Rabies

General Disease Information Sheets

What is Rabies?

Rabies is a viral disease that affects the central nervous system of warm-blooded animals, including humans. The disease has a long incubation period (six months) and symptoms may take several weeks to appear after infection. However, once symptoms appear, rabies is always fatal in animals.

The rabies virus is a lyssavirus, a group of viruses responsible for causing encephalitis that also includes several recently identified bat lyssaviruses. Lyssaviruses belong to the family Rhabdoviridae. The name *Rhabdo* comes from the Greek and identifies the characteristic bullet or rod-shape of the viruses. There are several strains of the classic rabies virus that are each generally confined to a major species as reservoir.

Rabies has been recognized for centuries. It wasn't until the 1880's when work done by Louis Pasteur identified a virus as the cause of the disease.

Rabies is a disease listed in the World Organization for Animal Health (OIE) *Terrestrial Animal Health Code* and must be reported to the OIE (OIE *Terrestrial Animal Health Code*).

Where is the disease found?

The rabies virus is present on all continents except Antarctica. Some countries have implemented vigilant control measures and succeeded in eradicating the disease to meet the OIE requirements for rabies free status. However, in some countries, the disease remains endemic with rabies present mainly in wild animal hosts. Although the infection of domestic livestock could have economic consequences in some countries, it is the occurrence of rabies in domestic dogs posing a threat to humans that is of major concern in several developing and in-transition countries.

How is the disease transmitted and spread?

Rabies is transmitted through the saliva of an infected animal. Infection occurs primarily via bite wounds, or infected saliva entering an open cut or wound or mucous membrane, such as those in the mouth, nasal cavity or eyes. Infection through inhalation of the virus has been documented, for example, in the environment of a densely populated bat cave.

The virus will generally remain at the entry site for a period of time before travelling along the nerves to the brain. In the brain, the virus multiplies quickly, resulting in clinical signs. The virus then moves from the brain along nerves to the salivary glands. The period of time before clinical signs appear in an infected animal can vary depending on the strain of virus and entry point. It is thus important to realise that the disease can be transmitted via the saliva of an infected animal to other animals and humans before the onset of clinical signs of the disease in the infected animal.

What is the public health risk associated with this disease?

Rabies is regarded as one of the most important zoonotic diseases in the world (a disease which primarily affects animals, but can cause disease in humans).

Any encounter with a domestic or wild animal where a bite is received must be investigated. Rabid wild animals lose their natural fear of humans, increasing the risk of encounter. Clinical signs in animals such as excessive salivation, choking or gagging can lead humans to unknowingly risk infection while examining inside the mouth of dogs and livestock searching for a foreign body or attempting to administer medication with bare hands.

It is important to immediately wash any bite wound or exposed surface with soap and water and report the incident to a doctor or hospital emergency department. The risk of rabies transmission must be evaluated based on the nature of the encounter, species of animal involved, prevalence of rabies in the area, and evaluation of the vaccination and clinical status of the animal and its availability for diagnostic testing.

Occupational groups regularly in contact with animals for example, veterinarians, animal control and wildlife officers should obtain protection through pre-exposure vaccination. Abattoir personnel, particularly in endemic areas, must take preventive actions to prevent infection from saliva, salivary gland and nervous tissue of infected animals. Infection does not occur by consumption of meat from a rabid animal.

What are the clinical signs of the disease?

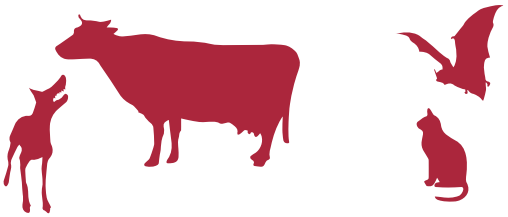
Clinical signs of rabies in animals will vary depending on the effect of the virus on the brain. Typical signs include sudden behavioural changes and progressive paralysis leading to death. In some cases, however, an animal may die rapidly without demonstrating significant clinical signs.

Furious rabies: Animals may be anxious, highly excitable and/or aggressive with intermittent periods of depression. With the loss of natural caution and fear of other animals and humans, animals with this form of rabies may demonstrate sudden behaviour changes, and attack without provocation. As the disease progresses, muscular weakness, incoordination and seizures are common. Death results from progressive paralysis.

Dumb Rabies: Animals with this form of rabies may be depressed or unusually docile. The animal will often have paralysis, generally of the face, throat and neck, causing abnormal facial expressions, drooling and inability to swallow. Paralysis may affect the body, first affecting the hind legs. The paralysis progresses rapidly to the whole body with subsequent coma and death.

In humans, early signs can include fever or headache. As the disease progresses, symptoms may include confusion, depression, sleepiness, agitation or paralysis of the face, throat and neck. Death generally results from progressive paralysis.

Rabies



How is the disease diagnosed?

The disease may be suspected based on clinical signs, however, laboratory tests are required to confirm the diagnosis. Samples taken from dead animals must be sent to competent laboratories for diagnosis. OIE recommendations can be found in the OIE *Terrestrial Animal Health Code* and the OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*.

What is being done to prevent or control this disease?

Prevention and control measures

In countries where the disease is endemic, measures are implemented to address and reduce the risk of infection in susceptible populations (wildlife, stray and domestic animals) and create a buffer between the animal source of the disease and humans.

- Surveillance and reporting of suspected cases of rabies in animals
- Vaccination programs for domestic animals
- Research into disease dynamics, vaccines and effective delivery mechanisms for target populations
- Wildlife rabies control programs including vaccination (trap/vaccinate/release or delivery of oral vaccines)
- Population control and vaccination programs for stray animal populations.

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. OIE web portal on Rabies:
   www.oie.int/en/animal-health-in-the-world/rabies-portal/

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

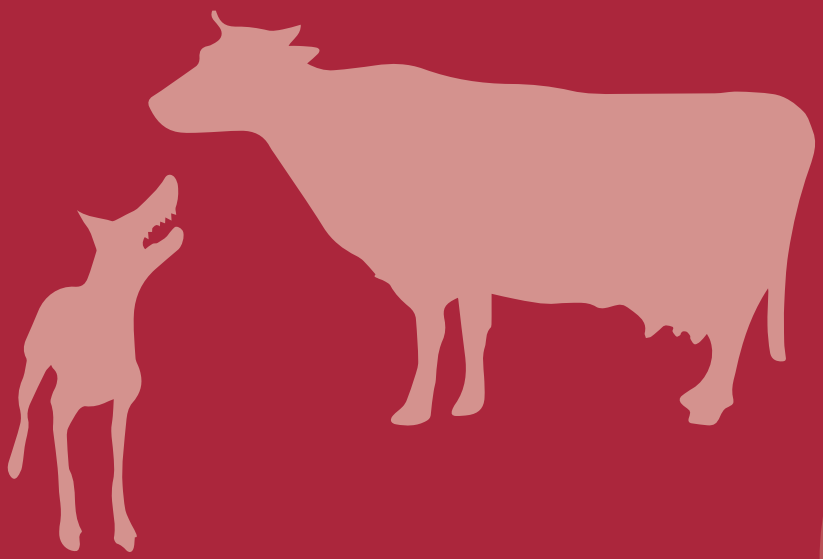
6. Merck Veterinary Manual:
   www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/toc_50000.htm

7. *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

- **European countries implementing effective wildlife rabies control programs that include oral vaccination campaigns have successfully eliminated the disease in wildlife (Switzerland 1999; France 2000; Belgium and Luxembourg 2001; Czech Republic 2004).**
- **Population control and/or oral vaccination programmes for domestic and stray animals are being implemented in several developing countries where rabies is endemic.**
- **Eradication is underway in North American countries**

• 12, rue de prony • 75017 paris france
• tel. 33 (0)1 44 15 18 88 - fax 33 (0)1 42 67 09 87
• www.oie.int • oie@oie.int