Summary report on the

Regional meeting to enhance preparedness and response capacities to Zika virus infection

WHO-EM/CSR/099/E

Cairo, Egypt (Round 1)
22–23 February 2016
Casablanca, Morocco (Round 2)
28–29 February 2016

World Health Organization
Regional Office for the Eastern Mediterranean

WHO-EM/CSR/099/E

Summary report on the

Regional meeting to enhance preparedness and response capacities to Zika virus infection

Cairo, Egypt (Round 1)
22–23 February 2016

Casablanca, Morocco (Round 2)
28–29 February 2016

World Health Organization
Regional Office for the Eastern Mediterranean

Document WHO-EM/CSR/099/E

Contents

1. Introduction

On 1 February 2016, 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 conducted two rounds of emergency meetings with a view to enhancing preparedness and readiness for Zika virus infection and associated conditions. The first of these two meetings was held on 22–23 February in Cairo which was attended by representatives of the ministries of health of 12 countries: Bahrain, Djibouti, Egypt, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Sudan and United Arab Emirates. The second round of this meeting was held in Casablanca on 28–29 February and was attended by representatives of the ministries of health of Afghanistan, Islamic Republic of Iran, Iraq, Libya, Morocco, Pakistan, Somalia, Syrian Arab Republic, Tunisia and Yemen. The objectives of the meetings were to:

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

Dr Jaouad Mahjour, Director of Programme Management inaugurated the first round of the meeting and Dr Yves Souteyrand, WHO Representative for Morocco inaugurated the second round of the meeting. 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 was acquired, 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 medical cause could be identified. He closed by encouraging participants to take the opportunity of the meeting to understand better the risks of transmission of the Zika virus in the Region, the global and regional strategies that could be adopted to detect importation early and to prevent local transmission, and to plan for the public health measures for effective response.

2. Summary of discussions

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 Region. 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 the introduction of the virus through a viraemic patient returning from the countries with active Zika virus circulation remains high in countries where the mosquitoes that primarily transmit this virus exist. According to this risk stratification, the countries need to enhance preparedness and readiness measures.

The *Aedes* mosquitoes that primarily transmit the Zika virus infection to humans are present in a number of countries including Djibouti, Egypt, Oman, Pakistan, Saudi Arabia, Somalia, Sudan and Yemen. Sporadic cases of dengue fever, either locally transmitted or imported, have been reported from Djibouti, Egypt and Oman while explosive outbreaks of dengue fever have been reported in the past from Pakistan, Sudan and Yemen, chikungunya fever from Yemen and yellow fever from Sudan.

Vector-borne diseases pose a particular challenge to national public health authorities because of their complex nature requiring multidisciplinary competencies and strong rapid interaction among 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 the rest of the area. 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. *Aedes aegypti* and *A. albopictus* are the mosquito

species mostly incriminated/suspected as vectors of arbovirus 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.

An overview of the distribution of *A. albopictus* and *A. aegypti*, and reported past outbreaks of dengue and chickungunya in the Region was presented. The role of entomological surveillance was highlighted in monitoring changes in geographical distribution and density of vectors, evaluation of control programmes and facilitation of appropriate and timely interventions. The main sampling tools for collections of all stages of the *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 publish 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 conducted. Furthermore a network of medical entomologists needs to be established to support the work of entomological surveillance and vector control for arboviral diseases. A capacity-building plan for entomological surveillance and vector

control through use of the regional/international resources/centres of expertise needs to be developed.

There is a strong need to build/strengthen an early warning system to pre-empt/predict and early detect vector-borne diseases in the region through integrating vector surveillance with syndromic based and event-based disease surveillance and use of the surveillance data efficiently to pre-empt/predict and early detect transmission risk. Operational research needs to be conducted to determine thresholds for entomological indices that can be useful to pre-empt and predict occurrence of epidemic.

The key vector control measures targeting all stages of the *Aedes* mosquitoes was highlighted, which included environmental, mechanical, biological, chemical and genetic methods. Other considerations such as what, where, when and how to apply the vector control measures were addressed. Insecticide resistance (pyrethroid and temephos), population movement, climate change remain key concerns. Countries are urged to adopt an integrated vector management approach addressing all vector-borne diseases; this is in line with resolution EM/RC52/R.6 on integrated vector management issued by the WHO Regional Committee for the Eastern Mediterranean in 2005. Integrated vector management focuses strongly on programme management using vector surveillance, clinical surveillance/notifiable disease, which will be used for guidance on the impact of interventions. Countries requested further guidance on which vector control interventions to use in specific contexts (prevention, epidemic etc). Current tools and strategies have not been evaluated for epidemiological outcomes (public health value).

During an overview of the laboratory diagnosis, it was reiterated that there are knowledge gaps about infectivity period. However, viral RNA has been detected in serum by PCR up to 5–7 days after the onset of symptoms and viral RNA has also been detected in urine over an extended period in the acute phase. Zika virus-specific IgM antibodies can be detected in serum from day 5 after the onset of symptoms and typically persist for approximately 2–12 weeks. The most important issue in serology is serological cross-reactivity with other flaviviruses (e.g. dengue, yellow fever, St Louis encephalitis, Japanese encephalitis, West Nile viruses). The plaque-reduction neutralization test (PRNT) for virus-specific neutralizing antibodies (IgG) in serum samples is considered as confirmatory test. Most of the countries are interested in diagnostic kits. To date WHO has not prequalified any diagnostic kits and also has not issued any interim recommendations or algorithm. Zika virus may also present a risk to blood safety. There are reports of confirmed positive Zika virus RNA among healthy blood donors during the outbreak in French Polynesia (2013/14) and recently two probable cases of Zika virus transmission by blood transfusion have been reported from Campinas, Brazil. An important issue could be reduction of blood donor pool due to blood donor deferrals especially in widespread outbreaks. Blood samples can be shipped at 2–8 °C to testing laboratories. As an interim arrangement, suspected samples can be sent to the WHO collaborating centre for viral haemorrhagic fever in Germany for testing until such time that diagnostic facilities are available in the countries. The participants asked to provide diagnostic reagents and training on Zika virus diagnostic methods and differential diagnosis.

WHO has not recommended any travel or trade restrictions with 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. They should adhere closely to steps that can prevent mosquito bites during the trip and practice safe sex, especially pregnant women and their partners, including through the correct and consistent use of condoms. Pregnant women need to be advised not to travel to areas of ongoing Zika virus transmission until more is known about the 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. Travellers to mass gatherings occurring in countries with active Zika virus transmission need to follow the normal travel advice provided by their health authorities.

IHR requirements at points of entry related to vector-borne diseases as specified in Annex 5 call for establishing vector surveillance and control at points of entry and a minimum distance of 400 metres from point of entry facilities (operations involving travellers, conveyances, containers, cargo and postal parcels). A vector surveillance and control programme should be appropriately designed for each point of entry using a risk assessment approach. This involves description of the environment of points of entry and surrounding 400-metre perimeter or wider, local entomological situation and the epidemiological context. Conveyances leaving a point of entry situated in an area where vector control is recommended should be disinsected. However, and in the context of Zika virus, the decision to implement WHO disinsection recommendations is dependent on individual country risk assessment for vector control. Currently, there is no WHO guiding document on disinsection of ships. The guidelines of the International Maritime Organization (IMO) on fumigating ships can be used as a reference.

Risk communication is the real-time exchange of information, advice and opinions between experts, community leaders, or officials and the people who are at risk. The ultimate purpose is to enable everyone at risk to take informed decisions to act to protect themselves and others from infection and mitigate the effects of Zika virus 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 provided 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. It was emphasized that public messages should be timely, precise, applicable and relevant, i.e. tailored to the audience for which they are intended. Communication products should be tested (pre and post) to analyse the public impact of their messages, and to ascertain whether behavioural changes to control the vector have in fact been achieved. 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.

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 6 months: 1) provide leadership and coordination for enhanced preparedness and response capacities; 2) enhance capacities required under the IHR (2005) at international points of entry; 3) establish effective surveillance systems and conduct risk assessment for Zika virus disease and potential complications; 4) reinforce

entomological surveillance and vector control; 5) improve access to quality diagnostics testing and rapid turnaround of results; and 6) improve risk communication and community engagement for Zika virus. To support the operationalization of this plan and to respond to any emergency request for assistance from the countries in managing the risk associated with Zika virus, an incident management system with designated staff has been established in the Regional Office.

The meeting 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.

3. Recommended actions

Enhancing preparedness and readiness for early detection of local transmission of Zika virus infection in countries with evidence of transmission of dengue, chikungunya and yellow fever viruses in the past

1. Identify 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.
2. Develop or update a geo-referenced atlas of *Aedes* and their current susceptibility status, which should be used as the basis for developing an insecticide resistance management strategy and use this information to update the categorization of high risk, low risk and receptive countries.
3. Establish a sentinel surveillance system for *Aedes* mosquitoes in areas with high density including at points of entry and collect

data regularly to pre-empt and detect occurrence of high densities of *Aede*s mosquitoes and target these areas for vector control.

4. Develop or update 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.
5. Establish an early warning system for detection of clusters of Zika virus infection and other vector-borne diseases through:
   - 5.1 using a uniform case definition for syndromic surveillance of acute febrile syndrome;
   - 5.2 using sentinel-based syndromic surveillance system for clusters of acute febrile syndromes in high risk areas (hot spots) as complementary to the routine disease surveillance system;
   - 5.3 integrating a syndromic disease surveillance system with the sentinel-based entomological surveillance system for *Aedes* mosquitoes and periodically sharing disease and entomological surveillance data and other information;
   - 5.4 establishing event-based surveillance system (including community-based surveillance system where possible);
   - 5.5 utilizing existing surveillance (e.g. measles, birth defect and AFP) to detect Zika virus infection and associated conditions;
   - 5.6 enhancing timely reporting and information sharing between epidemiology, laboratory and entomology surveillance units.
6. Improve appropriate laboratory diagnosis and testing capacities for Zika virus infection, including establishing appropriate links with external reference laboratories for sample testing.
7. Keep blood transfusion services updated about measures to ensure safe supply of blood.
8. Consider disinsecting conveyances arriving from a country with active Zika virus transmission using a risk assessment approach and using WHO standard recommendations for disinsection.

9. Establish a sentinel-based surveillance system for congenital birth defects using consistent case definitions and harmonized data collection tools, and follow up clinical outcomes of pregnant women suspected to be infected with an arboviral disease.
10. Collect retrospective data on birth registrations, trace them back and try to establish any baseline/comparator to assess the trend of congenital birth defects (especially microcephaly).
11. Conduct regular public awareness campaigns to proactively inform the public of the Zika virus situation; urge communities to keep areas in and around the home free from mosquito breeding sites through applying appropriate risk communication messages and strategies in accordance with local culture and behavioural practice, and provide communities with the appropriate knowledge, information and tools to protect themselves from mosquito bites.
12. Develop/update epidemic and pandemic contingency plans for Zika virus infection as well as standard operating procedures for an incident command system and for strengthening coordination.

Enhancing preparedness and readiness in all other countries for detection of imported cases of Zika virus infection in countries with no presence of Aedes *mosquitoes or with presence of* Aedes *mosquitoes but no evidence of transmission of dengue, chikungunya and yellow fever viruses in the past*

13. Raise the awareness of travellers going to areas with active transmission including for participating in mass gathering activities through issuance of appropriate advisories to reduce the possibility of exposure to mosquito bites.
14. Enhance coordination and collaboration between travel, trade and health sectors to ensure implementation of related WHO recommendations.

15. Increase knowledge and awareness of all aspects of Zika virus infection among clinicians, health care workers and other stakeholders.
16. Improve appropriate laboratory diagnosis and testing capacities for Zika virus infection, including establishing appropriate links with external reference laboratories for sample processing.
17. Keep blood transfusion services updated about measures to ensure safe supply of blood.
18. Establish sentinel surveillance of *Aedes* mosquitoes in areas with past information of *Aedes* distribution and take prompt action targeting breeding sites in a radius of 400 metres in the event of any increase in *Aedes* density.
19. Conduct surveys to collect data on *Aedes* mosquitoes in countries with no known vectors and enhance surveillance of mosquitoes in areas bordering with countries with known vectors.
20. Monitor imported goods (e.g. used tyres, bamboo) by quarantine measures to avoid entry of invasive species of mosquitoes and implement vector surveillance and control at designated points of entry as per IHR (2005).

Addressing knowledge gaps on the circulation/transmission of Zika virus in the past in the Region

21. Conduct studies on the *Aedes* vector distribution in the Region through literature review and multicentre cross-sectional studies.
22. Determine any possible link of microcephaly or other neurological disorders or Guillain-Barré syndrome with other arboviral infections in in the endemic belt of *Aedes* mosquitoes during an active circulation of dengue/chikungunya/yellow fever virus in the past.

23. Look for evidence of overt/silent/indirect Zika virus circulation in the Region by testing archived blood samples collected during the past epidemic of arboviral disease.
24. Conduct studies to determine increased incidence of microcephaly and Guillain-Barré syndrome.

4. 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.

World Health Organization
Regional Office for the Eastern Mediterranean
P.O. Box 7608, Nasr City 11371
Cairo, Egypt
www.emro.who.int