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Mass Gatherings and Zika Virus Infection - Concerns and Facts

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Dear Editor,

Emerging infections are a big global public health concern. There are many new emerging diseases that require serious attention. Currently, Zika virus infection is a major global problem, which has not been successfully controlled so far (1, 2). Zika virus infection is a mosquito borne infectious disease transmitted by Aedes species mosquito. There are also many new reports on atypical modes of disease transmission (such as sexual contact) (2). The emergence of Zika virus infection in a new setting due to disease importation by international travelers is also an important public health concern. From the first outbreak in South America in 2017, Zika virus has already been imported to several countries in America, Europe, Asia, and Oceania. Nah et al. noted that "the risk of importation may be high given continued global travel of mildly infected travelers (3)." Ginier et al. noted that "there is a risk of Zika virus importation to Aedes mosquito-infested regions in temperate climates (including regions of North America and Europe) with consecutive autochthonous transmission (4)." Similar to the situations of emerging flu and Middle East respiratory syndrome (MERS), the control of the imported disease is the basic practice in many countries. Screening for travelers with a history of illness is routinely performed. However, it is possible that a traveler with Zika virus infection have no signs of the disease making screening difficult (4).

Sometimes, there might be a large number of immigrations, which is usually a difficult-to-manage situation. Mass gatherings are usually the focus of disease control programs. In the case of Zika virus infection in 2016, Hajj and Olympics 2016 were the main mass gatherings that were widely mentioned (5). There are many publications regarding the risks of the two events. For Hajj, the concern is the possibility of imported Zika virus to the Middle East (5). For Olympics 2016, the concern was the possibility of exported Zika virus from tropical South America to other regions (5). Centers for Disease Control and Prevention (CDC) issued suggestions and warnings regarding the risks before the event (6) and had a strong collaboration with the local disease control team (https://www.cdc.gov/media/releases/2016/s0226-summer-olympic-games.html). Nevertheless, there are limited data on the situation after the event. For the Olympics 2016, the US CDC firstly mentioned the risks and launched the specific disease surveillance program regarding this event (7). The World Health Organization (WHO) also published health advice regarding the Olympics and Zika virus (http://www.who.int/mediacentre/news/releases/2016/zika-health-advice-olympics/en/).

With international collaboration, an emergency team was set for specific disease control and surveillance regarding the Olympic and Zika virus (8). After the event, the Brazilian Ministry of Health declared that Zika infection during the Olympics was almost zero (http://edition.cnn.com/2016/06/10/health/zika-olympics-health-minister/).

For the Hajj, both Saudi Arabia and countries with returning travelers from pilgrimage launched the surveillance program regarding the importation of Zika virus infection (9). WHO collaborates with the Ministry of Health of Saudi Arabia to set a sanitation plan, health education and system for screening travelers visiting Saudi Arabia for pilgrimage (8). WHO published a specific note for the Hajj pilgrimage stating that "travelers arriving from Zika epidemic and endemic countries are recommended to take insect bite avoidance measures during daytime and night time hours to reduce the risk of introduction of Zika virus in the country (10)." Ministry of Health of Saudi Arabia sets specific teams for disease control regarding Zika virus infection during the Hajj (8). Similar activities are aimed at controlling MERS, which is still an endemic disease in Saudi Arabia. Until the present time, according to the updated data from WHO and CDC websites, there has been no Zika virus infection case related to the Hajj, and Saudi Arabia is still a Zika virus disease-free region

(https://wwwnc.cdc.gov/travel/notices/alert/hajj-umrah-saudi-arabia-2017). As of May 2017, there were no reports on imported disease due to the two events and there should be no further incidence since it is already passed the incubation period of the Zika virus infection.

The lessons learnt from the situation are very interesting. The author gathered information from the available reports on the lessons learnt in several countries and made a summarization. First, with proper preparation and infection control practice, the problem can be successfully limited. In fact, control programs are intensified during mass gatherings. Considering MERS, disease control has been successfully achieved, and the problem of imported disease during the Hajj period has been successfully controlled (11). Al-Tawfiq et al. mentioned that "many factors contribute to the spread of these infections during mass gatherings, including crowding, the health of the attendees, and the type and location of meetings" and "surveillance, rapid diagnostic testing, and containment strategies" are the key factors for success of disease control (12). A good surveillance seems to be the most important tool.

In 2016, there was a big discussion on whether Olympics should be cancelled or not. Finally, it was successfully held without a problem of Zika virus infection (6). Zumla et al. (8) analyzed the situation and concluded that the good surveillance by international collaboration was the key to this success (13). Second, there should be a similar strict control in all periods. Strict practices are usually launched during mass gatherings, but it is usually neglected at other times. In fact, the importation of disease usually occurs during typical times. Immigrants should be regularly controlled, and control programs must be used for any person from any country. The previous situation of emerging Zika virus in Taiwan can be a good lesson since the imported disease was from a country that was not indicated as an endemic area at that time (13). During mass gatherings, the disease can be imported from any country.

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