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Editorial

Digital disease data: what is the impact on the Zika virus epidemic?

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Zika virus (ZIKV) is an arbovirus (arthropod-borne virus) of the family Flaviviridae that is mainly transmitted to humans by *Aedes* mosquitoes. This virus, was named after the Ziika forest, in Uganda, where the virus was first isolated from monkeys during a surveillance study for yellow fever virus[1]. It had been responsible for several outbreaks within the African continent since its isolation, but only became a worldwide public health problem when a major outbreak, beginning in 2014, was detected in Brazil.

Previous studies report that 80% of individuals with Zika may be asymptomatic; when symptomatic, individuals usually present with mild dengue-like manifestations, including fever, non-purulent conjunctivitis, maculopapular skin rash, arthralgia, and myalgia. The infection usually resolves within a short period (one week) after the onset of symptoms[2], and there is neither a treatment nor a vaccine commercially available to fight this disease.

ZIKV infections were first confirmed in Brazil by reverse transcription polymerase chain reaction in 2015, in patients' samples from the Northeast region of the country. Since then, ZIKV infections spread throughout the Americas, and the disease caught the attention of public health authorities due to the exponential growth of newborns presenting with microcephaly. As at the beginning of 2017, a total of 13,603 cases of compromised growth in Brazilian children had been reported by the Brazilian Ministry of Health, including microcephaly and other congenital malformations[3]. Besides the association with microcephaly, several other adverse outcomes have been associated with ZIKV infections, such as Guillain-Barré syndrome, vision impairment, and other neurological disorders. Since February 2016, it has become mandatory that all suspected cases of Zika be reported to the Brazilian Ministry of Health in order to define the full clinical picture of the disease[4]. In order to organize, analyze and share important data about the outcomes of a disease and how to handle an outbreak, it is imperative that health professionals have access to all information regarding the characteristics of patients' infections. Thus, strategies can be implemented in order to contain the spread of the disease, and also improve the healthcare system[5]. The Brazilian health information system has been extremely successful in gathering and publishing information, particularly epidemiological data.

Several different information systems compose the Brazilian Health System, and they allow health professionals to search for specific information during disease outbreaks, such as epidemiologic or demographic data, service conducts and guidelines, or for other purposes. Some important data regarding infectious diseases occurring in Brazil are available at Notifiable Diseases Information System (SINAN), Hospital Information System (SIH), Mortality Information System (SIM)), and Unified Health System Department of Informatics (SUS/DATASUS) [6].

In this issue of the *Journal of the Brazilian Society of Tropical Medicine*, Pavão *et al*. present a cross-sectional analysis of the National Health Information System (HIS) using data from hospitalizations registered with various International Classification of Diseases 10th Revision (ICD-10) codes potentially related to ZIKV infection, bringing evidence about the relevance of using health information systems to detect the possible association of ZIKV infections with neurological complications. The HIS, containing information on the whole lifespan of an individual, from birth to death, can be used to analyze the current situation and trends of public health in different Brazilian regions, detecting possible epidemics and their impact on public health.

The study also reviews the ICD-10 classification system codes potentially related to ZIKV disease and its complications. The data were selected based on a literature review of published studies on ZIKV outbreaks and recent protocols developed and published by the Brazilian Ministry of Health. According to the authors, the Brazilian SIH includes several database indicators pertaining to different aspects of the life cycle: SIM, the Live Birth Information System, Primary Care Information System, SINAN, and the Public Health Event Registry.

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A compilation of disease outcomes, together with their respective ICD-10 codes in Brazil can be found in the study, including viral infections, neurological manifestations associated with viruses (dengue, chikungunya, and Zika), abortion, and congenital malformations related to ZIKV infection. Although the HIS does not have optimal access and usage in Brazil, the quality of data available can improve the diagnosis of diseases such as zika, dengue, and chikungunya, and play an important role in several outbreak scenarios. Therefore, it seems important to use the Brazilian HIS to investigate the neurological manifestations associated with different viral infections, especially dengue, chikungunya and zika virus infections. However, caution must be exercised because disease reporting must be optimum in order to have completely reliable data, and consequently, adequate evaluation by health personnel.

Conflict of interest

The authors declare that there is no conflict of interest.

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