

**Precautionary Meeting of the Scientific Advisory Group for Emergencies
Zika Virus**

**Summary Minute of 3rd Meeting
7 March 2016
10 Victoria Street, London, SW1H 0NN**

List of attendees

Chairs

Sir Mark Walport	Government Chief Scientific Adviser
Chris Whitty	Chief Scientific Adviser, DH

Attending

Paul Cosford	Public Health England
Tom Evans	University of Glasgow and Chair of ACDP
Tony Fooks	Animal and Plant Health Agency
Jolyon Medlock	Public Health England
Dilys Morgan	Public Health England
Helen Roberts	Animal and Plant Health Agency
Charlotte Watts	Chief Scientific Adviser, DFID

Dialling in

Jeremy Farrar	Wellcome Trust
Simon Hay	University of Washington
Michael Johansson	US Center for Disease Control and Prevention
Alain Kohl	University of Glasgow
David Lalloo	Liverpool School of Tropical Medicine
Mark Rowland	London School of Hygiene and Tropical Medicine
Tom Solomon	Liverpool School of Tropical Medicine
Hugh Willison	University of Glasgow

Secretariat

Katie Badman	Government Office for Science
Colin Armstrong	Government Office for Science
Marsha Quallo-Wright	Government Office for Science
Jack Wardle	Government Office for Science
Elizabeth Surkovic	Government Office for Science

Observers

Siobhan Jolliffe	DH
Hugo Jones	DH (dialled in)
Rupert Lewis	Government Office for Science
Alex McLaughlin	DH
Jasdeep Sandhu	DFID
Graeme Tunbridge	DH
Vince Weaver	DCMS
Rebecca Whitfield	Cabinet Office (dialled in)

ACTIONS

1. **Secretariat** to update GBS advice to refer to 'other neurological manifestations'.
2. **PHE** to provide updated text on sexual transmission for paragraph 10 of paper Pre-SAGE 3(06), taking into account an increased risk from 'very low' to 'low'.
3. **PHE** to be clear of differences in risk of vector transmission and sexual transmission where relevant in their advice.
4. **Secretariat** to draft text on whether mosquitoes can survive in UK, for review by experts.
5. **Experts** to continue to scan literature for information related to previously discussed agenda items and provide updates to the group.

AGENDA ITEM 1: WELCOME

The chairs welcomed participants to the third pre-SAGE meeting, which had been convened to consider the latest evidence on the link between Zika virus and Guillain-Barré syndrome, sexual transmission of Zika and the role of *Aedes albopictus* as a potential vector. Attendees were informed that they should continue to speak to the media in their capacity as experts but content from pre-SAGE meetings was to be treated as confidential.

AGENDA ITEM 2: UPDATE ON LATEST SITUATION

As of 2 March 2016, a total of 41 countries and territories had reported active Zika transmission. Travel associated cases were increasing in USA and Europe as expected. In the UK, a total of 10 cases had been diagnosed in returning travellers, 9 of which were associated with the ongoing outbreak. One case of microcephaly had been reported in Colombia, which fitted with the epidemiological situation and the expected progression of the outbreak.

AGENDA ITEM 3: LINK WITH GUILLAIN-BARRÉ SYNDROME

Evidence was accumulating of a link between Zika virus and Guillain-Barré Syndrome (GBS). This was, however, complicated by recent dengue outbreaks and subsequent complications with serology. During an outbreak of Zika in French Polynesia in 2013, the risk of GBS was estimated to be 1 per 4000 Zika virus infections. This was comparable to the rate of GBS following *Campylobacter* infection, but was considered higher than the rate of GBS following other infections. At the individual level, the risk of GBS following Zika infection was considered to be very small.

The clinical pattern of GBS following Zika infection was unlikely to be significantly different to GBS following other infections, though there was some evidence that GBS cases due to Zika may present more quickly. Evidence suggested that typically about one third of GBS cases would require intensive care. No interventions were available that would reduce the risk of GBS. It was also noted that GBS could also be triggered by vaccination.

As Zika was a neurotropic virus, other neurological manifestations, including encephalitis, transverse myelitis and optic nerve involvement might also occur following Zika infection. It was difficult to compare the risk of GBS to the risk of other neurological manifestations. In Brazil, approximately half of neurological cases seen were GBS, and the other half were split evenly between various other neurological complications.

Overall, it was agreed that the group's previous assessment of the risk of GBS was still accurate, although a comment about other related neurological manifestations should be added to the advice.

ACTION 1: Secretariat to update GBS advice to refer to 'other neurological manifestations'.

AGENDA ITEM 4: SEXUAL TRANSMISSION OF ZIKA VIRUS

There had been 20 reports of sexual transmission of Zika virus from variety of countries, although the USA has reported the most. All documented reports were the result of male-to-

female transmission in which the men had symptoms of Zika virus infection either at the time or immediately prior to sexual contact. These reports were likely to represent a minority of cases of potential sexual transmission that might be occurring. This was because the women with Zika infection were ill enough to seek medical attention (ie those with mild infections might not have sought medical attention). In addition, Zika virus infection is asymptomatic in the majority of cases.

Overall, the risk of sexual transmission was thought to be low. This has been increased from very low. However, there was still a lot of uncertainty and further evidence was needed to establish an accurate estimate of the risk.

ACTION 2: PHE to provide updated text on sexual transmission for paragraph 10 of paper Pre-SAGE 3(06), taking into account an increased risk from 'very low' to 'low'.

It was noted that PHE advice had changed to recommend that all men returning from Zika-affected countries should use condoms for six months, even if they did not have symptoms, and that pregnant women whose partners had travelled to Zika-affected countries should use condoms for the duration of the pregnancy. Advice had also been issued to sperm donors.

The group agreed that differentiation should be made between sexual and mosquito transmission in reports.

ACTION 3: PHE to be clear of differences in risk of vector transmission and sexual transmission where relevant in their advice.

ADENGA ITEM 5: VECTORS

The role of *Aedes albopictus* in Zika transmission

Given that *Aedes albopictus* has been implicated in the transmission of dengue and Chikungunya virus and occupies a similar habitat as *Aedes albopictus*, it is a potential vector for Zika transmission. In addition, *Albopictus* mosquitoes infected with Zika were found in the field in Gabon in 2007 and it has been experimentally infected in the lab – although infection in the lab does not mean that it will be effective in the field.

Albopictus and *aegypti* also have different biting preferences. *Aegypti* is more of an urban mosquito which has a high preference for taking blood meals from humans and to lesser extent from domestic mammals, which makes it a very capable vector of Zika viruses. *Albopictus* is more likely to bite other hosts that do not carry the Zika viruses, which lowers its capacity to transmit them.

Persistence of *Aedes aegypti* or *Aedes albopictus* in the UK

The emergence of Zika virus has not changed the risk of invasive mosquitoes becoming established in the UK.

Models suggest that parts of Southern England (central London and around the Solent) could support establishment of *Aedes albopictus* but almost certainly not at the scale needed

to maintain Zika transmission in the UK other than sporadic cases. This is however a future threat and not a current issue.

Even on particularly hot days, the UK does not exceed the temperature required for *Aedes aegypti* to colonise. In the last 150 years, there have been only two reports of the mosquito in the UK, in Essex in 1919 and Merseyside in 2014. However these incidental reports did not lead to established populations.

Aedes albopictus has already gone through adaptations in order to survive in temperate climates. *Aedes aegypti* has had this opportunity to adapt and has not done so.

ACTION 4: Secretariat to draft text on whether mosquitoes can survive in UK, for review by experts.

Adaptation of Zika to mosquitoes commonly found in the UK

Certain arboviruses are capable of mutating to enhance their own ability to infect mosquitoes. However, it is not possible to say if the virus will “jump” into other mosquito species commonly found in the UK but it is very unlikely. It would be a rare event for the virus to jump to different groups of insects.

Importation of *Aedes aegypti*, *Aedes albopictus* and Zika via ships

An informal expert group in Defra looked at the possibility of Zika virus being brought into the UK via different transport routes, such as shipping containers, freight, food, flowers or tyres. The view of this group was that there was no greater risk of mosquitos being brought into the country as a result of the Zika virus. There is always a constant very low risk that this could happen, but this risk has not changed, and as such there is no reason for risk management.

The likelihood of an invasive mosquito capable of transmitting Zika virus arriving in the UK via ships and freight was considered to be very low.

Olympics

The Brazilian government are optimistic that cases of Zika will fall during the Olympics due to seasonal decline, which can be seen in cases of dengue. Furthermore, there were only 5 reported cases of imported dengue following the 2014 Football World Cup. Transmission of Zika virus appears to be ramping up and cases may go further into the season than we would expect.

AGENDA ITEM 6: CHANGES TO PREVIOUS ADVICE

The group agreed that small changes were needed to the advice on the risk of sexual transmission, potential vectors and the link between Zika virus and Guillian-Barré Syndrome.

AGENDA ITEM 7: UPDATE ON RESEARCH AGENDA

The Wellcome Trust and Newton Fund were planning to join MRC's research call, in order to increase funding. A panel meeting had been scheduled to discuss which research questions were priorities. Meetings had also been planned in Geneva and Washington to bring together various different international research funders, respectively.

Priority questions to be considered include the proportion of at-risk women at the end of a Zika outbreak, the clinical picture, risk of sexual transmission, the epidemiology, vectors, vaccines and diagnostic tests. A limiting factor in conducting research in South America could be the availability of staff and equipment.

ACTION 5: Experts to continue to scan literature for information related to previously discussed agenda items and provide updates to the group.

AGENDA ITEM 8: AOB

There have been reports of the Zika virus in breast milk. The clinical consequences in infants compared to unborn children therefore need to be considered.

**SAGE Secretariat
16 March 2016**