

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

**Summary Minute of 1st Meeting
3 February 2016**

Boardroom, Department of Health, Richmond House, 79 Whitehall, SW1A 2NS

List of attendees

Chairs

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

Attending

Ian Boyd Chief Scientific Adviser, DEFRA
Oliver Brady University of Oxford
Ian Brown Animal and Plant Health Agency
Michael Chew Wellcome Trust
Paul Cosford Public Health England
Tom Evans University of Glasgow and Chair of ACDP
Robin Grimes Chief Scientific Adviser, FCO
David Laloo Liverpool School of Tropical Medicine and Chair of ACMP
James Logan London School of Hygiene and Tropical Medicine
Sheila MacLennan National Blood Service
Jolyon Medlock Public Health England
Dilys Morgan Public Health England
Mark Palmer Medical Research Council
Mark Rowland London School of Hygiene and Tropical Medicine
Tom Solomon Liverpool School of Tropical Medicine
Sir David Spiegelhalter University of Cambridge

Dialling in

Alain Kohl University of Glasgow
Massimo Palmarini University of Glasgow
Tim Overton University Hospitals Bristol
Laura Rodrigues London School of Hygiene and Tropical Medicine
Charlotte Watts Chief Scientific Adviser, DFID

Secretariat

Colin Armstrong Government Office for Science
Katie Badman Government Office for Science
Marsha Quallo-Wright Government Office for Science
Adam Trigg Government Office for Science

Observers

Emma Aarons	(PHE)	Ruth Parry	(DH)
Neil Ebenezer	(DfT)	Jasdeep Sandhu	(DFID)
Hugo Jones	(DH)	Graeme Tunbridge	(DH)
Rupert Lewis	(GO-Science)	Stuart Wainwright	(CCS)
Chris Lewis	(DFID)	Daniel Watson	(HO)
Alex Mclaughlin	(DH)		

ACTIONS

1. **DH and GO Science** to ensure that there is a single science document for the outbreak building on that developed by the DH Chief Scientific Adviser.
2. **Dr Medlock, Prof Rowland, Dr Logan** to submit a form of words for point 6 in the science statement on spread of Zika by other mosquitos.
3. **Dr Maclennan** to submit a form of words for point 8 in the science statement regarding transmission via blood transfusions.
4. **Dr Brady** to circulate preliminary papers on mapping the potential spread of Zika virus by end of the week. This should include an overview of where Zika virus is currently being reported.
5. **PHE** to confirm which countries already have major populations of *Ae. aegypti* and *Ae. albopictus*.
6. **Dr Medlock** to confirm the wording for point 11 on UK incidences and point 21 on road in the science statement.
7. **PHE in collaboration with Dr Medlock, Prof Rowland, Dr Logan** to submit a suggested reference to spraying and the prevention of bites during air travel for the science statement.
8. **Everyone who has access to sequences should make them available as soon as possible.**
9. **GO-Science** to convene a meeting of research funders, including DH and DFID, to develop research strategy.
10. **ALL** to submit any additional comments on the science paper to the Secretariat.

AGENDA ITEM 1: WELCOME

The co-chairs welcomed participants to the meeting, which had been convened to review the evidence and ensure that the best scientific advice was being provided to policy makers. The aim was to develop and maintain a single source of scientific advice, which could be used across government.

Action 1 - DH and GO Science to ensure that there is a single science document for the outbreak building on that developed by the Department of Health's Chief Scientific Adviser.

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 SITUATION IN BRAZIL

There have been approximately 4000 suspected cases of microcephaly and over 50 deaths (either stillbirths or early deaths) prior to last week. Suspected cases have to be examined by a CT scan before being confirmed. In 732 cases examined, 62% had normal brains, 37% had confirmed neurological issues and about 2% had microcephaly. It was likely that there would be milder cases without microcephaly but with other neurological issues.

AGENDA ITEMS 3 & 4: REVIEW OF PRELIMINARY ADVICE

The outputs from the WHO Advisory Group and the advice from the Department of Health's Chief Scientific Adviser were reviewed. The following points were made:

Links between Zika and microcephaly

The link between the Zika virus and microcephaly was still being examined but there was increasing evidence that Zika infection was associated with microcephaly. There was an absence of strong evidence for alternative causes of microcephaly. In addition, it was not certain what proportion of women infected with Zika would have babies with the condition. The group agreed that while the evidence was still uncertain it would be appropriate to recommend precautionary measures.

It was noted that there were limited reports of occasional Guillain-Barré syndrome in non-pregnant women.

Critical trimester

The group agreed that, based on current evidence, it was impossible to say with certainty which trimester carried the most risk, but it was likely to include the first trimester. There was also uncertainty over how the virus affected fetuses in later pregnancy. Studies were underway to investigate this in more detail and preliminary results were expected in 6 months.

It was agreed that there could still be a risk to the child even if the mother had an asymptomatic infection. In addition, there was uncertainty about whether the virus would be viable in children born with it.

Transmission

Transmission is by *Aedes aegypti* mosquitoes. *Aedes albopictus* may also be involved. Neither of these are established in the UK.

The Zika virus is similar to other kinds of virus that can be transmitted by Culex. Research was underway to examine this further. It was agreed that, based on current evidence, reference to Culex should be omitted from the current advice from the group.

Action 2 - Dr Medlock, Prof Rowland, Dr Logan to submit a form of words for point 6 in the science statement on spread of Zika by other mosquitos.

In theory blood transfusions might be able to transmit the virus (as with other infections). The UK blood services have now implemented a specific 28 day deferral for donors visiting affected areas. Prior to this new deferral, risk was minimised because most of the affected countries had deferrals in place for malaria and/or Chikungunya.

Action 3 - Dr Maclennan to submit a revised form of words for point 8 in the science statement regarding transmission via blood transfusions.

Based on limited data, the virus has been shown to clear from the blood within 5 days. It persists in urine in a very small number of cases for up to two weeks. PCR results have shown Zika virus to be present beyond a month in semen. There is a risk that the virus could be in semen even if the individual was asymptomatic. PHE plan to conduct a study whereby semen of men who have travelled to Brazil is monitored for the Zika virus. This research is limited by finding men with the virus, so they are also testing those with minimal symptoms, and may include asymptomatic men.

The group sought to establish a clearer picture of where Zika was currently active and where it could spread in future in order to inform international engagement and travel advice. Several theories were proposed as to why Zika has spread so rapidly recently including whether the vector has changed, the effect of El Niño and a cycle between Zika and Chikungunya. With the spread of Chikungunya, there was a change in the virus which allowed it to be transmitted more directly. There is no certainty on the rate of evolution of the Zika virus. It is likely that Zika virus will spread to places that have experienced outbreaks of similar diseases.

It was difficult to predict how quickly Zika would spread across the US. The group agreed that it would most likely affect Florida, but could affect much of Eastern and Southern USA. It was likely that the spread would be sporadic.

The Spatial Ecology and Epidemiology Group (SEEG) at the University of Oxford had undertaken some modelling work based on reported data. Dr Brady agreed to share a draft paper on the issue with the group. PHE agreed to clarify which areas are considered to be major UK travel destinations.

Action 4 - Dr Brady to circulate preliminary papers on mapping the potential spread of Zika virus. This should include an overview of where Zika virus is currently being reported.

Action 5 - PHE to confirm which countries already have major populations of *Ae. aegypti* and *Ae. albopictus*.

There is an exceptionally small, but not zero, possibility of an infected *Ae. aegypti* mosquito from an affected region surviving long enough in the UK to bite a pregnant woman and infect her. However, as an example of another even more common mosquito-borne disease into the UK, up to 2000 cases of imported malaria occur every year, but cases transmitted by infected *Anopheles* mosquitoes which travelled to the UK (so-called airport malaria) occur at most once every decade. In contrast to Zika, the UK does have (some) mosquitoes capable of transmitting malaria.

Action 6 - Dr Medlock to confirm the wording for point 11 on UK incidences and point 21 on importation by lorry in the science statement.

Disinsection

WHO's declaration of a Public Health Emergency of International Concern (PHEIC) was likely to involve the recommendation of flight disinsection. It was noted that the effectiveness of this intervention was unproven. Disinsection may bring small benefits to those on the plane. It was noted that many direct flights back from Zika affected areas are already disinsected as a measure to control malaria and dengue.

Action 7 - PHE in collaboration with Dr Medlock, Prof Rowland, Dr Logan to submit a suggested reference to spraying and the prevention of bites during air travel for the science statement.

Potential Public Health Measures

The most effective way to protect British Nationals is to provide clear advice to pregnant and potentially pregnant women.

Current vector control measures against *Aedes* are unlikely to be totally effective. To maximise the impact they have to be very well executed. They can breed in small containers which can be treated with insecticide, but this is logistically challenging. Disease control effectiveness of large scale aerosol spraying against adult *Aedes* is unclear; whilst it has a role in early epidemics is unlikely to be a long term solution. As they are day-biting mosquitoes, measures conventionally used against malaria-carrying mosquitoes (e.g. bednets) are not generally relevant. Personal protection using topically applied DEET, and permethrin treated clothing, will reduce biting and provide some personal protection and might reduce transmission, however, data on transmission is lacking. Resistance to insecticides and repellents is a potential threat to their use. Personal protection and efforts by individuals and communities to reduce habitats for mosquitoes by source reduction should be the primary strategies.

Overall risk assessment

In light of the evidence presented at the meeting, the expert group confirmed that:

- The risk of acquiring Zika depends on whether an individual is in an area of active transmission.

- The risk of severe illness is low for those who are not pregnant.
- There is a substantially increased risk to pregnant women and this should be taken into account when considering travel to the region. The risk is not to the mother, but to the foetus.
- The risk of contracting Zika during air travel when returning from an area of active transmission is exceptionally small and will be reduced through disinsection.
- The risk of contracting Zika in the UK is close to zero.

AGENDA ITEM 7: AOB

The group noted that the available genome sequences were being studied. Initial results highlighted that the virus circulating in the Americas was similar to that from the outbreak in French Polynesia in 2013. The Chairs reminded attendees that virus genome data and epidemiological data should be rapidly and publically released.

Action 8 – Everyone who has access to sequences should make them available as soon as possible.

Sir Mark Walport identified the key research issues as developing better diagnostics, identifying the Zika virus' persistence in semen and further sequencing of the virus. The Chairs agreed that a research funders meeting should be held to agree a UK Zika research strategy.

Action 9 - GO-Science to convene a meeting of research funders, including DH and DFID, to develop research strategy.

Action 10 - ALL to submit any additional comments on the science paper to the Secretariat.

SAGE Secretariat