first positive case in Kentucky since 1987. In April 2016, bovine tuberculosis was detected on a cattle farm consisting of two premises in Southeastern Indiana. As part of the response to that event, wildlife was removed and tested from the affected areas. In August 2016, a wild white-tailed deer removed from the affected premise tested positive for bovine tuberculosis, marking the first time the disease was found in wild deer in Indiana. The disease has not been detected in wild deer in Kentucky.

What is being done to control this situation in Indiana?

The Indiana Board of Animal Health is working closely with the Indiana DNR to eliminate bovine TB-infected cattle in Indiana. The 2-year-old doe that tested positive for TB was culled as part of the surveillance effort on the cattle farm. The Indiana BOAH is testing all cattle within a 10 mile surveillance area of the affected farm. The Indiana DNR has established bovine tuberculosis management and surveillance zones and will be focusing on reducing the prevalence of disease and conducting testing of wild white tailed deer in the designated areas.

What is being done in Kentucky to monitor wild deer for the presence of bovine TB?

In order to ensure that deer do not harbor bovine TB, the Kentucky Department of Fish and Wildlife Resource (KDFWR) will test deer in Nicholas, Bath, and Fleming counties in the area of the infected 2010 cattle herd and in Boone county, in the area bordering the southeastern portion of Indiana during the 2016 firearm season. Personnel will staff deer

sampling stations to inspect harvested deer. Additionally, lymph nodes will be extracted for testing. Hunters will be notified of the results if their deer tests positive for bovine TB.

How is bovine TB transmitted?

Bovine TB is spread primarily through the exchange of respiratory secretions between infected and uninfected animals. This transmission usually happens when animals are in close contact with each other. Animals may also become infected with TB by ingesting the bacteria. Thus, animal density plays a major factor in TB transmission. Bacteria released into the air through coughing and sneezing can spread the disease to uninfected animals. Research also suggests that bovine TB can also be contracted from ingesting contaminated feed. Survival of TB in the environment is reduced by exposure to sunlight. Reports on the length of bacterium (*M. bovis*) survival vary from 18 - 332 days at temperatures ranging from 54-75 F.

Can bovine TB spread from infected cattle to wild deer and vice versa?

Although bovine TB was once relatively common in U.S cattle, it has historically been a very rare disease in wild deer. Prior to 1994, only eight wild white-tailed and mule deer had been reported with bovine TB in North America. In 1995, bovine TB was detected in wild deer in Michigan. The *M. bovis* strain isolated from the infected Indiana and Kentucky herd is a unique strain and does not match that found in Michigan. Kentucky has no history of tuberculosis infection in deer or other wildlife.

What are the symptoms of bovine TB in deer?

Bovine TB is a progressive, chronic disease. It can take months to years from time of infection to the development of clinical signs. Unlike most bacteria, bovine TB grows very slowly and only replicates every 12-20 hours. The lymph nodes in the animal's head usually show infection first and as the disease progresses, lesions will begin to develop on the surface of the lungs and chest cavity. In severely infected deer, lesions can usually be found throughout the animal's entire body.

How can I tell if my deer is infected with bovine TB?

Hunters do not always readily recognize small lesions in deer. Abscesses may not be visible to hunters when field dressing deer. Infected animals may have yellow to tan, pea-sized nodules in the chest cavity or lungs. Lymph nodes of the head and neck can be swollen and soft. In fact, most infected white-tailed deer appear healthy. In Michigan, only 42% of the bovine TB positive deer had lesions in the chest cavity or lungs that would be recognized as unusual by most deer hunters. These deer had tan or yellow lumps on the inside surface of the rib cage and/or in and on the lung tissue.



Bovine tuberculosis lesions seen with chronic infection, throughout lungs and on ribs of a wild deer. (photo from MIDNR website)

Bovine TB infected deer not showing lesions in the chest cavity can be diagnosed by performing a visual inspection of the lymph nodes in the deer's head. Affected lymph nodes, when cut, will contain one or more variably sized pus-filled nodules. Suspicious looking lymph nodes are removed for further testing at approved laboratory facilities. For 2005, KDFWR will remove and test lymph nodes, even if they do not look infected.

Is there any treatment for bovine TB?

There are no effective vaccines for disease prevention and no effective medications for treatment of bovine TB in wild deer. Instead, a combination of wildlife disease surveillance and deer management strategies can be used to eliminate the disease if present in wild deer. Wildlife surveillance monitors the spatial distribution and prevalence of the disease, while hunters are also asked to examine their deer.

Other mammals are most likely to contract bovine TB from feeding on infected tissues from deer carcasses. In Michigan, bovine TB has also been found in black bear, bobcat, coyote, opossum, raccoon, and red fox.

Can bovine tuberculosis infect humans?

In the U.S. today, the threat of humans contracting bovine TB from animals is extremely remote. Most human tuberculosis is caused by the bacteria *M. tuberculosis*, which is spread from person to person and rarely infects animals. Bovine TB is caused by the closely related bacteria *M. bovis*, which is capable of infecting all mammals including people. The United States has actively pursued a bovine tuberculosis eradication program since 1917. This program, together with food safety initiatives such as the pasteurization of milk, has been very effective in reducing the likelihood of people contracting tuberculosis from *M. bovis*.

What precautions should hunters take when field dressing deer or handling meat?

Bovine TB has not yet been detected in Kentucky. However, good field-dressing techniques are important to avoid contact with TB and other wildlife pathogens. The best way to insure your safety is to wear disposable rubber gloves when gutting a deer. Special attention should be paid to the lungs and chest cavity where small lesions may be evident in an infected deer. Every precaution should be taken to avoid cutting yourself when field dressing a deer.

Is it safe to eat venison?

Yes, venison from deer harvested in Kentucky is safe to eat. While it is possible to transmit bovine TB from animals to people, the likelihood is extremely rare. It is highly unlikely that a person field dressing or eating the cooked meat of animals infected with bovine TB would become infected. The TB bacterium is very rarely found in meat (muscle tissue). Since bovine TB is primarily spread through respiration, the bacterium is generally found in lung tissue. Although bovine TB has not yet been detected in Kentucky, as a precaution, all meats (including deer), should be thoroughly cooked to an internal temperature of 165 degrees F. This effectively kills all known bacteria, including TB and *E. coli*.