

Anthrax Fact Sheet

What is anthrax?

Anthrax is an acute infectious disease that usually occurs in animals such as livestock, but can also affect humans. Human anthrax comes in three forms, depending on the route of infection: cutaneous (skin) anthrax, inhalation anthrax, and intestinal anthrax. Symptoms usually occur within 7 days after exposure.

Cutaneous: Most (about 95%) anthrax infections occur when the bacterium enters a cut or abrasion on the skin after handling infected livestock or contaminated animal products. Skin infection begins as a raised itchy bump that resembles an insect bite but within 1–2 days develops into a vesicle and then a painless ulcer, usually 1–3 cm in diameter, with a characteristic black necrotic (dying) area in the center. Lymph glands in the adjacent area may swell. About 20% of untreated cases of cutaneous anthrax will result in death. Deaths are rare with appropriate antimicrobial therapy.

Inhalation: Initial symptoms are like cold or flu symptoms and can include a sore throat, mild fever, and muscle aches. After several days, the symptoms may progress to cough, chest discomfort, severe breathing problems and shock. Inhalation anthrax is often fatal. Eleven of the mail-related cases were inhalation; 5 (45%) of the 11 patients died.

Intestinal: Initial signs of nausea, loss of appetite, vomiting, and fever are followed by abdominal pain, vomiting of blood, and severe diarrhea. Intestinal anthrax results in death in 25% to 60% of cases.

While most human cases of anthrax result from contact with infected animals or contaminated animal products, anthrax also can be used as a biologic weapon. In 1979, dozens of residents of Sverdlovsk in the former Soviet Union are thought to have died of inhalation anthrax after an unintentional release of an aerosol from a biologic weapons facility. In 2001, 22 cases of anthrax occurred in the United States from letters containing anthrax spores that were mailed to members of Congress, television networks, and newspaper companies.

What causes anthrax?

Anthrax is caused by the bacterium *Bacillus anthracis*. The anthrax bacterium forms a protective shell called a spore. *B. anthracis* spores are found naturally in soil, and can survive for many years.

How is anthrax diagnosed?

Anthrax is diagnosed by isolating *B. anthracis* from the blood, skin lesions, or respiratory secretions or by measuring specific antibodies in the blood of persons with suspected cases.

Is there a treatment for anthrax?

Antibiotics are used to treat all three types of anthrax. Treatment should be initiated early because the disease is more likely to be fatal if treatment is delayed or not given at all.

How common is anthrax and where is it found?

Anthrax is most common in agricultural regions of South and Central America, Southern and Eastern Europe, Asia, Africa, the Caribbean, and the Middle East, where it occurs in animals. When anthrax affects humans, it is usually the result of an occupational exposure to infected animals or their products. Naturally occurring anthrax is rare in the United States (28 reported cases between 1971 and 2000), but 22 mail-related cases were identified in 2001.

Infections occur most commonly in wild and domestic lower vertebrates (cattle, sheep, goats, camels, antelopes, and other herbivores), but it can also occur in humans when they are exposed to infected animals or tissue from infected animals.

How is anthrax transmitted?

Anthrax can infect a person in three ways: by anthrax spores entering through a break in the skin, by inhaling anthrax spores, or by eating contaminate, undercooked meat. Anthrax is not spread from person to person. The skin ("cutaneous") form of anthrax is usually the result of contact with infected livestock, wild animals, or contaminated animal products such as carcasses, hides, hair, wool, meat, or bone meal. The inhalation form is from breathing in spores from the same sources. Anthrax can also be spread as a bioterrorist agent.

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Who has an increased risk of being exposed to anthrax?

Susceptibility to anthrax is universal. Most naturally occurring anthrax affects people whose work brings them into contact with livestock or products from livestock. Such occupations include veterinarians, animal handlers, abattoir workers, and laboratorians. Inhalation anthrax was once called Woollsorter's Disease because workers who inhaled spores from contaminated wool before it was cleaned developed the disease. Soldiers and other potential targets of bioterrorist anthrax attacks might also be considered at increased risk.

Is there a way to prevent infection?

In countries where anthrax is common and vaccination levels of animal herds are low, humans should avoid contact with livestock and animal products and avoid eating meat that has not been properly slaughtered and cooked. Also, an anthrax vaccine has been licensed for use in humans. It is reported to be 93% effective in protecting against anthrax. It is used by veterinarians, laboratorians, soldiers, and others who may be at increased risk of exposure, but is not available to the general public at this time.

For a person who has been exposed to anthrax but is not yet sick, antibiotics combined with anthrax vaccine are used to prevent illness.

Sources: Centers for Disease Control and Prevention [Internet]. Atlanta: Anthrax. Available from: <http://www.bt.cdc.gov/agent/anthrax/> and Anthrax Public Health Fact Sheet, Mass. Dept. of Public Health, August 2002.