

New Zealand's response to arboviruses and exotic mosquitoes

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Recently and somewhat belatedly, an article titled 'Is New Zealand prepared to deal with arboviral diseases?', published in the February 2004 issue of the *Journal*,¹ came to the attention of a group of New Zealand Ministry of Health advisers. The advisory group, comprising medical professionals, medical entomologists and a veterinary epidemiologist, was concerned by the inaccuracies in the article and the failure of the authors to have referenced appropriately some key work and access relevant available information. For example, the first paragraph of the article states "To date, there has not been a confirmed, indigenously acquired arboviral infection in a human within New Zealand." Thorough reading of one cited reference² would have avoided such inaccuracy in this part of the text even in the absence of access to the primary publication.³ Crump et al. wrote "The Sindbis-like alphavirus, *Whataroa virus*, is established in bird populations on the west coast of the South Island, where human infection without disease has been determined."²

In general, the authors did not address the question posed by the title and at best, restated views already expressed in other citations.^{2,4} Even then, some pertinent information was not presented. For instance, Russell noted that "New Zealand, a close geographical neighbor of Australia, does not have any records of local transmission of RR virus, although the risks for introduction of the virus from Australia with human or animal movement are significant".⁴ He goes on to say that "Of the 'lesser' Australian vectors, the urban mosquito *Aedes notoscriptus* is established in New Zealand and its association with brushtail possums in Australia, recently demonstrated to be relatively good hosts of RR virus and widely established and abundant in New Zealand, may indicate potential for establishment of the virus if it becomes introduced. However, the vector status of *Ae. notoscriptus* in Australia is not well understood, the competence of Australian populations for RR virus does seem to vary, and specimens from local New Zealand populations are poor vectors in laboratory studies." The latter matters are not presented appropriately in the article. More importantly, though, given the ongoing progress towards eradication from New Zealand of the southern saltmarsh mosquito, a much more significant vector of Ross River virus in parts of Australia, there is some imperative to have the record put straight.

It is noted that the article was accepted by the *Journal* in October 2003. None the less, the authors have formed views based on errors of fact and outdated information. Ultimately, their conclusions and recommendations are not well supported, let alone justified by the information provided in the preceding text.

While hindsight is a wonderful thing, as early as July 2002

eradication of the southern saltmarsh mosquito, *Ochlerotatus (Ochlerotatus) camptorhynchus* (Thomson) from Napier was declared (following two years of no finds). No reference is made to this fact in the article, perhaps because it does not support the statement "it [an attempt to eradicate it] is unlikely to be successful". Incidentally, *Oc. camptorhynchus* has now been eradicated also from Gisborne (including Wherowhero Lagoon and Sponge Bay), Maungawhio Lagoon (near Mahia Peninsula), Porangahau, Mangawhai and Whitford (south-east Auckland). Furthermore, *Oc. camptorhynchus* has not been detected in the Kaipara Harbour or on Whangaparaoa Peninsula since February 2004 and March 2004, respectively. The progress towards eradication in the Kaipara Harbour is no mean feat and is indicative of a number of initiatives clearly demonstrating the New Zealand Government's commitment to minimising the risk of new arboviral vectors establishing in New Zealand.

References

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The paper's authors, José G. B. Derraik and Charles H. Calisher, respond:

It may be from different directions, but we all seem to have the same goal in mind: protection of New Zealand humans and wildlife from incursions by exotic vectors and viruses. In this age of increasing biological invasions, emerging infectious diseases and fears of bioterrorism, our guard must be elevated. It was with these thoughts in mind that we wrote 'Is New Zealand prepared to deal with arboviral diseases?'.¹

We are well aware of the work on Whataroa virus done by numerous authors such as Terry Maguire, Jordi Casals, John Miles, and Richard Russell. Indeed, one of us has recently published a paper with Dr Russell.² None the less, Hogg et al.³ is the only publication that provided evidence of human infection with an arbovirus (Whataroa virus) in New Zealand, but this is not considered conclusive.^{4,5} In fact, Weinstein et al.,⁵ in an occasional paper prepared for the Ministry of Health, state that "no human cases of infection with Whataroa virus have been recorded" (p.4). We are yet to see a *confirmed* human case, an illness, caused by an arbovirus and acquired within New Zealand.

To ignore the role of *Ochlerotatus notoscriptus* as a vector of Ross River virus in Australia, particularly in urban areas, would be minimising the evidence that has been accumulating in this regard.⁶⁻⁸ Moreover, it would be a mistake to assume that a species that is a 'lesser' vector in Australia could not become a major vector in New Zealand. It appears that the only study on this species' vector status in New Zealand was done by Terry Maguire,⁹

and we know next to nothing about the vector status of *Oc. notoscriptus* in this country, or for that matter about most of New Zealand's other mosquito species, and extensive research should be done to clarify this issue. The distribution of *Oc. notoscriptus* is still expanding here, and this species is becoming the main container-breeding mosquito on the North Island. To say this species poses no threat based on the data currently available would be to take a major gamble with the public health of New Zealand, especially since it is common knowledge that there are major variations in vectorial competence among different populations of individual mosquito species.

In relation to *Oc. camptorhynchus*, its southernmost find in Marlborough in May 2004 was not detected by surveillance, but by a member of the general public.¹⁰ Although this species may have been temporarily eliminated from certain areas, we do not know the actual distribution of the southern saltmarsh mosquito in New Zealand, as no systematic and wide-ranging surveillance program has been done.

Finally, the principal questions remain: Is New Zealand prepared to deal with arboviral diseases? Does New Zealand have a laboratory ready to diagnose diseases in travellers returning to or visiting New Zealand? We believe that the answer is 'No', and that there is consequently reason for public health concern. Our paper was not meant to be critical of anyone or of any organisation, it was meant to encourage those responsible for human and animal health in New Zealand to ask themselves whether all is being done that can be done.

References

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