

**MINISTRY OF HEALTH - BRAZIL  
HEALTH SURVEILLANCE SECRETARIAT**

**Integrated Management Strategy for the Prevention and  
Control of Dengue (IMS–Dengue)  
Experience of Brazil**

**Giovanini Coelho**

**National Dengue Control Program - Brazil**

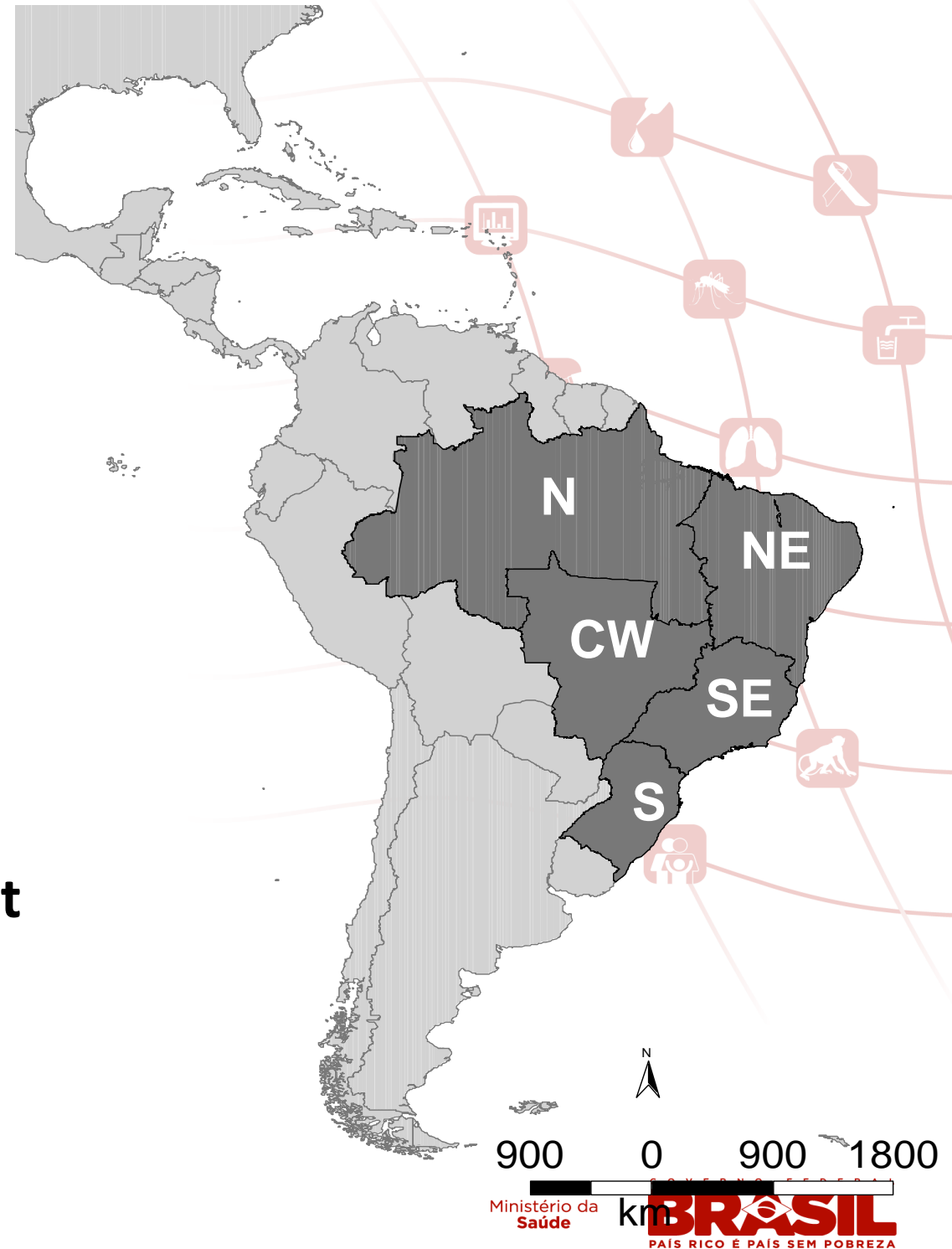
**State of the Art for the prevention and control of dengue in the Americas**

**May 28-29, 2014**

**Washington DC, USA**

# Brazil

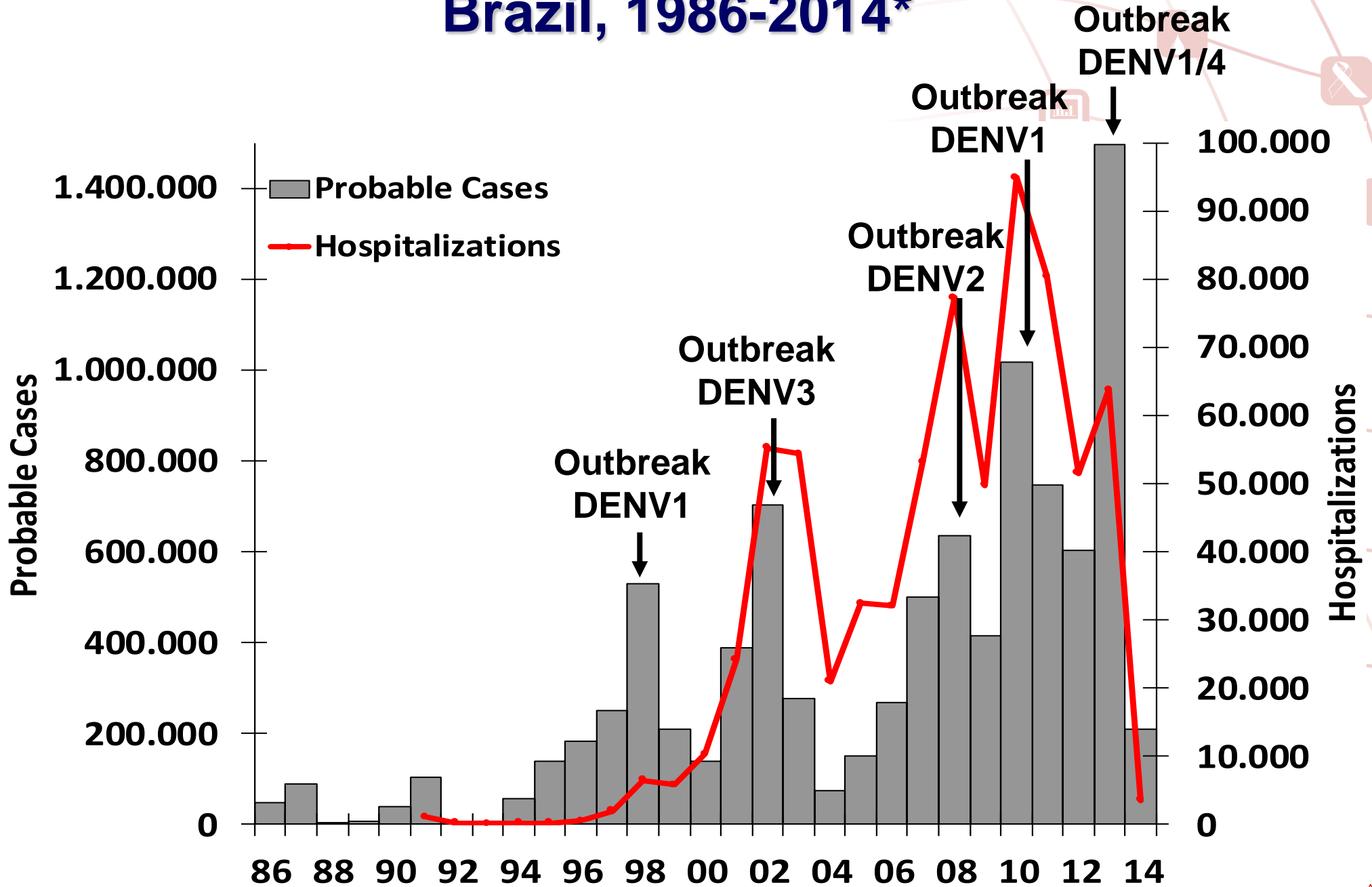
- Largest and most populated country in Latin America
- Area - over 8 million km<sup>2</sup>
- Population in 2013 - 201 million inhabitants
- 5 regions, 27 states and 5,565 municipalities
- High population density areas/cities (up to 12,901 inhab/km<sup>2</sup>) on the Atlantic coast
- Tropical and subtropical climate



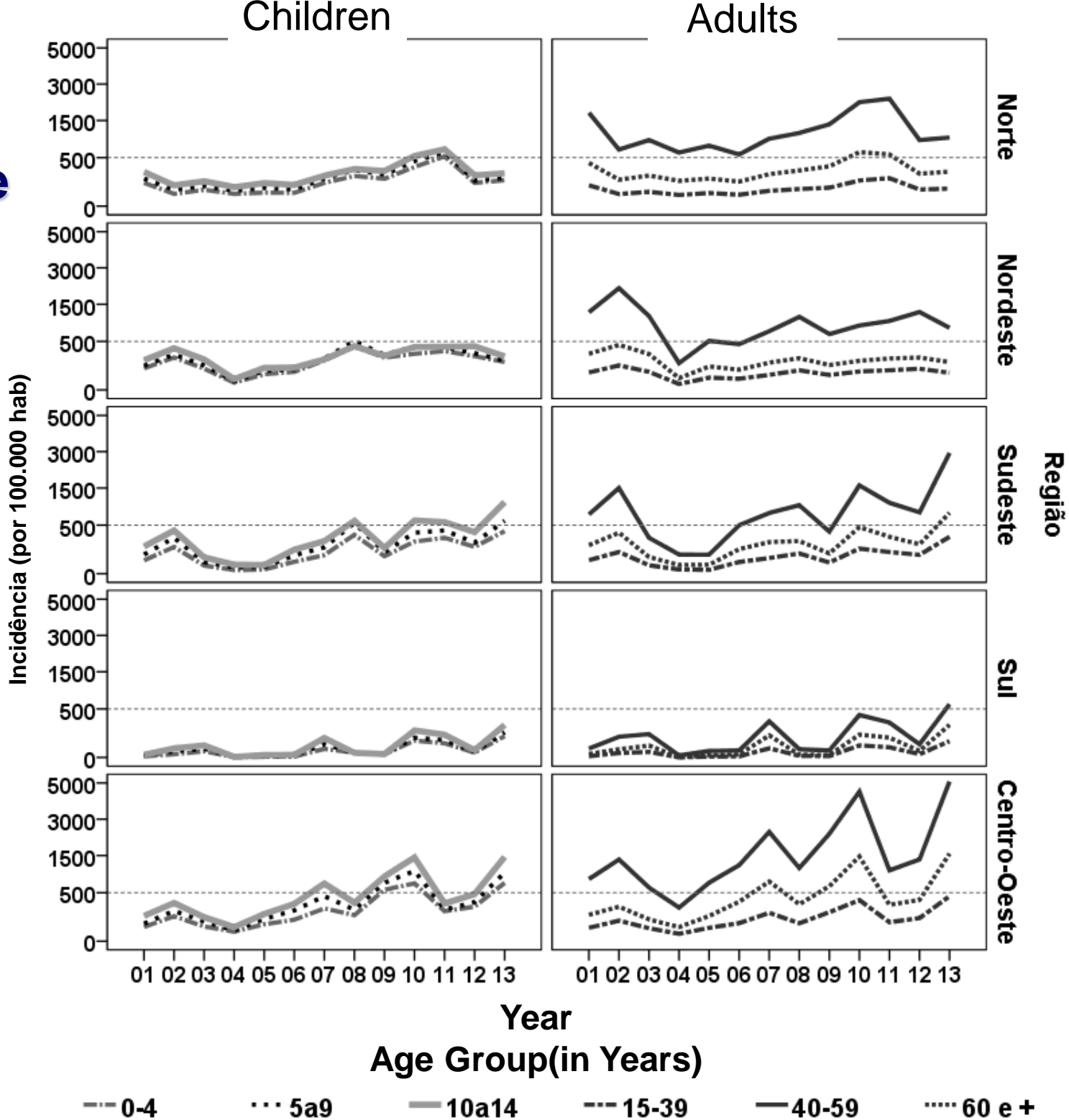
# Health System – Brazil

- **Unified Health System – SUS**
  - **Public system with universal coverage**
  - **Decentralized: municipality in charge of activities**
  - **Funding: direct transfer from MoH to states and municipalities**
  - **Social control: national, states and municipality boards of health**

# Dengue Probable Cases and Hospitalizations, Brazil, 1986-2014\*



# Dengue Incidence by age group and region, Brasil, 2001 – 2013\*



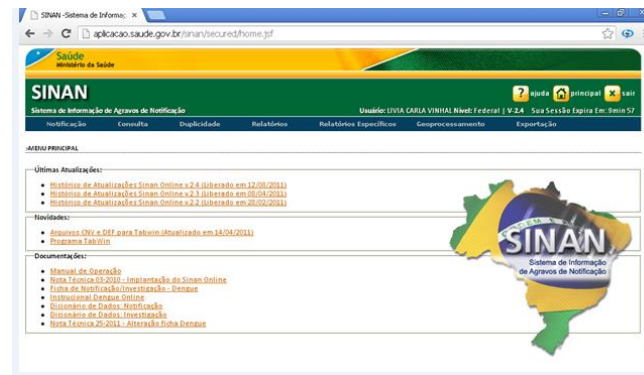
\*Incidence / 100,000 inhabitant



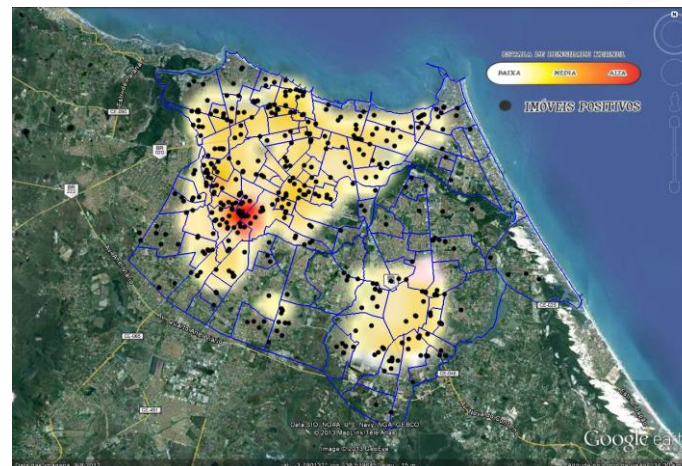
# IMS – Dengue: activities developed

- **Epidemiology**

- **National Surveillance Information System (SINAN): used by all municipalities**



- **Integrated data analysis: entomological and epidemiological**

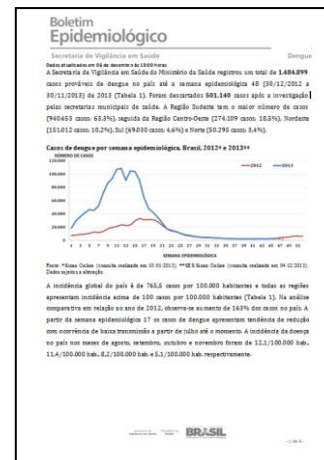


Fortaleza/CE, January, 2013

# IMS – Dengue: activities developed

- **Epidemiology**

- Dengue transmission monitored weekly by the MoH



- Dengue death investigation: one of the priority indicators

- Standardized guideline for investigation



# IMS – Dengue: activities developed

- 2014 - Adoption Dengue Revised Classification WHO Modified Information System for the country
- New notification/investigation forms
- Training of municipality and state levels

## Previous Surveillance Form – Final Classification

### 44 Classificação

- |                             |  |
|-----------------------------|--|
| 1 - Dengue Clássico         | 3 - Febre Hemorrágica do Dengue - FHD  |
| 2 - Dengue com Complicações | 4 - Síndrome do Choque da Dengue - SCD |
|                             | 5- Descartado                          |

### 45 Critério de Confirmação/Descarte

- |                            |                     |
|----------------------------|---------------------|
| 1 - Laboratório            | 3 - Em Investigação |
| 2 - Clínico-Epidemiológico |                     |

Os casos de dengue com complicações, FHD e SCD: preencher a página seguinte.

## Current Surveillance Form – Final Classification

### 44 Classificação

- |               |                                 |
|---------------|---------------------------------|
| 5- Descartado | 11- Dengue com sinais de alarme |
| 10- Dengue    | 12- Dengue Grave                |

### 45 Critério de Confirmação/Descarte

- |                            |                     |
|----------------------------|---------------------|
| 1 - Laboratório            | 3 - Em Investigação |
| 2 - Clínico-Epidemiológico |                     |

# IMS – Dengue: activities developed

- **Integrated vector management**

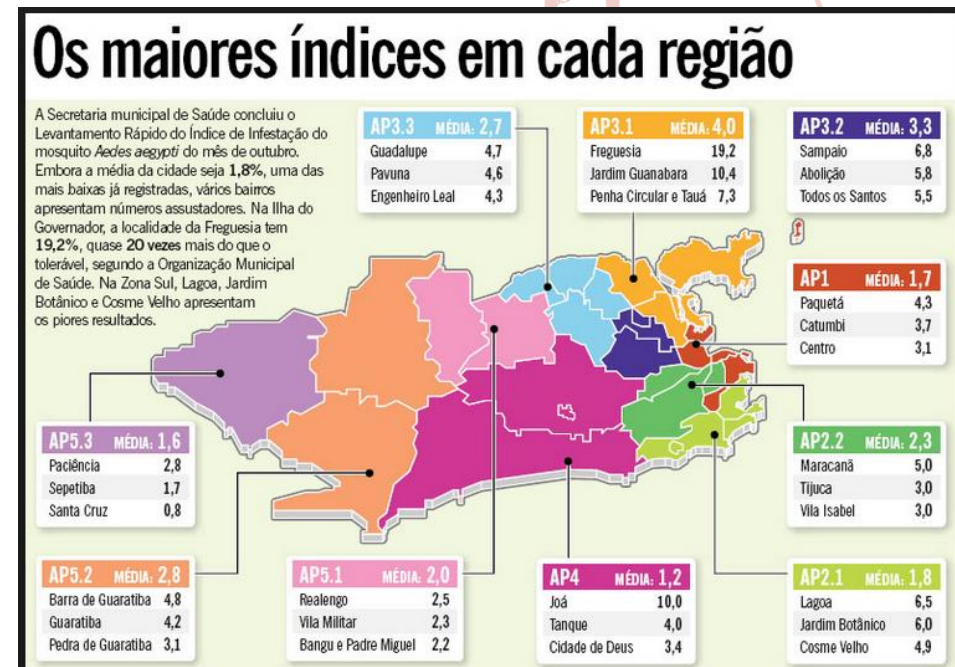
Rapid Index Survey of *Aedes aegypti* – LIRAA: Simplified method of *A. aegypti* House Index, identifies main breeding sites and critical areas

## Guideline



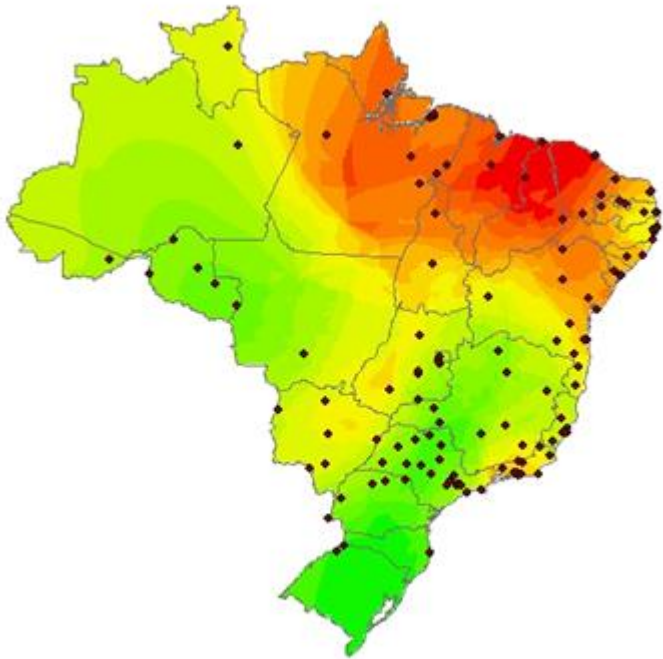
**Newspaper information**  
Dengue: Ilha do Governador tem a maior infestação de 'Aedes' do Rio

## Press Conference Liraa results 2014



# IMS – Dengue: activities developed

- **Integrated vector management**



Spatial temephos resistance, Brazil, 2000 - 2011



- **Monitoring system for insecticide resistance**
- **Management of insecticides in areas with resistance**
- **MoH: purchase and distribution to municipalities**

# IMS – Dengue: activities developed

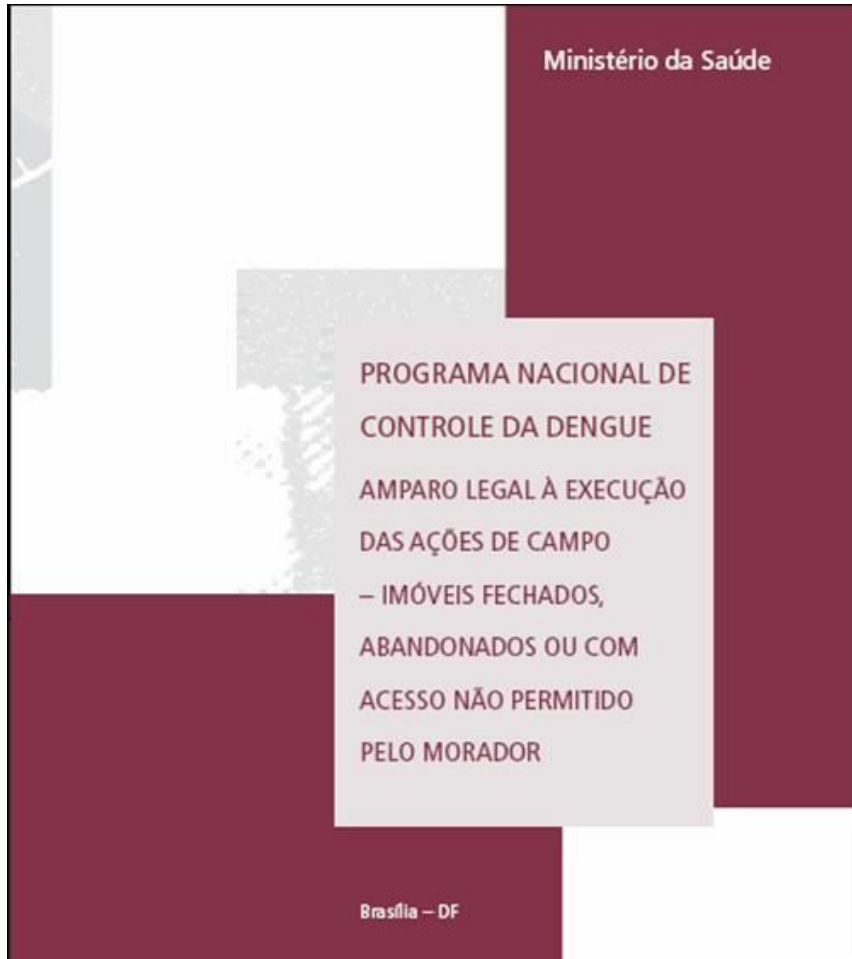
- **Integrated vector management**

- Partnership with Ministry of Environment and private sector to collect and adequate dispose tires



# IMS – Dengue: activities developed

- Integrated vector management



- Legal Support to Field Activities (Guideline)

Abandoned or closed Households

Refusals

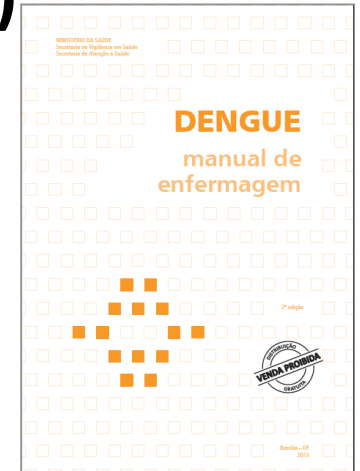
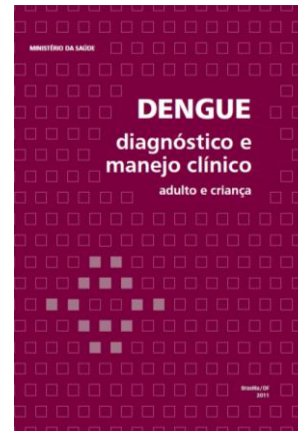
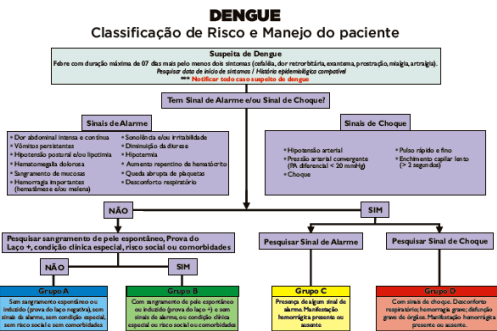
Distributed to Local Health

Secretariats

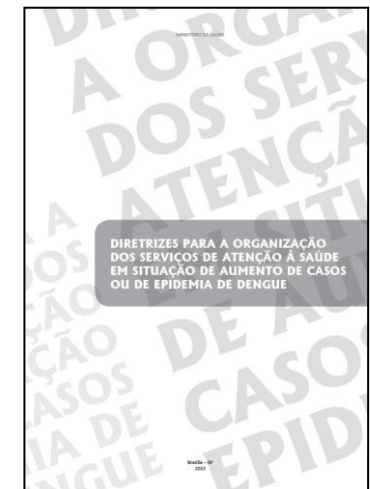
# IMS – Dengue: activities developed

- **Management of Patients**

- Update guidelines doctors and nurses: adults, children and patient with other conditions (pregnants , social risk, etc)



- New strategies to organize health services in epidemic situation: tents of hydration, containers, etc..



# IMS – Dengue: activities developed

- **Care for patients**
  - Specific strategies for medical staff training (doctors and nurses)

## Dengue in 15 minutes

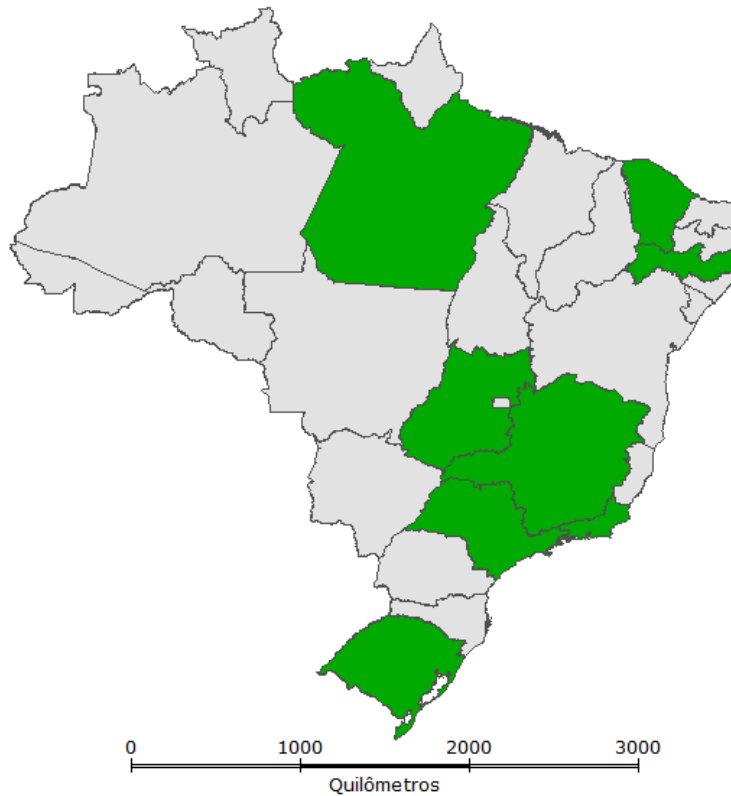
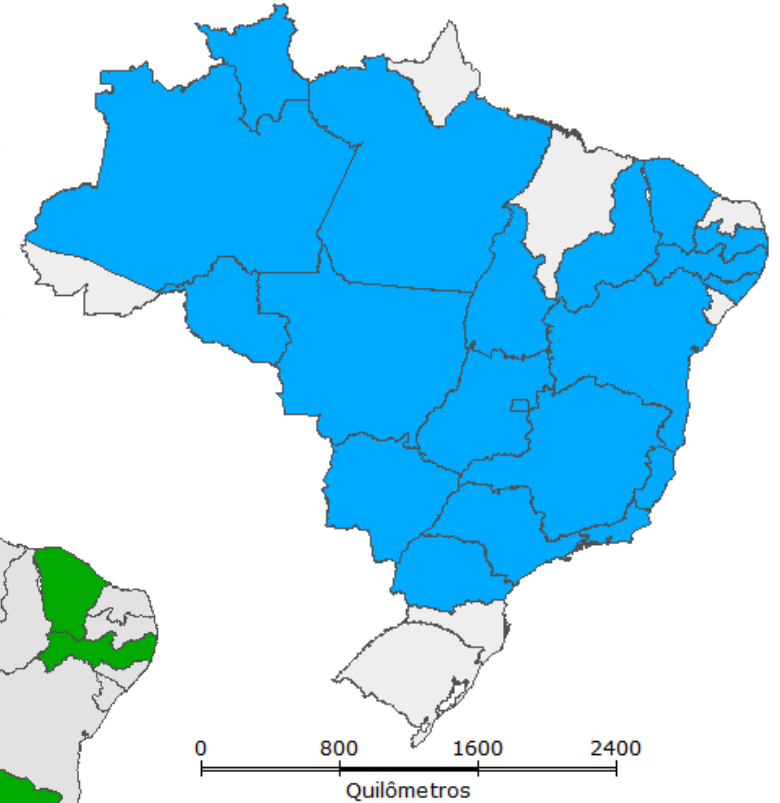
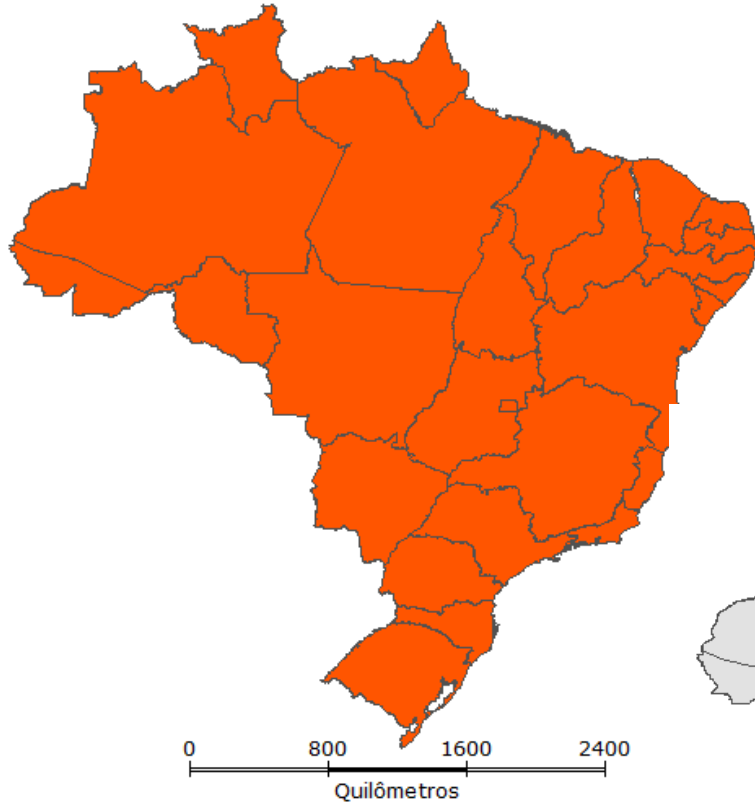





## On Line training

A screenshot of the UNA-SUS online training portal. The page title is 'Dengue' with the subtitle 'Atualização do manejo clínico da dengue'. The page includes a search bar, navigation links, and a list of professions eligible for the course. The list includes: Assistente Social; Biomédicos; Enfermeiros; Fisioterapeutas; Médicos Clínicos; Médicos em Medicina Diagnóstica E Terapêutica; Nutricionistas; Psicólogos e Psicanalistas e; Biólogos; Profissionais de Educação Física; Farmacêuticos; Fonoaudiólogos; Médicos em Especialidades Cirúrgicas; Médico Veterinário; Cirurgiões-Dentistas; and Terapeutas Ocupacionais.

# IMS – Dengue: activities developed

- **Laboratory surveillance**



-  Serology (IgM)
-  Virus Isolation
-  PCR



# IMS – Dengue: activities developed

- **Communication**

- **Massive information and mobilization campaign**



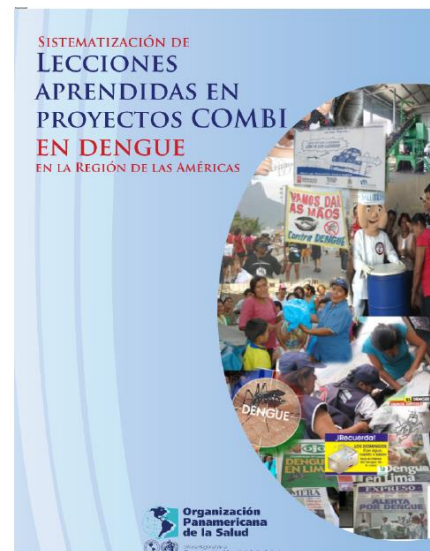
2013



2014



- **Pilot project COMBI in 4 cities**



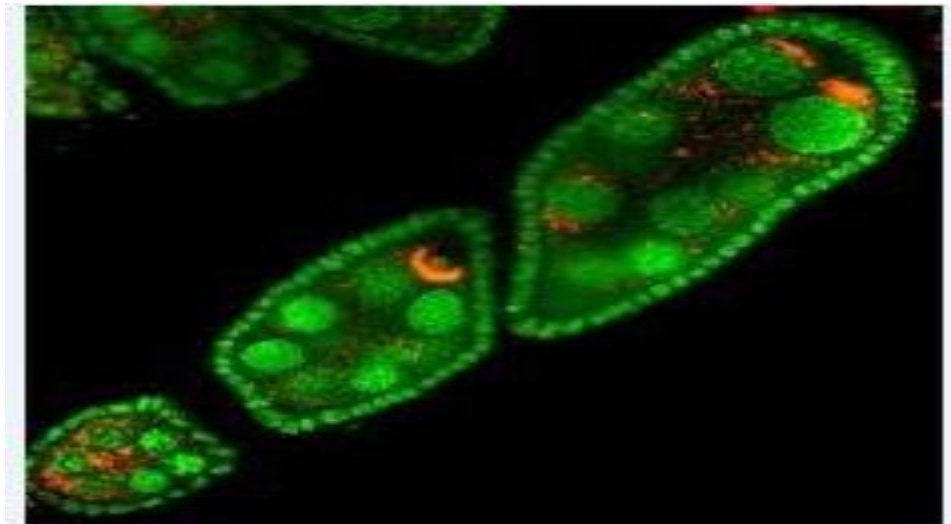
# IMS – Dengue: developed activities

- **Operacional Management of PNCD**
- **Call to research projects: Six studies supported in epidemiology, laboratory surveillance and care patients**
- **Call to training in Integrated Vector Management: Public Health Institutions**
- **7ª edition International Course Integrated Management Strategy for the Prevention and Control of Dengue**
- **Strong partnership with PAHO: Cooperation agreement nº 62**

# IMS – Dengue: new challenges

## Wolbachia study

- ✓ FNIH/ Monash University & SVS/MoH and Fiocruz
- ✓ Fase I : Laboratory, Entomological Studies, Community mobilization – October 2013
- ✓ Fase II: Field release in four communities in Rio de Janeiro - July 2014



# IMS – Dengue: new challenges

## Feasibility and cost-effectiveness of a novel dengue vector control

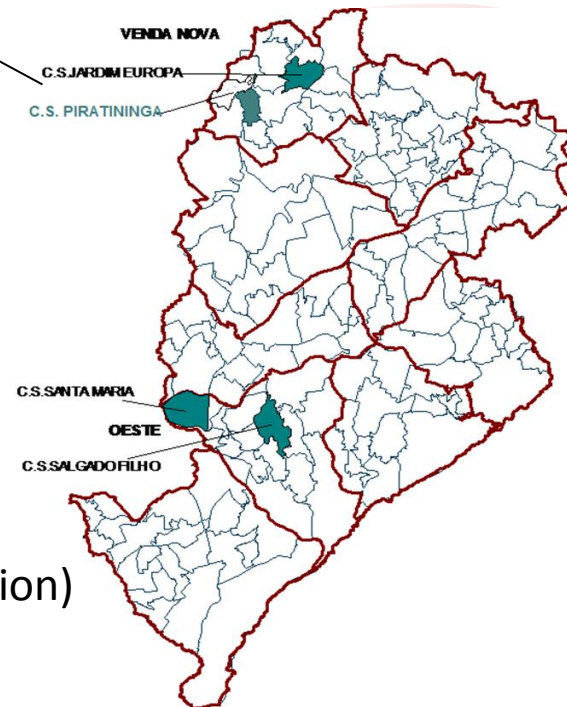
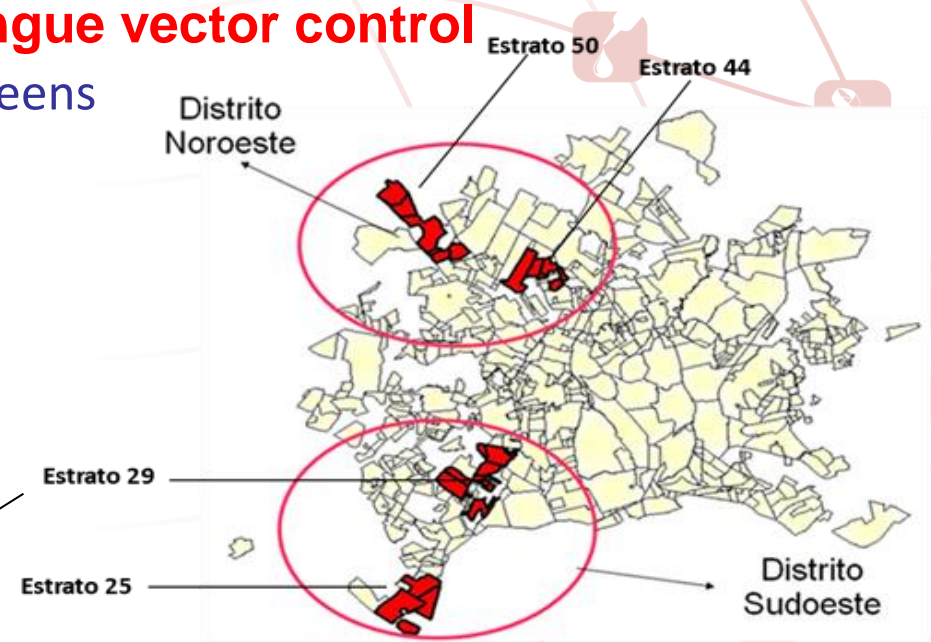
Interventions: insecticide treated window and door screens and target interventions.

Control: routine National Dengue Control Program



**Goiânia** – 29.486 households - (15.000 households – intervention)

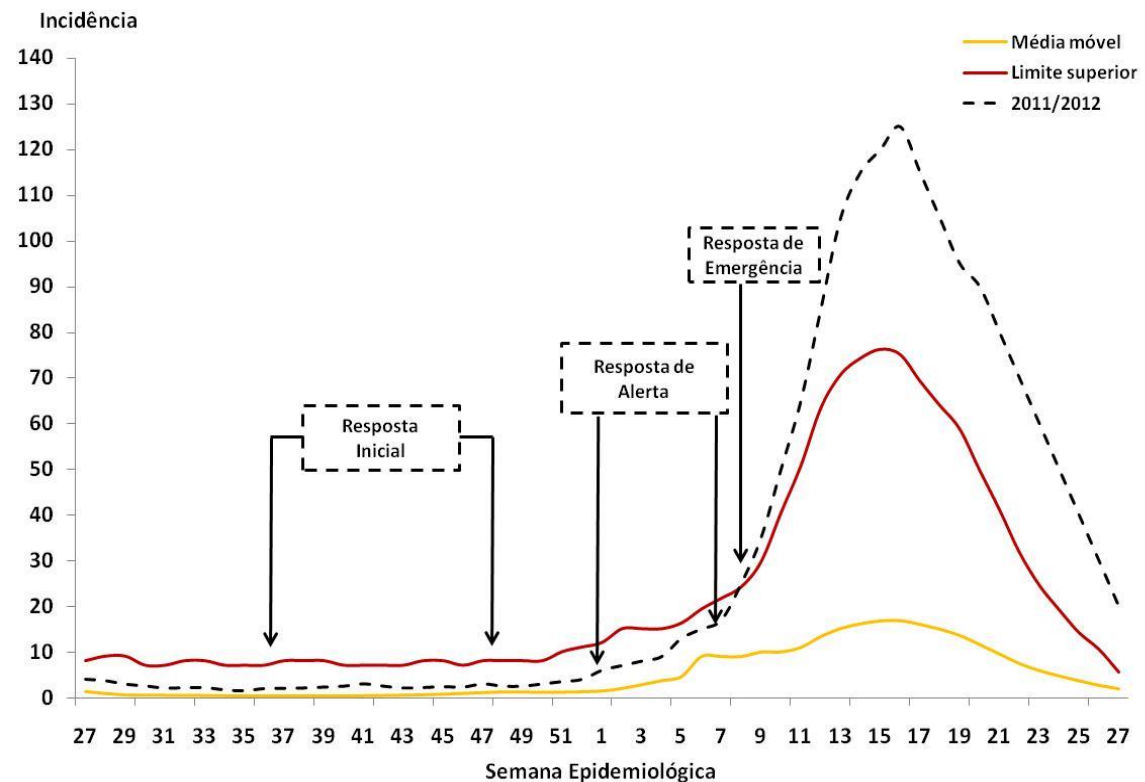
**Belo Horizonte** – 26.643 households - (13.417– intervention)



# IMS – Dengue: new challenges

## Multicentre Retrospective Study for Alarm Signals for Dengue Outbreak: Brazil, Mexico, Dominican Rep, Vietnam and Malaysia

- Supported by MoH and TDR/WHO
- 70 cities
- Results in June 2014



# IMS – Dengue: new challenges

- **Future vaccine implementation**
  - **Seroprevalence study: 63 cities in all regions: starting in 2º semester 2014 (children and adults)**
  - **Cellular immunity: starting in 1º semester 2014**
  - **Mathematical model: estimated for 2015**
  - **Partnership between MoH and São Paulo University**

# IMS – Dengue: new challenges

- Future vaccine implementation

**Proyecto Regional: Vigilancia del dengue para definir estrategias de vacunación y monitorear la introducción de la vacuna.  
Plan de trabajo 2013**

**Organización Panamericana de la Salud**  
Oficina Regional de la Organización Mundial de la Salud

**SABIN**  
VACCINE INSTITUTE

Modelo de Vigilancia Epidemiológica del Dengue  
Para Definir Estrategias de Vacunación en América Latina y el Caribe

Primera Reunión de trabajo del Grupo Técnico Internacional  
19-21 de febrero 2013

**Organización Panamericana de la Salud**  
Oficina Regional de la Organización Mundial de la Salud

**110**  
1902 - 2012

# Conclusion

- The decentralized health system expanded the activities of surveillance and vector control in Brazil.
- Mechanisms of supervision and evaluation must be improved
  - Routines to evaluate impact of response
- New tools and strategies need scaling up approach to demonstrate the feasibility and cost effectiveness.



**Thank you!**

**Obrigado!**

**Gracias!**

