



# National Center for Parasitology, Entomology and Malaria Control

## National Dengue Control Programme

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Deputy-Director of CNM

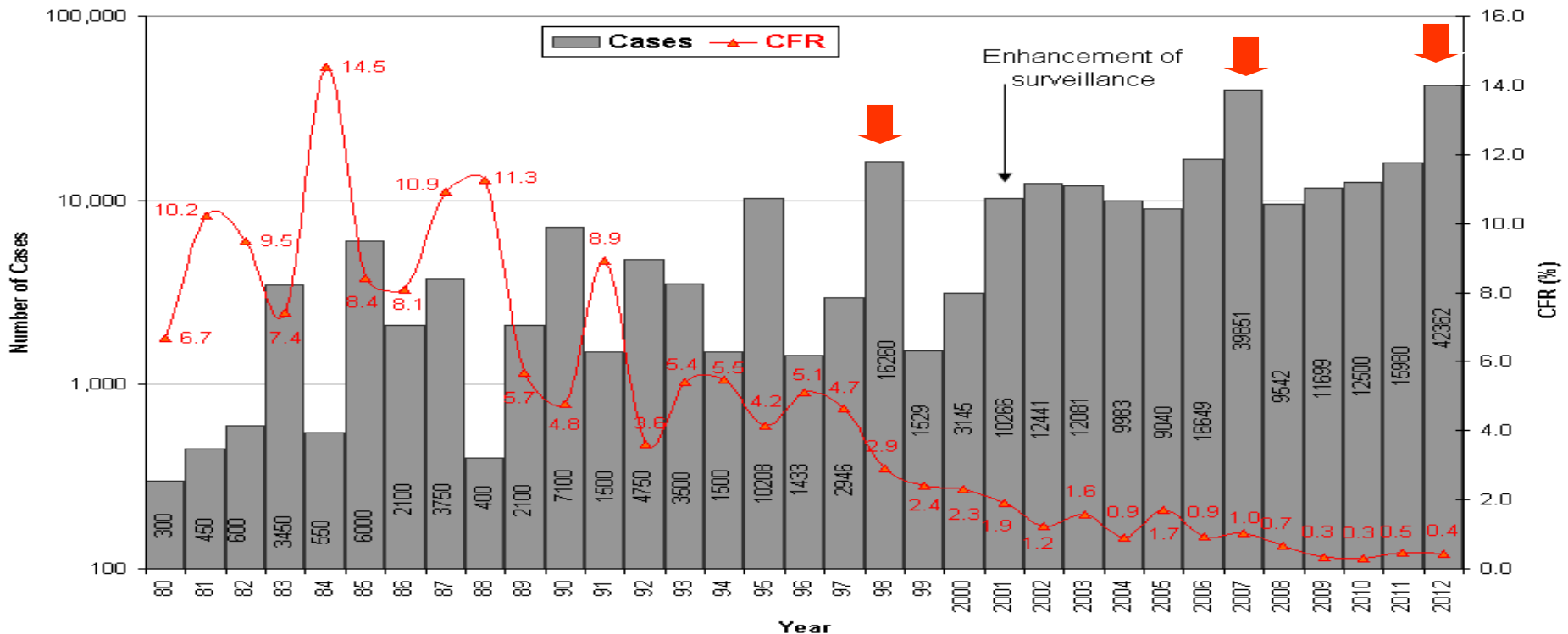
# Introduction

- Dengue is an infectious tropical disease caused by the dengue virus .
- Dengue is transmitted by Aedes mosquito, principally A. aegypti (80%; *in domestic containers*) and Albopictus (~20%; *in discard containers*).
- Nowadays, Dengue is a public health concerning problem (endemic in >100 countries) including **Cambodia** (high burden ~115USD/case).

# Dengue Situation in Cambodia, 1980-2012

- Total reported cases **275,965** (IR: 0.7–3.0/1000 during '01–'12) by public health care facilities, but only from pediatric wards.
- Secular trend showed cyclical pattern of epidemics at intervals of **3-5 years** but less distinguishable since enhancement of the surveillance system in 2001.
- **Two major epidemics** occurred with 16,260 and 39,851 and 42,362 reported cases in **1998** and **2007** and 2012 respectively.

Yearly Reported Cases and Case Fatality Rate (CFR) of Dengue in Cambodia, 1980 - 2012



# Goals, 2013

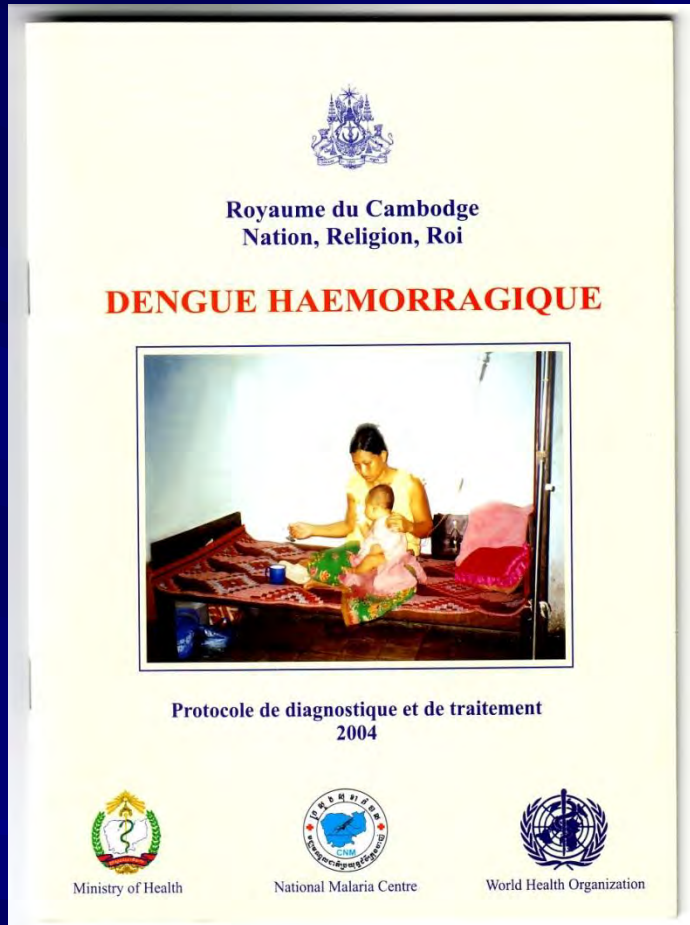
- To reduce dengue morbidity rate more than 20% from the five previous years mean+2SD by the end of 2013 (IR≤253.4).
- To reduce DHF case fatality rate less than 0.7% by the end of 2013.



# Strategic Plan and Activities, 2013

- Improve and strengthen the quality of the existing surveillance system;
- Strengthen emergency preparedness and outbreak containment;
- Promote awareness of people (community/school-based health education, TV broadcasting);
- Implement mass larviciding in high risk provinces as preventive control measure ( 2 rounds/ year);
- Improve health staff capacity on clinical diagnosis and management;
- immediate carry-out a rapid responding activities (vector management, regularly data analysis, mobile HE, ...etc.);
- Accelerate operational research.

# Case Definitions and Guidelines



Clinical Diagnosis & Management Protocol:  
 → DF and DHF (DHF & DSS)



Dengue Surveillance's SOP:  
 → Suspected, Probable & Confirmed

# Virologic Surveillance

Sentinel Hospitals are collected and sent specimens to Pasteur Institute for :

- Serology
- Virology

PCVIR/DHF 1982/93

N° d'entrée à l'hôpital: .....  
 លេខចូលសំរាកនៅមន្ទីរពេទ្យ : .....

**FIEVRE HEMORRAGIQUE HOSPITALISEE**  
 អ្នកជំងឺត្រូវបានដាក់នៅមន្ទីរពេទ្យ

Rédacteur de la Fiche : ..... Hôpital Service : .....  
 អ្នករាយការណ៍ : ..... មន្ទីរពេទ្យ : .....

Nom Prénom du patient : ..... N° d'entrée dans le service: .....  
 ឈ្មោះ និង ត្រកូលរបស់អ្នកជំងឺ លេខចូលមន្ទីរពេទ្យ

Age : / / ans / / / mois. Sexe : M  F   
 អាយុ ឆ្នាំ ខែ ភេទ ប្រុស ស្រី

Adresse complète: village, commune, district, province .....

អាសយដ្ឋាន : ភូមិ ឃុំ ស្រុក ខេត្ត

Vaccination contre l'encéphalite japonaise ne sait pas  oui  non   
 ការចាក់ថ្នាំប្រយុទ្ធនឹងជំងឺឈាមខ្លាញ់ មិនដឹង ប្រយោជន៍ មិនប្រយោជន៍

Vaccination contre la fièvre jaune ne sait pas  oui  non   
 ការចាក់ថ្នាំប្រយុទ្ធនឹងជំងឺឈាមស្លេក មិនដឹង ប្រយោជន៍ មិនប្រយោជន៍

Date début de maladie : / / / / / / / / Date d'hospitalisation : / / / / / / / /  
 ថ្ងៃចាប់ផ្តើមជំងឺ ថ្ងៃចូលសំរាកមន្ទីរពេទ្យ

Signes cliniques  
 រោគសញ្ញា

1. Syndrome fébrile juste avant ou au moment de l'hospitalisation oui  non   
 រោគសញ្ញាជំងឺក្តៅខ្លួន តែម្ដងមុន ឬ ពេលចូលសំរាកមន្ទីរពេទ្យ ប្រយោជន៍ មិនប្រយោជន៍

2. Signe hémorragique d'origine non traumatique oui  non   
 រោគសញ្ញាឈាមចេញមកពីទីកន្លែងមិនមែនជំងឺរបួស ប្រយោជន៍ មិនប្រយោជន៍

Préciser le type d'hémorragie: .....  
 បញ្ជាក់ពីប្រភេទឈាមចេញមក

Prélèvements : date / / / / / / / / à / / / / h / / / / min  
 សំរាប់ពិនិត្យ ថ្ងៃខែឆ្នាំ ម៉ោង លើ

Température axillaire  / / / / / °C  
 សីតុណ្ហភាពក្រវែក

Température rectale   
 សីតុណ្ហភាពតាមមុខ

- d'admission: Sang sur tube sec (5 ml)   
 លេខចូលសំរាកមន្ទីរពេទ្យ ឈាមលើកញ្ចប់ស្ងួត ( 5ml )  
 ( dès l'entrée à l'hôpital )  
 ( ពេលចូលមន្ទីរពេទ្យ )

- de sortie: Sang sur tube sec (5 ml)   
 លេខចេញពីមន្ទីរពេទ្យ ឈាមលើកញ្ចប់ស្ងួត ( 5ml )

( si vous pensez que le malade peut s'évacuer avant le prélèvement de sortie, faites un prélèvement 48 heures après l'entrée à l'hôpital )  
 ( បើអ្នកគិតថា អ្នកជំងឺអាចចេញមុនមុនពេលចេញពីមន្ទីរពេទ្យ អ្នកគួរធ្វើសំរាប់ពិនិត្យឈាមលើកញ្ចប់ស្ងួត ៤៨ ម៉ោង មុនពេលចេញពីមន្ទីរពេទ្យ )

Institut Pasteur de Cambodge

# The Line-Listing Form

## WEEKLY LINE-LISTING REPORTING FORM FOR HEALTH CENTRES AND REFERRAL HOSPITALS

Kingdom of Cambodia  
 Ministry of Health  
 Health Centre: .....  
 Hospital : .....

### WEEKLY REPORT

From Wednesday ...../...../..... to Tuesday ...../...../..... (Week of report .....

Cholera,  Dengue,  Acute Flaccid Paralysis,  Measles

N°	Name	Age	Sex	Current address				Temporary stay	Admission date	Death date	Observation
				Village	Commune	District.	Pro/Vil.				
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											

- ◆ Remark : This report must be weekly send to the Communicable Disease Control Department of the Ministry of Health even if no case are observed Report start from next tuesday.
- ◆ Communicable Disease Control Department  
 (Fax/phone : 023 88 23 17, Mobile phone: 855 12 85 68 48, E-mail : [cdcmoh@comnet.com.kh](mailto:cdcmoh@comnet.com.kh))

Date: .....

Signature of rep



Signature of Health Centre / Hospital Director: .....



# 1<sup>st</sup> and 2<sup>nd</sup> Round Mass larviciding application, 2013

## ■ Mass larviciding application as 1<sup>st</sup> Round, Apr- May:

- Abate remained from last year: 14,210 Kgs,
- Supplied as 1<sup>st</sup> R form NDCP : 125,250 Kgs,
- Bti : 4,800 Kgs
- Additional request for 1<sup>st</sup> R : 15,200 Kgs

===→ The process of application still in progress,

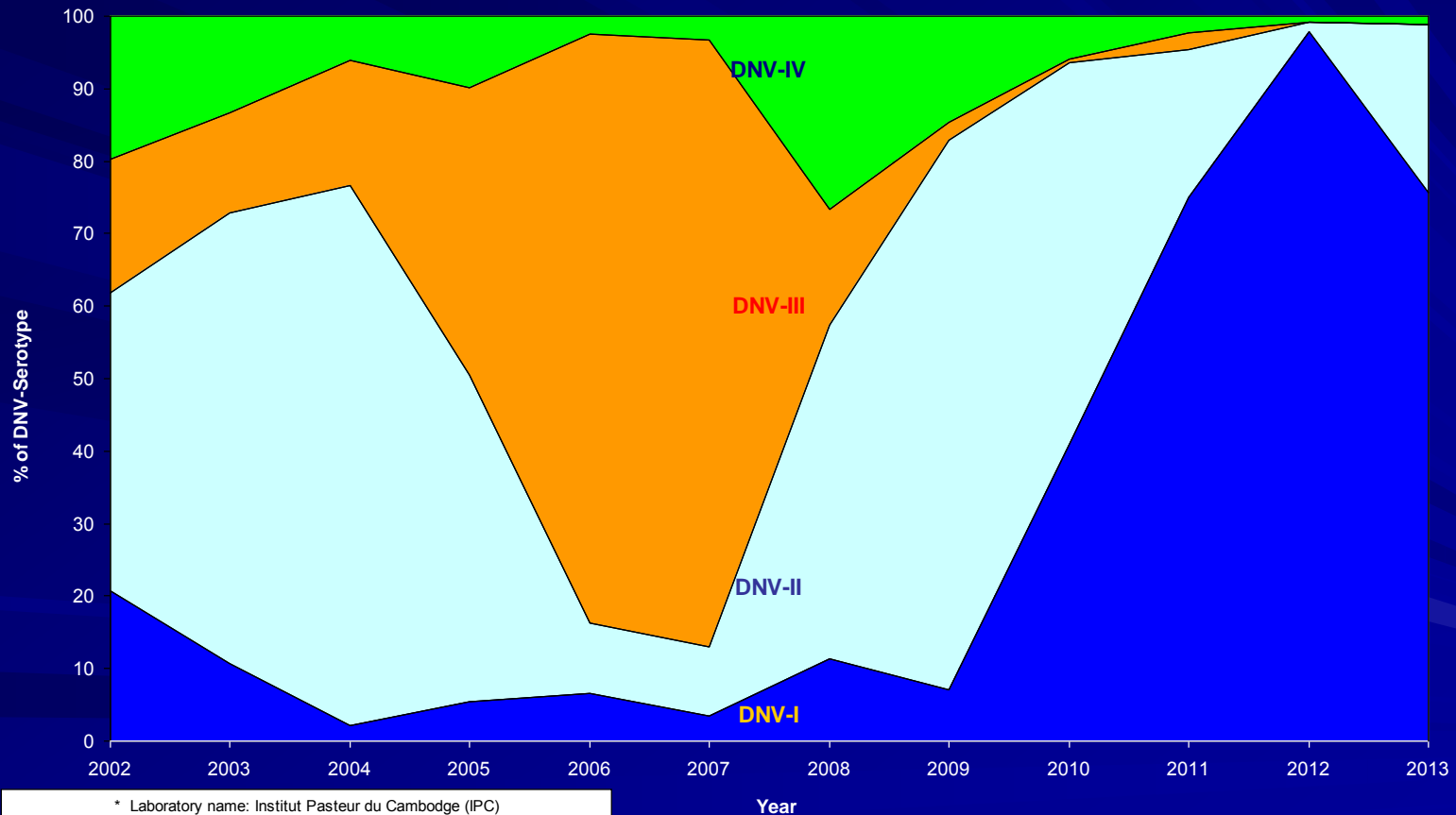
## ■ Mass larviciding application as 2<sup>nd</sup> Round, Jul- Aug:

- Plan to send Abate : 137,500 Kgs.

Total, 2013:

- Abate: 292,160 Kgs,
- Bti : 4,800 Kgs.

# Proportion of dengue serotypes by years from sentinel sites, 2002-2013



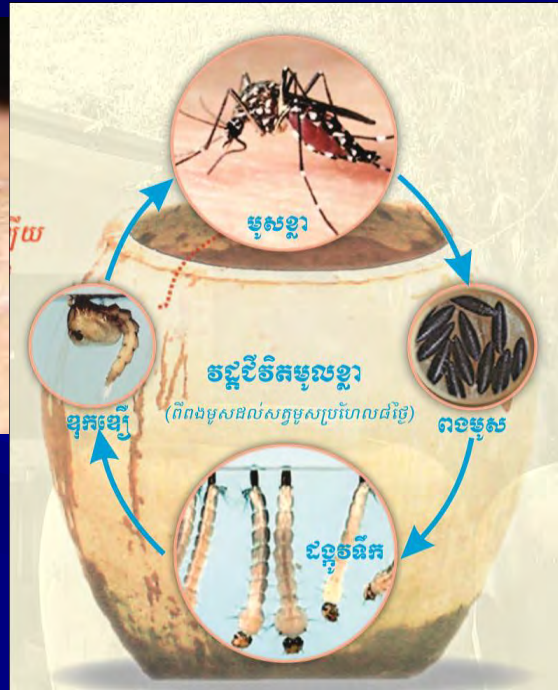
Dengue,

What are the contribution factors  
?

# Dengue contribution factors, Cambodia :

## *Why so many manmade containers ?*

Substandard housing and inadequate water supply in Cambodia, only 33% in urban and 0.7% in rural; Ref. WHO 2005.









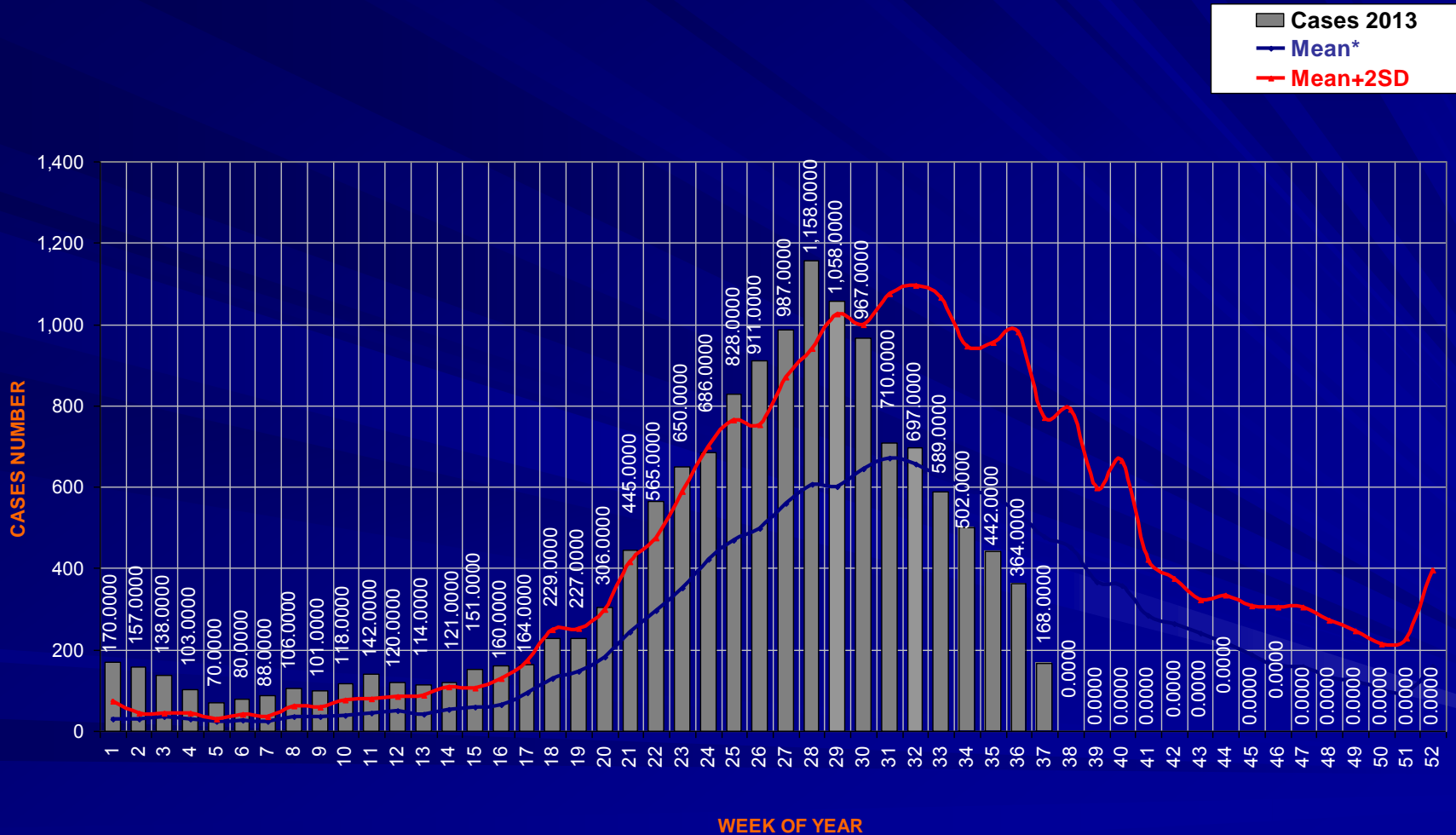
# Population mobility and increasing of air travel and transportations ( Tourists)



- *Aedes aegyptis* and as well as their eggs can travelling from one localities to another localities very fast,
- Sick people also can transfer dengue virus in few hours or one day to many places through these transportation.



# RELATIONSHIP OF DENGUE CASES BY WEEKS IN CAMBODIA 2013 WITH Mean AND Mean+2SD DURING 2006-2012 (\*Exclude 2007 and 2012)



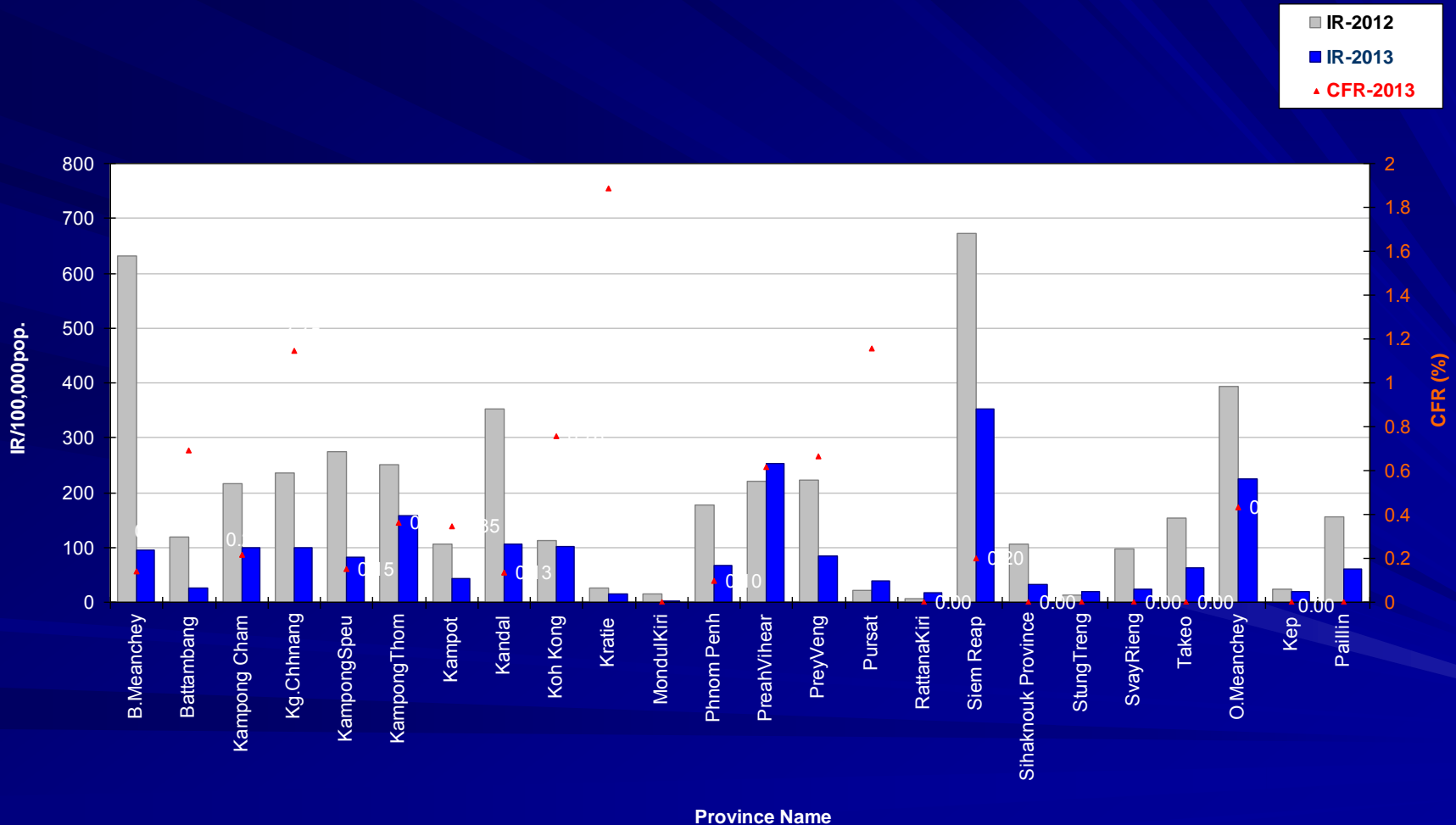
# CUMULATIVE CASES OF DENGUE-REPORTED BY MONTH COMPARE WITH BASELINE OF 2006-2012 (\* Excluded 2007 and 2012), CAMBODIA, 2013



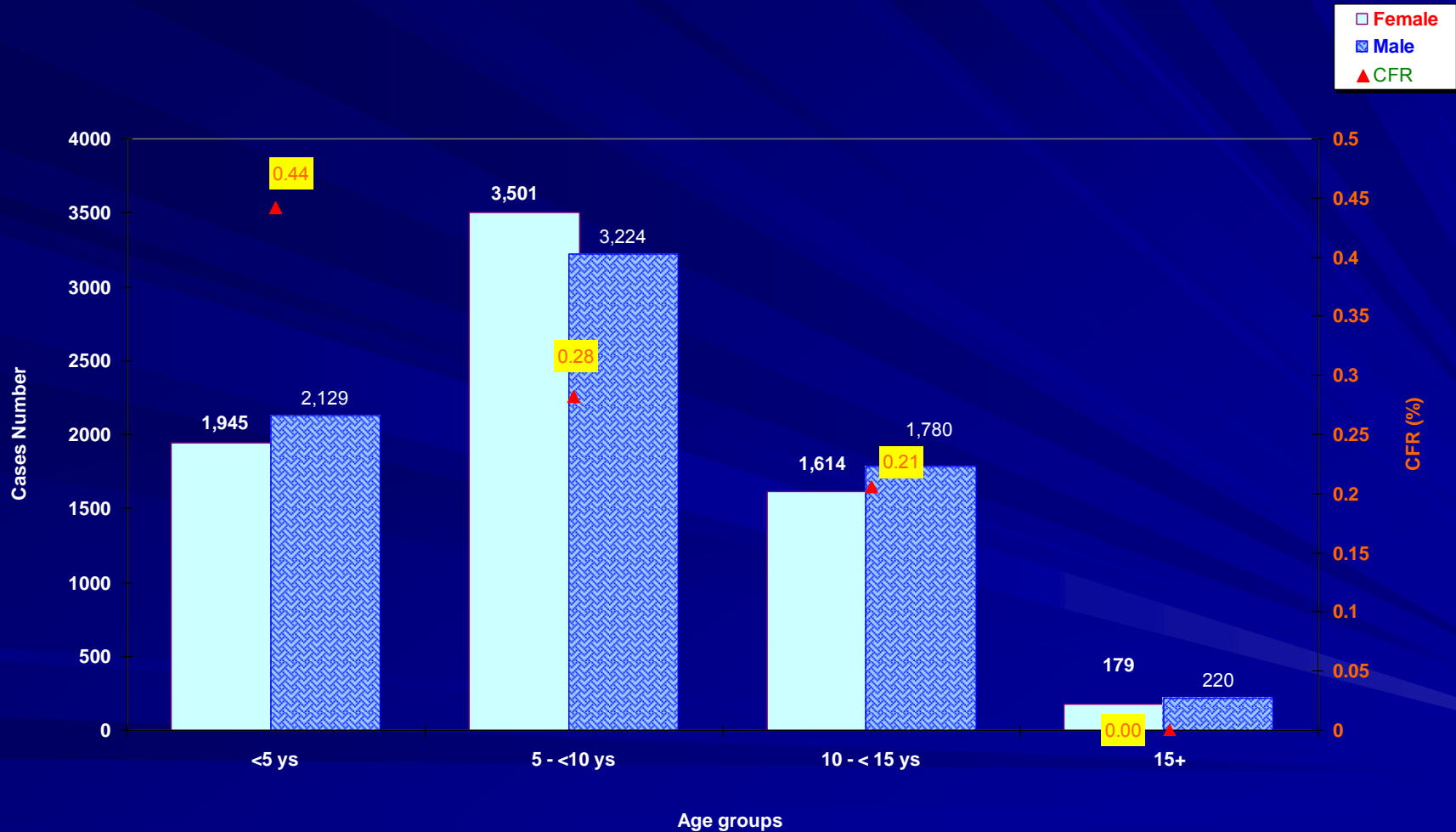


# COMPARISON OF DENGUE INCIDENCE RATE (IR) BY PROVINCE IN CAMBODAI

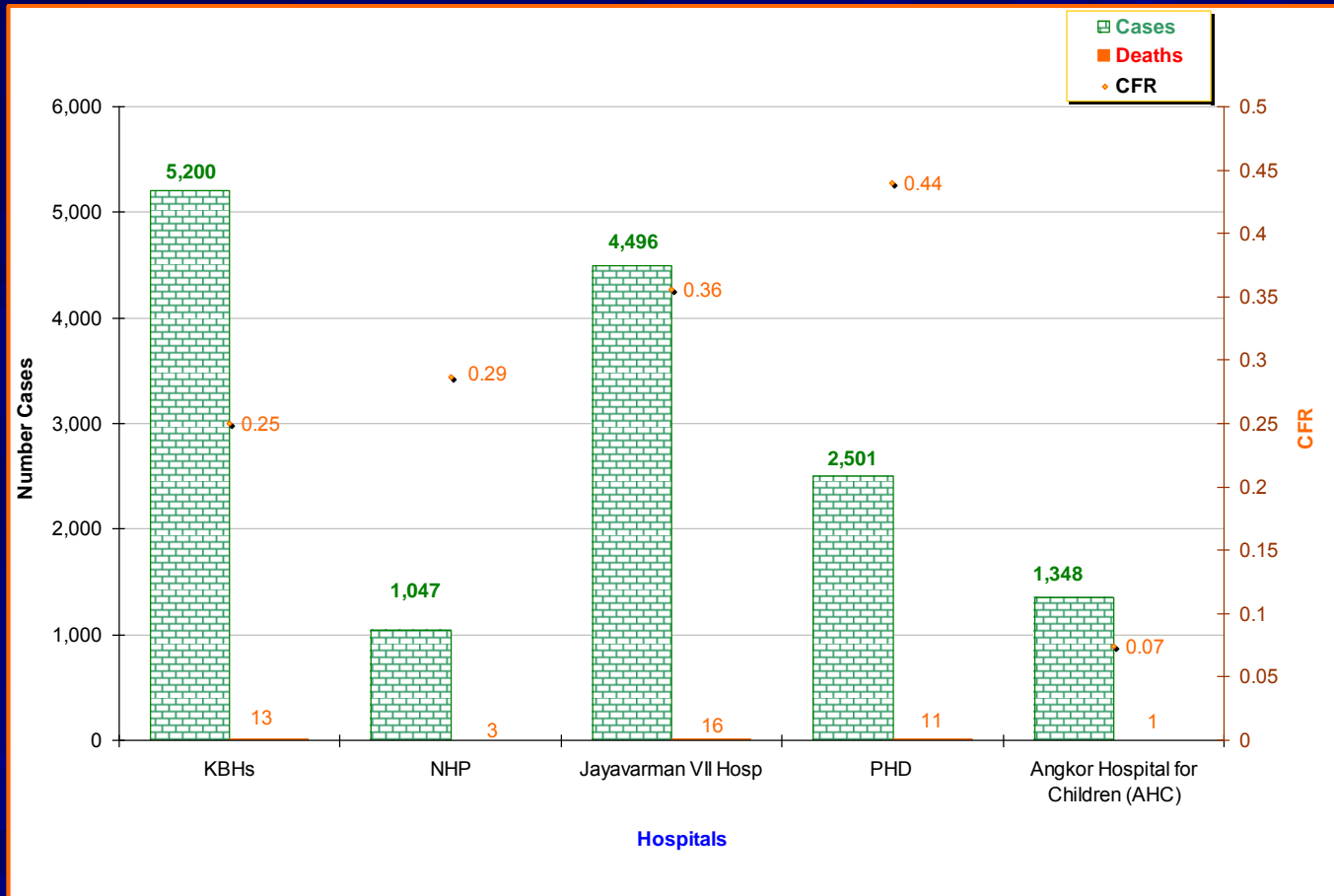
2012 (n=34,995/147; CFR:0.4%) VS 2013 (n=14,592/44 CFR: 0.3%) DURING 37 WEEKS



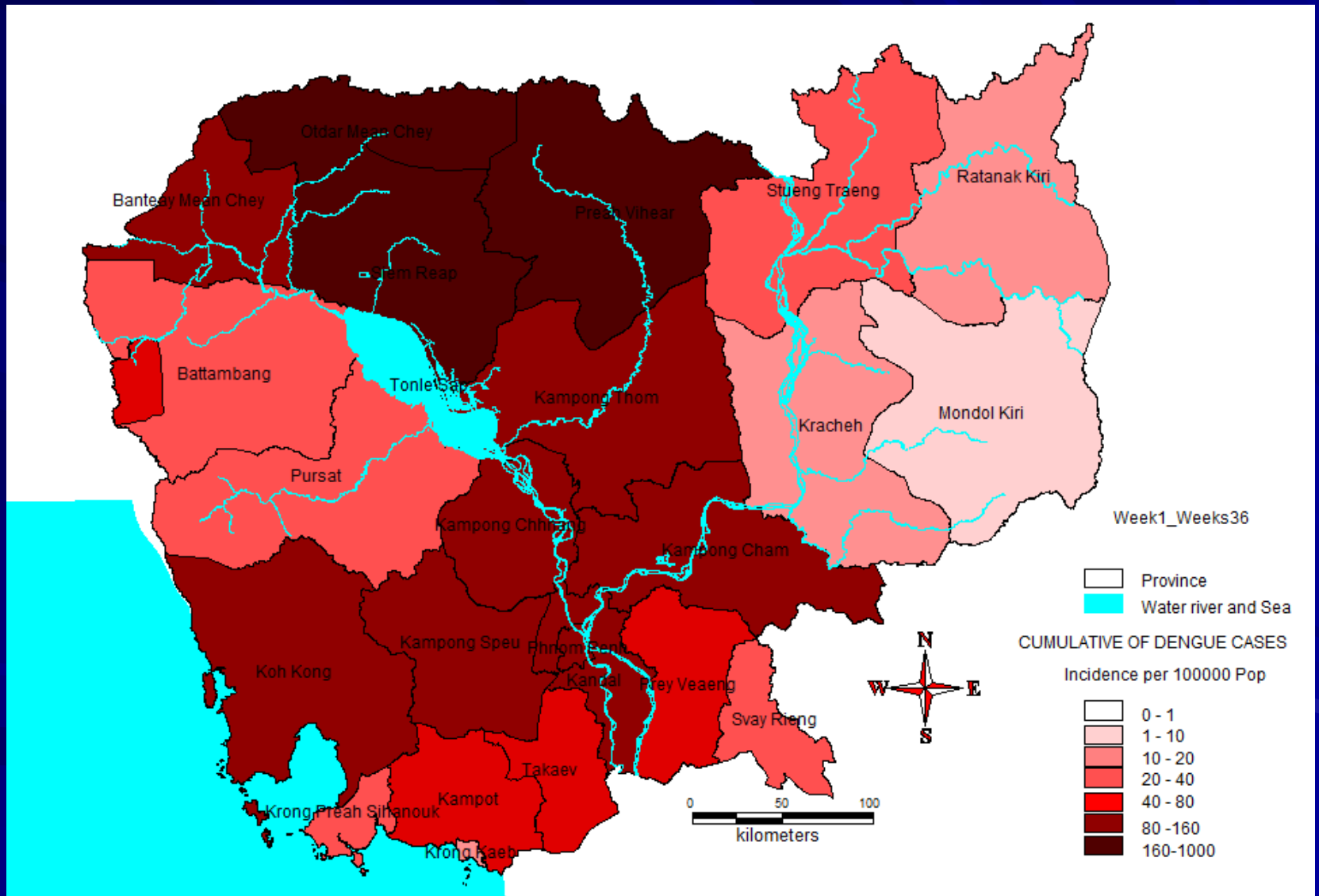
# Distribution of Dengue Reported Cases & Cases Fatality Rate by Age and Gender, Cambodia-2013 (14,592/44)



# THE NATIONAL DENGUE REPORTING SOURCES, CAMBODIA 2013 (14,592/44)

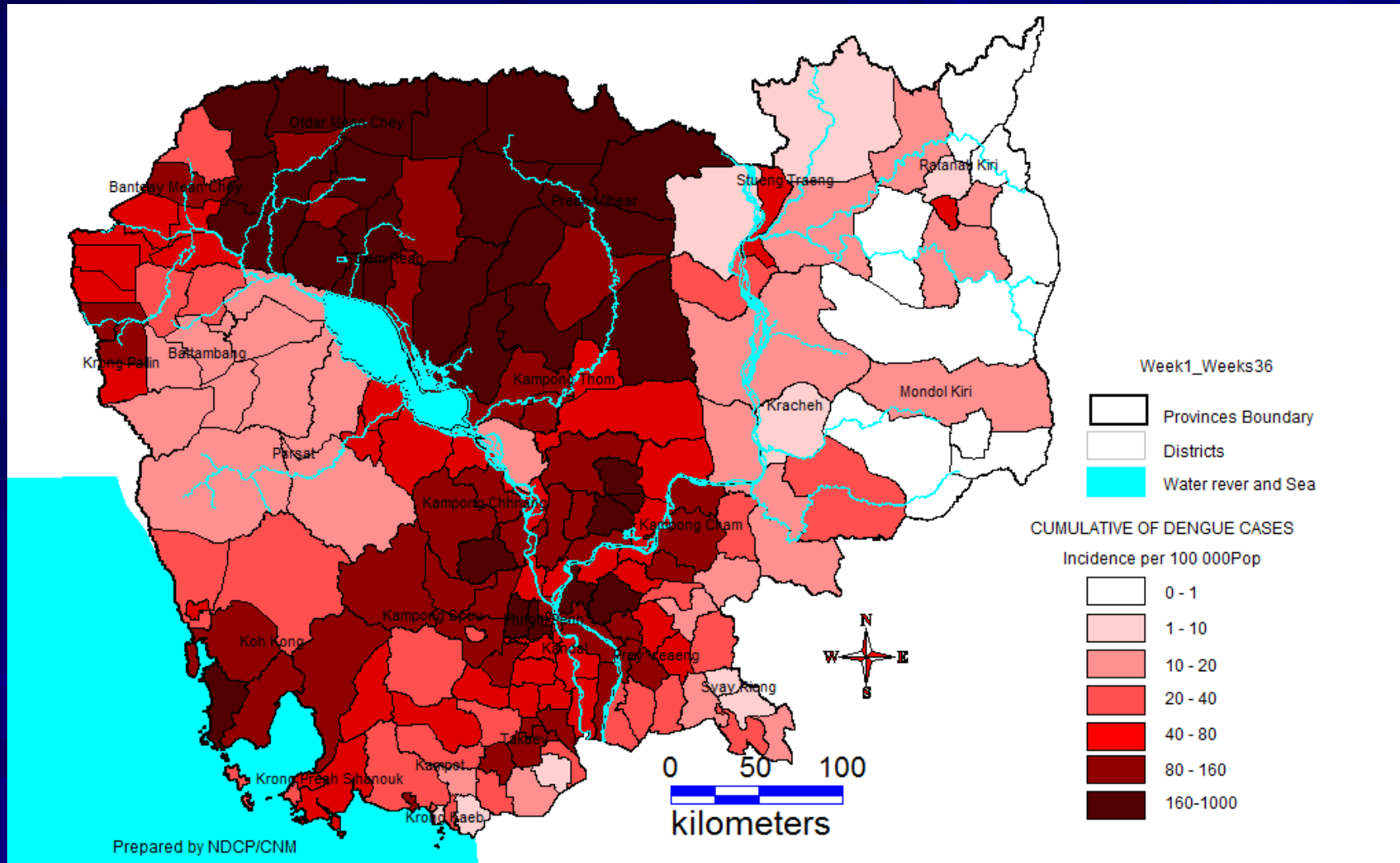


# Cumulative Incidence of Dengue cases by Province in Cambodia 2013

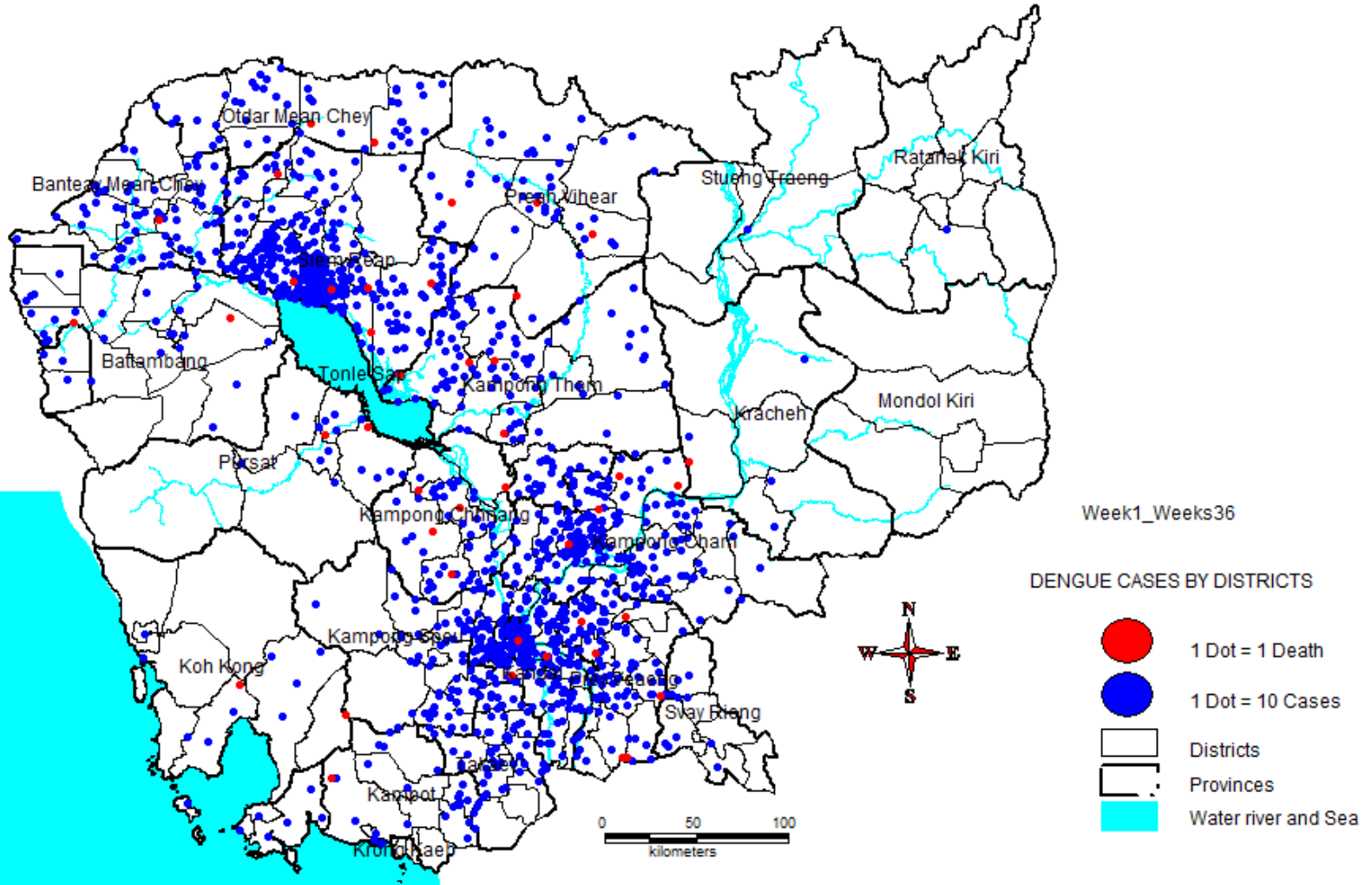




# Cumulative Incidence of Dengue cases by District in Cambodia 2013



# Cumulative Incidence of Dengue cases and Death by District in Cambodia 2013



# Control activities, 2013

- Surveillance:
- TV Broadcasting: Dengue spots( Bayon, TVK, Hang Meas, and Apsara),
- 2 Radio stations (102MHz, 102.5MHz) and
- 3 Newspapers ( Koh Santepheap, Raksmei Kampuchea and Kampuchea Thmei)
- ASEAN Dengue Campaign Day
- Rapid Response in the outbreak localities: Mobile HE at the outbreak localities, Source reduction,
- Preparedness for Mass larviciding
- School-based training: Prey Vaeng; Svay Rieng
- Clinical Management training to Pediatricians



# ASEAN DENGUE DAY in CAMBODIA, 26<sup>th</sup> April, 2013



អរម្ភសាទរ

ទិវាអាស៊ានប្រយុទ្ធនឹងជំងឺគ្រុនឈាម នៅកម្ពុជា  
កំចាត់ជំងឺគ្រុនឈាម និងមូសខ្លា ដើម្បីការពារ ជីវិតអ្នក និងគ្រួសារអ្នក  
វគ្គព្រះធារិយ៍ប្រយុទ្ធនឹងជំងឺគ្រុនឈាម សង្កាត់ទឹកថ្លា ខណ្ឌសែនសុខ  
ថ្ងៃទី ២៦ ខែ មេសា ឆ្នាំ ២០១៣

SF... dengue  
... ae M...





ក្រុមភ្លេងស្រីសិស្សនិស្សិតមហាវិទ្យាល័យស្រីស្រី  
វិទ្យាល័យ បាវិត្ត









# Summary of Dengue Situation, Cambodia up to 2012

- Dengue situation showed increasing trend, may be relating with:
  - a high accuracy of the surveillance system ?
  - an improvement of public health facility ?
  - a community KAP positive effect ?
  - other contribution factors ? (climate ?, social ? biological ...?)
- Dengue in 2013:
  - Epidemic situation since the 1<sup>st</sup> week of January
  - Peak backward in 4weeks but rigorously the decreasing trend
  - reaching the national indicator for only CFR (<0.7%) neither IR (>253.4)
  - Dengue serotype (DENV) 1 was predominant within 4 years interval from DENV-3 in 2007.



# Discussion & Conclusion

- Dengue in Cambodia shows steeply increasing trend, why?.
- Nevertheless, effective dengue prevention and control on time, why?.
- Currently, no Dengue vaccine available.
- Very high breteau index during the rapid response activities at the dengue outbreak locations of outbreak provinces and high dengue cases reported at the end of the year, over the lower limit of 5 previous years, year 2012 should pay attention of dengue outbreak during next dry season of year 2013.
- The dramatic global emergence of DF/DHF are complex and not well understood, thus **Early Warning System** should be focused for reducing burden of Dengue (*e.g. epidemiological surveillance system, water monitoring, and climate monitoring system, but how to integrate ?*).

# Acknowledgements

## Donors and technical advisors:

- Ministry of Health, Cambodia;
- USAID; WHO;
- HSSP2-Pooled Fund;
- ADB-GMS/CDC2;
- CCCA Trust fund;
- IPC; NAMRU2; REDI-Sg
- KBH- NPH and PSH;

## Collaborations:

- Provincial health departments- Municipality health department, Phnom-Penh;
- NGOs and OIs .....
- School health department, MOE;
- Local authorities

# CHIK Situation, 2013

Date/Month	0- 15Y/o		15- >50Y/o		Total	
	M	F	M	F	M	F
■ Prah Vihea:						
- 26 Dec-25Jan:	1	6	23	32	24	38
- 26Jan-25Feb :	0	0	10	8	10	8
- 26Feb- 25Mar:	1	1	9	12	10	13
- 26Mar-25Apr:	0	0	6	17	6	17
- 26Apr-25May:	6	3	24	31	30	34
- 26May-25Jun:	8	2	30	32	38	34

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Total: 263 ( M:118, F:145)