

Rabies and Australian Bat Lyssavirus Infection

Lyssaviruses are a group of viruses that includes rabies and bat lyssavirus. Lyssavirus is carried by bats in Australia. Rabies is carried by mammals in many overseas countries. Both are spread by bites and scratches. These diseases can be prevented by rapid and thorough cleaning of the wound and by vaccination. There is no cure.

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What are rabies and Australian bat lyssavirus?

Rabies virus and Australian bat lyssavirus (ABLV) belong to a group of viruses called lyssaviruses. These viruses are usually transmitted via a bite from an infected ("rabid") animal. They all cause a similar illness known as rabies, which affects the central nervous system and is usually fatal. The World Health Organization estimates that more than 55 000 people die from rabies worldwide each year. Rabies virus does not currently occur in land dwelling animals in Australia. However, ABLV, which is closely related but not identical to rabies virus, does occur in Australia, and can be transmitted from bats to humans. Only three cases of human infection with ABLV have been recorded since the virus was first identified in 1996. All three cases were in Queensland and all died as a result of ABLV infection after being bitten or scratched by bats.

What are the symptoms?

Rabies and ABLV infection are thought to cause similar symptoms. The early symptoms are flu-like, including headache, fever and fatigue. The illness progresses rapidly to paralysis, delirium, convulsions and death, usually within a week or two. Rabies cases and the three known human cases of ABLV infection have shown a wide variability in the time it takes for symptoms to appear following exposure to an infected animal (from several days to several years).

How are they spread?

Both rabies and ABLV are spread from infected animals to people through bites or scratches, or by being exposed to infected animals' saliva through the eyes, nose or mouth. Only mammals can be infected. Overseas, dogs are the main transmitter of rabies. Other animals that transmit rabies overseas include bats, monkeys, foxes, cats, raccoons, skunks, jackals and mongooses.

In Australia, evidence of ABLV infection has been found in species of flying foxes/fruit bats and insect-eating microbats. **It is assumed that any bat in Australia could potentially carry ABLV.** The behaviour or appearance of a bat is not an accurate guide as to whether it is carrying the virus. The rabies and ABLV viruses are unlikely to survive outside the bat or animal for more than a few hours, especially in dry environments that are exposed to sunlight. Contact or exposures to bat faeces, urine or blood do not pose a risk of exposure to ABLV, nor do living, playing or walking near bat roosting areas, as long as bats are not handled. Apart from two horses, no wild or domestic animals in Australia have ever been found to be infected with ABLV.

Who is at risk?

People who handle bats in Australia are at risk of ABLV infection. People who come into contact with wild or domestic mammals in a rabies endemic country are at increased risk of rabies infection.

How is it prevented?

The best protection against being exposed to rabies or other lyssaviruses (including ABLV) is to avoid handling any bat in Australia or overseas, or any wild or domestic land dwelling mammal in a country where there is a rabies virus risk. This includes bats and wild or domestic dogs, cats and monkeys. Only people who have been vaccinated against rabies and who have been trained in handling bats should ever handle bats or flying foxes.

When a bat is injured or in distress, do not try to rescue it. Contact the experts at your local wildlife rescue group, which has trained staff who can deal with bats safely. Contact details can be found at <http://www.nwc.org.au/resources/injured-wildlife-find-your-nearest-rescue-group>, or download the IFAW Wildlife Rescue App from your app store. A private veterinarian may also be able to offer assistance and advice. Do not touch the bat and avoid direct contact with any bat saliva.

Rabies vaccine is used to protect against rabies and ABLV infection before a potential exposure. A course of three injections, given over one month, is recommended for people whose job or other activities place them at increased risk of being bitten or scratched by bats in Australia or mammals in rabies endemic countries. Periodic booster doses of vaccine may also be required. Rabies vaccination may also be recommended for people who travel to a rabies endemic country, depending on the circumstances (see below for specific advice for travellers).

Rabies infection may also be prevented following an exposure through proper wound care, and depending on the outcome a risk-assessment by a series of treatments known as post-exposure prophylaxis (PEP) or post-exposure treatment (PET) - see below for [advice on what to do if potentially exposed](#).

Is there any advice for travellers?

Rabies risks vary depending on where you are travelling and activities planned while abroad. The World Health Organisation (WHO) maintains [maps of rabies-endemic countries](#). Generally, the risk is highest in developing countries across Asia (including Bali), Africa and Central and South America; however, animals in most developed countries have the potential to be infected and spread rabies.

Regardless of your destination, you should take the following measures to reduce your and your family's risk of contracting rabies:

- **Talk to your doctor about pre-travel rabies vaccination at least 1 month before departure** (to allow enough time to receive a full vaccine course if required). Your doctor may recommend being vaccinated depending on the places you are planning to visit, your likelihood of interacting with animals, your access to emergency medical attention while abroad and your personal health circumstances.
- **Avoid contact with all wild and domestic animals** (especially dogs, cats, bats and monkeys), and take precautions to avoid being bitten or scratched, even if previously vaccinated:
 - Do not allowing young children to feed, pat or play with animals; their height makes them particularly vulnerable to high-risk bites to the face, head and neck
 - Avoid contact with stray dogs and cats, and remaining vigilant when walking, running, cycling, riding scooters or other activities that may provoke an animal to attack
 - Do not carrying food around monkeys and do not feed, pat or play with monkeys, even in popular tourist areas where travellers may be encouraged to interact with monkeys.

If bitten, scratched or exposed to an animals' saliva through your eyes or mouth while abroad, you should take immediate action to prevent infection (see below).

What should I do if bitten, scratched or exposed to a potentially rabid animal?

Even if previously vaccinated, if you are bitten or scratched by a bat anywhere or by a land dwelling mammal overseas, you should:

- **immediately wash the wound thoroughly with soap and water for at least five minutes** - proper cleansing of the wound reduces the risk of infection
- **apply an antiseptic with anti-virus action** such as povidone-iodine, iodine tincture, aqueous iodine solution or alcohol (ethanol) after washing
- **seek medical attention as soon as possible** to care for the wound and to assess whether you are at risk of infection

If you are at risk of infection, you may require treatment consisting of a combination of rabies immunoglobulin and rabies vaccine. If you have not been vaccinated previously, you will require an injection of rabies immunoglobulin as soon as possible and a series of either four or five rabies vaccine injections over one month. If you have been vaccinated before, you will require two further doses of vaccine. In NSW, Public Health Units will work with your doctor to assess your risk and where indicated, will arrange for rabies vaccines and immunoglobulin to be delivered to your GP or hospital.

If exposure occurs while abroad, wherever possible, you should seek treatment as soon as possible in that country. Rabies immunoglobulin may be difficult to obtain in some countries but vaccine is usually available. If you do receive treatment while abroad, you should ask for a post-exposure prophylaxis (PEP) certificate, and obtain the following details (preferably in English):

- the contact details for the clinic attended (telephone and email address)

- the batch and source of immunoglobulin (RIG) used (note: equine RIG rather than human RIG may be used in some countries)
- the volume of RIG administered
- the type of cell culture vaccine used
- the vaccine batch number
- the number of vials used
- the route of vaccine administration
- the date of RIG and/or vaccine administration.

Upon returning to Australia, you should see a doctor to reassess the risk and complete the course of treatment where required.

If the animal or bat can be observed or tested without placing other people at risk, health authorities may decide to delay your treatment for a short period of time. In Australia, testing of bats can be arranged by local Public Health Units. If it is found that the animal is not a rabies risk, the course of vaccinations will not be required and can be ceased.

How is it diagnosed?

Diagnosis of rabies and ABLV can be difficult and confirmation requires laboratory tests for the presence of the virus in skin, blood, spinal fluid and nervous tissue.

How is it treated?

There is no available treatment for rabies or ABLV once symptoms have started.

What is the public health response?

Doctors should contact their local public health unit for advice on people bitten or scratched by animals or bats that could transmit rabies or ABLV. Public health unit staff will help arrange vaccination following exposure and rabies immunoglobulin where required.

Hospitals and laboratories will notify cases of rabies and ABLV infection to the local public health unit. Public health unit staff will investigate the likely source and determine whether others may be at risk of infection.

Further information

For further information please call your local Public Health Unit on **1300 066 055** or visit the New South Wales Health website www.health.nsw.gov.au.

For information regarding domestic animals that have been exposed to sick bats, please visit the NSW Department of Primary Industries [website](#).