

# Global Health Conference of the Americas

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**October 6th-9th, 2020**

**Pre-Conference Workshop  
Arboviruses in Latin America  
and the Caribbean**

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## Pre-conference workshop: Arboviruses in Latin America and the Caribbean

### Co-Chairs



**Dr. Carlos Espinal**

*Interim Chair, Department of Health Policy and Management, and Director, Global Health Consortium, Robert Stempel College of Public Health & Social Work, Florida International University, USA*

On behalf of the Global Health Consortium, Robert Stempel College of Public Health and Social Work, Florida International University, Dr. Espinal opened this first day of the Virtual Global Health Conferences of the Americas, in partnership with the Pan American Health Organization / World Health Organization (PAHO / WHO) presenting the pre-conference workshop on Arboviruses in Latin America and the Caribbean, aimed at evaluating the impact of the SARS-CoV-2 pandemic in the control programs and integrated management strategy (IMS) of arboviral diseases (AD) in the region.



**Dr. Luis Gerardo Castellanos**

*Unit Chief, Neglected, Tropical and Vector Borne Diseases PAHO/WHO, USA*

The SARS-CoV-2 pandemic has tremendously impacted global health, the economies, and life itself. Yet, besides COVID-19 there are diseases which cannot be forgotten. In 2019 there were over 3 million Dengue cases in Latin America, and up to September 2020 the number is around 2 million.

This workshop is a key forum to bring AD back to the scene, to understand and to further evaluate the innovative changes that all countries needed to implement to sustain the integrated management system (IMS) of AD in the light of the lockdowns, and the lack of health care workers (HCW) who were assigned to the COVID-19 response, and how PAHO is supporting the member countries in the control of AD.

## Pre-conference workshop: Arboviruses in Latin America and the Caribbean

### Session 1

#### Integrated management system for arboviral diseases: Challenges in the context of COVID-19



Moderator

**Dr. José Luis San Martín**

*Regional Advisor, Dengue Prevention and Control, PAHO/WHO, USA*

#### Keynote lecture

#### Arboviruses: Global situation



**Dr. Raman Velayudhan**

*Unit Head, Veterinary Public Health, Vector Control and Environment Unit (VVE), WHO*

At the beginning of 2019, WHO had listed Dengue among the ten diseases that would be a potential threat for the year. The subsequent situation confirmed this observation.

Dengue tends to show seasonal patterns, with transmission often peaking during and after rainy seasons. There are several factors contributing to this increase and they include:

- Climate change with intensified rainy seasons (ambient air temperature, rains, humidity).
- Unplanned urbanization and population growth.

- Increased travel.
- Poor implementation of effective control measures.
- Waning cross-immunity with other viruses.

Outbreaks of Chikungunya, Dengue, Yellow Fever and Zika are growing exponentially. These are the reported cases of Aedes-borne viruses cases in 2020:

- Dengue: 1,843,115 cases reported worldwide:
  - 43% from Brazil: 794,565.
- Chikungunya: 65,837 cases reported worldwide:
  - Americas: 39,233 (outbreak in Brazil)
  - Asia: 5,560 (outbreaks in Malaysia, Thailand, Cambodia)
  - Africa: 35,000 (outbreak in Chad)
- Zika: 7,452 cases from the Americas
  - Brazil (86%), Bolivia (8.4%) and Guatemala (2%).

Estimating Dengue burden helps to allocate resources, to plan and implement prevention and control measures, to understand the epidemiology and spread of the disease, and it also helps analyze the economic burden of the disease.

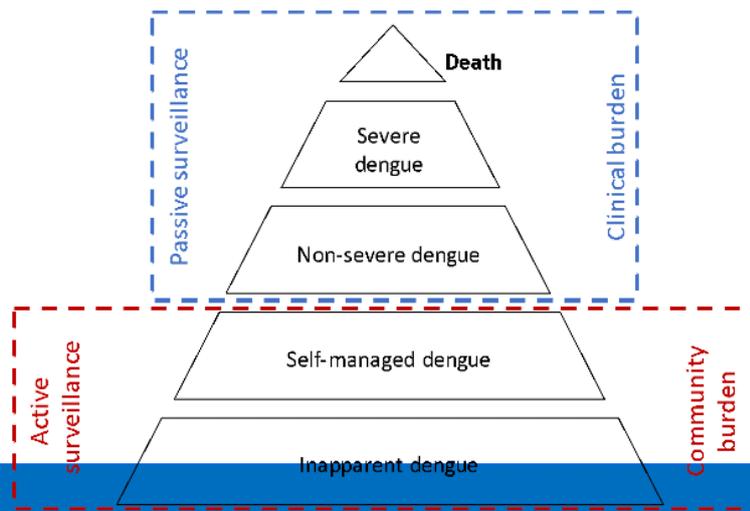
WHO has outlined the global strategy for Dengue prevention and control for 2021-2030:

1. To build capacity in countries to detect, prevent and respond to Dengue outbreaks.
2. To reduce preventable Dengue deaths to zero.
3. To reduce the burden of the disease and to reduce incidence by 25 % (2010-2020 levels as baseline).

WHO has organized a Vector Control Advisory Group (VCAG). These are the various tools that are currently under the VCAG evaluation: The prevention and control of Dengue has been

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### The distribution of dengue burden



impacted by COVID-19. Several measures for vector control (VC) can be implemented in at risk areas under the current situation, even during lockdown:

- Householders should be encouraged to work together in and around their homes to remove stagnant water, reduce solid

waste and properly cover all water storage containers. This can be done as a weekly family activity.

- The VC staff should continue implementing VC measures and conduct community-based activities, wearing PPE and observing social distancing.

### VCAG Portfolio Review - NTDs

Intervention	Product class	Prototype / product	Status
Spatial Repellents	Spatial Repellents	Transfluthrin passive emanator	Field study
Peridomestic residual spray	Outdoor spraying of residual chemical for killing sand fly vectors	Spaying of exterior walls and boundary fences of dwellings with residual insecticide formulations	
Vector traps for disease management	Adulticidal Oviposition Traps	Vector traps including AGO trap and Trap-N-kill® trap	Field study
	Auto-dissemination devices	In2Care® Mosquito Trap	
Sterile insect technique (SIT) with microbial infection	Sterile Insect Technique / Incompatible Insect Technique	Sterilized male Ae. aegypti and Ae. albopictus infected with Wolbachia spp.	Field study
Microbial control of human pathogens in adult vectors	Wolbachia-based population alteration	wMel strain Wolbachia in Aedes aegypti	Field study

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- Encourage the use of insect repellents and bed nets during the day (elderly, pregnant women, infants and the sick).
  - Intersectoral coordination should be initiated for support from non-health sectors.
  - Larvicides, TIRS (directed at resting places of vector), indoor space spraying depending on local resources, capacity, and action plans; fogging to rapidly reduce mosquito density. WHO prequalified insecticides should be used, selected on evidence of susceptibility of local *Aedes* population.
  - Reduce mosquito breeding sites by removing, destroying, or treating and reducing adult mosquitoes in all areas affected by or at risk of Dengue.
- Conclusion:**  
There is a global need for a programmatic approach to Dengue and arboviral diseases. With the increase of urbanization, the threat of the *Aedes aegypti* will also increase. Regional coordination is needed for laboratory diagnosis, vector control and cross border reporting. ●

## Pre-conference workshop: Arboviruses in Latin America and the Caribbean

### Arboviroses: Regional Situation. Analysis through the PLISA.



**Dr. Gamaliel Gutierrez**

Technical Officer in Arboviral Diseases PAHO/WHO, USA

*Aedes aegypti* is widely distributed globally, mainly in tropical areas. In the Americas, this vector is present throughout the continent, except for Canada and continental Chile. However, the latest information indicates that the mosquito has been found in the northern region of continental Chile, which increases the risk of Dengue outbreaks in this area.

There are several vector-borne diseases in the Americas: Dengue, Chikungunya, Zika, Yellow fever, Malaria, Chagas disease, cutaneous and visceral Leishmaniasis, Onchocerciasis, among others. It is important to note that in

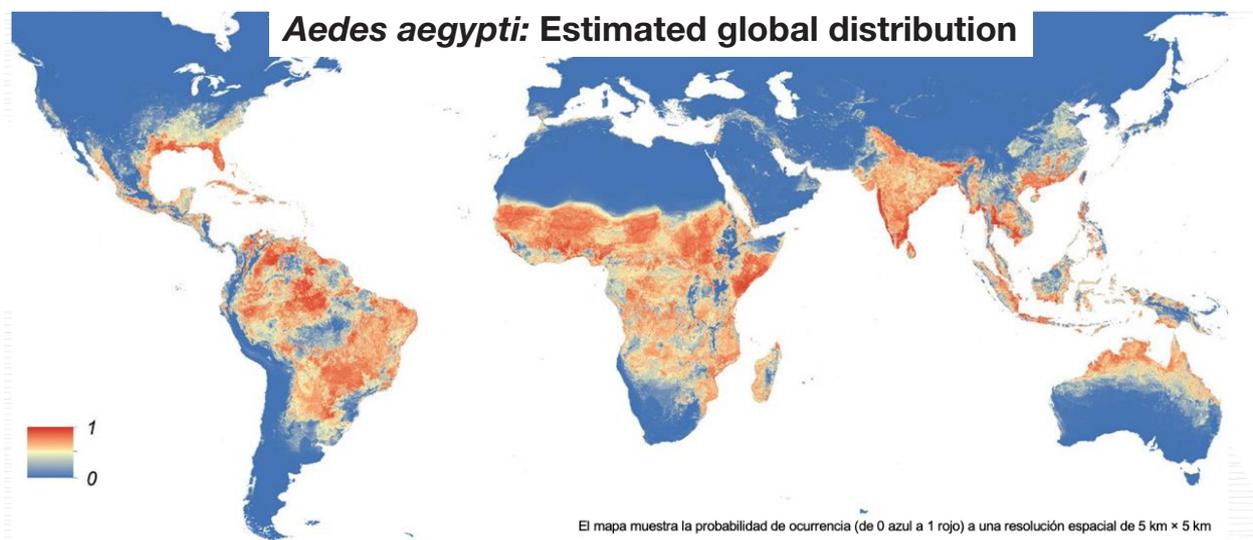
several countries these diseases are present simultaneously. Dengue, Chikungunya, and Zika are vector-borne diseases that have been reported in almost all countries and territories of the Americas.

However, Dengue has always outnumbered Zika and Chikungunya. Clinical suspicion of this disease must always be present, mainly in endemic areas, since it continues to be the most important Arbovirus in the region.

The number of Dengue cases in the Americas started to decrease with the COVID-19 epidemic. A hypothesis is that this decrease is strictly due to the lockdowns and travel restrictions. There could also be a reduction in case reporting due to the pandemic, yet the number of severe cases and deaths has been significantly low.

Brazil is the country with the highest number of reported cases of Dengue, followed by Paraguay, which has seen a great epidemic, as well as Bolivia.

There has been circulation of the four Dengue



Fuente: eLife 2015;4:e08347 DOI: 10.7554/ELIFE.08347 2015

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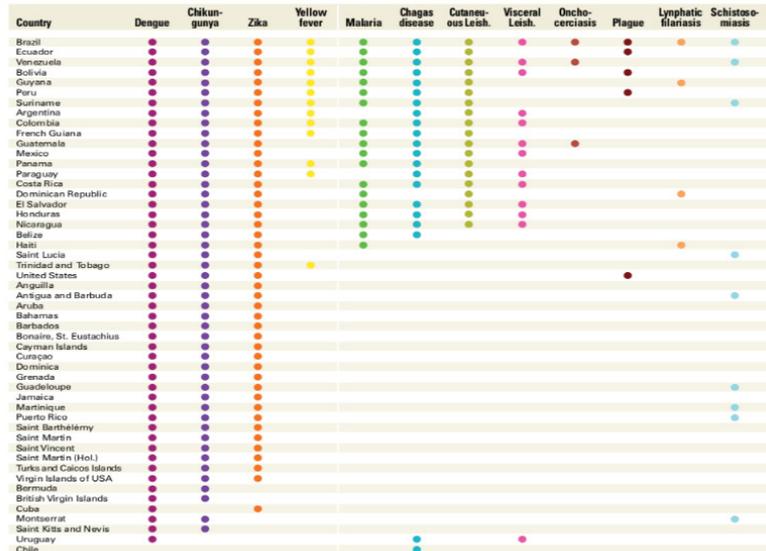
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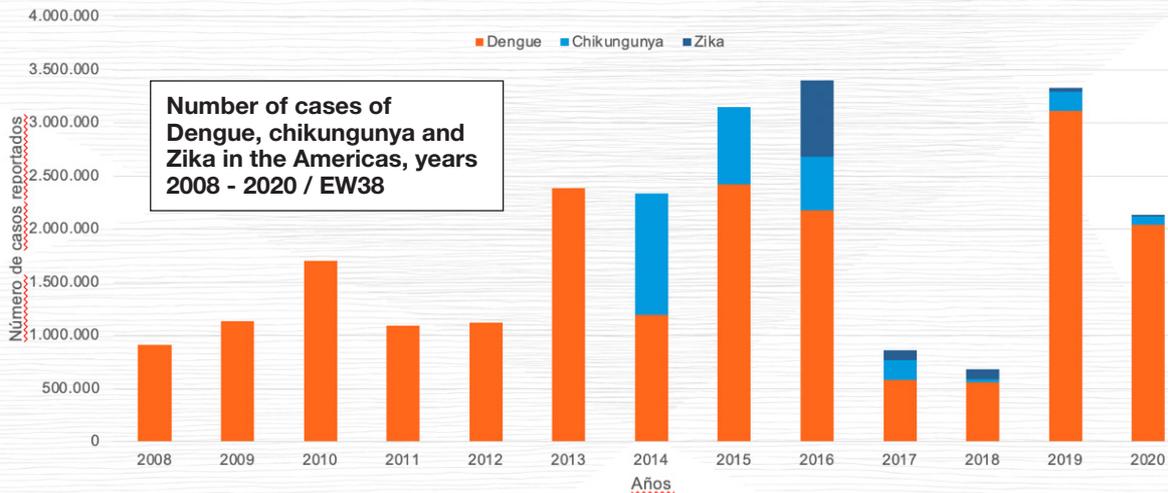
Geographical distribution of vector-borne diseases\* (VBD) in the Americas, 2013- 2018



Distribution of vector-borne diseases (VBD) in the Americas

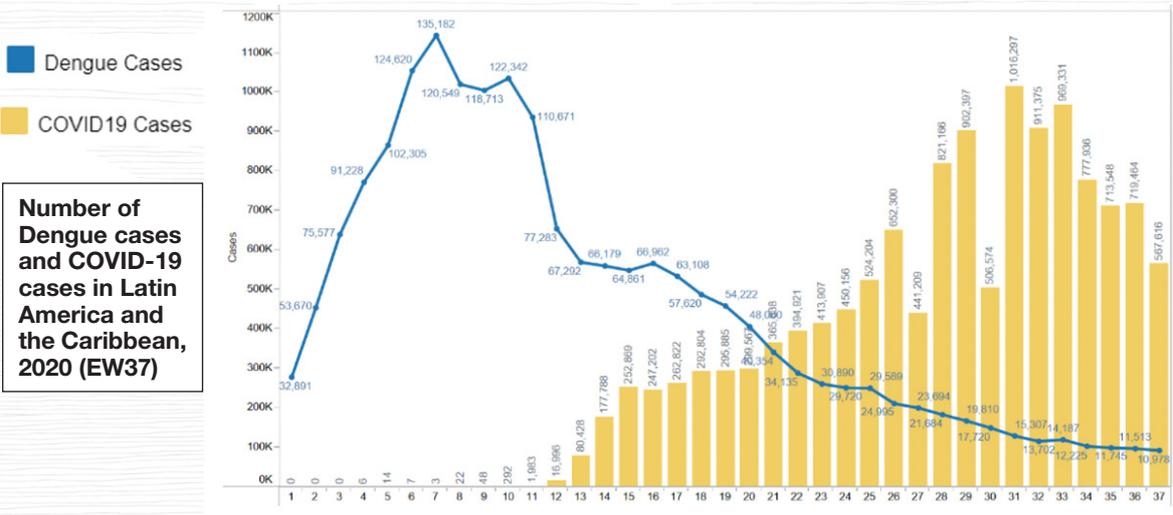


\* Not all VBDs transmitted in the Americas are included  
Source: PAHO/WHO



Number of cases of Dengue, chikungunya and Zika in the Americas, years 2008 - 2020 / EW38

Fuente: [www.paho.org/plisa](http://www.paho.org/plisa)



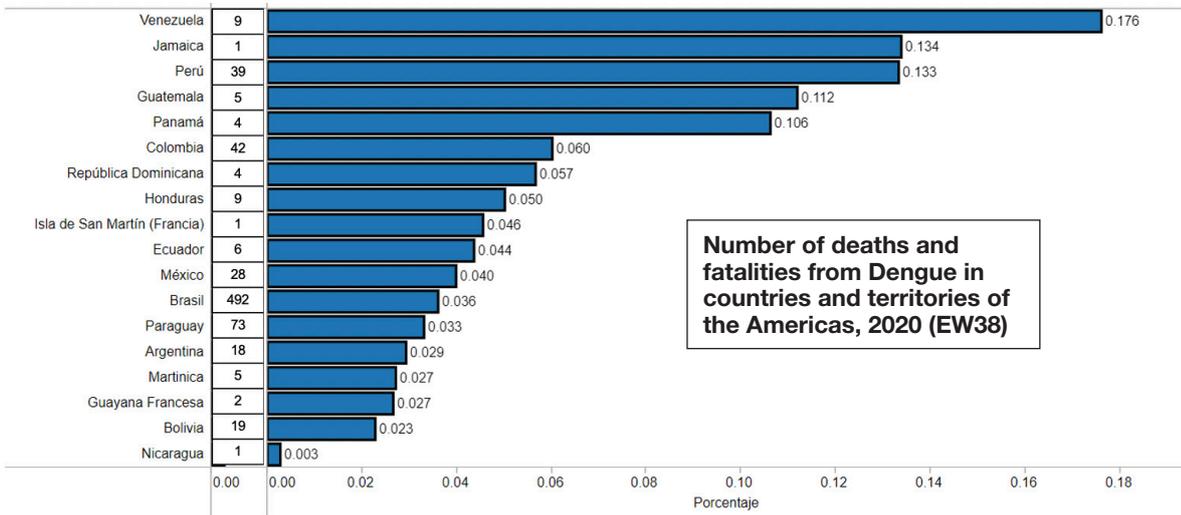
Number of Dengue cases and COVID-19 cases in Latin America and the Caribbean, 2020 (EW37)

Source: Health Information Platform for the Americas (PLISA). Data reported by Ministries and Institutes of Health of the countries and territories in the Americas.

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Number of deaths and fatalities from Dengue in countries and territories of the Americas, 2020 (EW38)

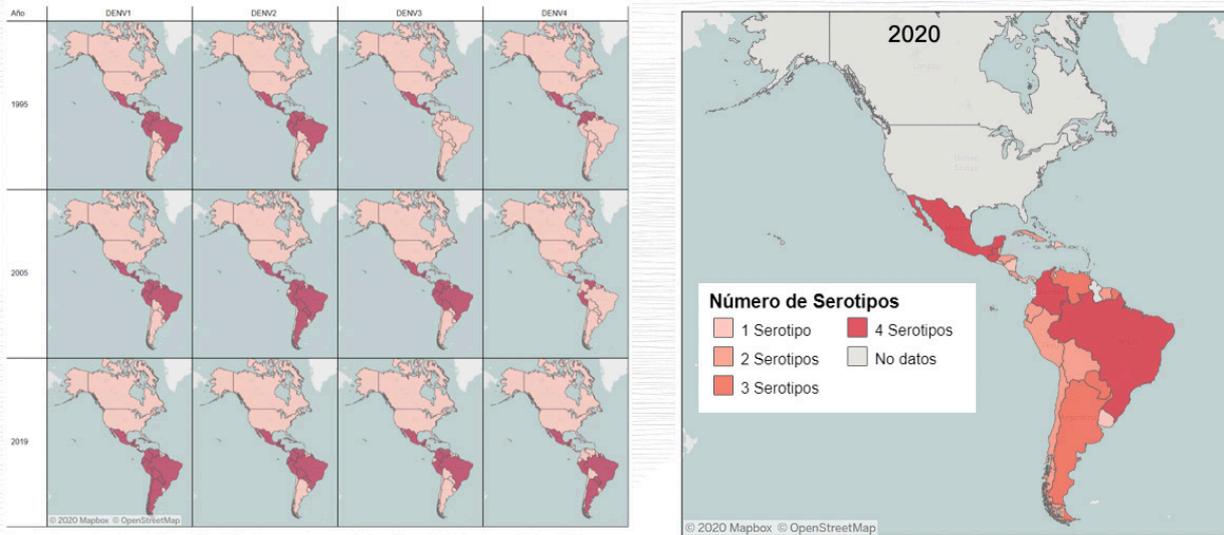
OPS

Organización Panamericana de la Salud  
Organización Mundial de la Salud  
Américas

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### Dengue: Dengue virus serotypes in the Americas, 1995, 2005, 2019, and 2020 (EW37)



Fuente: Plataforma de Información en Salud de las Américas (PLISA). Datos reportados por los Ministerios e Institutos de Salud de los países y territorios de la Región.

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Organización Panamericana de la Salud  
Organización Mundial de la Salud  
Américas

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serotypes in the region. Since 1995, DV1 and DV2 have been present mainly in Latin America. As shown in this graphic, also DV3 and DV4 have circulated in different countries in the

region. Currently there is co-circulation of the four serotypes in Brazil, Venezuela, and Mexico. Co-circulation implies a significant risk of epidemics in the country and higher severity and fatality rate. ●

## Pre-conference workshop: Arboviruses in Latin America and the Caribbean

### Session 2

#### Technical cooperation, innovation and partnerships



Moderator:

**Dr. João Bosco**

*Institute of Tropical Pathology and Public Health, Federal University of Goiás, Brazil*

In the last decade there have been over 15 million cases of Dengue in the Americas, the number of deaths is almost paralleled those in South-Eastern Asia. There is a lot of work ahead. The first presentation by Dr. San Martín will show us how PAHO/WHO cooperates with the member countries in implementing the IMS.

**New technical cooperation modalities for the patient care component of the IMS-Arbovirus during the COVID-19**



**Dr. Jose Luis San Martin**

*Regional Advisor, Dengue Prevention and Control, PAHO/WHO, USA*

Technical cooperation provided by PAHO within the scope of the IMS for the prevention and control of AD is based on partnerships, capacity-building, monitoring, evaluation and advocacy. The strategy includes six principal areas: management, laboratory, epidemiology, vector control, patient care, and environment. All of them extend to research and community outreach. To carry out evaluations, clinical training, assessments, and vector control activities, PAHO mobilizes resources, technical staff to all the member countries, among other actions of cooperation.

The COVID-19 pandemic immediately limited

### Technical cooperation in the framework of the Integrated Management Strategy for the Prevention and Control of Arboviral Disease: IMS-arbovirus



#### Technical cooperation:

- IMS-arbovirus evaluation
- Clinical training for patient care: workshops
- Assessment of organization of health units
- Vector control activities
- Development / adjustment of national IMS-arbovirus
- Strengthening of surveillance of arboviral diseases
- Control of outbreaks / epidemics



Mobilization of PAHO technical staff  
Mobilization of arbovirus task force (GT-arbovirus)

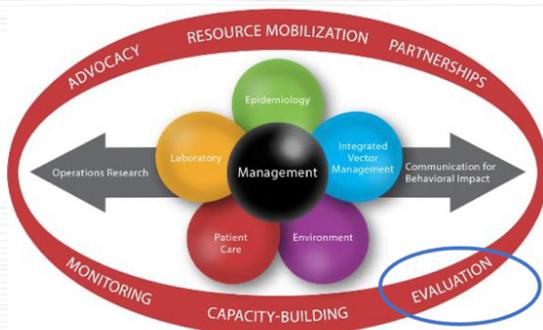
# COVID - 19

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### Future technical activities



#### Evaluation:

How to evaluate from a distance?

- Self-evaluation?
- Assisted evaluation?

#### Standardized indicators

Componente	Cumplimiento de indicadores		
	Prioridad 1	Prioridad 2	Prioridad 3
Gestión	<ul style="list-style-type: none"> <li>• 4/5 cumplidos</li> <li>• 1/5 parcialmente cumplido</li> <li>• 0/5 incumplidos</li> </ul>	<ul style="list-style-type: none"> <li>• 2/5 cumplidos</li> <li>• 1/5 parcialmente cumplido</li> <li>• 2/5 incumplidos</li> </ul>	<ul style="list-style-type: none"> <li>• 3/5 cumplidos</li> <li>• 0/5 parcialmente incumplidos</li> <li>• 2/5 incumplidos</li> </ul>
Epidemiología	<ul style="list-style-type: none"> <li>• 5/6 cumplidos</li> <li>• 1/6 parcialmente cumplido</li> <li>• 0/6 incumplidos</li> </ul>	<ul style="list-style-type: none"> <li>• 4/5 cumplidos</li> <li>• 1/5 parcialmente cumplido</li> <li>• 0/5 incumplido</li> </ul>	<ul style="list-style-type: none"> <li>• 3/5 cumplidos</li> <li>• 1/5 parcialmente incumplido</li> <li>• 1/5 incumplido</li> </ul>
Atención al paciente	<ul style="list-style-type: none"> <li>• 1/4 cumplido</li> <li>• 2/4 parcialmente cumplido</li> <li>• 1/4 incumplido</li> </ul>	<ul style="list-style-type: none"> <li>• 1/4 cumplido</li> <li>• 2/4 parcialmente cumplido</li> <li>• 1/4 incumplido</li> </ul>	<ul style="list-style-type: none"> <li>• 1/4 cumplido</li> <li>• 3/4 incumplidos</li> </ul>
Laboratorio	<ul style="list-style-type: none"> <li>• 4/4 cumplidos</li> </ul>	<ul style="list-style-type: none"> <li>• 3/4 cumplidos</li> <li>• 1/4 parcialmente cumplido</li> <li>• 0/4 incumplidos</li> </ul>	<ul style="list-style-type: none"> <li>• 2/3 cumplidos</li> <li>• 1/3 parcialmente cumplido</li> <li>• 0/3 incumplidos</li> </ul>
MIV	<ul style="list-style-type: none"> <li>• 2/4 cumplido</li> <li>• 2/4 parcialmente cumplido</li> <li>• 0/4 incumplido</li> </ul>	<ul style="list-style-type: none"> <li>• 1/3 cumplido</li> <li>• 2/3 parcialmente cumplido</li> <li>• 1/3 incumplido</li> </ul>	<ul style="list-style-type: none"> <li>• 1/2 cumplido</li> <li>• 1/2 parcialmente cumplido</li> </ul>

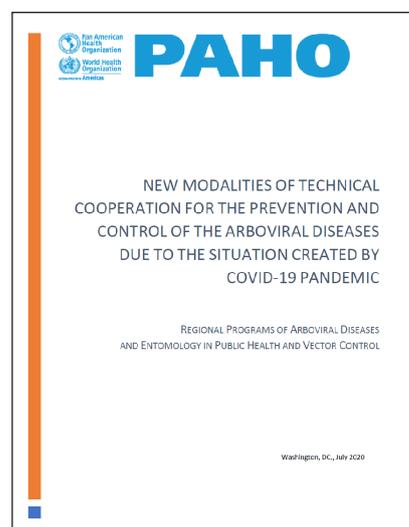
human, material and economic resources which needed to be allocated to the pandemic. Most health units were solely intended for the treatment of patients with COVID-19.

New modalities of technical cooperation needed to be designed. A network of clinical experts in Dengue diagnosis and management was organized, following the model of the existing laboratory network (RELDA, 26 laboratories since 2008). At a regional level, the network goals were knowledge transfer, standardization of guidelines, protocols, and case management. The second goal was to train all HCP. The online course offers contents on the diagnosis and treatment of Dengue, guidelines for the review and discussion of clinical cases, and coaching on the organization and reorganization of health services. This 20 hours' self-learning course on Dengue has recruited over 6,000 participants from 26 countries as of October 2020.

Technical activities will now focus on evaluation, which is a critical element in the IMS. The first goal is to prepare a standardized document to evaluate IMS-arbovirus.

Next goals:

- Development of a tutorial to guide the family on how to identify and control household and surrounding mosquito breeding sites.
- Development of an online toolkit to guide decision makers to design and promote key activities for the prevention and control of AD in urban areas.
- Development of short educational videos to be disseminated in social media. ●



## Pre-conference workshop: Arboviruses in Latin America and the Caribbean

### Modifying an arboviruses cohort to answer COVID-19 questions in Puerto Rico



**Dr. Gabriela Paz-Bailey**

*Dengue Branch, Division of Vector-borne Diseases, National Center for Emerging and Zoonotic Diseases U.S. Centers for Disease Control and Prevention (CDC)*

Puerto Rico has had several arbovirus epidemics. Dengue has been cyclic; in 2014 there was an epidemic of Chikungunya, and Zika epidemic in 2015 through 2017.

The Ponce Research Institute, jointly with the Puerto Rico Vector Control Unit and the CDC, organized the COPA Project (from the name in Spanish, organized communities for the prevention of arboviruses).

COPA objectives are to determine the efficacy of Wolbachia suppression in reducing the incidence of arboviral infections and the population density of female *Ae. aegypti*.

A pilot study was launched in 2017. In the first year, out of about 24,000 households visited less than 10% were recruited and 4,090 participants were included. Seropositivity found in 2018 is shown in the next table: IgG testing showed that 31% of the participants had Chikungunya in the past.

A collaborative study with the NIH to assess Dengue seroprevalence by PRNT in children and adolescents from 1 to 16 years of age showed that about 60% of the participants around 16 years old have been infected by one of the four DV serotypes.

Dengue sero-prevalence by PRNT, 1-16 y.o., COPA baseline, Ponce, 2018

Due to the restrictions, controls in 2020 were done

## COPA components

### Community Engagement



- Focus groups
- Townhall meetings
- Activities in schools

### Arboviral Infection Surveillance



- Annual questionnaires and blood sample collection
- Febrile illness surveillance

### Vector Control



- Mosquito surveillance
- Wolbachia intervention implementation and evaluation

## Pre-conference workshop: Arboviruses in Latin America and the Caribbean

### Arboviruses sero-positivity, COPA baseline, Ponce, 2018

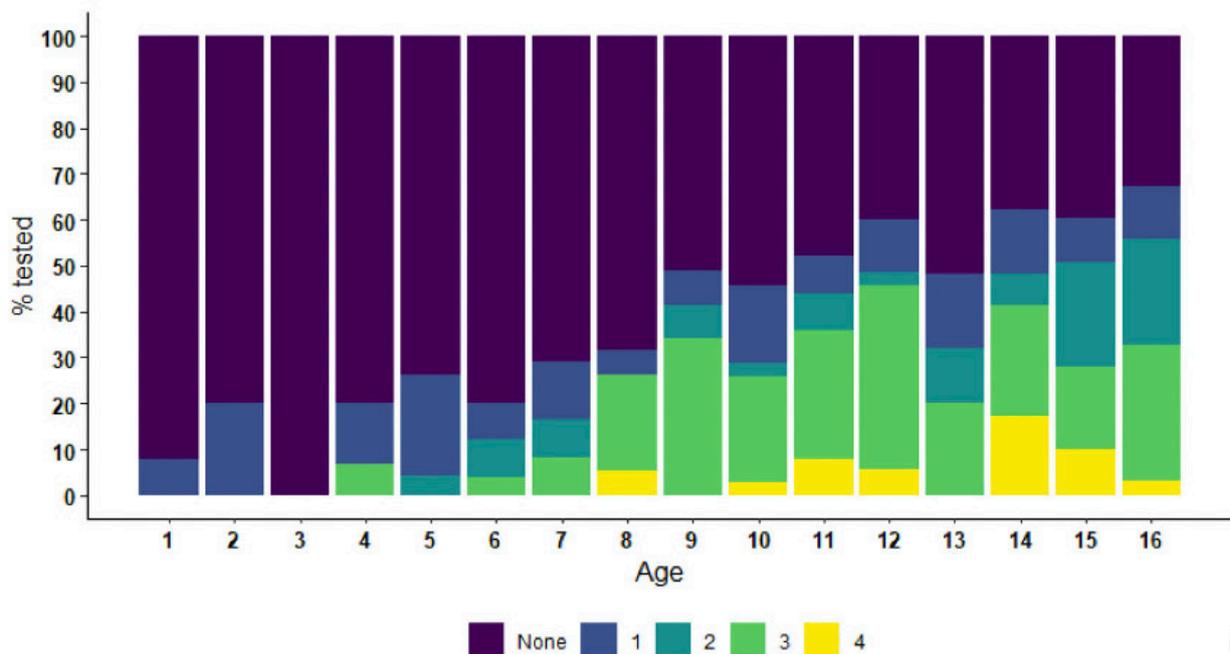
	Total tested	N Positive	% Positive
DENV IgM	4,035	16	0.4%
ZIKV IgM	4,024	651	16%
CHIKV IgM	4,034	28	0.7%
CHIKV IgG	4,035	1,268	31%

over the phone; however, 3,800 residents from 38 communities in Puerto Rico could be followed-up through a standardized questionnaire on demographics and health status.

There is a high acceptance of vector control interventions among residents and participants (83%-84%, respectively). Wolbachia releases started in September 2020. Mosquitoes are shipped from California, picked up from the airport 5 times/week, and taken to Ponce to

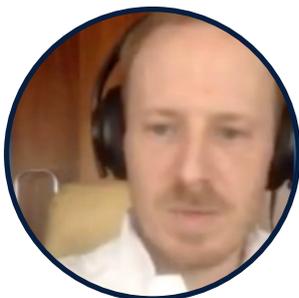
be released. Overall, about 2 million males are released in the 19 treatment clusters.

COPA is also a research platform to evaluate other public health threats. In 2020, the COCOVID study was designed to determine community seroprevalence, incidence, and household attack rates of SARS-CoV-2, and the percentage of asymptomatic persons. COCOVID cohorts will provide key data and may also help to monitor vaccine effectiveness. ●



## Pre-conference workshop: Arboviruses in Latin America and the Caribbean

### New guidelines for the clinical management of arboviral diseases with the GRADE methodology



**Dr. Ariel Izcovich**  
PAHO International Consultant

This clinical practice guidelines for the clinical management of arboviral diseases was developed using the GRADE methodology to assess the quality of the evidence, to produce summaries and to translate them into recommendations.

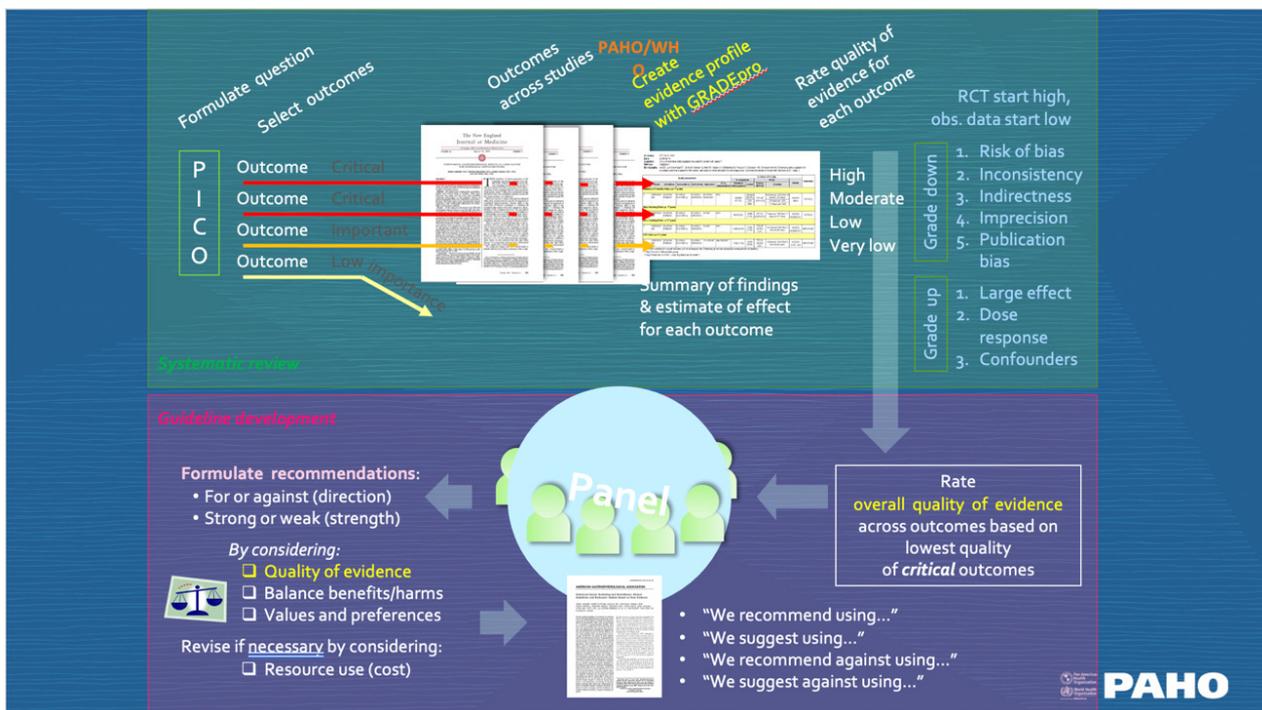
The GRADE system distinguishes between the quality of the evidence and the strength of the recommendation, and explicitly evaluates the relevance of the outcomes. Recommendations are produced through a transparent process which also considers values and preferences

of the patients, the balance of benefits and harms, and costs (if applicable).

The experts defined the PICO questions which would guide the literature search to extract relevant information in ad hoc tables, and to prepare summaries of the evidence.

**Questions:**

- Which clinical/laboratory findings are useful in differentiating patients with arboviral diseases?
- Which clinical/laboratory findings should be used as warning signs in patients with Dengue, Zika or Chikungunya?
- Which clinical/ laboratory findings should be used as a criteria to decide hospitalization and hospital discharge?
- Should oral hydration be recommended to patients with Dengue, Zika or Chikungunya?
- Should intravenous (IV) hydration be recommended to patients with Dengue and warning signs?
- Which IV hydration scheme should be recommended for patients with Dengue,



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Questions	Systematic reviews	Studies included	Metanalysis and Summary of findings tables
<ul style="list-style-type: none"> <li>Warning signs</li> <li>Hospitalization criteria</li> </ul>	<ul style="list-style-type: none"> <li>Systematic review on prognostic factors for severe arboviral disease</li> </ul>	6772 articles screened 515 articles retrieved 226 studies included	35 prognostic factors analyzed 3 summary of findings tables
<ul style="list-style-type: none"> <li>Clinical findings that differentiate between arboviral diseases</li> </ul>	<ul style="list-style-type: none"> <li>Systematic review arboviral disease clinical findings</li> </ul>	8432 articles screened 179 articles retrieved 79 studies included	39 clinical findings analyzed 1 summary of findings table
<ul style="list-style-type: none"> <li>IV fluid management</li> </ul>	<ul style="list-style-type: none"> <li>Systematic review on different types of fluids for IV resuscitation</li> <li>Systematic review on hemocomponent transfusion</li> </ul>	8206 articles screened 63 articles retrieved 8 studies included	8 outcomes analyzed 2 summary of findings tables
<ul style="list-style-type: none"> <li>Oral fluid management</li> </ul>	<ul style="list-style-type: none"> <li>Systematic review on oral fluid administration</li> </ul>	6313 articles screened 5 articles retrieved 4 studies included	4 outcomes analyzed 1 summary of findings table
<ul style="list-style-type: none"> <li>Additional interventions for severe arboviral disease</li> </ul>	<ul style="list-style-type: none"> <li>Systematic review on steroids</li> <li>Systematic review on Immunoglobulins</li> </ul>	1291 articles screened 35 articles retrieved 20 studies included	12 outcomes analyzed 2 summary of findings table
<ul style="list-style-type: none"> <li>Symptom management</li> </ul>	<ul style="list-style-type: none"> <li>Systematic review on NSAID</li> <li>Systematic review on acetaminophen</li> <li>Systematic review on antihistaminic treatment</li> <li>Systematic review on steroids</li> </ul>	1283 articles screened 35 articles retrieved 15 studies included	15 outcome analyzed 8 summary of findings tables
<ul style="list-style-type: none"> <li>Non-vector disease Zika transmission</li> </ul>	<ul style="list-style-type: none"> <li>Systematic review on breastfeeding transmission</li> <li>Systematic review on sexual transmission</li> </ul>	307 articles screened 17 articles retrieved 5 studies included	1 outcome analyzed 2 summary of findings tables

- Zika or Chikungunya?
  - Should platelet transfusion be recommended to patients with Dengue and thrombocytopenia?
  - Which treatment scheme should be recommended for managing arboviral disease related symptoms (acetaminophen vs NSAID vs Dipyron vs others)
  - Should steroids and/or immunoglobulins be recommended for treating patients with severe Dengue?
  - Should condoms be recommended to

- prevent Zika sexual transmission?
  - Should breastfeeding be continued in women with Zika infection?

The next tables show a summary of the systematic reviews carried out for each question, the number of studies identified and the findings.

The experts discussed the summary of the findings and analyzed the information considering other aspects as already

## Pre-conference workshop: Arboviruses in Latin America and the Caribbean

PAHO/WHO  
Summary of judgments (EtD)

Crystalloids vs colloids for initial resuscitation in patients with dengue					
CRITERIA	SUMMARY OF JUDGEMENTS				
PROBLEM	No	Probably no	Probably yes	Yes	
DESIRABLE EFFECTS	Trivial	Small	Moderate	Large	
UNDESIRABLE EFFECTS	Large	Moderate	Small	Trivial	
CERTAINTY OF EVIDENCE	Very low	Low	Moderate	High	
VALUES	Important uncertainty or variability	Possibly important uncertainty or variability	Probably no important uncertainty or variability	No important uncertainty or variability	
BALANCE OF EFFECTS	Favors the comparison ◀	Probably favors the comparison ◀	Does not favor either the intervention or the comparison ●	Probably favors the intervention ▶	Favors the intervention ▶
RESOURCES REQUIRED	Large costs ◀	Moderate costs ◀	Negligible costs and savings ●	Moderate savings ▶	Large savings ▶
EQUITY	Reduced ◀	Probably reduced ◀	Probably no impact ●	Probably increased ▶	Increased ▶
ACCEPTABILITY	No	Probably no	Probably yes	Yes	
FEASIBILITY	No	Probably no	Probably yes	Yes	

mentioned. Their judgements were recorded in evidence to decision (EtD) frameworks as recommended by GRADE.

### Recommendations:

- A table was developed pointing the clinical/ laboratory findings that best help to the differential diagnosis between arboviral and other diseases.
- Proposed warning signs: 1) Abdominal pain; 2) Lethargy, somnolence, or irritability; 3) Mucosal bleeding; 4) Fluid accumulation; 5) Hepatomegaly; 6) Progressive hematocrit increase; 7) Vomits
- Proposed hospitalization criteria: 1) Warning signs; 2) Severe Dengue according to WHO 2009 definition; 3) Breathing difficulties; 4) Pulse pressure shortening; 5) Arterial hypotension; 6) Acute renal failure; 7) Capillary refill prolongation; 8) Pregnancy; 9) Coagulopathy; 10) Inappropriate oral fluid tolerance
- We recommend intensive oral hydration for patients with Dengue, Zika or Chikungunya [STRONG recommendation]
- We suggest dipyrone or acetaminophen over NSAID, steroids or antihistaminic for the initial symptomatic management of patients with arboviral diseases [CONDITIONAL recommendation]
- We recommend early IV hydration for patients with Dengue and warning signs [STRONG recommendation]
- We recommend crystalloids over colloids for initial IV resuscitation [STRONG recommendation]
- We recommend not transfusing hemocomponents (i.e., platelet concentrate) to patients with Dengue and thrombocytopenia [STRONG recommendation]
- We suggest not using steroids or immunoglobulins in patients with Dengue severe Dengue or shock related to Dengue [CONDITIONAL recommendation]
- We recommend condom use to prevent Zika sexual transmission [STRONG recommendation]
- We recommend continuing breastfeeding to mothers with possible or confirmed Zika infection [STRONG recommendation]

## Pre-conference workshop: Arboviruses in Latin America and the Caribbean

### Session 3

## Integrated management strategy for arboviral diseases in the COVID-19 era: Country experiences



Moderator

**Dr. José Luis San Martín**

*Regional Advisor, Arboviral Diseases Prevention and Control, PAHO/WHO*

The technical teams of the member countries carry out IMS to prevent and control arboviral and other diseases. The next presentations by representatives of the national teams from Colombia, El Salvador, Dominican Republic, and Mexico will describe how COVID-19 has impacted IMS for AD.



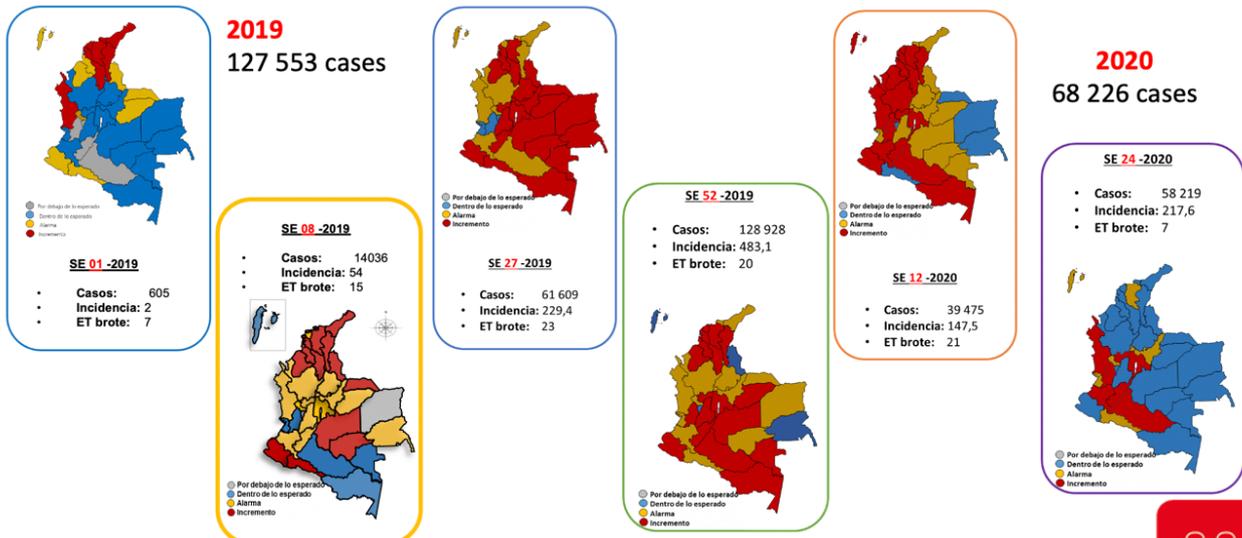
**Colombia**

**Dr. Iván Mauricio Cárdenas**

*Specialist, Integrated Management System of Endemic-Epidemic Diseases Group, Direction of Promotion and Prevention, Ministry of Health and Social Protection.*

The main Dengue outbreak in Colombia occurred in 2010, with 665 cases/100,000 inhabitants. The number of cases, incidence, and serotype circulation in 2019-2020 is shown in the next figures:

### INS Dengue epidemy, Colombia, 2019 -2020

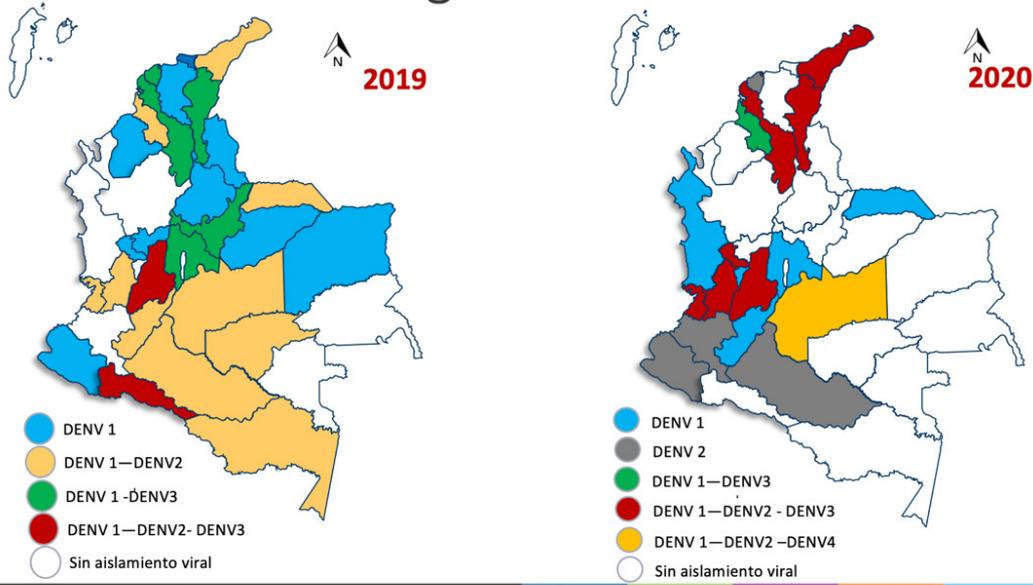


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### INS Colombia: Dengue Virus Circulation



Fuente: Laboratorio nacional de referencia, Instituto Nacional de Salud, Colombia

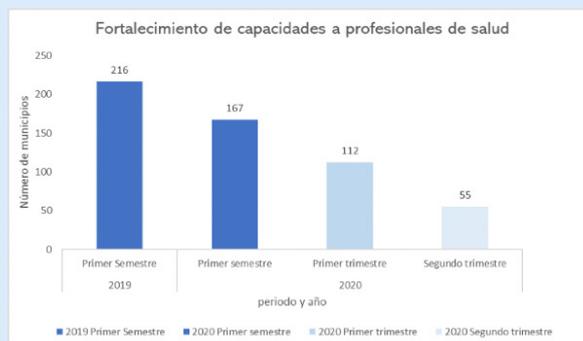
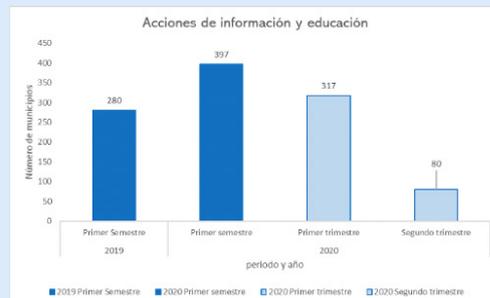
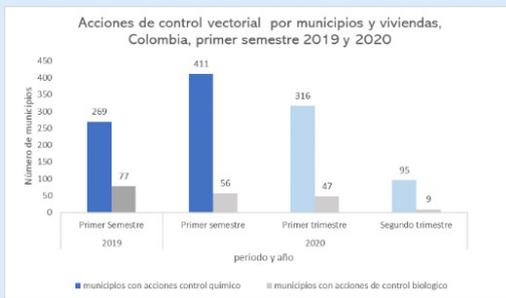
The main goal of the strategic plan for AD prevention and control is to contribute to reducing the burden of VBD, to reach a mortality rate of 2% or lower by 2021 through

implementing, monitoring, evaluating, and sustaining IMS for AD.

The main lines of action in the COVID-19

Ministerio de Salud y Protección Social de Colombia

### Colombia: VBD program actions in the COVID-19 pandemic



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pandemic, prioritize epidemiologic, entomologic, and viral surveillance; as well as prevention and control actions including informative campaigns, inspection and elimination of mosquitoes breeding nests, environmental sanitization, and vector treatment. Dengue remains one of the priority issues in public health in Colombia. Programs have been

highly impacted by the pandemic; however, the teams keep working, predominantly in the areas at highest risk of transmission. The epidemiology of Dengue in Colombia is considered unstable; however, mortality and severity rates show that transmission was contained due to the restrictions and lockdowns imposed during the pandemic. ●



### El Salvador

**Dr. Rolando Masis**

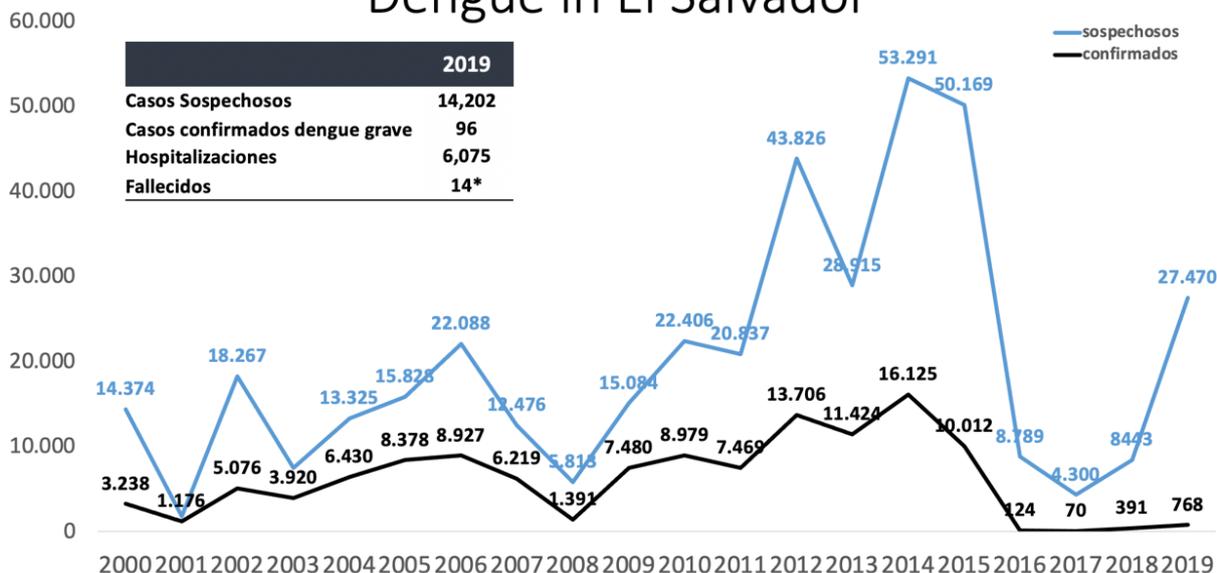
General Coordinator, Integrated Management System, Arboviruses. Ministry of Health.

Although not as relevant as in other countries in Central America, a significant increase in Dengue occurred in El Salvador in 2019.

Since 2015, El Salvador has been working with the IMS for the prevention and control of Dengue, Chikungunya and Zika.

Traditional and innovative tools for epidemiological surveillance are in use through the Health Surveillance System (VEGEPES). There are 1,234 reporting units. Epidemiological reports are published twice daily and weekly; there is also a weekly entomological survey. The program also works on vector control, patient care, intensive HCP training and follow-up of suspected cases. The VBD interdisciplinary commission and is currently working on sentinel surveillance, developing new algorithms to control suspected cases, as well as training technicians and implementing IMS.

## Dengue in El Salvador



\* Highest in 19 years

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Twelve of the most affected localities are working with a biological control project with fish that has a predilection for the larvae of the

*Aedes aegypti*. This is a low cost, environmental, harmless method which promotes community participation. ●



### Dominican Republic

**Dr. Ronald Skewes**

Chief, National Direction of Epidemiology, Ministry of Health.

Dengue outbreaks in the Dominican Republic follow a biannual pattern, two years of high incidence (peaks in the second half of the year) followed by one year of low incidence; 2018-19 were years of high incidence; thus, low rates were expected for 2020.

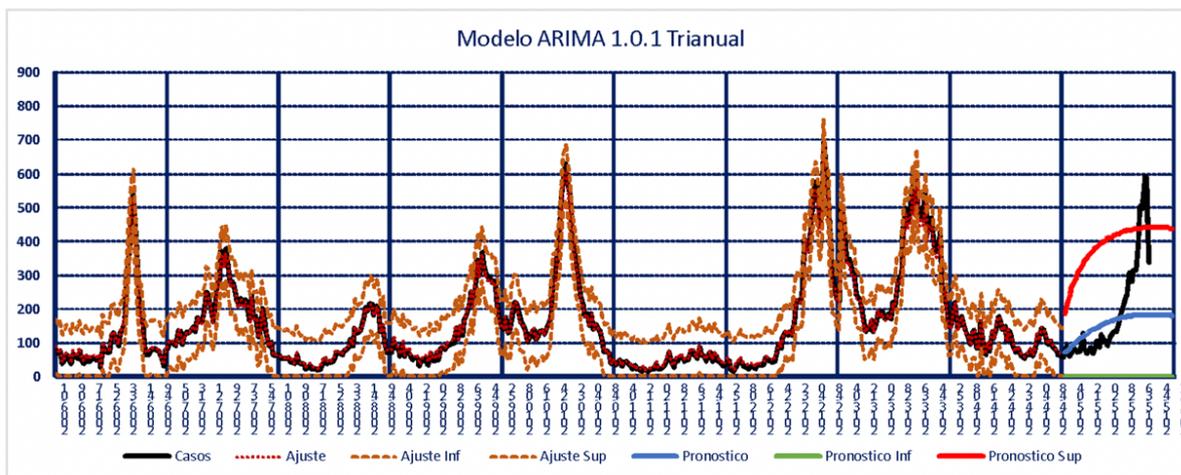
The graphics show pre pandemic data between EW1 2019 up to EW9 2020, and intra pandemic data from EW9 to EW 40, 2020. There was a reduction in the number of cases

at the beginning of the pandemic which is still maintained. However, mortality rate shows substantial increases. To date, during the pandemic, Dengue mortality rate has almost doubled, reaching 1.58%.

There is also a different pattern seen in the severity of cases before and during the pandemic, with a significant increase of severe cases, as seen in this graphic (gray line).

The proportion of cases without signs of alarm before the pandemic was 37%, versus 49% during the pandemic. Conversely, the cases of Dengue with signs of alarm accounted to 62% in the pre-pandemic period, and dropped to 47% during the pandemic. Severe Dengue grew from 2% to 4%, pre and intra pandemic, respectively.

There is also a very noticeable change in the average age range of cases, which was very stable between 10 and 16 years of age before the pandemic, and showed a high variability during the pandemic, thus a certain impact on



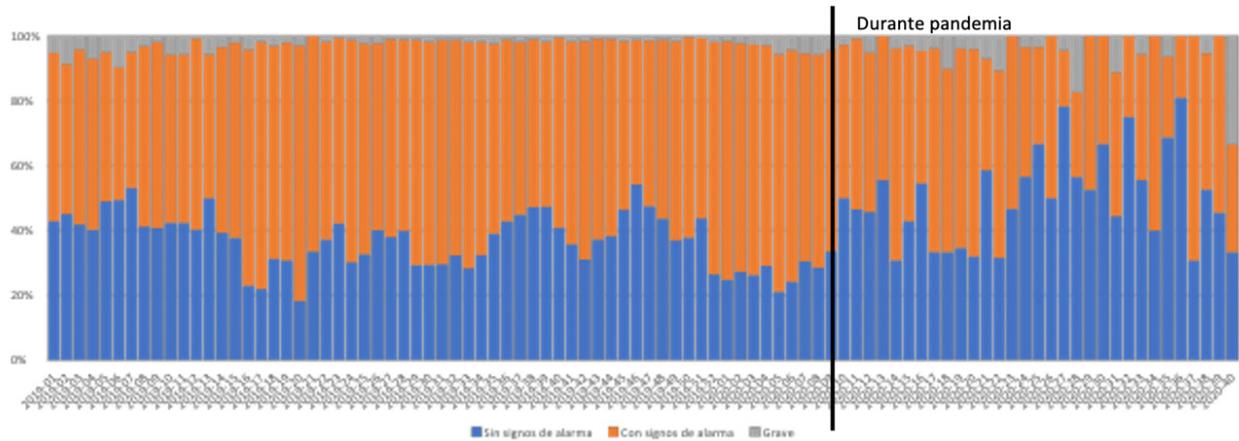
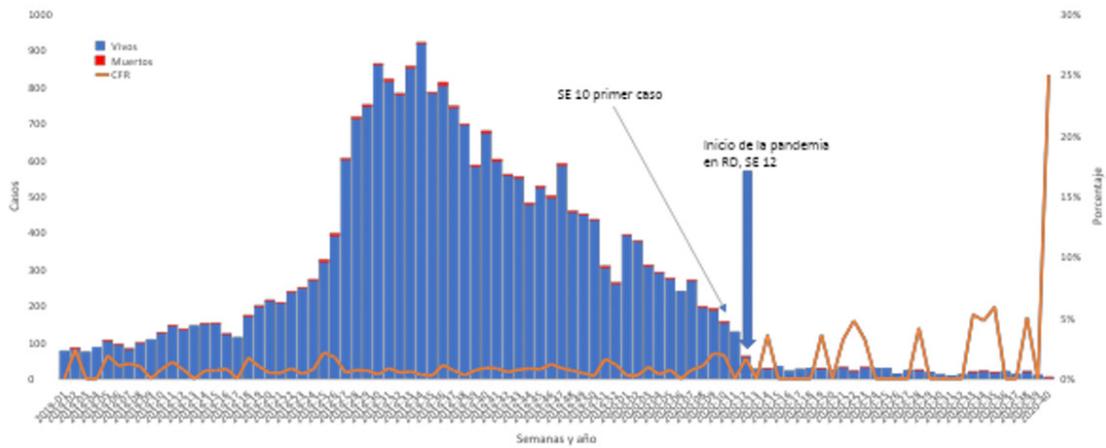
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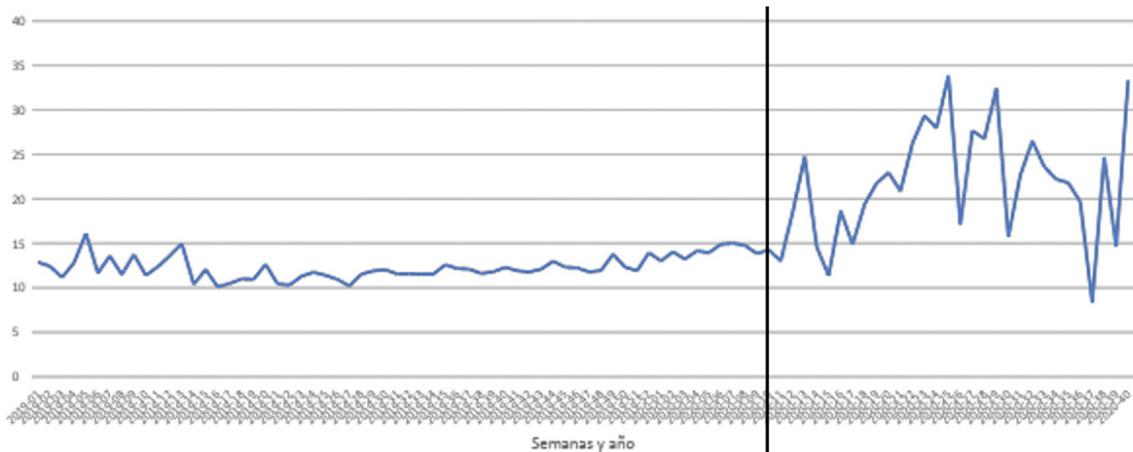
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### Dengue cases and deaths 2019 y 2020



### Average age range of dengue cases, by EW (2019 to EW 40, 2020)



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COVID can be anticipated. The usual annual peak of the second semester is not noticeable in 2020. The reasons remain to be confirmed: less demand of patient care due to the lock-down, restrictive measures,

fear, misclassification, or Dengue cases that could have been reported as a different event. COVID-19 has impacted on Dengue mortality in the country, and a more detailed evaluation is necessary. ●



**Mexico**  
**Dr. Gustavo Sánchez Tejeda**  
 Director, Vector Borne Diseases Program,  
 Ministry of Health.

Mexico expected a second Dengue epidemic with high mortality rates in 2020. Up to EW6 the number of cases had already increased by 150% as compared to 2019.

The co-circulation of COVID-19 and Dengue virus in cities with high population density has placed a challenge on the current control models, it also affected entomological surveillance and

increased the risk of transmission. By the time of the lock-down in March 2020, the Dengue health care training plan was suspended. As elsewhere, healthcare staff was assigned to COVID-19. PAHO suggested to implement virtual training and sent training materials to Mexico in April. The contents included updated clinical criteria, and accessible materials for the first level of care. The four weeks course was organized in five modules and a weekly 90 minutes video conference.

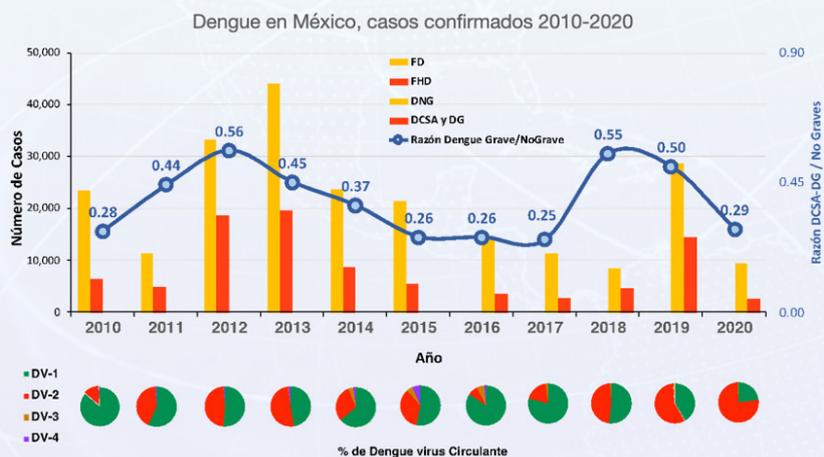
Virtual training proved to be a good option. By August 2020, over 9,900 physicians from the first level of care had been trained.

Localization of Dengue cases in Mexico during the pandemic (EW 9 through 22, 2020) did not show great differences as compared to the pre pandemic period.

By EW26, already one month after the end of lock-down, the main transmission areas varied;

### Dengue in Mexico: 2019 - 2020

- **2019:**
  - 43,362 cases
  - 371 deaths
- **2020 vs 2019**
  - EW6: ↑ 150% cases
  - EW26 same number of deaths
  - High lethality was expected for 2020

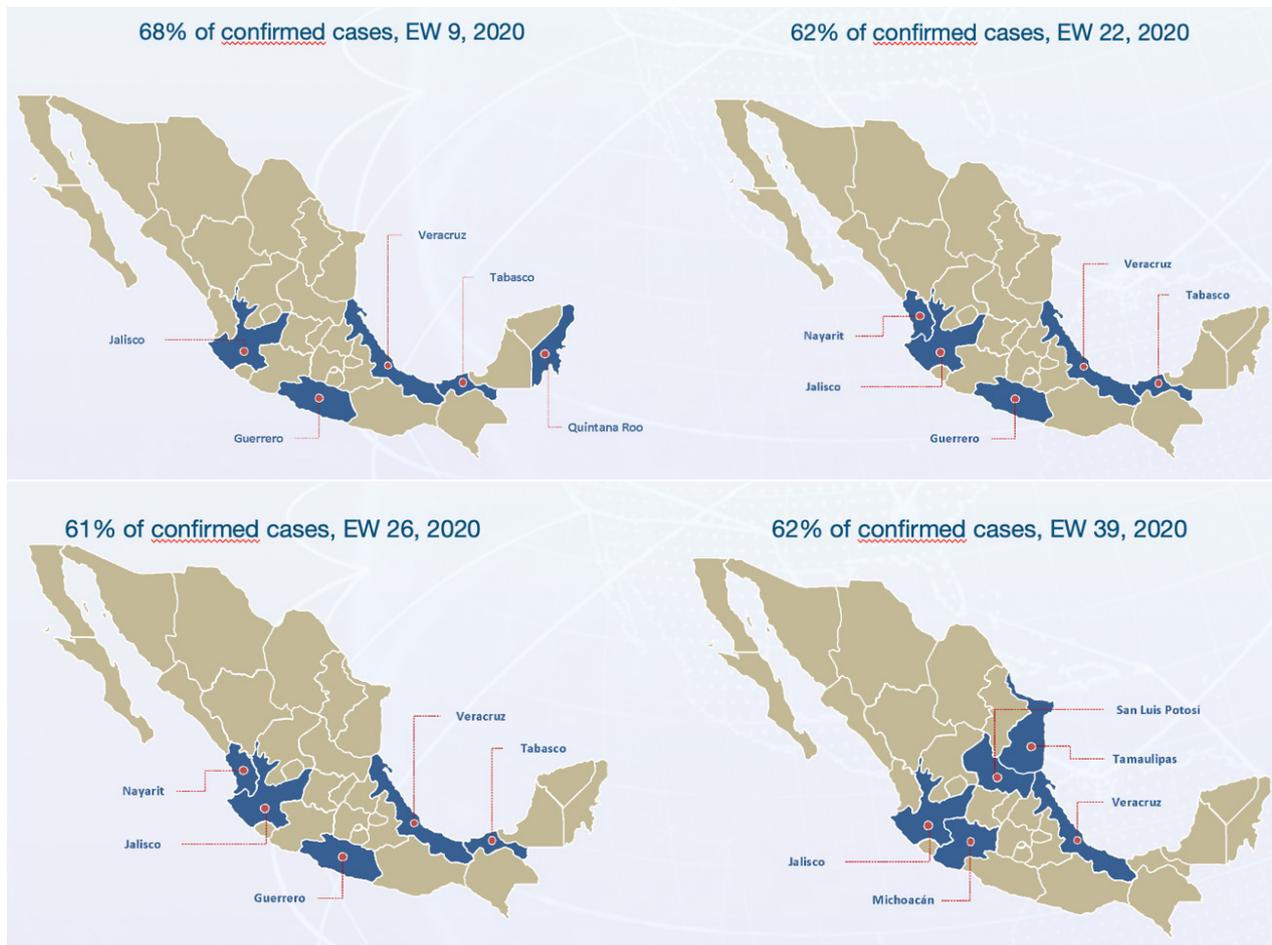


Fuente: SINAVIDEGE/SALUD/Sistema de Vigilancia Epidemiológica de Dengue. \* A la semana 39

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outbreaks occurred in several localities.

The number of Dengue cases reported weekly is currently 40% less than in 2019.

- The strategies used to control COVID-19 provide valuable information to better understand the epidemiology of Dengue.
- Epidemiological surveillance was sustained, with higher sampling rates.
- Areas where there was transmission during the lock-down are suggestive of intra-household transmission of Dengue.
- Timely detection and quality of care depends on the training of medical and paramedical personnel. Virtual training is a reliable and effective option.

### Conclusion

Dr. José Luis San Martín

In the light of the COVID-19 pandemic, despite the challenges that surveillance systems still face in the Americas, the region has shown advances in the detection and prognosis of outbreaks and epidemics of AD. Prognosis in AD is complex due to diverse individual and collective variables; however, the countries are actively working to increase their epidemiologic prognostic capacities.

PAHO is ready to continue supporting the member countries in their challenges to prevent and control AD and to implement IMS.

The comorbidities of Dengue and COVID-19 are an interesting finding. Studies should be expanded to determine if Dengue is a risk factor for COVID-19 or conversely, if COVID-19 patients have an increased risk for Dengue. ●