

Anthrax

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WHAT IS ANTHRAX?

Anthrax is an infectious bacterial disease, caused by the spore-forming bacteria *Bacillus anthracis*.

Anthrax has been recognised in Australia as a cause of sudden death in farm animals, particularly sheep and cattle for more than 150 years. Anthrax was probably introduced into Australia in the early 1880s by contaminated fertiliser imported from the Indian sub-continent.

Prior to the availability of an effective vaccine, anthrax was a major cause of mortalities in sheep and cattle. It was widely spread across pastoral areas by travelling livestock.

HOW IS ANTHRAX SPREAD?

Spores of the anthrax bacteria, *Bacillus anthracis*, can lie dormant in the soil for decades and are capable of infecting animals which graze on contaminated areas.

Anthrax is known to occur intermittently in grazing livestock and there have been sporadic cases in Victoria, New South Wales and Queensland in recent decades. In Victoria, most of these cases have been in northern parts of the state and involved cattle and sheep, although other species are also at risk. Usually only a small number of deaths occur on each affected farm.

Once a case of anthrax has occurred, further animals may also become infected by sniffing or licking a recent anthrax-infected carcass. Movement of an animal that has been exposed but is not yet sick (incubating anthrax) can also spread anthrax to new properties, paddocks and areas.

Anthrax can occur at any time of the year. Over the past few decades, it has occurred most during the summer months in Victoria.

In Australia, good food safety standards ensure that meat, milk and other animal products are safe to consume if cooked and handled appropriately.

WHICH SPECIES ARE AFFECTED?

Anthrax can affect humans and a wide range of animals. However, nearly all cases in Victoria have been seen in livestock, particularly cattle and sheep.

Different species of animals can be more or less susceptible to anthrax than others. Herbivores (including cattle, sheep, goats, horses, alpacas and llamas) are the most susceptible, while pigs and carnivores (including dogs) are less susceptible.

CAN ANTHRAX SPREAD TO HUMANS?

Yes, however very few human cases of anthrax have been reported in Victoria. The greatest risk is to those who handle dead livestock such as farmers, veterinarians and knackery workers.

People can become infected with anthrax via:

- the skin (usually occupational exposure from handling and processing infected carcasses and animal products),
- the lungs (from breathing in anthrax spores),
- the gastrointestinal tract (from eating contaminated, undercooked food typically meat from animals that have died from anthrax).

This risk is greatly reduced in at-risk occupations by use of personal protective equipment (PPE) such as appropriate clothing and gloves, covering of any wounds and other good hygiene practices.

The last documented case of human anthrax in Victoria was in 2007 in a knackery worker who had contact with an infected carcass. They became infected through bacteria entering via the skin, received treatment and subsequently recovered.

WHAT ARE THE HUMAN SYMPTOMS OF ANTHRAX?

The symptoms of anthrax vary and include:

- **Cutaneous anthrax** – the most common form of anthrax infection is skin lesions, occurring in approximately 95 per cent of cases. The bacteria enters the body via a cut or graze. The skin becomes itchy then develops a sore that turns into a blister. The blister may break and within 2-7 days it becomes a sunken, dark-coloured scab, which is usually painless. Without treatment, the infection can spread to the lymph nodes or blood (causing infection called septicaemia). Death is rare if antibiotic treatment is given promptly.

- **Gastrointestinal anthrax** – this form of anthrax infection is very rare in developed countries such as Australia. Gastrointestinal symptoms and/or throat swelling and pain may be followed by fever, septicaemia and death. Without prompt and appropriate treatment up to 75% of people with gastrointestinal anthrax may die. Gastrointestinal anthrax is usually seen when people eat meat from animals that have died of anthrax.
- **Pulmonary anthrax** – this is the rarest form of anthrax infection which causes lung infection after inhalation of bacterial spores. Initial symptoms may be mild or non-specific, progressing (within days) to serious respiratory symptoms. Without prompt and appropriate treatment, up to 100% of people with pulmonary anthrax may die. Pulmonary anthrax is usually seen in industrial (factory) situations such as workers processing animal hides and other animal products. The risk of developing pulmonary anthrax from inhaling dust on affected farms is very low.

Rarely the lungs or gastrointestinal tract are involved and these cases are far more serious and are often fatal.

I THINK I HAVE ANTHRAX - WHAT SHOULD I DO?

If you suspect you have been exposed to blood or fluids from an anthrax infected carcass, you should wash the affected area with soap and water and immediately seek medical advice.

All individuals exposed to carcasses of infected animals who have not used Personal Protective Equipment (PPE), as per *How can I reduce the risk of Exposure?* below, should be alert for symptoms including new respiratory symptoms, muscle aches, fevers or skin changes, especially on exposed areas.

If any of these symptoms occur, the individual should seek medical attention.

All incidents must be reported to your organisation's management, Victorian health agencies and Agriculture Victoria.

Department of Health (Victoria) can be contacted on 1300 651 160 for queries on human health conditions including anthrax.

WHAT ARE THE CLINICAL SIGNS OF ANTHRAX IN ANIMALS?

Cattle, sheep and other grazing animals with anthrax usually die suddenly. Just prior to death, animals may show signs of high fever. Blood may be present around the nose, mouth and anus of carcasses. However, in many cases you may not see any signs. Therefore, it should not be relied upon to diagnose anthrax. If livestock die suddenly, even when there is no history of anthrax on the property, anthrax could potentially be the cause.

Pigs are usually noticed to be off their food, with a high fever, swelling of the neck and face and sometimes bloodstained froth at the mouth. They can die within 12-18 hours of illness

and commonly die after 2-7 days. Young pigs may die suddenly.

WHAT TO DO IF I SUSPECT ANTHRAX?

Anthrax is a notifiable disease and any suspected or confirmed cases must be reported immediately to Agriculture Victoria on the **Emergency Animal Disease Watch Hotline 1800 675 888** (24/7) or to your local Agriculture Victoria Animal Health and Welfare staff.

Do not move the carcass. Cattle and sheep that die suddenly without any other obvious cause must be tested for anthrax before they are moved.

The carcass should remain undisturbed, unopened and protected from predation at the death site until anthrax is ruled out. This is critically important to prevent a large-scale anthrax incident.

Testing of carcasses before they are moved and speedy diagnosis of anthrax reduces the risk of human exposure and minimises contamination of the affected property and neighbouring and other properties if anthrax is subsequently confirmed.

WHAT IS THE RISK OF CONTRACTING ANTHRAX?

Anthrax in grazing livestock occurs sporadically. Seasonal conditions, property and area history of anthrax and soil disturbances all influence the occurrence of anthrax in livestock.

Farmers in anthrax-prone areas should contact their local Agriculture Victoria veterinary officer if they wish to undertake voluntary preventive vaccination of their livestock against anthrax.

The general public are not at risk when anthrax occurs in livestock due to Australia's high food safety standards and practices as well as the disease response and control measures implemented when anthrax is detected in livestock.

However, people working in occupations that involve handling dead livestock such as farmers, veterinarians and knackery workers may be at risk of contracting anthrax when anthrax occurs in livestock. This risk is greatly reduced by the using appropriate personal protective equipment (PPE) and implementing hygienic practices.

HOW CAN I REDUCE THE RISK OF EXPOSURE?

Appropriate use of Personal Protective Equipment (PPE) has proven to be highly effective against contracting anthrax. Practice good hygiene principles when wearing PPE;

- avoid touching your mouth, eyes and nose,
- cover any cuts or grazes with a water-resistant dressing under PPE (i.e. Band-Aid),
- do not eat or drink whilst wearing PPE,

- ensure it is removed safely and in the correct sequence, (seek guidance from the Site Supervisor)
- thoroughly wash hands and face after removing PPE & shower at the end of the shift before handling other animals.

PPE requirements will vary depending upon the level of risk associated with the task being completed.

When working on properties and in-contact with potentially infected animals or materials;

- Disposable overalls (ensure all skin is covered)
- Waterproof footwear, i.e. gumboots
- Gloves
- Properly fit-tested N95 (P2) mask (minimum)
- Eye protection
- Insect (fly) repellent must be worn

When working on properties without contact with potentially infected animals or materials;

- Waterproof footwear, i.e. gumboots
- Disposable overalls (ensure all skin is covered)
- Gloves
- Insect (fly) repellent must be worn

For persons involved in incineration/burning activities, PPE must include fire-grade footwear and clothing (instead of disposable overalls).

For persons involved in vaccination activities, care must be taken to avoid human exposure including self-inoculation and handling of items contaminated with vaccine. Accidental self-injection with anthrax vaccine can cause an inflammatory reaction and medical advice should be sought immediately if this occurs. Appropriate PPE must be worn.

When using disinfecting agents such as glutaraldehyde, persons should, as a minimum requirement, wear waterproof gumboots, heavy PVC waterproof gloves; disposable, chemical resistant overalls and a P3 rated facemask, (e.g. Sundstrom SR200 P3 respirator with appropriate filter).

Any additional recommendations or requirements will be provided by Agriculture Victoria based on a case-by-case assessment of the risk associated with the task being performed. Any concerns or questions whilst on property should be referred to Agriculture Victoria.

HOW CAN I REDUCE THE RISK OF SPREAD?

Good hygiene, appropriate use and decontamination of PPE and thoroughly washing/disinfecting yourself and any materials/vehicles before leaving an infected property will protect you from spreading anthrax to other people or animals.

If you have been working at an infected site or handling potentially infected animals, carcasses or other materials it is recommended you shower, wash footwear and launder all clothing before engaging with other people or handling your own animals. Any additional recommendations will be provided by Agriculture Victoria on a case-by-case basis.

WHAT IS THE GOVERNMENT'S RESPONSE TO ANTHRAX?

The government's response to anthrax in animals aims to quickly eradicate the disease to prevent spread through a combination of strategies including quarantine and movement controls on susceptible animals and vaccination of at-risk livestock.

Where a case of anthrax is suspected, movement of animals and animal products from the farm is suspended while anthrax testing is carried out.

Appropriate samples are collected and tested on farm using the hand-held immunochromatographic test (ICT) with results available within 15 minutes. Further confirmatory testing is usually undertaken at a laboratory, taking approximately 24 hours. This testing will be carried out at no cost to the farmer.

If the case occurs on a dairy farm, the dairy processor is advised. Relevant food safety and public health agencies are also routinely notified.

Where a case of anthrax is confirmed after veterinary examination of affected animals and laboratory testing of samples, the affected property is quarantined, potentially exposed stock are vaccinated, dead animals are safely disposed of (usually by burning) and contaminated sites disinfected.

Quarantine is not released until at least 20 days have passed since the last death from anthrax and at least 20 days have passed since the last round of vaccinations on the property, whichever is later.

Most incidents of anthrax involve single isolated cases, and quarantine and vaccination measures prevent further cases. Occasionally, larger-scale outbreaks occur in Victoria, such as those in 1997 and 2007. Vaccination across a wider area is usually required to control larger outbreaks.

FURTHER INFORMATION

- AUSVETPLAN - Anthrax Response Strategy <https://animalhealthaustralia.com.au/ausvetplan/>
- Department of Health Victoria 'Anthrax' <https://www.health.vic.gov.au/infectious-diseases/anthrax>
- Better Health Channel 'Anthrax' <https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/anthrax>
- Agriculture Victoria – Anthrax in animals <https://agriculture.vic.gov.au/biosecurity/animal-diseases/general-livestock-diseases/rabies-and-australian-bat-lyssavirus>

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