

## Blood safety and zoonotic emerging pathogens: now it's the turn of Zika virus!

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Zika virus is a flavivirus of the family *Flaviviridae*, which derives its name from the Zika forest in Uganda where it was initially identified in 1947 in the Rhesus macaque population<sup>1,2</sup>. Like other viruses transmitted by arthropod vectors (e.g., West Nile, Dengue and Chikungunya viruses), in the great majority of cases Zika virus infection causes an asymptomatic or mildly symptomatic flu-like disease<sup>3-5</sup>. There are essentially two reasons for the growing interest from health authorities and the scientific community towards this emerging viral infection. The first is that Zika virus infection is not confined only to limited areas of Africa<sup>6,7</sup>, since major outbreaks have recently been recorded in different areas of the world, including Asia, Oceania, and South America, thus shifting interest in this arbovirus from a local to a global level. Such epidemics have been made possible by the rapidly increasing, worldwide diffusion of *Aedes* mosquito species, the main vector of Zika virus<sup>7</sup>. The second reason, which is related to the first, is that the blood-borne transmission of this pathogen raises major concerns regarding the safety of blood donations and transfusions in those geographical areas characterised by a potential widespread circulation of the virus (and its vector)<sup>8</sup>. For these reasons, the Pan American Health Organization (PAHO)<sup>9</sup> and the European Centre for Disease Prevention and Controls (ECDC)<sup>10</sup> have recently issued a bulletin to alert their national health and blood safety authorities about this still poorly recognised viral infection.

All these aspects of Zika virus infection (i.e., epidemiology, pathogenesis, diagnosis and clinical manifestations) are addressed in a comprehensive and updated review published in this issue of *Blood Transfusion* by Marano and Colleagues<sup>11</sup>. The section dedicated to the preventive strategies towards Zika virus infection played out in different countries according to the epidemiology of this arbovirus is particularly interesting. Correctly, the authors identified close cooperation between veterinary and transfusion medicine specialists as being among the key strategies for implementing effective entomological and human surveillance systems.

As documented by the recent alert from the Italian Ministry of Health<sup>12</sup>, the issue of Zika virus infection is really topical and of potential concern even to Italy<sup>10</sup>, because of the recent Universal Exposition (Expo Milan 2015). It is estimated that, by its closure, this event will have attracted and concentrated approximately 20 million visitors from many countries to a limited geographical area characterised by the widespread diffusion of *Aedes albopictus*, also known as the tiger mosquito. Finally, the very recent report of a case of Zika virus infection in an Italian traveller returning from Brazil<sup>13</sup> teaches us that the risk of this infection is far from theoretical in Italy and that this arbovirus, like West Nile and Chikungunya viruses, could rapidly become a real threat to the national blood safety.

*The Authors declare no conflict of interest.*

### References

- 1) Kuno G, Chang GJ, Tsuchiya KR, et al. Phylogeny of the genus *Flavivirus*. *J Virol* 1998; **72**: 73-83.
- 2) Simpson DI. Zika virus infection in man. *Trans R Soc Trop Med Hyg* 1964; **58**: 335-8.
- 3) Duffy MR, Chen TH, Hancock WT, et al. Zika virus outbreak on Yap Island, Federated States of Micronesia. *N Engl J Med* 2009; **360**: 2536-43.
- 4) Pupella S, Pisani G, Cristiano K, et al. Update on West Nile virus in Italy. *Blood Transfus* 2014; **12**: 626-7.
- 5) Liunbruno GM, Calteri D, Petropulacos K, et al. The Chikungunya epidemic in Italy and its repercussion on the blood system. *Blood Transfus* 2008; **6**: 199-210.
- 6) Musso D, Nilles EJ, Cao-Lormeau VM. Rapid spread of emerging Zika virus in the Pacific area. *Clin Microbiol Infect* 2014; **20**: O595-6.
- 7) Ioss S, Mallet HP, Leparc Goffart I, et al. Current Zika virus epidemiology and recent epidemics. *Med Mal Infect* 2014; **44**: 302-7.
- 8) Petersen LR, Busch MP. Transfusion-transmitted arboviruses. *Vox Sang* 2010; **98**: 495-503.
- 9) Pan American Health Organization/World Health Organization. Epidemiological alert. Zika virus infection; 7 May 2015. PAHO/WHO; 2015.
- 10) European Centre for Disease Prevention and Control. Rapid risk assessment: Zika virus infection outbreak, Brazil and the Pacific region; 25 May 2015. Stockholm: ECDC; 2015.
- 11) Marano G, Pupella S, Vaglio S et al. Zika virus and the never-ending story of emerging pathogens and transfusion medicine. *Blood Transfus* 2016; **14**: 95-100.

- 12) Ministero della Salute. [Surveillance of human cases of Chikungunya, Dengue, West Nile disease and other arboviruses and assessing the risk of transmission in Italy]; 2015. [In Italian.]
- 13) Zammarchi L, Tappe D, Fortuna C, et al. Zika virus infection in a traveller returning to Europe from Brazil, March 2015. *Euro Surveill* 2015; **20**: pii=21153.

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