



Dr. Wichai Satimai

Director

Bureau of Vector-Borne Disease,
Department of Disease Control,
Ministry of Public Health
THAILAND

MALARIA CONTROL STRATEGY 2008-2011

OBJECTIVES

General Objectives

- 1) To reduce malaria morbidity and mortality until the disease is no longer public health problem
- 2) To reduce areas and population under malaria control phase and reclassify towards pre-elimination and elimination phase
- 3) To contain spreading of drug resistant parasites to other countries
- 4) To promote multilateral collaboration with other countries in solving malaria problems.

OBJECTIVES

Specific Objectives

1. To reduce malaria incidence rate to 0.4 or less, /1,000 pop.
2. To reduce malaria death rate to 0.2 or less, /100,000 pop.
3. To integrate/decentralize malaria control into general health services in 20 provinces
4. To eliminate malaria in among 20% of population living in active transmission areas

STRATEGIES

1. Strengthening the national malaria control program through partnership with the Government and Non-Government sectors and community
2. Development of network on health behavioral changes among government and private sectors and community
3. Development of prevention and control of malaria among population at risk of malaria, mobile population, refugees, ethnic groups and malaria reservoirs
4. Program management for integration/decentralization of malaria control program into general health services towards malaria elimination

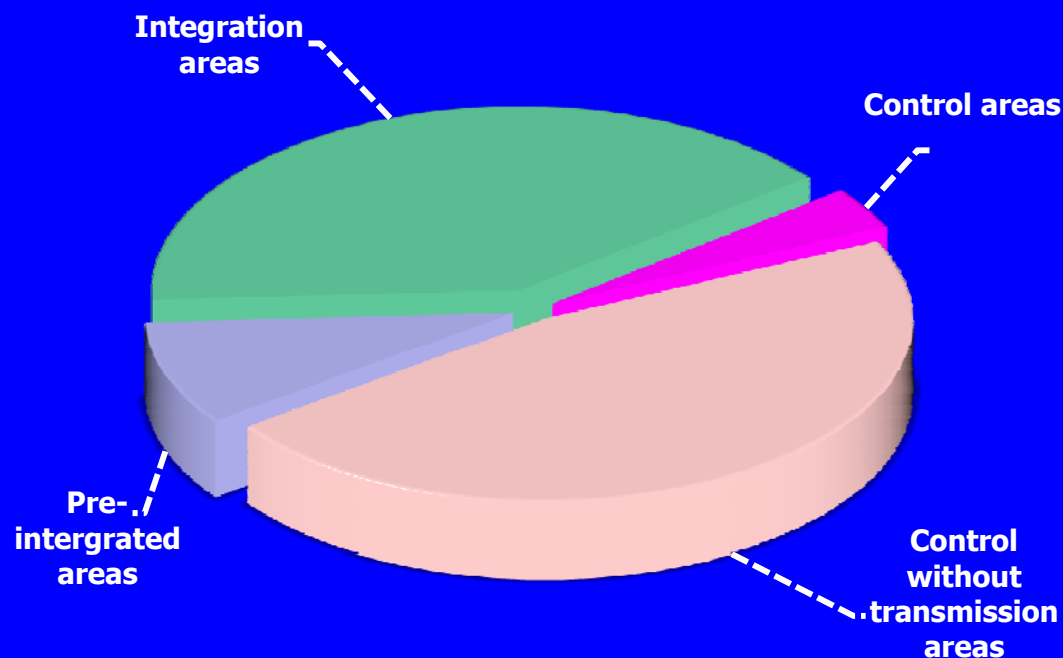
MALARIA CONTROL APPROACHES

1. Disease prevention
2. Disease management (early diagnosis and effective treatment, referral system and post treatment follow-up)
3. Networking of malaria surveillance and control of transmission at local level
4. Promotion and support decentralization of authority in malaria program management to related agencies
5. Development of human resources and operational interventions for malaria control suitable with prevailing situation
6. Collaboration with government institutes, private sector, international agencies and neighboring countries in controlling border malaria
7. Establish network in training and research on malaria in SEA region

Malaria Situation

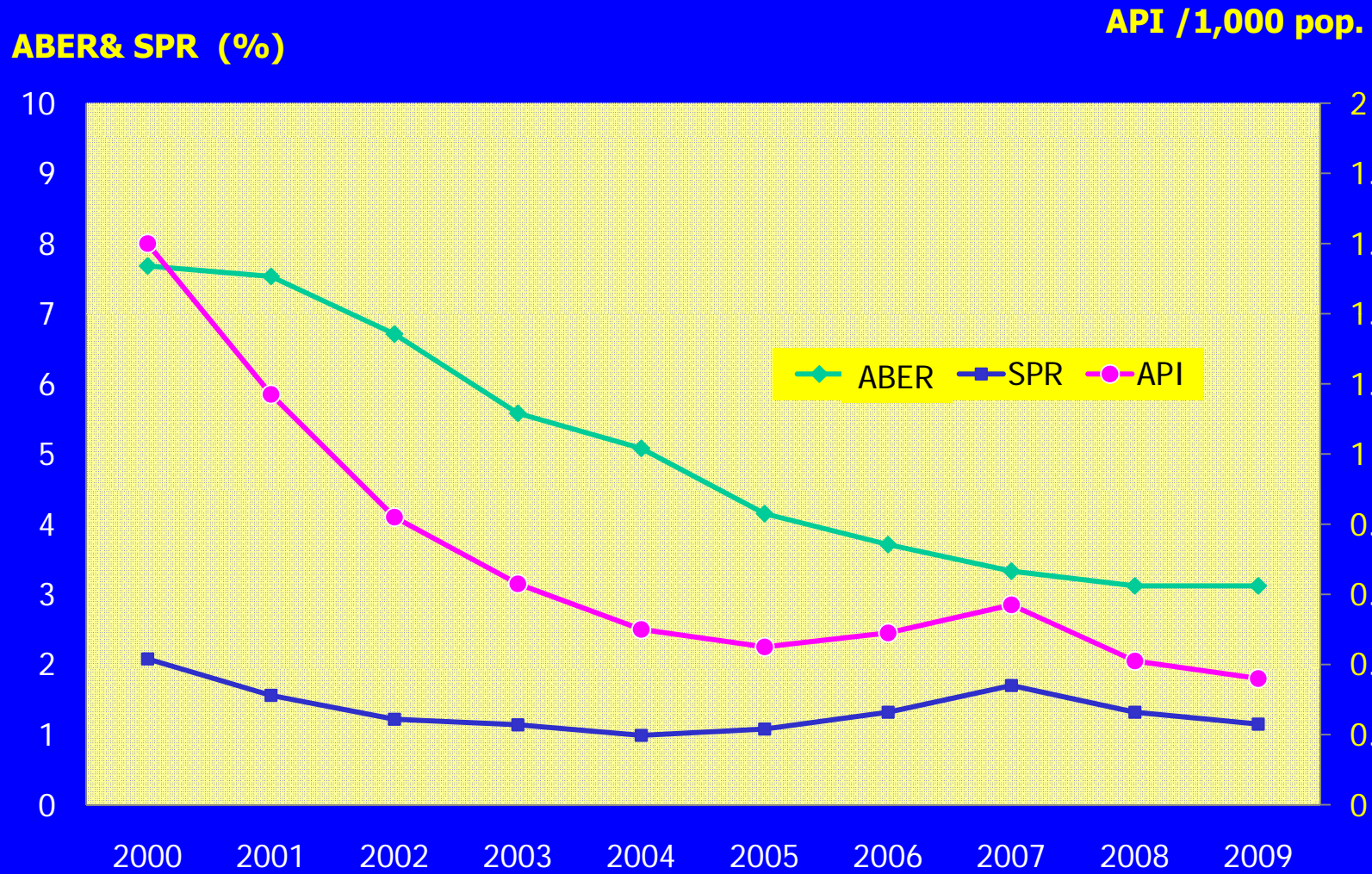
2009

Area Stratification and population covered (FY 2009)

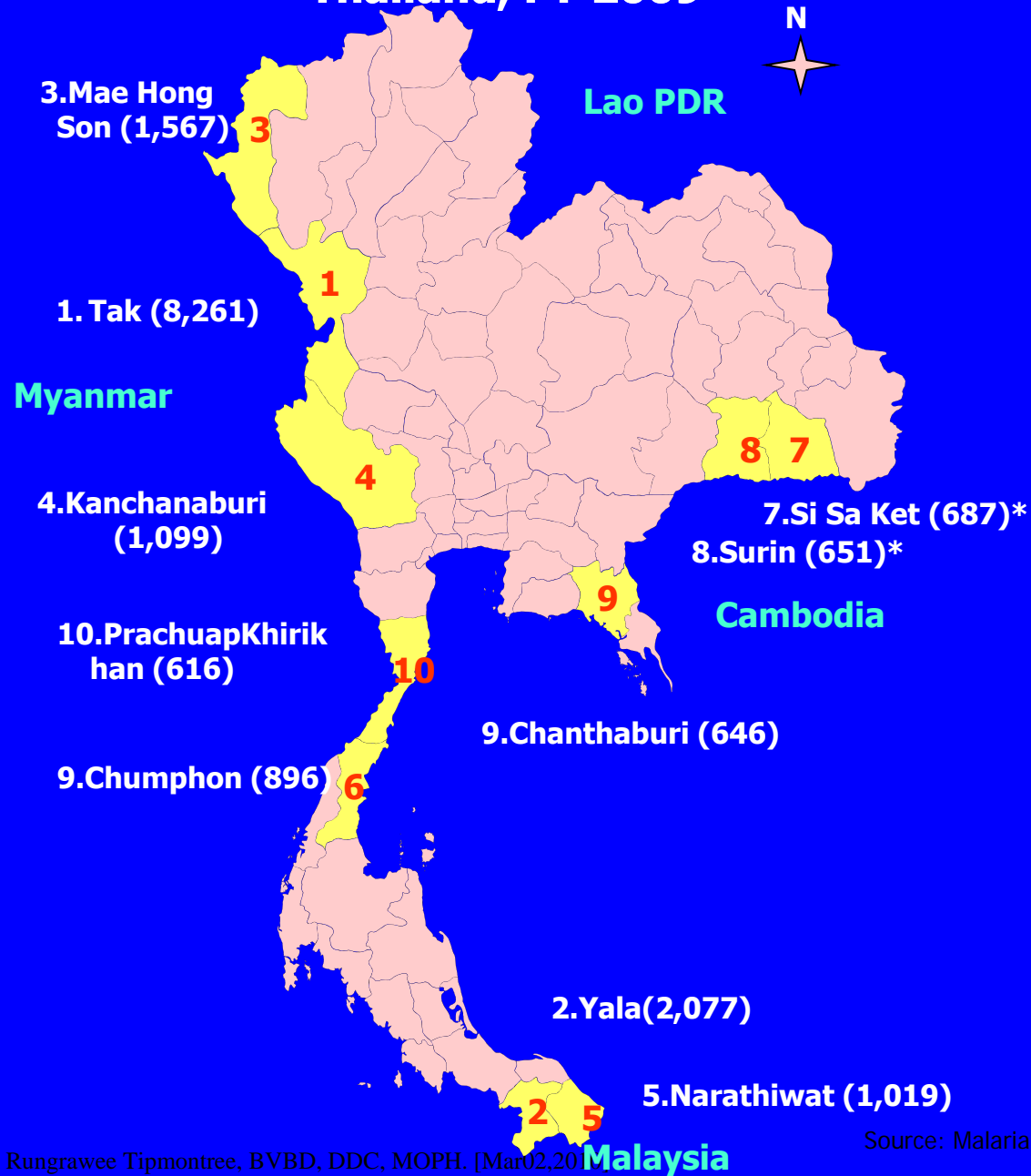


Area	Population	%
Control areas		
1. Control area with transmission (A)		
- Perennial transmission (A1)	422,705	0.7
- Periodic transmission (A2)	1,891,788	3.0
2. Control without transmission (B)		
- High risk (B1)	6,126,680	9.6
- Low risk (B2)	23,607,152	37.2
3. Pre-integration area: District-wide	5,879,343	9.3
4. Integration area: Province-wide	25,564,749	40.3
Total	63,492,417	100.0

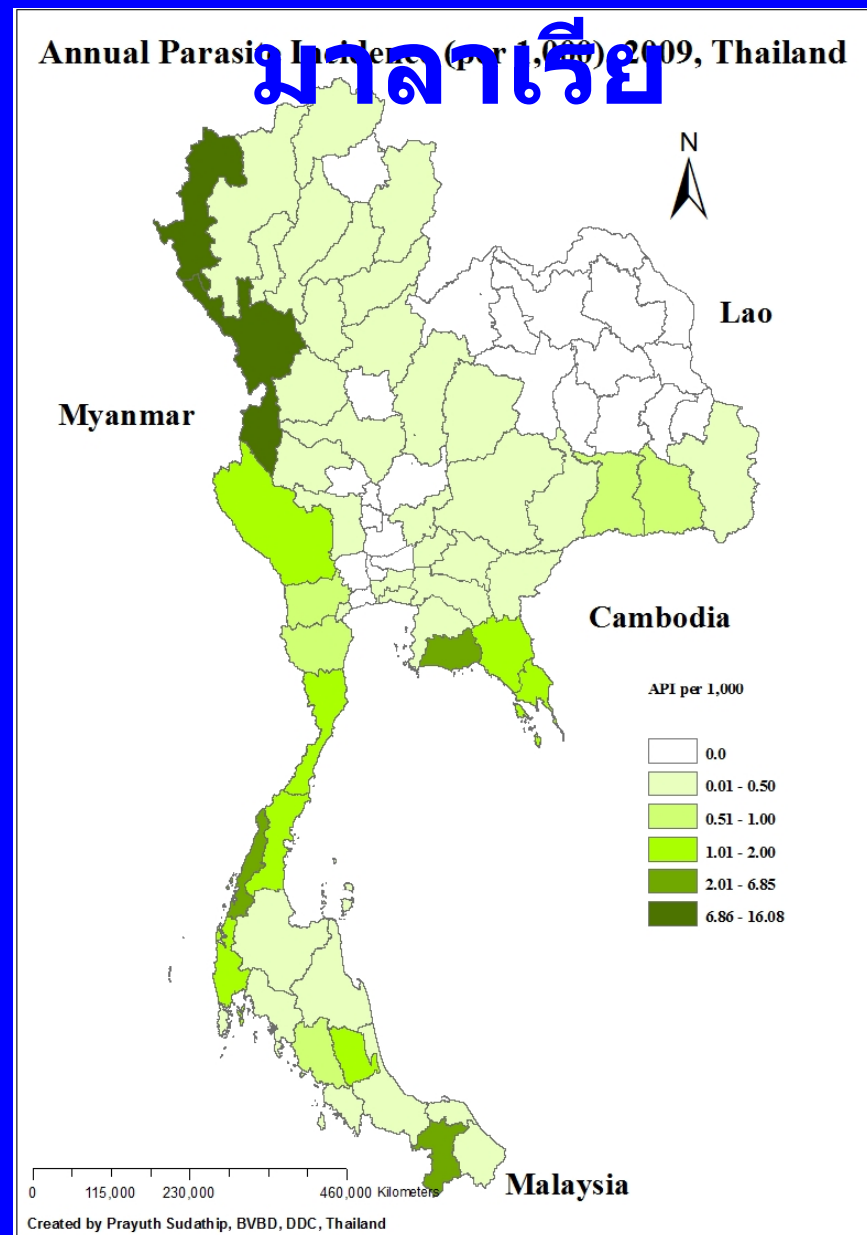
Annual Parasite Incidence (API), Annual Blood Examination Rate (ABER) and Slide Positive Rate (SPR), Thai cases, Thailand, FY 2000-2009



Top Ten Provinces with highest malaria cases, Thailand, FY 2009

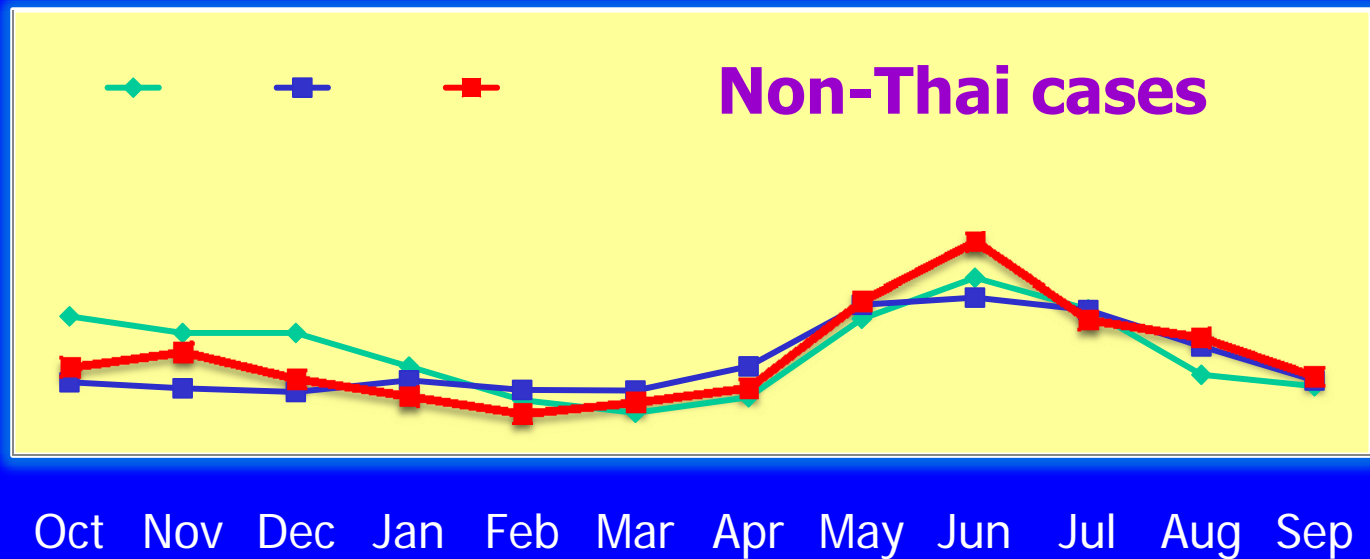
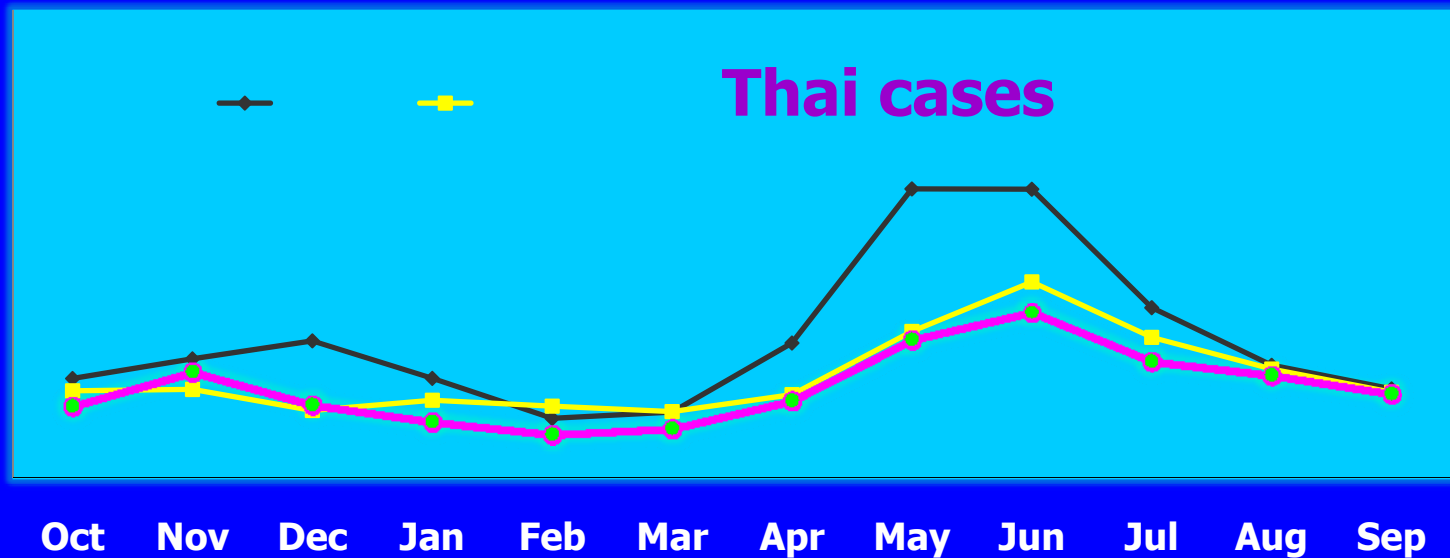


Annual Parasite Incidence , Thai cases, Thailand, FY 2009



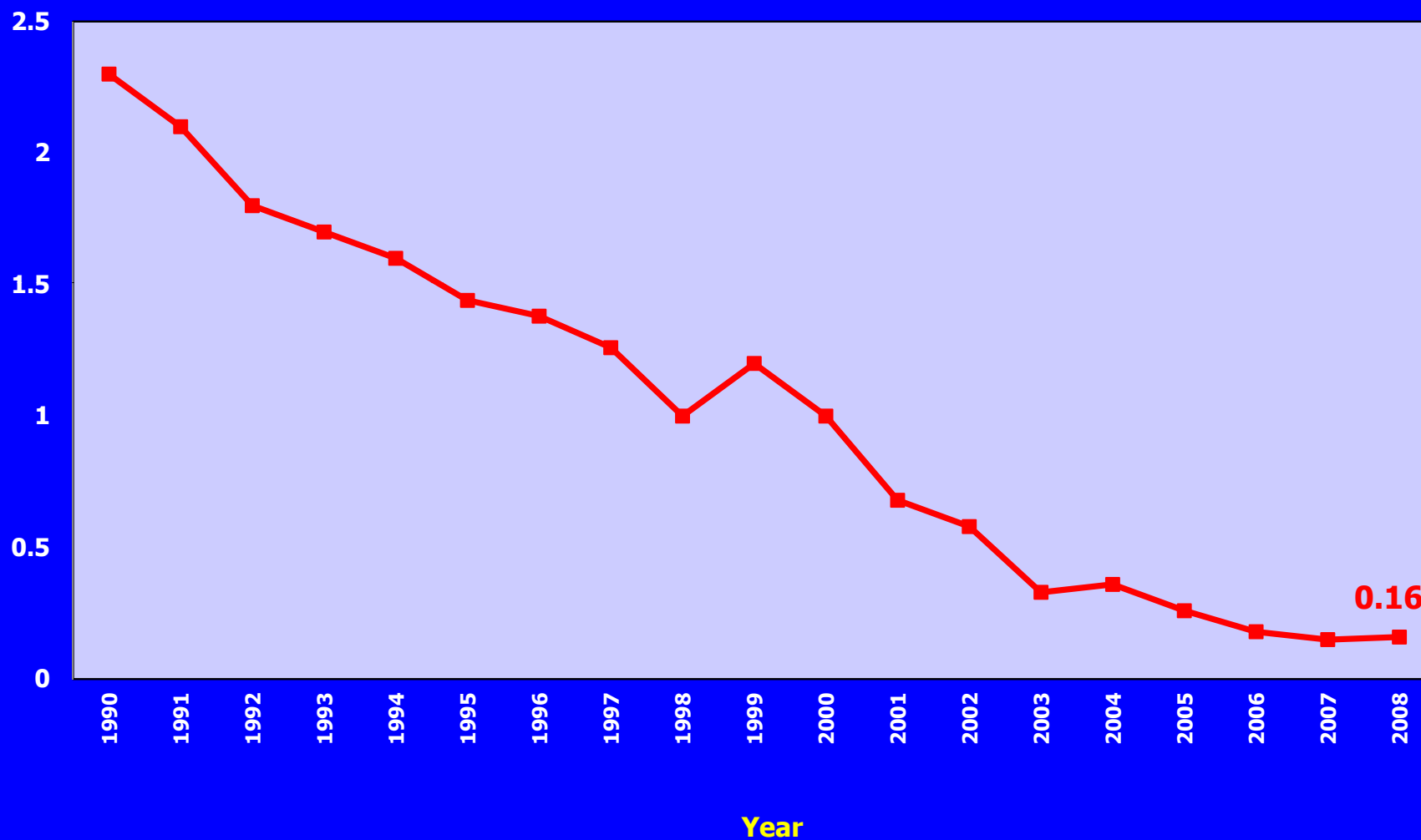
Monthly Thai and non-Thai Malaria Cases FY 2007-2009

Number of cases

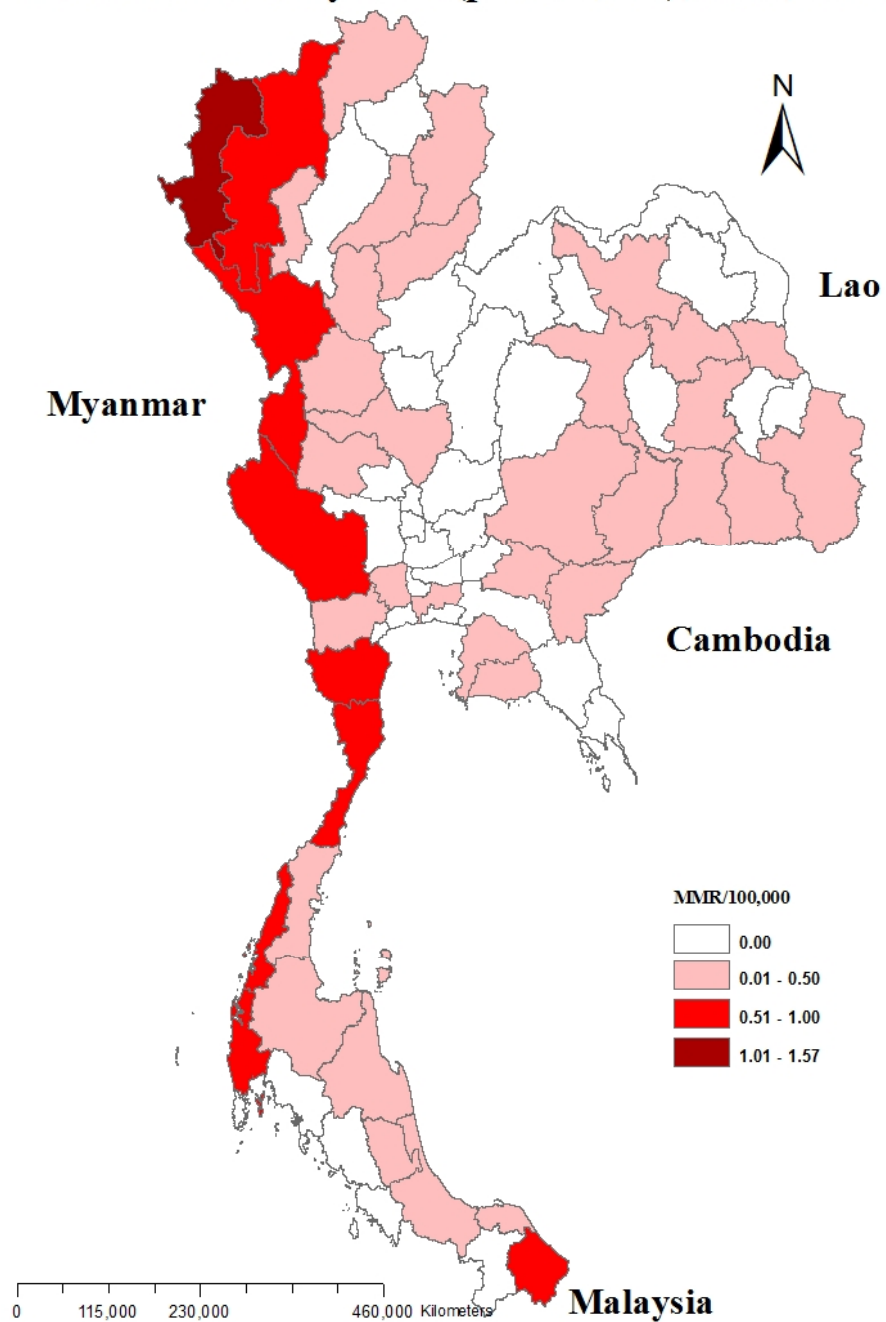


Malaria Mortality Rate, Thailand, 1990-2008

Mortality rate/100,000 pop.



Malaria Mortality Rate (per 100,000), 2008, Thailand

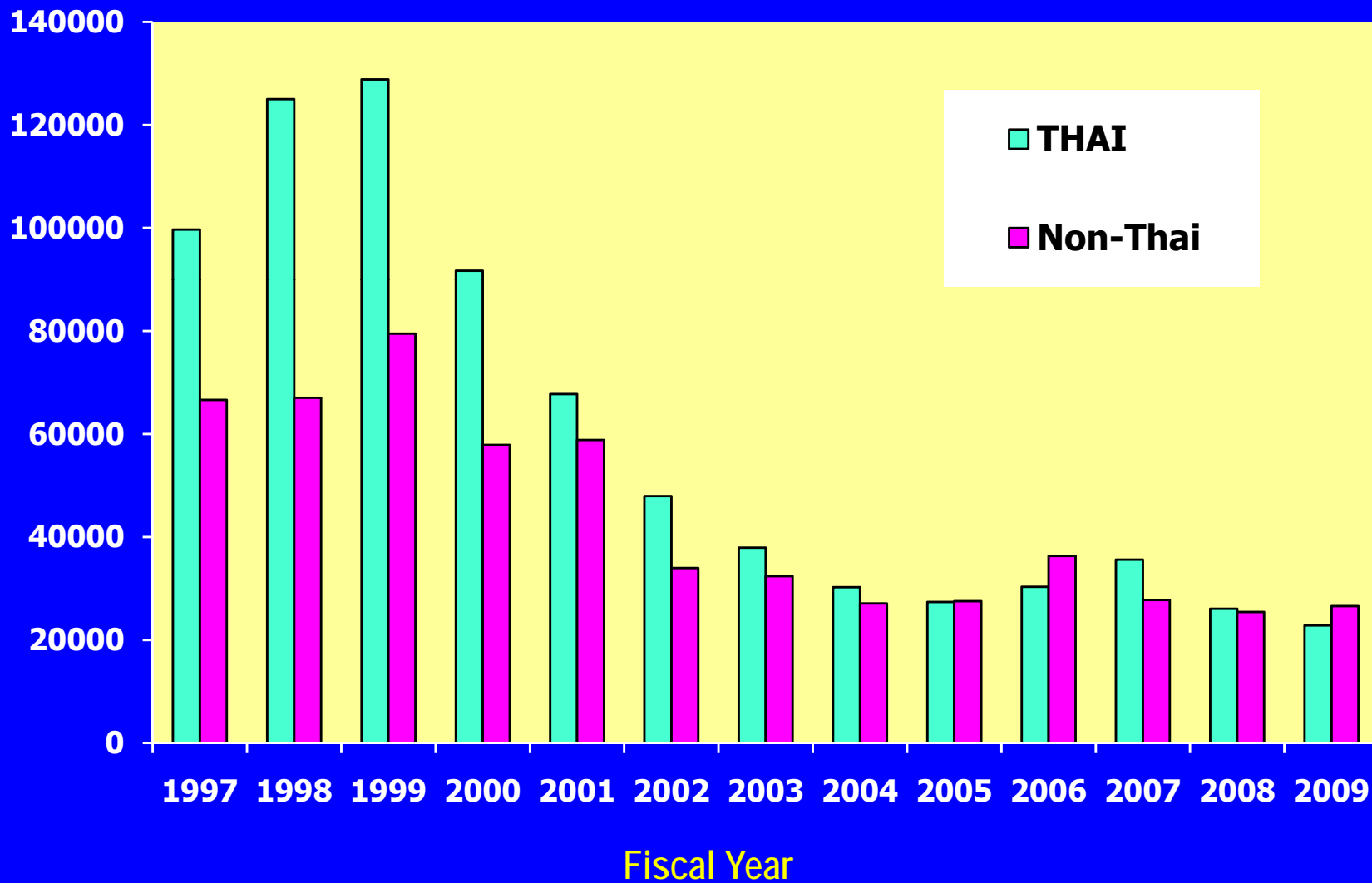


Created by Prayuth Sudathip, BVBD, DDC, Thailand

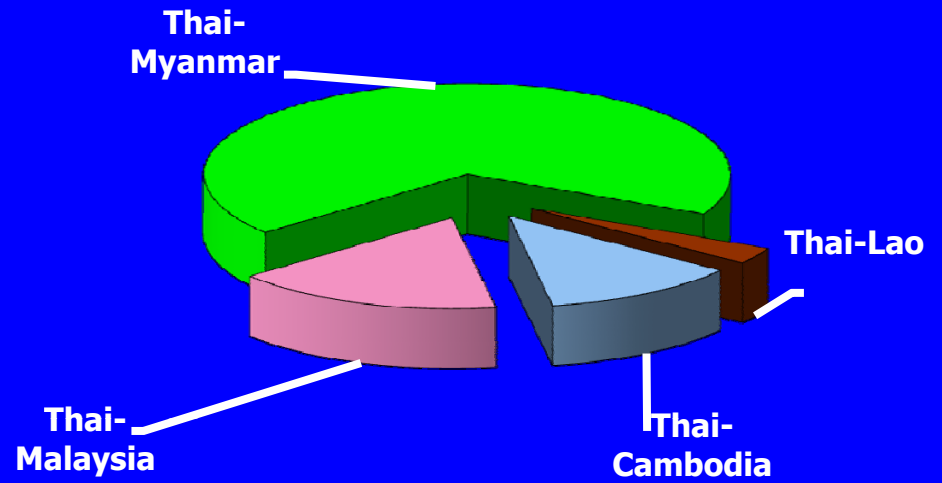
Malaria Mortality Rate, Thai national 2008

Thai and Non-Thai malaria cases Fiscal Year 1997-2009

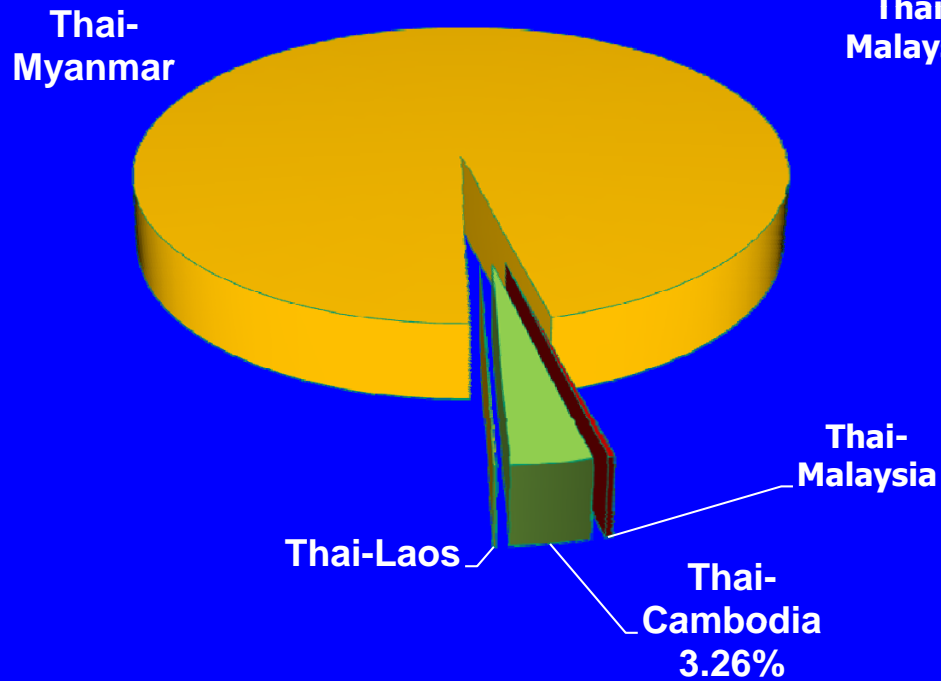
Number of cases



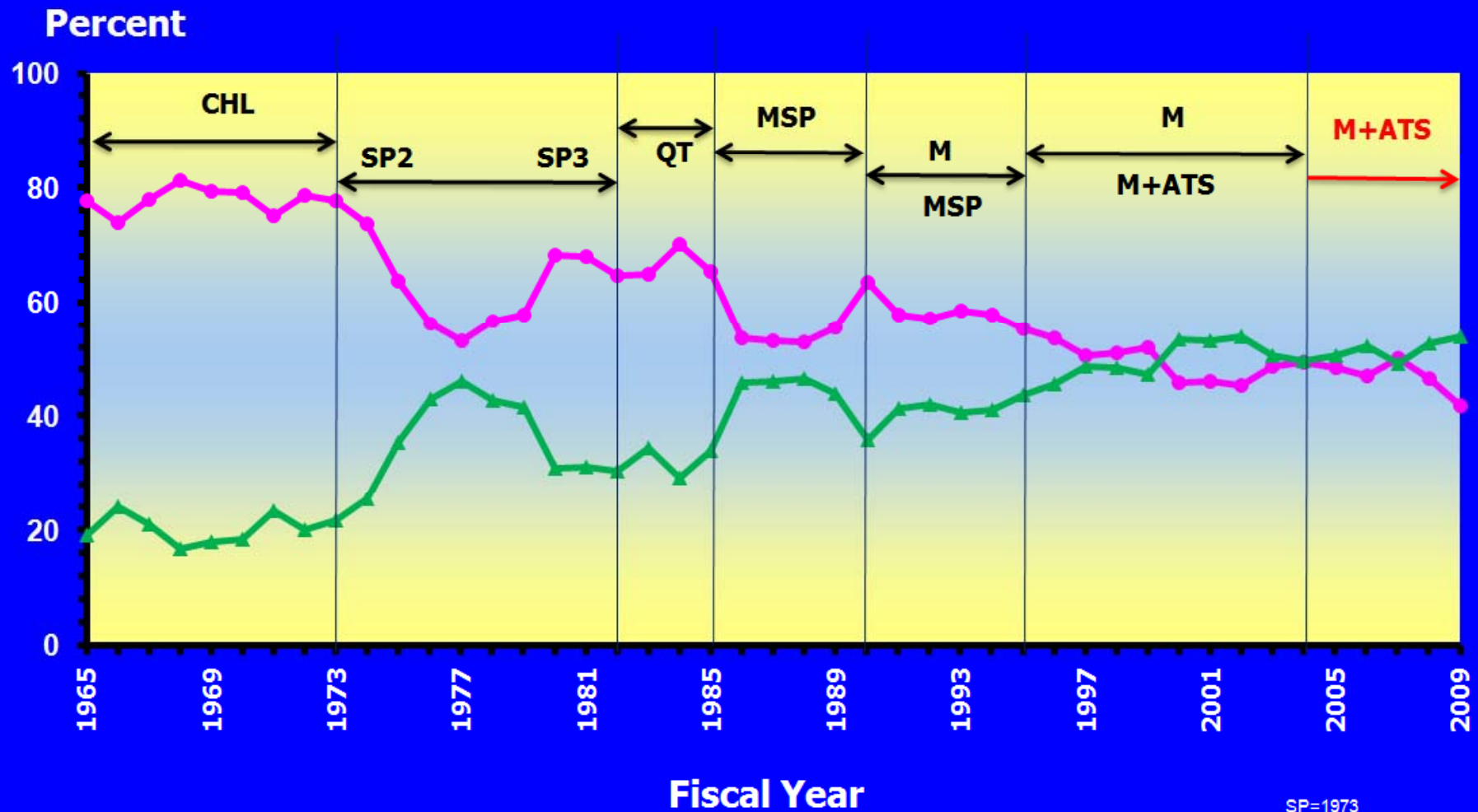
Proportion of Thai cases by border sites, Thailand, Fiscal Year 2009



Proportion of **Non-Thai** malaria cases by border sites, Thailand, Fiscal Year 2009



Proportion of malaria parasite species in relation to the National drug policy, Thailand, Fiscal Year 1965-2009



SP=1973
 SP2, SP3=1973-1982
 QT=1982-1985
 MSP=1985-1990
 M, MSP=1990-1995
 M, M+ATS=1995-2004
 M+ATS=from Oct 2004

◆ P.falciparum ▲ P.vivax

Treatment of *Pf*

Nationwide from 2008

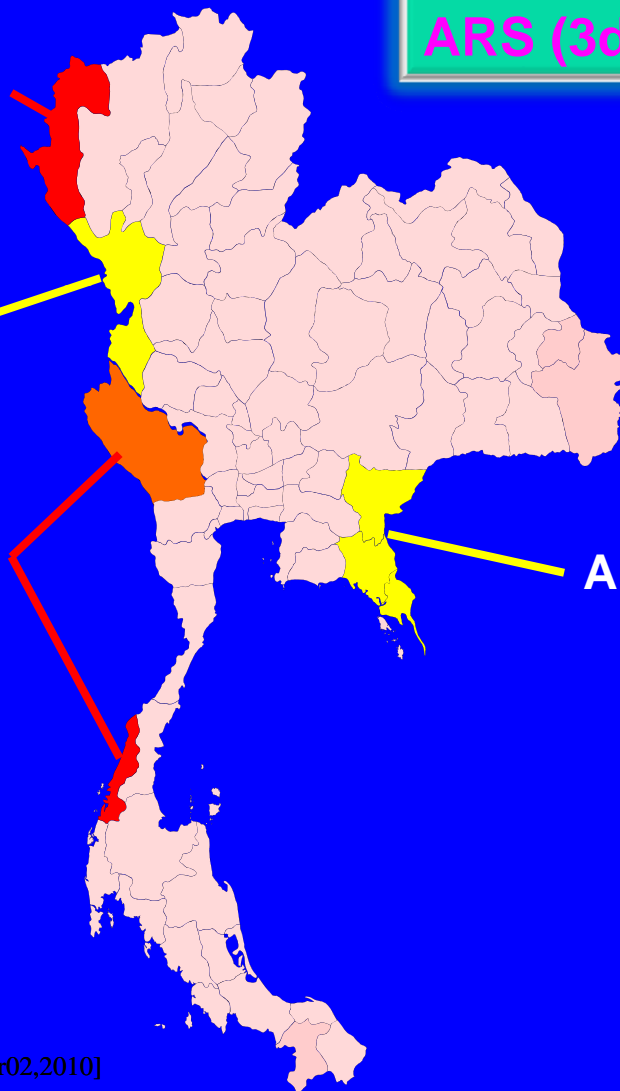
ARS (3d)-MQ (2d) + PQ

ARS (2d)-MQ (2d) + PQ, 2005

ARS-MQ + PQ, 1995

ARS (2d)-MQ (2d) + PQ, 2005

ARS-MQ + PQ, 1995



Treatment of *Pv*, *Pm*, and *Po*

Standard regimen	<i>Pv</i>	<i>Pm</i>	<i>Po</i>
Chloroquine 500 mg x 3d	X	X	X
Primaquine 15 mg x 14 d	X		X

- No evidence of *Pv* resistance
- Frequent relapse cases
 - Primaquine from 15 mg → 20 mg x 14 d

Insecticide Resistance Monitoring in Thailand 2010

Insecticide	Mosquitoes	Locations	Resistance status
Deltamethrin 0.05%	<i>An minimus</i>	Chanthaburi, Tak, Chumpon, Kanchanaburi	①
	<i>An maculatus</i>	Tak, Chumpon	①
Permethrin 0.75%	<i>An minimus</i>	Chanthaburi, Tak, Chumpon, Kanchanaburi	①

Resistance status

① = indicate susceptibility ② = suggest the possibility of resistance

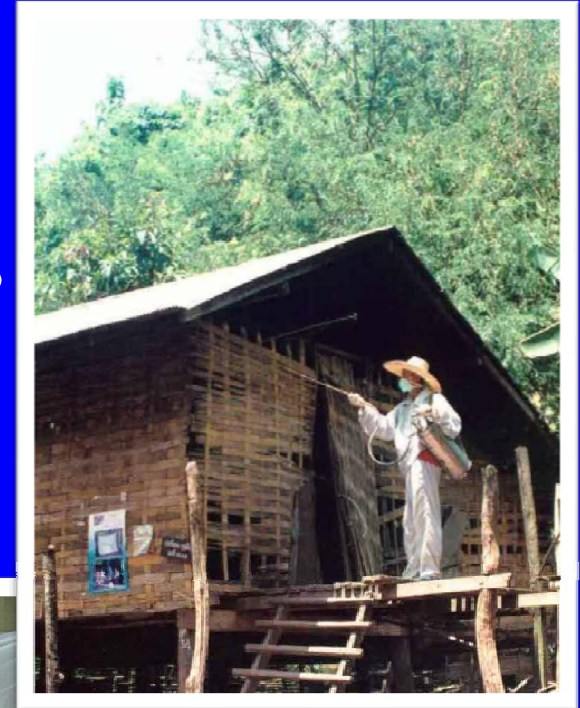
③ = resistance individuals present

CONTROL ACTIVITIES

VECTOR CONTROL

Chemical

- Indoor residual spraying (IRS)
- Insecticide-treated nets (ITN)
- Long Lasting Insecticide-treated nets (LLINs)



SURVEILLANCE AND CASE DETECTION

Case detection

- Passive case detection (PCD)
- Active case detection (ACD)



Malaria Clinic

Case and foci investigation



Foci investigation



Mobile MC

SURVEILLANCE AND CASE DETECTION

Health facilities where service provided



Malaria Clinic



Malaria Post [GFM]



Health Center



Hospital

NEW

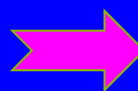
SURVEILLANCE AND CASE DETECTION

- New surveillance system is being tested
- Web-based and paperless

EP.1
Case Detection & Blood Draw (+ Follow-up)

EP.3
Laboratory & Symptom FU

VIVO



Bill & MELINDA GATES foundation

Infected Case by Village

Bill & MELINDA GATES foundation

Infected Case by Village

Software being developed by Biophics, Mahidol University



Behavior Change Communication

BCC is being implemented in Malaria Control program

รู้เร็ว รักษาเร็ว
 คิสิญฺหฬยฉฉฉฉฉฉฉฉ ฉฉฉฉฉฉฉฉฉฉฉฉฉฉ

มีไข้ ปวดหัว ครั่นเนื้อครั่นตัว
อาจเป็นโรคมาลาเรีย
รีบปรึกษา หมอที่คลินิก หรือเจ้าหน้าที่
สาธารณสุขประจำบ้านที่รู้เรื่องมาลาเรีย




1 **รีบไปปรึกษา**
 เจ้าหน้าที่สาธารณสุขประจำบ้านที่รู้เรื่องมาลาเรีย



2 **รับการเจาะเลือด**
 เพื่อวินิจฉัยสาเหตุ



3 **รับมดทับทึ**
 ป้องกันยุงกัด



4 **กินยารักษา**
 ตามยี่งูมาลาเรียที่หมอให้

กรมควบคุมโรค กระทรวงสาธารณสุข
 151 ถนนวิภาวดีรังสิต กรุงเทพฯ 10160 โทร. 0-2562-0464
 www.moph.go.th

- Bi-languages materials were produced
- Variety of printed materials were developed, produced and distributed

การป้องกัน **การตรวจวินิจฉัย**



▲ ใช้มุ้งกันยุง
 สวมเสื้อแขนยาว กางเกงขายาว



▲ ใช้ยาพอกันยุง
 ที่ขาพอกันยุง



1 **รีบไปปรึกษา**
 เจ้าหน้าที่สาธารณสุขประจำบ้านที่รู้เรื่องมาลาเรีย



2 **รับการเจาะเลือด**
 เพื่อวินิจฉัยสาเหตุ



3 **รับมดทับทึ**
 ป้องกันยุงกัด



4 **กินยารักษา**
 ตามยี่งูมาลาเรียที่หมอให้

กรมควบคุมโรค กระทรวงสาธารณสุข
 151 ถนนวิภาวดีรังสิต กรุงเทพฯ 10160 โทร. 0-2562-0464
 www.moph.go.th



Community Mobilization

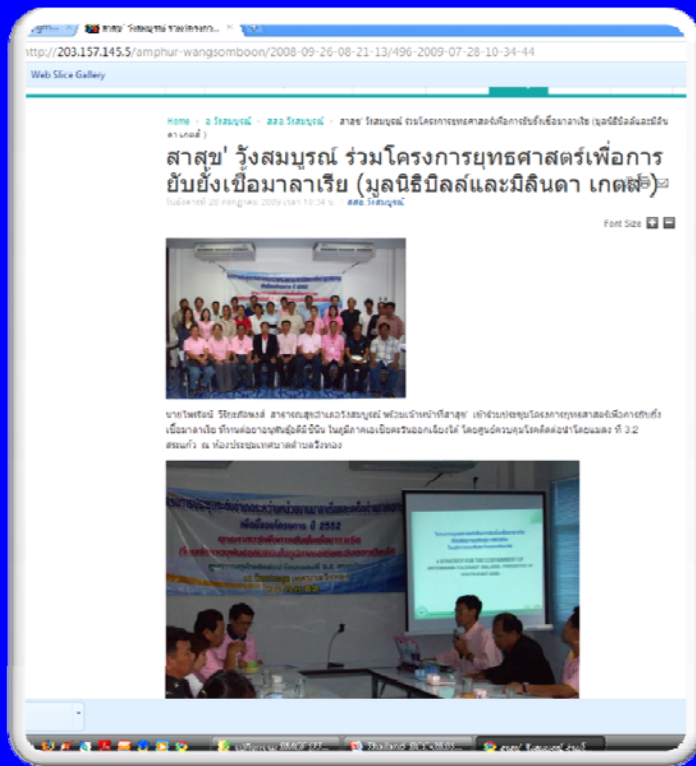
- Capacity building :training volunteers (malaria prevention and control), health staff (use of BCC packages)
- Migrants ->involve business owners to participate in malaria prevention & control



Malaria corner at the factory

Advocacy

- Organize malaria campaign on World Malaria day
- Reinforce success results to public



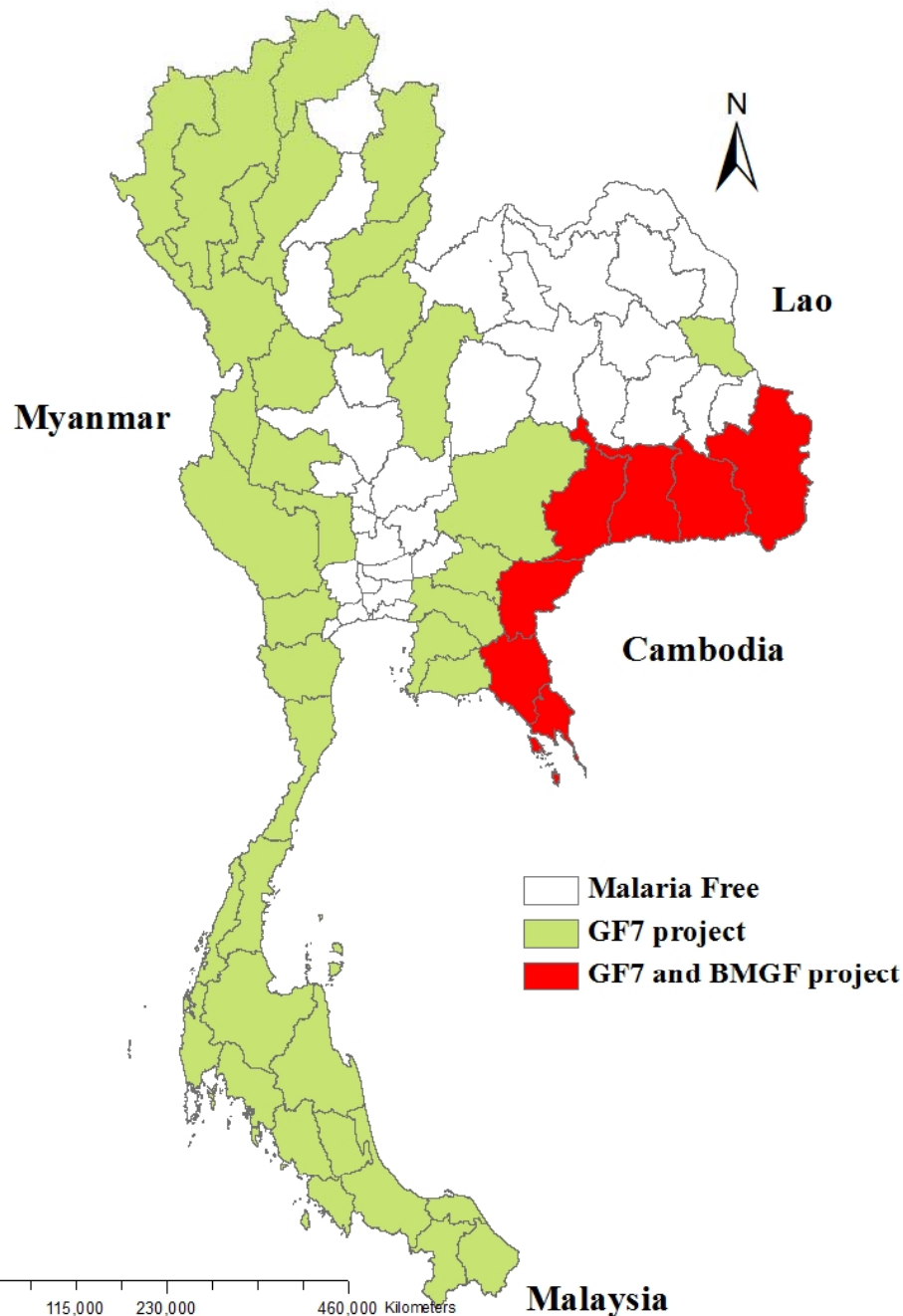
BUDGET

Sources of Budget for Malaria Control Program in Thailand

- **Government budget**
- **The GFATM round 7 (2008-2012)**
- **The Strategy for the containment of Artemisinin tolerant malaria parasites in South-East Asia (2009-2010)**

Areas under different projects covered

- Malaria free [29 provinces]
- GFATM round 7 [43 provinces with selected transmission areas]
- BMGF [7 provinces]



INTERNATIONAL TRAINING

FINISHED

- 1. Management of Malaria Field Operations (MMFO) 2009 [19 January- 13 March 2009] at Nonthaburi and field practice in Kanchanaburi Provinces**

INTERNATIONAL TRAINING

FINISHED

- 1. International Course on Malaria Prevention and Control (Basic course) for participants from African countries [June8-July3, 2009] at Saraburi**
- 2. International Course on Malaria Prevention and Control (Basic course) for participants from African countries [July20-August14, 2009] Saraburi**

INTERNATIONAL TRAINING

Upcoming

- 1. Management of Malaria Field Operations (MMFO) 2010 [Sep20-Nov13,2010] in Nonthaburi and Chiang Mai [field work in Mae Hong Son]**
- 2. International Course on Malaria Prevention and Control (Basic course) for participants from African countries [May31-June25, 2010] in Saraburi**

PERSISTING MALARIA PROBLEM

Malaria Problems

- **High Population migration along international border**
- **Forest-related malaria : difficult for Vector Control operations, inaccessibility areas**



Involvement of ACTMalaria Alumni in Malaria Control Program

MMFO 2009

- 1. Mr. Sawat Chonpol: drug resistance monitoring.**
- 2. Mr. Pratueng Chamnoi : malaria control program manager in regional office 8.**
- 3. Mr. Seesai: drug resistance monitoring and laboratory QA.**
- 4. Mr. Phasuk : supervisor for vector-borne disease control.**
- 5. Mr. Cherdchai Kaewpa: laboratory ISO and RDT expert.**

BITTW 2009

- 1. Ms. Weena Santabutr : coordinator for vector-borne disease control activities.**
- 2. Ms.Nopparat Mongklangoon: involves in modification of surveillance system**

Involvement of ACTMalaria Alumni in Malaria Control Program

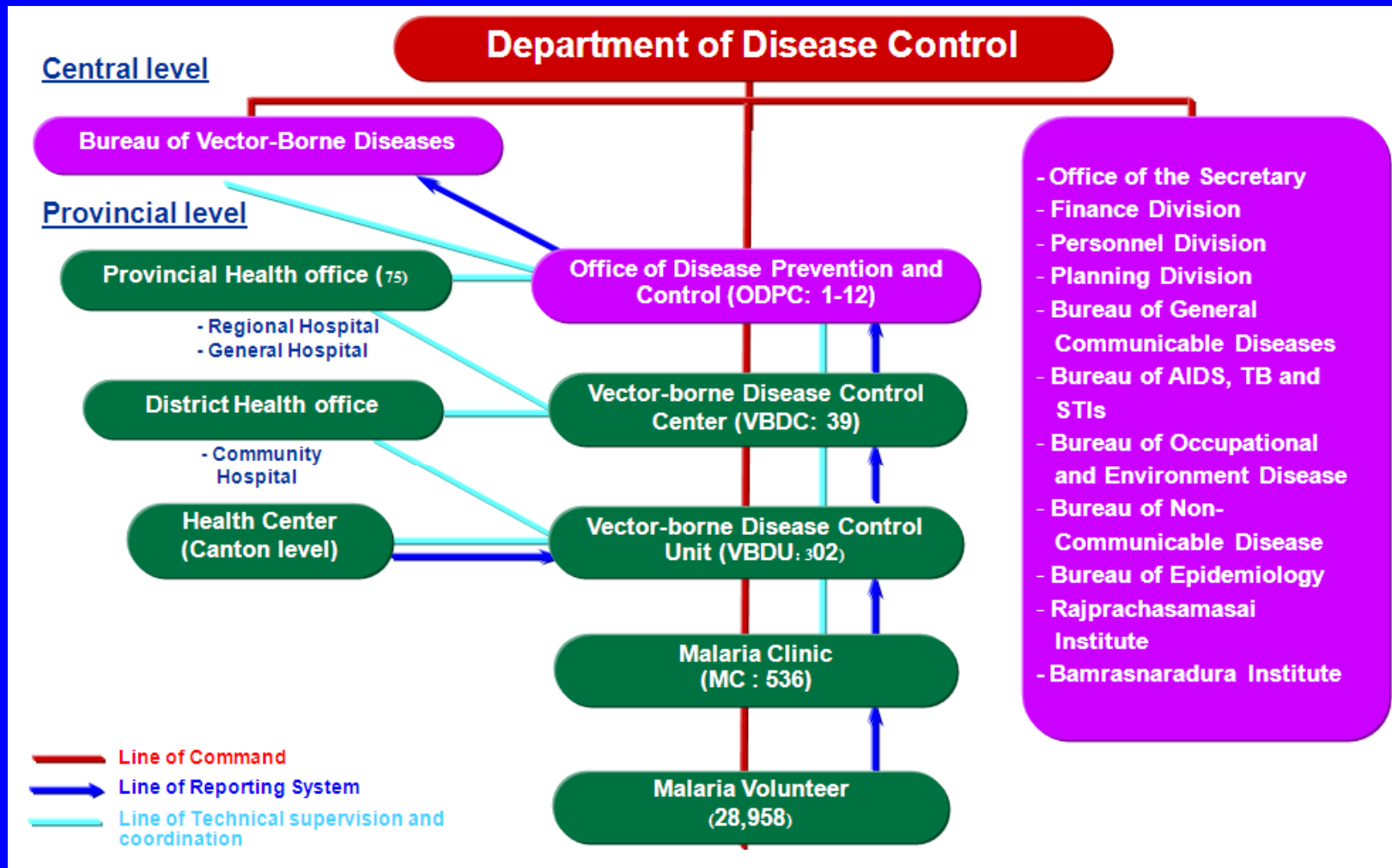
Monitoring of insecticide resistance, Hanoi, Vietnam

- 1. Mr. Manid Naksuwan: monitoring of insecticide resistance [field+lab].**
- 2. Mr. Piti Mongklagoon: monitoring of insecticide resistance [field+lab].**



Thank You

Organization chart & reporting system of malaria and vector-borne disease control in Thailand



Insecticide Resistance Monitoring in Thailand 2007-2010

Insecticide	Mosquitoes	Locations	Resistance status
Deltamethrin	<i>Ae aegypti</i>	Some provinces	① > ② > ③
0.05%	<i>Ae albopictus</i>	Kanchanaburi, Songkhla, Nakhonsatchasima, Prachuabkhirikhan, Nakhonsawan	① > ②
	<i>An minimus</i>	Chanthaburi, Tak, Chumpon, Kanchanaburi	①
	<i>An maculatus</i>	Tak, Chumpon	①

Resistance status

① = indicate susceptibility ② = suggest the possibility of resistance

③ = resistance individuals present

Insecticide Resistance Monitoring in Thailand 2007-2010

Insecticide	Mosquitoes	Locations	Resistance status
Permethrin	<i>Ae aegypti</i>	Some provinces	③ > ②
0.75%	<i>Ae albopictus</i>		①
	<i>An minimus</i>	Chanthaburi, Tak, Chumpon, Kanchanaburi	①

Insecticide Resistance Monitoring in Thailand 2007-2010

Insecticide	Mosquitoes	Locations	Resistance status
Lamdacyhalothrin 0.05%	<i>Ae aegypti</i>	Chanthaburi, Trat, Rayong, Sa Kaew	③
Funitrothion 1%	<i>Ae aegypti</i>	Some provinces	
	<i>Ae albopictus</i>	Songkhla, Kanchanaburi	① > ②
Malathion 5%	<i>Ae aegypti</i>	Some provinces	①
Propoxur 0.1%	<i>Ae aegypti</i>	Some provinces	① + ②

Insecticide Resistance Monitoring in Thailand 2007-2010

Insecticide	Mosquitoes	Locations	Resistance status
Etofenprox 0.5%	<i>Ae aegypti</i>	Some provinces	③
Temephos (0.02 mg/l)	<i>Ae aegypti</i>	Some provinces	① > ② > ③
	<i>Ae albopictus</i>	Songkhla, Tak, Kanchanaburi , Nakhonsawan, Nakhonratchasima, Suratthani, Pattalung	①