

Zika virus and measures of legal interventions in public health

José Luiz Gondim dos Santos¹, Marcos Vinicius Malveira de Lima¹, Francisco Naildo Cardoso Leitão¹, Vitor Djannaro Eliamen da Costa¹, Hugo Macedo Jr¹, Pascoal Torres Muniz²

DOI: <http://dx.doi.org/10.7322/jhgd.122919>

Abstract

The Zika virus is an emerging and important world health problem. In public health its harmful effects have stimulated various legal interests. The Federal Government of Brazil recently adopted several social and health surveillance measures, extending the instruments of possibilities to combating the virus transmitter in Brazil. Law No. 13.306/2016 brought incisive determinations about action awareness policies and educational campaigns, and at the same time authorizes the highest authorities of the Unified Health System (SUS) within federal, state, county and municipal governments to establish and implement the necessary measures to control the diseases caused by the virus, i.e. dengue, chikungunya and Zika. The published legislation has created a motivating environment for researchers to develop projects aimed at the mosquito that transmits the dengue virus, the chikungunya virus and the Zika virus. Therefore, studies on *A. aegypti* have led to greater scientific knowledge about its habitat, reproduction and development and a description of means to combat it, as a precondition for the fulfilment of the social purposes of Law No. 13.301, of June 27, 2016, mainly if researches about more efficient management models and management of public finances, contributing to unveiling impacts on public health and growth and human development.

Keywords: Zika virus, legal interventions, public health.

INTRODUCTION

The Zika virus is a flavivirus transmitted by mosquitoes of the *Aedes* species, mainly *A. aegypti* and *A. africanus*¹⁻³. The symptoms associated with the infection are usually self-limited and include fever, a maculopapular rash, conjunctivitis, myalgia and arthralgia. A Zika virus outbreak is ongoing in the Americas, with high infection rates in Brazil and Colombia^{1,2}. The Zika virus is possibly teratogenic, because the infection is strongly associated with microcephaly and other brain defects, eye damage, foetal loss and risk of congenital anomalies that appear more when maternal infection is acquired during the first trimester of pregnancy⁴.

The Zika virus was first isolated in 1947 in a monkey in the Zika forest in Uganda, Africa. The first human case was reported in Nigeria in 1954. The East African Zika virus probably spread to South-East Asia around 1945, a stable endemicity period in Africa and South-East Asia that persisted throughout the 20th century⁵.

Multiple epidemics have been reported to date. The first outbreak occurred on the island of Yap in Micronesia. It is estimated that 5,005 (73%) out of 6,892 residents aged 3 or more had the Zika virus infection during the outbreak, and about 82% had subclinical infections⁶. The second major outbreak was reported in the years 2013–14 in French Polynesia, with a total of 8,510 suspected cases reported by the country's sentinel network, and this subsequently spread to various regions, including Easter Island and New Caledonia^{7,8}.

This outbreak in the Americas began in Brazil in 2015, with the first reports of cases transmitted locally in the country being confirmed that year⁹. Retrospective tests show that the first cases occurred in Rio de Janeiro in January 2015. The virus entry route came from travellers from endemic regions including Chile, Asia and Africa during major sporting events held in 2014. The isolated strains belong to the Asian lineage and are more closely related to French Polynesia¹⁰⁻¹².

In the Americas, there were 621,342 suspected or confirmed cases up to 09.22.2016, with the highest num-

1 Programa de Pós-graduação em Ciências da Saúde da Faculdade de Medicina do ABC (FMABC) – Santo André (SP), Brasil.

2 Pesquisador. Programa de Pós-graduação em Saúde Coletiva da Universidade Federal do Acre.

Corresponding author: José Luiz Gondim dos Santos - E-mail: profgondim@outlook.com

Suggested citation: Santos JLG, Lima MVM, Leitão FNC, Muniz PT. Zika virus and measures of legal interventions in public health. *J Hum Growth Dev.* 2016; 26(3): 393-397. DOI: <http://dx.doi.org/10.7322/jhgd.122919>

Manuscript submitted 21 Oct 2016, accepted for publication 3 Dec 2016.

ber of cases being in South America, with 275,397 in Brazil, 103,508 in Colombia and 59,348 in Venezuela. The remaining cases were reported in Mexico, Central America and the Caribbean, including the Virgin Islands of the United States and Puerto Rico¹³. Based on asymptomatic infection rates, it is estimated that between 500,000 and 1.5 million people were affected in Brazil in 2015¹⁴.

Because of the public relevance of the problems caused by the zika virus and its impact on public health¹⁵, the Brazilian government edited and enacted Law No. 13.301, of June 27, 2016¹⁶, and published it in the Official Gazette of June 28, 2016.

The law provides for the adoption of health surveillance measures on confirmation of a situation of imminent danger to public health caused by the presence in mosquitoes of the dengue virus, the chikungunya virus or the zika virus, and amends Law No. 6.437, of August 20, 1977, which deals with offences of, and penalties for, non-compliance with health legislation in Brazil.

The legal protection contained in the law under discussion is public health through the adoption of health surveillance measures when checked the situation of imminent danger by the mosquito presence of Dengue Virus, the Chikungunya Virus and the Zika Virus¹⁷.

Law No. 13.301/16 brings significant changes to Law No. 8.742, of December 7, 1993¹⁶, which provides for the organization of social assistance and other measures and changes to Law No. 6.437 of August 20, 1977, which provides on the violations of federal health legislation, and sets out the sanctions and other measures¹⁸.

As a priority emphasis, we note that the government has operated major adjustment in Social Assistance. According to the new legislation it is permitted to grant benefits of temporary continued provision for a maximum period of three years for people who are disabled and for child victims of microcephaly because of neurological sequelae resulting from diseases transmitted by *Aedes aegypti*.

The granting of this right is an attempt to alleviate the suffering in thousands of cases of neurological sequelae that have occurred in newborns, which has highlighted the cases of microcephaly in the northern region of Brazil, where there are suspicions that these anomalies were caused by incidences of the zika virus in specific cases of pregnancy in progenitors.

The numbers are: **Alagoas:** 212 (102 in research, 25 confirmed, 85 discarded); **Bahia:** 775 (582 in research, 120 confirmed, 73 discarded); **Ceará:** 335 (256 in research, 33 confirmed, 46 discarded); **Maranhão:** 181 (151 in research, 14 confirmed, 16 discarded); **Paraíba:** 790 (440 in research, 59 confirmed, 291 discarded); **Pernambuco:** 1,601 (1,188 in research, 209 confirmed, 204 discarded); **Piauí:** 127 (81 under investigation, 32 confirmed, 14 discarded); and **Rio Grande do Norte:** 374 (275 in research, 76 confirmed, 23 discarded)¹⁹.

With regard to the performance of federal health legislation, Law 13.301/16 brought incisive determinations about the actions of awareness of policies and educational campaigns, as well as allowing the highest authorities of the Unified Health System, the SUS, within federal, state, county and municipal governments to determine and implement necessary measures to control the

diseases caused by the virus, i.e. dengue, chikungunya and zika.¹⁶

Article 1 of Law 13.301/16 refers to the adoption of measures for a set situation considered as a *situation of imminent danger to public health due to the presence of the mosquito transmitter of the dengue virus*. This emphasis on law highlights this special condition warranting stronger action and the need to adopt measures according to the law. The legal instrument for determining the content, starting point and end of the diagnosed situation is the Decree of the Head of the Executive, which is responsible exclusively for issuing decrees to faithful execution of laws as art. 84, item IV of the Federal Constitution of 1988.¹⁶

This mechanism, adopted by Law 13.301/16 as a condition to spread the actions arising from *the situation of imminent danger to public health due to the presence of the mosquito transmitter of the dengue virus*, is the framework for the beginning of the impact of the attributes of police power of discretion, self-enforceability and coerciveness in relation to actions on health monitoring. This form of state action is a consequence of the legal control of a democratic state under the rule of law, which requires respect from the state itself for the fundamental rights enshrined in the Federal Constitution²⁰.

The Decree of the Head of the Executive establishes the timing of the intervention measures, allowing purchases and emergency contracts to meet the needs of combating public health hazards. The law does not include devices for structuring health authorities; this may reduce the social effectiveness due to the lack of infrastructure and staff in the states, and especially in the municipalities, which have a public and notorious budget fragility. The law requires the decree, declaring **situation of imminent danger to public health by presence of the mosquito transmitter of dengue virus** to be runnable^{16,23}.

As guidelines for health public policies, Law No. 13.301/16 includes in its text community actions, with broad popular participation, establishing the duty of all towards combating the proliferation of the mosquito that transmits the zika virus. These community actions should be combined with educational campaigns and guidance to the public, especially women of childbearing age and pregnant women, published in all media, including state radio programmes.

On the other hand, as a material action of intervention, Law No. 13.301/16 provides for:

- a) *Extensive visits in advance communicated to all public and private places*, although with cautious possession to eliminate the mosquito and its breeding, in areas identified as potential possessors of transmitters; and
- b) *Forced entry into public and private places*, in cases of abandonment, reclusion or absence of a person, that can enable the access of a public agent, designated and identified, when that is essential to the containment of diseases.

The two material intervention actions have their constitutional basis in Article 182, paragraph 2, which states that every property has its social function, adding to the other intervention measures provided in Law No. 10.257 of June 10, 2001, which regulates Articles 182

and 183 of the Federal Constitution, establishing general guidelines for urban policy and other measures²¹.

In the case of Law No. 13.301/16, not taking proper care to prevent the proliferation of mosquitoes transmitting the zika virus is a violation of the principle of the social function of property, and an acceptance of state intervention to protect public health.

From the conceptual point of view, aimed at the faithful fulfilment of Law No. 13.301/16, the legislature conceptualized situations that allow this type of legal intervention, as follows:

- a) **Property in situations of abandonment**, such as one that shows prolonged absence of use, verified by its physical characteristics, such as signs of lack of maintenance, and information from local residents or other evidence that demonstrates non-use;
- b) **Absence** of the person from the location; impossibility of allowing access to the property assuming two visits duly reported on alternate days and periods within a ten-day interval; and
- c) **Refusal**: Preventing the public agent from gaining access to the property.

Intervention measures in the cases provided for in the law are adopted, and as an administrative process must follow the procedure bound in the law and compatible with the possibility of contradictory and wide defence, to enable the smoothness of the process under Article 5, section LV, of the Federal Constitution of 1988¹⁸.

Also, encouragement of the development of scientific research through the creation of the National Programme to Support the National Support Programme to Combat Diseases Transmitted by Aedes (PRONADES) (Article 7) is highlighted in the legal text, with forecast resource contribution within 30 days after the publication of the law. Likewise, it highlights the relevant treatment given to the incorporation of new health surveillance technologies.

Research in public health for the purpose of fighting and containing the zika virus is essential to the knowledge of the main forms of dissemination, symptomatology, transmission modes, serology, etc., and is the most efficient and effective way to control and extinguish evidenced cases.

On the other hand, it is observed that studies and surveys are necessary to assess the implementation of the management capacity of a situation of imminent risk re-

sulting from the application of Law No. 13.301/16. Union, states and municipalities are prepared as a structure of organic unity to face the problem of proliferation? Are the processes and procedures clear and timely to meet the needs involved in the issue? Are there enough professionals to implement and is health-monitoring equipment properly structured to provide for sure?

These are questions that must be studied in their universe for the purpose, in our view, of ensuring the efficiency and effectiveness of the new legal status that can be answered by speculative studies properly aligned to real society problems. It is observed that the law itself provides the research means to encourage in their area of interest through the National Support Programme to Combat Diseases Transmitted by Aedes (PRONADES).

Elsewhere, improvements incorporating technologies are essential to the practical results of research carried out. Decisions on improvements should be addressed from the perspective of the economic paradigm, limited by doing what is possible, as well as from the perspective of the rational defensive paradigm, guided by rational use of health technologies²²⁻²⁴.

Thus, we must applaud the new legal instrument enabling the police power in the Brazilian state and contribute, as public officials, legal professionals, researchers and citizens, to the effective and efficient implementation of Law No. 13.301, of June 27, 2016, as the relevant regulatory instrument of public policy for dealing with problems caused by the zika virus and other similar diseases.

Thus, from the published law, it is suggested that researchers in the field of public health should submit and implement research projects on the mosquito that transmits the dengue virus, the chikungunya virus and the zika virus to the National Support Programme to Combat Diseases Transmitted by Aedes (PRONADES), with provision of funds to be made within 30 days of the publication of Law No. 13.301/16, pursuant to Article 10.

Finally, we have no doubt that the study of the mosquito that transmits the dengue virus, chikungunya virus and zika virus, its forms of development, habitat, reproduction and description on ways to combat it will be a prerequisite for compliance with the social purposes of Law No. 13.301, of June 27, 2016, with research on models of management and more efficient management of public finances being primarily suggested, contributing to unveiling the impacts on public health and growth and human development.

REFERENCES

1. Pan American Health Organization (PAHO). World Health Organization (WHO). (PAHO/WHO). Zika virus infection: step by step guide on Risk Communications and Community Engagement. [cited 2016 Jan 27] Available from: http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&gid=33051&Itemid=270
2. Centers for Disease Control and Prevention (CDC). Zika virus. [cited 2016 Aug 18] Available from: <https://www.cdc.gov/zika/intheus/florida-update.html>
3. Centers for Disease Control and Prevention (CDC). Recognizing, Managing, and Reporting Zika Virus Infections in Travelers Returning from Central America, South America, the Caribbean, and Mexico. [cited 2015 Jan 15] Available from: <https://emergency.cdc.gov/han/han00385.asp>

4. Johansson MA, Mier-y-Teran-Romero L, Reefhuis J, Gilboa SM, Hills SL. Zika and the Risk of Microcephaly. *N Engl J Med*. 2016;375:1-4. DOI: <http://dx.doi.org/10.1056/NEJMp1605367>
5. Gatherer D, Kohl A. Zika virus: a previously slow pandemic spreads rapidly through the Americas. *J Gen Virol*. 2016; 97(2):269-73. DOI: <http://dx.doi.org/10.1099/jgv.0.000381>
6. Duffy MR, Tai-Ho C, Hancock WT, Powers AM, Kool JL, Lanciotti RS, *et al*. Zika virus outbreak on Yap Island, federated states of Micronesia. *N Engl J Med*. 2009;360:2536-43. DOI: <http://dx.doi.org/10.1056/NEJMoa0805715>
7. Cao-Lormeau VM, Roche C, Teissier A, Robin E, Berry AL, Mallet HP, *et al*. Zika virus, French Polynesia, South Pacific, 2013. *Emerg Infect Dis*. 2014; 20(6):1085-6. DOI: <http://dx.doi.org/10.3201/eid2006.140138>
8. Iosifidis S, Mallet HP, Leparac Goffart I, Gauthier V, Cardoso T, Herida M. Current Zika virus epidemiology and recent epidemics. *Med Mal Infect*. 2014; 44(7):302-7. DOI: <http://dx.doi.org/10.1016/j.medmal.2014.04.008>
9. Zanolini C, Melo VCA, Mosimann ALP, Santos GIV, Santos CND, Luz K. First report of autochthonous transmission of Zika virus in Brazil. *Mem Inst Oswaldo Cruz*. 2015;110(4):569-72. DOI: <http://dx.doi.org/10.1590/0074-02760150192>
10. Salvador FS, Fujita DM. Entry routes for Zika virus in Brazil after 2014 world cup: New possibilities. *Travel Med Infect Dis*. 2016;14(1):49-51. DOI: <http://dx.doi.org/10.1016/j.tmaid.2015.10.004>
11. Musso D. Zika virus transmission from French Polynesia to Brazil. *Emerg Infect Dis*. 2015;21(10):1887. DOI: <http://dx.doi.org/10.3201/eid2110.151125>
12. Brasil P, Calvet GA, Siqueira AM, Wakimoto M, Sequeira PC, Nobre A, *et al*. Zika Virus Outbreak in Rio de Janeiro, Brazil: Clinical Characterization, Epidemiological and Virological Aspects. *PLoS Negl Trop Dis*. 2016;10(4): e0004636. DOI: <http://dx.doi.org/10.1371/journal.pntd.0004636>
13. Pan American Health Organization (PAHO). World Health Organization (WHO). Zika cases and congenital syndrome associated with Zika virus reported by countries and territories in the Americas, 2015 -2016: Cumulative cases. [cited 2016 Sep 29] Available from: http://www.paho.org/hq/index.php?option=com_docman&option=com_docman&task=doc_view&Itemid=270&gid=36250&lang=en.
14. Dyer, Owen. Zika virus spreads across Americas as concerns mount over birth defects. *BMJ*. 2015;351:h6983. DOI: <http://dx.doi.org/10.1136/bmj.h6983>
15. Schram PCF. Zika virus and public health. *J Hum Growth Dev*. 2016;26(1):7-8. DOI: <http://dx.doi.org/10.7322/jhgd.114415>
16. Brasil. Presidência da República. Lei nº 13.301, de 27 de junho de 2016. Dispõe sobre a adoção de medidas de vigilância em saúde quando verificada situação de iminente perigo à saúde pública pela presença do mosquito transmissor do vírus da dengue, do vírus chikungunya e do vírus da zika; e altera a Lei nº 6.437, de 20 de agosto de 1977. [cited 2016 Sep 29]. Available from: <http://presrepublica.jusbrasil.com.br/legislacao/354790519/lei-13301-16>.
17. Brasil. Presidência da República. Lei nº 8.742, de 7 de dezembro de 1993. Dispõe sobre a organização da Assistência Social e dá outras providências. [cited 2016 Sep 29] Available from: http://www.planalto.gov.br/ccivil_03/leis/L8742.htm.
18. Brasil. Constituição da República Federativa do Brasil de 1988. Promulgada em 5 de outubro de 1988. [cited 2016 Sep 29] Available from: http://www.planalto.gov.br/ccivil_03/constituicao/constituicaocompilado.htm.
19. Uol Notícias Ciência e Saúde. Zika e Microcefalia: número de casos confirmados de microcefalia no Brasil sobe para 583. [cited 2016 Sep 29] Available from: <http://noticias.uol.com.br/saude/ultimas-noticias/redacao/2016/02/23/numero-de-casos-confirmados-de-microcefalia-no-brasil-sobe-para-583.htm>.
20. Alenxandrino M, Prado V. Direito administrativo descomplicado. 17 ed. Rio de Janeiro: Forence; 2009. P. 240-51.
21. Brasil. Presidência da República. Lei nº 10.257, de 10 de julho de 2001. Regulamenta os arts. 182 e 183 da Constituição Federal, estabelece diretrizes gerais da política urbana e dá outras providências. [cited 2016 Sep 29] Available from: http://www.planalto.gov.br/ccivil_03/leis/LEIS_2001/L10257.htm.
22. Guimarães R. Incorporação tecnológica no SUS: o problema e seus desafios. *Ciênc Saúde Coletiva*. 2014;19(12):4899-4908. DOI: <http://dx.doi.org/10.1590/1413-812320141912.04642014>.
23. Bezerra IMP, Sorpreso ICE. Concepts and movements in health promotion to guide educational practices. *J Hum Growth Dev*. 26(1):11-20. Doi: <http://dx.doi.org/10.7322/jhgd.113>

This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated.

Resumo:

O Zika vírus é um importante e emergente problema de saúde no mundo. Na saúde pública, seus efeitos danosos atingem os mais diversos bens jurídicos. O Governo Federal do Brasil adotou recentemente diversas medidas sociais e de vigilância sanitária alargando o instrumental de possibilidades de combate ao transmissor do vírus no território brasileiro. A Lei 13.306/2016 trouxe determinações incisivas sobre as ações de políticas de conscientização e campanhas educativas, bem como autoridades máximas do Sistema Único de Saúde - SUS de âmbito federal, estadual, distrital e municipal foram autorizados a determinar e executar as medidas necessárias ao controle das doenças causadas pelos vírus da dengue, chikungunya e da zika. A partir da legislação publicada, surge um ambiente motivador para pesquisadores desenvolverem projetos de pesquisa para que o mosquito transmissor do *Vírus da Dengue*, do *Vírus Chikungunya* e do *Vírus da Zika*. Por conseguinte, estudos sobre o *A. aegypti* possibilitaram o maior conhecimento científico sobre as formas de desenvolvimento, habitat, reprodução e descrição quanto às formas de o combater, como um pressuposto para o cumprimento dos fins sociais da Lei nº 13.301, de 27 de junho de 2016, principalmente se surgirem pesquisas sobre modelos de gestão e gerenciamento de finanças públicas de modo mais eficiente, contribuindo para desvelar impactos sobre a saúde pública e crescimento e desenvolvimento humano.

Palavras-chave: zika virus, intervenções legais, saúde pública.