Dengue, Chikungunya, and other vector-borne disease: surveillance and response in Latin America and the Caribbean; the role of the Pan American Health Organization

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• CONTENTS

✓ About PAHO
✓ The fight against vector borne diseases in LAC
✓ Malaria, Dengue, Chikungunya and many more...
✓ Current challenges
✓ Conclusions
Vector Borne Diseases (VBD) in the Region of the Americas

Geographic distribution of vector-borne diseases in the Region of the Americas, 2013

Presence of vector-borne diseases ordered by frequency and prevalence

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Communicable Diseases and Health Analysis (CHA) | Neglected, Tropical and Vector Borne Diseases (VT) & Epidemic Alert and Response, and Water Borne Diseases (WR)
In 1902, the First General International Sanitary Convention of the American Republics whose purpose was to assure effective cooperation in promoting health in the Americas was held in Washington.

Originally called The Pan American Sanitary Bureau (PASB), the Pan American Health Organization (PAHO) is the world’s oldest international public health agency continuously working.
PAHO is now a coalition encompassing 30% of earth's land mass and 14% of the world's current population. With 28 country offices in 35 countries, PAHO's scope has also continued to grow. The initial focus on controlling epidemic diseases has broadened to include non-communicable diseases, better health education, and environmental improvements designed to help all people, especially those in need.
- **PAHO Member States (since 1902) and...**
- **WHO (since 1948)**

### Participating States
- France
- Netherlands
- United Kingdom

### Observer States
- Spain
- Portugal

### Associate Members
- Puerto Rico
- Aruba
- Curaçao
- Sint Maarten

### PAHO Member States
- Antigua and Barbuda
- Argentina
- Bahamas
- Barbados
- Belize
- Bolivia
- Brazil
- Canada
- Chile
- Colombia
- Costa Rica
- Cuba
- Dominica
- Dominican Republic
- Ecuador
- El Salvador
- Grenada
- Guyana
- Haiti
- Honduras
- Jamaica
- Mexico
- Nicaragua
- Panama
- Paraguay
- Peru
- Saint Kitts and Nevis
- Saint Lucia
- Saint Vincent and the Grenadines
- Suriname
- Trinidad and Tobago
- United States
- Uruguay
- Venezuela

### Map Details
- Headquarters
- Country Offices

2008
The fight against Yellow Fever and PAHO

What today is a key shipping route connecting the Atlantic and Pacific Oceans was formerly a breeding ground for disease, particularly Yellow Fever.

PAHO was the first international health organization to organize a united front against the spread of pestilence and disease that engulfed the Hemisphere at the turn of the century. Founded by eleven countries, PAHO's first task was to eliminate yellow fever and malaria in the Panama Canal Zone.
The Second International Sanitary Convention, which took place in 1905 in Washington, DC., continued to stress the importance of yellow fever, noting the success of control campaigns in Cuba, the Panama Canal Zone and Mexico. Setting an important precedent, the convention resolved that, in event of epidemics, national health authorities would be responsible for quarantine and disease control campaigns.

After Finlay’s announcement (on 18 February 1881) of a major scientific theory: transmission of yellow fever required an intermediate agent, he singled out the mosquito *Aedes aegypti*.
Yellow fever today: Enzootic areas and reported cases

Risk occurs below 2300 meters high

- Until 2007: BOL, BRA, COL, ECU, F.GUIANA, GUY, PAN, PER, SUR, TRT and VEN
- 2008: Expanded area to PAR & north of ARG
The role of PAHO
The turn of the 20th century saw considerable advances in the scientific understanding of the disease. Dr. Charles Laveran, showed (1880) that malaria is caused by a single-celled organism. Dr. Ronald Ross, discovered (late 1890s) that malaria is transmitted via mosquitoes.

The efforts to eradicate malaria worldwide were spurred on by the successes through use of DDT. After World War II, the World Health Organization (WHO) helped countries put together programs of spraying to combat malaria transmission. These campaigns partially interrupted malaria transmission and it was reflected in dramatic reductions in infection and number of cases in a relatively short time.
The role of PAHO

Malaria in the Americas, 2013

- 21 endemic countries (430,113 cases in 2013); 64% reduction since the year 2000

- 74% P. vivax; 25% P. falciparum; <1% P. malariae

- 82 deaths reported in 2013; 79% reduction since the year 2000

- 14 Member States are free of local malaria transmission
Malaria in the Americas today: Towards Elimination - Where?

Fuente: Reporte de los países a OPS, 2012
The role of PAHO

Support the Region’s Reinforced Commitment

- Further reduction of malaria morbidity by 75%, following WHA58.2 (2005)
- Further reduction of malaria-related deaths by 25%
- Implementing efforts to eliminate malaria in areas deemed feasible
- Reversal of trend in countries with current increases in the number of malaria cases (VEN, HAI, GUY)
- Prevention of reintroduction of malaria in countries that have been declared malaria-free

Strategy & Plan of Action for Malaria in the Americas 2011 – 2015

APPROVED

26-30 Sept. 2011
• The fight against DENGUE; (The fight against *A. aegypti*)

Countries and territories at risk of dengue, 2013

Distribution of countries or areas at risk of dengue transmission, worldwide, 2013

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement. © WHO 2014. All rights reserved.

Data Source: World Health Organization
Map Production: Control of Neglected Tropical Diseases (NTD)
World Health Organization
**Figure 2:** Map of the U.S. showing the areas at risk of dengue outbreaks, based on the approximate distribution of dengue mosquito vectors *Aedes aegypti* and *Aedes albopictus*. Map adapted from [28, 29]. The delimited area represents the approximate geographical area in which either dengue mosquito vector (*Aedes aegypti* and/or *Aedes albopictus*) have been found present in the USA and are therefore considered to be at risk for the establishment of dengue outbreaks. The noncontiguous states of Alaska and Hawaii are not shown at scale. U.S. territories are not shown.
DENV circulation in the Americas, 2013

DEN-2 en 18 countries (85.7%)
DEN-4 en 17 countries (81.0%)
DEN-1 en 16 countries (76.2%)
DEN3 en 11 countries (52.4%)

Source: Country dengue report. Regional Dengue Program PAHO/WHO.

2001: Resolución CD43 - Recomendación a los países a fortalecer las áreas críticas para el control del dengue

2002: Organización de nuevos programas nacionales de control del dengue

2003-2013: Veintidós países han elaborado EGI-Dengue

2007: Resolución CSP27.15. Recomendación a los países a fortalecer la implementación y evaluación de la EGI-Dengue

2012-2020: La OMS lanza la Estrategia Global para la Prevención y Control del Dengue 2012-2020
Integrated Management Strategy: (EGI-Dengue) in the Americas

• Launched in the Americas in 2003
• It includes 6 technical areas of work
• Already implemented in 26 countries and 4 sub regions; and evaluated in 22.
• Case management and use of new case classification stressed since 2010.
Dengue case classification by severity

Without

with

warning signs

1. Severe plasma leakage

2. Severe haemorrhage

3. Severe organ impairment

Severe dengue

Probable dengue

Live in/travel to dengue endemic area. Fever and 2 of the following criteria:

• Nausea, vomiting
• Rash
• Aches and pains
• Tourniquet test positive
• Leucopenia
• Any warning sign

Laboratory confirmed dengue (important when no sign of plasma leakage)

Warning signs*

• Abdominal pain or tenderness
• Persistent vomiting
• Clinical fluid accumulation
• Lethargy; restlessness
• Liver enlargement >2cm
• Laboratory: Increase in HCT concurrent with rapid decrease in platelet count

* Requiring strict observation and medical intervention

Criteria for dengue ± warning signs

Criteria for severe dengue

WHO/TDR 2009

TECHNICAL SUPPORT AND GUIDES FOR COUNTRIES
Dengue cases and CFR in three Regions of the WHO, 2000 - 2012

EUROPE
2010: France: two locally acquired cases
2012: Portugal, Autonomous Region of Madeira: 2,164 locally acquired dengue cases
CHIKUNGUNYA: Introduction into the Americas

December 6th, 2013

Alerta Epidemiológica
Fiebre por Chikungunya
9 de diciembre 2013

Ante la detección de los primeros casos de transmisión autóctona de fiebre por chikungunya en las Américas, la Organización Panamericana de la Salud (OPS) / Organización Mundial de la Salud (OMS) recomienda a los Estados Miembros que establezcan y mantengan la capacidad para detectar y confirmar casos, manejar pacientes, implementar una efectiva estrategia de comunicación con el público para reducir la presencia del vector, en especial en las áreas en las que está presente el mosquito transmisor de esta enfermedad.
Anticipated preparedness, 2010
Vigilancia de CHIKV en Las Américas: Detección y diagnóstico por laboratorio

Centros Colaboradores OPS/OMS

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Instituto Evandro Chagas – Departamento de Arbovirologia e Febres Hemorrágicas
Dr. Pedro Fernando Vasconcelos
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Tel. 559132024609
Correo e: pedrovasconcelos@iec.pa.gov.br
CURRENT CHALLENGES: Elimination of Diseases

VERIFICATION/ELIMINATION OF DISEASES

- Onchocerciasis: ECU, MEX, GUT
- Trachoma: MEX
- LF: BRA
- Schistosomiasis: SUR, DOR and St. Lucia
- Chagas: ARG, COL, MEX and PER

Malaria: ARG, ECU, PAR, MEX, ELS, COR & BLZ (PAN)

Leprosy: (< 100 cases) 17 COUNTRIES

“Low hanging fruits” - 2015 - 2017
CONCLUSIONS

1. Vector borne diseases have been a historical public health challenge to the Americas
2. Countries in the Americas have also historically been leaders in preventing, controlling and eliminating VBD as public health problems, great examples of this are Malaria in the Caribbean and yellow fever from the Region
3. PAHO has been instrumental, supporting countries in preparedness, prevention, control and elimination of VBD diseases, always in collaboration with governments and partners
4. VBD will continue to be a dynamic public health threat to countries in the Americas, therefore, the commitment from governments and international stakeholders to prevent further spread is essential.
Thank you