



## Ross River Virus Disease

### A Management Guide for General Practitioners

### Environmental Health Guide

This management guide provides a summary of the epidemiology, clinical features, diagnosis, management and prognosis if Ross River virus (RRV) disease.

RRV is a virus that occurs in nature in environmentally-driven cycles between mosquitoes and animals (including humans). It is transmitted only by mosquitoes and cannot be caught from direct contact with another person or animal.

#### Overview

##### Clinical presentation

- Patients with Ross River virus (RRV) disease usually present with arthralgia, with or without arthritis.
- Constitutional symptoms such as fatigue, fever, myalgia, and maculopapular rash, occur in about 50% of patients.
- Patients are most commonly aged 20 to 60 years, although disease can occur at any age.

##### Diagnosis

- RRV disease can resemble other infectious and non-infectious illnesses.
- Diagnosis of RRV disease requires 3 criteria to be met:
  1. Clinical syndrome consistent with RRV disease;
  2. Travel or residence in an area of known or likely RRV transmission; and
  3. Serological evidence of recent RRV infection. A positive IgM is highly suggestive but seroconversion or a 4-fold rise on IgG titre is diagnostic of RRV disease.

##### Management

- There is no specific treatment for RRV disease. Patients should be informed that symptoms may persist for weeks to months, however most patients completely recover within a few months.
- Most patients find rest useful in the acute phase of illness.
- Gentle physical therapies such as hydrotherapy and swimming can reduce symptoms in some patients.
- Many patients will require simple analgesics to alleviate inflammation and pain during the course of their illness.
- Depression is common in prolonged cases of RRV disease and may require active management.

##### Prognosis

- Most patients recover from RRV disease within 3-6 months.
- Some patients have a more chronic illness. Searching for alternative diagnoses in some of these cases is recommended.



## Epidemiology

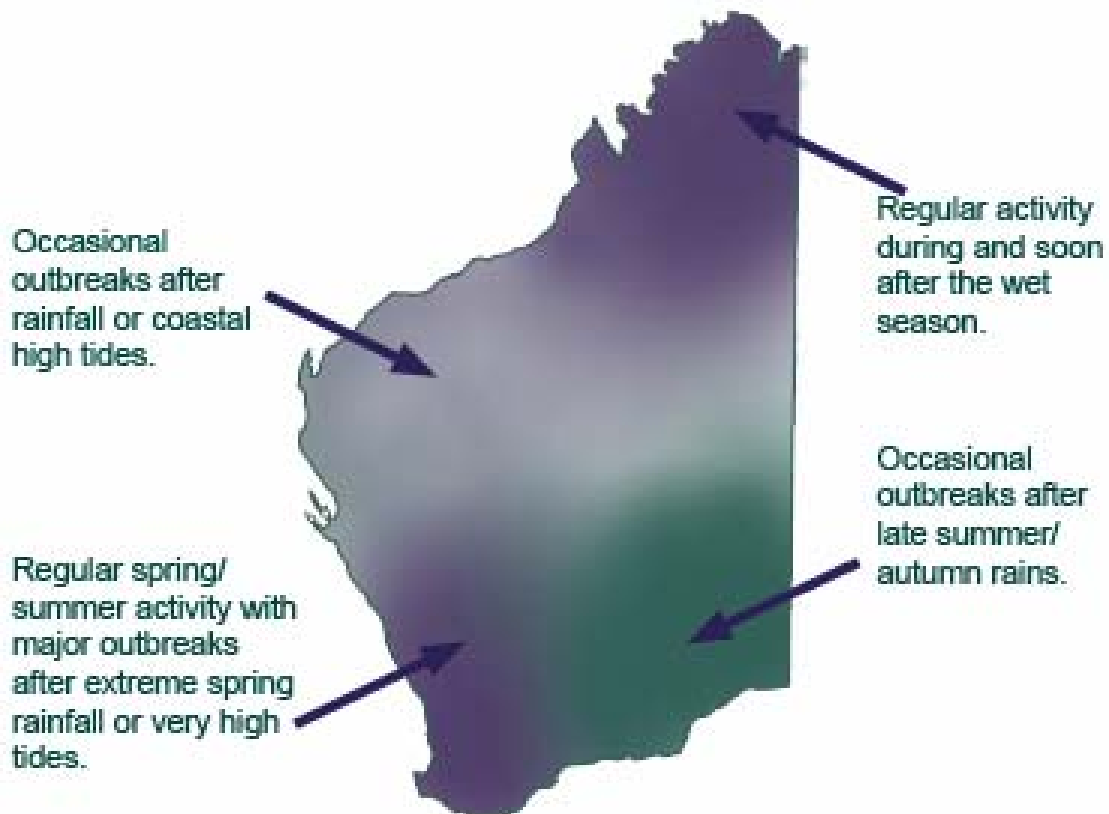
- RRV is endemic in several regions of Australia, including parts of Queensland, and the South-West and Kimberley regions of WA.

Major epidemics or small clusters of cases of RRV disease have been reported from every Australian State and Territory.

- Large epidemics of RRV disease occur every few years in WA, including throughout the South-West, where notification rates are highest in the vicinity of the Peel-Harvey estuary (Mandurah region), Leschenault estuary (Bunbury region), Capel and Busselton.

Many suburbs of Perth, particularly the outer metropolitan area, have also experienced local transmission during large RRV disease outbreaks.

- RRV is most active in late spring and summer in the South-West, during and just after the northern wet season in the north (Kimberley, Pilbara and Gascoyne), and in late summer and autumn in the interior (e.g. Murchison and Goldfields).





## Clinical Presentation

### Incubation period:

Usually between 7 to 9 days (range 3 to 21 days)

### Asymptomatic infection:

Most people infected with RRV are either asymptomatic or have only mild symptoms.

### Typical presentation:

The box below outlines the common symptoms experienced by patients with RRV disease. There is no specific order of symptom onset in patients with RRV disease.

Other symptoms (lymphadenopathy, sore throat, coryza, headache, neck stiffness, and photophobia) are unusual.

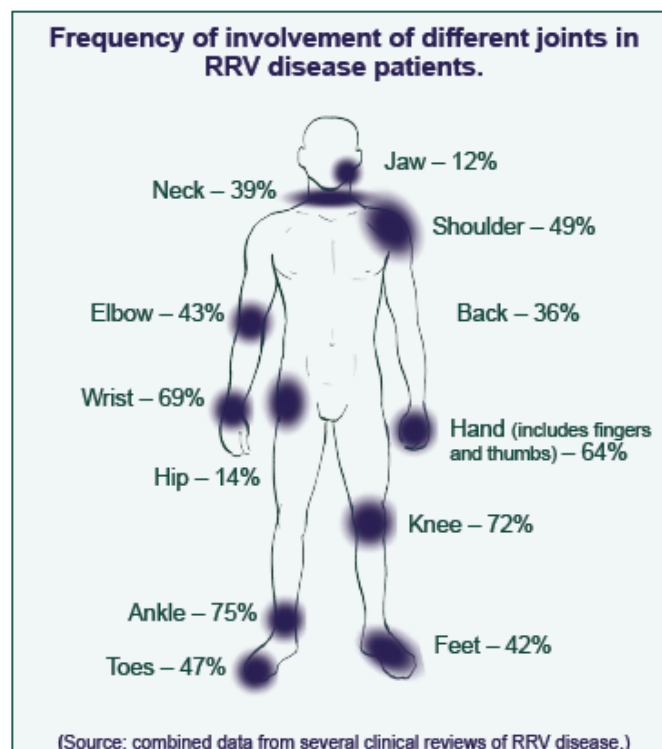
Frequency of symptoms/signs of RRV disease in patients (Harley, Sleigh, Ritchie, 2002; Smith 2001)	
Symptom/Sign	Frequency
Joint Pain	95%
Duration >1 month	90%
Fatigue	90%
Arthralgia	80%
Myalgia	60%
Rash	50%
Fever	50%

### Rash:

The rash is commonly distributed on the limbs and trunk. It is usually maculopapular and resolves within 2 weeks.

### Joints:

Peripheral joints are most commonly involved in RRV disease, including knees, ankles, wrists and fingers. Most patients have symmetrical involvement of joints. The involvement of joints can range from tenderness and minor restriction of movement to severe swelling, effusion and redness.





## Diagnosis

Diagnosis is based on:

1. Clinical symptoms and signs suggestive of RRV disease;
2. Residence in, or recent travel to, an area with endemic or epidemic RRV activity (see Epidemiology); and
3. Laboratory investigations.

### Laboratory Investigations:

#### RRV IgG serology

- A case of RRV disease is most reliably diagnosed by showing a >4-fold rise in RRV IgG antibody, or seroconversion, between acute and convalescent samples.
- The first serum specimen should be taken during the acute stage (within 7 days of onset of symptoms) and the second specimen at least 10 days later.
- Other diagnoses should be considered if there is not a rising IgG titre.

#### Single IgM serology

- IgM serology cannot be relied upon to conclusively diagnose RRV disease.
- A single serum specimen with a positive RRV IgM is highly suggestive of RRV disease, but not conclusive. RRV IgM can persist for months to years after primary infection. Thus, a positive RRV IgM may represent previous mild or asymptomatic infection and does not represent the cause of the presenting illness.
- False positive IgM results do occur and this should be suspected if IgM is detected in the absence of IgG. A convalescent serum sample should be taken to confirm the diagnosis through IgG seroconversion.

## Differential Diagnosis

The differential diagnosis of RRV is broad, and includes a spectrum of infectious and non-infectious causes of polyarthropathy.

Infectious differentials include Barmah Forest virus and parvovirus B19 (erythema infectiosum).

Non-infectious differentials include acute onset of non-infectious arthritides (including rheumatoid arthritis, SLE and adult Still's disease), Reiter's Syndrome and Henoch Schonlein purpura.

If the patient has:

- A high ESR/CRP,
- Anaemia,
- Persistent reduction in joint movements, or
- Radiological changes,

then the diagnosis of RRV disease should be considered.

## Management

There is no specific treatment for RRV disease. None of the current treatment recommendations for RRV disease are based on high levels of evidence such as randomised controlled trials.

### 1. General Measures

- Rest is useful in the acute phase of infection.
- Some patients find gentle physical therapies, including hydrotherapy, physiotherapy, massage and swimming, can improve symptoms.
- Patients with a more prolonged course of illness commonly experience depression and other psychological sequelae from RRV disease. Psychosocial management and referral to other agencies, as appropriate, form an important part of the management of some patients.



## 2. Medications

- Many patients find that simple analgesics, such as paracetamol or aspirin, are sufficient to control pain. Non-steroidal anti-inflammatory drugs (NSAIDs) can effectively reduce pain and swelling in some patients.
- Corticosteroids are not a recommended treatment due to their questionable efficacy in RRV disease and adverse side effects.

## 3. Other therapies

- Anecdotal evidence suggests that some patients find relief from symptoms through self-help techniques such as the use of heat on sore joints, relaxation exercises, planning daily activities to avoid fatigue, maintaining a good diet and moderate exercise.

## Prognosis

- Most patients will experience resolution of major symptoms within 3-6 months.
- Some patients have a chronic course of symptoms, with persistence of non-rheumatic symptoms (such as fatigue and poor concentration) a common feature. In some of these cases, prolonged illness may be due to a co-morbid condition, and it is important to investigate for other conditions that may be causing or contributing to symptoms.
- A relapsing course of RRV disease is occasionally experienced.

## Notification

- RRV disease is a notifiable disease under the *Health Act (1911)*. All cases of laboratory confirmed RRV disease should be reported to the Department of Health.
- Upon receipt of notification of a case of RRV disease, the Department of Health will initiate an investigation via Local Government environmental health officers aimed at identifying the most likely time and place of exposure to infected mosquitoes.
- Notification data are vital for informing mosquito control programs.

## More Information:

- For more information about RRV disease consult a Clinical Microbiologist, Infectious Diseases Physician, or Rheumatologist.
- For more information about the ecology of RRV, surveillance programs and management of outbreaks contact Environmental Health Directorate on (08) 9385 6001.
- For patient information pamphlets on RRV and mosquito control, call HealthInfo on 1300 135 030
- Patients can be referred for patient support information and groups to the Arthritis Foundation of WA on (08) 9388 2199 or [www.arthritiswa.org.au](http://www.arthritiswa.org.au)

## References

Harley D, Bossingham D, Purdie D, Pandeya N, Sleigh A. Ross River virus disease in tropical Queensland: evolution of rheumatic manifestations in an inception cohort followed for six months. *Medical Journal of Australia* 2002; 177(7):353-5

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