Information topic	Details
Indicator name	**Exotic notifiable infectious diseases in New Zealand of priority border health concern**
Domain and topic	Mosquito-borne diseases
Indicator definition and units	Priority* notifiable respiratory and vector-borne diseases imported into New Zealand (by District Health Board (DHB), ethnicity, age, socioeconomic status (SES), sex and origins of the disease). *Disease priorities should be identified by annual risk assessment (*Jefferies 2016*).
Data source	- Notifiable and other diseases in New Zealand: Annual Summary. Institute of Environmental Science and Research (ESR) - As required: more detailed unit record Episurv data requested from ESR for specific diseases identified in the risk assessment
Numerator	EpiSurv notifications reported by ESR for each year, in accordance with their case status annual reporting inclusion criteria (i.e. all cases, excluding those classified 'not a case') (ESR 2019).
Denominator	Statistics New Zealand mid-year population estimates for corresponding year and subsection of numerator data. For the NZDep2013 analysis, the 2013 denominator population by NZDep2013 deciles, age group and sex has been used.
Methodology	- Case counts may be low for exotic diseases. For analysis of the characteristics of vulnerable subgroups, consider pooling annual data by a higher level of disease classification e.g. grouping arboviral diseases versus parasitic mosquito-borne disease. Avoid pooling across years due to the time sensitive nature of border health. However, data aggregation of no greater than 2 years can be considered to enable subgroup analyses, if appropriate. - Direct age standardisation will be carried out where data allows, otherwise crude rates will be calculated. - Note statistically significant differences (i.e. no overlapping 95% confidence intervals, or hypothesis test $p<0.05$). - Total counts <5 are excluded from analysis to reduce random error and protect case confidentiality.

Time period and time scale	- Annual; from 2001 onwards
	- Time trends:
	  ○ Trends from 2001 onwards for total counts of individual diseases
	  ○ Trends from 2015 onwards by New Zealand Deprivation Index 2013 (NZDep13) (Atkinson et al 2014).
	  ○ Trends over 2 years for subgroup analyses by overseas origin of disease and prioritised ethnicity

	○ Most recent time point of 3 years combined for subgroup analysis by age group and district health board.
Spatial coverage	National District Health Board
Measures of frequency	Annual number of disease notifications by: - origin of disease, - age group, - sex - ethnicity (prioritised), - SES and - DHB
Limitations of indicator	Annual notification counts may be small making statistical trend analysis unfeasible.
Limitations of data source	- Case under-detection is likely for exotic diseases. New Zealand can only identify diseases which are currently notifiable*, which health practitioners know to look for, and for which we have current national diagnostic capacity. - Some diseases, including mosquito-borne diseases, can have a high proportion of asymptomatic or mild associated infection (Duffy et al 2009). *Zika only became officially notifiable in New Zealand in March 2014 (ESR 2019)
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Related indicators	- Overseas infectious diseases of priority concern to New Zealand - Human-disease competent vectors/pests introduced to New Zealand - High-risk human-disease competent vectors/pests present at the New Zealand border
For more information	ESR. Annual Surveillance Summary: https://surv.esr.cri.nz/surveillance/annual_surveillance.php (accessed August 2021)
References	- Atkinson J, Salmond C, & Crampton P. 2014. *NZDep2013 index of deprivation*. Wellington: Department of Public Health, University of Otago. - Duffy MR, Chen TH, Hancock WT, et al. 2009. Zika virus outbreak on Yap Island, Federated States of Micronesia. *The New England Journal of Medicine* 360: 2536 – 43. - ESR. 2019. *Notifiable Diseases in New Zealand: Annual Report 2019.* Porirua: Institute of Environmental Science and Research Limited. - Johnson S. 2016. *Development Report: Border Health Indicators*. Wellington: Environmental Health Intelligence New Zealand.