

# Ross River virus infection in the north-west outskirts of the Sydney basin

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## Abstract

In early 1997, 69 cases of Ross River virus infection were reported in the north-western outskirts of Sydney. This represents a substantial increase over the maximum of 12 cases reported in any one year since 1991. The majority of cases (71%) are thought to have been locally acquired. This is the first reported outbreak of Ross River virus infection in this area and highlights the need for metropolitan health services to be vigilant about a disease that has primarily been associated with rural and semirural areas in New South Wales. *Comm Dis Intell* 1998;22:101-102

## Introduction

Ross River virus (RR virus) is a mosquito-borne arbovirus endemic in various regions of Australia<sup>1</sup>. The area covered by the Western Sector Public Health Unit (WSPHU), from western metropolitan Sydney to the western and north-western rim of the Sydney basin, comprises urban, semi-rural, rural and wilderness environs. Historically, there has been no published RR virus activity in this area; WSPHU has received occasional notifications for cases who had travelled to areas of known RR virus activity. Early in 1997, staff of the WSPHU became aware of an increase in laboratory RR virus notifications. On investigation, it became apparent that some cases may have acquired the infection within the Sydney basin. A prospective descriptive investigation of RR virus notifications was then undertaken.

## Methods

For the purpose of this investigation a case was defined as any person resident in the area covered by the WSPHU, with RR virus IgM positive serology, notified by a laboratory or doctor to the WSPHU between 1 January 1997 and 31 May 1997, with an onset of symptoms after 31 December 1996.

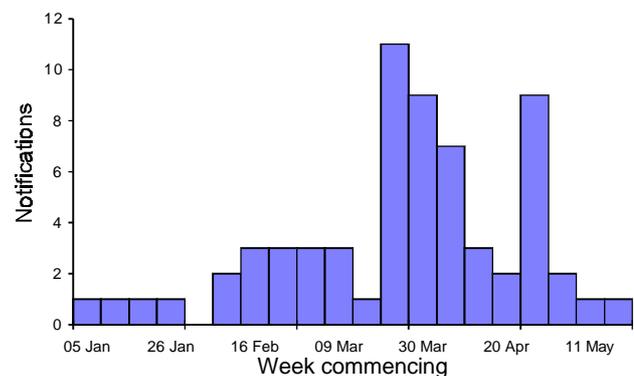
The referring doctors for cases were interviewed by telephone by the WSPHU and Department of Virology staff, and details were obtained about the presentation of symptoms, likely onset and travel history of the case. The cases were then contacted and interviewed either in person or by telephone, to clarify symptoms, date of onset and travel history. Where the case was not contactable, information obtained from the referring doctor was used for analysis.

## Results

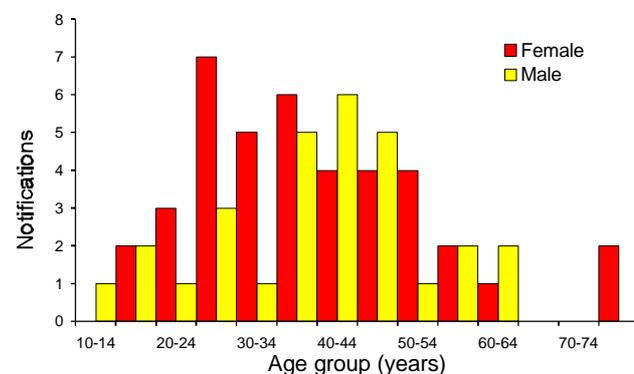
Since 1991 the maximum number of RR virus infections notified to the WSPHU in any one year had been 12. A total of 69 cases were identified during the five month study period, representing a crude incidence rate of 7.4 per 100,000 population. Histories were obtained from 68 (99%) referring doctors and 60 (87%) cases. The majority of cases, 49 (71%), recalled being bitten by mosquitoes

within the Western Sector area in the 21 days prior to becoming symptomatic; 15 (22%) reported histories of travel outside the Western Sector in this time period.

**Figure 1. Notifications of Ross River virus infection by week of onset, north-western Sydney, January-May 1997**



**Figure 2. Notifications of Ross River virus infection by age group and sex, north-western Sydney, January-May 1997**



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The onset of symptoms for most cases occurred in April 1997, with peaks in late March and early May (Figure 1). Most cases were in the 25 to 49 years age range (Figure 2). The male:female ratio was 1:1.4. All cases for whom a clinical history was available reported having joint pains; a majority (57%) also reported fatigue as a prominent symptom. Rash and fever were less commonly reported (21% each).

## Discussion

The number of notifications received by the WSPHU between January and May 1997 represents a substantial increase in cases for this area. Previously, all cases for which the WSPHU have records were likely to have been acquired outside the area. In this outbreak the vast majority of infections were likely to have been locally acquired. Most cases lived in the semirural parts of the area covered by the WSPHU where conditions for RR virus activity are favourable, however a few cases with no travel history did occur within the Sydney metropolitan area. These findings were limited by the reliance of defining a case on a single IgM result. The high false positive rate of some IgM assays,<sup>2</sup> and the persistence of virus specific IgM,<sup>3</sup> made diagnosis and time, and therefore place, of infection difficult to ascertain. However, the substantial increase in notifications compared to previous years seems to indicate that there was an increase in local RR virus activity.

The potential for RR virus activity in semi-rural areas to spread into major metropolitan centres has been seen in outbreaks in Perth and south-west Western Australia.<sup>4,5</sup> Lindsay et al., postulated that in the Perth outbreak, transmission within urban areas was facilitated by the movement of infected humans.<sup>4</sup> The incidence of infection in the metropolitan area in this western Sydney outbreak is unlikely to have been high enough for human-mosquito-human transmission to occur, and more likely to have arisen from animal host-mosquito-human transmission in the local area or unreported travel through endemic areas.

A smaller proportion of cases experienced fever and/or rash than has been documented in some previous studies.<sup>1,3</sup> There were anecdotal reports of people

believing they could not have RR virus infection if they did not have a fever and rash. Future health promotion messages regarding RR virus therefore should state that fever and rash are not always seen. Health promotion interventions should commence by early summer; however, considering the March and May peaks of onset in this outbreak, it may be worthwhile to also target interventions to coincide with events such as school holidays and public holidays, when people spend long periods of time outdoors and are therefore more likely to be bitten by mosquitoes. Health promotion interventions (including initiatives such as minimising mosquito breeding sites and education programs) and mosquito species and population studies, are currently being undertaken in western Sydney. The interventions were targeted for the 1997/98 mosquito season. Only four cases with onset between January 1998 and April 1998 have been notified to the WSPHU to date.

This is the first reported outbreak of RR virus in western Sydney. The reason why an outbreak occurred in this area in 1997 is difficult to determine. A combination of rains in late January and early February, the presence of appropriate mosquito vectors and macropod hosts, the large number of horses on farms in the area (possibly acting as amplifying hosts), and the increasing urbanisation around the natural and artificial waterways are likely to have contributed to this outbreak. This outbreak highlights the need for public health staff to be vigilant regarding RR virus, even in areas with no previous documented history of RR virus activity.

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**10 November 1998, Canberra**

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For further details see *CDI* 1998;22:60