Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

NZC
NATIONAL ZOONOSES COMMITTEE
OF IRELAND

hpsc

Rabies

Prevention and Control Guidance

June 2015

Review date: June 2017

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Preface and Acknowledgements

This guidance is published jointly by the National Zoonoses Committee and the Health Protection Surveillance Centre (HPSC). It supersedes the HPSC Protocol for Management of Possible Rabies Exposure, November 2011, and all hard copies of that document should be destroyed.

The document is aimed at the following professionals, for the public health management of a potential exposure to Rabies:

- Consultants in Public Health Medicine;
- Department of Agriculture, Food and the Marine (DAFM) Veterinary Inspectors;
- Local Authority Veterinary Inspectors;
- Other medical and veterinary professionals who are involved in the management of such exposures.

This document was produced by a subgroup of the National Zoonoses Committee (NZC) which included a representative from the HPSC. The NZC is a national group of medical, veterinary, environmental health professionals and scientists, concerned with human and veterinary public health. The group has representation from the Health Service Executive (HSE), Department of Agriculture, Food and Marine, Local Authority Veterinary Services, Safefood, The Food Safety Authority of Ireland and University College Dublin. The group built on work already commenced by a sub-group of the South-East Regional Zoonoses Committee who had commenced review of their Rabies guidance in 2012 and on the Health Protection Surveillance Centre Protocol for Management of Possible Rabies exposure, 2011.

The members of the Rabies subgroup of the National Zoonoses Committee were:

Ms Anna Maria Brennan, Veterinary Officer, Kilkenny Co. Council

Dr Sarah Doyle, Consultant in Public Health Medicine, HSE South (*Chair*)

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Mr John Melville, Superintending Veterinary Inspector, DAFM, (Sept 2012 – Sept 2013)

Dr Seamus O'Dea, Medical Officer, Cherry Orchard Hospital (Sept 2013 onwards)

In addition to the above members, Mr Pat Power, Veterinary Officer, South Tipperary County Council was a member of the SERZC Rabies sub-group that commenced the work on this document.

This document builds on important previously published guidance, including the following:

1. Protocol for Management of Possible Rabies Exposure, November 2011. Health Protection Surveillance Centre (HPSC);
2. Guidelines on Managing Rabies Post-Exposure Prophylaxis, January 2013, Health Protection Agency (HPA);
3. Rabies: South Eastern Regional Zoonoses Committee Update to the South Eastern Health Board Rabies Document, July 2004;
4. Rabies – Cork Zoonoses Committee – 1996.

The subgroup would like to acknowledge the advice given by the following during the preparation of this document:

Dr David Brown, Virus Reference Department, Public Health England

Dr Anthony Fooks, Animal Health Veterinary Laboratories Agencies, UK

Dr Ferdia Murphy, National Parks and Wildlife Services, Ireland

Dr Niamh Roche, National Parks and Wildlife Services, Ireland

Glossary of terms

DAFM Department of Agriculture, Food and the Marine
EBLV European Bat lyssavirus
HDCV Human Diploid Cell Vaccine
HSE Health Service Executive
HPA Health Protection Agency (the HPA became part of Public Health England 2013)
HPSC Health Protection Surveillance Centre
HPRA Health Products Regulatory Authority (formerly Irish Medicines Board)
HRIG Human Rabies Immunoglobulin
NDCC National Disease Control Centre
PEP Post-exposure prophylaxis
RABV Rabies Virus
SERZC South-East Regional Zoonoses Committee
WHO World Health Organization

Scope of the guidance

Experience in other countries suggests that there are likely to be three categories of Rabies query that will come to public health attention. These concern the following:

1. **Pre-exposure prophylaxis for persons travelling abroad**. Queries should be referred to GPs or other travel medical advice centres. Advice should be given in accordance with the Rabies Chapter of the National Immunisation Guidelines for Ireland (see http://hse.ie/eng/health/immunisation/).
2. **Suspected case of Rabies**. Expert advice of a Consultant in Infectious Disease should be sought for the management of the case. Person to person transmission is rare. However, in the case where a contact is thought to have been exposed (through an open wound or across a mucous membrane) to the saliva of a patient suspected of harbouring rabies virus, advice on the need for post-exposure vaccination and immunoglobulin should be sought from a Specialist in Public Health Medicine in the local Department of Public Health in conjunction with the HPSC.
3. **An incident of potential human exposure to Rabies requiring assessment for post-exposure prophylaxis**. This is the main focus of this guidance.

Appendix 1 provides a summary of the epidemiology and clinical signs of Rabies.

Prevention of Rabies after animal/bat bites and Post-exposure Prophylaxis

Medical or veterinary professionals may be consulted about the possibility of Rabies infection after a human has had a potential exposure to terrestrial animals or bats. A risk assessment should be undertaken, considering the likelihood of Rabies infection in the animal (Appendix 1), the immune status of the human, the nature of the bite, the seriousness of infection (see Appendix 2) and the treatment required.

Prolonged incubation periods have been associated with human rabies. Therefore, people who present for treatment even months or years after a possible exposure should be evaluated and treated as if the event occurred recently.

Summary of actions to be taken following potential Rabies exposure

1. ***Treat wound bite immediately and seek medical attention. (P7)***
2. ***Notify An Garda Siochana, Director of Public Health/Medical Officer of Health, DAFM, and Local Authority Veterinary Inspector***. (***P7)***
3. ***Obtain relevant history. (P7)***
4. ***Ensure suspect animal isolated and detained. (P8)***
5. ***Assess likelihood of Rabies infection in the animal. (P9)***
6. ***Consideration of type of exposure? (P11)***
7. ***Consider if pre-exposure vaccination given?*** Full course is three-dose IM course. (***P12)***
8. ***Decide if post-exposure treatment required: (P15)***
    a. Decide on number of vaccine doses required.
    b. Assess need for and dosage of HRIG (20 iu/kg body weight), if needed.
9. ***An incident control team (ICT) may need to be convened, depending on the circumstances of the incident.*** (***P16)***

1. Treat bite wound immediately and seek medical attention

Checklist for Treatment of Animal/Bat Bites/Contact

(Rabid/Suspected Rabid Animal/Animal from a country where there is a risk of Rabies)

- Clean and flush wound immediately (soap & water) **for a minimum of 15 minutes.**
- Thorough wound cleansing under medical supervision with 70% ethanol tincture or tincture or aqueous solution of povidone iodine or another substance with virucidal activity.
- Tetanus prophylaxis and antibacterial treatment, as indicated.
- No sutures or wound closure unless unavoidable.
- Rabies immunoglobulin and/or vaccination as indicated.

2. Notify relevant professionals

The following should be informed of a rabid/suspected rabid animal/bat or an illegally imported animal:

- An Garda Siochana;
- Director of Public Health/Medical Officer of Health (*if the animal has been illegally imported and there is concern about potential human exposure*)
- DAFM National Disease Control Centre (NDCC), 1850 200 456, 24 hours/day 7 days/week who in turn will contact the Local Superintending Veterinary Inspector.
- Local Authority Veterinary Inspector

3. Obtain relevant history

Use the proforma in Appendix 3 to obtain relevant history, including name and address of the animal's owner and details of all persons and animals that may have come in direct contact with the suspect animal.

4. The animal must be isolated and detained

Management of the animal incident will be by DAFM according to the DAFM NDCC Rabies Contingency Plan. At the time of writing this has not yet been published but includes the following:

- Summary of rabies disease in animals;
- Relevant EU legislation relating to rabies and the importation, landing and movement of dogs and cats;
- Background, structures and government policy;
- Resources;
- Key operations
    - Reporting suspect rabies case
    - Investigation of a suspect rabies case
    - Service of notices
    - Euthanasia
    - Taking and packaging of samples
    - Transport of samples
    - Laboratory diagnosis
    - Confirmation of rabies
    - Cleansing and disinfection of premises
    - Infected area and infected zones controls
    - Compensation
    - Disposal
    - Investigation of local wildlife infection
    - Vaccination of wildlife
    - Health and safety
    - Animal health and welfare

5. Assess the likelihood of infection in the animal

The following should be considered to provide an indication of the likelihood of infection in the animal:

- The risk of rabies in the country of exposure;
- Whether or not the animal is indigenous to the country of exposure;
- The animal's behaviour at the time of the incident;
- Clinical status of the animal responsible;
- The availability of the animal for observation following the bite;
- The species of the animal;
- Vaccination status of the animal (this should be objectively verified);[1]
- For an imported animal: official documentation/ country of origin;
- Whether the bite was provoked or not;
- Exposure of the animal to other animals.

Which animal, a bat or a terrestrial animal?

Rabies is generally transmitted through contact with saliva from infected animals, in Europe typically from foxes and racoon dogs, but also from domestic carnivores, via bites. Although rare in Europe, bats can transmit rabies to other mammals, including humans.

If a terrestrial animal, in which country were they bitten?

The HPA - UK maintains an up-to-date list of country by country Rabies risk in terrestrial animals at http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1259152458758

Ireland and the UK [including Northern Ireland] are rabies free for terrestrial animals. Could the animal be an imported animal?[2] Appendix 2 provides information on the risk of Rabies from an imported animal.

All countries should be considered as high risk countries for bat exposures.

There have been concerns about risk of transmission of bat lyssaviruses. The majority of rabies cases are caused by the classical sylvatic rabies virus (RABV) species. In addition, five species of lyssavirus virus are detected in bats in Europe: European Bat lyssavirus 1 (EBLV-1), European Bat lyssavirus 2

[1] A history of rabies vaccination in an animal is not always a guarantee that the biting animal is not rabid.
[2] Contact NDCC helpline who may be able to help establish if the animal is a third country import.

(EBLV-2), West Causcasian Bat Virus (WCB), Bokeloh Bat lyssavirus (BBLV) and Ikoma lyssavirus-like virus.

Daubenton's bats in the UK have a seroprevalence of European Bat lyssavirus 2 (EBLV-2) of 1-4 %. The levels, if any, of EBLV in Irish bats is unknown, but it must be assumed that Irish bats are, to some extent, infected with EBLV and possibly to similar levels as those in the UK.

There is no evidence to suggest that there is a rabies virus (RABV) carrier state in bats. There has never been a reported case of RABV in a European bat. The role that bats play in the maintenance, transmission, and evolution of bat lyssaviruses is complex and generally poorly understood. However, it is hypothesised that salivary excretion of virus occurs immediately before the development of disease and may be transmitted to co-specifics in roosts by scratching and / or biting. The development of a neutralising antibody response to EBLV in the absence of disease, appears to be relatively common and is unique to bats. How this happens remains unknown. However, it has not been demonstrated that such bats can transmit disease and it is concluded that this does not occur. Bat lyssaviruses have rarely been reported to infect humans and terrestrial mammals but it has happened (four known human cases in Europe). When it does the manifestation of the disease clinically is indistinguishable from RABV disease. It is understood that animals other than bats are dead end hosts for EBLV i.e. it does not have the ability to form a reservoir in terrestrial animals.

As there are a lot of gaps in our information about the epidemiology of lyssaviruses we should not assume that bat species other than Daubenton's bats are totally free from the virus. Thus bat bites from any species of bat should be treated as if it is from a potentially infected bat. Daubenton's bats rarely, if ever, roost in dwelling houses. They tend to use structures near waterways e.g. bridges, tunnels, derelict buildings, sometimes trees etc. Migratory pathways of bats into and out of Ireland and the UK are unknown. However, Daubenton's bats are not considered to be migratory due to their specific habitat requirements i.e. slow moving waterways with vegetation cover e.g. rivers/ lakes with trees and hedges along their banks.

6. What is the nature of the exposure/bite?

The assessment of exposure needs to take into account the risk of direct physical contact with saliva, neural tissue or other body fluids. The assessment will be different for terrestrial mammals and bats (Tables 1 and 2, Figures 1 and 2).

Table 1: Categories of Exposure to Terrestrial Mammals

Category	**Terrestrial Mammal[3]: Categories of exposure**
I	Touching or stroking animals. Licks of intact skin or other contact of intact skin with saliva.
II	Minor scratches, bruising or abrasions without bleeding. Minor bites without breaking of the skin (covered areas of arms trunk and legs). All bites, licks and scratches from rodents and primates.
III[4]	Single or multiple transdermal bites or scratches, licks on broken skin. Major bites (multiple, or on face, head, hands, genitals or neck). Contamination of mucous membrane with saliva (i.e. licks).

Table 2: Category of Exposure to Bats

Category	**Bats: Categories of exposure**
I	No physical contact: i.e. no direct physical contact with the bat's saliva or neural tissue, or if the person was protected by a barrier capable of preventing such contact, such as a boot, shoe, or appropriate protective clothing.
II	Uncertain physical contact (may be common with bat exposures): i.e. where there has been no observed direct physical contact but this could have occurred, a child found in a room with a bat, or a grounded or aggressive bat found in a room of a sleeping (or intoxicated) person[5]
III[4]	Direct physical contact with bat's saliva or neural tissue: Single or multiple transdermal bites or scratches and bruising. Minor bites without breaking of the skin (covered areas of arms, trunk and legs). Major bites (multiple, or on face, head, hands, genitals or neck). Contamination of mucous membrane with saliva or bat droppings/urine.

[3] Rodents, rabbits, hares seldom, if ever, require specific anti-Rabies post-exposure prophylaxis.
[4] Bleeding at the site of injury indicates potentially severe exposure and must be infiltrated with immunoglobulin.
[5] Most bats found in houses and attics in the Ireland are pipistrelles, which are not known to be infected with rabies-related viruses. Healthy bats avoid contact with humans, therefore bats behaving normally (i.e. flying into a room, but not grounded or acting aggressively) constitute a minimal risk.

7. Any pre-exposure vaccination?

Full pre-exposure **vaccination** consists of 3 x 1.0ml intramuscular (IM) doses of anti-rabies vaccine given on days 0, 7, 21 – 28.

Rabies vaccine[6]

Rabies vaccine is used for pre- and post- exposure prophylaxis. Two vaccines are licensed and they can be used interchangeably pre- or post- exposure:

1. Human diploid cell rabies vaccine (HDCV) (Rabies vaccine BP)
2. Purified chick embryo cell vaccine (Rabipur)

An up-to-date list of licensed vaccines can be accessed on the HPRA website https://www.hpra.ie/.

Type: Inactivated (not live)

Primary course: three doses

Dosage/route: 1ml IM. Rabies vaccine can be given to infants at the same dosage as for adults.

Intervals: Days 0, 7 and either 21 or 28

Boosters: For those at regular and continuing risk, 1 year after primary course and then 3-5 yearly thereafter. Antibody titres are advised 6 monthly for those who work with live rabies virus. They may be given reinforcing doses of vaccine if their titre is below 0.5IU/ml. For those with frequent episodic exposure, e.g. rabies diagnostic workers, veterinary surgeons and staff, wildlife rangers conducting bat research antibody titres should be checked every 3 years and boosters administered as necessary.

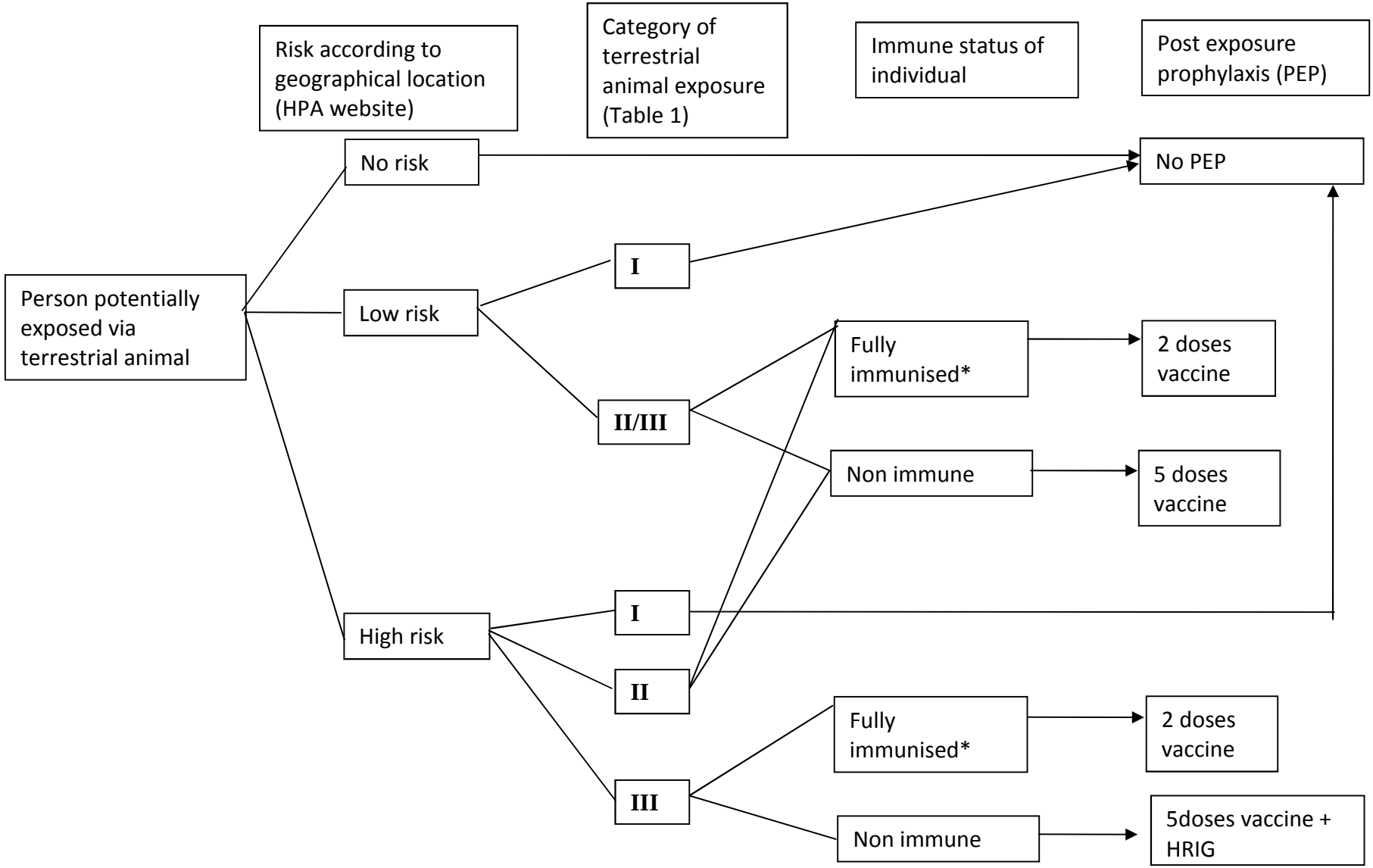
Side effects: Local redness, swelling, pain at site of injection. Transient fever, headache, dizziness and gastrointestinal symptoms, have been observed in 5-15% of vaccinated people. Serious adverse events are rare and include Guillain-Barre Syndrome and allergic reactions.

Contraindications: Anaphylaxis to any of the vaccine constituents. As rabies infection is generally fatal, there are no contraindications to post-exposure vaccination. Pre-exposure vaccine should only be given to pregnant women if the risk of exposure is high and rapid access to post exposure prophylaxis will be limited. Post exposure treatment should be given when indicated.

For more details on pre-exposure prophylaxis for rabies, please see National Immunisation Guidelines at http://hse.ie/eng/health/immunisation/. As with all vaccinations patients must be observed for 15-20 minutes after administration of the vaccine.

[6] Experimental evidence indicates that available vaccine strains which belong to rabies virus species in phylogroup I are ineffective against infection with lyssaviruses in phylogroup II and West Caucasian bat virus. A similar lack of protection is likely for Ikoma lyssavirus.

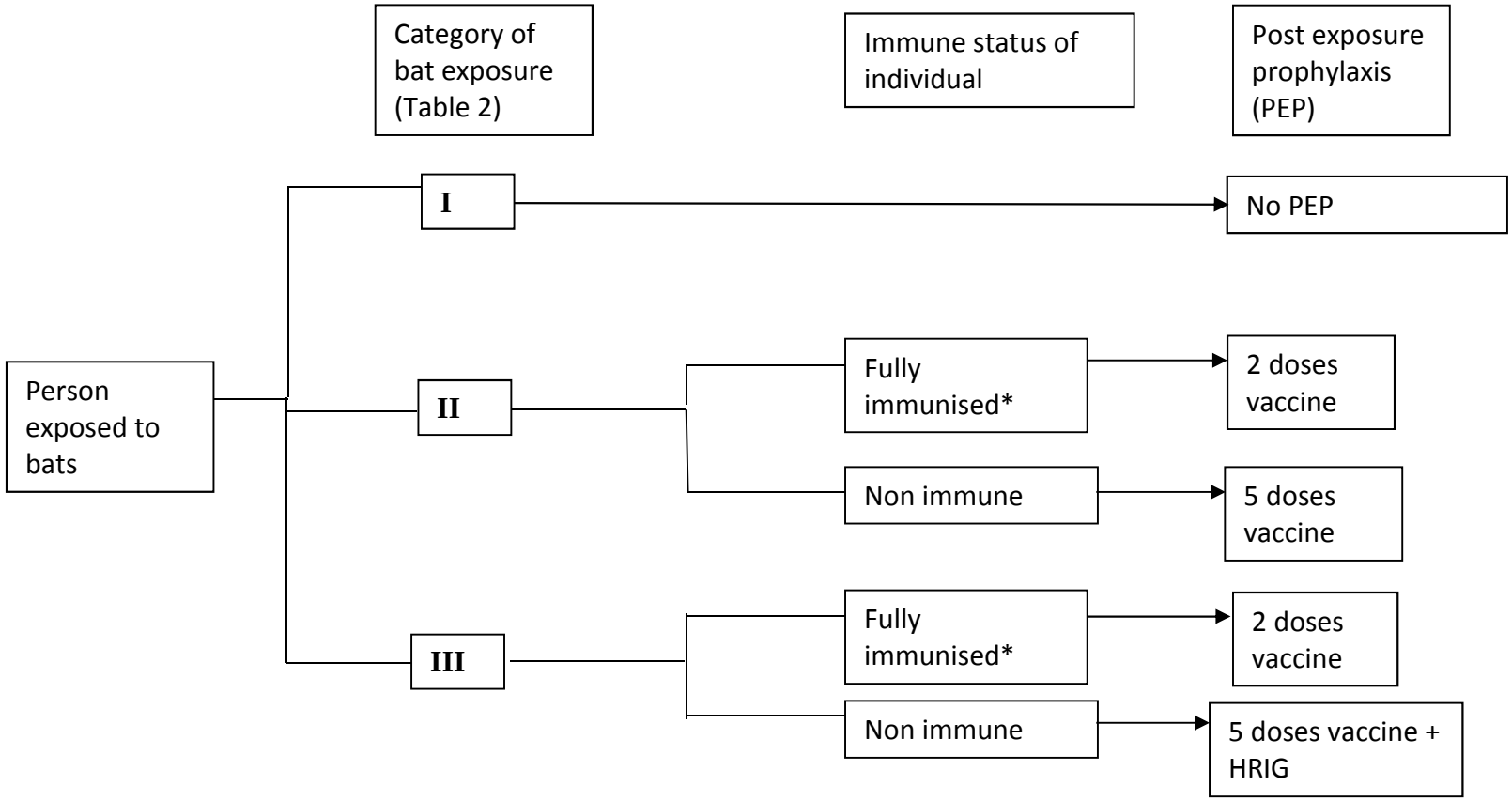
Figure 1: Summary of Risk Assessment for Treatment Following Exposure to Terrestrial Animals (adapted from HPA)



*In individuals whose last dose of vaccine was more than 10 years previously and there are particular risk factors (a known rabid animal or multiple severe bites to the head or neck) then specialist advice should be sought

Figure 2: Summary of Risk Assessment for Treatment Following Exposure to Bats (adapted from HPA)

NB: All countries should be considered high risk for all bat species



*In individuals whose last dose of vaccine was more than 10 years previously and there are particular risk factors (a known rabid animal or multiple severe bites to the head or neck) then specialist advice should be sought.

8. What post-exposure vaccine and rabies immunoglobulin is indicated?

If PEP is indicated in fully vaccinated individuals then two 1.0ml IM doses are required, on Day 0 and Day 3. Immunoglobulin is not **usually** indicated if fully vaccinated.

If a person is unvaccinated or not fully vaccinated, then cell culture or purified embryonated egg rabies vaccines having a potency of at least 2.5 IU per single intramuscular immunising dose should be applied according to the ***Five-dose IM regimen (Essen regimen):***
One dose IM on day 0, 3, 7, 14 and 28. Injections are into the upper arm (deltoid region) or, for children <2 years, into the antero-lateral thigh muscle.[7] It is important to complete the initial three doses within one week.

The gluteal area should never be used for rabies vaccine administration due to lower neutralising antibody titre results.

The two-dose regimen outlined for some persons travelling abroad, 1.0ml i.m. of vaccine given on days 0 and 28, should be taken as not fully vaccinated and individuals should receive the full 5-dose post-exposure course.

Human Rabies immunoglobulin (HRIG) is administered only once (i.e., at the beginning of the anti-rabies prophylaxis) to previously unvaccinated persons to provide immediate antibodies until the patient responds to vaccine. If HRIG was not administered when vaccination was begun, it can be administered up to the seventh day after the administration of the first dose of vaccine. **Beyond the seventh day, HRIG is not indicated since an antibody response to cell culture vaccine is presumed to have occurred**. If anatomically feasible, the full dose of HRIG should be thoroughly infiltrated in the area around and into the wounds. Any remaining volume should be injected intramuscularly at a site distant from vaccine administration. For multiple wounds dilute the HRIG in normal saline to ensure an adequate volume to infiltrate all wounds.

Stocks of human diploid cell rabies vaccine (HDCV) and Human Rabies Immunoglobulin (HRIG) for national use can be sourced through Cherry Orchard Hospital, Ballyfermot, Dublin 10. Tel: 01-6206000.

[7] Further advice should be sought on completion of post-exposure prophylaxis for patients started on an alternative regimen.

Rabies post-exposure prophylaxis in immunosuppressed individuals

In patients in whom immunological memory is no longer assured as a result of HIV/AIDS or other immunosuppressive causes:

- The importance of wound treatment should be further stressed;
- HRIG should be administered deeply into the wound for both category 2 and 3 exposures;
- Vaccine should always be administered with a five dose regimen, with the understanding that the immune response might still be inadequate;
- Serological sampling to assess response to vaccination may be indicated, and if inadequate further vaccine doses may be required two to four weeks after vaccination;
- Specialist advice should be sought urgently.

Human rabies immunoglobulin (HRIG) specific

The dosage of HRIG is 20 iu/kg body weight. The concentration of HRIG varies by manufacturer.

9. An incident control team (ICT) may need to be rapidly convened, depending on the circumstances of the incident.

The following may be involved:

- Specialist in Public Health Medicine (SPHM)/MOH, Department of Public Health
- Senior Medical Officer, Department of Public Health
- SPHM, Health Protection Surveillance Centre
- Veterinarian, NDCC
- Veterinarian, Local Authority
- Representative of Parks and Wildlife Service (01-8882000)
- Consultant Microbiologist, local laboratory
- Representative, National Virus Reference Laboratory
- Medical Officer, Cherry Orchard Hospital
- Infectious Diseases Clinician

Preventing Rabies in animals and humans in Ireland

Maintaining Rabies-free status in Ireland is of paramount importance in protecting the health of the population from this fatal disease. Table 3 outlines actions that should be taken to ensure this and to protect those who may be exposed.

Table 3: Preventing Rabies in animals and humans in Ireland

Prevention of Introduction of Rabies to Ireland	Protection of those who may be exposed
Pet movement regulations http://www.agriculture.gov.ie/pets/	**Promote awareness in high risk groups and professionals.** Groups in these risk categories include - Laboratory workers handling or potentially handling the virus - Those likely to be in direct contact with rabies-prone animals: o Staff at animal quarantine centres o Staff at zoos o Staff at research and acclimatisation centres where rabies-prone animals are housed o "At risk" staff at ports and airports, e.g. DAFM inspection staff o Dog wardens o Animal workers who regularly travel to rabies enzootic areas o Authorised carrying agents for imported rabies-prone animals o Selected National Parks and Wildlife staff who may handle bats, based on risk assessment o Workers in enzootic areas abroad at special risk (e.g. veterinary staff, zoologists) - Health-care workers who have or may come into close contact with a patient (or their clinical specimens) with probable or confirmed Rabies

Border inspection posts controls for third country imports

Control of stray dog and cat population

Promote awareness among high risk groups and professionals i.e.

- Veterinary professionals
- Dog wardens
- Parks and Wildlife personnel
- Animal charities

Animal vaccination

- Vaccination of dogs, cats, ferrets before foreign travel and in compliance with pet regulations for animals reintroduced into Ireland.
- In enzootic areas.

Animal identification/Traceability

- Implantation of microchip devices

Bats

Anyone bitten/scratched by a bat should seek medical advice.

People who find a sick/dead bat should not touch the animal. Advice should be sought from a bat conservation organisation or other animal welfare group.

Licensed bat handlers and those who regularly handle bats should ensure that they have the relevant rabies vaccination and should always wear protective gloves when handling bats.

Illegally imported animals (P7)

Illegally imported animals present a risk for the importation of Rabies to Ireland and should be notified to the DAFM NDCC at 1850 200 456.

Foreign Travel

Appropriate pre-exposure vaccination.

Avoid contact with dogs/wild carnivores in endemic areas.

Medical advice should be given regarding practical steps to be taken if an animal bite is sustained

Pre-exposure Immunisation

All those who are at continuous or frequent risk of exposure should be offered vaccine. See above for groups in high risk categories.

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Appendix 1: Risk of Rabies from imported animals

Ireland has been rabies-free for many decades and the controls which have applied regarding quarantining of animals coming into this country have been effective in preventing the importation of this disease. The threat of introduction from European countries has decreased significantly over the past number of years due to successful wildlife vaccination programs. The primary rabies risk/threat for Ireland is thought to be introduction by smuggled animals, with animals illegally imported from Eastern Europe, North Africa and Russia considered the highest risk.

To harmonise rabies controls and to protect against the introduction and spread of rabies, whilst facilitating trade, in 2004, the EU introduced a companion animal movement and importation policy applicable to dogs, cats and ferrets (EC Regulation 998/2003,) requiring a pet passport and rabies vaccination for pet movement within EU and from low risk third countries. High risk third countries were subject to more severe restrictions. However, five EU member states, the UK, Sweden, Finland, Ireland and Malta benefited from additional provisions until 31st December 2011. These provisions consisted of the additional requirements: an individual serological test for detection of neutralising rabies-antibodies and a waiting period before entry of pet animals into their territory (low risk third countries). In the UK, the Veterinary Laboratories Agency did a risk analysis to determine the effect of the removal of these extra measures. It concluded that, while the withdrawal of the extra measures would cause a 60-fold increase in the mean risk of rabies entering the UK (via the importation of non-UK cats/dogs), in absolute terms the risk of rabies entry would remain very low for the UK. In particular, the risk would increase for movements from EU member states and listed third Countries.

A new European regulation on the movement of pet animals came into force on 1st January 2015. Current controls on non –commercial movement of pet cats, dogs or ferrets accompanied by their owner into or out of Ireland (see http://www.agriculture.gov.ie/pets/) are as outlined below.

Cats, dogs or ferrets to/from other Member states of the EU:

Persons travelling on holiday or to permanently locate their residence (or other non-commercial movement where there is no sale or change of ownership involved) to/ from Ireland to/from another EU Member States may bring their pet cat, dog, or ferret with them provided the following conditions are met:

- The pet must be identified by a microchip (a transponder readable by a device compatible with ISO standard 11785);
- The animal must be accompanied by an EU Pet Passport in respect of the animal which demonstrates that the animal is currently immunized against rabies and in cases where a dog is being brought in from countries other than Finland, Malta or the UK, that it has been treated against Echinococcus multilocularis (tapeworm) not more than 120 hours (5 days) and not less than 24 hours (1 day) prior to scheduled arrival time in Ireland;
- In cases where the number of animals being moved exceeds five, a veterinary health certificate to demonstrate that the animals have been clinically examined within 48 hours of departure is also required unless the owner can show proof that the animals are being brought to compete in a sporting event or other competition;
- The operator of the airline/ ferry company is legally obliged under the Pet Passport (No2) Regulations 2014 to notify the arrival of the animals to the Department of Agriculture, Food and the Marine by email at least 24 hours in advance.

Cats, dogs or ferrets from 'low-risk' Non-EU countries*:*

Persons travelling on holiday or to permanently locate their residence (or other non-commercial movement where there is no sale or change of ownership involved) to Ireland from a 'low- risk' non-EU country (see list in Annex 11 to Commission Implementing Regulation 577/2013) may bring their pet cat, dog, or ferret with them provided the following conditions are met:

- An approved airline/pet cargo carrier must be used;
- Pets from Non-EU low-risk countries may enter Ireland via Dublin Airport only;
- The pet must be identified by a microchip (a transponder readable by a device compatible with ISO standard 11785);
- The animal must be accompanied by a veterinary health certificate in the form of Annex IV to Commission Implementing Decision 577/2013 to certify that the animal is currently immunized against rabies and dogs must be treated against Echinococcus multilocularis (tapeworm) not more than 120 hours (5 days) and not less than 24 hours (1 day) prior to scheduled arrival time in Ireland;
- Evidence that the movement is for non-commercial purposes must be presented to the approved airline in advance.

The operator of the airline/ cargo company is legally obliged under the Pet Passport (No2) Regulations 2014 to notify the arrival of the animals to the Department of Agriculture, Food and the Marine by email at least 24 hours in advance. Pets from these low risk countries must be carried as manifested freight.

Cats, dogs or ferrets from all other Non-EU countries (high –risk countries):

Persons travelling on holiday or to permanently locate their residence (or other non-commercial movement where there is no sale or change of ownership involved) to Ireland from non-EU countries other than those catergorised as 'low-risk' may bring their pet cat, dog or ferret with them provided the following conditions are met:

- An approved airline/pet cargo carrier must be used;
- Pets from Non-EU countries may enter Ireland via Dublin Airport only;
- The pet must be identified by a microchip (a transponder readable by a device compatible with ISO standard 11785);
- The animal must be accompanied by a veterinary health certificate in the form of Annex IV to Commission Implementing Decision 577/2013 to certify that the animal is currently immunized against rabies and dogs must be treated against Echinococcus multilocularis (tapeworm) not more than 120 hours (5 days) and not less than 24 hours (1 day) prior to scheduled arrival time in Ireland; (link to Certificate);
- The animal must also have undergone a blood test at least 30 days after rabies vaccination to confirm a neutralising antibody titration at least equal to 0.5 IU/ml. The pet may enter Ireland only when at least three months has expired since a successful blood-test;
- Evidence that the movement is for non-commercial purposes must be presented to the approved airline in advance.

The operator of the airline/ cargo company is legally obliged under the Pet Passport (No2) Regulations 2014 to notify the arrival of the animals to the Department of Agriculture, Food and the Marine by email at least 24 hours in advance. Pets from these countries must be carried as manifested freight.

The HPA - UK maintains an up-to-date list of country by country Rabies risk in terrestrial animals at http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1259152458758

Appendix 2: Rabies: A Communicable Disease

Both human and animal Rabies are notifiable diseases. Rabies is a worldwide disease mainly of animals which occasionally crosses into the human population.

Infectious Agent: Lyssaviruses, such as rabies virus, are in the family *Rhabdoviridae* in the genus *lyssavirus*. All members of the genus are antigenically related, but use of monoclonal antibodies and nucleotide sequencing demonstrates differences according to animal species or geographical origin. Rabies virus is spread in domestic and wild animals worldwide. Two forms of European Bat lyssavirus (EBLV1 and EBLV2) are found in Europe.

Reservoir: All mammals may be affected but primarily dogs, cats, foxes, ferrets and bats in Europe. In other continents, other wildlife species are of importance e.g. raccoons in the USA. Spill over infections may occur in human and livestock: these tend to be considered dead-end hosts and tend not to spread the disease.

Mode of Transmission: Virus laden saliva of a rabid animal is introduced by a bite or scratch (or, very rarely, into a fresh break in the skin or through intact mucous membranes). Bats, particularly if sick or injured, should not be handled. *Any bite, scratch or lick from a warm-blooded animal in an endemic area is a risk.*

Transmission from person to person is theoretically possible since the saliva of the infected person may contain virus. Person to person spread has been documented via corneal and other grafts.

Incubation Period: Usually 3-8 weeks; rarely as short as nine days or as long as several years. Depends on severity of wound, site of wound, distance of wound from brain (shorter incubation period nearer to head), amount of virus, protective clothing and other factors.

Period of Communicability: In dogs and cats, usually 3-7 days before the onset of clinical signs and throughout the course of the disease.

Clinical Signs: Rabies is an acute viral infection usually with an insidious onset resulting in encephalomyelitis, which is almost invariably fatal due to respiratory paralysis.

Onset in humans is often heralded by a sense of apprehension, headache, fever, malaise and indefinite sensory changes. Excitability is common. The disease progresses to paresis or paralysis; spasm of swallowing muscles leads to fear of water (hydrophobia); delirium and convulsions follow. Without medical intervention, the usual duration, to death, is 2-6 days.

Irrespective of the species involved, rabid animals exhibit typical signs of CNS disturbance. Clinical signs may include the excitative (furious) phase or the paralytic (dumb) phase. The latter is the more usual form of the disease in dogs. From onset of signs, death usually occurs within 15 days.

Diagnosis:

This is only possible after the onset of symptoms. The National Virus Reference Laboratory (NVRL) must be involved. Serum antibodies appear after six days. Rabies virus can be isolated from saliva, brain, CSF and urine or demonstrated by immunofluorescent antibody staining of impression smears of skin, cornea or other material. PCR is available for saliva specimens.

Appendix 3:
PROFORMA FOR POSSIBLE RABIES EXPOSURE

To be used in conjunction with Rabies: Prevention and Control Guidelines, 2015: country risk (page 9) and category of exposure tables (page 11)

1. **Date of report:** ____/____/____ **Time of Report** _____am/pm

2. **Name of caller:** _____ **Tel:** _____

   GP/Hospital/other:_____

3. **Call taken by:** _____

PERSON BITTEN

4. **Name:** _____

5. **Adess:**_____

   _____

Tel: (home)_____**Tel: (work)** _____

6. **Age:** _____yrs **Date of Birth:** ____/____/____ **Sex:** MÂ FÂ **Weight** ____kg

7. **Name of GP:** _____ **Tel:** _____

   GP Address: _____

_____

8. **Have they had a <u>full</u> three-dose pre-exposure IM course of Rabies vaccine?** YÂ NÂ

   Vaccine_____ Dates of course: 1) ____/____/____ 2) ____/____/____ 3) ____/____/____

DETAILS OF EXPOSURE/BITE

9. **Country and Town**: _____

10. **Date of Bite**: ____/____/____

11. **Dates away from Ireland** **From** ____/____/____ **To** ____/____/____

12. **Site of Bite/Exposure:** _____ **Depth of bite/s:** superficial/deep

13. **Number of wounds**_____ **Nature of exposure**: bite/lick/saliva/scratch/other_____

14. **Was the skin broken**? YÂ NÂ **Did the wound bleed?** YÂ NÂ

15. **Bite classification**: Category I Â

    Category II Â

    Category III Â

DETAILS OF SUSPECT ANIMAL

16. **Type of animal/species:** _____

17. **Wild/domestic** _____

18. **Provoked/unprovoked: give details** _____

_____

_____

19. **Is the animal's owner or home known**? **Y**Â **N**Â

Details _____

20. Is the animal vaccinated? **Y**Â **N**Â **DK**Â

21. **Any efforts made to trace the Animal? Y**Â **N**Â

22. **Details** _____

23. When was the Animal last seen alive? _____

DETAILS OF HUMAN CONTACTS OF SUSPECT ANIMAL

23. **Name and address of Contact 1:** _____

_____

24. **Name and address of Contact 2:** _____

_____

25. **Name and address of Contact 3**_____

_____

DETAILS OF ANIMAL CONTACTS OF SUSPECT ANIMAL

26. **Address Animal Contact 1** _____

_____

27. **Address Animal Contact 2** _____

_____

28. **Address Animal Contact 4** _____

_____

REFER: Cherry Orchard Hospital (01-6206000) will give advice on individual cases

29. ***ACTION:*** Call passed to Dr _____for action at _____am/pm

30. **HPSC informed? Y**Â **N**Â

Details:_____

_____

RECOMMENDED TREATMENT:

31. **Post exposure course arranged**? **Y**Â **N**Â

If no, any follow-up? **Y**Â **N**Â

Referred to GP (e.g. dog under observation) **Y**Â **N**Â

FOR RABIES IMMUNOGLOBULIN: (Dosage 20 iu/kg body weight)

32. **Rabies immunoglobulin?** **Y**Â **N**Â **Weight of patient** _____kg

If YES: dose/no. of vials _____ injection site: _____

FOR RABIES VACCINE COURSES:
Standard course of five doses at 0, 3, 7, 14, 28.

Modified course for people who have had full pre-exposure vaccination: days 0, 3.

Vaccine issued_____

Dates of course 1) ____/____/____ 2) ____/____/____ 3) ____/____/____ 4) ____/____/____ 5) ____/____/____

33. **Doctor administering treatment**: _____

Address to where immunoglobulin or vaccine to be sent: _____

_____

_____

34. **GP informed**: **Y**Â **N**Â

Please keep a record of all post exposure incidents.

Appendix 4: HPSC Fact Sheet on Rabies, 2015

http://www.hpsc.ie/A-Z/Zoonotic/Rabies/Factsheet/

Rabies

What is rabies?
Rabies is a viral infection of the nervous system that can infect almost all mammals, including humans. Foxes, dogs, raccoons, bats and skunks can all act as reservoirs for rabies. Worldwide, the principal hosts for rabies are the domestic dog, and bats, particularly insect eating bats. Once infected, the virus becomes concentrated in an infected animal's saliva and is passed on through the animal's bite. It can also be passed on by contact of infected saliva through scratches, licks on broken skin and mucous membranes. It is one of the oldest recognised diseases in man. Rabies is a **notifiable disease** in Ireland.

How does rabies make you ill?
After being bitten by an infected animal, the disease usually incubates for about 3 to 8 weeks, but can be very variable. The virus multiplies in the initial wound and spreads through the nerves to the spinal cord and brain. When the virus reaches the brain, it rapidly multiplies and passes to the salivary glands. After this time early symptoms of malaise, fever, or headache followed by anxiety, convulsions and paralysis appear. Due to spasm of throat muscles, an affected person may find it difficult to swallow even water (hydrophobia). Not everyone who is bitten by a rabid animal will develop the disease. By the time symptoms develop, the disease has become very advanced and it is almost always fatal.

Can rabies be treated?
There is a vaccine against rabies, licensed for use in Ireland, that is very effective at preventing the disease. The vaccine works by stimulating the body's defences to produce antibodies that will neutralise the rabies virus. When someone is strongly suspected of having been bitten by a rabid animal, specific antibody (called immunoglobulin or Ig) is also given at the same time as the vaccine, regardless of whether the person has been immunised in the past. This gives a booster dose of antibody that provides a very high dose of antibodies to combat the rabies vaccine. The earlier the vaccine and immunoglobulin are given, the better are the chances of survival. If given within hours of a bite recovery is generally 100%. Once symptoms of encephalitis appear (confusion, paralysis, coma), the disease is almost invariably fatal.

Where is rabies found?
Rabies is found in Asia, Africa, and Central and South America, but it also can be found in northern Europe. In developed countries such as the United States very few people die of rabies, despite the disease being quite common among animals there.

Throughout the world, however, according to the World Health Organization, 40,000 people die of the disease each year. At least 30 countries, including Ireland, are officially rabies-free, usually because of strict regulations about animal movement. There has not been a case of rabies in animals in Ireland since 1902.

How likely are you to catch rabies?
Rabies is very hard to contract. A deep bite from a rabid animal is the most likely way in which it can be passed on. Although possible, the likelihood of contracting rabies from licks of a rabid animal or from touching a rabid animal is tiny.

Are bats a risk?
A tiny proportion of bats in Europe carry bat rabies (caused by European Bat Lyssavirus - very similar to normal or sylvatic rabies). Bats carrying rabies have been identified in the UK and there is at least one instance of a British bat handler dying of rabies following a bat bite. As bat populations are potentially quite mobile, the supposition must be that bats carrying rabies can fly to Ireland and so, given the seriousness of rabies, the assumption must be that any bat in Ireland (most especially a species known as Daubenton's bat) poses a risk of rabies. Accordingly, if a person is bitten by a bat in Ireland, they will be offered rabies preventive treatment, on the very slender possibility that they may have been exposed to the virus. However, it must be remembered that the likelihood of a member of the general public contracting rabies from a bat is extremely small; and it would only be in the circumstance where a bat were to bite a person that the disease could be spread.

Bats are a protected and valuable species. It is important that members of the public should not approach a bat they come across. If a bat is seen during the day or allows a person to approach them, they are unwell and should not be approached. Bats should only ever be approached and handled by those trained and qualified to do so. By avoiding bats, members of the general public will have a risk of developing rabies that is very close to zero.

What can be done if one is bitten by a rabid animal?
If bitten, and treated straightaway, the risk of dying is tiny. The wound should be cleaned thoroughly with soap and water. The person should then seek immediate medical attention. Vaccination and, occasionally if medically indicated, immunoglobulin are given. This would be particularly important for bites acquired outside the UK and Ireland.

Who should be immunised against rabies?
Various groups of people should be immunised against rabies. Groups for whom vaccination should be considered include: anyone who travels to remote places where medical treatment may not be available; people who handle bats; anyone whose work involves working with imported animals; health and laboratory workers who work with the virus. The vaccine comes in three doses, and should be boosted every two or three years. It is a very safe vaccine with few side effects and is virtually 100 per cent effective.

Where can I get further information on Rabies?

The **European Centre for Disease Prevention and Control** has extensive rabies information.
http://ecdc.europa.eu/en/healthtopics/rabies/Pages/index.aspx

The **World Health Organization** has a rabies factsheet. http://www.who.int/mediacentre/factsheets/fs099/en/

The **Centers for Disease Control and Prevention** provide an excellent rabies portal. http://www.cdc.gov/rabies/

The **Health Protection Surveillance Centre** has useful resources on rabies. http://www.hpsc.ie/A-Z/Zoonotic/Rabies/

Appendix 5: Contacts

Government Departments			
1.	Department of Health	Hawkins House, Dublin 2.	01-6354000
2.	Department of Agriculture, Food and the Marine	NDCC: National Disease Control Centre, Department of Agriculture, Food and the Marine, Kildare Street, Dublin 2.	01 6072000 and ask for NDCC After Hours Emergency Line: 1850 200 456
Medical			
3.	Health Protection Surveillance Centre	25-27 Middle Gardiner Street, Dublin 1	01 8765300 – ask for duty physician
4.	Cherry Orchard Hospital	Ballyfermot, Dublin 10.	01 6206000
5.	HSE East (Counties Dublin, Kildare and Wicklow)	Department of Public Health, Steevens Hospital, Dublin 8	01 6352073 or 01 6352151
6.	HSE Midlands (Counties Laois, Offaly, Longford and Westmeath)	Department of Public Health, Area Office, Arden Road, Tullamore, Co. Offaly	057 9359891
7.	HSE Mid West (Counties Clare, Limerick, and North Tipperary)	Department of Public Health, Mount Kennett House, Henry Street, Limerick	061 483337
8.	HSE North East (Counties Cavan, Louth, Meath and Monaghan)	Department of Public Health, Railway Street, Navan, Co. Meath	046-9076412
9.	HSE North West (Counties Donegal, Sligo and Leitrim)	Department of Public Health, Iona House, Upper Main Street, Ballyshannon, Co. Donegal.	071-9852900
11.	HSE South (Counties Cork and Kerry)	Department of Public Health, Floor 2, Block 8, St. Finbarr's Hospital, Douglas Road, Cork	021-4927601
13.	HSE South East (Counties Carlow, Kilkenny, South Tipperary, Waterford and Wexford)	Department of Public Health, Lacken, Dublin Road, Kilkenny	056-7784142
14.	HSE West (Counties Galway, Mayo and Roscommon)	Department of Public Health, Merlin Park Hospital, Galway	091-775200
International Medical			
15.	Public Health England, Virus Reference Division	Public Health England, 61 Colindale Avenue, London NW9 5EQ, UK.	0044-20-83276017
16.	Public Health England, Infectious Diseases Urgent and Out of Hours advice and support	Public Health England, 61 Colindale Avenue, London NW9 5EQ, UK.	0044-20-82004400 or 0044-20-82006868
District Veterinary Offices			
17.	Cavan/Monaghan	Farnham St., Cavan	076 1064439
18.	Cork North	Hib. House, 80 South Mall, Cork	021 4851400
19.	Cork South	Clogheen, Clonakilty Co. Cork	023 8836200
20.	Donegal	Meeting House St, Raphoe, Co. Donegal	074 9173600
21	Galway	Áras an tSáile, Lakeshore Drive, Renmore, Galway	091 507600
22.	Kerry	Spa Road, Tralee, Co. Kerry	066 7145052
23.	Kildare/Dublin/Laois/Wicklow W	Poplar House, Poplar Square, Naas, Co. Kildare	045 873035
24.	Leitrim/Longford/Sligo	Derryhallagh, Drumshambo, Co. Leitrim	071 9682000 1890-253101

25.	Limerick/Clare	Houston Hall, Ballycumin Ave. Raheen Ind. Est, Ratheen, Limerick.	061 500900
26.	Mayo	Michael Davitt House, Castlebar, Co. Mayo	094 9035300 1890 200507
27.	Meath/Louth	Kilcairn, Athlumney, Navan, Co. Meath	046 9079030 1890 253110
28.	Offaly/Westmeath	Clonminch, Tullamore, Co. Offaly	057 9370300 1890253237
29.	Roscommon	Govt. Offices, Circular Road, Roscommon	090 6630100
30.	Tipperary	Government Offices, Davis Street, Tipperary	062 34900 1890 253127
31.	Waterford/Kilkenny	Govt. Offices, The Glen, Co. Waterford	051 312300
32.	Wexford/Wicklow E/Carlow	Vinegar Hill Lane, Enniscorthy, Co Wexford	053 9259200 1890 200507
Local Authorities			
33.	Carlow County Council	County Offices, Athy Road, Carlow	059 9170300
34.	Cavan County Council	Franham Street, Cavan	049 4378300
35.	Clare County Council	New Road, Ennis, Co. Clare	065 6821616
36.	Cork County Council	County Hall, Carrigrohane Road, Cork	021 4276891
37.	Donegal County Council	County House, Lifford, Co. Donegal	074 9153900
38.	Dun Laoghaire/Rathdown County Council	County Hall, Marine Road, Dun Laoghaire	01 2054700
39.	Fingal County Council	County Hall, Main Street, Swords, Co. Dublin	01 8905000
40.	Galway County Council	County Hall, Prospect Hill, Galway	091 509000
41.	Kerry County Council	Aras an Chontae, Rathass, Tralee, Co. Kerry	066 7183500
42.	Kildare County Council	Aras Chill Dara, Devoy Park, Nass, Co. Kildare	045 980200
43.	Kilkenny County Council	County Hall, John Street, Kilkenny	056 7794000
44.	Laois County Council	County Hall, Portlaoise, Co. Laois	057 8664000
45.	Leitrim County Council	Aras an Chontae, Ck On Shannon, Co.Leitrim	071 9620005
46.	Limerick City and County Council	Merchants Quay, Limerick	061 407120
47.	Longford County Council	Aras an Chontae, Great Water St., Longford	043 3343300
48.	Louth County Council	Millennium Centre, Dundalk, Co.Louth	042 9335457
49.	Mayo County Council	Aras an Chontae, Castlebar. Co. Mayo	094 9047600
50.	Meath County Council	County Hall, Navan, Co. Meath	046 9097000
51.	Monaghan County Council	Council Offices, The Glen, Monaghan	047 30500
52.	Offaly County Council	Courthouse, Charleville Road, Tullamore, Co. Offaly	057 9346800
53.	Roscommon County Council	Courthouse, Roscommon	0906 632500
54.	Sligo County Council	Riverside, Sligo	071 911 1111
55.	South Dublin County Council	County Hall, Tallaght, Dublin 24	01 4149000
56.	Tipperary County Council	Civic Offices, Clonmel, Co. Tipperary	076 1065000
57.	Waterford City and County Council	City Hall, The Mall, Waterford	076 1102020
58.	Westmeath County Council	County Buildings, Mullingar, Co. Westmeath	044 9332000
59.	Wexford County Council	County Hall, Carricklawn, Wexford	053 9196000
60.	Wicklow County Council	County Offices, Whitegates, Wicklow	0404 20100
61.	Cork City Council	City Hall, Anglesea Street, Cork	021 496 6222
62.	Dublin City Council	Civic Offices, Wood Quay, Dublin 8	01 2222222
63.	Galway City Council	City Hall, College Road, Galway	091 536400