

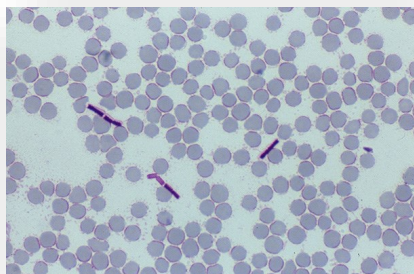
Anthrax

Anthrax is a potentially fatal disease of all warm-blooded animals, including humans, caused by *Bacillus anthracis*, a spore-forming bacterium. Cattle, sheep, and goats are considered highly susceptible to anthrax, while birds are highly resistant. Anthrax is particularly common in parts of Africa, Asia, and the Middle East. Anthrax outbreaks in the United States (U.S.) occur most often in the West and Midwest. Several states including North and South Dakota, Texas, Minnesota, Montana, and California have had anthrax outbreaks. The diagnosis of anthrax **must** be reported to animal health officials.

Anthrax Agent

The anthrax bacterium is found in two forms: vegetative and spore. The vegetative form grows and reproduces in the animal, releasing toxins that cause the disease. Exposure of the vegetative form of the organism to oxygen results in the formation of spores. The spore form contaminates the environment and may remain viable in the soil for decades, which makes eradication difficult. Spores can survive for two years in water. Spores are highly resistant to the following:

- Heat,
- Cold,
- Chemical disinfection, and
- Long dry periods.



Rapid decomposition of an unopened carcass destroys the vegetative form of the bacterium within a few days of death.

Transmission

Transmission in animals typically occurs by ingestion of soil-borne spores and possibly by inhalation of spores. Animal exposure to spores may occur directly from the soil through grazing or from ingestion of feed grown on anthrax-infected soil. An increased incidence of anthrax exposure occurs:

- After flooding of the grazing area,
- After a drought, and
- After disruption or tilling of the soil.

Once ingested, spores revert to the vegetative form and produce toxins in the animal. Occasionally, inhalation of spores can cause disease in animal. Some susceptible species may develop a localized infection caused by exposure through breaks in the skin.

Clinical Signs in Ruminants

Ruminants are most susceptible to anthrax. The disease has a rapid onset after exposure and sudden death may occur without observation of other clinical signs. In some animals, staggering, trembling, difficulty breathing, collapse, and terminal convulsions may be seen. Infected animals bloat rapidly at the time of death and a dark bloody discharge may appear from the mouth, nose, anus, and/or vulva. A notable sign of anthrax is the lack of rigor mortis (stiffening of the body) after death.



If a bloated cattle carcass has not undergone rigor mortis and has dark, bloody discharge from the body openings, suspect anthrax. Take precautions and call your veterinarian or animal health official.

Clinical Signs in Equines

Equines typically develop acute disease after ingestion of anthrax spores. Common signs of the disease in equines include:

- Fever,
- Chills,
- Anorexia,
- Depression,
- Colic, and/or
- Bloody diarrhea.

Swelling of the neck, sternum, lower abdomen, and external genitalia may also occur. Affected horses usually die within 1-3 days and some affected horses may survive up to a week.



Clinical Signs in Swine

Pigs infected with anthrax may have mild to chronic infections characterized by localized swelling in the neck. Some pigs may develop progressive swelling of the throat resulting in difficulty breathing and swallowing. Systemic signs include:

- Fever,
- Loss of appetite, and/or
- Enlarged lymph nodes.



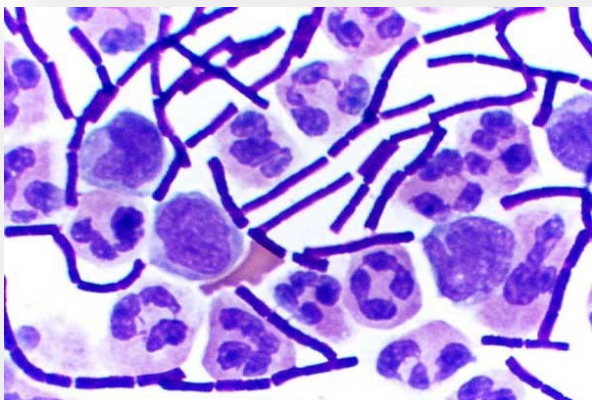
Diagnosis

Suspect anthrax in animals that die suddenly in areas prone to the disease. A veterinarian should rule out anthrax as the cause of death before the carcass is handled by others. A diagnosis of anthrax is made by identification of the anthrax bacteria in samples from the dead animal.

The optimal anthrax sample from animal carcasses is to sterilely aspirate aqueous humor from the eye and place in a sealed red top tube. If this is not feasible the whole eye can be submitted as an alternative.

Treatment

Call your veterinarian for assistance with an anthrax suspect. *Bacillus anthracis* and its toxins rapidly affect animals, and antibiotics and supportive treatment must begin immediately.



Control

To control an outbreak, it is essential to quarantine the premises, dispose of carcasses appropriately, and decontaminate using effective products and application methods. Additional considerations include:

- Isolate infected animals,
- Remove exposed animals from contaminated premises if possible,
- **Avoid opening suspect carcass(es) to prevent spore formation,**
- Use of an anthrax vaccine on exposed animal may be recommended,
- Restrict access of grazing animals in known-contaminated areas, and
- Properly dispose of carcass(es) and contaminated materials.

Prevention

Annual vaccination of livestock anthrax endemic areas with modified live anthrax vaccine may aid in the prevention of the disease.



Zoonotic Potential

Anthrax may cause serious disease in humans after exposure to anthrax-infected animals and their tissues. For more information on anthrax in humans, contact your local County Public Health Department or visit: [California Department of Public Health](http://www.cdph.ca.gov)

Animal Health and Food Safety Services Animal Health Branch

Headquarters - (916) 900-5002
Redding District - (530) 225-2140
Modesto District - (209) 491-9350
Tulare District - (559) 685-3500
Ontario District - (909) 947-4462
USDA-APHIS-VS - (916) 854-3950 or (877) 741-3690

For more information, please click the following:
[Animal Health Branch](#)
[Hand Washing Why, When, How, and with What?](#)