

Anthrax

Anthrax is a rare and potentially fatal bacterial disease. The infectious agent is *Bacillus anthracis*, a bacterium that most commonly occurs in wild and domesticated animals such as cattle, sheep, goats, horses and deer. *Bacillus anthracis* bacteria form spores, which are tough shells that help the microbes survive unsuitable conditions.

Anthrax spores are infectious for a long time

Anthrax spores are infectious for long periods of time. Spores can live in the soil for many years. Soil, hair, hides and wool are all possible places for spores to exist. Processed skins and hides of infected animals may contain spores for many years.

Anthrax in Victoria

In Victoria, outbreaks of anthrax among animals occur from time to time in the southern regions, and along the Murray and Goulburn rivers. Occasionally a person is infected. Illness usually develops within two to seven days of exposure.

Humans can become infected with anthrax by handling products from infected animals or by breathing in anthrax spores from infected animal products. Anyone who works with livestock or their by-products – such as abattoir and knackery workers, tanners, veterinarians and farmers – is most likely to be exposed.

Anthrax is relatively rare

Anthrax is a relatively rare human infection. Among animals, it is found worldwide but tends to be more common in certain places, including:

- Africa
- Asia
- The Caribbean
- Central America
- South America
- Eastern Europe
- Southern Europe
- The Middle East.

The last confirmed human case of anthrax in Victoria occurred in February 2007.

Symptoms in humans

Symptoms of anthrax in humans depend on how the disease was contracted and include:

- Skin lesions
- Fever
- General malaise
- Headache
- Gastrointestinal upsets, such as vomiting
- Cough
- Flu-like symptoms
- Chest pain
- Joint pains.

Different types of anthrax infection

Anthrax can target various body parts, including:

- **Cutaneous anthrax** – skin is the most commonly affected body part, occurring in about 95 per cent of cases. The bacteria enter the body via a cut or graze. The skin becomes itchy then develops a sore that turns into a blister. The blister (vesicle) may break and bleed. Within two to seven days, the broken blister becomes a sunken, dark-coloured or black scab which is usually painless. Without treatment, the infection can spread to the lymph nodes or blood (septicaemia). Death is rare with the right antibiotic treatment. The mortality rate from untreated cutaneous anthrax is 5–20 per cent.
- **Pulmonary anthrax** – a rare lung infection that can occur when bacterial spores are inhaled. At first, the infection seems like a mild upper respiratory tract infection, such as a cold or flu. The person's health rapidly deteriorates over the next few days with severe breathing problems and shock. Without treatment, the mortality rate is 70 to 80 per cent. In many cases, pulmonary anthrax is fatal even when treated.
- **Intestinal anthrax** – very rare in developed countries. It occurs if a person eats the undercooked meat of an infected animal, usually one that has died in the field. Early symptoms include nausea, vomiting, vomiting blood, diarrhoea and high temperature. If the infection spreads to the blood (septicaemia), the death rate is between 25 and 60 per cent.

A person with anthrax is not considered contagious

Direct person-to-person spread of anthrax is extremely unlikely to occur. However, the infected person is usually isolated in hospital as a precaution while they undergo treatment.

Contagiousness is not a concern in caring for or visiting people with pulmonary anthrax. Second attacks can occur but are very rare. Recovery is usually followed by prolonged immunity to the condition.

Diagnosis methods

Anthrax is diagnosed using a number of tests, including:

- Skin tests
- Blood tests
- Chest x-rays
- Spinal tap (lumbar puncture) of the cerebrospinal fluid.

Treatment options

Treatment for anthrax must be commenced urgently. This includes antibiotics and hospitalisation in intensive care.

The antibiotics ciprofloxacin, doxycycline and amoxycillin are all possible treatments. Amoxycillin is particularly used for children.

Eliminating anthrax from the environment

The Department of Health works closely with the Department of Primary Industries to investigate anthrax cases.

Once a person has been diagnosed with anthrax, it is important to find and isolate the source of infection. Some strategies include:

- Inform the Department of Primary Industry of the case.
- Treat symptomatic animals with antibiotics.
- Vaccinate all animals that are at risk and re-immunise annually.
- Deeply bury animal carcasses with quicklime at the site of death, if possible, or cremate. Do not perform an autopsy. Do not burn in an open field.

- Decontaminate soil on infected farms with five per cent formalin.
- Seize suspected animal products.
- Incinerate infected animal products.
- Use formaldehyde to disinfect contaminated premises and machinery.
- Sterilise imported bonemeal before use as animal feed.
- Sterilise wool, hair, hides and other infected products by ethylene oxide gas or ionising (gamma) radiation.

Anthrax and bioterrorism

If one or more people have been infected with anthrax with no evidence of exposure to infected animals or their products, a deliberate release of anthrax organisms must be considered as a possible source.

The risk of bioterrorism is low

In 2001, 22 human cases of anthrax were identified in the United States after the intentional release of highly refined anthrax spores via a number of postal items mailed from Trenton, New Jersey.

At the time, no mail transmission occurred elsewhere in the world. Since that time, no mail transmission of anthrax has occurred in the United States or elsewhere in the world.

In Australia, in the months following these events, there were many thousands of incidents related to intentional or inadvertent exposure to powders considered 'suspicious'. None of these incidents were shown to involve anthrax.

The use of anthrax as a bioterrorism agent remains a hypothetical risk. However the likelihood that an individual or terrorist group could prepare and disseminate anthrax in Australia is considered low.

Vaccination

The USA manufactures a vaccine for anthrax, but this is not registered in Australia. The vaccine can, however, be imported by special arrangement when it is needed.

The vaccination involves six doses, three given two weeks apart followed by three additional injections given at six, 12 and 18 months after the first dose. An annual booster is required to maintain ongoing immunity.

Where to get help

- Your doctor
- Department of Health, Communicable Diseases and Prevention Unit Tel. 1300 651 160
- Department of Primary Industries (DPI) Tel. 136 186

Things to remember

- Anthrax is a rare and potentially fatal bacterial disease that most commonly affects the skin.
- Anthrax tends to affect hooved animals and humans are occasionally infected.
- Treatment options include antibiotics and hospitalisation in intensive care.

This page has been produced in consultation with, and approved by:

Department of Health - Communicable Disease Prevention and Control Unit

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