

# Diseases, Disorders and Injuries

## Anthrax

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## What is anthrax, and what causes it?

Anthrax is an infectious disease that can affect the skin, the lungs, and the gastrointestinal tract. The infection can sometimes spread to other parts of the body, especially if treatment is not started early. For example, anthrax could, very rarely, lead to inflammation of the meninges (meningitis).

Anthrax is caused by a bacterium called *Bacillus anthracis*. The bacteria occur in living tissue of infected animals. The bacteria can form spores under certain conditions when, for example, body fluids infected with the bacteria are exposed to the air. The bacteria cannot live for long outside an animal. On the other hand, the spores can survive in soil and some other materials for decades.

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## How is anthrax contracted?

*Bacillus anthracis* produces small spores to multiply. When these spores enter a cut or abrasion on the skin, they start a skin infection, usually called cutaneous anthrax. If the spores are inhaled, they are small enough to enter the lungs and cause inhalation anthrax. Eating contaminated, undercooked meat can cause oropharyngeal (mouth and throat) and gastrointestinal anthrax.

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## Is anthrax contagious between people?

No. Spreading anthrax from person to person is extremely unlikely to occur. It also requires a relatively large dose to infect a person – one would have to inhale 8,000 to 50,000 spores. Smallpox takes only 10 to 100 organisms to cause the disease.

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## What are the symptoms of anthrax?

The symptoms of the disease vary depending on how the disease was contracted. Symptoms from cutaneous anthrax can occur as early as 1 to 7 days after exposure but could be delayed for weeks (incubation period). The skin infection begins with itchy bumps that resemble insect bites. Skin bumps develop into painless black blisters.

If the *Bacillus anthracis* spores are inhaled, a person may experience flu-like symptoms 1 to 7 days after infection, including fever, feeling unwell, body aches, fatigue, cough, shortness of breath, and chest discomfort. The onset of symptoms could be delayed by up to 2 months. The symptoms may progress to severe breathing problems.

In the case of gastrointestinal anthrax, symptoms usually begin a few days after ingestion of the contaminated meat but can be delayed for weeks. The symptoms include sore throat, difficulty swallowing, swelling of neck or neck glands, abdominal pain, fever, nausea, vomiting, and diarrhea.

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## How is anthrax recognized?

Confirmation of an anthrax diagnosis requires laboratory examinations which identify *Bacillus anthracis* in the blood, skin lesions, or respiratory secretions. Thoracic imaging can be used to diagnose inhalation anthrax.

Laboratory blood tests can also detect whether the amount of certain specific proteins (antibodies) has increased in the blood. An increase indicates infection by *Bacillus anthracis*. Antibodies are produced by special cells of the body's infection defence system to reduce or neutralize the effect of invading microorganisms. Tests may also be done using skin lesion swabs, spinal fluid, or respiratory secretions.

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## How is anthrax treated?

Anthrax can be controlled with antibiotics. To be effective, treatment should start early after exposure. If left untreated or if treatment starts too late, anthrax can be fatal. In some cases, an antitoxin can be used.

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## Is anthrax an occupational concern?

Human anthrax is unusual in North America. The British Columbia Centre for Disease Control [reported](#): "The latest BC case was seen in 2001. More recently, 2 people were infected in 2006 in Saskatchewan during an outbreak among animals (mainly cattle). All these people developed skin infections and recovered. Human cases of digestive and lung anthrax have never been reported in Canada."

Anthrax can be an occupational hazard for workers who process hides, hair, bone and bone products, and wool. Animal breeders, slaughterhouse workers, trappers and hunters, fur industry workers, tanning and leather industry workers, veterinarians, or wildlife, agricultural, and laboratory workers who handle infected animals or animal products can also be at risk for the infection.

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## How can we prevent anthrax?

Employers should conduct a [risk assessment](#) to determine the anthrax-related hazards and risks. Workplaces that process animal products should have adequate ventilation systems, including a local exhaust system to reduce dust levels. Clean the workspace with a high-efficiency particulate air filter (HEPA) vacuum. Workers who handle raw animal materials should be informed about modes of transmission. Avoid shaking or beating hides, dry sweeping, or using compressed air (for cleaning). Workers should follow good personal hygiene practices, including care of skin abrasions (broken skin should be covered). Workers should use adequate personal protective equipment (such as a properly fitted face mask or respirator (N-95), eye protection, and protective gloves) and facilities for washing and changing clothes after work.

[Health Canada](#) recommends that laboratory workers who work with anthrax should follow containment level 2 or 3 (depending on the risk group 2 or 3 strains) practices in appropriately designed and maintained facilities.

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