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VECTOR-BORNE DISEASE NOTIFICATIONS IN NEW ZEALAND

Vector-borne disease is an important environmental health issue, and is inherently linked to the environment. Vector-borne zoonotic diseases, which can pass from animals to humans, involve four agents: the human victim, the pathogen, the vector and the (wildlife) reservoir (Ostfeld et al 2006). For example, West Nile fever is caused by the West Nile virus pathogen, transmitted by mosquito vector from a reservoir of wild birds (Heymann 2004; Stürchler 2006). Pathogens causing particular diseases can be carried by different vector species and be hosted by different wildlife reservoirs.

Pathogens coexist parasitically with wildlife reservoirs, and vectors act as obliging modes of transport helping pathogen dispersal (Holt and Dobson 2006). The opportunity for human–wildlife interaction continues to increase, as human environmental activity expands and encroaches into native forest and previously undeveloped land. Increased human exposure to wildlife results in the opportunistic emergence of new human diseases and a greater likelihood of transmission of known disease pathogens (Moore 2007; Goldberg et al 2008). As a result, newly emerging and pre-existing vector-borne diseases will continue to be an important environmental health issue.

Table 1:
NUMBER OF NOTIFICATIONS OF VECTOR-BORNE DISEASES IN NEW ZEALAND, BY RISK FACTOR AND YEAR, 1997-2010

Disease	Number of notifications					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 1997–2010	
Malaria	561	48		101	710	79
Dengue fever	717			12	729	98
Rickettsial disease	9		20	23	56	16
Ross river fever	19			9	28	82
Cysticercosis	4			1	5	80
virus infection	6			0	6	100
Chikungunya fever	3				3	100
Japanese encephalitis	1				1	100
Lyme disease	1				1	100

Source: ESR (2011)

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VECTOR-BORNE DISEASE NOTIFICATIONS, BY RISK FACTOR

It is important to monitor the travel-related risk factors for these diseases to determine whether cases are contracting the disease outside of or within New Zealand. Furthermore, it is important to take into account the characteristics of each disease during monitoring, as diseases such as malaria can keep recurring a long time after first exposure.

The majority of cases of vector-borne disease were overseas during the incubation period, while others had previous overseas travel as a possible risk factor for disease (Table 1). Overall, 79% of malaria cases and 98% of dengue fever cases reported overseas travel at some point, while for the remaining cases it was not known whether there had been prior travel. Additionally, there were four diseases where all notified cases from 1997 to 2010 had reported being overseas during the incubation period. These diseases were Barmah Forest virus disease, Chikungunya fever, Japanese encephalitis and Lyme disease – all of which are rare in New Zealand. The results suggest that exposure almost certainly occurred overseas.

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