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Editorial

Dengue in Honduras and the Americas: The epidemics are back!

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After intensive co-circulation and epidemics of chikungunya, Zika, and dengue during 2015–2016 [1], the years 2017 and 2018, showed a significant decrease in all the arboviral disease burdens, including dengue. In 2017, there were 580,640 cases of dengue in the region (254,453 in Brazil, 89,893 in Mexico and 76,093 in Peru), with 561,356 in 2018 (265,934 from Brazil, 78,621 Mexico and 44,825 Colombia) [2]. Such declines in dengue have been discussed by experts, indicating that multifactorial events may have accounted for this situation, including elements of immunity, increased vector control, and even vector and/or viruses changes or adaptations [3].

In spite of this, at the end of 2018 and the beginning of 2019, prime conditions for reemergence and new epidemics of dengue in the Americas are in place. In the region, between epidemiological week (EW) 1 and EW 26 of 2019, a total of 1,297,632 cases of dengue (132.92 cases/100,000 pop.) have been reported. Of them, 606,043 (46.7%) were laboratory-confirmed and 7144 (0.55%) classified as severe dengue. The reported case-fatality rate has been so far 0.039% [2,4]. From the total cases, 1,127,244 have been reported from Brazil, followed by Colombia with 52,064 and Nicaragua with 36,383 cases [2].

In addition, is also worthy to mention that incidence rates (cases/100,000 pop.) are high not only in afore-mentioned countries, but also in Antigua and Barbuda, Belize, and Honduras, among others (Table 1). In some areas, as is the case of Honduras in Central America, there is a dramatic surge in case numbers and a progression to epidemic levels of dengue during this year, with a significant proportion of severe dengue. In that country, approximately a third of dengue cases are considered to be the severe (Table 1), with an anticipated high proportion of associated deaths (~2 deaths per 1000 cases). Severe dengue is defined by dengue with any of the following symptoms: severe plasma leakage leading to shock or fluid accumulation with respiratory distress; severe bleeding; or severe organ impairment such as elevated transaminases ≥1000 IU/L, impaired consciousness, or heart impairment.

Honduras is a country in Central America with environmental [5] and social conditions prone for vector-borne diseases, including those caused by arboviruses, such as dengue [5–7]. During 2015 the country experienced an epidemic with more than 44,834 cases (522.75 cases/100,000 pop.) [6] reaching its highest weekly incidence during EW 21 with 20.5 cases/100,000 pop., 1789 cases) (Fig. 1). After that, in subsequent years, 2016–2018, the incidence decreased, until 2019 when the year began with 199 cases in the EW1 (2.17 cases/100,000 pop.), progressing to a sustained increase to reach 2528 cases in the EW25 (27.60 cases/100,000 pop.) and 3582 in the EW26 (39.11 cases/100,000 pop.) for a cumulated number of 18,988 cases. Of them, 6067 were severe dengue cases (31.95%) (Table 1), a proportion that has

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Table 1
Top ten countries in the Americas with higher incidence rates of dengue, 2019 up to EW26.

Country	EW of the last report	Dengue Cases	Incidence Rate*	Laboratory Confirmed Cases	% Confirmed	Severe dengue	% Severe dengue	Deaths	CFR%	Population (x 1000)	Serotype
Nicaragua	25	36,383	578.89	1188	3.27	0	0.00	4	0.011	6285	N/A
Brazil	23	1,127,244	540.66	596,381	52.91	710	0.06	366	0.032	208,495	DEN 1,2
Antigua and Barbuda	12	182	176.70	17	9.34	0	0.00	0	0.000	103	DEN 3
Belize	16	647	169.37	90	13.91	0	0.00	0	0.000	382	DEN
Honduras	26	18,988	207.33	0	0.00	6067	31.95	44	0.232	9158	DEN 1,2
Jamaica	21	3663	126.35	25	0.68	0	0.00	3	0.082	2899	DEN 2,3
Martinique	24	430	111.69	7	1.63	0	0.00	0	0.000	385	DEN 1,2,3
Colombia	24	52,064	105.25	0	0.00	581	1.12	23	0.044	49,465	DEN 1,2,3
El Salvador	24	4522	70.52	0	0.00	20	0.44	0	0.000	6412	DEN 2
Saint Martin	7	20	62.50	2	10.00	0	0.00	0	0.000	32	DEN 1
Americas	26	1,297,632	132.92	606,043	46.70	7144	0.55	501	0.039	976,235	DEN 1,2,3,4

EW = Epidemiological week. CFR% = Case fatality rate (%). N/A = Not available. *Cases/100,000 pop.

increased since 2016 (1.36%) (Fig. 1).

This ongoing epidemic in Honduras has been focused mainly in the northern regions or departments, such as Cortes (the most populated, 1,751,997 pop.), with 8404 cases (479.68 cases/1000,000 pop., 44.3% of the country), Yoro (357.71 cases/1000,000 pop.), Santa Barbara, Olancho, and Colon (Fig. 1), all of these departments have incidence rates > 200 cases/100,000 pop and with the department where the capital, Tegucigalpa, is located, Francisco Morazan (1924 cases, 116.59 cases/100,000 pop.), concentrate 80.95% of the cases in the country (Fig. 1). After the submission of this Editorial, 4,316 additional cases were reported during EW27, for a total of 23,304 cases, 29.15% of them, severe, with 51 laboratory-confirmed deaths (CFR 2.2%), 38 of these fatalities among those < 15 years-old. This situation and these figures have several important implications for public health in the country and highlight the urgent need for enhanced surveillance, vector control and strategies of education and prevention in the most affected areas. The situation also has implications for travel medicine, travelers and travel medicine practitioners. Cortes, there is the second largest city in the country and San Pedro Sula, has an international airport (IATA Code: SAP), with multiple destinations in USA (direct flights from/to Atlanta, Dallas, Fort Lauderdale, New York, Houston, Miami, Newark, Orlando), Mexico city, Belize city, San Jose of Costa Rica, San Salvador, Guatemala city, Panama and also to Europe with key destinations such as Madrid, Spain. According to the World Tourism Organization (https://data.worldbank.org/indicator/ST.INT.ARVL), the number of international arrivals to Honduras in 2017 was 851,000.

As recommended by the Pan American Health Organization [4], this situation demands a strengthening of disease surveillance, including improved laboratory diagnosis [8]. There is also the need to suspect and screen for differential diagnoses including other arboviral diseases, such as Mayaro [8–10]. Health authorities need to review their emergency plans and at the same time strengthen and intensify vector surveillance and control for *Aedes aegypti* and *Aedes albopictus*. Health systems need to ensure that healthcare professionals are properly trained for appropriate clinical diagnosis and clinical management of patients with dengue or other arboviruses [4,9], with a special focus on age groups and at-risk groups with the highest case-fatality rates. Recently, in San Pedro Sula, pilot education campaigns to identify risk factors associated with container mosquitoes have been developed as workshops, offering a framework for training community leaders and stakeholders to create a sustainable community-based vector control program for container mosquitoes [11].

Finally, in order to adapt risk communication according to the epidemiological scenario, geographical information systems (GIS) are important to identify high risk areas and to focus interventions and surveillance for arboviral diseases [6,7,12], including dengue, chikungunya and Zika. These infections need to be highlighted for prevention considered as diseases of importation in travelers and migrants to and from Honduras [13–15].

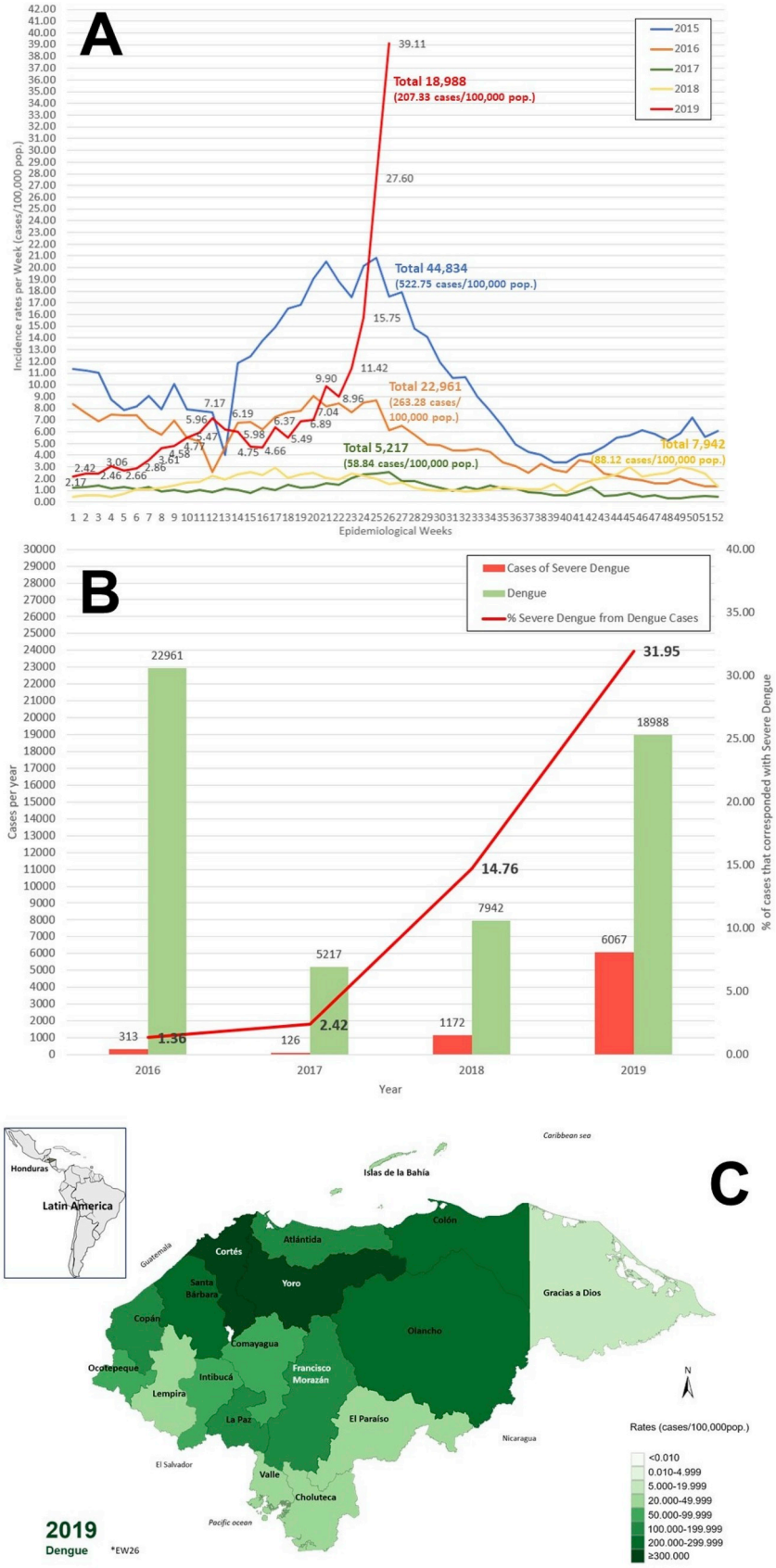

Fig. 1. Epidemiological situation of dengue in Honduras, 2015–2019. A. Incidence rates per week. B. Number and proportion of severe dengue. C. Geographical distribution by departments, 2019. (Till epidemiological week 26, 2019).

Conflicts of interest

None.

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