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RABIES

GENERAL INFORMATION

Rabies is a contagious and fatal viral infection. The infection is spread through the saliva of an infected mammal or an infected bat. The virus can enter the body through a bite, a scratch, or a lick on a mucous membrane. This can even happen during sleep due to a bat, since these bites are often difficult to see.

In countries where rabies is found, travellers are often bitten, scratched or licked by mammals, especially dogs but also cats and monkeys. Rabies causes an inflammation of the brain which is always fatal. Symptoms of the disease may occur after only 7 days, but also not until months later. A fatal course can only be prevented by immediate action after a possible infection (see below). Once symptoms of the disease are present, a fatal outcome is 100% certain. There is no treatment.

When traveling, do not pet any (tame) wild animals, stray animals and other non-trusted household pets. Also, do not touch dead animals. Children must be watched very closely.

It is important for every traveller to be informed about the true risk and to know what to do if bitten by an animal. However, the risk is low for the ordinary traveller, and preventive vaccination is not recommended.

RISK AREAS

Map: http://www.who.int/rabies/endemicity_dog_mediated_rabies_map_2016.jpg?ua=1

In North America and a part of Eastern Europe, rabies is found only in wild mammals and bats. In other regions, such as Western Europe, it is found only in bats.

On the Indian subcontinent, in Southeast Asia, Africa and parts of Latin America, rabies is also found in pets such as dogs. The risk for travellers is greatest in these countries.

PREVENTION

- Avoid any contact with wild mammals (including monkeys!) and bats. In countries where rabies is present, also avoid any contact with dogs and cats. This also applies for animals that appear healthy, since they can be infected before they show symptoms. Also, never touch a dead animal.

- Preventive vaccination is recommended for the following people:
 - People who stay for long periods in a high-risk region or in remote regions where prompt medical help is not available.
 - People who frequently travel to endemic regions.
 - Travellers who take a long bicycle tour or joggers in endemic regions.
 - Children who go to live with their parents in endemic regions.
 - People who run a high risk due to their occupation or activities, such as veterinarians, foresters, veterinary students, or volunteers who protect bats.
 - Military personnel who go on missions to endemic regions.
 - Laboratory technicians or experts who come into contact with the virus as part of their work (for example, laboratory work).

Vaccination

Today's **vaccine** is safe (produced in human cells or cell cultures – including Vero cells) and no longer has the dangerous side effects of earlier vaccines (prepared on brains of sheep or goats). It is used both for preventive vaccination and for vaccination after exposure (post-exposure prophylaxis or PEP). Preventive vaccination provides partial protection. Specifically, it 'primes' the immune system, thus making it 'boostable', but revaccination is necessary after every bite. In that case the number of vaccinations is lower than it would be without prior vaccination, and then rabies-specific immunoglobulins (RIG) are not needed. The vaccine can be administered intramuscularly or intradermally (off-label). These administration routes are equivalent according to the WHO. For intradermal vaccination, a number of technical rules must be followed (see <https://www.itg.be/Files/docs/Reisgeneeskunde/WHO-ID-rabies.pdf>).

The rabies vaccination is available in rabies centres. However, it is difficult to obtain through the patient's usual pharmacist (Rabipur - Novartis Pharma & rabies vaccine Mérieux HDCV - Sanofi Pasteur MSD). There are often shortages of this vaccine in Belgium.

a. Update of the preventive vaccination schedule (pre-exposure prophylaxis - PreP) beginning 1 May 2018

Schedule: 2 visits, on Days 0 and 7.

On 1 May 2018 the preventive vaccination schedule in Belgium was changed from 'Schedule: 1 inoculation during three visits on days 0, 7, 21 or 28' to a schedule with 2 visits, on day 0 and on day 7 (change made based on the new WHO guideline for rabies (April 2018)).

The rabies vaccine will be administered on days 0 and 7:

- Either as a **double intradermal dose (2 x 0.1 ml)** at two different injection sites (for example, in the anterior side of both forearms)
- Or as **1 dose (1 ml) intramuscular** in the deltoid muscle.

Once a person has received a complete basic vaccination of 2 inoculations, no additional recall inoculations are necessary for tourists and expats.

We advise that after two injections, a stamp should be placed in the vaccination card with the statement: *'Rabies PrEP completed, additional vaccines needed after risk'*.

Schedule: last-minute inoculation on Day 0 and later on Day X.

For last-minute travellers, an accelerated schedule can be used:

- Double intradermal dose (2 x 0.1 ml) on Day 0 + a double intradermal dose (2 x 0.1 ml) after returning to the country or on departure for the next trip
- 1 dose intramuscular (1 ml) on Day 0, and a second IM dose (1 ml) after returning to the country or on departure for the next trip.

Schedule: 3 inoculations in case of immunosuppression on Days 0, 7, 28.

The alternative intramuscular schedule over three visits on Days 0, 7 and 28 is reserved for people with reduced defences or receiving treatment with immunosuppressive medications. In this specific population, monitoring the antibody production seems useful.

Once a person has received a complete basic vaccination as part of travel medicine, no additional recall inoculations are necessary for tourists and expats. It is only necessary to check the antibody production in people with reduced defences or receiving treatment with immunosuppressive medications, and this can be performed by Sciensano (starting 10 days after the 3rd injection, preferably after 4- weeks).

For people who have an elevated risk of exposure due to their occupation (for example, veterinarian, bat researcher), different guidelines apply as part of the occupational health regulations.

b. What to do after a bite or other risk?

If during your travels you are bitten by a possibly infected animal (or were licked on the mucous membranes), follow the procedure below:

- Wash the wound well for 15 minutes with soap and water (the virus is highly sensitive to detergents).
- Then disinfect thoroughly with iodine (for example Iso-Betadine®) or ethanol 60-80 %
- Consult a doctor as soon as possible to decide on the post-exposure prophylaxis (PEP), even if you have had preventive vaccinations. You may need specific anti-rabies immunoglobulins (MARIG) and a series of rabies vaccinations, the first one of which must be given on the same day. Call the travel assistance insurance provider for advice on reliable medical facilities. After returning, you can visit your family doctor or a specialised clinic.

The decision on whether or not to vaccinate depends on:

- The country where you are when bitten (whether it is the country that the animal comes from or an imported animal)
- The animal with which you came into contact (a bat is always considered high-risk)
- The type of wound
- The patient's history

This procedure is described in detail in an instruction booklet that can be retrieved from the ITG [Institute of Tropical Medicine] web site after July 1, 2017:

https://www.itg.be/Files/docs/Reisgeneeskunde/PEP_Rabies_NL.pdf

Because of the high mortality rate associated with rabies, it is advisable in the case of any doubts about the indication, treatment and follow-up to get information from the ITG experts (<https://www.itg.be/E/contact>).

- This advice can preferably be obtained by mail (medsec@itg.be) from Monday to Friday during working hours.
- After office hours and over the weekend, contact the emergency service of the Hospital of the University of Antwerp (UZA) (where physicians from ITG and UZA maintain the Infectious Disease Monitoring Service) at 03 821 30 00.

Post-exposure prophylaxis (PEP) in a previously non-vaccinated person (no PrEP):

- Schedule with **4 vaccinations** on Day 0 (2x), Day 7 and Day 21 with a check of the antibody titre 10 days after the completion of the schedule (thus starting on Day 31).
- Schedule with **5 vaccinations** on Days 0, 3, 7, 14 and 28, with a check of the antibody titre 10 days after completion of the schedule (thus starting on Day 38). If the increase is sufficient, further vaccination is not necessary.

The schedule with five vaccinations is combined with **specific anti-rabies-immunoglobulins (MARIG) 20 UI/kg, 'antiserum'**, in and around the wound. Doses of 2 ml (300 UI) and 5 ml (750 UI) are available. The administration of these specific immunoglobulins no longer makes sense after the eighth day since starting the vaccination.

Post-exposure- prophylaxis (PEP) in a previously vaccinated person (PrEP)

- **2 vaccinations** on Day 0 and Day 3, each of 1 dose, no MARIG

Although it is strongly recommended that after a suspected exposure, vaccination should be started as soon as possible and preferably within 24 hours, it is even possible to start the inoculations after the trip (vaccination and/or immunoglobulins), since the incubation period is usually quite long.

The request for full reimbursement of the immunoglobulins and their administration may only be made by a physician associated with the ITG. The administration of PEP-rabies vaccine without immunoglobulins can be performed by any travel clinic or by the treating physician. The reimbursement for this rabies vaccine remains unchanged.

[The work of the National Reference Centre of the Belgian Institute of Public Health on analysing samples collected from humans \(mainly blood and/or cerebrospinal fluid\) or animals \(blood and brain\) with regard to rabies is not changing.](#)

The problem in developing countries lies mostly in the fact that sometimes only low-value vaccines (produced in animal brains) are available, and that the correct immunoglobulins are not in stock.

In the case of a suspect bite, one may also decide to return home immediately or to try to obtain the right vaccine and immunoglobulins through travel insurance.

Preventive vaccination is indicated for the following people:

- People who stay for long periods in a high-risk region or in remote regions where prompt medical help is not available.
- People who frequently travel to endemic regions.
- Travellers who take a long bicycle tour or joggers in endemic regions.
- Children who go to live with their parents in endemic regions.
- People who run a high risk due to their occupation or activities, such as veterinarians, foresters, veterinary students, or volunteers who protect bats.
- Military personnel who go on missions to endemic regions.
- Laboratory technicians or experts who come into contact with the virus as part of their work (for example, laboratory work).

Sources

- [Soentjens P. Recommendations on pre-exposure rabies vaccine schedules. Jan 2018](#)
- [Scientific Study Group on Travel Medicine. Summary of the Consensus Meeting Jan 2018](#)
- [Rabies PEP July 2017](#)
- [WHO Technical Report on Rabies April 2018](#)