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Zika virus infection in Thailand : Detect Prevent Respond and Future Research

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Preventive Medicine (Epidemiology),
Preventive Medicine (Travel Med)

Global Zika Virus in the past 1947 - 2007

Figure 1

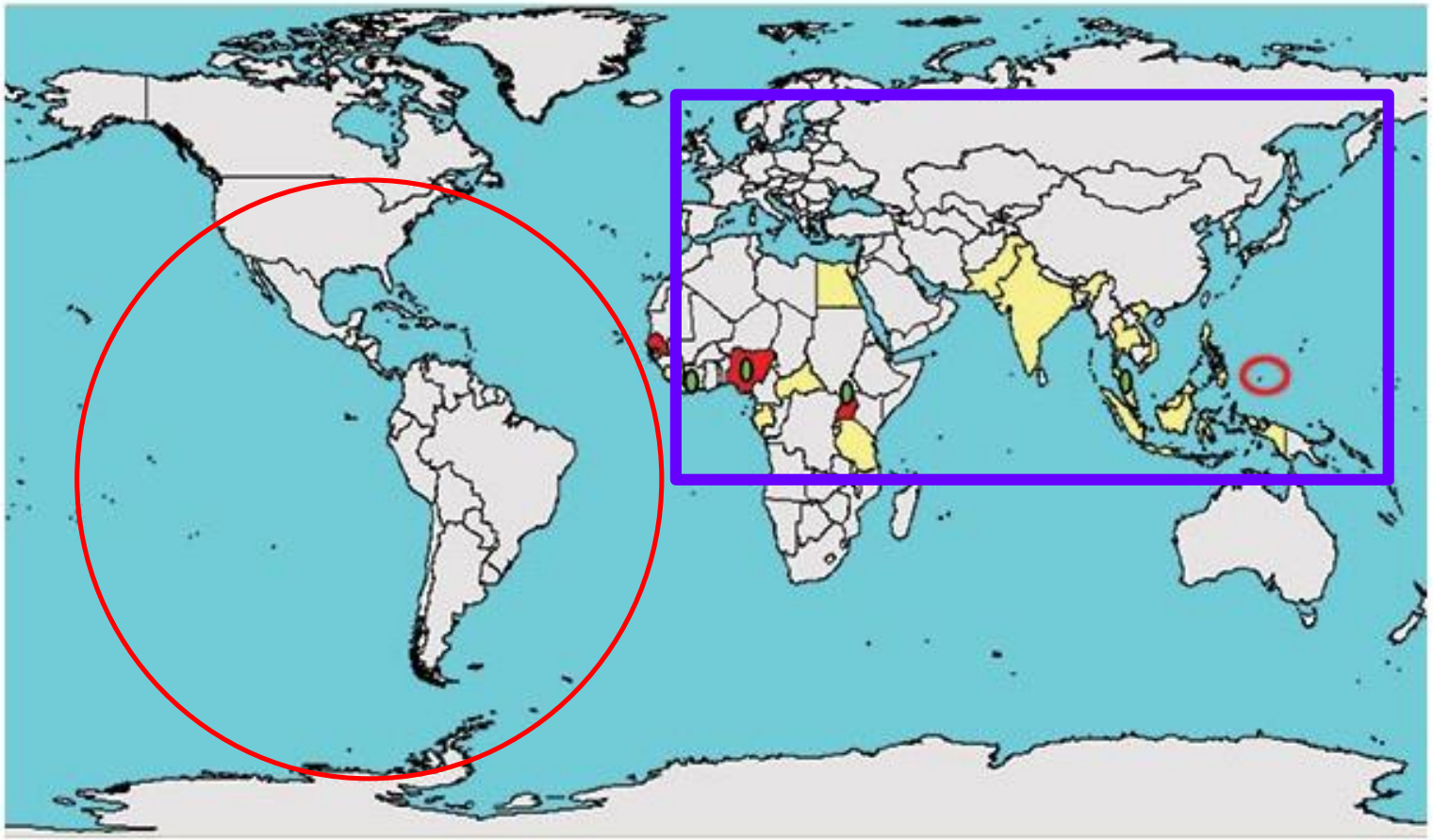


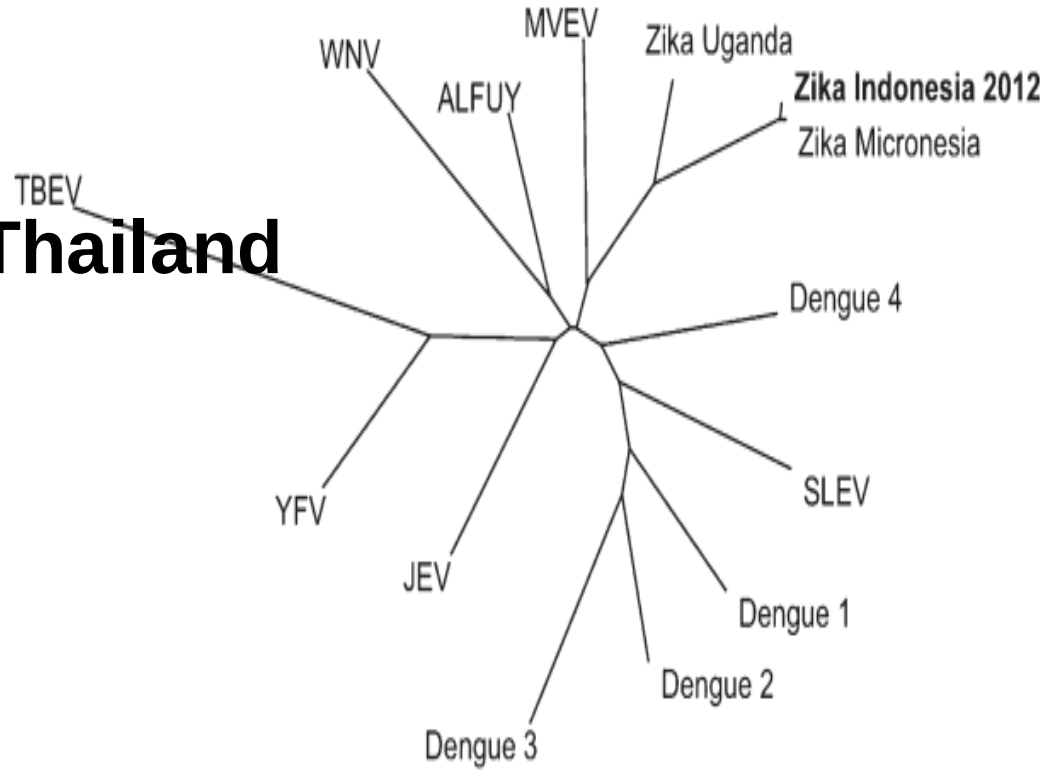
Figure 1. Approximate known distribution of Zika virus, 1947–2007. Red circle represents Yap Island. Yellow indicates human serologic evidence; red indicates virus isolated from humans; green represents mosquito isolates.

Source: Hayes EB. Zika virus outside Africa. Emerg Infect Dis. 2009 Sep

Members in the family *Flaviviridae*

Flavivirus in Thailand

1. JEV
2. Denv-1
3. Denv-2
4. Denv-3
5. Denv-4
6. Zikv



False positive of serology among flavivirus in this area is crucial

FIGURE 1. Phylogenetic tree showing relationships of Zika virus to other flaviviruses. **Bold** indicates virus isolated in this study. Sca
indicates nucleotide substitutions per site. WNV = West Nile virus; ALFUV = subtype of MVEV; MVEV = Murray Valley encephalitis
SLEV = St. Louis encephalitis virus; JEV = Japanese encephalitis virus; YFV = yellow fever virus; TBEV = tick-borne encephalitis virus.

Vector-borne transmissions in Thailand

Main vector

- ***Aedes aegypti***

Other vector involvement

- *Ae. albopictus*

Possible vector (research)

- *Culex quin. (we found the ZIKV in saliva grand)*

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Vector-borne transmissions

Aedes also has “Tran ovarian transmission”

ห้องปฏิบัติการ หน่วยกีฏวิทยาทางการแพทย์ ภาควิชาปรสิตวิทยา

คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

ผลการตรวจไวรัสซิกาทางห้องปฏิบัติการ

Positive rate of Zika virus in Ades spp. during outbreak from April – September 2016 approximately 7-10%

559

ควิทยา

วันที่เก็บตัวอย่าง	สถานที่เก็บตัวอย่าง หมู่บ้าน/ตำบล/อำเภอ/จังหวัด	จำนวนยุงที่ตรวจ (ตัวอย่าง)				จำนวนยุงที่ตรวจพบเชื้อ (ตัวอย่าง)			
		ยุงรำคาญ	ยุงลาย	ลูกน้ำ	ตัวโม่ง	ยุงรำคาญ	ยุงลาย	ลูกน้ำ	ตัวโม่ง
22-มิ.ย.-59		1	2	1	0	0	0	1	0
รวม		1	2	1	0	0	0	1	0
		4				1			

วิธีการตรวจ: PCR and Sequencing

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Non-vector-borne transmissions

- Infected monkey bite (infected human bite ?)
- Blood transfusion
- Organs transplantation (Kidney/Liver)
- Sexual intercourse (both hetero and homo)
- Tranplacental infection to fetus
- Perinatal infection
- Breast milk? (virus detected in breast milk)
- Eyes secretion ?

Zika virus detected in different samples

Blood : 5 – 7 days (depend on blood type and except pregnancy)

Saliva : 5 – 7 days

Eyes secretion : 5-7 days

Urine : up to 14 days

Semen : up to 2 months

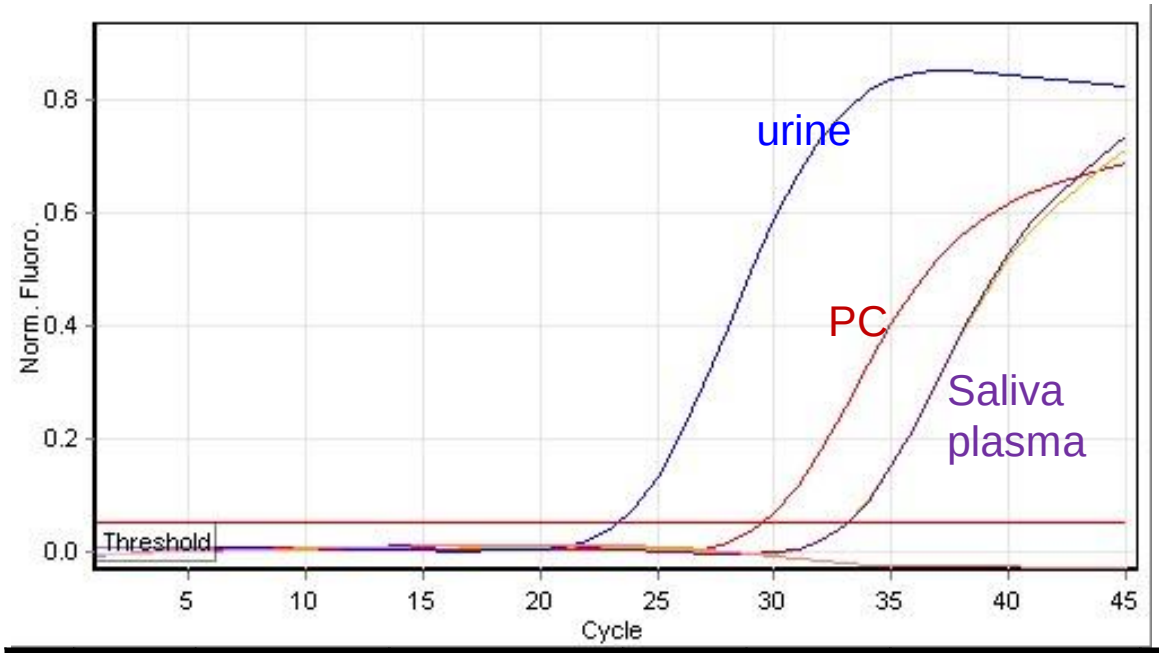
Cervical mucus : up to 8 days

CSF : acute phase of meningoencephalitis

Amniotic fluid/Placenta : until delivery

Death fetus in utero : autopsy

Breast milk : infected during perinatal period



No.	Colour	Name	Type	Ct	Ct Comment	Given Conc (copies/ul)	Calc Conc (copies/ul)
1		PC zikavirus	Positive Control	29.52			
2		SI162870 SV	Unknown	33.10			
3		SI162870 U	Unknown	23.34			
4		SI162870 PL	Unknown	33.10			
8		water	Unknown				

Saliva, Plasma, Urine in acute case (LOI 5 days) : Positive

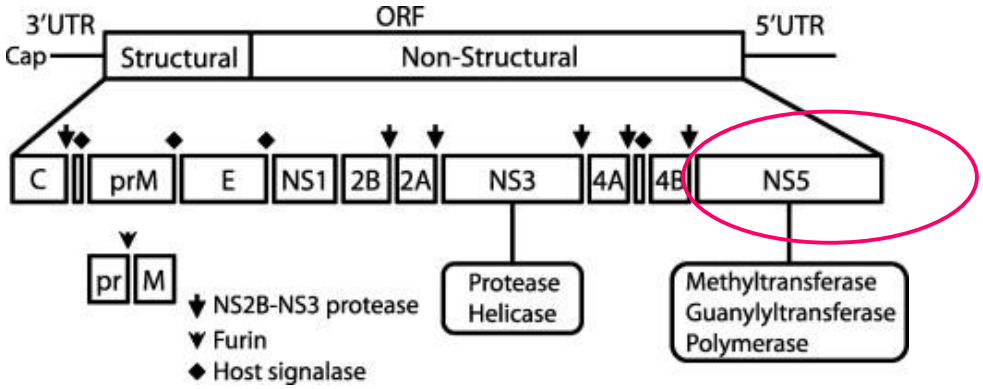
First recognize of Zika virus circulation in the country

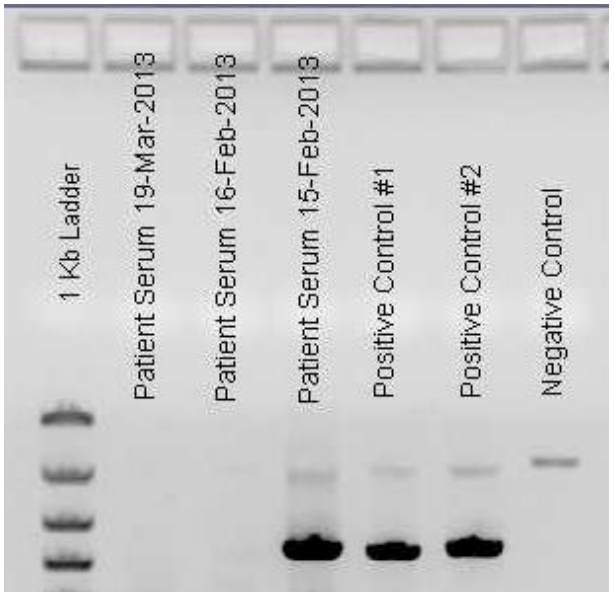
- 2013, Thailand MOPH was notified from Canada health authority about confirmed Zika virus infection in a traveler ex Thailand
- Retrospective investigation in unexplained outbreak of rash in 2012 and revealed confirmed Zika virus infection (US CDC-Arboviral Branch)
- Prospective investigation in outbreak of rash nationwide (2013 – 2015)

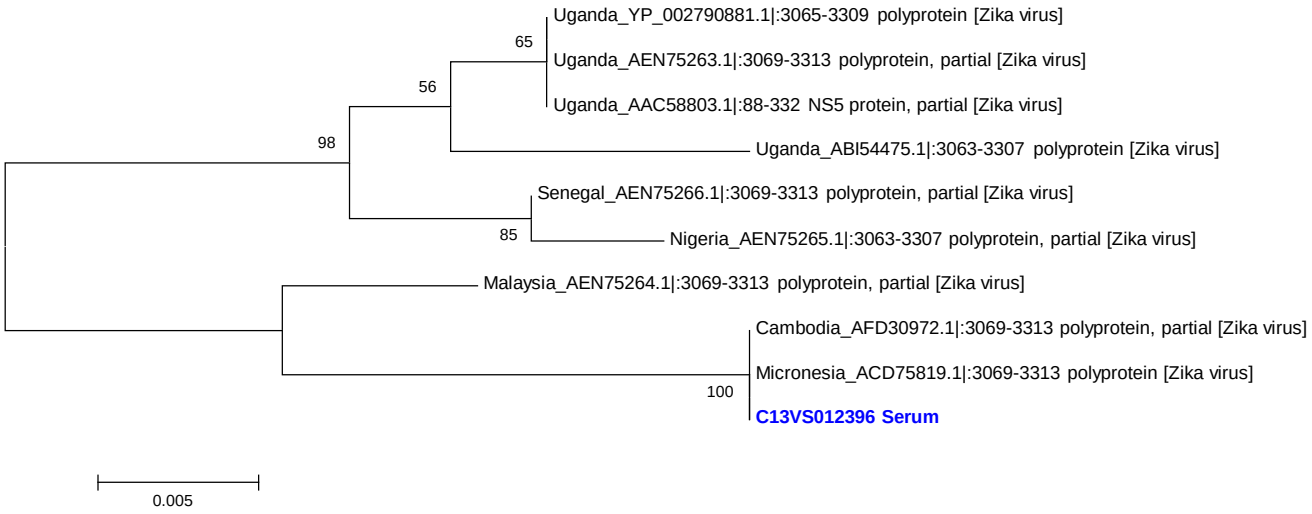
Zika virus – in a Returning Canadian Traveller from Thailand

Patricia Webster RN BScN
Alberta Health Services, Communicable Disease Control
Calgary Zone, Team Lead Communicable Disease and Epidemiology

Molecular Detection







Exported case# 2

Eurosurveillance, Volume 19, Issue 4, 30 January 2014

Rapid communications

FIRST CASE OF LABORATORY-CONFIRMED ZIKA VIRUS INFECTION IMPORTED INTO EUROPE, NOVEMBER 2013

D Tappe[1,2], J Rissland[2,3], M Gabriel[1], P Emmerich[1], S Günther[1], G Held[4], S Smola[2,3], J Schmidt-Chanasit (jonassi@gmx.de)[1,2,5]

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5. German Centre for Infection Research (DZIF), partner site Hamburg-Luebeck-Borstel, Hamburg, Germany

Exported case# 2

TABLE

Serological results of a case of Zika virus infection from Thailand imported into Germany, November 2013

Antibody or antigen tested	Serum samples taken after symptom onset (days)		
	10	31	67
Anti-ZIKV-IgG[a]	1:5,120	1:2,560	1:2,560
Anti-ZIKV-IgM[a]	1:10,240	1:2,560	1:320
Anti-DENV-IgG[a]	<1:20	1:80	1:160
Anti-DENV-IgM[a]	1:40	<1:20	<1:20
DENV NS1[b]	Negative (0.1 arbitrary units)	Negative (0.2 arbitrary units)	Negative (0.1 arbitrary units)
Anti-JEV-IgG[a]	<1:20	1:40	1:20
Anti-JEV-IgM[a]	<1:20	<1:20	<1:20
Anti-WNV-IgG[a]	<1:20	1:20	1:80
Anti-WNV-IgM[a]	<1:20	<1:20	<1:20
Anti-YFV-IgG[a]	<1:20	<1:20	1:20
Anti-YFV-IgM[a]	<1:20	<1:20	<1:20
Anti-CHIKV-IgG[a]	<1:20	<1:20	<1:20
Anti-CHIKV-IgM[a]	<1:20	<1:20	<1:20

CHIKV: chikungunya virus; DENV: dengue virus; JEV: Japanese encephalitis virus; NS1: nonstructural protein-1; WNV: West Nile virus; YFV: yellow fever virus; ZIKV: Zika virus.

[a] Indirect immunofluorescence assay (IIFA) titres <1:20 for serum were considered negative [1-3].

[b] SD BIOLINE Dengue Duo NS1 Ag + Ab Combo and Bio-Rad Platelia Dengue NS1 Ag.

Eurosurveillance, Volume 19, Issue 4, 30 January 2014

Exported case# 2

In November 2013, an acute Zika virus (ZIKV) infection was diagnosed in a German traveller returning from Thailand. The patient reported a clinical picture resembling dengue fever. Serological investigations revealed anti-ZIKV-IgM and -IgG, as well as ZIKV-specific neutralising antibodies in the patient's blood. In Europe, viraemic travellers may become a source of local transmission of ZIKV, because *Aedes albopictus* (Skuse) and *Ae. aegypti* (Linnaeus) are invasive mosquitoes and competent vectors for ZIKV.

Conclusions

This report constitutes, to the best of our knowledge, the first laboratory-confirmed case of a ZIKV infection imported into Europe. The case highlights that unusual DENV serology results might be caused by a flavivirus different than DENV despite a similar clinical picture. A serological study after the Yap outbreak indicated that ZIKV-infected patients can be positive in anti-DENV-IgM assays [20], as also experienced in our case. This cross-reaction in the Yap outbreak was seen especially if ZIKV was a secondary flavivirus infection. These findings underscore the importance of a careful diagnostic investigation in travellers suspected with dengue, and the well-known serological cross-reactions in the flavivirus group. Thus, the rate at which seemingly imported dengue cases among travellers from endemic areas in the recent years were actually ZIKV infections remains a question.

Eurosurveillance, Volume 19, Issue 4, 30 January 2014

Exported case# 3

Brief communication

Zika fever imported from Thailand to Japan, and diagnosed by PCR in the urine

Koh Shinohara, MD[1], Satoshi Kutsuna, MD[1]*, Tomohiko Takasaki, MD[2], Meng Ling Moi, PhD[2], Makiko Ikeda, PhD[2], Akira Kotaki, PhD[2], Kei Yamamoto, MD[1], Yoshihiro Fujiya, MD[1], Momoko Mawatari, MD[1], Nozomi Takeshita, MD[1], Kayoko Hayakawa, MD[1], Shuzo Kanagawa, MD[1], Yasuyuki Kato, MD[1], and Norio Ohmagari, MD[1]

[1]Disease Control and Prevention Center, National Center for Global Health and Medicine, Tokyo, Japan and [2]Department of Virology, National Institute of Infectious Diseases, Shinjuku-ku, Tokyo, Japan

*To whom correspondence should be addressed. Disease Control and Prevention Center, National Center for Global Health and Medicine, 1-21-1 Toyama, Shinjuku-ku, Tokyo 162-8655, Japan. Email: sonare.since1192@gmail.com

Accepted 24 September 2015

Travel period 25 – 31 July 2014/ visited Koh Samui

Journal of Travel Medicine, 2016, 1–3 doi: 10.1093/jtm/tav011

Taiwan reports 1st imported Zika case via Thailand

Posted by Robert Herriman on January 19, 2016 // Leave Your Comment

Taiwanese health officials are reporting today the first imported Zika virus infection in the country since testing began in 2003. The patient is a 24-year-old male from northern Thailand.

China-Taiwan (blue) map/Rintojiang

Health officials say the individual was stopped by the quarantine officer at the fever screening station upon his arrival in Taiwan Taoyuan International Airport. Infection with Zika virus was confirmed in the case through testing his blood samples by the Taiwan CDC laboratory. This is the first case of Zika virus infection detected among the 50,000 samples collected by the Taiwan CDC laboratory since 2003.

According to the patient, prior to his trip to Taiwan, he was in Thailand for the past three months and it was his first visit to Taiwan, When he was in Thailand on January 9, he already experienced symptoms such as fever and headache. After specimens were collected from him, he was tested negative for dengue virus by the dengue NS1 rapid test and his specimens were submitted to the Taiwan CDC laboratory for further testing. He was then confirmed to have Zika virus infection.

The other two travelers traveling with him are his coworkers who both reside in northern Thailand as well. Although one of them experienced sore threat and headache, the symptoms subsided after seeking medical attention. The other one of them experienced a mild sore throat and mucus. Both of them were tested negative for Zika virus and dengue virus. As of now, the case is currently stable and recovering.

Taiwan CDC is raising the travel notice level for six countries in Central and South America and Southeast Asia

Exported case # 4

-Thai 24 year old,

-Northern province,

-Quarantined at Taoyuan Airport coz of fever on 10 January 2016

-Clinical developed in Thailand 1 day before departure to Taiwan

-Zika PCR in positive in patient's blood

Source: http://outbreaknewstoday.com/

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Source: Rome Buathong, Bureau of Epidemiology

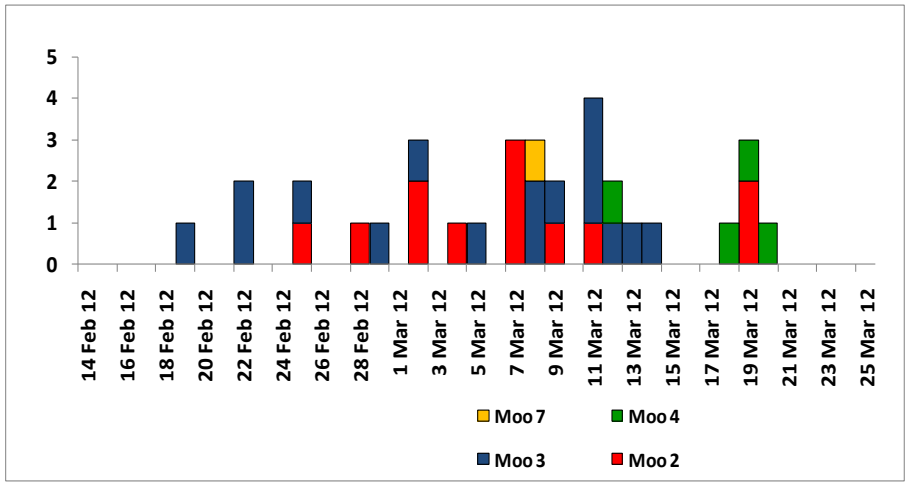
Testing by US CDC, Arbovirus Disease Branch

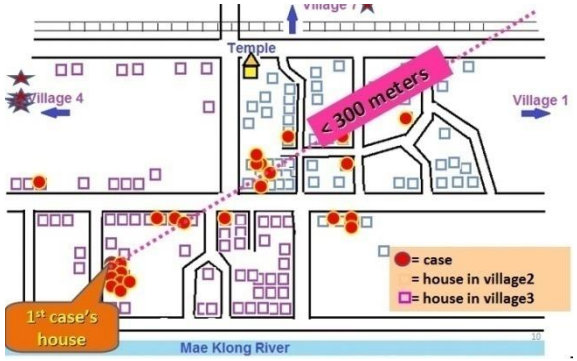
10/13 = Zika IgM positive

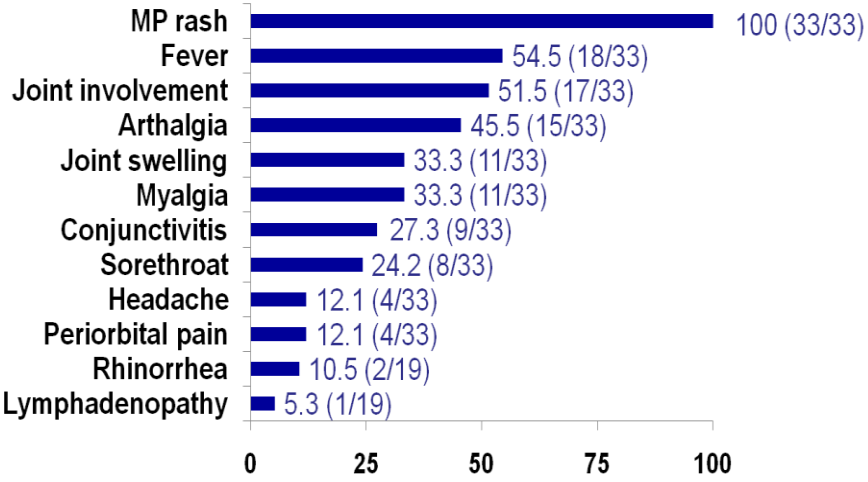
3/10 = PRNT of ZIKV higher than DNV 4 times

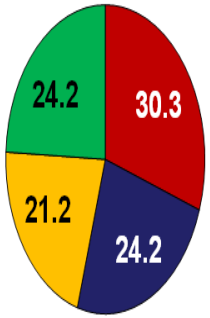
Case	Dengue captured ELISA-IgM	Dengue captured ELISA-IgG	CHIKV (IgM) ELISA	JEV (IgM) ELISA	CDC Dengue PRNT	CDC Zika RT-PCR	CDC Zika IgM ELISA	CDC Zika PRNT	CDC interpretation
1						Not done	Positive	10240	Confirmed Zika
2						Not done	Positive	5120	Flaviviral infection
3						Not done	Positive	>20480	Probable Zika
4						Not done	Positive	>20480	Flaviviral infection
5						Negative	Positive	1280	Confirmed Zika
6	Negative	Positive	Negative	Negative	>20480	Negative	Positive	>20480	Flaviviral infection
7	Negative	Negative	Negative	Negative	20480	Not done	Positive	20480	Flaviviral infection
8	Negative	Negative	Negative	Negative	640	Negative	Equivocal	2560	convalescent sample
9	Negative	Negative	Negative	Negative	20	Not done	Positive	1024	Confirmed Zika
10	Negative	Negative	Negative	Negative	QNS	QNS	QNS	QNS	Not tested (QNS)
11	Positive	Positive	Negative	Negative	>20480	Not done	Positive	>20480	Flaviviral infection
12	Negative	Negative	Negative	Negative	<10	Negative	Positive	10	Probable Zika
13	Negative	Negative	Negative	Negative	160	Negative	Negative	40	convalescent sample

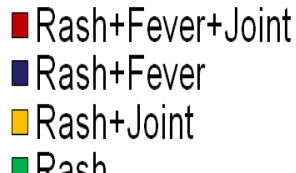
Epi & Clinical Characteristics of inconclusive fever and rash outbreak in 2012



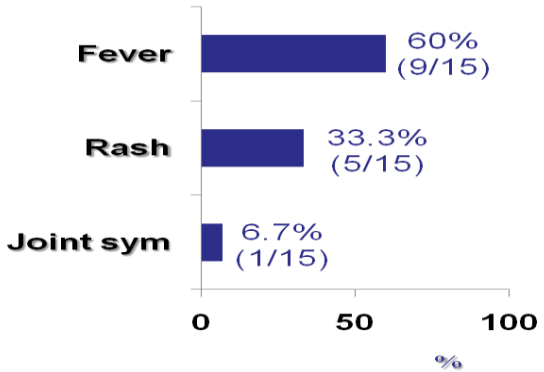








1st symptom



T. Tantitaweewat & R. Buathong,Thailand MOPH

7 Confirmed Zika Fever Cases, 2012-2014 (blood ONLY)

Summary of sample testing

Date	Province	Age	Gender	DOI (days)	DENV RT-PCR	ZIKV RT-PCR	DENV IgM	DENV IgG	ZIKV IgM	DENV PRNT	ZIKV PRNT	Interpretation*
March 2012	Ratchaburi	18	M	7	ND	Negative	Positive	Negative	Positive	160	1,280	ZIKV
March 2012	Ratchaburi	12	F	9	ND	ND	Negative	Negative	Positive	20	1,024	ZIKV
March 2012	Ratchaburi	32	F	16	ND	ND	Negative	Negative	Positive	80	10,240	ZIKV
September 2013	Lamphun	9	F	1	Negative	Positive	Negative	Negative	Negative	ND	ND	ZIKV
September 2013	Sisaket	53	F	3	Negative	Positive	Negative	Negative	ND	ND	ND	ZIKV
July 2014	Petchabun	39	F	1	Negative	Positive	ND†	ND†	ND	ND	ND	ZIKV‡
July 2014	Petchabun	24	F	3	Negative	Positive	ND†	ND†	ND	ND	ND	ZIKV

DENV = dengue virus; DOI = date of illness; ND = not determined; PRNT = plaque reduction neutralization test; RT-PCR = reverse transcription polymerase chain reaction; ZIKV = Zika virus.

Rome Buathong, et al. Am. J. Trop. Med. Hyg., 93(2), 2015, pp. 380–383

Geographic of confirmed Zika fever case from 2012-2015 (Blood testing period)

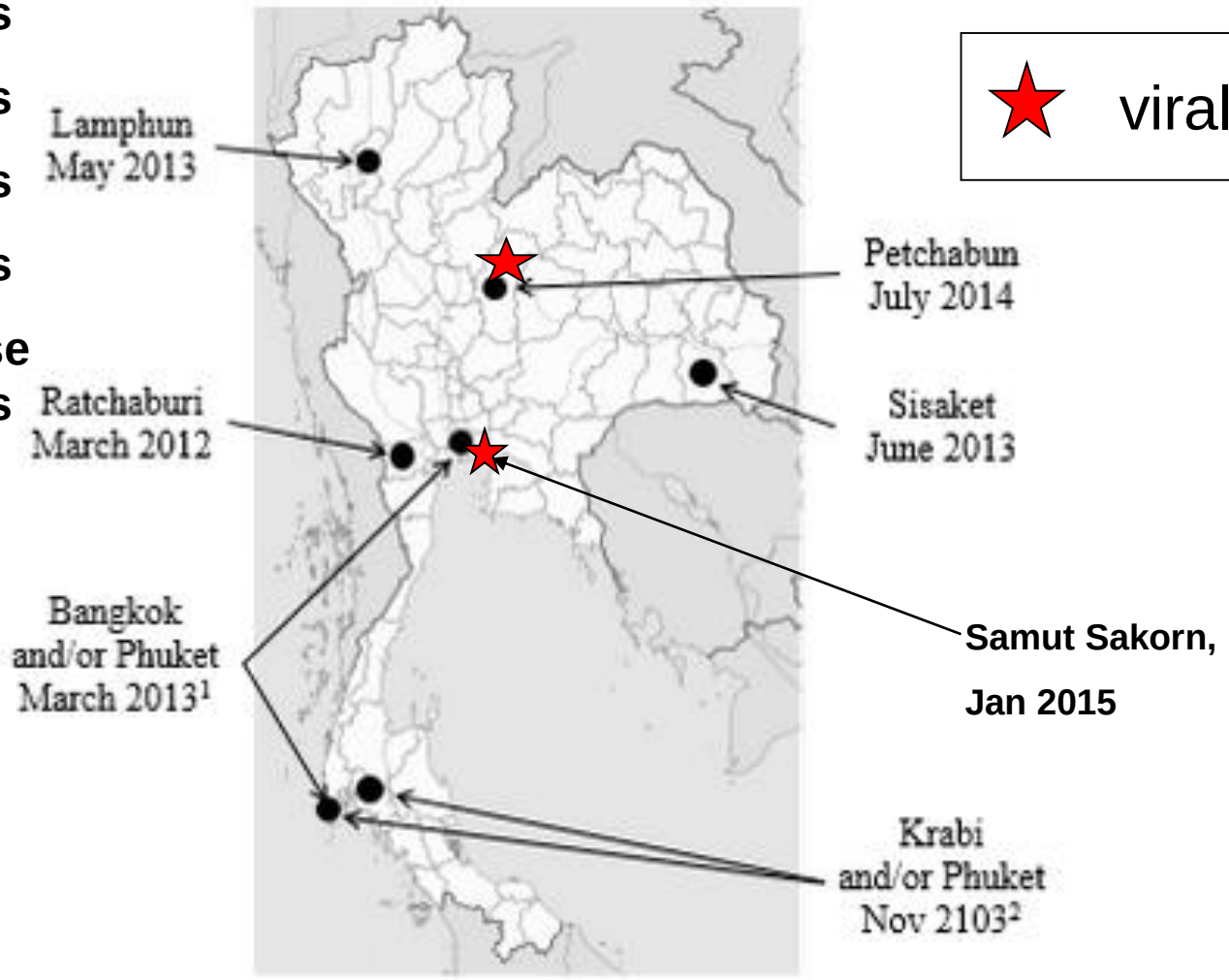
2012: 3 cases

2013: 2 cases

2014: 2 cases

2015: 5 cases

Exported case
2013: 2 cases



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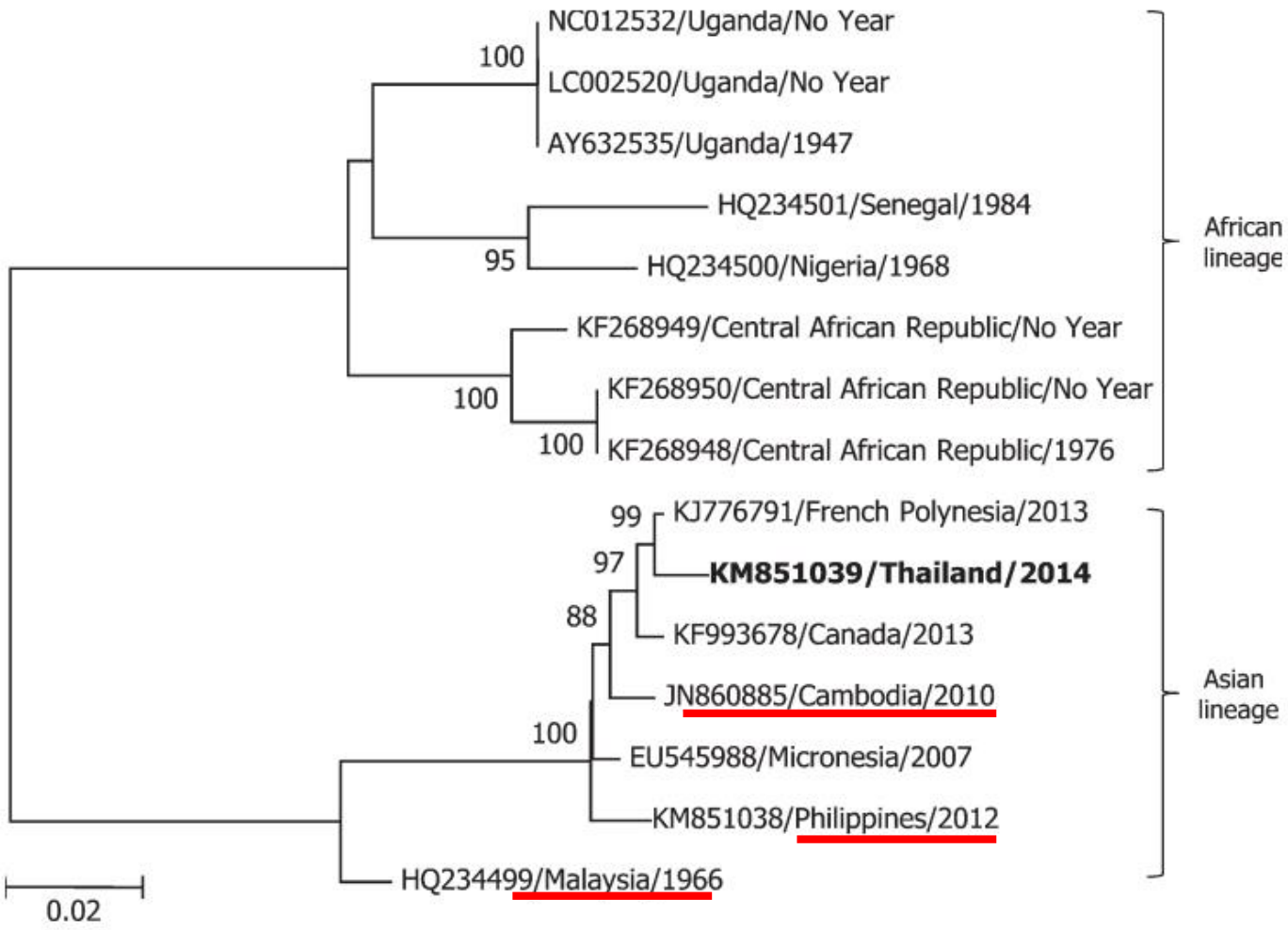
Molecular sequencing of Zika virus in Thailand linked closely with French Polynesia



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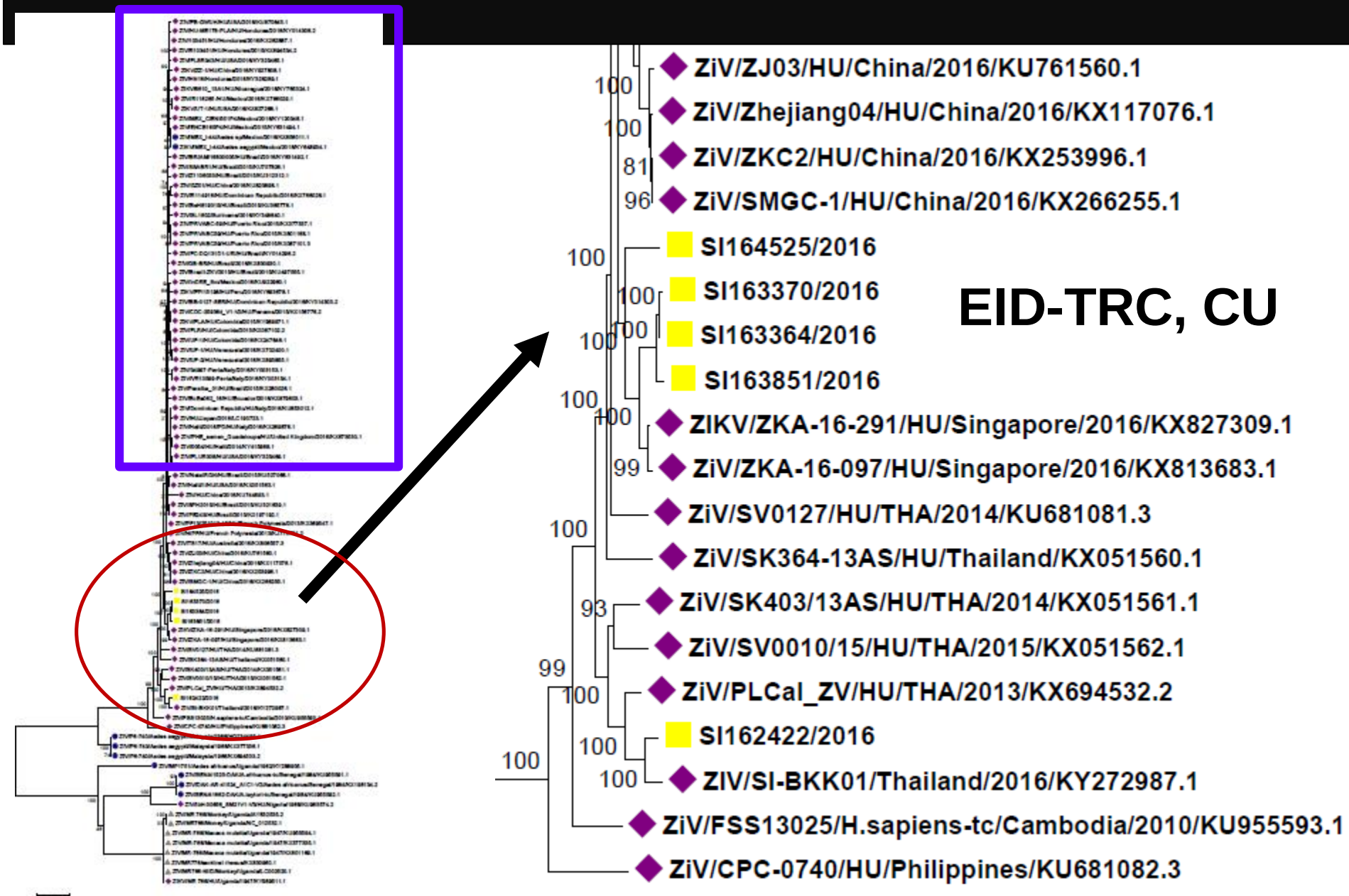
Rome Buathong, et al. Am. J. Trop. Med. Hyg., 93(2), 2015, pp. 380–383

WGS of Zika virus in Thailand (N=10)



National Surveillance for Zika virus 2016 - present

- **Zika Fever**
  - **PUI** was divided into 3 categories : Pregnant women / Pediatric / Adults
  - all PUI cases were required lab testing : urine +/- blood for PCR
  - **Confirmed case** was a PUI case with confirmed either ZIKV PCR/sequencing or PRNT
- **Congenital Zika Syndrome in newborn**
- **GBS**

Laboratory Capacity Building Before Implement National Wide Passive Surveillance

- August 2014, US CDC (Arbovirus section) and TUC came to Thailand for staff straining for Zika virus PCR
- 5 major national lab centers were trained
- In 2015, the lab testing centers were located all Thailand (14 regional lab centers)
- Lab testing is free of charge (sponsored by Bureau of Epidemiology 2 million US dollars/years)

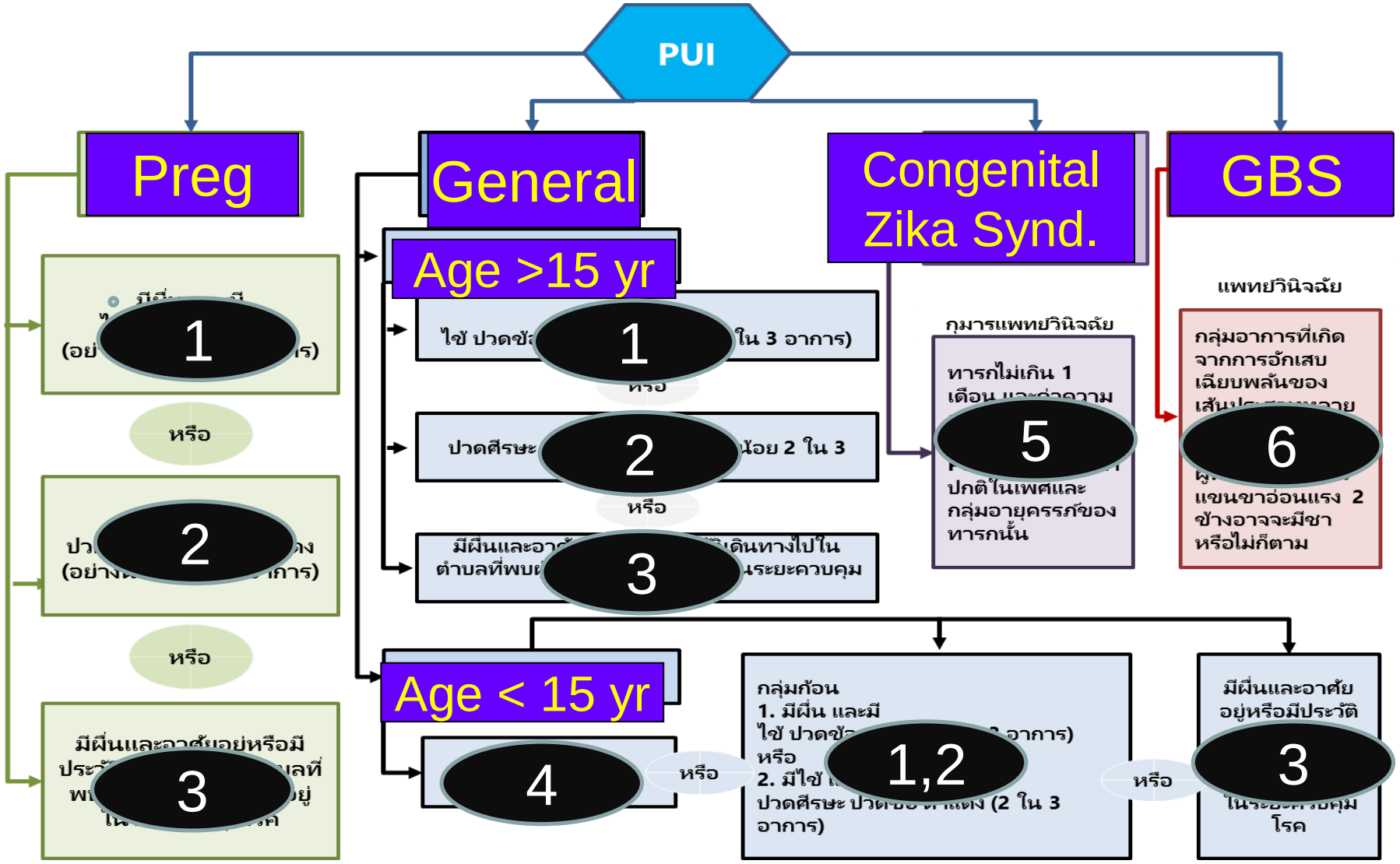
Zika fever in Yap Islands for set case definition

Table 1. Clinical Characteristics of 31 Patients with Confirmed Zika Virus Disease on Yap Island during the Period from April through July 2007.

Sign or Symptom	No. of Patients (%)
Macular or papular rash	28 (90)
Fever*	20 (65)
Arthritis or arthralgia	20 (65)
Nonpurulent conjunctivitis	17 (55)
Myalgia	15 (48)
Headache	14 (45)
Retro-orbital pain	12 (39)
Edema	6 (19)
Vomiting	3 (10)

* Cases of measured and subjective fever are included.

Patients under investigation: PUI



Attention!

- Zika virus is notifiable by law since 2015
- All public and private hospitals/labs must do report within 7 days after detection
- Penalty is 500 euro/case will be apply

→ All lab cost (PCR) is **free of charge** (MOPH is responsible for PUI)

→ Total budget for PCR cost in 2016 is 2 millions US dollar

Pregnant women

With the following symptoms: Any single case of

1→ Maculopopular (MP) rash + 1 of the following:

fever, joint pain or conjunctivitis

2→ Fever + 2 of the following:

headache, joint pain or conjunctivitis

3→ MP rash + living or have been travelling

in area where confirmed cases of Zika infection where found during control mission (28 days after detection)

General patients
Adult

15 years old and over with the following symptoms:

Any single case of

1→ MP rash + 1 of the following:

fever, joint pain or conjunctivitis

2→ Fever + 2 of the following:

headache, joint pain or conjunctivitis

3→ MP rash + living or have been travelling in area where confirmed cases of Zika where found during control mission

General patients
Paediatric case

Under 15 years old with the following symptoms:

4→ **1 child** has fever + MP rash + conjunctivitis

1/2→ **A cluster** (2 children or more from the same village, school or workplace) within 2 weeks that presents:

- MP rash + 1 of the following: fever, joint pain or conjunctivitis
- Fever + 2 of the following: headache, joint pain or conjunctivitis

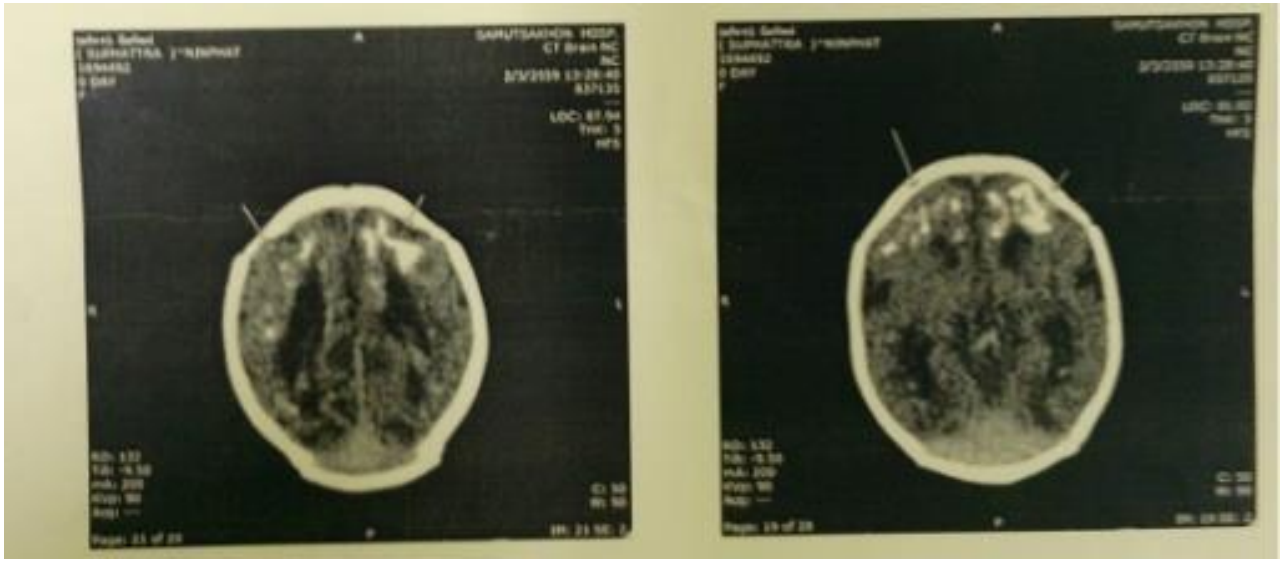
3→ MP rash + living or have been travelling in area where confirmed cases of Zika where found during control mission

Babies with congenital abnormalities
Congenital Zika Syndrome

Neonatal (infants < 1 month) **presenting microcephaly**

(whose head curve is under 3 percentile of ref curve)

and/or brain calcification



Guillain-Barré Syndrome
GBS

Patients with **Guillain-Barré syndrome** or other **inflammatory neurological disease** acquired after an infection leading to **acute muscle weakness**, **paralysis** (that may require mechanical ventilation) or **severe limbs weakness** on both sides

Case classification

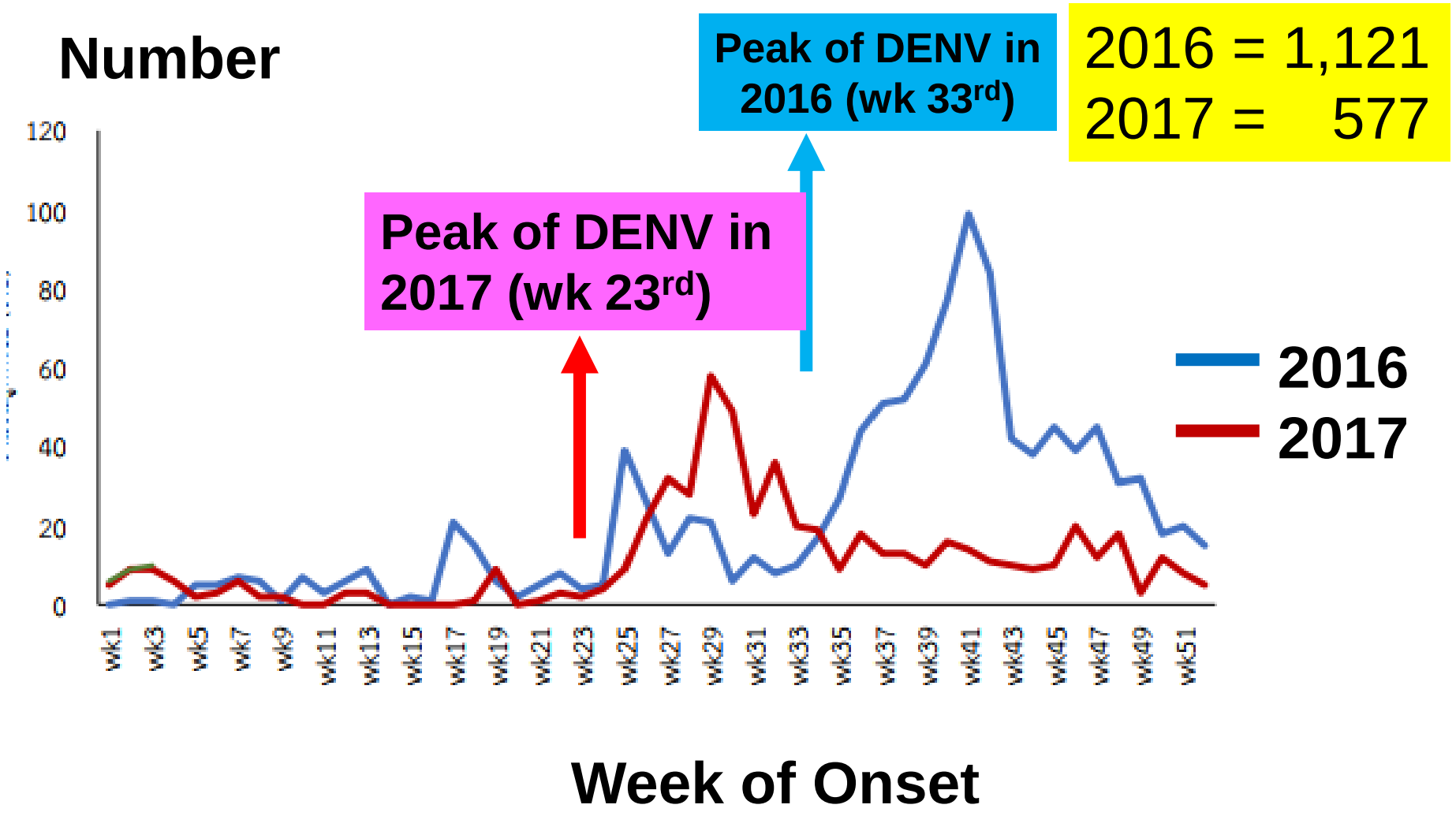
- **PUI** : notify for lab investigation
- **Suspected case** : for outbreak use only, not count as Zika virus infection in the registry
- **Confirmed case** : for implement control, count as Zika virus infection in the registry

    - **Only** confirmed by molecular diagnosis either PCR or sequencing

    - **Except** CZS either molecular or IgM

Number of Zika virus infection by week of onset

1 Jan 2016 – 31 Dec 2017 (N = 1,689)

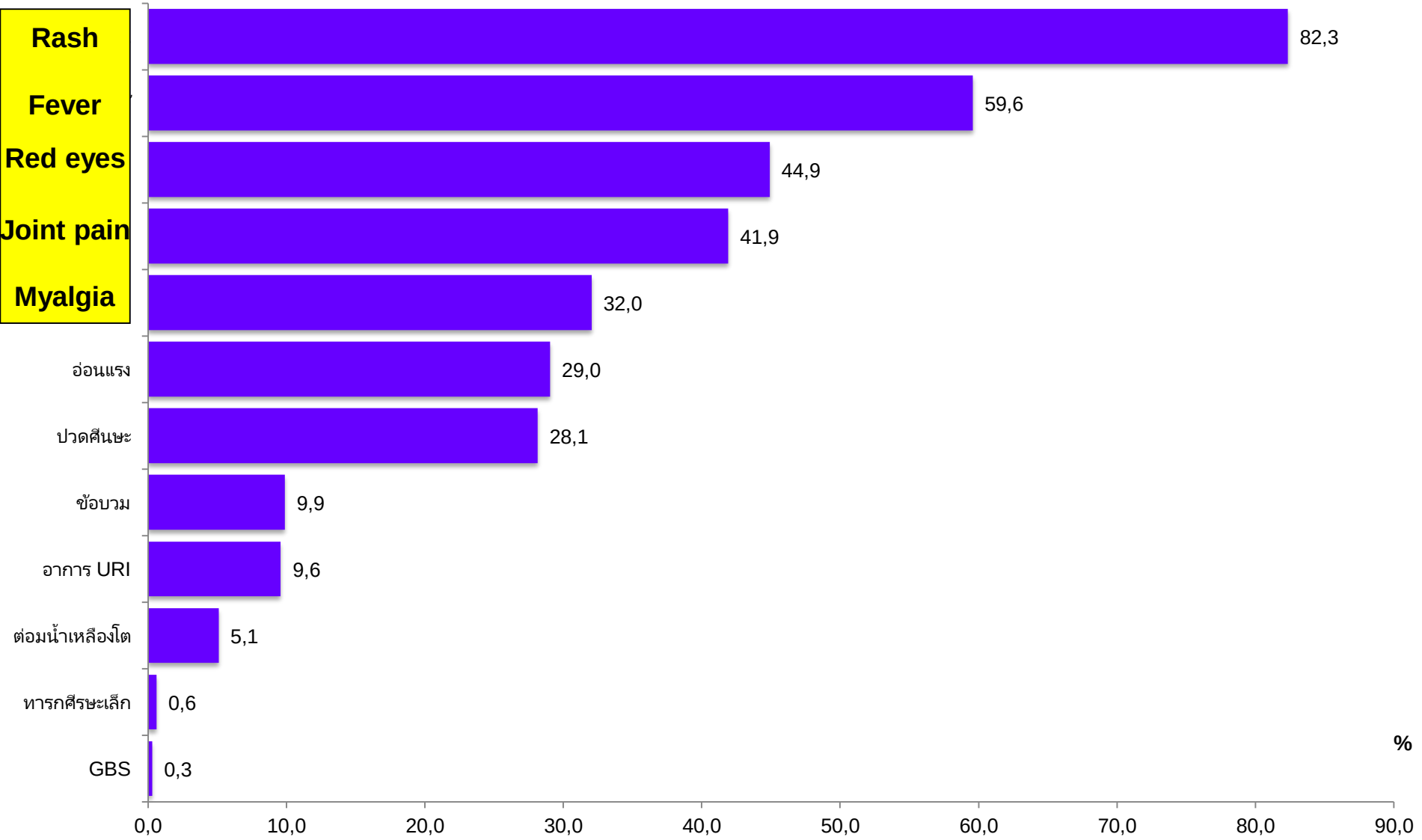


Number of Zika virus infection by month of onset

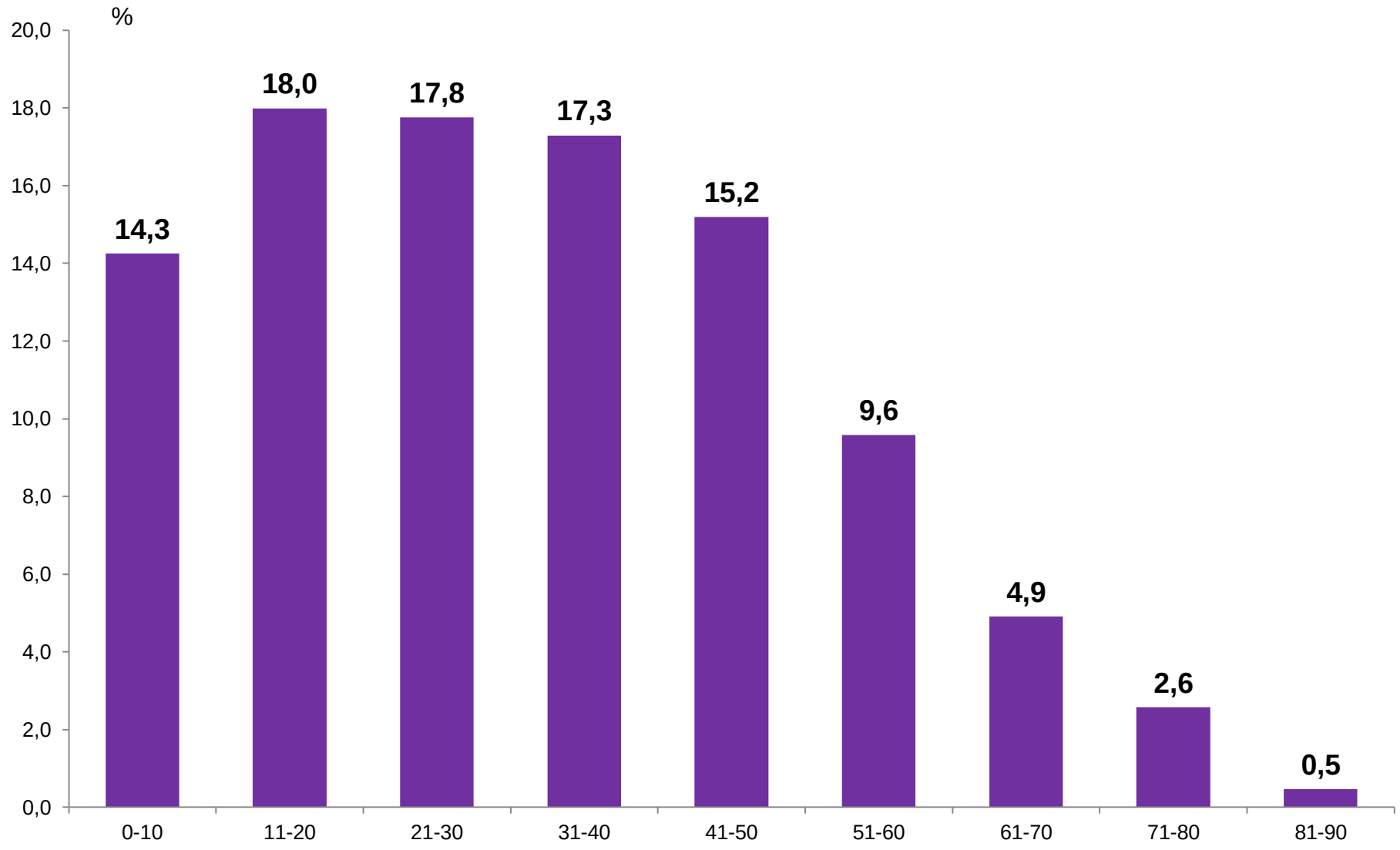
1 Jan 2016 – Jan 2018

Time	Number			# Affected Province
	Symptomatic	Asymptomatic	Total	
Last week (13 - 19 Jan 18)	10	0	10	3
2018	25	0	25	6
2017	564	13	577	33
2016	882	239	1,121	43
Total	**1,481**	**250**	**1,689**	
	(87.68%)	**(12.32%)**		

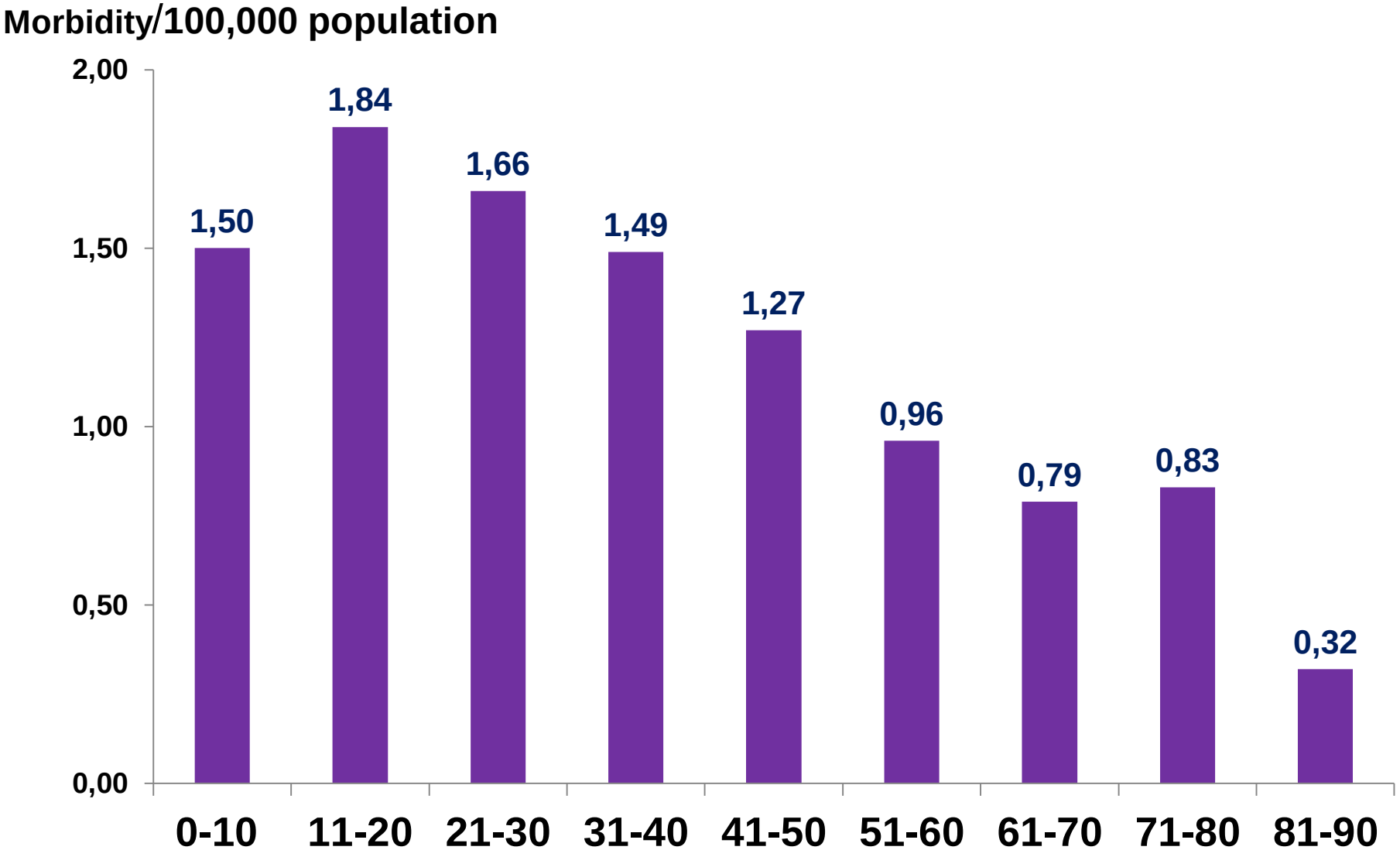
Clinical presentations of confirmed Zika infection, 1st Jan – 23rd September 2016 (N = 840)



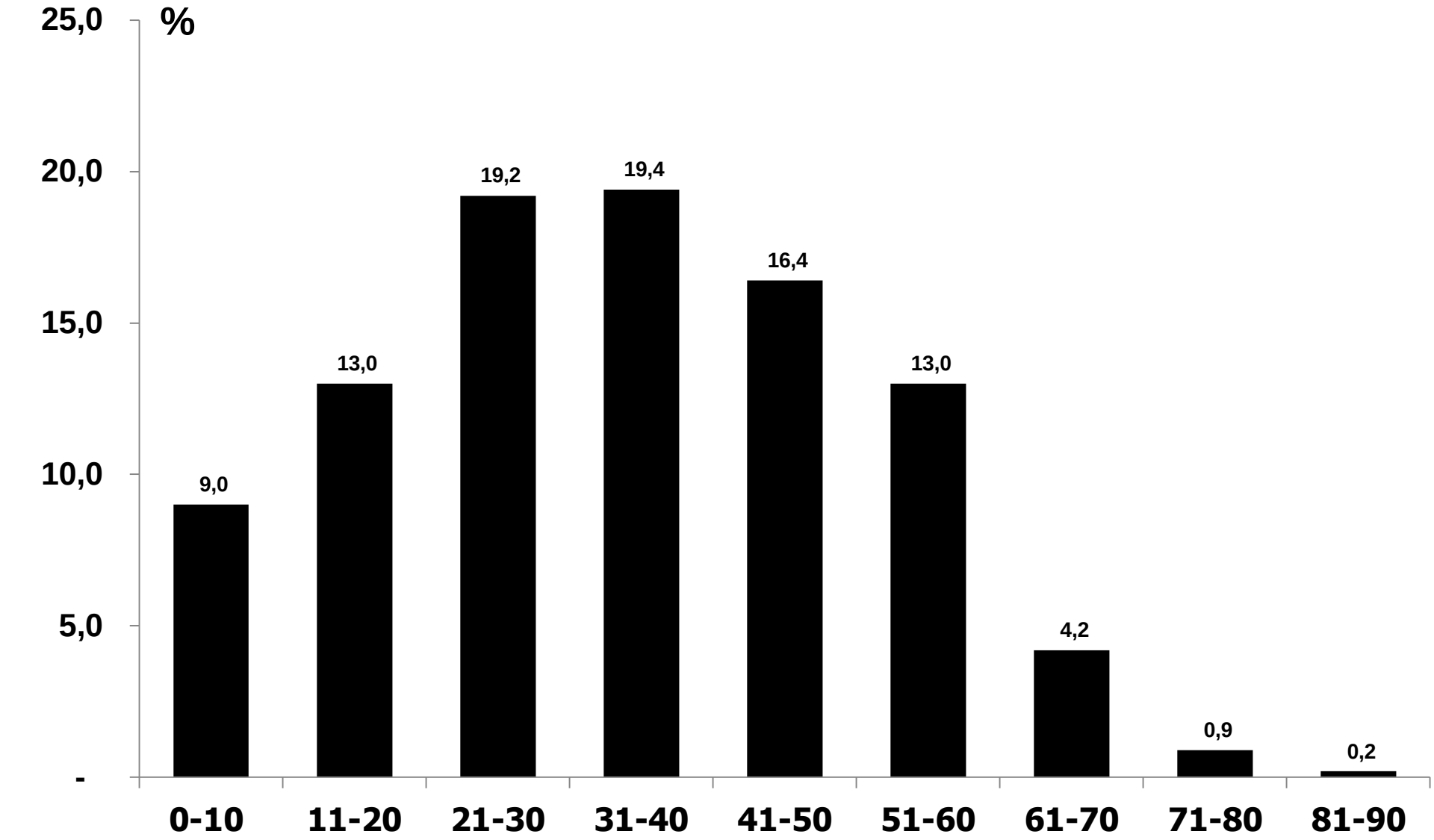
Zika infection distribution (proportion) by age group, 1 Jan – 23 September 2016 (N = 884)



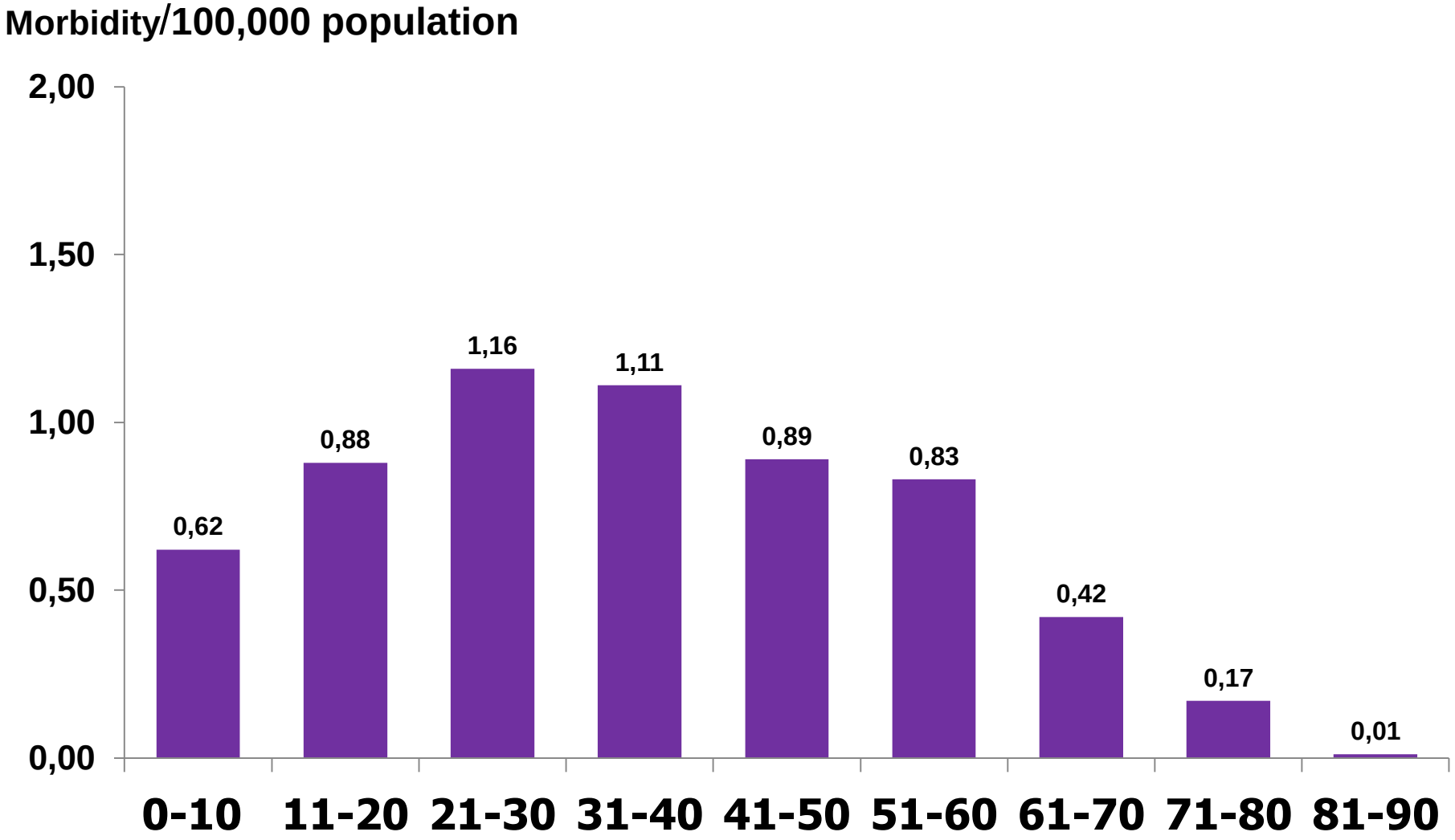
Morbidity rate of Zika infection by age group, 1 Jan – 23 September 2016 (N = 884)



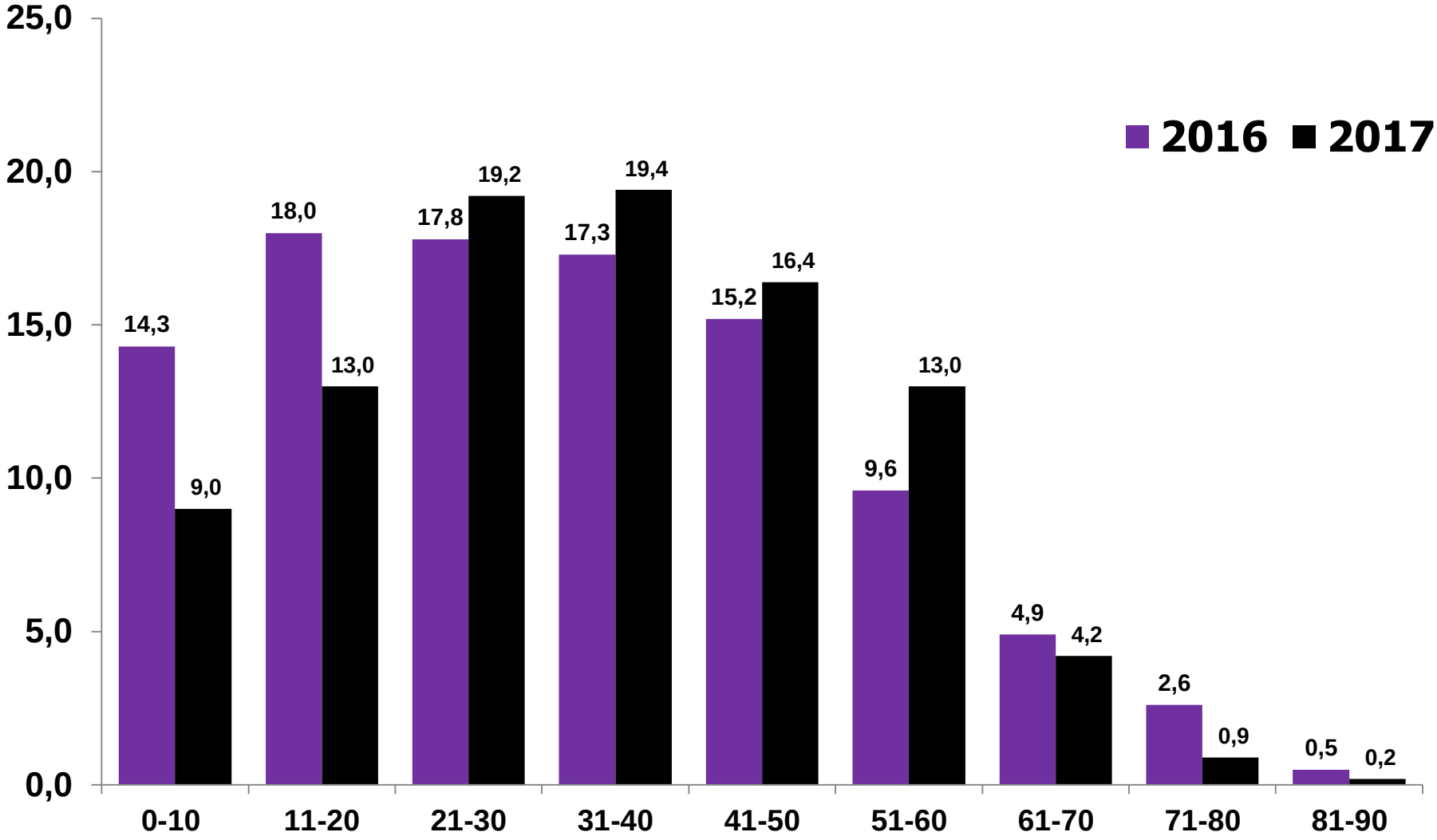
Zika infection distribution (proportion) by age group, 2017 (N = 557)



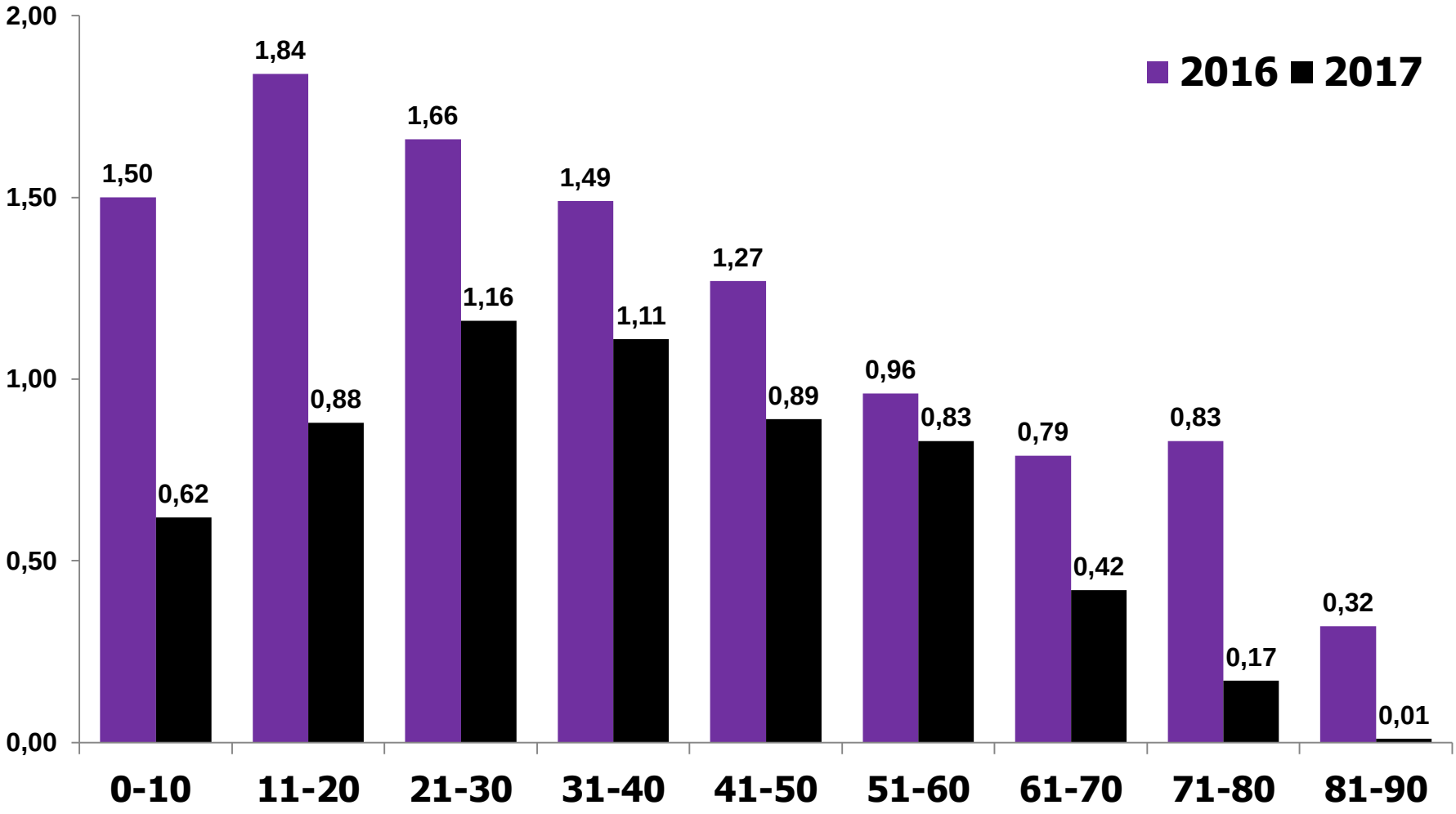
Morbidity rate of Zika infection by age group, 2017 (N = 577)



Zika infection distribution (proportion) by age group, 2016 (N=884) vs 2017 (N=577)

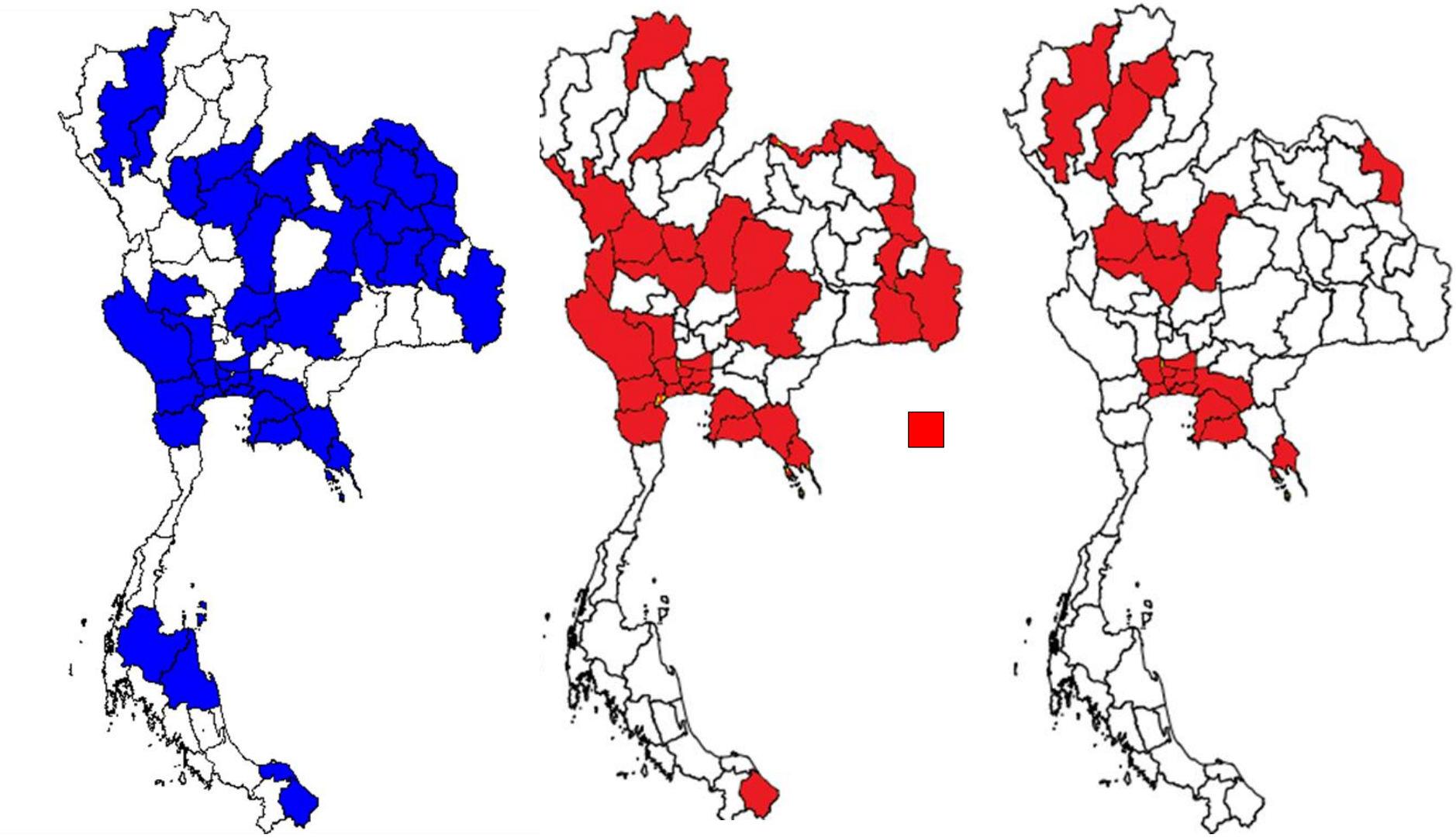


Zika morbidity by age group, 2016 (N=884) vs 2017 (N=577)



Detected area

Geographic area of confirmed Zika virus infection in Thailand 2016/2917/2018



Pregnancy with confirmed Zika virus

- During 1 Jan 2016 – 19 Jan 2018, total ZKV infected pregnancy was **121 case (6.98%)**

  - Symptomatic infection = **67** cases (55.3%)
  - Asymptomatic infection = **54** cases (44.7%)

- **108** pregnant women were **delivered (89 %)**

  Miscarriage = **4 cases** (3.7%) (2 confirmed)

  Birth abnormalities = **4 cases** (3.7%)

Microcephaly with confirmed Zika virus

- During 1 Jan 2016 – 16 Jan 2018, total ZKV infected pregnancy was **3 case**
- **All 3 cases were confirmed either molecular or IgM**

  - Born from un-registered infected pregnancy
  - 2 newborns diagnosed with microcephaly and one was congenital Zika syndrome (CZS)

GBS confirmed Zika virus

- During 1 Jan 2016 – 24 Nov 2017, total GBS with confirmed Zika virus infection was **3 cases and died 1 case**

Zika related abortion in Pregnancy

Bureau of Epidemiology

EOC

17 OCT 2016

Misccariage Case 1 Summary

- **Maternal age** : 16 years old, G1P0A1
- **Place** : Phonpisai, Nongkhai
- **Rash and illness during pregnancy** : None
- **Asymptomatic infection:** first confirmed on 21st July 2016 (Active search) at **GA** 12 wks
- **Abortion** : 14th October 2016 at **GA** 25 wks
- **Death fetus weight** : 1,002 grams
- **Lab confirmations** : Mother Urine PCR – positive on 21st July (US CDC protocol: NIH)

Miscarriage Case 1 Summary

- **Lab confirmations** :

  <u>Death fetus</u>

  1. Cord Blood - Positive Zika PCR on 14th Oct 16

  2. Placenta – Positive Zika PCR on 14th Oct 16 (2 sites from 5 sites)

  3. Brain necropsy – Positive Zika PCR on Rt. And Lt. brain on 15th Oct 16

ศูนย์โรคติดต่ออุบัติใหม่ สภากาชาดไทย TRC-EID

WHO Collaborating Centre for Research and Training on Viral Zoonoses

รายงานผลการตรวจ Zika Viurs PCR

Report Date:15/10/2559 (รับตัวอย่างวันที่ 15 ต.ค.2559)

№	CU-ID	ชนิดตัวอย่าง	Name	สถานที่เก็บตัวอย่าง	วันที่รับตัวอย่าง	วันที่ เก็บตัวอย่าง	Zika Virus PCR Result		หมายเหตุ
							Real-time PCR	Nested PCR	
1	SI164517-BTL	Left-Brain Tissue	บุตร [redacted]	จ.หนองคาย	15/10/2016	14/10/2016	Detected		
2	SI164517-BTR	Right-Brain Tissue	บุตร	จ.หนองคาย	15/10/2016	14/10/2016	Detected		
3	SI164517-SR	Serum	บุตร	จ.หนองคาย	15/10/2016	14/10/2016	Not Detected		
4	SI164517-SRPC	Serum from umbilical cord	บุตร	จ.หนองคาย	15/10/2016	14/10/2016	Detected		
5	SI164518-PC1	Placenta	น.ส.	จ.หนองคาย	15/10/2016	14/10/2016	Not Detected		
6	SI164518-PC2	Placenta	น.ส.	จ.หนองคาย	15/10/2016	14/10/2016	Detected		
7	SI164518-PC3	Placenta	น.ส.	จ.หนองคาย	15/10/2016	14/10/2016	Not Detected		
8	SI164518-PC4	Placenta	น.ส.	จ.หนองคาย	15/10/2016	14/10/2016	Not Detected		
9	SI164518-PC5	Placenta	น.ส.	จ.หนองคาย	15/10/2016	14/10/2016	Detected		

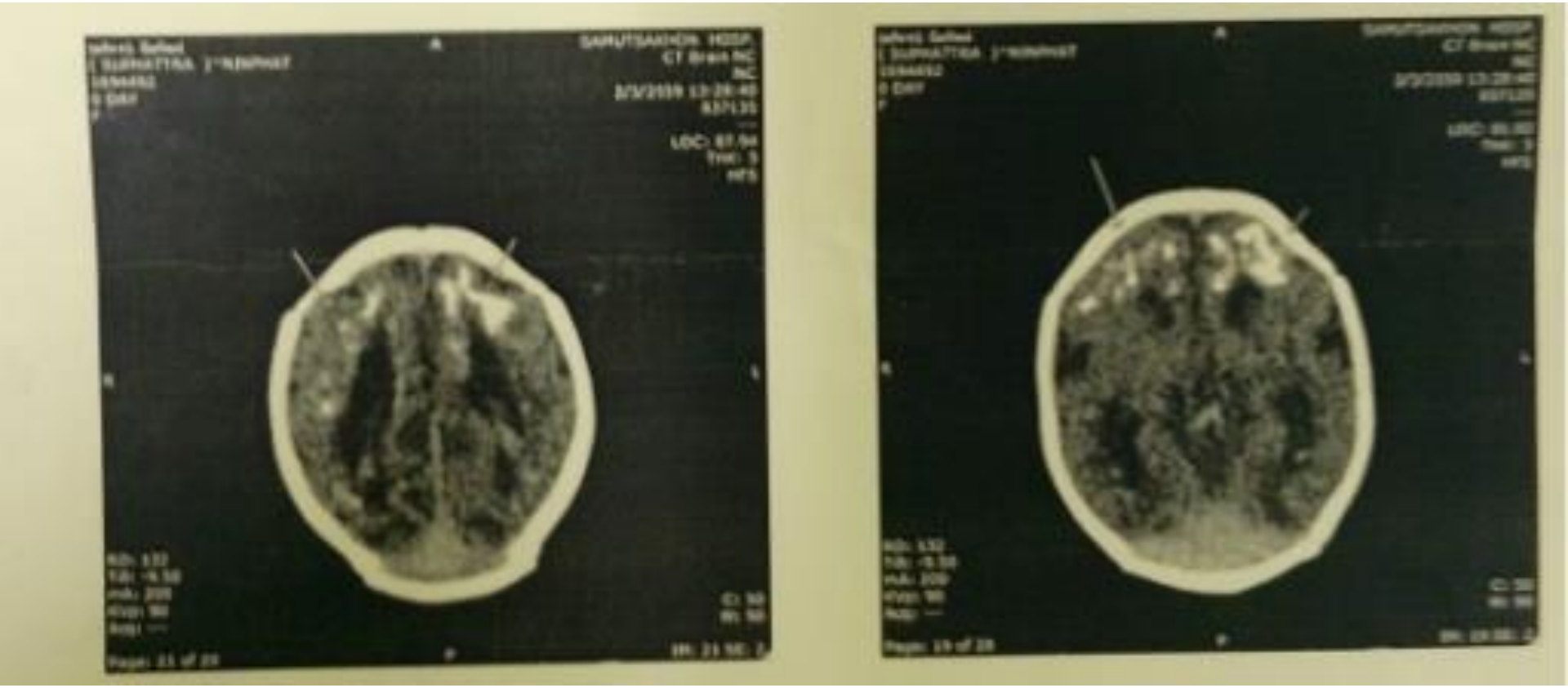
Microcephaly Case 1 Summary

- **Maternal age** : 16 years old, G1P1
- **Place** : Samut Sakorn and Suphan Buri
- **Gestation** : 39^{+3} wks **Birth weight** : 2,165 grams
- **Rash and illness during pregnancy** : None
- **Mode of Delivery** : normal, 1st March 2016
- **Detected date** : 3rd March 2016
- **CT Brain** : calcification in frontal lobe and loss of cerebral sulci
- **Lab confirmations** : Anti-Zika IgM positive

(Both US CDC protocol and Euroimmune Kit)

TORCHS Ab : Negative

CT Brain Findings
3 days of age



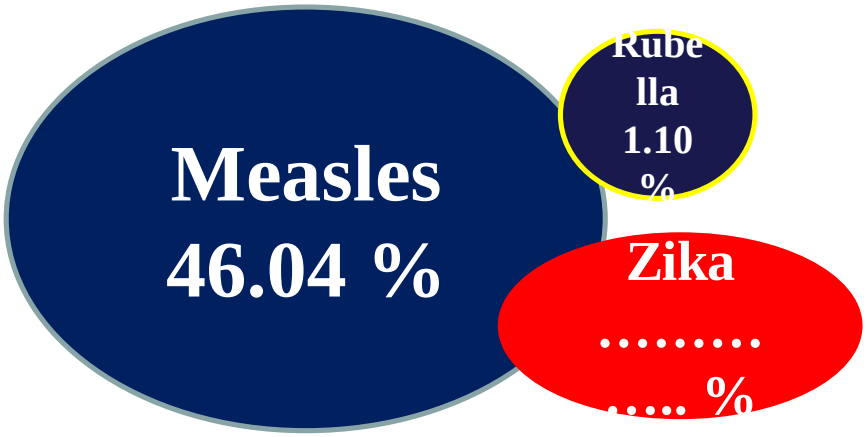
Investigation of Zika virus infection Incidence among Measles- and Rubella-negative patients in Measles Elimination Program in Thailand 2016

Nipapan SARITAPIRAK, Nirandorn YIMCHOHO, Rome BUATHONG

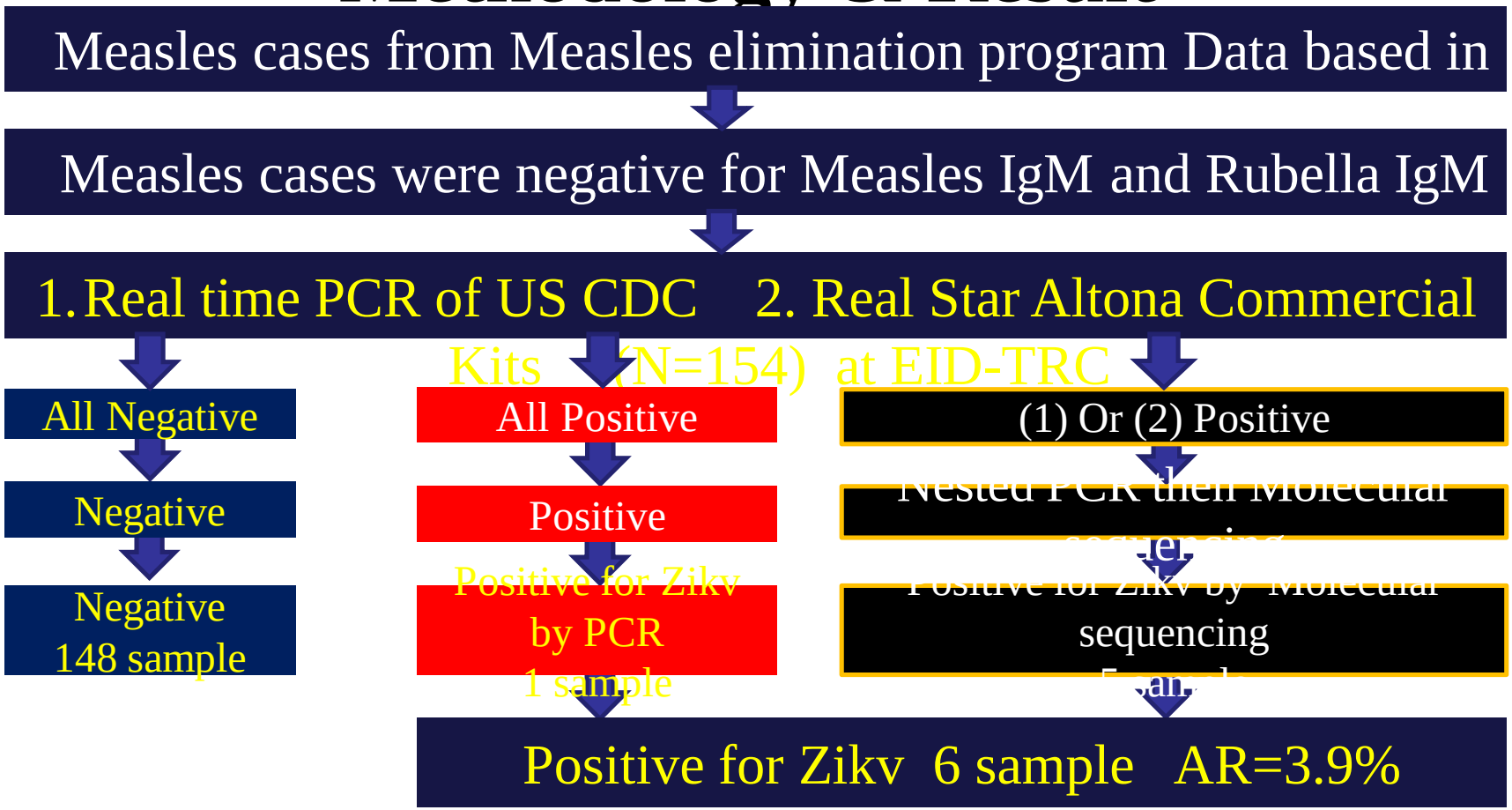
MZ Project,

Bureau of Epidemiology, MOPH Thailand

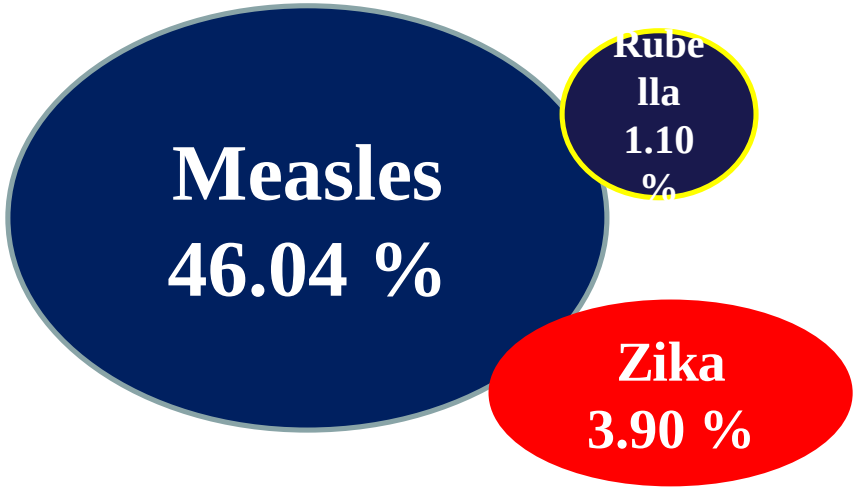
Research Question



Methodology & Result



Discussions & Conclusion



Still under estimation of Zika infection among Measles program because of

1. **Sample recruit for testing is acute sample (< 7 days after onset) is not preferred sample for Measles / Rubella IgM**
2. **Diagnosis of Zika virus based on ONLY molecular technique. The incidence will be higher if the Zika**

Asymptomatic rate of Zika virus infection in adults during Zika virus outbreak in a community of Thailand 2017

Rome BUATHONG, Supaporn WACHARAPHUSADEE, Yongjua LOASIRITHAWORN, Jurai WONGSAWAT

PZ Project,

Bureau of Epidemiology, MOPH, Nonthaburi, Thailand

The EID Health Science Center, The Thai Red Cross Society, Bangkok, Thailand

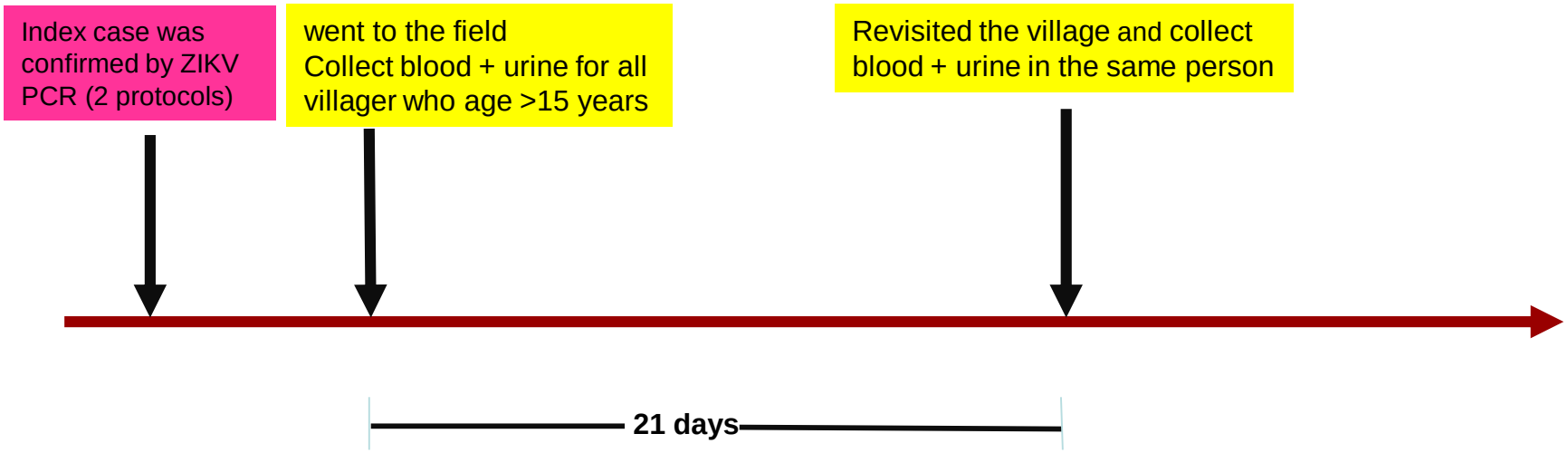
Research Question

Is asymptomatic rate of ZKV in emerging area different from endemic area ?

Previous report in Yap Island 80%

Thailand? (ZKV endemic)

Methods and Results



- **Molecular testing by real time PCR (Commercial Kit) in both urine and blood**
- **489 were enrolled in 7 provinces of all regions in Thailand**
- **74 people were positive PCR either first time or second time AND 415 were negative twice**
  - **44 symptomatic and 30 asymptomatic**
  - **Asymptomatic rate in adults is 40.5 %**

Conclusion

Asymptomatic rate of emerging ZKV area is different from endemic ZKV area

Previous report in Yap Island (Ab)
80%

Thailand (PCR)
40%
(Waiting for seroconversion)

Discussions

- Under diagnosis will be common in flavivirus endemic to country due to

  1) High cross reactivity between Dengue and Zika viruses

  Zika fever tend to be diagnosed with Dengue fever if the clinicians use either rapid test or ELISA

  2) High cost

  + needs other diseases exclusion by laboratory testing with need more invest cost

  + many diseases mimic the presentation in the

Discussions

- Under diagnosis will be common in flavivirus endemic country due to

  3) High technique

  + needs confirmation by molecular detection such as PCR and sequencing

  + methods itself is also complicated

  + blood is not good sample due to rapidly disappeared within 5 days

  + the
  detect

- In end

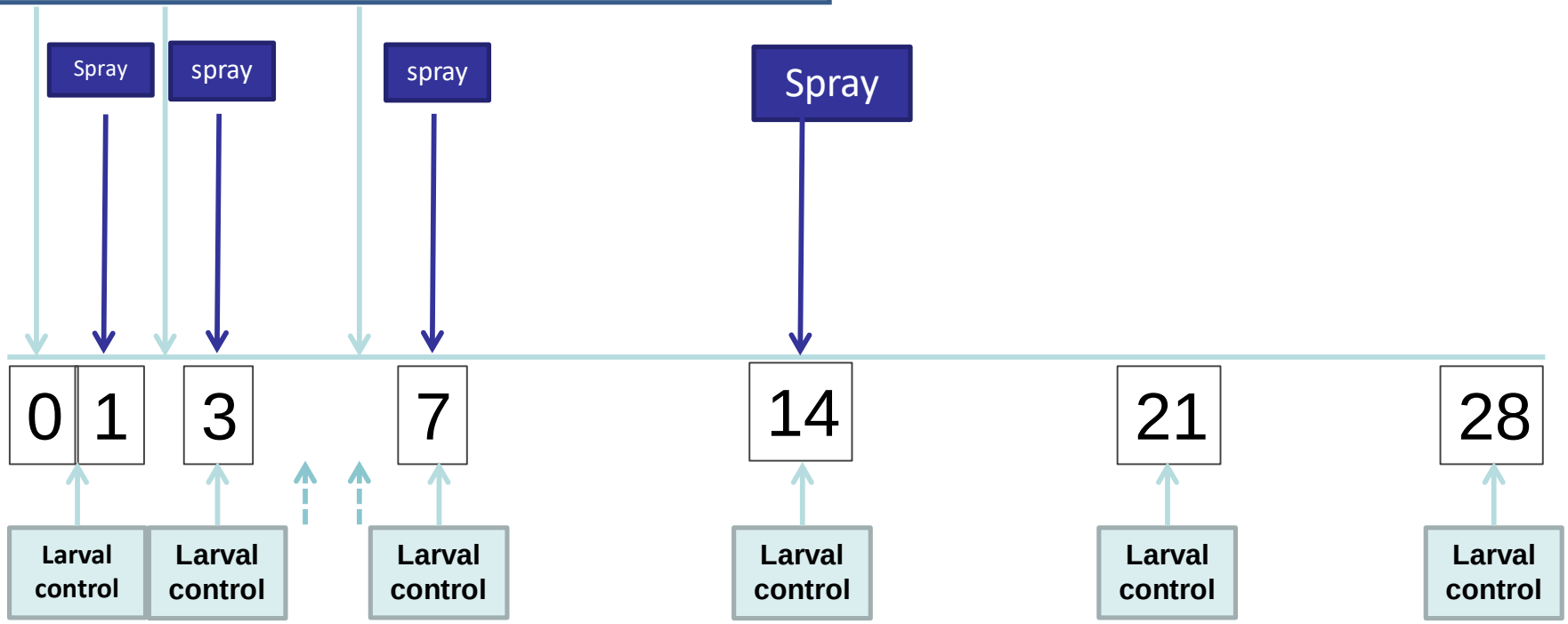
Zika fever in Thailand will be obliterated by Dengue fever

And there is persisting such for a

Control Strategy

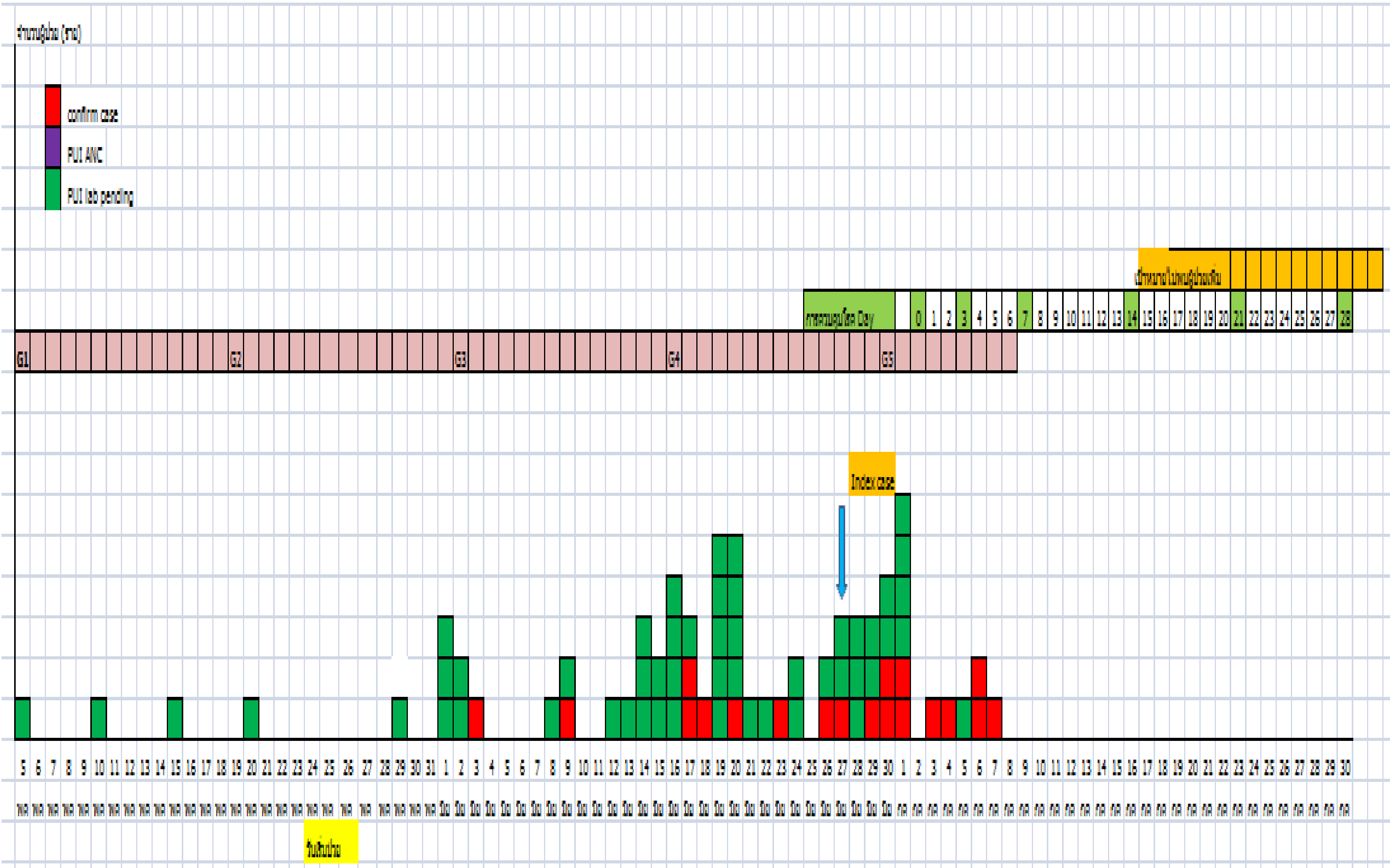
Activities of Zika Control and Prevention

- Logistics
- Prepared meeting at day 0
- Investigation and active case finding
- Community and social mobilization
- EOC

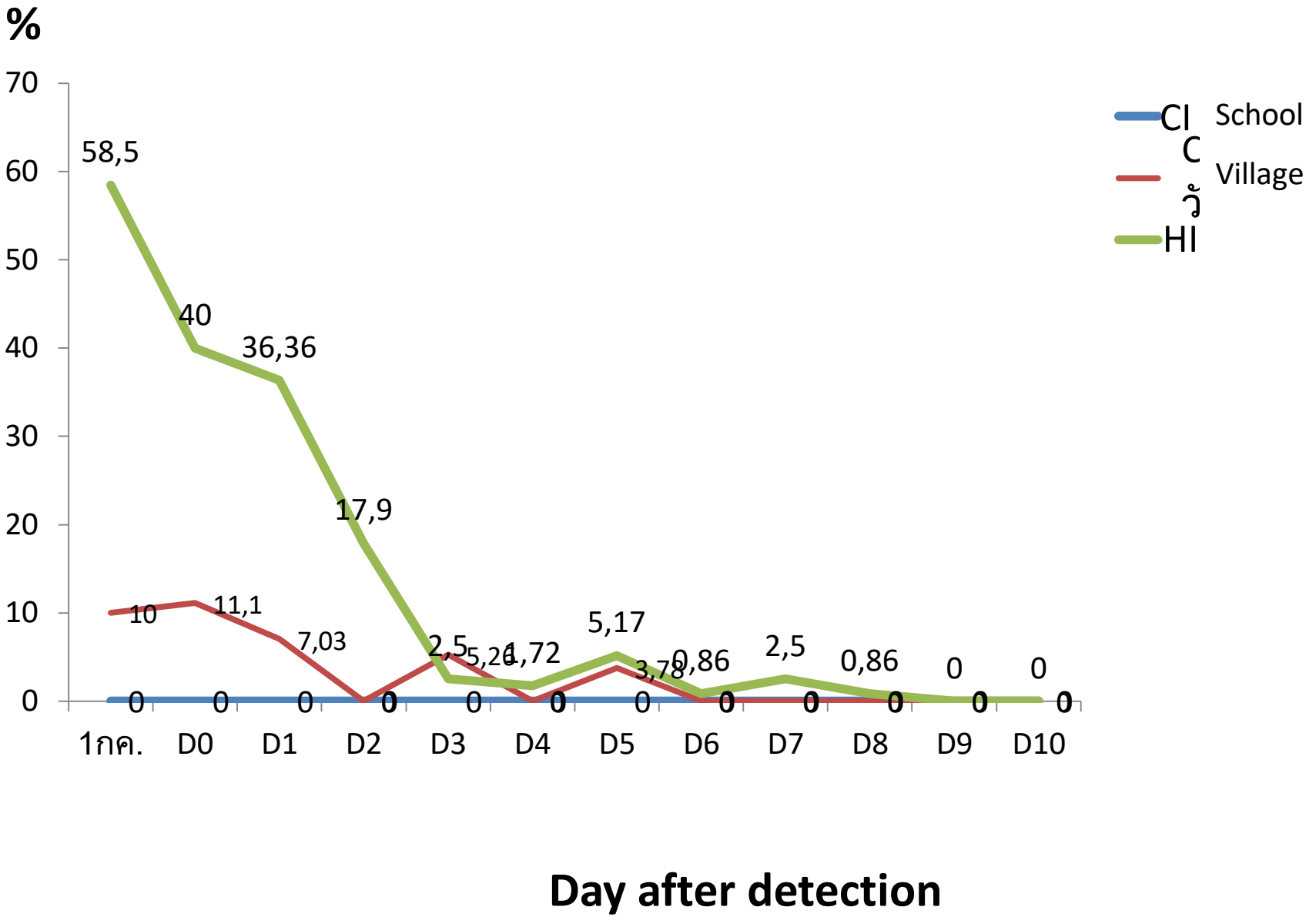


Village check	Sub district check	District check
HI, CI near 0	< 5%	< 5%

Epidemic curve of Zika fever outbreak in a province May – July 2017

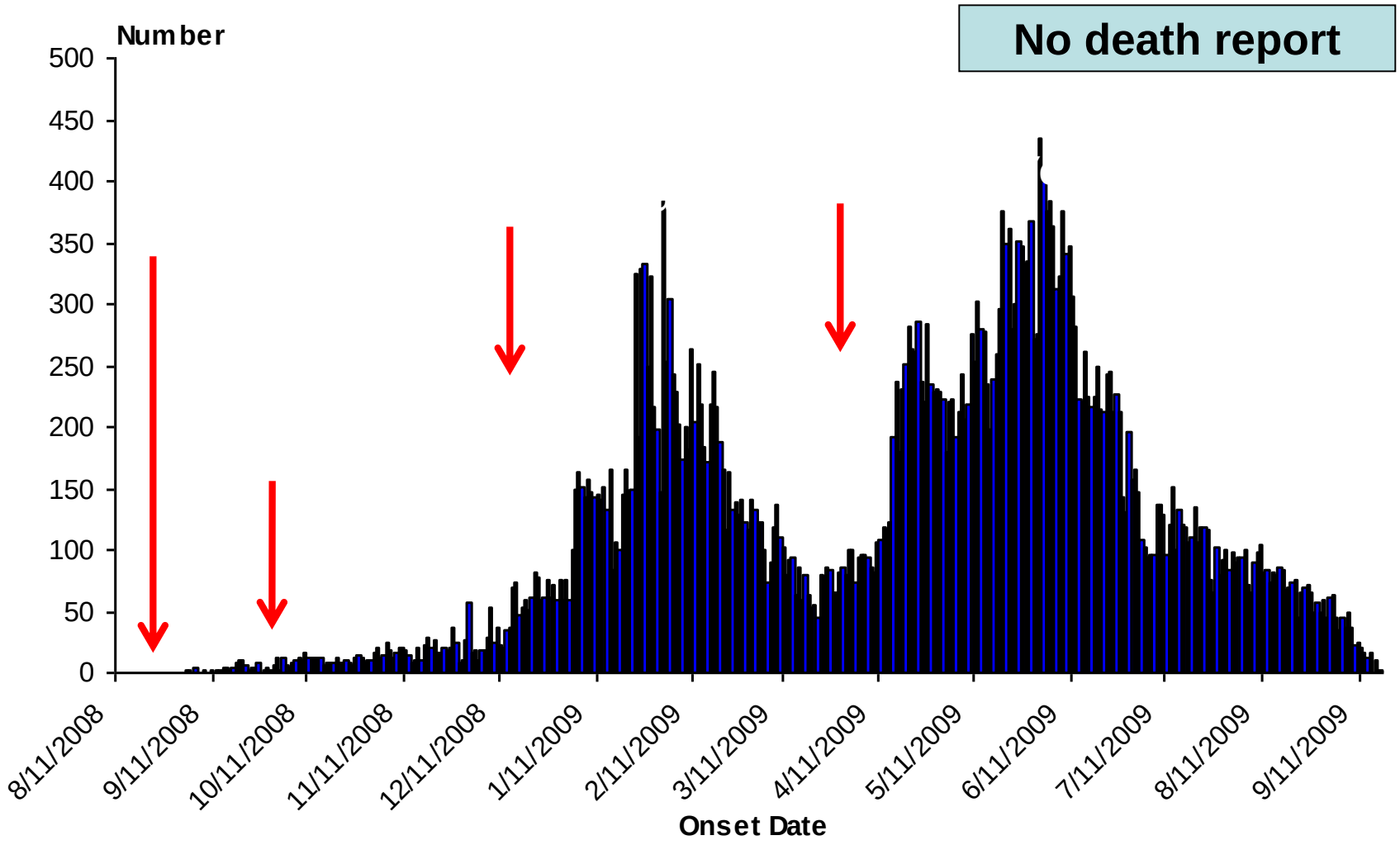


HI , CI in affected village



What emerging look like in Thailand?

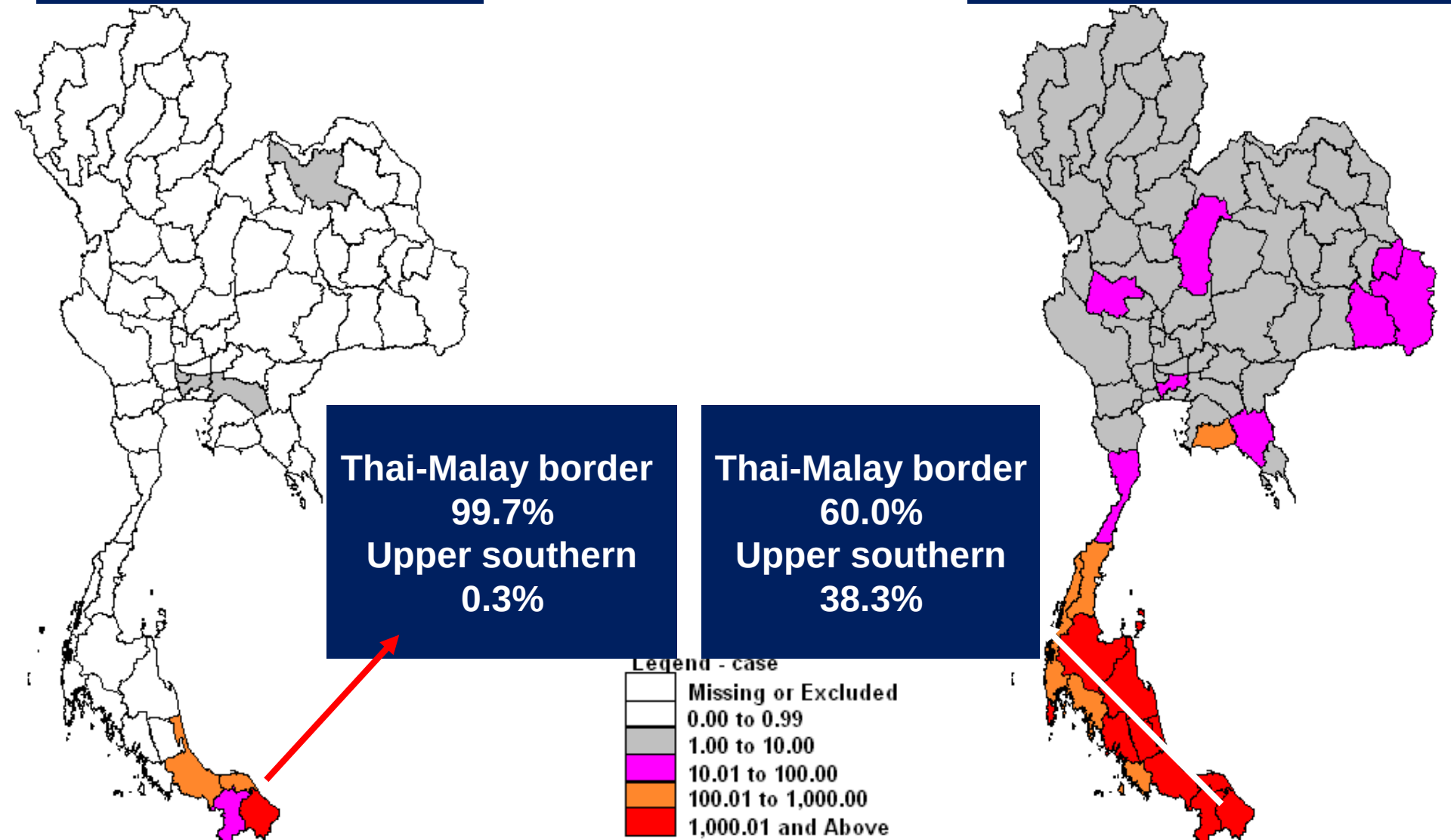
Number of suspected CHIK by date of onset Notifiable Diseases Surveillance, Thailand, Aug 2008 – Sep 2009 (N=44,040)

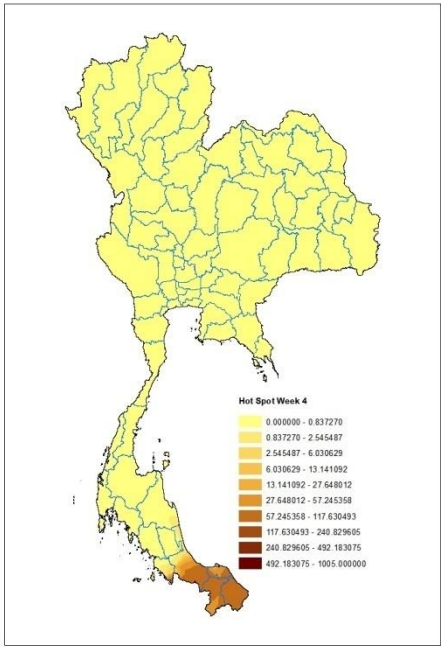


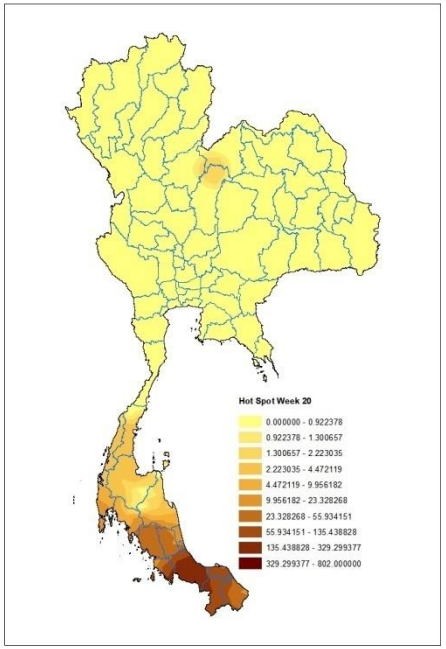
Geographic distribution of CHIK report between 2008 and 2009, Thailand

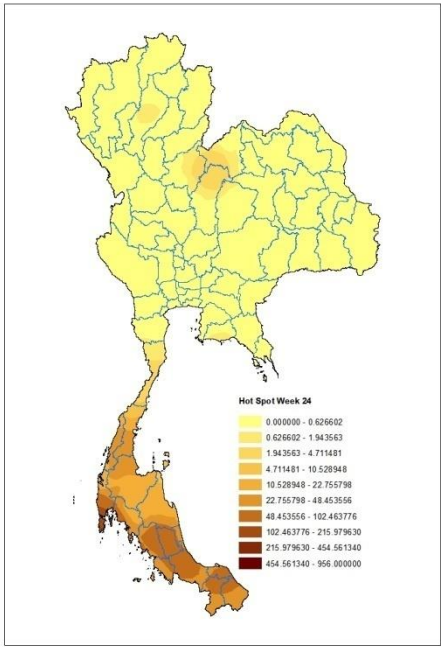
2008 (n=2,494)

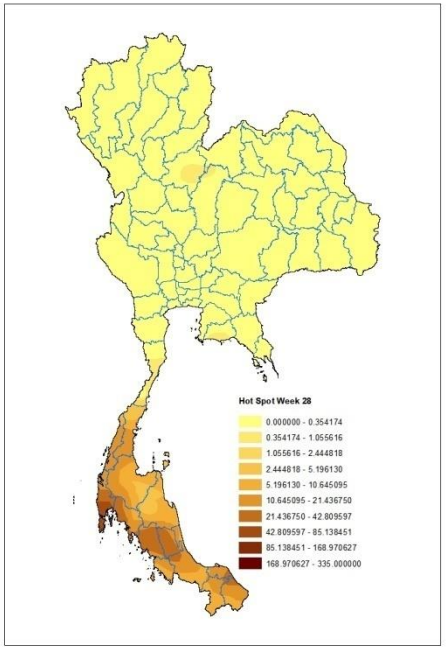
2009 (n=41,546)











CHIK reporting case movement from southernmost to upper southern provinces

กรมควบคุมโรค
สำนักระบาดวิทยา

Thank you for your kind attention

SAWASDEE

KRUB