

Infectious diseases in the XXI century

With the advent of industrialization, economic and health improvements, and the urban conditions resulting from them (in the transition from the XIX to the XX century), mortality from external causes had a significant decrease and occidental civilization experienced what was termed demographic and epidemiological transition.⁽¹⁾

By the end of this transition, the infectious diseases have ceased to be the main object of health research, [being] replaced with research on the so-called chronic degenerative diseases and cancer. This change in the object of interest of the health research prevailed in the twentieth century (especially after the Second World War) and still prevails.⁽²⁾

However, from the mid 60s, after the failure in the global program to eradicate malaria, the occurrence of bacterial resistance to antibiotics and the recurrence and expansion of tuberculosis, the interest for the study on infectious diseases reemerged.

In this historical decade, the economic development in the so called tropical countries has also begun in Southeast Asia, continued in Latin America, culminating in Africa. This process, although and with very different results, produced an important population growth and urbanization in these countries, as well as a growing economic interest in these regions by the Western developed countries.

Consequently, large migratory flows have occurred between developed countries and those regions, facilitating the appearance of rare and exotic infectious diseases (in the Western developed countries). Thus, the term Emerging and Reemerging Diseases was coined to denote these new threats to health.⁽²⁾

In the early 1980s, the recognition of a new disease, Acquired Immuno-deficiency Syndrome (AIDS), increased the scientific interest in emerging diseases, so that research on such diseases has become comparable to that on chronic degenerative diseases and cancer.

Since then, we have watched astonished the expansion of dengue, the advent of dengue hemorrhagic (with its complications), the recognition of different etiologies and clinical aspects of viral hemorrhagic fevers, the emergence of new diseases (some of them, such as Severe Acute Respiratory Syndrome, SARS, with pandemic potential), the Ebola outbreak in West Africa and, more recently, the advent of two viral diseases hitherto considered rare and exotic (restricted to specific geographical areas) caused by the *Chikungunya* and Zika viruses.

The latter diseases have gained world headlines, in both lay and scientific press due to their rapid expansion to the West (especially the Americas), as well as to the dramatic aspects related to its clinical manifestations.

Brazil was particularly affected by these two diseases from the end of 2013. This coincided with the holding in the country of two world-scale events (The World Cup in 2014 and the Olympic and Paralympic Games to be held in mid-2016), able to attract a large number of tourists. At the time of the World Cup, little grounded speculations were published on the risk that tourists would have of contracting these infections if they came to Brazil.^(3,4) These speculations caused a great impact on the media with significant political and economic consequences. This led Brazilian scientists to publish a series of articles demystifying the exaggerated risk [as] previously disseminated.⁽⁵⁻⁸⁾

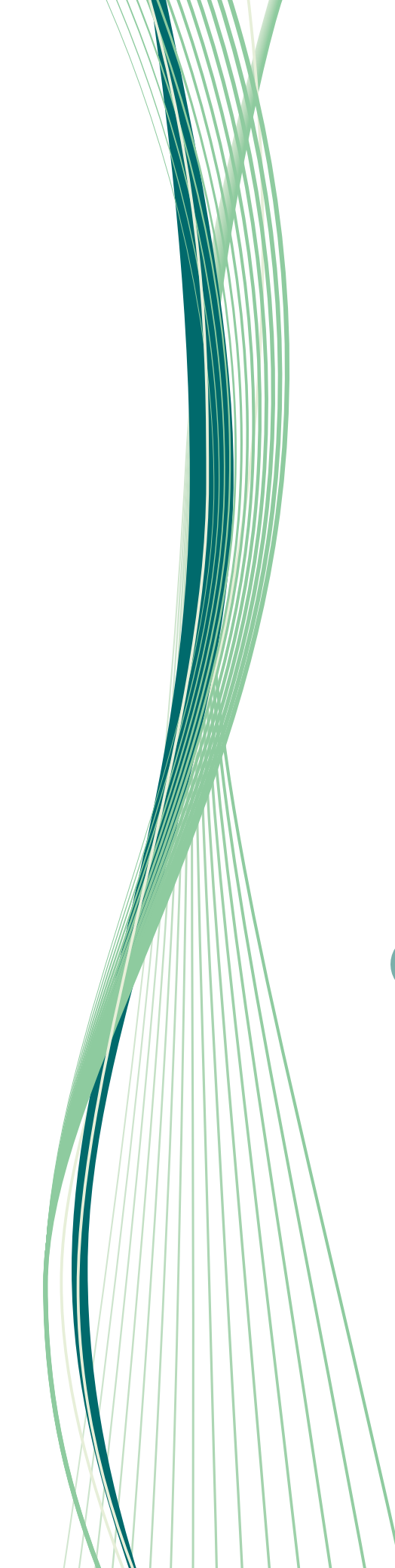
The Zika fever is a disease that was discovered in 1947. *It is known for [almost] seventy years*, being considered a benign disease until the end of 2015. It did not arouse great concerns, except a curiosity typical of rare and unpleasant conditions. It is worth remembering the phrase “*deu zica*” in the Brazilian slang, which was coined to denote something that *went wrong* or an unpleasant and unexpected result.

However, the birth of several babies with microcephaly in northeastern Brazil in the second half of 2015 (with clinical and imaging aspects suggestive of infectious prenatal process, associated with maternal infection with Zika virus) generated international alarm. Since then, we have seen a great interest and concern with this disease, which was so far virtually unknown to the scientific community, the general population, and the lay press. This concern generates a proposal to postpone the Olympic Games. It was necessary to better estimate the risk of contracting Zika during the Olympics, showing that it is much reduced and should not cause any greater apprehension.^(4,7,9)

Every event of such magnitude and drama brings good and bad consequences. In this case, the good consequences stem from aroused scientific interest and the research coordinated with a major global effort, which allowed elucidating the ethiopathogenic mechanisms of Zika infection in about six months, rapidly proposing the development of diagnostic tests, and developing vaccines and therapeutic strategies that will arise in the near future. The bad consequences are the occurrence of many children affected with serious problems that will cause a great burden and present and future disorders to them and to our society.

Although we have coexisted with dengue (and perhaps because of it) for more than thirty years and experienced recurring and growing annual epidemics (in both number of cases and hospitalizations and deaths, more than 1,600,000 cases were reported to the Ministry of Health in 2015), and even though the vector control measures were widely known and disseminated among us, they were neglected by both government and society in general.

This behavior has persisted even after the Chikungunya virus was introduced in Brazil by the end of 2013, and epidemics of this new disease [have been] recorded since then. However, these epidemics have not had a dra-



maticity even comparable to that caused by the “epidemic” of children with microcephaly (and other equally serious congenital malformations) called congenital Zika syndrome.

It is time to rethink and draw useful lessons from what happened in the last two years. Infectious diseases exist and will always exist in the natural environment. Human exposure to new or old disease agents, with more or less dramatic epidemic consequences (beyond our control), result from our negligent relationship with the natural environment.

We must stop our impetus when entering into a new and unfamiliar environment. Caution is advisable and previous scientific studies could avoid or minimize the adverse consequences resulting from [both] expansion of human activity and anthropogenic changes caused in these environments.

The increase in human mobility is another aspect that is worth mentioning. Nowadays, we can travel to anywhere on the planet in a few hours. [Furthermore,] we travel more and more, unaware of the implications of these movements for the dispersion of new and old infectious diseases.⁽¹⁰⁾

In this context, the concern with epidemiological and health surveillance and the early recognition of suspected cases (patients who seek health care services) are essential for the immediate action and future epidemic control.

The nursing professionals, given the nature of their activities, are among the most prominent professionals who work in the health systems. This realization brings duties and responsibilities that should be recognized and rewarded in the public and private health services and attention and surveillance structures.

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