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## Ross River Virus runs rampant on the Gold Coast of Australia

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**Abstract.** The first outbreak of Ross River Virus (RRV) occurred in 1928 in South Wales, Australia. I reviewed RRV literature published between 2001 and 2015. The virus is carried by a mosquito and transmitted through a wallaby as its most common intermediate host. Researchers arrived at their findings by conducting extensive lab work on both mosquitos and humans. Signs and symptoms of RRV include joint inflammation, pain, fatigue, and muscle aches. It takes 3-21 days for symptoms to appear, with an average of 9 days. There is no cure to RRV, and there is no vaccine currently being developed. The best way to prevent infection with RRV in endemic areas is to prevent mosquito bites.

**Keywords:** Virus, mosquito, wallaby

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### Introduction

Ross River Virus is Australia's most common and widespread virus. It is endemic in Australia and Papa New Guinea (Barber 2009). There are roughly 5000 reported cases in Australia annually (Harley et al. 2001). RRV is spread by its mosquito vector. While over 40 different species of mosquitoes across Australia play a role in transmission, the three main genera are *Aedes*, *Anopheles*, and *Culex* (Diptera: Culicidae). The intermediate hosts include large marsupials such as wallabies and kangaroos (2001). The virus has also been found in some large bird species. RRV is most prominent in the spring and summer (Claffin et al. 2015).

### Background

The first outbreak of Ross River Virus (RRV) occurred in 1928 in South Wales, Australia. The primary vector of that outbreak was the mosquito, *Aedes vigilax* (Skuse). The largest outbreak occurred in 1980, and effected Fiji, New Caledonia, Samoa, and the Cook Islands. Following that outbreak, a record number of 16,842 people were tested for RRV in a single year. It is suspected that *Aedes* mosquitoes are capable of vertical transmission. That is, a female *Aedes* mosquito can transmit RRV to its offspring.

### Approach

My sources were published between 2001 and 2015. They arrived at their findings by conducting extensive lab work on both mosquitos and humans (Harley et al. 2001, Claffin et al. 2015). Some researchers have used mice to model what the virus will do in humans. There are very intricate steps to testing mosquitoes for a virus. It takes a virologist with special training, along with sophisticated lab equipment and tests to determine the presence of a virus.

### Clinical presentation

Signs and symptoms of RRV include joint inflammation, pain, fatigue, and muscle aches (Griffin 2001). It takes 3-21 days for symptoms to appear, with an average of 9 days (Bossingham 2006). Blood tests are done to determine whether the disease is in fact RRV. Some symptoms can last from 6 months up to a year. There is no cure to RRV, and there is no vaccine currently being developed. Physicians try to treat the individual symptoms of RRV by administering steroid injections or giving prescription pain killers. Those that have the virus present in their blood streams are referred to as viremic (Harley et al. 2001).

After entering the bloodstream, the virus makes its way to the liver, spleen, muscles, and lymph nodes, and these places are the primary sites for replication (Griffin 2001).

**One Health**

RRV relates to one health because it deals with how the mosquito affects humans, animals, and the environment that they all live in. A competent mosquito vector infected with RRV can take a blood meal on a wallaby. The same wallaby can be bitten by a different mosquito, thus giving the new mosquito the virus. Then a human can get RRV by getting bitten by one of the virus-carrying mosquitos. Ross River Virus is considered a moving health target for authorities in endemic areas (Clafin et al. 2015, Griffin 2001).

**Prevention**

There are several steps that you can take to avoid getting RRV and in fact, prevent mosquito bites in general. Wearing light colored clothing can help repel mosquitos. Wearing insect repellent bracelets or spraying insect repellent on your clothing can help keep mosquitos off of you. Try to avoid going outside when mosquitos are most active – dusk and dawn. As for prevention at your house, make sure to eliminate standing water, as this is where *Aedes* mosquitos usually breed.

**Conclusion**

While RRV it is the most common virus in Australia, it can be avoided and to some extent, treated. Use proper techniques to avoid times when mosquitos are active. If you have symptoms that resemble those of RRV, go to a physician to get a blood test. RRV can affect the quality of life. But with treatment, life can be restored. I do not see RRV becoming a prominent virus in the United States. I can, however, see the virus coming to the United States temporarily. If we were to import a kangaroo or any other intermediate host from Australia for a zoo, it could potentially bring RRV here. Or if someone from Australia were infected with RRV and then flew back to the United States, we could potentially be transmitted by mosquito to another person.

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