



EID Weekly Updates:

Emerging and Reemerging Infectious Diseases, Region of the Americas

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Human Rabies Transmitted by Bats in Pará State, Brazil

Background

Rabies is an infectious disease of acute viral etiology transmitted via mammals. The disease presents two principal transmission cycles: urban and wild. It is of major importance in that it has a case-fatality rate of 100%. However, it is amenable to elimination in its urban cycle as long as efficient prevention measures are taken to eliminate the source of infection to humans.

The principal sources of infection in the urban transmission cycle are dogs and cats. Bats are the primary source of infection in the wild cycle.

Cases of human rabies occur mainly as a result of being bitten by an infected animal, following the introduction of the virus contained in the animal's saliva. The disease can also enter the system through the mucous membranes, though less frequently, via scratches and licking. There also exists a remote possibility of vertical transmission or of infection through the respiratory tract, sexual contact, or the digestive tract (in animals).

In Brazil, in the period from 1986 to 2003, 675 cases of human rabies were reported, with most cases occurring in the northeastern (59%) and northern (21%) regions. In the period from 1986 to 1994, there was a significant reduction in the number of cases, extending up to the present (2003 data), with an average of 23 cases. Over the same period (1994-2003), the predominant species responsible for attacks was the dog, bringing about 80% of all human cases, followed by bats (8.2%). Historical data on human rabies cases by attacking species shows that, during the same period, the number of cases of human rabies transmitted by bats did not exceed 4 cases throughout the entire country.

In 2003, 17 cases of human rabies were reported, 14 transmitted by dogs and 3 by bats. So far this year, cases transmitted by these species have occurred in Bahia, Maranhão and Espírito Santo.

Current Situation in Portel, Pará

During the month of March 2004, the Department of Health of the State of Pará (Secretária da Saúde/SES-PA) and the Secretariat of Surveillance in Health (Secretária de Vigilância em Saúde/SVS) reported an outbreak of human rabies transmitted by bats in the city of Portel. The first case occurred on 4 March and the last case on 26 March. Following the reports to the SES and SVS, once epidemiological research was begun, five deaths had already occurred prior to any material being collected for diagnosis.

To date, the distribution of cases and deaths is as follows:

	Confirmed	Suspected	Ruled out	Total
Number of cases	5	11	3	19
Number of deaths	5	8	0	13
<i>Note:</i> The number of deaths is included in the number of cases. <i>Sources:</i> Department of Health of the State of Pará (Secretária da Saúde/SES-PA) and the Secretariat of Surveillance in Health (Secretária de Vigilância em Saúde/SVS).				

Should all suspected cases emerge as confirmed, which would elevate the number of confirmed cases to 16, this situation would represent the greatest outbreak of human rabies transmitted by bats ever to be registered in the country. The causes of this extremely rare event are being investigated by the municipal health authorities, SES-PA, SVS, and State Secretary of Agriculture. Aggression by bats occurred predominantly in the months of September and October 2003. Meanwhile, these episodes have been reported as frequent in the rural area around the Acuti Pereira River, the area where the affected persons were living. Initial evaluations indicate the existence of more than one bat colony in the affected localities.

Measures Taken

The epidemiological investigation included the interview of all persons attacked by bats along with the review of suspected cases of human rabies and deaths in the city appearing to occur as a result of compatible symptomology. Based on the identification of the persons attacked, a prophylaxis protocol (antirabies serum plus vaccine) was implemented for rabies in the city. All those attacked by bats were vaccinated. For other people exposed to the risk of rabies along the Acuti Pereira River, a regime of pre-exposure vaccination prophylaxis was instituted.

For all suspected cases detected after the epidemiological investigation medical care was made available in the city, with two suspected cases being sent to the Barros Barreto Hospital in Belém, Pará. Biological material was collected from the

affected persons for diagnostic purposes, the samples being sent to the Evandro Chagas Institute for diagnostic testing.

Teams from the local health department have been working to identify the bat colonies and to control vampire bats in the areas where attacks have occurred.

Teams from both the city and state are vaccinating all dogs and cats against rabies in the focal area and are intensifying their vaccination efforts in the other rural and urban areas.

An orientation program is being offered for health professionals, training technicians on prophylactic treatment. Educational colloquia are being held for teachers, nursing auxiliary staff, and community health workers. There is a local media campaign to educate the public, and leaflets and technical notes are being prepared on bat attacks for distribution in the city.

Source: Report sent to PAHO by the Ministry of Health, Secretary of Health Surveillance (*Ministério da Saúde, Secretária de Vigilância em Saúde*) of Brazil, Brasília.

Serological Study on Migratory and Native Birds, Brazil

Migratory birds are the principal natural reservoirs of such viruses as Avian Influenza, Newcastle, West Nile Virus (WNV) and other rarely studied arboviruses as Mayaro, Oropuche, Tacaiúma, Cacicaporé, San Luís and Rocío. The current epidemic of avian influenza occurring in eight Asian countries has mainly affected small family poultry farms, where birds are raised in the open and contact with potentially infected wild birds is much more probable. In fact, the World Organization for Animal Health (IOE) recommends avoiding contact by domestic fowl with wild birds as a basic measure to prevent and control outbreaks caused by highly pathogenic avian influenza.

The northeastern region of Brazil is visited periodically by thousands of migratory birds moving from the Arctic winter of the North to South America. The species migrating toward northeastern Brazil congregate in its naturally moist coastal areas. This circumstance was the reason behind a study conducted in Salina Diamante Branco, Galinhos, to identify the viruses that could be circulating among the migratory birds flying to the Brazilian coast.

As part of the study, birds were captured between 22 April and 3 May 2003, whereupon their biometric parameters and the clinical status were registered. Blood samples and cloacal discharge were extracted for serological studies and for isolation of WNV and other arboviruses. Studies were also carried out on dead birds, and samples of different organs were collected to isolate avian influenza, Newcastle and West Nile viruses. In addition, mosquitoes from the species circulating in the area were captured for entomological study as well as for serological tests for viral identification.

A total of 711 birds from 23 different species were captured, of which 6 were native species. In some of the species identified (*Calidris alba* and *Arenaria interpres*). West Nile Virus (WNV) had already been isolated beforehand in the USA. Blood samples

were extracted from 682 birds, out of which 495 underwent hemoagglutination testing and 294 were tested for viral isolation. Tissue sampling was done on 67 dead birds, 6 of which had been found dead in the area and the rest of which dying during the study.

All the blood and tissue samples were sent to the Evandro Chagas Institute for diagnosis. The studies conducted to isolate the virus among laboratory mice were negative. In the remaining blood samples, hemoagglutination tests were carried out for antibody detection of 20 different types of arbovirus (Alphavirus, Phebovirus, Orthobunyavirus and Flavivirus): none of the species presented antibodies against WNV, though they did to other arbovirus (Eastern Equine Encephalitis, Oropuche, Mayaro and Caciporé).

The cloacal discharge samples were sent to the laboratory of the Ministry of Agriculture, Livestock, and Provision in Campinas, São Paulo, for isolation of avian Influenza and Newcastle viruses. Material from 388 birds was divided into 22 pools and examined; 13 of the pools turned out to be positive for Avian Influenza A (H3) in samples taken from live migratory birds. Newcastle virus was isolated in 5 samples taken from migratory birds.

This study did not detect any circulation of WNV in the wildlife area of Salina del Diamante Branco in Galinhos State. However, the detection of antibodies for certain arboviruses among these birds demonstrates that the birds had previous contact with these and other related viruses, which accounts for their circulation in the area.

The isolation of Avian Influenza Virus A (H3) in a significant proportion of the birds' cloacal discharges, though of low pathogenicity, motivated shipment of the samples so that additional tests might be carried out on what the strain might mean in terms of its impact on human health.

Sources and Additional Information

- [*Boletim eletrônico epidemiológico*](#) (*Electronic Epidemiological Bulletin*) No. 2, 2004. Brasília: Secretary of Surveillance in Health (Secretaria de Vigilância em Saúde), Brazil. (in Portuguese)
- Technical Fact Sheet: [*Highly Pathogenic Avian Influenza*](#). Paris: World Organization for Animal Health (OIE).
- [*WHO Manual on Animal Influenza Diagnosis and Surveillance*](#). Geneva: World Health Organization (WHO), 2002.

International Health Regulations (IHRs)

The purpose of the International Health Regulations is to ensure maximum security against the international spread of diseases, with minimum interference with world traffic. The origins of the IHRs date back to the mid-nineteenth century, when cholera epidemics overran Europe between 1830 and 1847. These epidemics served as catalysts for intensive infectious disease diplomacy and multilateral cooperation in public health, starting with the first International Sanitary Conference held in Paris in 1851.

Between 1851 and the end of the century, eight conventions were negotiated on the

spread of infectious diseases across national boundaries. The beginning of the twentieth century saw multilateral institutions being established to enforce these conventions, including the precursor of the present Pan American Health Organization (PAHO).

In 1948, the WHO constitution came into force; and in 1951, WHO Member States adopted the International Sanitary Regulations, which in 1969 were renamed the International Health Regulations. These were modified in 1973 and 1981. Their original intention was to help monitor and control six serious infectious diseases: cholera, plague, yellow fever, smallpox, relapsing fever and typhus. Today, only cholera, plague and yellow fever qualify as reportable diseases.

Since 1995, WHO has been working on a revision of the International Health Regulations that would address the ever-changing unpredictable problem of the international spread of disease. WHO has now produced a working paper containing a preliminary draft of the proposed revisions. During the first half of 2004, national governments and international bodies will carefully review this draft. The results of this review will form the basis of an amended draft to be put to an International Working Group (IGWG) planned for November 2004. At this IGWG, Member States will be asked to endorse a final draft to be presented to the World Health Assembly in 2005 for adoption.

The working paper is available in six languages, among them [English](#), [Spanish](#), and [French](#).

This advisory approach to review the draft IHR requires active participation by Member Countries. To facilitate this process, the Pan American Health Organization (PAHO) and the World Health Organization (WHO) will carry out four subregional advisory meetings in the countries of the following subregions:

1. *South America*: Rio de Janeiro, Brazil, 5–7 April 2004.
2. *English-speaking Caribbean*: St. George's, Grenada, 19–20 April 2004.
3. *Central America, the Dominican Republic, and Cuba*: Santo Domingo, Dominican Republic, 27–29 April 2004.
4. *North America*: Ottawa, Ontario, Canada, 2–5 June 2004.

The objectives of these meetings are to permit the exchange of impressions and ideas on the first draft and to identify principal concerns of the Member Countries. Thus, a previous process of review will have had to take place within each country, for which WHO has developed a questionnaire to facilitate national discussion. This questionnaire has been distributed among the countries. In order to obtain a solid national position regarding the proposed new IHRs, one integrating all involved sectors, this endeavor should be led by the Ministry of Health.

Source and Additional Information: [International Health Regulations](#) (Geneva: World Health Organization/WHO, 2004).