

## Overseas Infectious Diseases of Priority Concern

### HIGHLIGHTS:

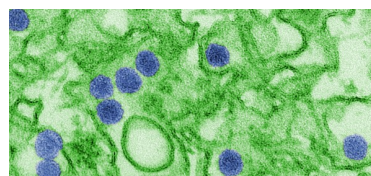
- Zika infection and microcephaly and other neurological disorders alerted as the only new Public Health Emergency of International Concern (PHEIC) in 2016-17.
- Polio has remained a PHEIC since it was first announced in 2014.
- Three types of severe respiratory virus were reported, 2013-17.
- Dengue spread to more countries and territories in the Pacific, 2013-17.



*Aedes aegypti* mosquito



Infectious diseases can be imported through air travel



Transmission electron micrograph of the Zika virus

### 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.

### Zika infection and microcephaly and other neurological disorders alerted as a Public Health Emergency of International Concern (PHEIC) in 2016

**Zika** is a vector-borne virus, transmitted by the bites of virus carrying mosquitoes. The primary vector species, *Aedes aegypti*, is found in tropical, subtropical and some temperate climates (CDC 2018). In New Zealand there are no known species competent of transmitting Zika and no locally acquired vector-borne cases of the virus (WHO 2018a). Infections have been imported from overseas with one case acquired locally through sexual contact (ESR 2016). The symptoms of the infection are generally mild and short-lived (2-7 days), of more concern are the complications microcephaly and Guillain-Barré syndrome which Zika can trigger (WHO 2016a).

If a Zika infection occurs during the term of pregnancy it can transmit to the fetus which can cause the baby to be born with **microcephaly** among other congenital manifestations collectively known as congenital Zika virus syndrome. Children born with microcephaly have smaller heads and brains, often resulting in physical and developmental disabilities (WHO 2016b).

**Guillain-Barré syndrome** is an autoimmune syndrome where the victim's immune system attacks their peripheral nerves resulting in paralysis - usually of the legs and arms, but sometimes the chest affecting breathing. The fatality rate is about 3-5% of people infected (WHO 2016c).

The first outbreak of Zika in humans occurred in 2007 on the Island of Yap in Micronesia, prior to this only 14 cases had been recorded in humans. The 2007 outbreak was followed by outbreaks in French Polynesia, Easter Island, the Cook Islands, and New Caledonia in 2013-14 (Kindhauser et al. 2016).

On 1 February 2016 the WHO declared Zika infection and microcephaly and other neurological disorders a PHEIC following the continuing geographic spread of the disease and a suspected (later confirmed) link between Zika and microcephaly. WHO lifted the PHEIC declaration on 18 November, however as the disease continued to spread geographically, WHO advised a high level of vigilance (WHO 2016d).

## Overseas Infectious Diseases of Priority Concern

Table 1 shows the geographic spread of Zika from when it was first alerted in 2015, through to 2017.

Table 1: Reported distribution of Zika, microcephaly and Guillain-Barré syndrome 2015-2017

| Year                    | 2015                                                                                                                                                         | 2016*                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2017               |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Zika                    | <b>Africa:</b> Cape Verde<br><b>South/Central America:</b> Brazil, Colombia, El Salvador, Guatemala, Honduras, Mexico, Panama, Paraguay, Suriname, Venezuela | <b>South East Asia:</b> Maldives, Viet Nam<br><b>Oceania:</b> Papua New Guinea<br><b>Central/South America:</b> French Guiana, Martinique, Puerto Rico, Guyana, Barbados, Ecuador, Bolivia, Haiti, Saint Martin, Guadeloupe, Dominican Republic, United States Virgin Islands, Costa Rica, Curaçao, Jamaica, Nicaragua, Bonaire, Aruba, Trinidad and Tobago, Saint Vincent and the Grenadines, Sint Maarten, Argentina, Dominica, Cuba, Chile, Saint Lucia, Peru | <b>Asia:</b> India |
| Microcephaly            | <b>South America:</b> Brazil                                                                                                                                 | <b>Central/South America:</b> Brazil, Panama, Martinique                                                                                                                                                                                                                                                                                                                                                                                                         |                    |
| Guillain-Barré syndrome |                                                                                                                                                              | <b>Central/South America:</b> El Salvador, France - Martinique, Brazil, Colombia, Venezuela, Panama<br><b>Oceania:</b> France - French Polynesia                                                                                                                                                                                                                                                                                                                 |                    |

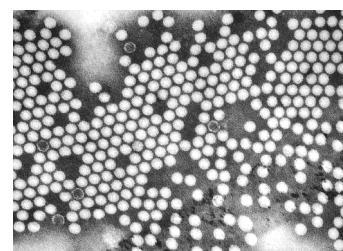
\*Year Zika was alerted as a PHEIC

Source: WHO 2018b

For the most current Zika country classification table visit: [www.who.int/emergencies/zika-virus/classification-tables](http://www.who.int/emergencies/zika-virus/classification-tables)

### Polio remains a PHEIC

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 2016e). Between 2012 and 2014, the international spread of polio increased (Table 2). Key regions affected were Africa and the Middle East. The geographic spread of the disease has decreased since 2014 and in a recent update issued in August 2017 WHO stated there had been no international transmission in the past 3 months (WHO 2017).



Electron micrograph of the poliovirus

Table 2: Reported distribution of wild Polio 2012-17

| Year                                                          | 2012                                                                | 2013                                                                                                                            | 2014*                                                                                                                                             | 2015*                           | 2016*                                        | 2017*                          |
|---------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------------------------|--------------------------------|
| Countries with reported cases of wild polio (number of cases) | Afghanistan (37), Chad (5), Niger (1), Nigeria (122), Pakistan (58) | Afghanistan (14), Cameroon (4), Ethiopia (9), Kenya (14), Nigeria (53), Pakistan (93), Somalia (194), Syrian Arab Republic (35) | Afghanistan (28), Cameroon (5), Equatorial Guinea (5), Ethiopia (1), Iraq (2), Nigeria (6), Pakistan (306), Somalia (5), Syrian Arab Republic (1) | Afghanistan (20), Pakistan (54) | Afghanistan (13), Nigeria (4), Pakistan (20) | Afghanistan (14), Pakistan (8) |

\*Years Polio was alerted as a PHEIC

Source: WHO 2018c

## Overseas Infectious Diseases of Priority Concern

### Three severe respiratory diseases of particular concern were detected in the world, 2013-2017

Two types of serious influenza ('Flu') viruses and one serious coronavirus of priority border health concern were reported between 2013 and 2017 (Table 2) (WHO 2018b).

**Asian Highly Pathogenic Avian Influenza A(H5N1)** spreads easily among birds and rarely to humans (CDC 2016a). However, it has a high death rate in infected people. Human cases were notified in Cambodia in 2013 by the WHO (WHO 2018b) (Table 2). A(H5N1) is thought to be consistently present (endemic) in birds in Bangladesh, China, Egypt, India, Indonesia and Vietnam (CDC 2016a).

**Avian influenza A(H7N9)/A(H5N6)** is a flu virus transmitted by birds (CDC 2016b). It also has a relatively high death rate in humans. Cases were reported in China between 2013-17 (WHO 2018b) (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.

**Middle East Respiratory Syndrome Coronavirus (MERS-CoV)** is a lung disease with a high death rate (WHO 2016f). 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 2013-17 (WHO 2018b) (Table 2). Cases were also imported to North America (USA), Asia (China, Malaysia, Philippines, Thailand), the Middle East (Bahrain), Africa (Egypt, Algeria) and many European countries. In Europe only a few cases of local spread were reported in France and Italy in 2013 (WHO 2018b).

Table 2: Distribution of Severe Exotic Respiratory Diseases of Priority Border Health Concern to New Zealand, 2013-17

| Year                                                                          | 2013                                                                                                                            | 2014                                                                                                                                                                                                                                                     | 2015                                                                                                                                                                                             | 2016                                                                                                                                       | 2017                                                                         |
|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Highly Pathogenic Avian Influenza A(H5N1)                                     | <b>South-East Asia:</b><br>Cambodia                                                                                             |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                  |                                                                                                                                            |                                                                              |
| Middle Eastern Respiratory Syndrome Coronavirus (MERS-CoV)                    | <b>Middle East:</b> Saudi Arabia, UAE, Qatar, Oman, Kuwait, Jordan<br><b>Europe:</b> UK, Germany, France, Italy, Spain, Tunisia | <b>Middle East:</b> Islamic Republic of Iran, Jordan, Kuwait, Lebanon, Saudi Arabia, UAE, Yemen<br><b>Europe:</b> Austria, Greece, Netherlands, Turkey<br><b>Africa:</b> Egypt, Algeria<br><b>South-East Asia:</b> Malaysia<br><b>North America:</b> USA | <b>Middle East:</b> Iran, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, UAE<br><b>Europe:</b> Germany<br><b>Asia:</b> China, Republic of Korea<br><b>South-East Asia:</b> The Philippines, Thailand | <b>Middle East:</b> Saudi Arabia, Oman, United Arab Emirates, Qatar, Bahrain<br><b>Europe:</b> Austria<br><b>South-East Asia:</b> Thailand | <b>Middle East:</b> Saudi Arabia, Qatar, United Arab Emirates, Lebanon, Oman |
| Non-seasonal influenza: Human infection with Avian influenza A (H7N9)/A(H5N6) | <b>Asia:</b> China<br><b>North America:</b> Canada                                                                              | <b>Asia:</b> China<br><b>South-East Asia:</b> Malaysia                                                                                                                                                                                                   | <b>Asia:</b> China<br><b>North America:</b> Canada                                                                                                                                               | <b>Asia:</b> China                                                                                                                         | <b>Asia:</b> China                                                           |

Source: WHO 2018b

## Overseas Infectious Diseases of Priority Concern

### Spread of mosquito-borne diseases in the world, 2013-17

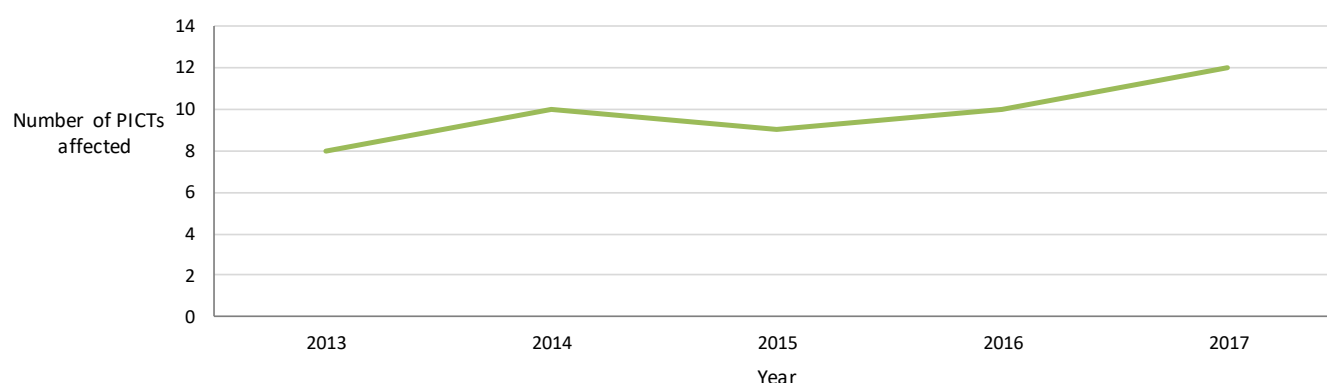
Mosquito-borne diseases often cause fever and a rash, and may include: joint pain (e.g. Chikungunya, Zika), bleeding problems (e.g. Dengue, Rift Valley and Yellow Fevers), red eye (Zika, Chikungunya). They can be fatal.

**The WHO reported outbreak alerts for six mosquito-borne diseases, 2013-17:** Chikungunya, Zika, Dengue Fever, Rift Valley Fever, Yellow Fever and West Nile Virus (WHO 2018b). Combined, these diseases were present across the Pacific, North and South America, Asia, Africa and Europe.

### Dengue spread to more countries and territories in the Pacific, 2013-17

The Asia-Pacific region is a high-risk region for the importation of exotic disease to New Zealand\*. Between 2013 and 2017 the number of Pacific Island countries and territories reporting cases of Dengue\*\* increased from eight to twelve (Figure 1). Over this period all four serotypes of Dengue were detected.

Figure 1: Number of Pacific Island Countries and Territories (PICTs) with dengue outbreaks, 2013-17



Source: Pacific Public Health Surveillance Network 2018

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

\*\* Only Dengue is reported, there was no information available for Zika and Chikungunya in the Pacific at the time of reporting.

### Trends in Mosquito-borne Diseases in the Pacific

For live and historical data see:

*Pacific Public Health Surveillance Network* [www.pphsn.net](http://www.pphsn.net)

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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](http://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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