

# Advocacy and Communication in the Prevention and Control of Vector-borne Diseases

PROFESSOR EMERITUS LULU C. BRAVO, MD  
UNIVERSITY OF THE PHILIPPINES MANILA



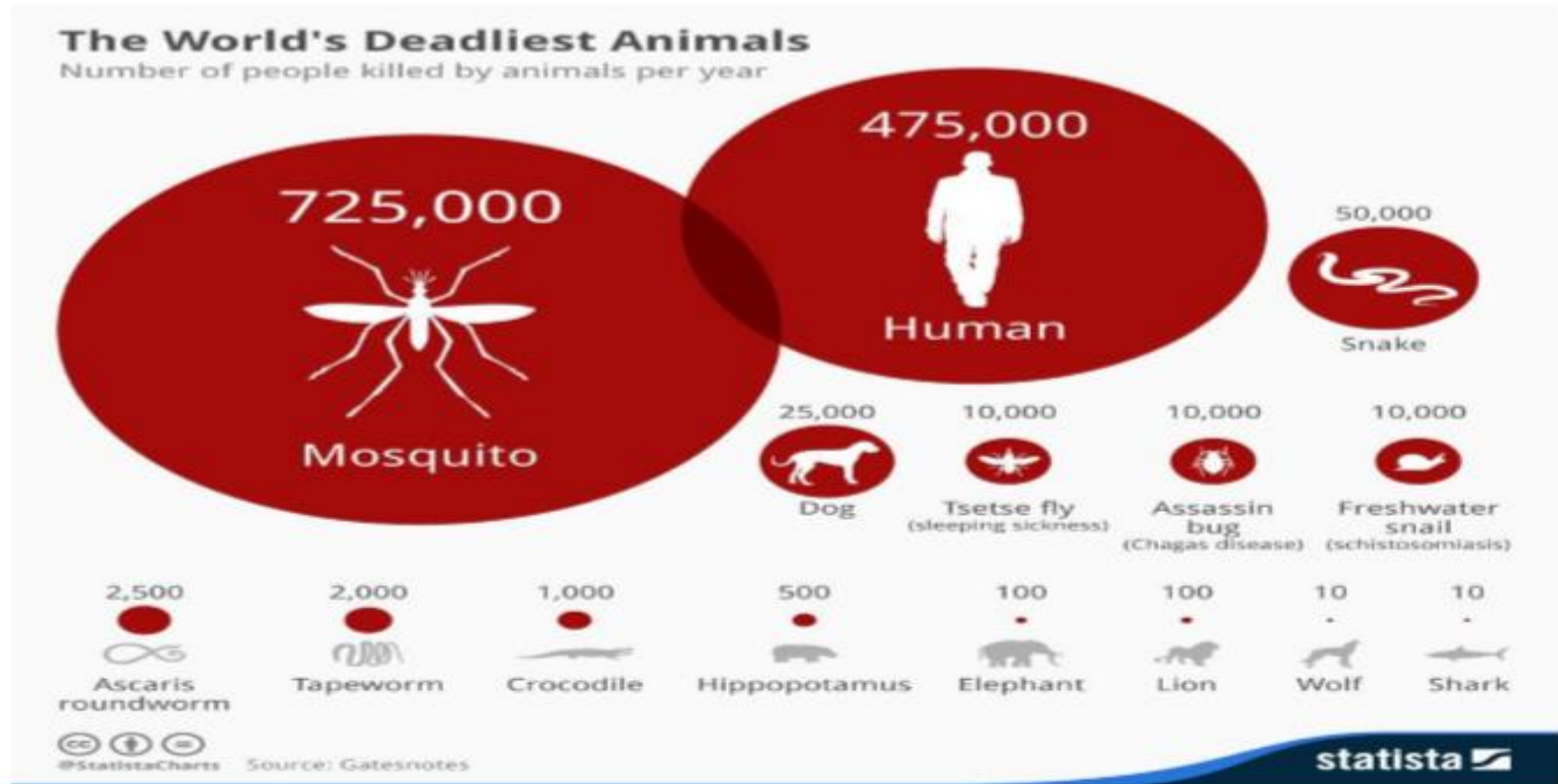
# DISCLOSURE

RECEIVED RESEARCH GRANTS FROM:

GSK, TAKEDA, NOVARTIS, SANOFI, PFIZER, SSI-BMGF  
AND SEQUIRUS IN THE LAST 5 YEARS.



# Dengue Global Perspective



**725,000** people are killed annually by devastating diseases carried by **mosquitoes** such as malaria, **dengue**, yellow fever, chikungunya, Zika, chikungunya, Japanese encephalitis, etc.





## MOSQUITO-BORNE DISEASES

### ZIKA VIRUS

Can cause babies to be born with deformities, e.g. smaller heads

### WEST NILE VIRUS

Can cause death and neurological diseases

### MALARIA

Can disrupt blood flow to vital organs and cause death

### DENGUE FEVER

Causes death if not treated properly

### CHIKUNGUNYA

Causes debilitating joint pain and can be deadly for elderly

### YELLOW FEVER

Hemorrhagic fever that can cause death

### RIFT VALLEY FEVER

Causes severe illness with low death rate in humans

### LA CROSSE ENCEPHALITIS

Causes inflammation of the brain, can be deadly

### ST. LOUIS ENCEPHALITIS

Rarely causes death, causes fever, headache, nausea

### FILARIASIS

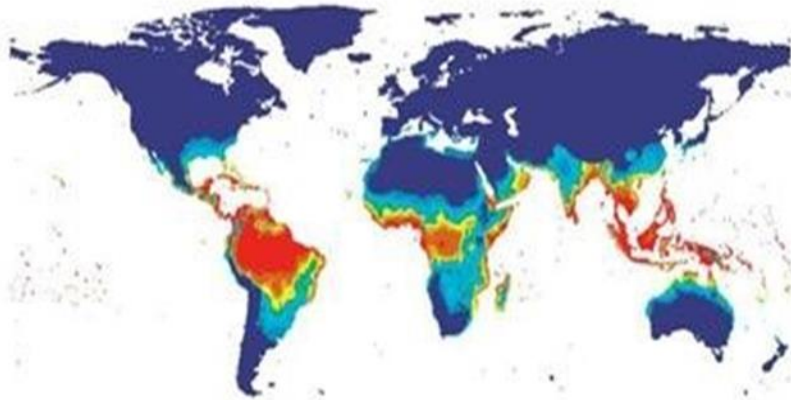
Infection of filarial worms via mosquitos. Can be treated

**Malaria** is endemic in **91 countries** with **40 %** of population at risk (WHO 2017)

**Dengue** is endemic in **100 countries** with **50 %** of population at risk (WHO 2017)



## DENGUE RISK IN 1990



0.0 - 0.1

0.1 - 0.2

0.2 - 0.3

0.3 - 0.4

0.4 - 0.5

0.5 - 0.6

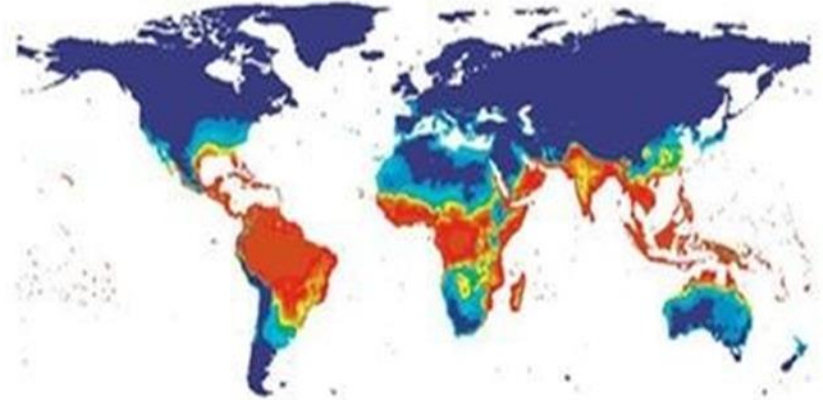
0.6 - 0.7

0.7 - 0.8

0.8 - 0.9

0.9 - 1.0

## DENGUE RISK IN 2085



Logistic regression model with vapor pressure (humidity) as the predictor of dengue fever risk, using climate data from 1961 - 1990. The model is 89% accurate. Colours represent probability of dengue transmission.

Source : Simon Hale et al. The Lancet, 6th Aug 2002

Tropical countries are at risk of dengue.

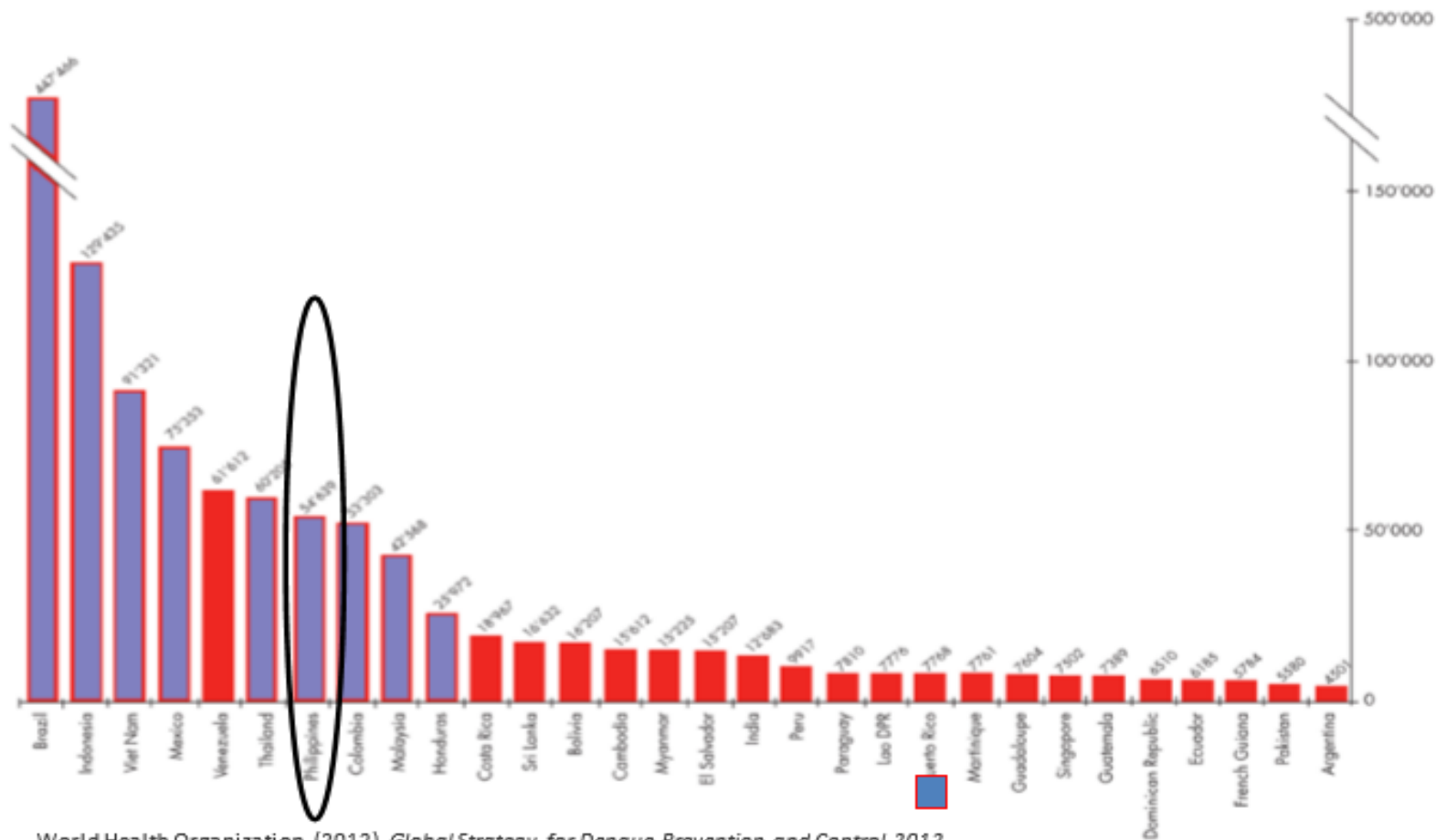


# Dengue: Global Perspective

- Dengue is fast emerging **pandemic-prone viral disease** in the world (WHO, 2017)
- The incidence increased to **30-fold** in the last 50 years (WHO 2017).
- An estimated **390 million** dengue infections occur each year\*
  - **96 million** infections have clinical signs and symptoms
  - **294 million** have **no** clinical signs and symptoms
- **70%** of global dengue disease burden is in the Asia Pacific region\*
- \*Bhatt et al. Nature 2013;496:504-7.



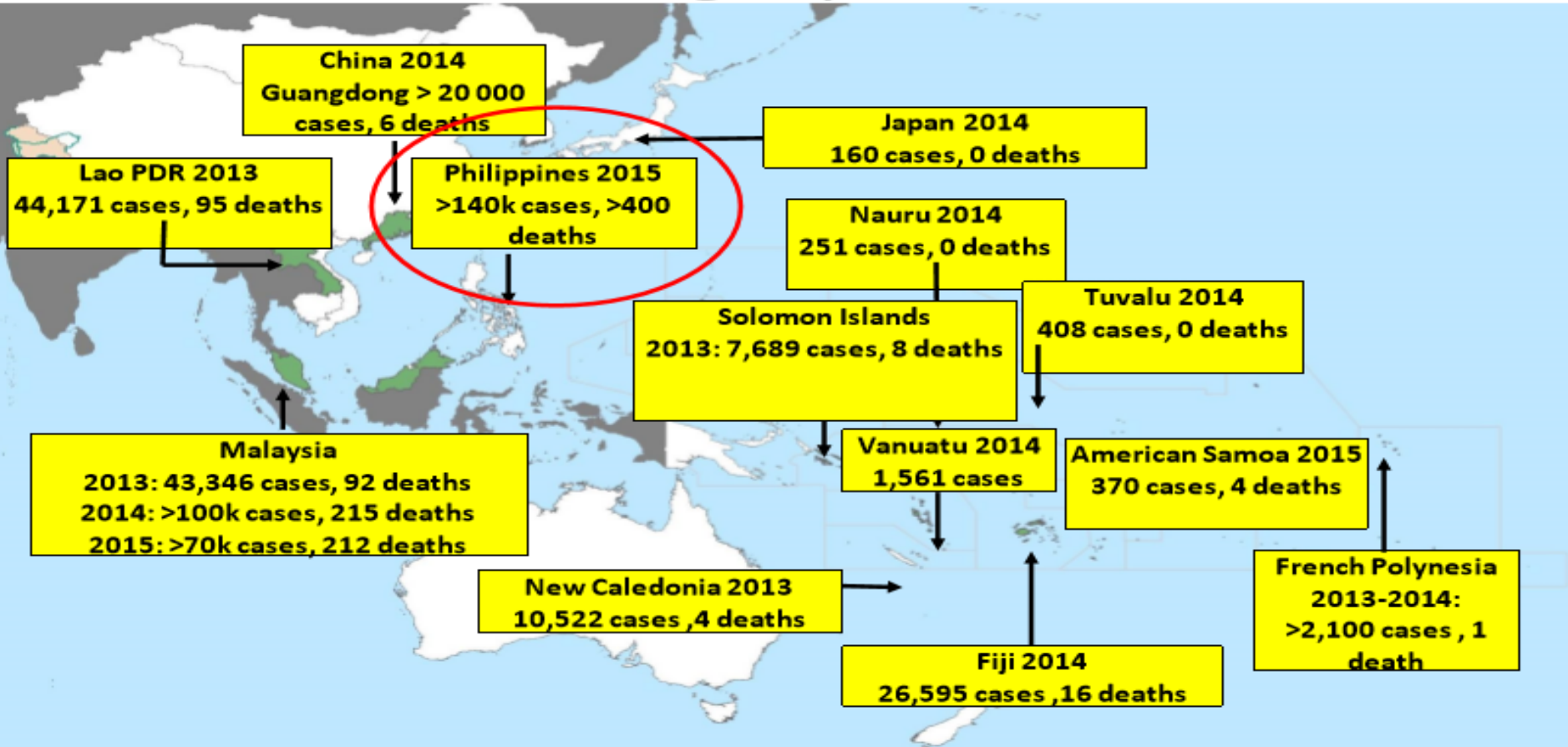
# THE MOST HIGHLY DENGUE-ENDEMIC COUNTRIES



World Health Organization. (2012). *Global Strategy for Dengue Prevention and Control 2012 - 2020*. Geneva: World Health Organization.



# Recent Dengue Outbreaks in Western Pacific Region, 2013-2015



Philippines ranks 1<sup>st</sup> in the WPR with most number of dengue cases





# India faces worst dengue fever outbreak in years with more than 6,500 confirmed cases

By South Asia correspondent James Bennet

Updated 5 Oct 2015, 7:45am

India is the in grip of its worst dengue fever outbreak in years, with more than 6,500 confirmed cases and at least 25 deaths in the capital New Delhi so far this season.

Across India, wards normally reserved for surgery are crammed with men, women and children battling the potentially fatal mosquito-borne virus.

Thousands of cases have overloaded the city's hospitals.

There is also a growing number of fatalities and allegations authorities have been slow to respond



PHOTO: The ABC's James Bennet talks to a dengue patient in a ward in New Delhi, India. (ABC James Bennet)

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# 2015 - WORST YEAR FOR DENGUE IN 20 YEARS - 123,168 CASES CONFIRMED AND 116 DEAD

Thailand's public health officials have reported that 2015 was the worst year for dengue fever in more than 20 years.

Thailand's Ministry of disease control estimates that 116 people died and as many as 123,168 cases of dengue fever were detected up until the end of November 2015.

Sophon Mekthong, deputy director-general at the Ministry of Public Health said in a statement that despite the high number of cases,

"the fatalities are not alarming compared to previous years, which shows our medical response is improving."

International health agencies such as the World Health Organisation have classified dengue fever as the world's fastest spreading tropical disease. In 2015, the highest numbers of cases in Thailand in 2015 were recorded in Bangkok and Chiang Mai.

The World Health Organization issued a warning in November 2015 that the number of dengue cases globally has increased in recent decades with "explosive outbreaks" recorded in several Southeast Asia countries.

# 2015: DEADLY DENGUE OUTBREAKS ACROSS ASIA



Image courtesy of IFRC

# HOSPITALS ACROSS ASIA STRUGGLE AGAINST SOARING DENGUE CASES

Malaysia, the Philippines, Thailand, Taiwan, Vietnam and India are some of the worst hit countries. According to the World Health Organization, Malaysia reported more than 107,000 cases and more than 293 deaths as

# Malaysia dengue fever cases top 120,000 for 2015; Selangor state reports more than half

By ROOHA AL-SHARAH

January 1, 2016 0 Comments

1067 views



The number of Dengue fever cases reported in Malaysia continues to increase year after year since 2011 and in 2015, we see the highest number of cases and deaths as the southeast Asian country topped 120,000 cases. More than half the cases were reported from Selangor state alone (60,000+).



In addition, 322 dengue related fatalities were reported nationally as of Dec. 28, more than 100 more than the previous year.

If we look at dengue fever in Malaysia since 2011, we see a steady climb each year. That year there were 10,884 cases/36 deaths. In 2012, it increased to 21,900/35; in 2013 it was 43,346/92 and last year 108,608/215



# Bulacan declares state of calamity over dengue cases

ABS-CBN News

Posted at Sep 30 2015 11:27 PM | Updated on Oct 01 2015 07:54 AM

MANILA - The provincial government of Bulacan has declared a state of calamity due to the alarming number of dengue cases recorded in the province.

Through a resolution, the provincial government will allocate a P39-million calamity fund to prevent the continuous rise of dengue cases in the province.

The fund will be used to provide free hospitalization and medication for dengue patients. Dengue Express Lanes will also be established in all government hospitals to provide easy access and relief.

Records from the Provincial Epidemiology Surveillance Unit (PESU) showed there are 4,771 cases of dengue in the province since January 2015. Of this number, eleven have died.

PHILIPPINES

# Dengue on the rise: 55,000 reported cases so far in 2015

This is higher than the 50,000 cases reported during the same period in 2014.

**Jee Y. Geronimo**  
@jygeronimo  
Published 1:00 PM, September 04, 2015  
Updated 2:58 PM, September 04, 2015



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NEWS

# Isabela town in state of calamity due to dengue outbreak

Published 10/1/2015 12:33pm

Luna town in Isabela province was declared in a state of calamity due to the year-round threat from dengue.

Health officials in Luna cited reports that at least 52 people had fallen ill due to dengue in May and June, GMA News stringer Joel Nueva reported.

Vice Mayor Andy Domingo and the town council approved a resolution declaring Luna is in a state of calamity due to the dengue cases.

This will allow the local government to access some P500,000 for fogging operations and financial

HOME LOCAL NEWS BUSINESS OPINION SPORTS FEATURE LIFESTYLE ENTERTAINMENT

Time to read less than 1 minute

# Rise in Baguio dengue cases blamed on El Nino

Share

Tuesday, December 22, 2015

By DANICA QUER



DENGUE cases in Baguio City rose by 307 percent this year, the City Health Office reported.

The office's chief of the epidemiology department, Dr. Donabel Tubera, attributed the increase to El Nino.

The country is in the middle of an El Nino episode that started in September and is expected to last until the middle of next year.

The warm air from the Pacific Ocean causes the dengue-carrying mosquito to breed faster, Tubera said.



She said males from 10 to 19 years old have the highest risk of contracting the disease.



# The National Dengue Prevention and Control Program in the Philippines is mainly focused on vector control and community mobilization in cooperation with the Local Government Units

## Integrated Vector Management



**CURRENT VECTOR CONTROL STRATEGIES HAVE NOT STOPPED THE SPREAD OF DENGUE**

## Key Anti-Dengue Campaigns



### **4-S Strategy**

- Search and destroy
- Self-protection measures
- Seek early consultation
- Say no to indiscriminate fogging



### **The Four O'clock Habit**

- Community activities
- Dengue Awareness Month



# Dengue: Philippine Perspective

## 1. Philippines

Table 4A.1

Ten Leading Causes of Morbidity  
Philippines, 2015

Disease	Number of case	Rate per 100,000 population
1 Acute Respiratory Infection	1,588,224	1,560.57
2 Hypertension	613,281	602.60
3 Acute Lower Respiratory Tract	500,863	492.14
4 Bronchitis	163,349	160.50
5 Influenza	150,134	147.52
6 Urinary Tract Infection	140,506	138.06
7 Acute Watery Diarrhea	129,544	127.29
8 Dengue Fever	70,736	69.50
9 Acute Febrile Illness	55,759	54.79
10 TB Respiratory	53,278	52.35

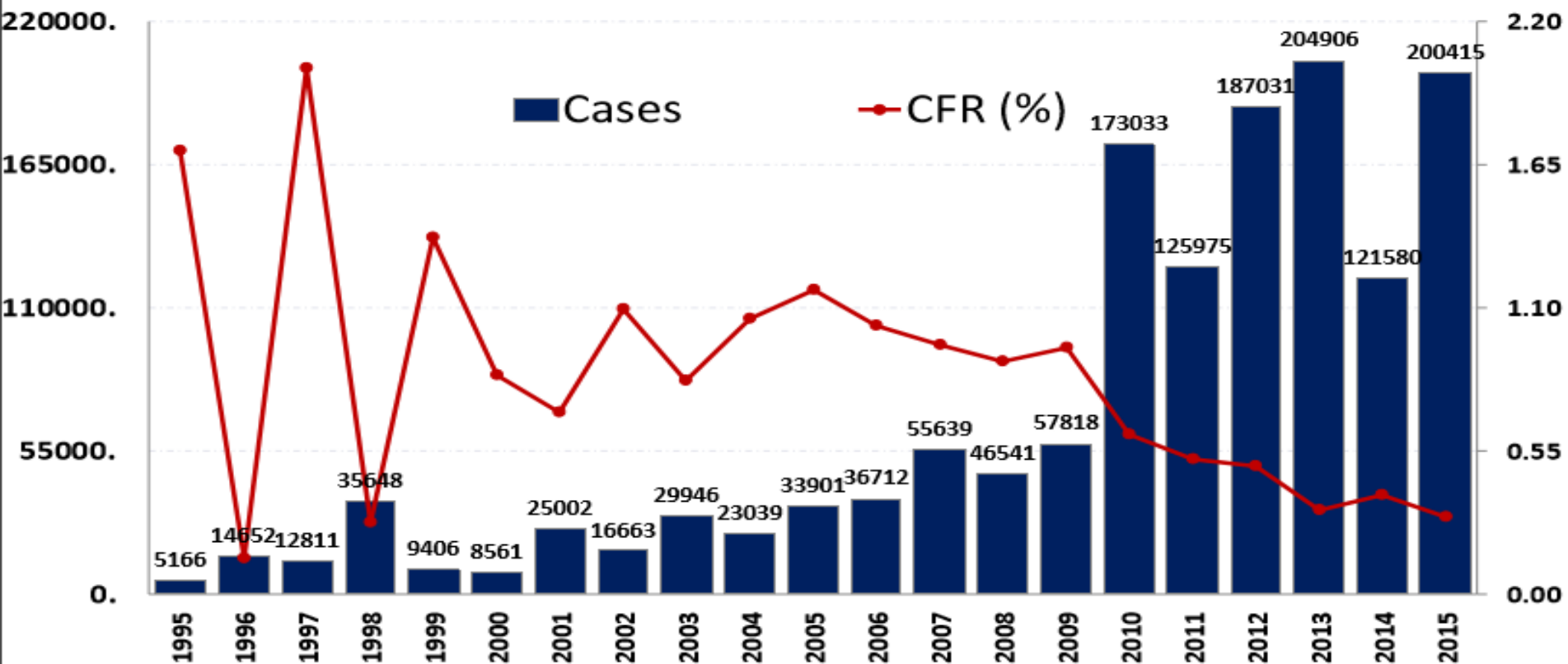
Dengue ranks 8<sup>th</sup> in the leading cause of morbidity (FHSIS= 70, 736 cases)

According to PIDSR official report, there are 200, 415 dengue cases in 2015.

EB FHSIS 2015 Annual Report



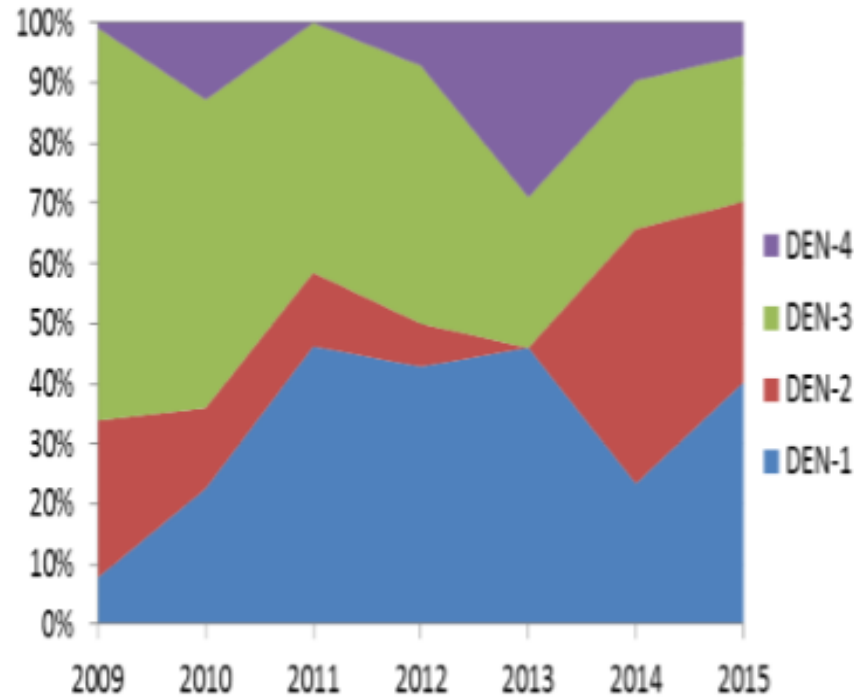
# Suspected Dengue Cases Reported & Case Fatality Rate (CFR), Philippines 1993 – 2015



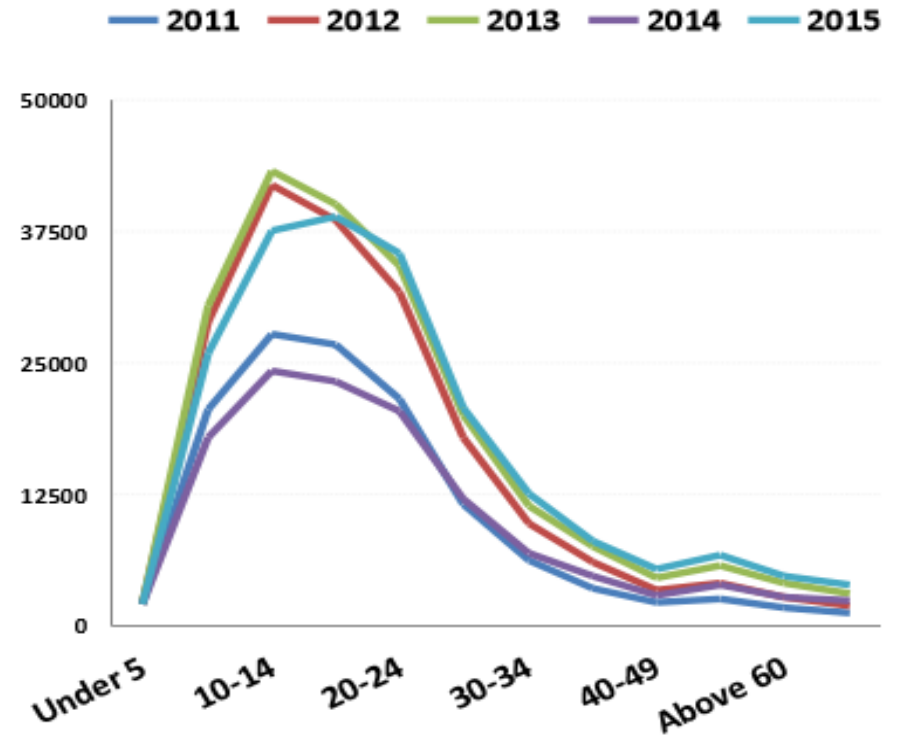
- From 1995 – 2015, average of >63,000 cases/year
- CFR declining, dengue incidence is increasing



## Dengue Virus Circulating Serotypes, 2009-2015



## Age Distribution of Dengue Cases in the Philippines, 2011 - 2015



- Dengue is hyper-endemic with all four serotypes circulating, in which serotype 1 and 3 are highly prevalent.
- Over the years, dengue affects younger age group.



# Health Professionals

- Serve as credible voices for the value of vaccines and recruit other advocacy voices



- WHO-DOV 2011



# DENGUE DANCE: 2013 ASEAN DENGUE DAY ERIC TAYAG STYLE





# MEDSCAPE VIDEOS FOR CME



DENGUE PICTURES



# DENGUE ACTIVITIES : MARCH – AUGUST 2017

Bangkok, Thailand



Manila, Philippines



Singapore



A DENGUE  
WHITE PAPER  
For the  
WORLD!





# BREAK DENGUE

## Shaping a Collective Environment Ready to Tackle Dengue



**2016:** Recognized as  
**WHO eHealth case  
study**



**2015:** Winner “Most  
impactful emerging or  
global initiative”



# Priorities Driven by WHO High Level Strategy



- Reduce mortality from dengue by 2020 by at least 50%
- Early case detection
- Improved outbreak prediction and detection
- Integrated vector management
- Effective communication to achieve behavioural outcomes

*WHO report, Global Strategy for dengue prevention and control, 2012–2020.*

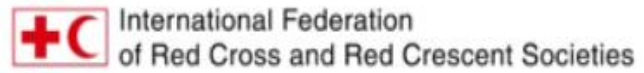
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**Break Dengue** is a partner and catalyst in enabling and implementing integrated solutions towards the WHO 2020 dengue objectives.

Break Dengue's mission is to **connect, share and develop innovative solutions** to dengue fever.

Vector control, surveillance, drugs, diagnostics and vaccines all hold exciting potential but none can solve the problem alone. **We need an integrated approach.**



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# Break Dengue has been recognized for an innovative approach...



Winner, **ASAP Alliance for Corporate Social Responsibility Award 2017**



WHO recognition as case study in **WHO e-Health Report 2016**



Winner, **"Most impactful emerging or global initiative"** at eyeforpharma 2015



Winner, the **best use of social media in healthcare**, Shorty Awards, 2014

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**Break Dengue takes a comprehensive approach to the challenges, engaging on multiple fronts:**



# The Break Dengue ecosystem, building collective impact...



## Brazil Exchange



“Outbreaks like Zika distract us from other medical emergencies”  
 Gary Finnegan

theguardian  
 Editorial

## Dengue Lab 1250+

Break Dengue

**€10,000 PRIZE: HELP US BREAK DENGUE**

Do you have an initiative that could help to combat dengue fever in your community?

Apply now

## Dengue Prize

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# Give the Red Card to Dengue!

Sign the petition

[www.breakdengue.org/redcard](http://www.breakdengue.org/redcard)

#RedCardDengue



# HELP FREE OUR TRIBE FROM DENGUE

JOIN THE TRIBE

## 2014 RED CARD CAMPAIGN

81,000 video views  
250,000+ strong community  
Over 1 million reached through mobilization campaign



## 2015 DENGUE TRIBE CAMPAIGN

370,000 page views on website during campaign alone;  
500,000 during the year



# Editorial coverage led by an independent editorial committee



**43**  
published blogs  
Views: **27,118**



OCTOBER 09, 2017 - BY ALISON BOOTH  
**DENGUE IN CAMBODIA: USING GUPPIES AND GROWTH HORMONES TO FIGHT DISEASE**

Dengue in Cambodia is endemic all year round. But budgets are tight. For some time, The World Health Organization (WHO) and Asian Development Bank (ADB) have been helping the authorities search for a cost-effective and sustainable way to tackle dengue in Cambodia. A more recent...

[Read more](#)

OCTOBER 09, 2017 - BY TIANE MATT  
**BRAZIL PORT CHIEF STRUCK DOWN BY DENGUE IN PARANAGUÁ**

Happy new year! Not for Rodrigo Buitrago Castro, a 26-year-old port terminal manager from Paranaguá in the Brazilian state of Paraná. His encounter with a mosquito at a New Year's Eve party made him another high-profile victim of dengue in Paranaguá, a city facing...

[Read more](#)



JULY 14, 2017 - BY ALISON BOOTH  
**URBANIZATION AND GLOBALIZATION: SPREADING DENGUE AROUND THE GLOBE**

Half a century ago, dengue was under control; DDT and spraying kept *Aedes aegypti* mosquitoes at bay. In stark contrast, dengue is now a serious global health threat. Over the past four decades, dengue's global threat has grown as urbanization and globalization have helped the...

[Read more](#)



FOCUS 23, 2017 - BY TIANE MATT  
**DENGUE VACCINATION CAMPAIGN: THOUSANDS REACHED IN SECOND DRIVE**

During the first half of 2017, the Brazilian state offered 10 days of second of three doses against dengue. Those who missed out on the first dose were given a second chance to begin the vaccination program after launching the dengue vaccination program in 2016...

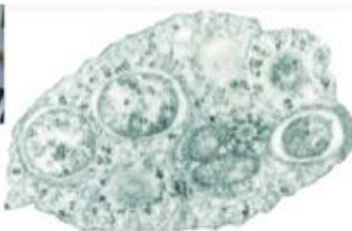
[Read more](#)



JUNE 23, 2017 - BY TIANE MATT  
**DENGUE PROTECTION: WHAT YOU NEED TO KNOW**

New online medical training module explores role of vaccine in dengue prevention for people living in, or traveling to, areas affected by dengue. Dengue prevention is what the world needs in order to reduce the risk of infection. For decades, here the use of insect...

[Read more](#)



OCTOBER 24, 2017 - BY ALISON BOOTH  
**HOW WOLBACHIA-INFECTED MOSQUITOES ARE REDUCING DENGUE OUTBREAKS**

A naturally-occurring bacteria, Wolbachia can be found in around 60% of insect species, including some types of mosquito. Wolbachia, however, it is not usually found in the *Aedes aegypti* mosquito. But artificially infecting an *Aedes* population with Wolbachia reduces the mosquitoes' ability to transmit dengue...

[Read more](#)



OCTOBER 17, 2017 - BY TIANE MATT  
**PARANÁ STATE ROLLS OUT THE FINAL WAVE OF ITS DENGUE IMMUNIZATION PROGRAM**

Health authorities in the Paraná State of Brazil are embarking on the third stage of a public dengue immunization program targeting individuals 0-44 years of age, the first public initiative of its kind in the Americas. The community-based vaccination campaign began on September 10 and...

[Read more](#)



AUGUST 18, 2017 - BY TIANE MATT  
**WORLD MOSQUITO DAY POST: CELEBRATE THE FINDINGS OF RONALD ROSS**

What is World Mosquito Day? In the year of 1897, a British doctor named Ronald Ross found that it was the female mosquitoes (of the Anopheles genus) that were responsible for transmitting the malarial parasite to a child. His discovery ultimately led to greater ways...

[Read more](#)

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# Global Dengue Scientific Network

## Building & activating expert and scientific community

### GLOBAL DENGUE LAB

The screenshot shows the homepage of the Global Dengue Lab. At the top, it features the 'THE GLOBAL HEALTH NETWORK' logo and navigation links. The main header includes the text 'Global Dengue Lab' and 'We should all care about DENGUE' with the 'Break Dengue' logo. Below this is a navigation menu with options like 'Home', 'About', 'Articles', 'Members/Groups', 'Community', 'Dengue Video Library', and 'Contact Us'. The 'Home' section contains a welcome message, a 'Discussions' section with a link to a 'Launch of crowdsourced dengue fever map', and a 'Dengue Video Library' section. A 'Tweets by @BreakDengue' sidebar is also visible.

- Partnership with **Global Health Network**
- Biggest dengue scientific & expert community globally, **1250+** members
- Place to build a dialogue with stakeholders, discuss ideas/solutions and keep momentum going
- The place to build a focused forum, closed and/or open

# 1250+ experts

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# Fostering innovation in combating dengue

## Break Dengue Prize

- **2, €10,000 prizes** awarded to **design and test new approaches to integrating a dengue vaccine** as part of a holistic plan to combat dengue.
- **Break Dengue connected the Colombian prize winner with Sanofi-Pasteur** in designing their survey about the **acceptability and feasibility of introducing the dengue vaccine in Colombia**.
- The **Cambodia Dengue Prize winning project is advising the Ministry of Health** on dengue policy as part of a comprehensive public health strategy.

*"...the collaboration Break Dengue facilitated has proved mutually beneficial and has advanced my project's goals..."*

Dr. Aileen Chang  
Asst. Prof. Of Medicine  
George Washington University  
Colombia Dengue Prize Winner



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# 2. Education & Prevention

We have developed a complete dengue toolkit, specifically created to fit needs. You will find out more about dengue symptoms, disease prevention tips, information on treatment, and what to do if you're travelling in a dengue endemic area. <https://www.breakdengue.org/download-toolkits/>

DOWNLOAD THE TOOLKITS  
**LEARN MORE ABOUT DENGUE**



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# TARGETED TOOLKITS

## KEEP DENGUE AWAY

### DENGUE IS DIFFICULT TO RECOGNIZE

Dengue is difficult to recognize because the early symptoms of fever, headache, body aches are not specific. Dengue may be misdiagnosed as other illnesses : influenza, typhoid, Zika, malaria ...

75% of dengue infections are asymptomatic	20% are mild – moderate dengue fever	5% are severe dengue : 500,000 people with severe dengue require hospitalization each year and 2.5% of people will die
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#### SYMPTOMS

- High fever
- Severe headache
- Pain behind eyes
- Skin rashes
- Muscle and joint pains
- Vomiting

WARNING SIGNS OF PROGRESSION TO SEVERE DENGUE

## ANYONE CAN BE INFECTED WITH THE DENGUE VIRUS

Transmission of dengue virus occurs through:



Covering, emptying and cleaning of domestic water storage containers on a weekly basis



Applying insecticides as space spraying during outbreaks as one of the emergency vector control measures

## RISK OF DENGUE IN TROPICAL COUNTRIES

- The annual incidence of dengue has grown dramatically in recent decades.
- The annual numbers of dengue cases remains underreported and many cases are misclassified.
- The infection causes flu-like illness, and occasionally develops into a potentially fatal complication.
- A vaccine is available in some countries for those who are 9-45 years old living in endemic areas.

number of reported dengue cases is continually increasing. There have been cases reported in Europe and the Americas.

#### TRAVEL

in middle-income countries, dengue fever after malaria.

#### PREVENTION

Prevention depends on the prevalence in the destination.

by carrying out the following preventive measures:





⊗ Break Dengue

# DON'T LET DENGUE BREAK YOU

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# Break Dengue - a WHO case study



Global diffusion of eHealth: making universal health coverage achievable - a new WHO report

featuring  Break Dengue

The report explains how Break Dengue has built a coalition of stakeholders to meet the considerable challenge posed by dengue fever.



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# 1. Tracking Dengue

The challenge of mapping dengue fever is immense but digital technology can help. Dengue Track is an initiative from Break Dengue that is using big data to build the ultimate dengue tracking system.

This online interactive tool centralizes information about dengue outbreaks from a range of sources, adds data from social media channels, and alerts people when they may be at risk of dengue.

[https://www.breakdengue.org/bd-documents/DengueTrack\\_Slideshow.pdf](https://www.breakdengue.org/bd-documents/DengueTrack_Slideshow.pdf)

[https://www.breakdengue.org/bd-documents/DengueTrack\\_Plugins.pdf](https://www.breakdengue.org/bd-documents/DengueTrack_Plugins.pdf)

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Did you know that?

Your experience about dengue will help us to track the disease around the world.

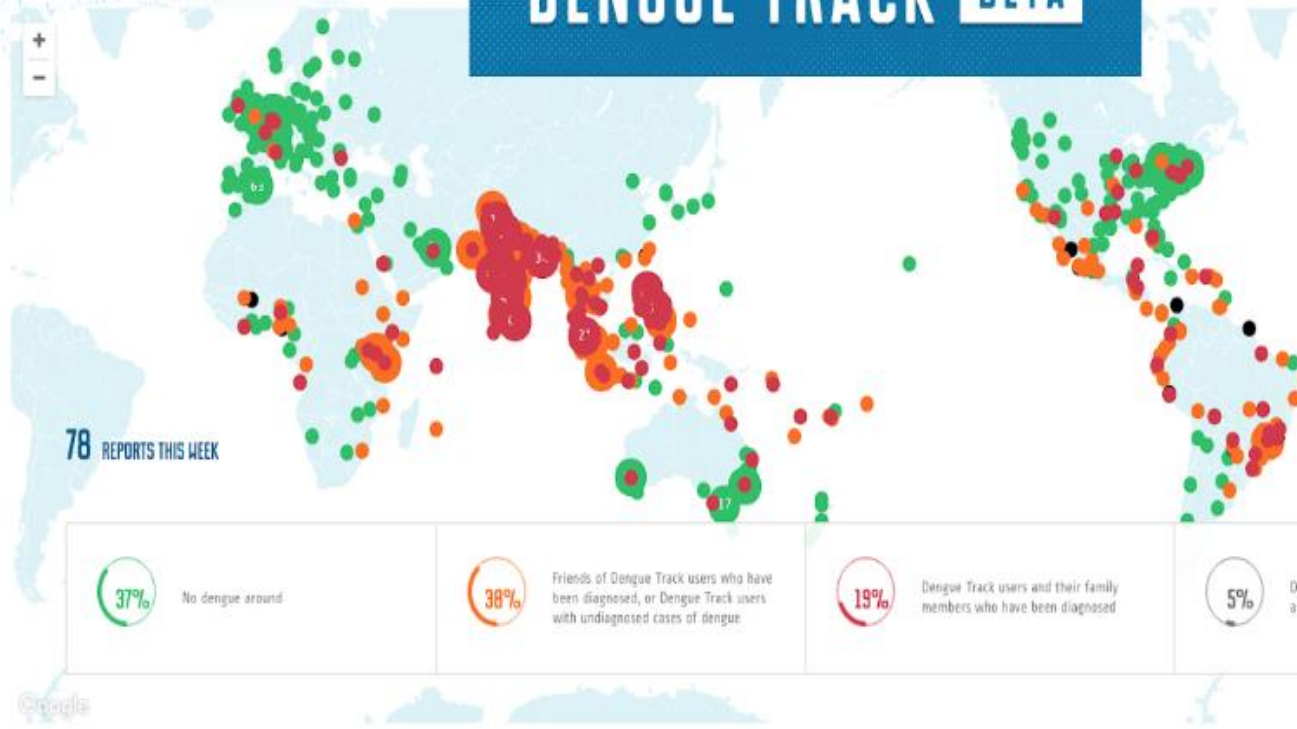
How? Your experience will be used on Dengue Track, a collaborative tool to track dengue around the world.

Continue to help us by subscribing to Dengue Track. You can update your experience later, and be alerted to dengue in your area.

Insert your email here:



# DENGUE TRACK BETA



## INTERACTIVE CHAT

## JOIN US



# Don't Let Dengue Break You!



## Break Dengue - AIESEC partnership launch

Cartagena, Colombia

[www.breakdengue.org](http://www.breakdengue.org)



# Our mission is to bring Break Dengue to the ground in Brazil!

## OUR OBJECTIVES

- Bring Break Dengue's strategy and tools (e.g. Dengue Track) live in the field, reinforce our position as the leading platform driving the fight against dengue
- Bring our [\*Don't Let Dengue Break You\*](#) awareness and mobilization campaign to local communities and document it
- Generate powerful stories about dengue that we can share with target audiences for a viral effect
- Explain concretely what people can do to contribute to dengue prevention for themselves and for their communities
- Build a sense of urgency
- Strengthen relationships with influential NGOs and community organizations in your area



# THE NEED FOR A VACCINE AGAINST DENGUE IS CLEAR<sup>1</sup>

Insufficient prevention  
and control

Lack of a specific treatment

Lack of prophylactic  
measures

Pressure to do more

Need for  
dengue  
vaccine

