Rabies and other lyssaviruses

Rabies virus is a species of the genus *Lyssavirus* of the family *Rhabdoviridae*. Seven lyssaviruses, all antigenically related, are now recognised: rabies and six rabies-related viruses, five of which are known to have caused fatal infection in humans. The differences are often associated with geographic location and mammalian species. Some of these rabies-like illnesses will be diagnosed as rabies using the standard (FA) test.

Currently only Rabies is listed in the notifiable infectious diseases schedule. Reporting of other lyssavirus infections by medical practitioners is recommended with informed patient consent.²

**Epidemiology in New Zealand**

New Zealand has long been rabies free. Rabies and other lyssaviruses are, however, widely distributed throughout the developed and developing world, including Asia and some parts of Oceania, and cases in New Zealand could potentially occur in people who have travelled through rural parts of rabies-endemic countries.

**Case definition**

**Clinical description**

An acute encephalomyelitis that progresses to coma and death within 10 days of the onset.

**Laboratory test for diagnosis**

**Laboratory confirmation requires** at least one of the following:

- isolation of rabies virus from skin snips, saliva, cerebrospinal fluid (CSF) or neural tissue
- detection of viral antigen in tissue
- detection of rabies neutralising antibody at a titre of at least 1:5 in serum or CSF (provided the patient is not immunised).

¹ Unless otherwise specified, the term ‘rabies’ in this chapter can be read as ‘rabies and other lyssaviruses’.

² In this case, informed consent includes understanding and agreement by the patient that their name and some details will be provided by the responsible medical practitioner to the local medical officer of health for public health follow-up and inclusion in national infectious disease statistics.
These tests may not be available in New Zealand.

If other lyssavirus infection is suspected, discuss testing with the Institute of Environmental Science and Research (ESR); however, the testing is the same as for rabies.

**Case classification**

- **Under investigation**: A case that has been notified, but information is not yet available to classify it as probable or confirmed.
- **Probable**: A clinically compatible illness with a history of travel to an area where rabies is endemic.
- **Confirmed**: A clinically compatible illness that is laboratory confirmed.
- **Not a case**: A case that has been investigated and subsequently found not to meet the case definition.

**Spread of infection**

**Incubation period**

Highly variable, usually 3–8 weeks (but may be as short as 9 days or up to 7 years).

**Mode of transmission**

Lyssaviruses are carried in the saliva of infected mammals and transmitted by percutaneous introduction through a bite or scratch into a fresh break in the skin or by contact with intact mucous membranes (eyes, nose, mouth) (Communicable Diseases Prevention and Control Unit 2008; BCCDC 2009). Transmission has also occurred through transplantation of organs (usually cornea; also liver, kidneys, vascular) taken from people who died with undiagnosed rabies. There have been rare reports of transmission by aerolisation of infectious material – in a laboratory setting and in a bat-infested cave.

**Period of communicability**

From dogs and cats: For 3–7 days before onset of clinical signs and throughout illness. Bats and skunks may shed the virus for 1–2 weeks before onset of disease. It remains unclear as to whether it is possible for animals in the wild to carry lyssaviruses asymptomatically.

**Notification procedure**

Attending medical practitioners or laboratories must immediately notify a medical officer of health of suspected cases of rabies. Notification should not await confirmation.
Other lyssavirus infections are not currently listed on the notifiable infectious diseases schedule. Reporting of other lyssavirus infections by medical practitioners is recommended with informed patient consent.\(^3\)

The Ministry of Health reports to the World Health Organization (WHO) where appropriate, in accordance with the International Health Regulations (2005).

### Management of case

#### Investigation

Obtain a history of travel, vaccination and animal bites.

Ensure laboratory confirmation has been attempted.

#### Restriction

Given the lack of evidence for person-to-person transmission of rabies (other than through corneal or solid organ transplantation), in 2008 the Centers for Disease Control and Prevention (CDC) Hospital Infection Control Practices Advisory Committee recommended that medical staff adhere to standard infection control precautions. Staff should wear gowns, goggles, masks and gloves, particularly during intubation and suctioning.

Post-exposure prophylaxis is only indicated when a contact has been bitten by a case. It is also indicated when the case’s saliva or other potentially infectious material such as neural tissue has contaminated an open wound or mucous membrane (CDC 2008).

#### Treatment

The case should be under the care of an infectious diseases physician.

#### Counselling

Advise the case and their caregivers of the nature of the infection and its mode of transmission.

### Management of contacts

Identify contacts for prophylaxis and counselling where appropriate.

#### Definition

All those who have an open wound or mucous membrane exposure to the case’s saliva.

\(^3\) In this case, informed consent includes understanding and agreement by the patient that their name and some details will be provided by the responsible medical practitioner to the local medical officer of health for public health follow-up and inclusion in national infectious disease statistics.
All contacts bitten or scratched by, or with wound or mucous membrane exposure to, the same rabid animal.

Investigation and restriction
Nil.

Prophylaxis
Human disease caused by all known lyssaviruses, including Australian bat lyssavirus (ABL), may be prevented by initial first aid and specific treatment with rabies immunoglobulin (RIG) and vaccination.

Test any contact animal for the virus if possible.

Consult an infectious diseases physician for advice.

Counselling
Advise all contacts of the incubation period and typical symptoms of rabies. Encourage them to seek early medical attention if symptoms develop.

Other control measures

Identification of source
Attempt to identify the animal source so steps may be taken to minimise the risk of further transmission.

Disinfection
Clean and disinfect surfaces and articles soiled with saliva.

Health education
Pre-exposure prophylaxis rabies vaccination may be indicated for people travelling to rabies-endemic countries and who plan to be in contact with wild or domestic animals, visiting remote areas where medical care is difficult or staying longer than 1 month in an area where dog rabies is common. It is also recommended for research laboratory personnel working with live lyssaviruses.

Advise people travelling in a country with endemic rabies that, if they sustain an animal bite, they should wash the wound immediately and thoroughly with soap and water and then be assessed by a doctor as soon as possible to determine the need for post-exposure prophylaxis. Advise travellers they should obtain detailed, written information on the type of any immunoglobulin and/or vaccine they have received and the schedule.
Reporting

Ensure complete case information is entered into EpiSurv.

On receiving a notification, medical officers of health should immediately notify the Ministry of Health Communicable Diseases Team.

If the case may have acquired rabies in New Zealand, the Director of Public Health, Ministry of Health, will notify the appropriate staff in the Ministry for Primary Industries, on phone: 0800 809 966, so that further investigation of the source can be undertaken.

If the case has been acquired in another country, obtain as much information as possible about the case’s contacts in that country as it may be necessary to inform health authorities in that country. Such liaison with other countries will be conducted by the Ministry of Health.

References and further information


