PREVENTION OF HUMAN LYSSAVIRUS INFECTION

Recommendations of the Lyssavirus Expert Group meeting, Canberra, 11 November 1996[1]*. Endorsed by the Communicable Diseases Network Australia New Zealand.*

Introduction

This document provides a background to the newly identified bat lyssavirus and recommendations for prevention of human lyssavirus infections. The recommendations are based on the currently available information on the newly identified virus, and may be updated as more information becomes available.

Medical practitioners are advised to contact public health authorities regarding post-exposure vaccination.

Background

A lyssavirus which is likely to represent a new genotype was first identified in May 1996 from a fruit bat in northern New South Wales[1,2]. The virus has now been isolated from five animals belonging to two bat species in New South Wales and Queensland. The two species are the Black flying fox (*Pteropus alecto*) and the Little Red flying fox (*Pteropus scapulatus*). The first human case apparently due to this virus was identified in a woman from Queensland in November 1996[3].

The genus *Lyssavirus* falls within the family *Rhabdoviridae.* There are currently six genotypes recognised within the genus. These include the classic rabies virus, Lagos bat virus, Mokola virus, Duvenhage virus and the two European bat lyssaviruses. These viruses have not previously been reported to occur in Australia. The newly identified lyssavirus is closely related to, but is distinct from, the classic rabies virus. In laboratory animals, rabies vaccine and rabies immunoglobulin are protective against this new lyssavirus.

Non-rabies lyssaviruses usually do not spread among terrestrial animals and human infections are rare. The newly identified lyssavirus is currently only known to have infected fruit bats (flying foxes) and one human. Insectivorous bats are known to carry other lyssaviruses overseas and therefore cannot be discounted as a potential risk at this stage.

Rabies virus and other lyssaviruses are usually transmitted to humans via bites or scratches which provide direct access of the virus in saliva to exposed tissue and nerve endings. This means that most people would not be exposed to lyssavirus through casual contact with bats.

As the bat lyssavirus is closely related to classic rabies virus, infection may be prevented by rabies vaccine and rabies immunoglobulin. Recommendations for administering these are provided below. Further research is being conducted into the distribution and transmissibility of the virus.

Recommendations

PRE-EXPOSURE VACCINATION

Pre-exposure vaccination should be recommended to those occupationally or recreationally exposed to bats, where there is a risk of being bitten or scratched, for example:

- Bat carers
- Veterinary laboratory staff
- Veterinarians
- Wildlife officers (including local government officers)
- Managers of display or research colonies
- Members of indigenous communities who may catch bats for consumption
- Power line workers who frequently remove bats from power lines

Pre-exposure vaccination consists of three deep subcutaneous or intramuscular doses of 1ml rabies vaccine given on days 0, 7 and 28. Doses should be given in the deltoid area, as rabies neutralising antibody titres may be reduced after administration in other sites. In children, administration into the anterolateral aspect of the thigh is also acceptable. Where possible, serum should be collected prior to vaccination and sent to the state health laboratory for possible examination when appropriate diagnostic tests become available.

POST-EXPOSURE MANAGEMENT AND VACCINATION

If a person is bitten or scratched by any Australian bat, the flow chart (Figure) should be used to determine the appropriate post-exposure treatment. Contact such as patting bats or exposure to urine and faeces does not constitute an

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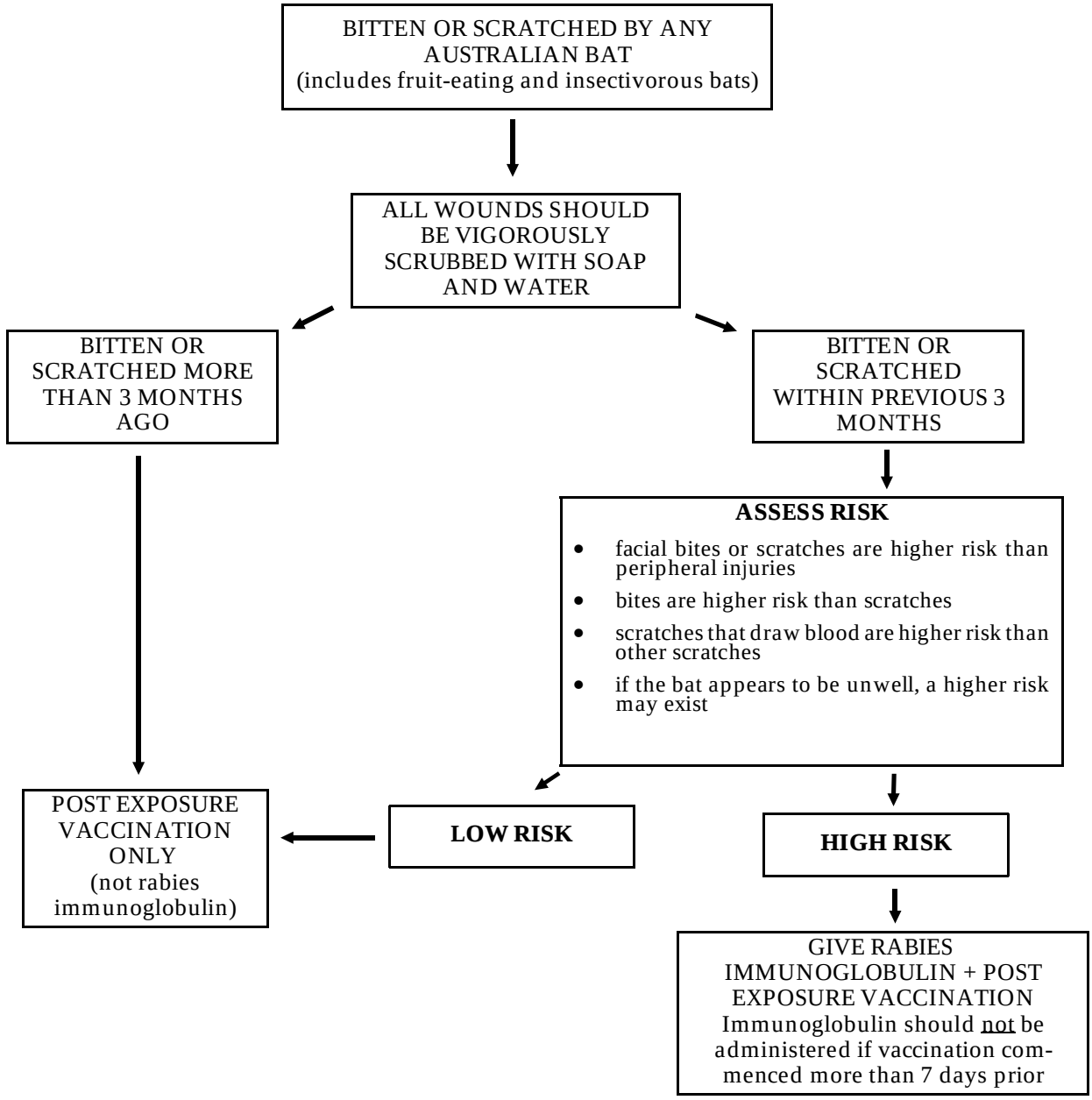
Figure. Bat exposure flow chart



at-risk exposure. Pre-exposure vaccination should be offered if the person has ongoing contact with bats.

In all cases, the wound should be scrubbed thoroughly, as soon as possible, with soap and water. Proper cleansing of the wound is the single most effective measure for reducing virus transmission. Where possible, the bat should be sent to the State veterinary laboratory for further investigation.

Post-exposure vaccination consists of five doses of 1ml of rabies vaccine given by deep subcutaneous or intramuscular injection, on days 0, 3, 7, 14 and 28. Doses should be given in the deltoid area, as rabies neutralising antibody titres may be reduced after administration in other sites. In children, administration into the anterolateral aspect of the thigh is also acceptable. Where possible, serum should be collected prior to vaccination and sent to the state health laboratory for possible examination when appropriate diagnostic tests become available.

Rabies immunoglobulin, when required, should be given as a single dose at the same time as the first dose of the post-exposure vaccination course. The dose is 20 International Units per kilogram body mass. Where the site permits, half the dose should be infiltrated into the wound and half given intramuscularly. If vaccination has been commenced more than seven days prior, rabies immunoglobulin should not be administered.

Rabies immunoglobulin is currently in short supply worldwide. An assessment should be made of the risk of virus transmission before immunoglobulin is given. Considerations as to the level of risk include:

- facial bites or scratches are higher risk than peripheral injuries;
- bites are higher risk than scratches;
- scratches that draw blood are higher risk than other scratches;
- if the bat appears to be unwell, a higher risk may exist.

For more information on rabies immunoglobulin and vaccine, see *The Australian Immunisation Procedures Handbook, 5th edition*[4].

References

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ANNUAL REPORT OF THE *CDI* VIROLOGY AND SEROLOGY LABORATORY REPORTING SCHEME, 1995

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Summary

There were 42,451 laboratory reports recorded by the Virology and Serology Laboratory Reporting Scheme in 1995. Following recent epidemic years, low numbers of measles reports were received. The number of reports of pertussis was similar to previous years. Ross River virus reports were markedly reduced compared with previous years. Six reports of Japanese encephalitis virus were recorded following the outbreak in the Torres Strait. For viral meningitis no single type of enterovirus was reported in large numbers as is usually the case. Consecutive epidemics of influenza A and influenza B were recorded in the winter months. Influenza A sub-type H_1N_1 was the predominating strain for the first time since 1988. Reports of respiratory syncytial virus were received in large numbers while rotavirus numbers remained low compared with previous years.
***Comm Dis Intell* 1996;20:507-524.**

Introduction

For many diseases laboratory identification of the agent of disease is essential for accurate diagnosis. For these diseases laboratory surveillance is useful. The laboratory can also provide additional information regarding specific characteristics of microorganisms. For example the antigenic characterisation of influenza virus is important in deciding the formulation of the vaccine for the following season.

The Virology and Serology Laboratory Reporting Scheme, LabVISE, began in 1977. It is a sentinel scheme which collects data on viruses and other agents (bacteria, chlamydial infections, coxiellas and rickettsias) diagnosed in virology and serology laboratories. Laboratories in all States and the Australian Capital Territory contribute to the scheme.

Data are reported in *Communicable Diseases Intelligence* (*CDI*) each fortnight. An annual report is produced each year[1,2,3]. This is the annual report for 1995.

Methods

Twenty-two laboratories currently contribute to the LabVISE scheme. Participation is voluntary. Included are both public and private laboratories with representation in all States and the Australian Capital Territory. A number of State reference laboratories are included.

Laboratories elect to submit data on either computer disk using LabVISE software, written in Epi Info, or on forms in the same format. Reports are submitted, collated and analysed and published in *CDI* each fortnight. Each record includes compulsory fields: laboratory; specimen collection date; patient name code; specimen source; the agent detected and the method of diagnosis. Additional optional fields include: specimen laboratory code number; sex; date of birth, or age; postcode; clinical diagnosis; and risk factors. Data presented in this annual report are based on reports with specimen collection dates in 1995.

Due to the limitations of the system, age group data are only available in unequal age groups, hence this must be borne in mind when interpreting figures of age-sex distribution.

Data derived from this scheme must be interpreted with caution. The number and type of reports received is subject to a number of biases. These include the number of participating laboratories which has varied over time. The locations of laboratories also create biases in the system as some jurisdictions are better represented than others. Also changes in diagnostic practices, particulary the introduction of new testing methodologies, may affect the number of laboratory reports received. The introduction of testing for hepatitis C in 1990 has resulted in an increase in the