



# RABIES

## WHAT IS RABIES?

The rabies virus produces a potentially fatal infection which only affects mammals; it is present on all continents except Antarctica. The term 'rabies' refers to the disease caused by any known Lyssavirus species. Across the world, the animal responsible for most rabies transmissions to humans is the domestic dog.

While the most common way for humans to become infected with the rabies virus is through a bite, it can also occur through non-bite direct contact with the saliva or brain/nervous system tissue of an infected animal: this may be via a scratch if the animal had licked its claws, or from a lick to an open wound, or through contact with the mucous membranes of the mouth, nose or eyes.

The World Health Organization (WHO) has determined 3 categories of exposure:

- Category I touching or feeding animals, animal licks on intact skin (no exposure)
- Category II nibbling of uncovered skin, minor scratches or abrasions without bleeding (exposure)
- Category III single or multiple transdermal bites or scratches, contamination of mucous membrane or broken skin with saliva from animal licks, exposures due to direct contact with bats (severe exposure).

During exposure, the virus enters the body and attacks the nervous system, taking anywhere from a week to a year to produce symptoms (averaging 3 to 8 weeks). The timeframe can depend on the amount of virus inoculated, which Lyssavirus type, and also the part of the body affected i.e. how far from the brain and central nervous system the site of exposure was or whether the area had a high nerve density.

## WHAT ARE THE SYMPTOMS?

Early symptoms of rabies are often non-specific, such as headache, cough, fever, nausea, tiredness and pain, itching or tingling at the site of the healed bite wound. Later, a range of symptoms affecting the nervous system develop, including anxiety, confusion and agitation, followed sometime after by hallucinations, muscle spasms, insomnia and an inability to drink and swallow (hydrophobia), due to painful spasms of the swallowing muscles on exposure to water.. The final stages of the illness are characterised by paralysis, convulsions and coma. Rabies is almost always fatal and treatment is supportive – there is no cure.

Children are at highest risk of developing rabies – up to 40 percent of bites from potentially rabid animals occur in children under 15 years of age. The bites they receive are often in high risk parts of the body – the face, head and hands – and may not be reported, thereby missing out on the vital immediate after-care.

In developing countries, rabies is mainly transmitted by dogs, however any mammal with teeth (even the young i.e. puppies or kittens) theoretically can spread rabies – this is known as terrestrial rabies, from animals which mostly live on land. Bats are a major reservoir of the virus in many parts of the world, including Australia, and exposure to bats is considered high risk, with the potential for developing bat-mediated rabies.

Animal behaviour is NOT a reliable sign of whether an animal is rabid; an infected animal can appear normal.

## WHERE IS IT FOUND?

Lyssaviruses are found in most countries, however the vast majority of human infections of terrestrial rabies are reported in rural regions of Asia and Africa. While the rabies virus is also present in developed countries, including parts of Europe and North America, due to the high levels of immunisation the risk of infection is lower.

Australia, New Zealand, Japan, Papua New Guinea and Pacific island nations are currently free of terrestrial rabies,

however Australia's bat population has been found to carry the closely related Australian Bat Lyssavirus. To date in Australia there have been 3 fatalities from bat-mediated rabies.

A country's rabies-free status can change rapidly: this was the case in Bali in 2008 when an infected dog was transported to the island, seeding an outbreak which led to rabies cases and subsequent deaths in humans.

## RISK TO TRAVELLERS

Travellers to rabies-endemic countries should be aware of the risk and know that the best strategy to prevent rabies is to avoid contact with any animal. Pre-exposure vaccination is recommended for high-risk groups including animal handlers, veterinarians, naturalists, cave explorers, cyclists, and travellers to remote areas. People who will be travelling to, or living in, rabies-endemic areas should discuss with a health professional whether vaccinations should be considered, taking into account their likelihood of interacting with animals and access to emergency medical attention in that location.

It is felt that the smaller stature of children puts them at higher risk of being bitten and there is a further risk that, having been warned not to make contact with animals, they may not report minor bites, scratches or licks.

## WHAT IS RABIES VACCINATION?

Inactivated viral vaccine (Mérieux Inactivated Rabies Vaccine or MIRV / Rabipur / Verorab)

## SCHEDULE

*Schedule - Pre-exposure:*

Currently three doses at 0, 7 and 28 days

*Schedule - Post-exposure:*

The management of a rabies exposure in someone who has received the 3 pre-exposure vaccinations is to institute first aid (thorough cleansing of wound with soap and water for 15 minutes, then apply povidine iodine) and, as quickly as possible, seek medical assistance in getting 2 more doses of rabies vaccine - on days 0 and 3.

For those individuals who have not had the 3 pre-exposure doses, the necessary treatment is more complicated and may not be easily accessible: follow the above first aid protocols and seek immediate medical advice in order to obtain rabies immunoglobulin or RIG (passive protection injected around wound site) and commence the course of 4 rabies vaccines – on days 0, 3, 7 and 14. The RIG cannot be given if 7 or more days have lapsed since starting the post-exposure rabies vaccine course.

Other countries may also follow slightly different post-exposure schedules which are still acceptable to the World Health Organization, however it is recommended to contact your travel insurer and also make notes of all treatments received overseas including vaccine name, batch number and how many doses given, volume of RIG administered, route and dates of treatment, plus clinic contact details. Get in touch with your doctor on arrival in Australia to have your wound and treatment assessed. Caveat: The cell culture vaccines used in Australia and many overseas countries may not be available in all areas and so you may be faced with being administered outdated and non-WHO approved nerve tissue vaccines, potentially involving a course of daily injections of large volumes for up to 21 days. These vaccines may be ineffective or unsafe and should be rejected in favour of cell culture vaccines.

**Contraindications:** Rabies vaccines should not be administered to individuals who have previously experienced a serious reaction to these vaccines or those who are known to be hypersensitive to any of the vaccines' components.

## SCHEDULE (ACCELERATED)

*Pre-exposure only:*

If time does not permit a standard schedule, an accelerated schedule of Days 0, 7 and 21 is possible.

## LEVEL OF PROTECTION

Booster doses are not usually required except in the event of a future rabies exposure, where 2 additional doses should be given. Australian recommendations for those people who have been immunised and have on-going occupational exposure to lyssaviruses, is to test the level of rabies antibodies every 2 years and provide booster injections whenever antibody levels fall below 0.5IU/ml.

## POSSIBLE SIDE EFFECTS

Vary depending on vaccine prescribed.

Usually infrequent and mild:

Mild:

- Pain, redness, itchiness or skin hardening at injection site
- Fever and headache
- Allergic skin reactions
- Nausea, abdominal pain
- Muscle or joint aches and pains
- Swelling of lymph nodes
- Abnormal weakness, loss of feeling
- Dizziness

Rare:

Convulsions, Serum sickness-like reaction, anaphylaxis (very rare)

Australian Immunisation Handbook (online): <https://immunisationhandbook.health.gov.au/vaccine-preventable-diseases/rabies-and-other-lyssaviruses>

WHO Rabies factsheet: <https://www.who.int/news-room/fact-sheets/detail/rabies>

**More information on Rabies is available during your pre-travel consultation with Travelvax.  
Call 1300 360 164 for the location of the clinic nearest to you.**