Glanders

General Disease Information Sheets

What is glanders?

Glanders is an infectious and life-threatening disease that mainly affects horses, donkeys or mules caused by the bacterium *Burkholderia mallei*. Glanders can be transmitted to humans. Susceptibility to glanders has also been demonstrated in camels, felines living in the wild, bears, wolves and dogs. Carnivores may become infected by eating infected meat. Guinea pigs and hamsters are highly susceptible. The infection is generally fatal.

The incubation period varies from a few days to many months depending on the intensity of exposure.

Glanders has been recognised since antiquity. Hippocrates considered it to be a serious disease of equidae. The disease principally affected the cavalry and was a major zoonotic threat for veterinarians and stable hands. The worldwide prevalence of glanders has been considerably reduced through the actions of the Veterinary Services and national control programmes.

Glanders is an OIE-listed disease as described in the *Terrestrial Animal Health Code* of the World Organisation for Animal Health (OIE). As indicated in the OIE *Terrestrial Animal Health Code* any occurrence of glanders must be notified to the OIE.

Where is the disease found?

The disease has been eradicated in North America, Australia and Europe through testing and then eliminating any infected animals, coupled with import control measures. However, glanders remains sporadically reported in a number of Asian, African, Middle Eastern, and South American countries. In April 2010, Bahrain notified the first occurrence of the disease; in Brazil, the disease reappeared in 2009.

How is the disease transmitted and spread?

The most common source of infection is ingestion of contaminated food or water. Contaminated aerosols (produced by coughing and sneezing), and contaminated fomites brought to the animals via grooming equipment and tack may also be a source of infection.

The bacteria can also enter the body through contact with lesions or abrasions of the skin or through mucosa. In this case, a local infection with ulceration may develop spreading to other parts of the body in the course of the disease.

Poor husbandry and feeding conditions as well as animal transport can be predisposing factors. Unsanitary conditions and over-crowded stables are risk factors.

What is the public health risk associated with this disease?

Glanders is a life-threatening zoonosis and no vaccines exist. It is a rare disease in humans with cases having occurred in veterinarians, other people working closely with horses, and laboratory workers. In addition to animals with clinical disease, asymptomatically infected animals pose a risk to humans. Humans are accidental hosts and human to human transmission is rare.

In humans the disease can take different forms such as: nasal, localized with nodules and abscesses, pulmonary, septicemia with disseminated or chronic infection, respectively. A cure is possible, however, if cases are treated rapidly with antibiotics; fatality rates for untreated infections are very high.

Infection can occur through direct contact with infected animals, their secretions, and through indirect contact with contaminated fomites, food, soil, and water.

Transmission to humans can be avoided by controlling the disease in animals, avoiding contact with infected animals, and by taking precautionary hygiene measures.

Potentially contaminated material should only be handled in a laboratory using appropriate biosafety and biosecurity measures, in accordance with the rules laid down in the OIE *Manual of Diagnostic Test and Vaccines for Terrestrial Animals*.

What are the clinical signs of the disease?

The disease causes nodules and ulcerations in the respiratory tract and lungs in animals. A skin form, known as‘farcy’, also occurs.

Both acute and chronic forms of the disease have been described. Acute forms occur most frequently in donkeys and mules, with high fever and respiratory signs. In horses, glanders generally takes a more chronic course and they may survive for several years.

There are four recognised clinical presentations of glanders:
- nasal,
- pulmonary,
- cutaneous,
- asymptomatic carrier.

These different forms of glanders are usually referred to according to the location of the initial infection. The nasal and pulmonary forms tend to be more acute while the cutaneous form is a chronic process.

Inflammatory nodules and ulcers develop in the nasal passages and give rise to a sticky yellow discharge. Stellate scarring follows upon healing of the ulcers. The formation of nodular abscesses in the lungs is accompanied by progressive debility, coughing and may also be accompanied by diarrhoea. In the cutaneous form (“farcy’), the lymph vessels are enlarged; nodular abscesses form along their course, which then ulcerate and discharge yellow pus. Nodules are regularly found in the liver and spleen, leading to wasting and death.

How is the disease diagnosed?

Clinical signs alone are not sufficient to obtain a final diagnosis, especially in the first stages of the disease.

To confirm the diagnosis, laboratory tests are required. The relevant OIE recommendations are contained in the OIE *Terrestrial Animal Health Code* and in the OIE *Manual of Diagnostic Tests and Vaccine for Terrestrial Animals*.

What can be done to prevent or control this disease?

To date, no treatment with veterinary drugs is capable to cure the infection. Control of glanders requires early detection and diagnostic testing of suspected clinical cases, screening of apparently normal equids, and elimination of positive cases.

For glanders-free countries, there are recommendations on importing equines. An international veterinary certificate is required attesting that the animals showed no clinical signs of glanders and were kept in an exporting country free of the disease for at least 6 months prior to shipment.

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In countries that are at risk or where the disease is endemic, control focuses on early detection, eliminating positive cases and preventing further spread with appropriate biosecurity. Vaccination and treatment of clinical cases in animals are not control options. Recommended control measures include:

- surveillance for glanders in susceptible animal populations with reporting of all suspected cases.
- identification and humane euthanasia of infected animals
- quarantine measures;
- cleaning and disinfection of infected farms;
- destruction by incineration of euthanized animals and any contaminated material;

In areas that are at risk or where the disease is endemic a strategy for surveillance and control of glanders must exist, supported by appropriate legislation. Cooperation of horse owners with veterinarians is essential for disease detection and control.

More Information?

References:

1. OIE *Terrestrial Animal Health Code:*
   www.oie.int/en/international-standard-setting/terrestrial-code/access-online/

2. OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animal:*
   www.oie.int/en/international-standard-setting/terrestrial-manual/access-online/

3. OIE Technical Disease Card:
   www.oie.int/en/animal-health-in-the-world/technical-disease-cards/

4. The Center for Food Security and Public Health, Iowa State University
   www.cfsph.iastate.edu/

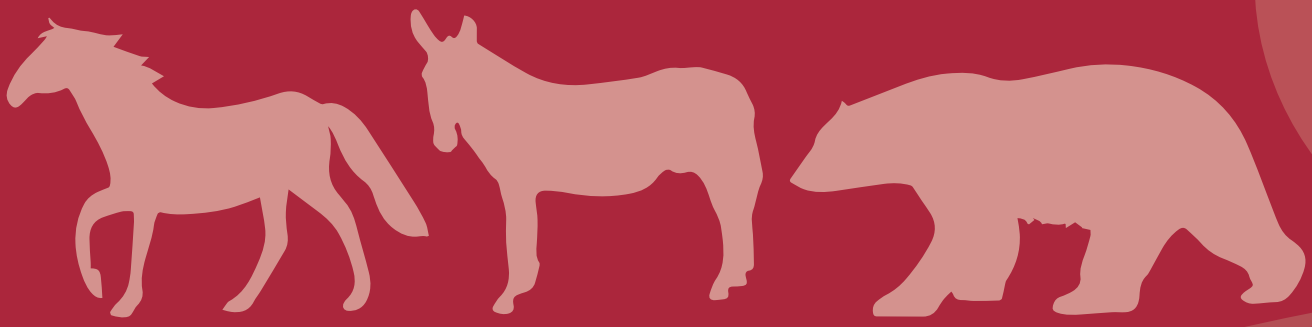
5. Merck Veterinary Manual:
   www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/toc_50000.htm

6. *Atlas of Transboundary Animal Diseases Animales Transfronterizas*
   P. Fernandez, W. White; Ed.: 2011

Ask our experts:

List of Reference Laboratories:
www.oie.int/en/our-scientific-expertise/reference-laboratories/list-of-laboratories/

List of Collaborating Centres:
www.oie.int/en/our-scientific-expertise/collaborating-centres/list-of-centres/



Key Facts

- The first recorded description of glanders was by Aristotle in the 3rd Century. In 1664, the disease was recognised as highly contagious. Its zoonotic potential was not reported until the beginning of the 19th Century. Glanders control programmes have been in place since the 20th Century.

- In 1934, glanders was officially eradicated in domestic animals in the United States of America. An isolated human case of glanders occurred in 2000 in a researcher at the United States Army Medical Research Institute (USAMRIID)

- Glanders was used as a biological weapon against animals in Europe, Russia, and the United States during the First World War. Its use as a biological weapon is now banned under the international Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction.

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