Vector-borne Disease Notifications

HIGHLIGHTS:

- **In 2013, 167 cases of vector-borne diseases were notified in New Zealand.**
- **Notifications of vector-borne diseases in 2013 were 39% higher than in 2012.**
- **Annual notifications of vector-borne disease fluctuated between 50 and 203 cases from 2000 to 2013**
- **In the last 5 years, 95% of all vector-borne disease events had an overseas travel history.**
- **Monitoring vector-borne disease is important in New Zealand**

Source : Vector-Borne and Zoonotic Disease, January 2014, Vol. 14, No. 1

Vector-borne disease

Vector-borne diseases occur when a virus, protozoan (single-cell organism) or bacterium, carried by mosquitos, sand flies or ticks, is transmitted to humans. Mosquitos, sand flies and ticks are examples of 'vectors', while malaria and dengue fever are examples of vector-borne diseases.

2013 notifications of vector-borne diseases increased 39%

167 cases of vector-borne disease were notified in New Zealand in 2013, an increased of 39% compared to 2012 (Table 1).

Dengue fever and malaria were the most commonly notified vector diseases, accounting for 63% and 28% of total notifications respectively.

Ross River virus disease only accounted for a small proportion of total vector-borne disease notifications (Table 1).

The first case of Zika fever in New Zealand was notified in March 2014. Up until June 2014, 28 confirmed and 24 probable cases of Zika fever were notified (ESR, 2014a). As the mosquitoes that are able to transmit Zika virus are not normally found in New Zealand, these Zika fever cases are most likely to be transmitted overseas (Ministry of Health, 2014).

Table 1 : Number of vector-borne disease notifications in New Zealand, 2012-2013

Disease	2012	2013	Change %
Malaria	38	47	24 ↑
Dengue fever	77	106	38 ↑
Rickettsial disease	4	9	125 ↑
Ross River virus	1	3	200 ↑
Cysticercosis	0	1	-
Chikungunya fever	0	1	-
Total	120	167	39 ↑

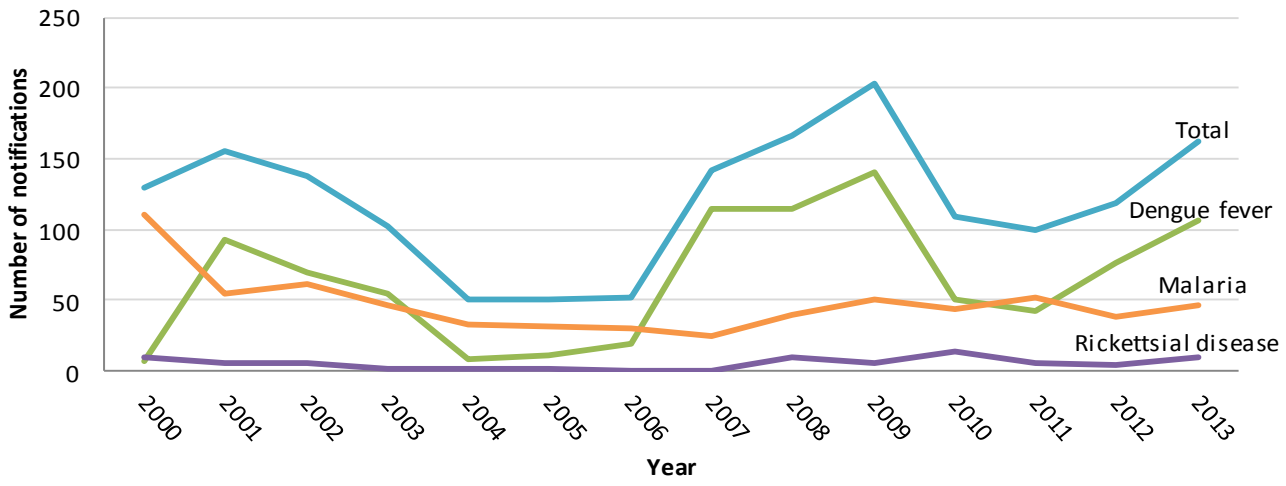
Source: ESR (2014b)

Vector-borne Disease Notifications

Annual notifications of vector-borne disease fluctuated between 50 and 203 cases from 2000 to 2013

The number of vector-borne disease notifications has fluctuated over the years: ranging between 50 and 203 cases from 2000 to 2013 (Figure 1). Dengue fever cases contributed to the majority of vector-borne disease notifications in the 14-year period.

Figure 1 : Number of vector-borne disease notifications in New Zealand, 2000-2013



Source: ESR (2014)

Note: "Total" indicates the total of dengue fever, malaria, rickettsial disease, Ross River virus, cysticercosis, Barmah Forest virus infection, Chikungunya fever, Janpanese encephalitis and Lyme disease cases.

In the last 5 years, almost all vector-borne disease cases had an overseas travel history

From 2009 to 2013, 95% of vector-borne disease notifications had overseas travel history (Table 2). 94% of the overseas travel happened during incubation period.

Table 2 : Number of vector-borne disease notifications in New Zealand, 2009-2013

Disease	Number of Notifications 2009-2013					Proportion travelled overseas, either during incubation or prior to illness (%)
	Overseas travel during incubation period	Prior Travel overseas, but not during incubation period	No overseas travel, no prior travel	No overseas travel, prior travel unknown	All notifications 2009-2013	
Malaria	194	37	0	0	231	100
Dengue fever	411	1	0	4	416	99
Rickettsial disease	7	0	22	10	39	18
Ross River fever	16	0	0	0	16	100
Cysticercosis	1	0	0	0	1	100
Barmah Forest virus infection	2	0	0	0	2	100
Chikungunya fever	3	0	0	0	3	100

Source: ESR (2014)

Note: Data has been pooled over 5 years due to small numbers.

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Only one in five rickettsial disease notifications had overseas travel history. This suggests that most people diagnosed with Rickettsial disease were likely to be infected in New Zealand (Table 2).

Monitoring vector-borne disease is important in New Zealand

The risk of vector-borne disease in New Zealand is low. However, it is important to monitor vector-borne disease, due to several factors that could increase our risk:

- increasing movement of people and goods worldwide
- climate change potentially creating more suitable habitats for vectors in New Zealand
- the close proximity of, and close relations with, a number of countries in the Western Pacific and South East Asia, where vector-borne diseases are endemic

It is also important to monitor the travel-related factors of vector-borne disease to determine whether the diseases are transmitted outside or within New Zealand.

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REFERENCES

- ESR. 2014a. New Zealand Public Health Surveillance Report. September 2014: Covering April to June 2014. Porirua: The Institute of Environmental Science and Research Ltd.
- ESR. 2014b. Notifiable and Other Diseases in New Zealand: Annual Report 2013. Porirua: The Institute of Environmental Science and Research Ltd.
- Heymann DL (ed). 2004. Control of Communicable Diseases Manual (18th edition). Washington, DC: American Public Health Association.
- Kelly, P., Roberts, S., & Fournier, P.-E. 2005. A review of emerging flea-borne bacterial pathogens in New Zealand. New Zealand Medical Journal, 118(1208).
- Kelly, P., Rolain, J.-M., & Raoult, D. 2005. Prevalence of human pathogens in cat and dog fleas in New Zealand. New Zealand Medical Journal, 118(1226), U1754.
- Ministry of Health. 2014. Zika virus. Access on 08/09, 2014, from http://www.health.govt.nz/our-work/diseases-and-conditions/zika-virus.
- Roberts, S., Croxson, M., Austin, P., Mckay, J., Hill, P., & Ellis-Pegler, R. 2001. The evidence for rickettsial disease arising in New Zealand. New Zealand Medical Journal, 114 (1138), 372-374.
- Stephen Higgs. 2014. Vector-Borne and Zoonotic Diseases. January 2014. Vol. 14, No. 1.
- Stürchler DA. 2006. Exposure: A guide to sources of infections. Washington: ASM Press.