Rabies

The disease

Rabies is an acute viral encephalomyelitis caused by members of the lyssavirus genus. The disease may be caused by rabies virus genotype 1 (classical rabies) or less commonly by rabies-related lyssaviruses. The presentations are clinically indistinguishable. Rabies-related lyssaviruses implicated in human disease include European bat lyssaviruses (EBLVs) and Australian bat lyssavirus (ABLV).

Infection is usually via the bite or scratch of a rabid animal, most frequently a dog. In some parts of the world, other animals such as bats, cats and monkeys are important sources of exposure. In parts of Europe (including the UK) EBLV-1 and EBLV-2 are found in insectivorous bats and have occasionally caused human disease.

On rare occasions, transmission of the virus has occurred through body fluids from an infectious animal coming into contact with an individual’s mucous membranes. Exposure through mucous membranes has a low probability of infection but must be managed as a significant event. Infection does not occur through intact skin. Virus is present in some tissues and fluids of humans with rabies, but person-to-person spread of the disease has not been documented other than in exceptional circumstances. Cases have occurred rarely outside the UK through corneal grafts and other transplanted tissues taken from individuals with rabies.

The incubation period is generally between three and 12 weeks, but may range from four days to 19 years. In more than 93% of patients, the onset is within one year of exposure. The onset of illness is insidious. Early symptoms may include paraesthesiae around the site of the wound, fever, headache and malaise. The disease may then present with hydrophobia, hallucinations and maniacal behaviour progressing to paralysis and coma, or as an ascending flaccid paralysis and sensory disturbance. Rabies is almost always fatal, death resulting from respiratory paralysis. There is no specific treatment other than supportive care once clinical symptoms develop.
History and epidemiology of the disease

Rabies in animals occurs in all continents except Antarctica, although individual countries and islands are reported to be rabies-free. In the US, classical rabies virus in animals has become more prevalent since the 1950s; skunks, raccoons and bats account for 85% of animal cases. In Asia, Africa, Central and South America, classical rabies virus (genotype 1) is endemic in feral dogs and is also present in domestic dogs. In Mexico and Central and South America, vampire bats carry the classical rabies virus. Most countries that are declared rabies-free probably have rabies-related viruses in their bat populations. In the UK, EBLV 2 has been detected in Daubenton’s bats (Defra, 2009). The virus has never been detected in the most common bat species, the pipistrelles, in the UK (Defra, 2009). In other parts of Europe and in Australia, other bat species have been affected.

During the twentieth century, rabies in wildlife has spread through parts of Central and Western Europe. Foxes have been the main host, but many other animals have also been infected, particularly dogs. The incidence of endemic, fox-adapted rabies in Western Europe fell dramatically in the last years of the twentieth century. This has been largely due to the vaccination of wild and domestic animals. Rabies continues to be reported in domestic animals imported from rabies endemic countries. Rabies remains prevalent in Eastern Europe and Turkey.

Worldwide more than 55,000 people die of rabies each year (WHO, 2010). Every year, more than 15 million people worldwide receive a post-exposure preventive regimen to avert the disease – this is estimated to prevent 327,000 rabies deaths annually (WHO, 2010). Most cases are in developing countries, particularly India (Plotkin et al., 2008). In the UK, deaths from classical rabies continue to occur in people infected abroad. Such instances are, however, rare, with 25 deaths having been reported since 1946, five of which have occurred since 2000 and the most recent was in 2012. None had received appropriate post-exposure prophylaxis. A considerable number of people present for medical advice on their return to the UK with a history of exposure to an animal abroad. In 2000, 295 such people received prophylaxis in England and Wales (Hossain et al., 2004). Since then the number of people requiring post-exposure prophylaxis in England and Wales has increased threefold, and is now almost 900 per year of which, 10% were potentially exposed to bats in the UK and 90% were potentially exposed overseas (HPA data, 2009).
No case of indigenous human rabies from animals other than bats has been reported in the UK since 1902. In 2002, a man died from rabies caused by EBLV-2 acquired in the UK from a bat (Fooks et al., 2003). Only three other human cases of EBLV infection (all fatal) have been reported in the past 30 years in Europe (Nathwani et al., 2003).

The rabies vaccination

There are currently two rabies vaccines licensed for intramuscular use in the UK:

- human diploid cell vaccine (HDCV) (Rabies Vaccine BP); and
- purified chick embryo cell rabies vaccine (PCEC) (Rabipur®).

Other WHO approved cell culture-derived vaccines are available in other countries.

The vaccines available in the UK are thiomersal-free. The vaccines are inactivated, do not contain live organisms and cannot cause the disease against which they protect.

HDCV is a freeze-dried suspension of Wistar rabies virus strain PM/WI 38 1503-3M cultured in human diploid cells and inactivated by betapropiolactone. The potency of the reconstituted vaccine is not less than 2.5 IU per 1.0ml dose. It contains traces of neomycin, and human albumin is used as an excipient.

The PCEC rabies vaccine is a freeze-dried suspension of the Flury LEP-25 rabies virus strain cultured in chick embryo cells and inactivated with betapropiolactone. The potency of the reconstituted vaccine is not less than 2.5 IU per 1.0ml dose. It contains traces of amphotericin B, chlortetracycline and neomycin.

The above rabies vaccines may be used interchangeably to provide protection pre- or post-exposure (Cabasso et al., 1974; Turner et al., 1982; Fekadu et al., 1988; Briggs et al., 1992; Strady et al., 1998; Strady et al., 2000). Intramuscular vaccination with tissue-culture vaccines reliably produces rabies virus neutralising titres in approximately 95% of recipients (Nicholson et al., 1987; Fishbein et al., 1989; Strady et al., 1998). In 95% of individuals, rabies titres are long-lived, particularly if the vaccine has been administered intramuscularly compared with intradermal vaccination (Fishbein et al., 1989; Briggs et al., 1992; Strady et al., 1998; Suwansrinon et al., 2006). Immunologically competent persons who have received a primary course of rabies vaccine have
a primed immune response, and will respond promptly once they receive a booster dose of vaccine (Rosanoff et al., 1979; Turner et al., 1982; Fishbein et al., 1986; Naraporn et al., 1999). Therefore, there is no need to perform serologic testing or routine boosting for individuals who are at infrequent risk of rabies infection (see recommendations for the use of rabies vaccine).

**Storage**

See chapter 3.

**Presentation**

**Rabies vaccine BP**

The vaccine is supplied as freeze-dried powder and solvent for suspension and for injection. The powder is pinkish beige to orangey yellow. The solvent is a clear, colourless solution. Following reconstitution with the solvent supplied, the suspension will be a pinkish colour and free from particles.

**Rabipur**

The vaccine is supplied as freeze-dried powder and solvent for suspension and for injection. The powder is white. The solvent is a clear, colourless solution. Following reconstitution with the solvent supplied, the suspension will be a clear-colourless solution and free from particles.

Both vaccines should be used immediately and no later than one hour after reconstitution with the solvent supplied.

**Dosage, schedule and administration**

For primary pre-exposure immunisation, three doses of 1.0ml (2.5 IU) of rabies vaccine should be given intramuscularly on days 0, 7 and 28. The third dose can be given from day 21 if there is insufficient time before travel.

**Administration**

Vaccines are routinely given intramuscularly into the upper arm or anterolateral thigh (Zuckerman, 2000). However, for individuals with a bleeding disorder, vaccines should be given by deep subcutaneous injection to reduce the risk of bleeding.

The Joint Committee on Vaccination and Immunisation recommends the intramuscular rather than the intradermal route for pre-exposure prophylaxis use of rabies vaccine. The committee also recommends that only the intramuscular
route (or deep subcutaneous route for those with bleeding disorders) is used for post-exposure prophylaxis.

Whilst the intramuscular route is preferred for pre-exposure prophylaxis, suitably qualified and experienced healthcare professionals may give the vaccine via the intradermal route. The ‘off label’ use of the intradermal route is on the prescriber’s own responsibility as this is not covered by the manufacturer's Product Licence. For pre-exposure intradermal immunisation, 0.1 ml (0.25 IU) of the vaccine can be used according to the schedule above. Intradermal immunisation is reliable only if the whole of the 0.1 ml dose is given properly into the dermis and should only be given by those experienced in the intradermal technique. It should not be used in those taking chloroquine for malaria prophylaxis as this drug suppresses the antibody response if the vaccine is given by the intradermal route (chloroquine does not suppress the antibody response if the vaccine is given by the intramuscular route). Whilst the use of the intradermal route potentially allows the contents of a vial of rabies vaccine to be shared amongst more than one individual, this practice is not recommended and carries the risks of contamination (see chapter 4).

Rabies vaccines can be given at the same time as other vaccines, including other travel vaccines. The vaccines should be given at separate sites, preferably in different limbs. If given in the same limb, they should be given at least 2.5cm apart (American Academy of Pediatrics, 2006). The site at which each vaccine was given should be noted in the individual’s records. The vaccinee must keep a record of the vaccine and regimen received as it will influence future post-exposure treatment (see table 27.1).

**Disposal**

See chapter 3.

**Rabies-specific immunoglobulin**

Human rabies immunoglobulin (HRIG) is obtained from the plasma of immunised and screened human donors. Because of a theoretical risk of transmission of vCJD from plasma products, HRIG used in the UK is now prepared from plasma sourced from outside the UK. All donors are screened for HIV and hepatitis B and C, and all plasma pools are tested for the presence of nucleic acid from these viruses. A solvent detergent inactivation step for envelope viruses is included in the intramuscular/sub-cutaneous products. HRIG is used after high risk exposure to rabies to give rapid protection until
rabies vaccine, which should be given at the same time at a separate site, becomes effective.

**Storage**

Human rabies immunoglobulin (HRIG) should be stored in a refrigerator between +2°C and +8°C. This product is tolerant to ambient temperatures for up to one week, and can be distributed in sturdy packaging outside the cold chain if needed.

**Administration**

When indicated for post-exposure prophylaxis (see below), HRIG 20 IU/kg body weight should be infiltrated in and around the cleansed wound. If infiltration of the whole volume is not possible or the wound is healed or not visible, any remaining HRIG should be given intramuscularly in the anterolateral thigh, remote from the vaccination site. If more than 2 ml is to be given to children, or more than 5 ml to adults, the HRIG should be divided into smaller amounts and given into different sites. If vaccine is given but HRIG treatment is delayed, HRIG can still be given up to seven days after starting the course of vaccine.

**Disposal**

HRIG is for single use and any unused solution should be disposed - see chapter 3.

**Recommendations for use of the vaccine**

**Pre-exposure (prophylactic) immunisation and reinforcing immunisations**

All individuals at continuous and frequent risk of exposure to rabies virus listed in Table 27.1 should be offered pre-exposure rabies immunisation according to the schedule listed under dosage, schedule and administration on page 5. Pre-exposure rabies immunisation is also recommended for people at infrequent risk listed in table 27.1.

The need for reinforcing (booster) doses of rabies vaccine should be determined by risk category and/or by serology for anti-rabies antibody, see Table 27.1.
Table 27.1 Pre-exposure (prophylactic) immunisation and reinforcing immunisations

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Groups at Risk</th>
<th>Pre-exposure Recommendations</th>
</tr>
</thead>
</table>
| Continuous    | ● Laboratory workers routinely working with rabies virus | ● Primary course (3 doses of vaccine)  
● Serology at 6 month intervals  
● Single booster if titre falls below 0.5 IU/ml |
| Frequent      | ● People who regularly handle bats  
● Persons who regularly handle imported animals, e.g.:  
  ○ at animal quarantine stations  
  ○ at zoos  
  ○ at animal research and acclimatisation centres  
  ○ at ports where contact with imported animals occurs, e.g. certain HM Revenue and Customs offices  
  ○ as carrying agents authorised to carry imported animals  
  ○ as veterinary and technical staff in animal health*  
● Animal control and wildlife workers, veterinary staff or zoologists who travel regularly in rabies enzootic areas | ● Primary course (3 doses of vaccine)  
● Booster dose at 1 year  
● Then booster doses every three to five years or based on results of serology** |
### Rabies

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Groups at Risk</th>
<th>Pre-exposure Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequent</td>
<td>Health workers in rabies enzootic areas who will be at risk of direct exposure to body fluids or tissue from a patient with confirmed or probable rabies</td>
<td>Primary course (3 doses of vaccine)</td>
</tr>
<tr>
<td></td>
<td>especially if post-exposure medical care and rabies biologics at the destination are lacking or in short supply</td>
<td>No serology</td>
</tr>
<tr>
<td></td>
<td>or they are undertaking higher risk activities such as cycling or running</td>
<td>Booster dose can be considered at 10 years post-primary course if travelling again to a high risk area</td>
</tr>
<tr>
<td></td>
<td>or they are living or staying for more than one month</td>
<td></td>
</tr>
</tbody>
</table>

* Veterinary and technical staff in the Department for Environment, Food and Rural Affairs, and its executive agencies Animal Health and the Veterinary Laboratories Agency; the Scottish Executive Environment and Rural Affairs Department; the Welsh Assembly Government Environment, Planning and Countryside Department; and the Northern Ireland Department of Agriculture and Rural Development.

** In Scotland, serology can be offered on the NHS to inform the need for boosting for any patient at frequent rabies exposure risk, if the cost of the test is not covered by an employer as an occupational health responsibility. For frequent exposure risk patients in England, Wales or Northern Ireland, NHS funded serology should be offered only for clinical needs, such as following a severe reaction to a previous rabies vaccine.

Individuals who are at continuous risk should have their antibody levels tested every six months. Reinforcing doses of vaccine should be given if serology indicates that antibody levels are below a protective antibody titre of at least 0.5 IU/ml (WHO 2010).

For those at frequent risk, a single reinforcing dose of vaccine should be given one year after the primary course has been completed. Further booster doses
should then be given at three to five years, or guided by serology as described in table 27.1.

Routine boosting is not recommended for those at infrequent risk. For individuals, such as travellers, boosting with a single dose of vaccine can be considered in those who have had a primary course over 10 years ago and are travelling again to a high risk area.

Further information on country-specific rabies travel risk is available from the National Travel Health Network and Centre (www.nathnac.org), Travax (www.travax.nhs.uk), and, in Scotland, from Health Protection Scotland (www.hps.scot.nhs.uk) or FitForTravel (www.fitfortravel.nhs.uk). All travellers to enzootic areas should also be informed by their medical advisers of the practical steps to be taken if they are bitten by an animal or have some other types of exposure that puts them at risk of rabies (e.g. when saliva from an infected animal comes into contact with broken skin or mucous membranes such as the eyes, nose, or mouth).

**Post-exposure management**

Post-exposure management normally consists of wound treatment and risk assessment for appropriate post exposure prophylaxis. Treatment and immunisation after a possible rabies exposure will depend on the circumstances of the exposure, including the local incidence of rabies in the species involved and the immune status of the person.

Detailed guidance on risk assessment and management of potential rabies exposure for England and Wales, and Scotland respectively can be found on the HPA and HPS websites.


**Wound treatment**

As soon as possible after the incident, the wound should be cleaned by thorough flushing under a running tap for several minutes and washing with soap or detergent and water. A suitable disinfectant should be applied and the wound covered with a simple dressing. Suitable disinfectants include 40 to 70% alcohol, tincture or aqueous solution of povidone-iodine.
Rabies

Salivary exposures to mucous membranes such as eyes, nose or mouth should be washed thoroughly with clean water as soon as possible.

Primary suture could cause further damage to the wound and may increase the risk of introduction of rabies virus to the nerves. It should be avoided or postponed until post exposure prophylaxis has commenced. In patients requiring HRIG, sutures (and infiltration of local anaesthetic) should be delayed until HRIG has been infiltrated into the wound.

Risk assessment

Each case requires a full risk assessment based on the collection of the following information about the circumstances of the potential exposure. Health care professionals should try to collect as much of this information as possible to inform the risk assessment.

- The site and severity of the wound: high-risk exposures are those with broken skin, including single or multiple transdermal bites or scratches, or where mucous membranes or an existing skin lesion have been contaminated by the animal’s saliva or other body fluid. Intact skin is a barrier against infection. Bites represent a higher risk than scratches. Proximal bites (e.g. head and neck) represent a higher risk than distal wounds.
- The circumstances of the bite (or other contact): unprovoked bites carry greater risk than provoked bites.
- The species, behaviour and appearance of the animal (see specific section below on bats): Animals behaving abnormally represents a higher risk of infection (but normal appearance and behaviour do not exclude rabies).
- Health of the animal in the days/weeks following the bite, if known or can be established. If possible domestic dogs and cats should be observed for 15 days to see if they begin to behave abnormally, however treatment should not be delayed.
- The vaccination status of the animal: A regularly vaccinated animal is unlikely to be rabid but, rarely, vaccinated dogs have transmitted rabies.
- The origin of the animal, the country and location of the incident and the incidence of rabies in that species: It is important to know whether the implicated animal is indigenous to that locality or originates elsewhere, and to ascertain the incidence of rabies in the originating area. Countries are classified as high, low and no risk for terrestrial rabies. For individual country risk see www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1259152458758 and National Travel Health Network.
and Centre (www.nathnac.org), or in Scotland www.travax.nhs.uk (health professionals only, login required) and FitForTravel www.fitfortravel.nhs.uk/destinations.aspx

- The vaccination status of the individual at risk including dates and type of vaccine.
- Post-exposure prophylaxis treatment already received (timing of treatment and type of vaccines if possible).

Specialist advice on the assessment of the risk and appropriate management can be obtained from one of the following:

<table>
<thead>
<tr>
<th>Country</th>
<th>Contact</th>
<th>Telephone No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>England and Wales</td>
<td>Health Protection Agency Virus Reference Department, Colindale, London, or HPA Colindale Duty Doctor or Local Health Protection Unit</td>
<td>020 8200 4400 020 8200 6868 See hpa.org.uk for contact details</td>
</tr>
<tr>
<td>Scotland</td>
<td>Local on-call infectious diseases consultant Aberdeen Royal Infirmary Crosshouse Hospital, Ayrshire Gartnavel General Hospital, Glasgow Monklands Hospital, Lanarkshire Ninewells Hospital, Dundee Victoria Hospital, Fife Western General Hospital, Edinburgh</td>
<td>0845 456 6000 01563 521 133 0141 211 3000 01236 748 748 01382 680 111 01592 643 355 0131 537 1000</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>The Regional Virology Service or The Public Health Agency Duty Room</td>
<td>028 9024 0503 028 9055 3994(7)</td>
</tr>
</tbody>
</table>
Risk assessment for possible bat exposure

Both classical rabies virus and rabies-related lyssaviruses may be acquired from bats depending on the species and origin. Following a case of EBLV infection in a bat handler in the UK, bat exposures are an increasing cause for concern. Assessment of the risk from a possible bat contact is more difficult than for a terrestrial animal, but specialist advice should be sought for all bat exposures, including those in the UK. For the purpose of risk assessment all countries are considered to have rabies in their bat populations. Transmission of EBLV can occur in the absence of a recognised contact (e.g. waking to find a bat in the room).

Information that is required for an accurate risk assessment of a bat exposure includes:

- The nature of the contact, e.g. a definite bite or scratch, including site and severity, handling or touching, contact with saliva, urine or faeces or a possible unrecognised exposure. Bat bites or scratches are usually felt and not seen.
- Origin and condition of the bat, e.g. country and behaviour of the bat. Bats with rabies may be sick or grounded without injury, but apparently healthy bats may have rabies. If a bat is found dead, it should not be handled, but the Bat Conservation Trust contacted and rabies testing arranged through the Trust, if applicable.
- The vaccination status of the individual at risk (see above).

Post-exposure prophylaxis

Risk assessment should be done as soon as possible, so that post exposure prophylaxis, if indicated, can be started promptly. Treatment may need to start before full information is available on the ownership and condition of the biting animal.

As the incubation period for rabies can be prolonged, treatment should still be considered even if the interval from exposure is lengthy. Risk assessment should always be done (as above), even if the exposure occurred many months or years previously.

Following a risk assessment, if post exposure prophylaxis is indicated, this should be given as in table 27.2. It is particularly important that the first three doses are given as close as possible (within a day or two) of the recommended schedule.
Contraindications

Pre-exposure rabies vaccine should not be given to those who have had:
- a confirmed anaphylactic reaction to a previous dose of rabies vaccine, or
- a confirmed anaphylactic reaction to any component of the vaccine.

There are no absolute contraindications to post-exposure prophylaxis with rabies vaccine. In the event of a hypersensitivity reaction to a dose of a pre-exposure course, such individuals should still receive post-exposure vaccination if indicated, because the risks of rabies outweigh the risks of hypersensitivity. When there is a history of a hypersensitivity reaction to rabies immunisation, specialist advice should be sought and further doses given under close medical supervision.

Table 27.2 Guide to post-exposure prophylaxis following risk assessment

<table>
<thead>
<tr>
<th>Rabies exposure risk</th>
<th>Unimmunised / incompletely immunised individual**</th>
<th>Fully immunised individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>No risk</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Low risk</td>
<td>Five doses (each 1ml ampoule of 2.5 IU) rabies vaccine on days 0, 3, 7, 14 and 30</td>
<td>Two doses (each 1ml ampoule of 2.5 IU) rabies vaccine on days 0 and 3 - 7</td>
</tr>
<tr>
<td>High risk</td>
<td>Five doses (each 1ml ampoule of 2.5 IU) rabies vaccine on days 0, 3, 7, 14 and 30, plus HRIG (within 7 days of starting the course of vaccine)</td>
<td>Two doses (each 1ml ampoule of 2.5 IU) rabies vaccine on days 0 and 3 - 7</td>
</tr>
</tbody>
</table>

* Post-exposure rabies vaccine should be given via the intramuscular route (or by deep subcutaneous injection for people with bleeding disorders). If an individual arrives in the UK having started post-exposure prophylaxis via the intradermal route, they should receive the remaining doses via the intramuscular route. Where a regime has been started that is different to that used in the UK, specialist advice should be sought.

** Persons who have not received a full course of pre- or post-exposure tissue culture rabies vaccine.
The single site, intradermal 0.1ml pre-exposure vaccine regimen should not be used in those taking chloroquine for malaria prophylaxis, as this suppresses the antibody response.

**Precautions**

Minor illnesses without fever or systemic upset are not valid reasons to postpone pre-exposure immunisation.

If an individual is acutely unwell, pre-exposure immunisation should be postponed until they have recovered. This is to avoid confusing the differential diagnosis of any acute illness by wrongly attributing any signs or symptoms to the adverse effects of the vaccine.

**Pregnant women and breast-feeding**

Pregnant women and breast-feeding mothers should be given pre-exposure vaccination if the risk of exposure to rabies is high and rapid access to postexposure prophylaxis would be limited.

Post-exposure treatment should be given to pregnant women when indicated.

**Immunosuppression and HIV infection**

Individuals with immunosuppression and HIV infection (regardless of CD4 count) may be given pre-exposure rabies vaccines in accordance with the recommendations above. These individuals may not make a full antibody response. Re-immunisation should be considered after treatment is finished and recovery has occurred or, in the case of those with HIV, when there has been immune recovery following commencing antiretroviral treatment (e.g. CD4 count is greater than 200 per mm$^3$).

Individuals who are immunosuppressed or have HIV who are exposed may require a different regime for post-exposure management. Specialist advice should be sought urgently.

Further guidance is provided by the Royal College of Paediatrics and Child Health (www.rcpch.ac.uk), the British HIV Association (BHIVA) Immunisation guidelines for HIV-infected adults (Geretti et al., 2008) and the Children’s HIV Association of UK and Ireland (CHIVA) immunisation guidelines (www.bhiva.org/chiva).
Adverse reactions

All suspected adverse reactions should be reported to the Medicines and Healthcare products Regulatory Agency (MHRA). Anyone can report a suspected adverse reaction to the MHRA using the Yellow Card reporting scheme (www.yellowcard.gov.uk).

Rabies vaccine may cause local reactions such as redness, swelling or pain at the site of injection within 24 to 48 hours of administration. Systemic reactions such as headache, fever, muscle aches, vomiting and urticarial rashes are rare. Delayed hypersensitivity reactions have been reported from the US. Reactions may become more severe with repeated doses. Neurological conditions, such as Guillain-Barré syndrome, have been reported extremely rarely; a causal association with vaccination is not established.

HRIG may cause local pain and low-grade fever, but no serious adverse reactions have been reported.

Management of cases

Human rabies is a notifiable disease. In the event of a case of human rabies, the Consultant in Communicable Disease Control (in England, Wales or Northern Ireland) or the Consultant in Public Health Medicine for Communicable Disease and Environmental Health (in Scotland) should be informed.

Guidance on the management of human rabies is available on the DH, HPA and HPS websites
www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/Rabies/Guidelines

Supplies

- Rabies Vaccine BP is available from Sanofi Pasteur MSD (Tel: 0800 085 5511).
- Rabipur is available from Novartis Vaccines (Tel: 08457 451500) or MASTA (Tel: 0113 238 7500).

Rabies vaccine for pre-exposure immunisation of those at occupational risk and bat handlers in England and Wales is supplied by the Department of Health
and should be obtained from the HPA Virus Reference Department (Tel: 020 8200 4400). For others, it can be obtained through local pharmacies by private prescription. In Scotland, the vaccine is available through normal GP channels. In Northern Ireland, the vaccine is available for licensed non-occupational bat handlers via their GP by a HS21 prescription.

For post-exposure use, vaccine and HRIG are supplied through the HPA for England and Wales. Information may be obtained from the local Health Protection Unit (for contact details see www.hpa.org.uk/AboutTheHPA/ContactUs/HealthProtectionAgencyOffices/LocalHealthProtectionUnits/) or HPA Virus Reference Department (Tel: 020 8200 4400) or HPA Colindale Duty Doctor (Tel: 020 8200 6868) in England; the National Public Health Service (Virology Cardiff) for Wales (Tel: 029 2074 7747); the local on-call infectious diseases consultant in Scotland; and the Regional Virology Service (Tel 028 9024 0503) or the Public Health Agency Duty Room (Tel 028 9055 3994(7) in Northern Ireland.

Rabies vaccine and HRIG for use in post-exposure treatment are available free of charge to patients. If vaccine held for pre-exposure prophylaxis is used for post-exposure treatment, it will be replaced free of charge.

References


Naraporn N, Khawplod P, Limsuwan K et al. (1999) Immune response to rabies booster vaccination in subjects who had postexposure treatment more than 5 years previously. J Travel Med 6(2): 134-6.


