



**WORLD ORGANISATION FOR ANIMAL HEALTH**  
*Protecting animals, preserving our future*

## **Frequently Asked Questions on rabies**

Last update: July 2020

### **Key figures**

- Rabies kills around **59,000 people** a year, mainly children in rural areas
- Around **99%** of human cases are caused by bites from infected dogs
- Vaccinating **70%** of dogs allows rabies to be eradicated from a given endemic area
- **25.3 million anti-rabies vaccines** have already been delivered by the OIE mainly to countries in Asia and Africa (July 2020).

## **THE DISEASE**

### **1. What is rabies?**

Rabies is a **viral** disease that affects the **central nervous system** of **mammals**, including humans. The virus is present in the saliva and brain of infected animals. It is generally transmitted by the bite of diseased animals – most commonly dogs and other carnivores. Bats also represent an important reservoir in certain regions. The incubation period is variable, from several weeks to several months, but **once the symptoms appear**, the disease is **fatal**, in animals as well as in humans.

### **2. What is rabies virus?**

Rabies virus belongs to the genus *Lyssavirus*, a group of viruses responsible for causing encephalitis. Twelve distinct lyssavirus species can be distinguished within the genus, being the classical rabies virus (RABV) the most important one for public and animal health. The different RABV variants circulate in carnivores, most commonly domestic dogs and cats and, depending on the continent, various other species of carnivores (foxes, jackals, etc.) or chiroptera (bats).

### **3. Where is the disease found?**

Classical rabies virus is found throughout the world. Some countries have implemented stringent sanitary measures and have succeeded in eradicating the disease and self-declare freedom from dog-mediated rabies. In other countries the disease remains endemic with rabies present in dogs and/or in wildlife.

#### **4. What is the extent of rabies worldwide?**

Every nine minutes someone dies from rabies. Each year, rabies kills around **59,000 people** worldwide: it especially affects children in developing countries, with Africa and Asia being the worst hit. In countries where people are still dying from the disease, **dogs** are the **main reservoir of rabies**. Controlling the disease in dogs, and especially stray dogs, must therefore be the first priority to prevent lethal cases in humans.

#### **5. How is rabies transmitted?**

Rabies virus is transmitted through the **saliva** of an infected animal. Infection occurs primarily *via* bite wounds: Around **99%** of human cases are due to **bites by infected dogs**.

#### **6. How does rabies virus spread within the body?**

The virus will generally remain at the entry site in the body for a period of time before travelling along the **nerves** to the **brain where it** multiplies. The virus then moves along nerves to the **salivary glands**.

#### **7. What is the incubation period for rabies?**

The period of time before clinical signs appear in an infected animal can vary **from several days to several months** depending on the strain of virus, the species, the individual and the point of entry in the body. The disease can therefore be **transmitted** to other animals and humans via the saliva of an infected animal, sometimes **even before the onset of clinical signs in the infected animal**, constituting an insidious threat to anyone coming into contact with the animal.

#### **8. What are the clinical signs of rabies in animals?**

The clinical signs of rabies will vary depending on the effect of the virus on the brain. In its **classical form**, the disease is expressed by sudden **behavioural changes**: infected animals, especially wild animals, can lose their natural fear of other animals and humans, **allowing them to come into unusually close proximity and contact**,

**especially in the case of humans.** As the disease evolves, it causes cerebral dysfunction, cranial nerve dysfunction, ataxia, weakness, progressive paralysis, seizures, difficulty breathing and **swallowing, as well as excessive salivation. Aggressive behaviours and self-mutilation can also be observed. The disease progressively leads to death.**

In some cases, however, the behavioural changes are minimal, and the animal may die rapidly without showing significant clinical signs.

#### **9. How is rabies diagnosed?**

The disease may be suspected based on clinical signs but laboratory tests are needed 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 [\*Manual of Diagnostic Tests and Vaccines for Terrestrial Animals\*](#).

#### **10. What should you do in case of a bite by an animal, whether wild or domestic?**

**Any bite** by a domestic or wild animal must be **investigated**. The incident must be reported to a veterinarian, who will then take the appropriate measures. The bitten person must consult quickly a medical doctor.

## **THE OIE' S STRATEGY IN THE FIGHT AGAINST RABIES**

#### **11. What are the public health risks associated with this disease?**

Rabies is regarded as one of the world' s **most important zoonoses** (diseases that are naturally transmissible from animals to humans). The **occurrence of rabies in domestic dogs** poses a threat to humans and this is still a major concern in many developing countries. The disease can sometimes have economic consequences in some countries when it affects livestock (cattle, horses, small ruminants, etc.).

#### **12. Must cases of rabies be notified to the OIE?**

Rabies is on the list of animal diseases in the OIE [\*Terrestrial Animal Health Code\*](#). It is therefore compulsorily notifiable to the OIE by the veterinary authorities of the Members concerned, under the responsibility of the country' s Delegate to the OIE. At the same time, countries may also voluntarily publish [self-declaration](#) for rabies-free status.

### **13. What are the OIE' s aims regarding rabies control?**

The OIE' s aims are not only to encourage **transparency** in notification of the disease by its Members but to encourage governments to invest in **priority control programmes** such as rabies prevention, in particular through vaccination of dogs, the main source of the disease for humans.

### **14. What are the prevention and control measures for rabies?**

In countries where the disease is endemic, measures are implemented to address and reduce the risk of infection in **animal populations susceptible to the disease** (wildlife, stray animals, and domestic animals under their owner' s control) and create a buffer between the animal source of the disease and humans. These measures include:

- public awareness and education campaigns (for the general public, for dog owners and children);
- surveillance and reporting of suspected cases of rabies in susceptible animals;
- research into disease dynamics, suitable vaccines and vaccine delivery mechanisms for target populations;
- vaccination programmes for domestic animals, especially dogs, mainly by injectable route;
- vaccination programmes for wild animals (usually by distributing vaccine baits in the natural environment);
- stray animal population control programmes, where feasible.

Rabies control programmes are a major challenge for many countries. Nevertheless, the cost of vaccinating dogs remains minimal compared to the actual cost of emergency post-exposure prophylaxis for people who have been bitten. Indeed, 10% of the overall cost of these treatments would be sufficient to considerably reduce or even eliminate canine rabies. (See also Question 17)

Occupational groups regularly in contact with animals, such as veterinarians and animal control and wildlife officers, must take measures to prevent infection from saliva, salivary glands and nervous tissue of infected animals, and they should in certain cases obtain protection through pre-exposure vaccination. In the event of a person being bitten by a domestic or wild carnivore it will be necessary to urgently seek for physician and veterinary advice. Further details could be found on the [WHO website](#). Vaccination of humans is also advisable.

### **15. What is the purpose of rabies vaccination programmes?**

Vaccination of dogs is the preferred method of controlling and eliminating rabies worldwide. For epidemiological, ethical, and economic reasons, the culling of animals that are potential reservoirs cannot be considered as the first priority for control and eradication of rabies. All successful rabies eradication campaigns have included measures combining control and vaccination of stray dog populations and vaccination of all owned dogs.

Vaccination campaigns are set up with the aim of achieving coverage of around **70%** of the canine population in a zone where rabies is endemic as it disrupts the rabies transmission cycle.

In wild animals, oral immunisation using vaccine-containing baits has produced excellent results in some animal species (fox, raccoon, skunk, etc.) and has proved an effective solution to control, for instance, or even eradicate rabies in foxes in Western Europe. However, the cost is high.

### **16. What is the OIE doing?**

The OIE develops science-based standards, guidelines, and recommendations to control the disease in animals and prevent its spread. The Organisation also publishes standards on diagnosis of the disease and the production of high-quality veterinary vaccines and on stray dog population control.

The OIE's standards relating to rabies are regularly revised, with the emphasis on the epidemiological importance of the animal species most frequently linked to human cases (generally dogs).

The OIE is working in partnership with WHO and FAO to minimise the health, social and economic impact of rabies by coordinating activities worldwide.

The OIE has established a Vaccine Bank for dog vaccination against rabies and provides, when requested, technical support to its Members (See hereafter).

## **PROGRAMMES AND SUPPORTS from the OIE FOR RABIES CONTROL**

### **17. Do we have the means to eliminate canine rabies?**

Analysts have estimated that just 10% of the financial resources currently used for emergency treatment of people bitten by rabid dogs, within the context of post-exposure prophylaxis, would be sufficient to enable national Veterinary Services throughout the world to eradicate rabies at its source, rabid dogs, and so prevent almost all human cases worldwide (currently around 59,000 deaths per year).

### **18. What support can the OIE rely on in the fight against rabies?**

A rabies control strategy cannot be effective without the support of coordinated partners using the same strategies.

The OIE first of all relies on the Veterinary Services of its 182 Members.

In cooperation with the Food and Agriculture Organization of the United Nations (FAO), and the World Health Organization (WHO) the OIE has been developing for many years recommendations aimed at ensuring good intersectoral collaboration and worldwide implementation of the most appropriate strategies.

In response to an international call made in 2015 to set a goal of zero human dog-mediated rabies deaths worldwide by 2030, the World Health Organization (WHO), the World Organisation for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO), and the Global Alliance for Rabies Control (GARC) came together as the United Against Rabies (UAR) collaboration to achieve 'Zero by 30'. Read about this in [the Zero By 30 Global Strategic Plan](#), which puts countries at the centre of the plan, with renewed international support. It provides a harmonized and coherent foundation for rabies elimination that any country can adapt and use, and prioritises the societal changes that are needed to achieve Zero by 30. [The first annual report](#) describes great progress but also highlights the need to adapt and grow the approach in response to lessons learned.

OIE Members are themselves responsible for implementing the control methods advocated by the OIE, through their Veterinary Services, Public Health Services, local authorities, municipalities and police force. They can also receive support from Non-Governmental Organisations.

Since May 2019, OIE Standards on rabies include guidance for countries to apply, on a voluntary basis, for the endorsement of their national control programmes for dog-mediated rabies. [These guidelines](#) support countries to compile in a standard manner,

documented evidence that demonstrates compliance with the requirements described in the Terrestrial Code. The standard operating procedures for the official recognition of disease status / endorsement of national official control programme applications are available here. The first programmes are expected to be endorsed in 2021.

### **19. Who are the OIE' s experts?**

The OIE has twelve [Reference Laboratories](#) worldwide, designated for their scientific excellence in the field of rabies. The reference experts are responsible for the OIE' s and all its Members scientific matters falling within their remit. They are internationally renowned researchers who actively help their Reference Laboratories to provide technical and scientific assistance and give advice on rabies surveillance and diagnosis. They also offer scientific and technical training for OIE Members and coordinate scientific and technical studies in collaboration with other laboratories or organisations.

### **20. Does the OIE provide support for rabies vaccination?**

Support for developing countries is essential. With the financial support of the European Union, Australia, Germany, France, Canada and Japan, the OIE World Animal Health and Welfare Fund has already enabled various steps to be taken, such as the creation of an anti-rabies dog vaccine bank in 2012 and regular deliveries mainly to Asia' s and Africa' s poorest countries.

To date (July. 2020), 25.3million anti-rabies vaccines have been disseminated by the OIE. Of these, 7.7 million have been directly delivered by the OIE to countries to aid their national vaccination programmes. An additional 17.6 million doses have been ordered by countries or international organisations. In total, it represents 37 beneficiary countries which have received vaccine from the OIE Vaccine Bank.

In the framework of the Tripartite Alliance (WHO, OIE, FAO), WHO has decided to place its procurement orders for canine vaccines through the OIE Rabies Vaccine Bank. As of July 2020, 16.3million doses of rabies vaccines were purchased by WHO through the OIE Rabies Vaccine Bank for delivery to the Philippines, South Africa, Tanzania, Central African Republic and Pakistan.

This model guarantees the availability of high-quality vaccines complying with OIE intergovernmental Standards, their smooth delivery on the ground as well as a price obtained after a global competition between potential providers.

**For further information:**

- [Vaccine banks](#)
- [OIE rabies portal](#)
- [OIE \*Terrestrial Animal Health Code\*](#)
- [OIE \*Terrestrial Manual of Diagnostic Tests and Vaccines for Terrestrial Animals\*](#)
- [The Global Strategic plan against rabies "Zero by 2030"](#)