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**Event:** Emerging vector borne diseases in the Americas/Pacific and possible links to congenital malformations

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**Notified by:** Emerging Infections and Zoonoses (EIZ), Travel and Migrant Health (TMHS), Rare and Imported Pathogens Laboratory (RIPL)

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**PHE NIRP Level:** NA

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### **Background and Interpretation:**

Following an unprecedented wave of dengue (DENV), chikungunya (CHIKV) and Zika virus (ZIKV) infections in the Pacific during the period 2012-2014, large CHIKV and ZIKV outbreaks are being reported from the Americas. All three infections are transmitted by *Aedes* mosquitoes (a day-biter often found in urban environments) and present with similar clinical features; laboratory testing is required to determine which virus is the causative agent.

DENV has been endemic in the region for decades but CHIKV emerged in the region in December 2013, with the first report in the French Caribbean territory of St Martin. CHIKV is now widespread across Central and South America. To date, more than 1.7 million suspected and/or confirmed cases have been reported in the region, the majority (623,000 cases) reported in Brazil, Colombia, Ecuador, El Salvador, Honduras, Mexico, Nicaragua and Venezuela.

ZIKV infections were first reported in Easter Island (a Chilean island in the south eastern Pacific Ocean) in February 2014. The first autochthonous cases in mainland South America were reported in Brazil in May 2015 with 18 states affected as of 1 December 2015. To date, locally acquired cases have been reported in Colombia, Suriname, Guatemala, El Salvador, Paraguay, Mexico, Venezuela, Panama and Honduras. Further cases are expected in other countries in the Americas in coming weeks/months.

### **Possible association of ZIKV infection with congenital microcephaly**

In October 2015, the Brazilian Ministry of Health reported an unusual increase in the number of babies born with microcephaly [1]. As of 30 November, 1,248 (99.7/100,000 live births) cases of microcephaly including 7 deaths have been reported across 14 states in Brazil compared to the expected 150-200 cases per year that were reported 2010 to 2014 (5.7/100,000 live births in 2010). This led to the declaration of a public health emergency.

The Ministry of Health of Brazil has suggested a possible relationship between the increase in microcephaly and the ongoing ZIKV outbreak. There is currently some evidence to support an association with ZIKV; the virus has recently been demonstrated to cross the placental barrier being detected in blood and tissues of an affected foetus and the increase in microcephaly cases was noted within nine months of the virus' emergence in northern Brazil. Thus, while such an association is plausible, further evidence is required to definitively prove or disprove causality.

In addition, an increase of central nervous system malformations in fetuses and newborns has been reported in French Polynesia following an epidemic of ZIKV infection. At least 17 such cases were reported during 2014–2015, coinciding with the ZIKV outbreaks on the French Polynesian islands. Of four women who were tested, all had detectable IgG antibodies to flavivirus; further tests are ongoing. French Polynesia has also documented an increase in cases of Guillain–Barré syndrome (GBS) that occurred during an outbreak of CHIKV in 2014-2015; rare neurological manifestations associated with CHIKV infections have previously been described [2].



DENV, CHIKV and ZIKV do not occur naturally in the UK as the mosquito vector is not present. Cases of DENV and CHIKV are reported in UK travellers returning from countries where the infection is circulating [3, 4]. To date, three confirmed cases of ZIKV have been reported in UK travellers (one ex Cook Islands in 2014 and two in the past week; one returned from Colombia and the other from Suriname and Guyana [NB. ZIKV has not yet been reported in Guyana]).

#### **UK travellers to Central/South America and the Caribbean**

Between 2010 and 2014, almost 1.4 million UK residents travelled to South and Central America and the Caribbean on average each year, 25% (335,809) of these were women of childbearing age (16-44 years). On average, 25,625 UK resident females aged 16-44 travelled to Brazil each year between 2010 and 2014, from an average annual total of 101,680 (25%).

#### **Advice to travellers, in particular pregnant women**

All travellers to the Americas should ensure they seek travel health advice from their GP or a travel clinic well in advance of their trip and consult the National Travel Health Network and Centre (NaTHNaC) website <http://travelhealthpro.org.uk/> (or [fitfortravel](http://fitfortravel.com) in Scotland) for up to date information on current outbreaks and country information.

Standard mosquito protection advice should be reiterated to travellers to the Americas, particularly pregnant women. All pregnant women who live in or travel to areas where mosquito-borne diseases are known to occur (including CHIKV, DENV and ZIKV) should take measures to avoid being bitten during the daytime. Protection against night time biting mosquitoes may also be necessary in areas where malaria is a risk. Tailored advice for pregnancy and travel is available at:

<http://travelhealthpro.org.uk/pregnancy>

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#### **Implications and recommendations for PHE Centres**

PHE Centres and Health Protection teams should be aware of the spread of vector borne diseases in areas where UK residents frequently travel and the potential association between ZIKV infection and congenital and neurological complications.

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#### **Implications and recommendations for PHE sites and services**

PHE sites and services should be aware of the spread of vector borne diseases in areas where UK residents frequently travel and the potential association between ZIKV infection and congenital and neurological complications.

Infectious disease physicians and microbiologists are advised to:

- consider ZIKV in travellers with a febrile illness returning from regions where ZIKV is known to occur
- liaise with their obstetric clinical colleagues to alert them to the potential risk and to ensure appropriate investigations are requested for those with a relevant travel history

Referring diagnostic laboratories should send appropriate samples for testing (**including a full travel and clinical history, with relevant dates**) to the Public Health England, [Rare and Imported Pathogens Laboratory](#).

The [Imported Fever Service](#) can provide advice on the clinical recognition and differential diagnosis for travellers for affected areas who present with fever. The IFS can be reached 24 hours a day on 0844 7788990.

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#### **References/ Sources of information**

1. Pan American Health Organization. 1 December 2015: Neurological syndrome, congenital malformations, and Zika virus infection. Implications for public health in the Americas – Epidemiological Alert. Available at: [http://www.paho.org/hq/index.php?option=com\\_docman&task=doc\\_download&Itemid=270&gid=32405&lang=en](http://www.paho.org/hq/index.php?option=com_docman&task=doc_download&Itemid=270&gid=32405&lang=en)
2. Oehler E, Fournier E, Leparc-Goffart I, et al. Increase in cases of Guillain-Barré syndrome during a Chikungunya outbreak, French Polynesia, 2014 to 2015. Euro Surveill. 2015;20(48):pii=30079. DOI: <http://dx.doi.org/10.2807/1560-7917.ES.2015.20.48.30079>
3. PHE website: Dengue fever: guidance, data and analysis. <https://www.gov.uk/government/collections/dengue-fever-guidance-data-and-analysis>
4. PHE website: Chikungunya <https://www.gov.uk/guidance/chikungunya>
5. NaTHNaC. Zika virus in the Americas: update and advice for pregnant women. <http://travelhealthpro.org.uk/zika-virus-in-the-americas-update-and-advice-for-pregnant-women/>