

WHO events addressing public health priorities

Enhancing preparedness and response capacities to Zika virus infection¹

WHO Director-General Dr Margaret Chan, on the advice of the Emergency Committee set up under the International Health Regulations (2005), declared that clusters of microcephaly and other neurological disorders reported in Brazil, following a similar cluster in French Polynesia in 2014, constitute a public health emergency of international concern. Following this declaration, the WHO Office for the Eastern Mediterranean Region (EMR) conducted two rounds of emergency meetings with a view of enhancing preparedness and readiness for Zika virus infection and associated conditions, in conjunction with representatives of the ministries of health of 12 countries. The first round was held on 22–23 February in Cairo, Egypt, inaugurated by Dr Jaouad Mahjour, Director of Programme Management; while the second round was held in Casablanca, Morocco, on 28–29 February, inaugurated by Dr Yves Souteyrand, WHO Representative for Morocco. The objectives of the meetings were to:

- provide information and technical documents about Zika virus infection and associated conditions
- present the draft regional plan for preparedness and response to Zika virus infection; and
- agree upon priority activities to be implemented by Member States and WHO to enhance preparedness and response capacities to Zika virus infection.

In a message delivered during the inaugural sessions, Dr Ala Alwan, WHO Regional Director for the Eastern Mediterranean, urged Member States to remain vigilant and be prepared to face and manage new global health threats such as Zika virus with adequate knowledge, information and skills to prevent, detect and respond to these threats. He noted that the causal relationship between the increase in incidence of microcephaly and neurological disorders and the circulating Zika virus was currently being investigated. Until further knowledge, establishing and strengthening entomological surveillance and vector control in countries with presence of the *Aedes* mosquito would ensure early detection and effective monitoring of any abnormal increase in neonatal malformations or neurological disorders for which no known medical could be identified. He closed by encouraging participants to take the opportunity of the meeting to better understand the risks of transmission of Zika virus in the Region, global and

regional strategies that could be adopted to early detect possible introduction and prevent local transmission, and plan for public health measures for effective response. Discussing Zika virus situation in the EMR and recommendations for effective prevention and control measures were among outcomes of the meetings.

Overview of Zika virus: current situation in the Region

No human infection from Zika virus has so far been reported from any country in the EMR. However, serological evidence of the circulation of Zika virus has been reported in at least two countries in the Region. The current situation does not rule out the possibility of occurrence of Zika virus infection, as travel is likely to contribute to the risk of importation of cases to any country in the Region. While the risk of importation is equally high in all countries in the Region, the risk of local transmission following introduction of the virus through a viraemic patient returning from countries with active Zika virus circulation remains high in areas where the mosquitoes that primarily transmit this virus exist. According to this risk stratification, countries need to enhance preparedness and readiness measures.

Aedes mosquitoes, which primarily transmit Zika virus infection to humans, are present in a number of EMR countries, including Djibouti, Egypt, Oman, Pakistan, Saudi Arabia, Somalia, Sudan and Yemen. Vector-borne diseases pose particular challenges to national public health authorities, because of their complex nature requiring multidisciplinary competencies and strong rapid interaction between committed sectors. *Aedes* mosquitoes have been found in at least eight countries of the Region, while their presence or absence is still to be assessed in others. Therefore, a strong entomological surveillance system is needed in the Region.

Key public health measures for preventing Zika virus infection

Mosquito surveillance is a key component of any local integrated vector management programme. Preventing or limiting the transmission of dengue, chikungunya and Zika viruses is completely dependent on the control of mosquito vectors and reduction of person-mosquito contact.

¹ This report is extracted from the Summary report on the Regional meeting to enhance preparedness and response capacities to Zika virus infection, Cairo, Egypt 22-23 February 2016; and Casablanca, Morocco 28-29 February 2016 (http://apps.who.int/iris/bitstream/1/206084/10665/1/C_Meet_Rep_2016_EN_16740.pdf)

Aedes aegypti and *A. albopictus* are the mosquito species mostly incriminated/ suspected as vectors of arboviral diseases. Entomological sampling methods to assess *Aedes* population density and evaluate the control interventions have been largely implemented, especially in Asian countries. There is a need to introduce and adapt those methods in countries through standardized protocols, including traditional Stegomyia indices to be used in outbreak prevention.

The main sampling tools for collection of all stages of *Aedes* mosquitoes were described; however, it was noted that mosquito-based surveillance is not the preferred method for monitoring or predicting dengue, chikungunya or Zika virus outbreaks. For these arboviruses, it is more efficient to detect cases in people. Lack of entomological capacity is one of the main contributing factors to poor entomological surveillance for arboviruses. Countries need to conduct routine entomological surveillance, research and share with the scientific community, irrespective of whether the scope of the research area features high on the research agenda (i.e. molecular diagnostics). Malaria laboratories can diversify to include other arboviruses; an inventory of resources for medical entomology in the Region (i.e. experts, training institutes, research agencies and laboratories working for medical entomology) needs to be assembled. Furthermore, a network of medical entomologists needs to be established to support the work of entomological surveillance and vector control for arboviral diseases.

There is a strong need to build/strengthen an early warning system to predict, early detect and assess transmission of vector-borne diseases in the Region, through operational research and integrating vector surveillance with syndromic-based and event-based disease surveillance.

The key vector control measures targeting all stages of *Aedes* mosquitoes was highlighted, which include environmental, mechanical, biological, chemical and genetic methods. Insecticide resistance (pyrethroid and temephos), population movement, climate change remain key concerns.

Operations support

A draft regional plan for enhancing preparedness and response to Zika virus was presented. The plan outlined the following six objectives and areas of work, under which priority activities will be implemented within the next six months:

1. Providing leadership and coordination for enhanced preparedness and response capacities
2. Enhancing capacities required under the IHR (2005) at international points of entry
3. Establishing effective surveillance systems and conducting risk assessment for Zika virus disease and potential complications
4. Reinforcing entomological surveillance and vector control
5. Improving access to quality diagnostics testing and rapid turnaround of results; and

Box 1 Key recommendations for prevention of Zika virus infection in the EMR

- Identifying hot spots (risk mapping) through a uniform and standardized risk assessment and stratify areas by spatial and geographic distribution of *Aedes* mosquitoes and past arbovirus epidemics
- Developing or updating a geo-referenced atlas of *Aedes* and their current susceptibility status, which should be used as basis for developing an insecticide resistance management strategy and using this information to update the categorization of high risk, low risk and receptive countries
- Establishing a sentinel surveillance system for *Aedes* mosquitoes in areas with high density including at points of entry and collecting data regularly to pre-empt and detect occurrence of high densities of *Aedes* mosquitoes and target these areas for vector control
- Developing or updating an integrated vector management strategy with strong focus on entomological surveillance and control measures, supported by a clear operational plan defining each sector's role
- Establishing an early warning system for detection of clusters of Zika virus infection and other vector-borne diseases
- Collecting retrospective data on birth registrations, tracing them back and trying to establish any baseline/comparator to assess the trend of congenital birth defects (especially microcephaly)
- Conducting regular public awareness campaigns to proactively inform the public of the Zika virus situation; urging communities to keep areas in and around homes free from mosquito breeding sites through applying appropriate risk communication messages and strategies in accordance with local culture and behavioural practice
- Developing/updating epidemic and pandemic contingency plans for Zika virus infection as well as standard operating procedures for an incident command system and for strengthening coordination
- Increasing knowledge and awareness of all aspects of Zika virus infection among clinicians, health care workers and other stakeholders
- Establishing sentinel surveillance of *Aedes* mosquitoes in areas with past information of *Aedes* distribution and taking prompt actions targeting breeding sites in a radius of 400 metres in the event of any increase in *Aedes* density
- Determining any possible link of microcephaly or other neurological disorders or Guillain-Barré syndrome with other arboviral infections in the endemic belt of *Aedes* mosquitoes during an active circulation of dengue/chikungunya/yellow fever virus in the past.

6. Improving risk communication and community engagement for Zika virus (* further details provided opposite)

To support the operationalization of this plan and respond to any emergency request for assistance from the countries in managing the risk associated with Zika virus, an incident management system (IMS) with designated staff has been established in the WHO Regional Office.

The meetings concluded with agreement on a set of actions recommended for urgent implementation by Member States with support from WHO and concerned partners in order to keep the Region free from Zika virus infection. Box 1 lists a selection of the key recommendations.

WHO has not recommended any travel or trade restrictions within countries, areas and/or territories with Zika virus transmission. Countries reporting sporadic Zika virus in travellers arriving from affected countries pose little, if any, risk of onward transmission. All travellers need to stay informed about Zika virus and other mosquito-borne diseases. Pregnant women need to be advised not to travel to

areas of ongoing Zika virus transmission until more is known about the possible causal relationship between Zika virus and congenital malformation of newborns. The national health authorities may make public health and travel recommendations to their own populations, using a risk assessment approach.

Conclusion and next steps

The Regional Office will finalize the regional response plan based on the actions recommended above and will implement a set of priority activities to enhance preparedness and readiness before the next high-risk season. It will also identify a network of institutions, experts, reference laboratories and training centres in the Region to support Member States in implementation of the priority activities included in the regional response plan, such as the entomological surveillance, vector control, field investigation and laboratory detection as well as long-term capacity-building for prevention and control of arboviral diseases.

*Risk communication is real-time exchange of information, advice and opinions between experts, community leaders, or officials and people who are at risk. The ultimate purpose is to enable everyone at risk to take informed decisions to protect themselves and others from infection and mitigate the effects of Zika virus infection and its potential complications. Taking into consideration the varied context of countries in the Region, several scenarios were presented along with key considerations for risk communication, key messages and target audiences. Each scenario provides key points on how to communicate when a country prepares for Zika virus, when a country has the first confirmed case of Zika virus with travel history to an affected country, when a country has the first confirmed case of Zika virus with no travel history, and when a country experiences a Zika virus outbreak. Engaging communities at all phases of preparedness and response was emphasized, and vector control experts highlighted community participation as key to effective vector control management.