

Overseas Infectious Diseases of Priority Concern

HIGHLIGHTS:

- The number of international diseases of particular border health concern to New Zealand increased, 2011-15.
- Polio and Ebola Virus Disease were each alerted as a 'Public Health Emergency of International Concern' by the World Health Organization in 2014 and 2015.
- Four types of serious respiratory virus were reported between 2011 and 2015.
- Mosquito-borne diseases spread internationally, 2011-15.



Overseas exotic diseases are harmful to New Zealand's health

High-risk exotic diseases, potentially harmful to New Zealand's health, are those which:

- spread easily
- New Zealand people are particularly vulnerable to (e.g. non-immune)
- can cause severe illness
- are difficult to treat

Exotic diseases overseas can be spread to New Zealand by New Zealand travellers, visitors and immigrants. International air travel can spread diseases very quickly across borders. Monitoring high-risk exotic diseases overseas is therefore important. It can tell us about the possible exposures of New Zealand travellers, visitors and immigrants to diseases, and help target our disease prevention and control work.

Table 1: Reported distribution of Ebola and Polio, 2011-15

Year	Ebola	Polio
2011	Africa: Uganda	Africa: Chad, Cote d'Ivoire Asia: China, Pakistan
2012	Africa: Uganda, Democratic Republic of Congo	Africa: Niger
2013		Africa: Cameroon, Kenya, Somalia, South Sudan Middle East: Syrian Arab Republic
2014*	Africa: Guinea, Liberia, Mali, Sierra Leone, Democratic Republic of Congo, Nigeria Americas: USA Europe: Spain, UK,	Africa: Cameroon, Equatorial Guinea, Madagascar, South Sudan Middle East: Iraq, Syrian Arab Republic
2015*	Europe: Italy	Asia: Lao People's Democratic Republic, Myanmar

*Years Ebola and Polio were alerted as a 'Public Health Emergency of International Concern'. Source: WHO 2016a

Two diseases were alerted as a 'Public Health Emergency of International Concern' between 2011-15

Polio and Ebola Virus Disease were each classified as a 'Public Health Emergency of International Concern' by the WHO during 2014 and 2015 (WHO 2016a). There were no alerts between 2011 and 2013.

Ebola Virus Disease can cause fever, internal bleeding and death. It is transmitted from animals (e.g. bats in parts of Africa) before spreading between humans. A large outbreak began in 2014 and affected more than 28,000 people in West Africa (CDC 2016a). A few cases were imported to high-income countries (Table 1) but disease spread within these countries was rare (WHO 2016a). Before 2014, outbreaks were small and contained within remote African areas (WHO 2016b). Increasing population size, movement, urbanisation, and less developed public health capacities in West Africa, contributed to the recent emergency.

Polio is a viral disease which can cause severe neurological disability and sometimes death. It is preventable, and there is a global goal to eradicate it from the world using the polio vaccine (WHO 2016c). Between 2011 and 2014, the international spread of polio increased (WHO 2016a). Key regions affected were Africa, the Middle East, and Asia (Table 1).

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Four severe respiratory diseases of particular concern were detected in the world, 2011-2015

Three types of serious influenza ('Flu') viruses and one serious coronavirus of priority border health concern were reported between 2011 and 2015 (WHO 2016a):

Asian Highly Pathogenic Avian Influenza A(H5N1) spreads easily among birds and rarely to humans (CDC 2016b). However, it has a high death rate in infected people. Human cases (100 cases) were notified in Africa 2011-12, and in Asia 2011-13 by the WHO (WHO 2016a) (Table 2). Asian countries included China, Bangladesh, Indonesia, Cambodia and Vietnam. A (H5N1) is thought to be consistently present (endemic) in birds in Bangladesh, China, Egypt, India, Indonesia and Vietnam (CDC 2016b).

Avian influenza A(H7N9) is a newly discovered flu virus transmitted by birds (CDC 2016c). It also has a relatively high death rate in humans. Cases were reported in China between 2013-15 (WHO 2016a) (Table 2). A few cases were also imported to Canada and Malaysia during this period but did not spread. The virus does not easily spread between people currently.

Swine origin triple reassortant influenza A(H3N2) was detected in the USA in 2011 only (WHO 2016a) (Table 2).

Middle East Respiratory Syndrome Coronavirus (MERS-CoV) is a newly discovered lung disease with a high death rate (WHO 2016d). It is thought to have spread to humans from camels and bats in the Middle East. The largest person-to-person outbreaks have occurred in the Middle East and Asia (Republic of Korea) between 2012-15 (WHO 2016a) (Table 2). Cases were also imported to North America (USA), Asia (China, Malaysia, Philippines, Thailand) and eleven European countries, but of these, only a few cases of local spread were reported in France and Italy in 2013 (WHO 2016a).

Table 2: Distribution of Severe Exotic Respiratory Diseases of Priority Border Health Concern to New Zealand, 2011-15

Year	A(H5N1)	A(H7N9)	A(H3N2)	MERS-CoV
2011	Africa: Egypt Asia: Cambodia, China, Indonesia		Americas: USA	
2012	Africa: Egypt Asia: Bangladesh, Cambodia, China, Indonesia, Vietnam			Middle East: Jordan, Saudi Arabia, Qatar Europe: UK
2013	South-East Asia: Cambodia	Americas: Canada Asia: China		Middle East: Saudi Arabia, United Arab Emirates, Qatar, Oman, Kuwait, Jordan Europe: France, Germany, Italy, Spain, Tunisia, UK
2014		Asia: China, Malaysia		Africa: Algeria, Egypt America: USA Asia: Malaysia Europe: Austria, Greece, Netherlands, Turkey Middle East: Islamic Republic of Iran, Jordan, Kuwait, Lebanon, Saudi Arabia, United Arab Emirates, Yemen
2015		Americas: Canada Asia: China		Asia: China, Republic of Korea, The Philippines, Thailand Europe: Germany Middle East: Iran, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates

Source: WHO 2016a

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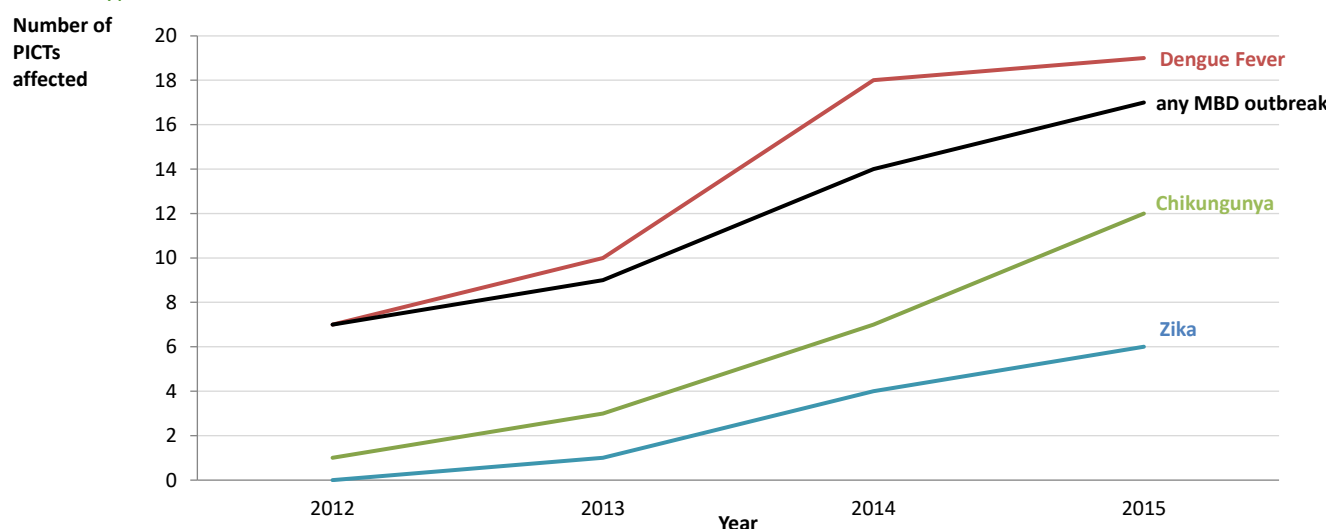
Increasing spread of mosquito-borne diseases in the world, 2011-15

Mosquito-borne diseases often cause fever and a rash, and may include: joint pain (e.g. Chikungunya, Zika), bleeding problems (e.g. Dengue, Rift Valley and Yellow Fevers), red eye (Zika, Chikungunya). They can be fatal.

The WHO reported outbreak alerts for six mosquito-borne diseases, 2011-15: Chikungunya, Zika, Dengue Fever, Rift Valley Fever, Yellow Fever and West Nile Virus (WHO 2016a). There was spread of these diseases to countries in Europe, Africa and South America. Of particular concern, Zika virus was detected to have spread to ten countries in South America in 2015. This was linked to an increase in the birth defect microcephaly (small head) in pregnant women infected with the virus in Brazil. This has led to Zika-associated microcephaly and other neurological (nervous system) disorders becoming a 'Public Health Emergency of International Concern' in 2016.

Importantly, other information showed there was **increased spread of mosquito-borne diseases among our close neighbours in the Pacific** also (Roth et al 2014; Pacific Public Health Surveillance Network 2016). This illustrates that there can be gaps in the information received and presented by the WHO alone.

Figure 1: Number of Pacific Island Countries and Territories (PICTs) with mosquito-borne disease (MBD) outbreaks, by disease type, 2012-15



Source: Pacific Public Health Surveillance Network (PPHSN) 2016

Note: Annual counts of PICTs affected by Zika, Chikungunya and Dengue Fever are derived from weekly updates issued by PPHSN. These weekly updates show alerts for each given week based on the best data available at the time of reporting. Sometimes these weekly data are updated. Any changes are reflected in subsequent weekly updates as new information come to hand.

Mosquito-borne diseases increased in the Pacific region, 2012-15

The Asia-Pacific is a high-risk region for the importation of exotic diseases to New Zealand. Pacific regional data (available from 2012) shows a large increase in outbreaks of Chikungunya, Zika and Dengue Fever there between 2012 and 2015 (Figure 1) (Roth et al. 2014; Pacific Public Health Surveillance Network 2016).^{*} The number of Pacific nations reporting at least one outbreak of a mosquito-borne disease increased from 33% (7/22) of Pacific Island Countries and Territories (PICTs) in 2012 to 77% (17/22) in 2015.

Between 2012 and 2015, the number of Dengue-affected nations in the Pacific more than doubled. All four serotypes of Dengue virus were detected. Chikungunya spread from one PICT in 2012, to having affected fourteen by 2015 (with twelve affected in 2015 alone). The latest outbreak of Zika in the Pacific was first reported in 2013. Seven PICTs detected Zika outbreaks in total, 2012-15. In 2015, Fiji, New Caledonia, Samoa, Solomon Islands and Vanuatu reported Zika outbreaks.

Twelve PICTs had more than one type of mosquito-borne disease outbreak reported in at least one year, 2012-15 (Roth et al. 2014; Pacific Public Health Surveillance Network 2016).

^{*} There was no similar information source found for countries in Asia, therefore closer analysis for Asia was not possible.

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*WHO = World Health Organization; CDC = Centers for Disease Control and Prevention

Please note: New Zealanders should register with Safe Travel (www.safetravel.co.nz) and check with their doctor before travelling overseas. This indicator does not represent the real-time risk of diseases in overseas countries.

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