

Rabies

Rabies is transmitted to humans usually by a bite or scratch from an infected animal (usually a dog) and almost always fatal once symptoms appear

Rabies is a virus carried in animal saliva that usually spreads to humans from a bite, scratch, lick to an open wound from an infected animal (typically a dog). It can also be a risk if an animal spits and saliva gets into the eyes, mouth or nose. The virus attacks the central nervous system, causing progressive damage to the brain and spinal cord. Once symptoms are present, rabies is almost always fatal.

Human rabies cases are often unreported, so it is difficult to give reliable information on how common it is worldwide. The disease is estimated to cause 59,000 human deaths annually. Rabies is rare in travellers with only 25 human deaths in the UK from imported rabies since 1946.

Although rabies cases are rare in travellers, animal bites and scratches are common. It is important that travellers visiting areas where rabies occurs are aware of the risk and know what to do if they are bitten or scratched or an animal spits in their face. Rabies is preventable if the correct post-exposure treatment (PET) is provided quickly. PET can be expensive and difficult to obtain in some areas.

Prevention

Contact with wild or domestic animals, including pets during travel should be avoided. Travellers should also be advised:

- Not to approach animals.
- Not to attempt to pick up an unusually tame animal or one that appears to be unwell.
- Not to attract stray animals by offering food or by being careless with litter.
- Be aware that certain activities may attract dogs (e.g. running, cycling).

The following advice can be given regarding first aid following a possible rabies exposure:

- Urgent action is required; treatment must be started as soon as possible after the exposure.
- Immediately wash the wound with detergent or soap and running water for several minutes.
- Apply a disinfectant to the wound such as 40-70 percent alcohol or iodine solution (tincture or aqueous solution of povidone-iodine).
- Apply a loose dressing over the wound.
- Get immediate medical advice about the need for PET and possible antibiotics to prevent a wound infection.
- Tetanus vaccine is needed if tetanus vaccines are not up to date.
- If the wound needs stitching (suturing) this must be postponed until PET has started.

Rabies vaccine

Individuals considered at risk of exposure to rabies viruses within the UK include:

- Laboratory workers routinely handling rabies virus.
- Workers at Defra-authorized quarantine premises and carriers.
- Bat handlers who regularly handle bats, including on a voluntary basis, in the UK.
- Veterinary and technical staff who may be at increased rabies risk.

Individuals considered at risk of exposure to rabies travelling outside the UK include:

- Animal workers who regularly travel to rabies enzootic areas.
- Travellers to rabies risk areas especially if:
 - Visiting areas where access to post-exposure treatment and medical care is limited.
 - Planning higher risk activities such as cycling and running.
 - Long-stay travellers (more than one month).
 - Health workers in rabies enzootic areas who may have direct contact with rabies infected patients.

See our [Country Information pages](#) to see individual recommendations for each destination.

A course of pre-exposure vaccines simplifies PET when this is required, two further rabies vaccines are given on days 0 and 3 - 7 after a possible rabies exposure. These vaccines should be obtained as soon as possible after the exposure. For individuals who have not had pre-exposure rabies, four doses of rabies vaccine are usually recommended over one month, plus rabies immunoglobulin may be recommended in the event of a high risk exposure. Immunoglobulin is in short supply worldwide, and may not be available in many countries.

Vaccine schedules

| Vaccine | Route of administration | Schedule | Pre-exposure recommendations** | Age range |
|------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rabies Vaccine BP (Human diploid cell vaccine) (HDVC) [discontinued] | Intra-muscular | 3 doses Day 0, 7 and 21 or 28* Rapid Regimen: 3 doses Day 0, 3, 7 and a further dose at 1 year | Primary course (3 doses of vaccine) Booster dose** | ***No minimum age stated in the Summary of Product Characteristics (SPC) |
| Rabipur (Purified chick embryo cell vaccine) (PCECV) | Intra-muscular | 3 doses Day 0, 7 and 21 or 28* Rapid Regimen: 3 doses Day 0, 3, 7 and a further dose at 1 year | Primary course (3 doses of vaccine***) Booster dose** | ***No minimum age stated in Summary of Product Characteristics (SPC) See Interrupted or accelerated course information below for further details |

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|-----------------------------------------------------|------|--------------------|-----------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------------|
| Verorab (Vero vaccine) (PVRV) | cell | Intra-muscular**** | 3 doses Day 0, 7 and 21 or 28**** | Primary course (3 doses of vaccine****) Booster dose** | ***No minimum age stated in Summary of Product Characteristics (SPC) |
|-----------------------------------------------------|------|--------------------|-----------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------------|

The Summary of Product Characteristics (SPC) should be consulted prior to the administration of any vaccine.

***A third dose can be given from day 21 if insufficient time before travel.**

****Routine booster doses are not recommended for most travellers.** [See Rabies. Chapter 27. Immunisation against infectious disease.](#)

*****Although the vaccine can be given at any age, the rapid regimen is 'off-license' in some age groups, see the Interrupted and Accelerated Courses information below. The risk of animal bites may be higher once the child is independently mobile. Children are often bitten around the face or head, a type of bite considered to be a higher risk due to the expected shorter incubation period.**

******Verorab and Rabipur have a UK license for a pre-exposure two dose regimen via intramuscular route (0.5mL) seven days apart. With Verorab this two-dose regimen is also licensed with the intradermal route (0.1mL). Guidance is awaited from UK Health Security Agency (UKHSA) and the Joint Committee on Vaccination and Immunisation (JCVI) on the use of this two-dose pre exposure vaccine regimen.**

Interrupted or accelerated courses

Ideally, those at risk should receive pre-exposure vaccination with three doses of rabies vaccine before travel. Where there is enough time to complete the 21-28-day course, this is the preferred schedule for pre-exposure prophylaxis.

Both the 0, 3, 7 and 365 (i.e. a fourth dose at 1 year) day schedule and the 0, 7 and 21 day schedule can be given using either product, where there is less than four weeks before departure. The 0,3,7 and 365 day schedule is 'off-license' in some age groups and with some vaccine brands but can be given according to Ch 27 immunisation against infectious disease 'Green book' guidance.

Further guidance on the two-dose regimen for Verorab and Rabipur is awaited from UKHSA.

A risk assessment should always be undertaken when considering rabies immunisation.

Resources

- More detailed information can be found in our [rabies factsheet](#)
- [UKHSA: Rabies: risk assessment, post-exposure treatment, management](#)
- [UKHSA: Rabies: summary of risk assessment and treatment](#)
- [UKHSA: Rabies post-exposure administration of vaccine and immunoglobulin](#)
- [UKHSA: Rabies and immunoglobulin service \(RIGS\)](#)
- [UKHSA: Rabies information for travellers](#)
- Further details on the vaccines can be found in the [SPC on the electronic medicines compendium](#)