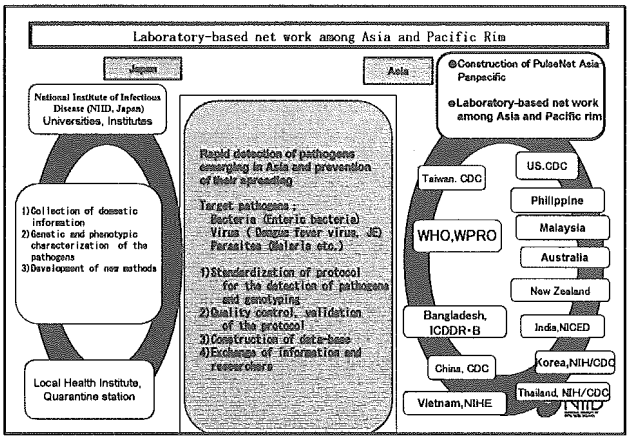


Background
PulseNet Asia Pacific (PNAP) members

- officially began establishing a network of public health laboratories in the region, after Honolulu meeting in December 2002
- a common goal of facilitating the timely exchange of DNA fingerprinting data of food borne pathogens.
- Now drawn together thirteen countries/ areas (Australia, Bangladesh, Hong Kong, India, Japan, Korea, Malaysia, New Zealand, Philippines, People's Republic of China, Taiwan, Thailand, and Vietnam) with a combined estimated population (2001) of 2.9 billion.

The 3rd meeting of Pulse-Net Asia Pacific ,which was held in Tokyo in November, 2005

Purpose:

1) Understanding the epidemiological situation of the enteric infectious diseases prevalent in Asia and sharing the information
2) Standardization and validation of PFGE method, and construction of PFGE-analyzed data base
3) Development of new molecular epidemiological methods
4) To promote research collaboration on the analysis of enteric bacterial pathogens
5) Construction of laboratory-based net work system among Asia and Pacific Rim
---which may lead to rapid response to bioterrorism and emerging diseases--

Priority of major foodborne pathogens in Asia Pacific countries/ areas

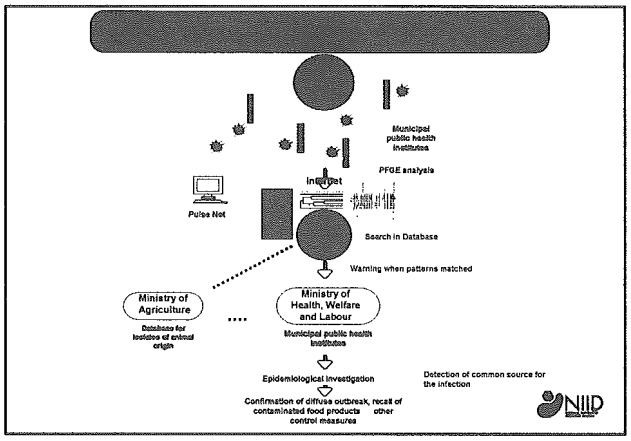
1. Salmonella (including typhi, and non-typhoidal salmonellae)
2. *E. coli O157*
3. *Vibrio cholerae*
4. Shigellae
5. *Vibrio parahaemolyticus*
6. Campylobacters
7. *Listeria monocytogenes*

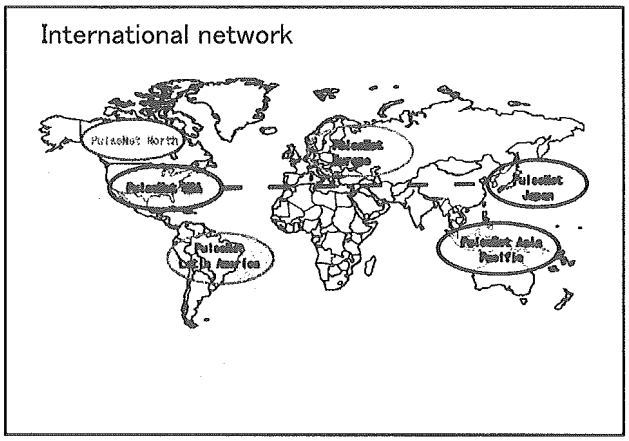
Research activities:

1) Surveillance of bacterial enteric pathogens (isolation frequency and other epidemiological information); *Vibrio cholerae*, *Salmonella enterica* serovar Typhi and Paratyphi A, *Shigella* spp., *Vibrio parahaemolyticus*, *Salmonella* spp., *Campylobacter* spp.etc.
2) Phenotypic and genotypic characterization of the pathogens; serotypes, virulence traits (possession of virulence genes, toxin production), antibiotic resistance and etc.
3) Genotyping of the pathogens; PFGE (analysis of each pathogen, construction of data base and etc.) and development of novel genotyping methods (Multiple variable-number tandem repeat analysis; MLVA, et al.)
4) Making common protocol and manual of methods on PFGE, standardization and validation
5) Workshop and technical transfer

Research of each country

1) Bangladesh:	The performance of the standardized *Vibrio cholerae* PulseNet PFGE protocol and dissemination of the standardized protocol to laboratories in Bangladesh
2) Hong Kong:	Recent food poisoning outbreaks in Hong Kong, 2004
3) India:	Hospital based surveillance of enteric infections in Kolkata, India
4) Japan:	Virulence traits of LEE-negative enterohemorrhagic *Escherichia coli*: identification of a new immunoglobulin binding protein that acts as an adhesion factor responsible for chain-like adhesion phenotype.
5) Korea:	PulseNet Korea and PFGE standardization and molecular epidemiological study of *Vibrio vulnificus*.
6) Malaysia:	Surveillance and construction of PFGE databases of *Salmonella* spp in Malaysia.
7) New Zealand:	Evaluation of the utility of two enzymes for PFGE subtyping of *Campylobacter*
8) China:	Surveillance and construction of PFGE data bases *Vibrio cholerae*, *Salmonella enterica* serovar Typhi and Paratyphi A, *Shigella* spp. and *Yersinia enterolitica* in China
9) Philippines:	Study of the relatedness of quinolone resistant nontyphoidal *Salmonella* isolated from 2002 onwards in Metro Manila
10) Taiwan:	Progress report on the development of multilocus variable-number tandem repeat analysis method for molecular subtyping of *Shigella* spp
11) Thailand:	Virulence factors and molecular epidemiology of bacteria causing food-borne poisoning isolates in Thailand.
12) Vietnam:	Analysis of *Salmonella enterica* serotype Typhi pulsed field gel electrophoresis patterns in different regions in Vietnam


Municipal public health institutions
PFGE analysis
Internet
Pulse Net
Search in Database
Warning when patterns matched
Ministry of Agriculture
Database for isolates of animal origin
Ministry of Health, Welfare and Labour
Municipal public health institutions
Epidemiological investigation
Detection of common source for the infection
Confirmation of diffuse outbreak, recall of contaminated food products other control measures


International network
PulseNet North
PulseNet Europe
PulseNet Asia Pacific

Asian Vivax Network

World Health Organization
Regional Office for the Western Pacific

David Bell Kevin Palmer Eva Christophel

Asian Vivax Network

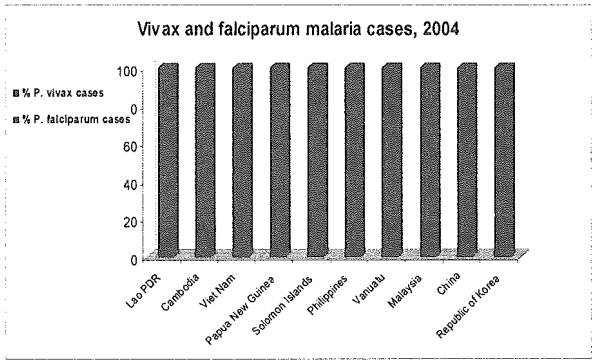
History of the concept

- Conceived at Bi-regional meeting on vivax malaria in East Asia, Shanghai, 2003
- Concept endorsed at further Bi-regional meeting in Shanghai, 2004.
  - Peoples Republic of China
  - Democratic Peoples Republic of Korea
  - Republic of Korea
  - Viet Nam

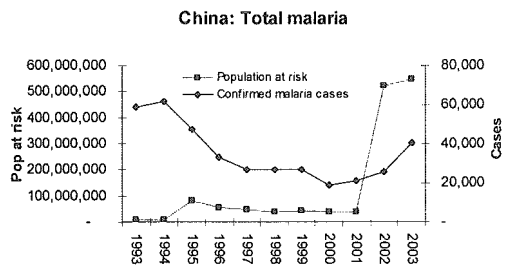
Background of 2003 meeting

- Several years of resurgent seasonal vivax malaria in eastern China, and re-emergence on the Korean peninsula
- Major outbreak in DPRK, >200 000 cases in 2002, declining by 2004 to about 45000
- Mass treatment with primaquine in DPRK (425000 in 2003)
- Inter-country collaboration for logistical support and training
- Reasons for outbreak ?? : Possibly climatic, and changed agricultural practices
- Uncertainty over
  - primaquine dose and safety,
  - Vectors (*An. sinensis, An. lesteri, ??An. anthropophagus*),
  - accuracy of clinical diagnosis
  - Parasite incubation period and relapse pattern

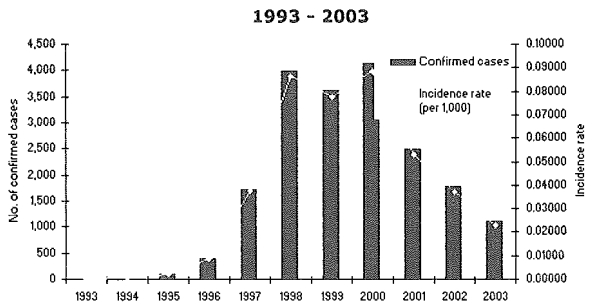
P. vivax and *P falciparum* cases in WPR



Total malaria in China (89% vivax)



Vivax malaria in Republic of Korea



Scope of Asian Vivax Network

- Capacity building
- Sharing of expertise – exchange of experiences, information and staff
- Sharing of surveillance data
- Joint research activities
- Coordination of malaria control activities

Recommendations of Shanghai, 2003

Immediate priorities

- **Redefine tropical and temperate vivax malaria** in the Pacific, China, and on the Korean Peninsula.
- **Develop human resources**, especially in the Republic of Korea, Democratic Peoples Republic of Korea, the Solomon Islands and Vanuatu.
- **Develop vivax molecular markers** for epidemiological studies in Asia and the Pacific.
- **Define place of case management vs. mass treatment and prophylaxis**
- **Develop and test effective diagnostic strategies**
- **Study of sociology of treatment seeking behaviour and compliance with primaquine** (anti relapse) therapy for vivax malaria which is quite different from falciparum malaria.

Recommendations of Shanghai, 2003

- Research

1. **Inter-country projects** that involve sharing of samples and results to facilitate capacity building and transfer of technologies.

Recommendations of Shanghai, 2003

- Research

2 **Epidemiology**:

1) biology of the "long incubation" *P. vivax*;

2) incubation period, relapse rates, and severity of disease of subspecies of *P. vivax*;

Recommendations of Shanghai, 2003

- Research

3. Diagnosis and treatment:

1) efficacy of chloroquine alone and chloroquine with primaquine using 28-day follow-up;

2) effectiveness of primaquine in preventing relapses in the long incubation forms using a 12-month follow-up;

3) the distribution and severity of G6PD deficiency;

4) a rapid test for G6PD deficiency, indicating severity;

5) sensitivity and specificity of clinical diagnosis versus microscopy;

6) develop better rapid diagnostic tests to guide preventive therapy and acute management;

1) detect hypnozoites during long incubation periods

2) detect past innoculation or past blood-stage infection (anti-CSP, anti-MSP)

3) better antigen tests for acute diagnosis;

Recommendations of Shanghai ,2003

- Research

4 Vector control

1) Determine the influence of human behaviour in endemic and epidemic vivax.

2) Identify methods of personal protection for soldiers, farmers and other groups with high exposure.

3) Determine the effect of the absence of domestic animals on vector behaviour and transmission in DPRK.

4) Determine the significance of *An. anthropophagus* as a vector.

Vivax in the Pacific

Re-define vivax malaria in the Pacific.

The 'Chesson strain' was characterized in 1940s. We need to understand the current epidemiology of the disease including:

1. biology of the parasite, transmission dynamics, relapse rates and relapse intervals,
2. impact on morbidity and mortality,
3. efficacy of chloroquine and artemisinin combinations,
4. efficacy of primaquine, identification and trials of replacements for primaquine,
5. ways to improve treatment compliance,
6. importance of G6PD and maybe new G6PD screening methods,
7. utility of rapid diagnostic tests vs. clinical diagnosis,

Cross cutting issues

- Develop critically needed human resources in places like DPRK, ROK, Solomon Islands and Vanuatu to carry out research on vivax malaria
- Different skills needed than for falciparum malaria as no culture system exists for vivax... require totally different research protocols involving human subjects or animals models.
- Develop molecular markers for epidemiological studies. Could form a centre for identification and characterization of vivax "strains" - a vivax reference centre.
- Need for a large sociological component focusing on treatment seeking and compliance behaviour, particularly for primaquine... clearly different from falciparum malaria

Asian Vivax Network – Endemic countries

- China
- Democratic Peoples Republic of Korea
- Republic of Korea

- Papua New Guinea
- Solomon Islands
- Vanuatu

- Vivax in the future:
  - Will re-emergence continue in other high-latitude countries? Japan?
  - Increasing prominence in other countries as P. *falciparum* is reduced?

Potential initial collaborators in the project

- Japanese institutions ?
- Henan Centre for Disease Control
- National Institute of Parasitic Diseases, China CDC
- Republic of Korea CDC
- Democratic Peoples Republic of Korea CDC
- Papua New Guinea Institute for Medical Research
- Australian National University, Army Malaria Institute

Structure of AVN

- Research
- Training – ACTMalaria, China CDC, Japanese Universities
- Control
  - Surveillance information
  - Coordination of control activities across borders
  - Quality assurance for diagnosis
  - Drug efficacy monitoring
  - Drug use monitoring
  - Integrated vector management

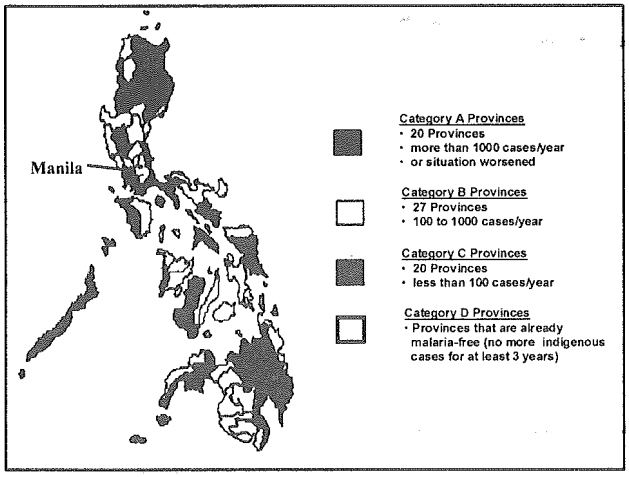
Questions

- How would the network be funded?
- Does the network need a secretariat?
- What mechanism would best allow inter-country and inter-agency coordination?
- Who will coordinate?

We need to make it happen!

Current situation of malaria in the Philippines: research needs to improve control

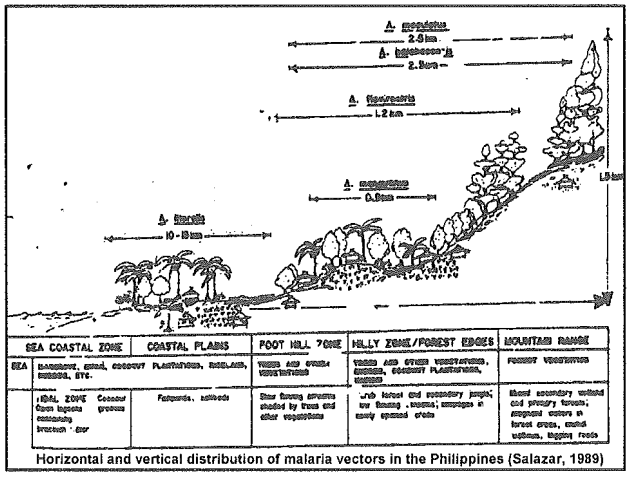
Dr. Fe Esperanza Espino
Research Institute for Tropical Medicine
Dept. of Health, Philippines



Species

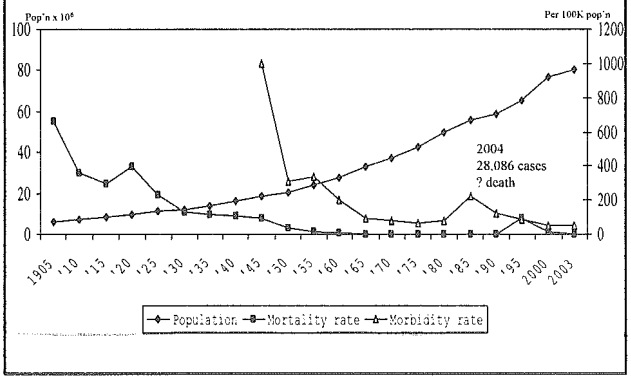
P. falciparum
P. vivax
P. malariae

- *An. Flavirostris – primary vector*
- *An. balabacensis*
- *An. litoralis*
- *An. maculatus*
- *An. mangyanus*

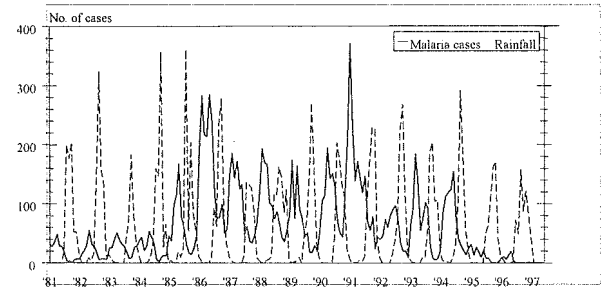


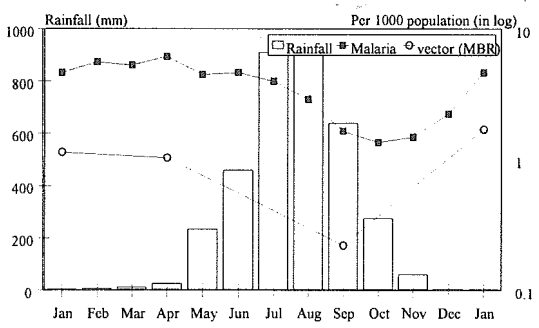
Horizontal and vertical distribution of malaria vectors in the Philippines (Salazar, 1989)

Malaria Mortality and Morbidity Rate since 1905

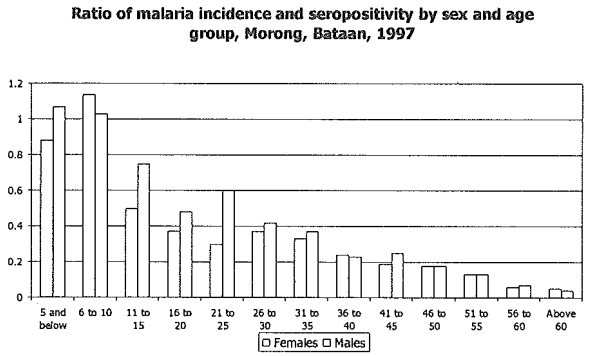


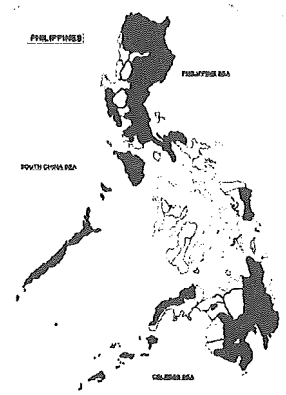
Monthly malaria cases and rainfall, Morong, Bataan, 1981 to 1997.





Mean monthly rainfall, and mean monthly malaria incidence (per 1,000 population), 1988 – 1996, and man-biting rates of Anopheles flavirostris, January 1992 to January 1993 (modified from Torres et al, 1997)..





Mid-1980s - 2002

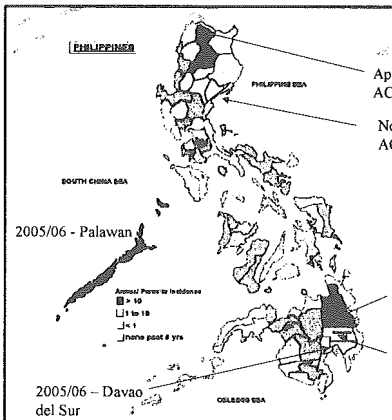
1s line drug – Chloroquine
2d line drug – Sulfadoxine-pyrimethamine
3d line drug - Quinine

Provinces with chloroquine resistant *P. falciparum* (red) detected by in-vitro microtechnique, Malaria Control Services, 1974 – 1992.

- Observed poor treatment efficacy in clinical trials in Palawan in early 1990s
- 1997 – 2001 - Surveillance of efficacy in Northern Luzon and Northern Mindanao showed efficacy of CQ and SP < 75% for uncomplicated falciparum malaria
- 2001 – CQ+SP efficacy <85%
- 2001 – Coartem efficacy 100%
- June 2002 - Treatment protocol revised and implemented

Treatment for malaria

P. falciparum	*P. vivax*
First line drug - CQ (25 mg/kg + SP (25mg/kg; 1.2mg/kg))	CQ (25 mg/kg)
Second line drug – Coartem (six doses)	Primaquine (0.3 mg/kg x 14 days)
Third line drug – Quinine Plus (tetracycline, doxicycline, erythromycin)	
Antigametocytocidal – Primaquine (0.9 mg/kg)	
Parenteral quinine for severe falciparum malaria	



Apr. 2004 Kalinga ACPR n = 31/31 (100%)

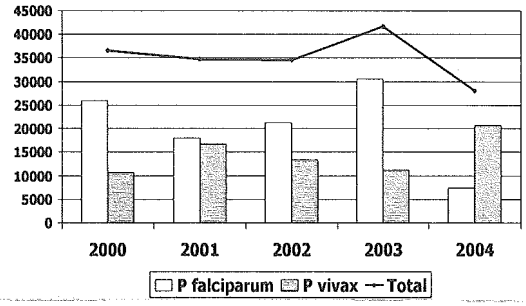
Nov. 2004 Isabela ACPR n = 66/70 (94%)

2005/06 Agusan del Sur *P. falciparum* and *P. vivax*

2001 Compostela Valley ACPR n = 31/38 (81.6%); gen. popn. < 85%

Figure. Therapeutic efficacy surveillance of CQ+SP for uncomplicated *P. falciparum* malaria in selected areas in the Philippines.

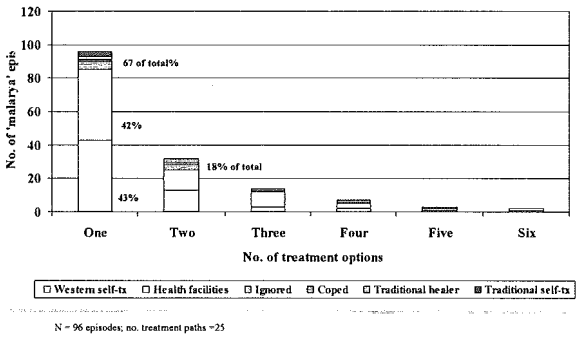
No. of malaria cases by species and year (2002-04)



Validation of malaria blood film microscopy in rural clinics (Agusan del Sur, 1997)

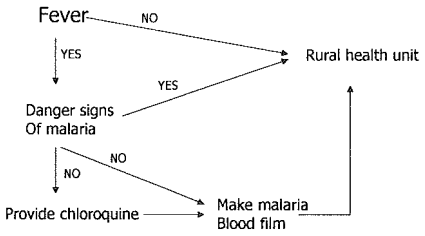
Sensitivity	0.55 (95%CI 0.32-0.76)
Specificity	0.88 (95% CI 0.77-0.94)
Positive predictive value	0.55
Negative predictive value	0.88

Pattern of treatment options for 'malarya', Morong, Bataan, (Espino and Manderson, 2000)



N = 96 episodes; no. treatment paths =25

Algorithm for BHWs



Validation of BHW algorithm

	Sensitivity (CI)	Specificity (CI)	Positive Predictive Value	Negative predictive value
1. Kabugao, Apayao (n=503 episodes) (Gomes et al, 1994)			0.65 – 0.84	0.51 – 0.67
2. Agusan del Sur (n= 168) (Belizario et al, 1998)	0.60 (0.39–0.78)	0.81 (0.74-0.87)	0.33	0.93

Local studies on RDTs

	Rapid Diagnostic Test*	Sensitivity (95% CI)	Specificity (95% CI)	Positive Predictive Value	Negative Predictive Value
Agusan del Sur (n=253) (ADS-MCP Report, 1996)	ParaSight™ F	0.95 (0.86-0.98)	0.84 (0.78-0.84)	0.71	0.97
Agusan del Sur (Bell et al, 1999)	ICT	0.88–0.97	0.63-0.75		
Palawan and non-malaria RITM patients (n=438) (Bustos et al, 1999)	ParaSight™ F	1.0	0.93	0.90	1.0
	ICT Malaria P.f™	0.99	0.99	0.97	0.99
	Determine™	1.0	0.97	0.82	0.97

P. falciparum histidine rich protein antigen (HRP)

Species diversity (Pasay, 1997)

Ag-polymorph studied	No. of sequence types observed
*Pf*AMA1	7/113
*Pf*MSP1	8/138
*Pv*AMA1	22/116
*Pv*MSP1	68/138

Molecular Analysis of Drug-Resistant Malaria

A. *Chloroquine (CQ) Resistance*
   -Prevalence of K76T mutation in the Philippines
   -Determination of *pfcrt* haplotypes and novel mutations

B. *Sulfadoxine-Pyrimethamine (SP) Resistance*
   -Prevalence of *dhfr* and *dhps* mutations

Chloroquine resistant *P. falciparum pfcrt* gene
Western Luzon (Q. Chen et al. 2003)

- Sequence of polymorphism disclosed that resistance in the Philippines evolved independently in the South Pacific

K76T point mutation

- Detected in all except one of 159 isolates from No. Luzon and So. Mindanao
- From 168 isolates from Western Philippines and No. Luzon,
  - Mutants - 81.5%
  - Wildtype - 16.7%
  - Mixed – 1.8%

Global Fund

Case detection
- QA system for malaria microscopy
- RDTs

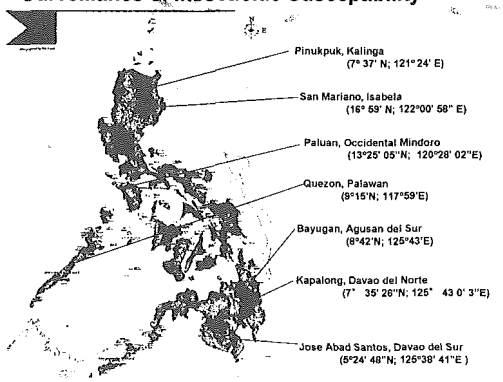
Treatment
- Coartem

Vector Control
- Bednets (long-lasting)
- Susceptibility testing

Roll-Back Malaria

Case detection
- QA for malaria microscopy
- Therapeutic efficacy surveillance of antimalarials for uncomplicated falciparum malaria

Surveillance of Insecticide Susceptibility



Map of the Philippines showing the study sites for the monitoring of insecticide resistance.

Vectors

1. Incriminated vectors
   - Vectorial capacity,
   - Competency
   - Insecticide susceptibility and parasite refractoriness
2. Update vector geographical distribution

Parasite

1. *P. vivax*
   - Characterization
   - Relapse studies – intrinsic hypnozoite activation in single and mixed infections (i.e. with *P. falciparum*)
2. *P. falciparum*
   - Genetic diversity and distribution
   - Antigenic variation
     - HRP2
     - LDH
     - DHFR

Treatment

1. Shortened courses
   - Five-day quinine plus tetracycline in non-severe falciparum malaria
   - Four-dose Coartem for uncomplicated falciparum malaria
2. Therapeutic efficacy
   - Extend sites of TES of chloroquine for *P. vivax*
   - TES of primaquine in *P. vivax*
   - Other atemisinin drug combinations
3. Screening of natural products (e.g. medicinal plants) for antimalarial and insecticide properties

Epidemiology

1. Drug combination treatment and changing trends of infection and disease
2. Environment and meteorological changes and changing trends of infection and disease
3. Co-morbidity (other parasitic disease) in endemic areas
4. Evaluation and validation of current indicators used in categorizing endemic areas
5. Indicators to evaluate effective control and document interruption of transmission (e.g. in school-aged children) and malaria-free areas
6. G6PD deficiency prevalence and distribution

Vector Control

1. Re-treatment of insecticide treated nets;
2. Impact of insecticide residual-spraying on malaria transmission;
3. Surveillance of insecticide resistance to insecticides used on bednets;
4. Efficacy of Long Lasting Insecticidal Nets used under local conditions and practices

Assessment of Control Activities

1. Critical period for bednet insecticide re-treatment
2. Efficacy of long-lasting ITNs
3. Rapid assessment of outbreaks
4. Efficacy of insecticide residual-spraying in controlling outbreaks
5. Monitoring and surveillance schemes in areas where malaria transmission has been interrupted
6. Control program operations and management and health sector reform

Strengthening Malaria Surveillance System in Central Java Province

Directorate Vector Borne Disease Control
Ministry of Health Indonesia

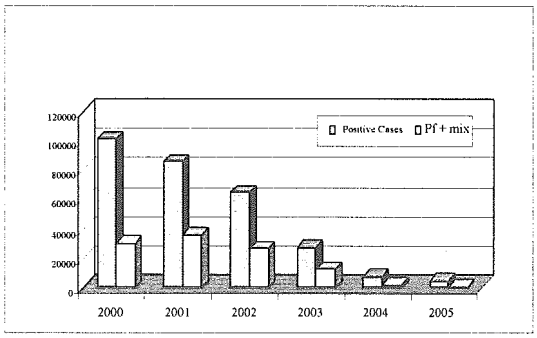
Background

National Health Survey NIHRD – 2001

1. Malaria as main cause of death:
   - Indonesia: 1.2 % of total (23,483 deaths)
   - Java-Bali: 0.1 %
   - Sumatra: 2.4 %
   - Other islands: 4.6 %
2. Parasitic diseases prevalence: 4.9 %
3. Malaria in pregnancies:
   - Sumatra: positive 3.8%
   - Java-Bali: positive 0.3%
   - Other islands: positive 3.9%
4. Low Hemoglobin rate (anemia) children 1-4 years (<11 g/dl):
   - North Sumatra: 64.4 %
   - Jambi: 55.4 %
   - South Sumatra: 65.5 %
   - Lampung: 52.1 %
   - West Nusa Tenggara: 66.0 %
   - East Nusa Tenggara: 44.8 %

Endemic Areas in Indonesia

Malaria Positive & P. falciparum and Mix in Java-Bali 2000-2005



Malaria Situation in Central Java

Province/District	Population	HCI	API 2000	API 2001	API 2002	API 2003	API 2004	API 2005
Central Java (Province)	33,569,012	109	1.74	1.46	1.44	0.51	0.15	0.06
Wonosobo (Case)	751,416	13	5.16	4.05	4.87	4.57	1.38	0.62
Pekalongan (Control)	798,605	1	1.35	1.12	4.87	0.7	0.46	0.05

Although malaria incidence has been decreased, but Wonosobo and Pekalongan districts have a good ecological condition for mosquito's breeding. Indeed, malaria outbreak may occur. So, malaria surveillance system still a need for MCP in both districts.

Research Objectives

- To establish surveillance and early warning outbreak system.
- To monitor malaria incidence and malaria risk factors.
- To explore proper indicators could detect changing malaria epidemiology.

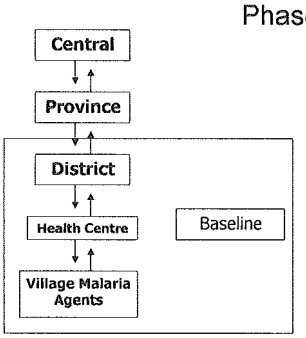
Research Benefits to Malaria Control Program

- To develop collaboration with the community to detect malaria cases at village level
- To develop broader functions of Village Malaria Agents
- To conduct need assessment for Malaria surveillance system
- To support elimination of malaria incidence in certain areas in Indonesia

Phase I. Baseline Data

- Qualitative Method
  - Interview with Provincial Malaria Programmers
  - Interview with Districts Malaria Programmers
  - Interview with Health Centers Malaria Programmers
  - Interview with Village Malaria Agents
- Document Research
- Observation

Phase I. Baseline Data



Phase I. Baseline Data Findings:

Village Malaria Agents

Activities	Pekalongan	Wonosobo
Number of Village Malaria Agents	45 people	45 people
Support from Local government to VMA per month	Rp.350.000	Rp. 120.000 Uniform clothes
Additional VMA Tasks	Aedes aegypti larva surveillance Assistance in Village Health Clinic	VMAs have other jobs as main job, not only as a VMA

Phase I. Baseline Data Findings

Activities	Pekalongan	Wonosobo
VMA tasks	▪Case finding and treatment ▪Home visiting ▪Taking Blood Slide ▪Case follow up ▪Simple epidemiology investigation	▪Case finding and treatment ▪Home visiting ▪Taking Blood Slide ▪Case follow up ▪Simple epidemiology investigation
VMA Recording and Reporting	Follow up cases not until 28th day	Follow up cases not until 28th day

Phase I. Baseline Data Findings

Health Centers

Activities	Pekalongan	Wonosobo
Malaria Incidence	Decrease	Fluctuate
Action after case finding	Only limited action can be taken	Only limited action can be taken
Laboratory	Clean less, laboratory supplies are enough	laboratory supplies are enough
Number of HC which have VMAs	10 Health Centers	13 Health Centers

Phase I. Baseline Data Findings

Districts

Activities	Pekalongan	Wonosobo
Number HCI (village)	1 village	13 Villages
Malaria Incidence	Source of Import case is fishermen	Source of Import case is plantation workers from Borneo island and Riau province
Funding from Local Government	Rp. 50.000.000	Rp. 150.000.000
Integrated intensified malaria planning	Don't have	Don't have yet, but will be conducted this year

Phase I. Baseline Data Conclusions

- The tasks of Village Malaria Agents (VMAs) need to be expanded. Not only to detect malaria cases among the community, but also larva surveillance activities.
- In order to eliminate malaria incidence, VMAs need to be trained to follow up malaria cases up to 28th day.
- Corrective action need to be conduct by health centers

Phase 2. Future Plan

Pekalongan District (Control)

- Facilitate Village Malaria Agent
- Regular monitoring activities to measure surveillance activities

Phase 2. Future Plan

Wonosobo District (Case)

- Facilitate community participation through Village Malaria Post (VMP)
- Training VMP Cadres
- Training Village Malaria Agent
- Facilitate inter-collaboration intensified malaria control planning activities
- Facilitate local government (District Health Office) to develop a proper surveillance system that match with local specific conditions
- Monitoring activities to measure surveillance activities

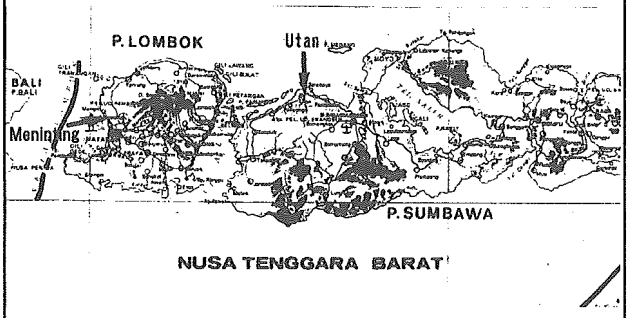
How to use chemotherapy for malaria control

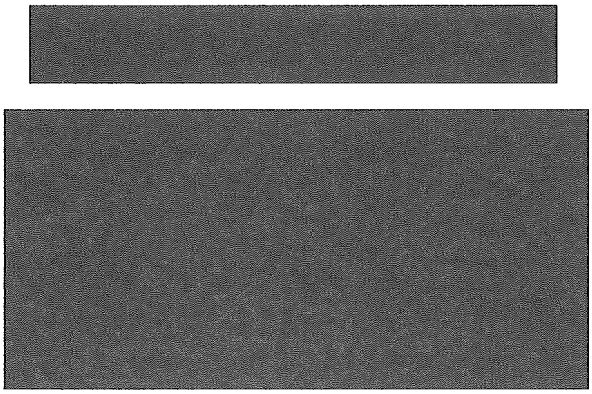
Hiroji Kanbara, Haruki Uemura (Nagasaki Univ.)
Yoes P.Dachlan, Sukma Buski (Airlangga Univ.)
Ismail, Artastra, Gerudug (NTB provincial health office)
Iskandar (Utan Rhee health center)
Suriyatna (Meninting health center)
Agung (Tanjung health center)

Problems of adopting chemotherapy in malaria control

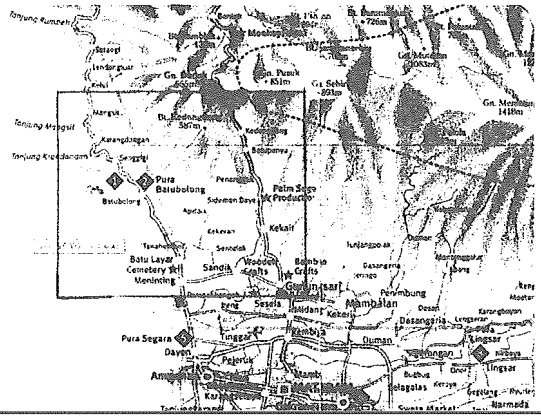
1. Coverage on patients (How many % of malaria patients can receive complete chemotherapy?)
2. Drug compliance (Do patients follow the direction ot take medicine?)
3. Efficacy of drugs..... Drug resistance (Are given drugs effective?)
4. Drug combination (At present artesunate based combination therapy is adopted widely, but what is the best combination?)

Map of the project areas

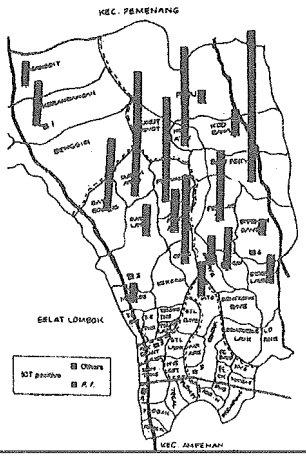


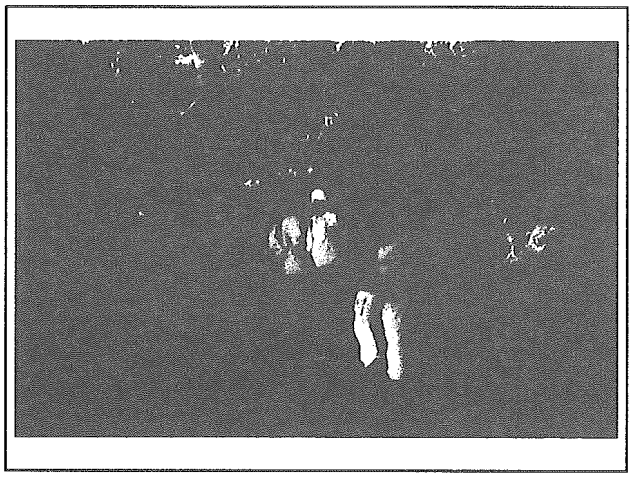


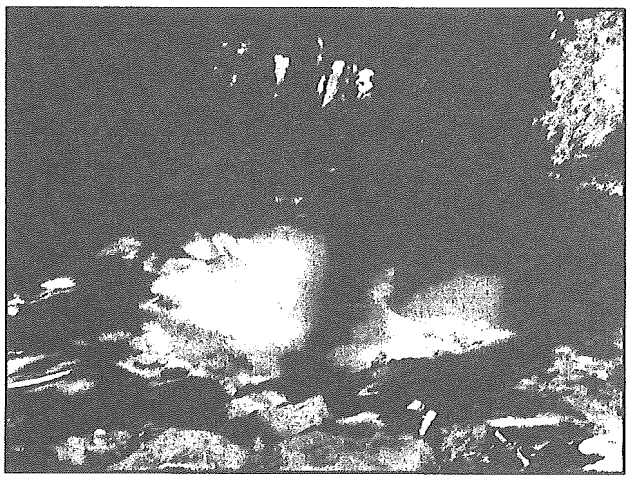
Map of Meninting area

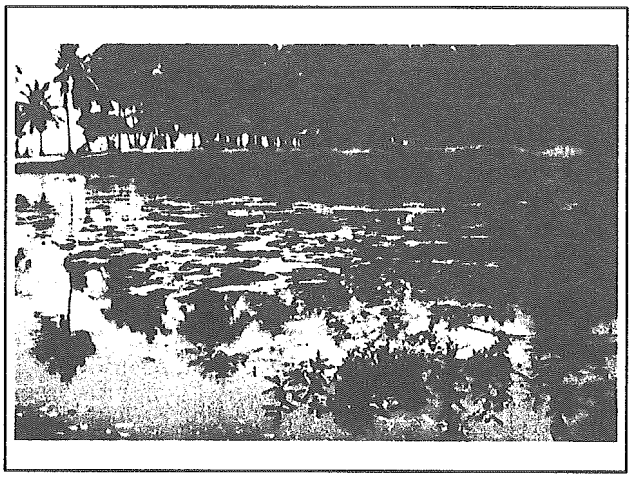


Number of malaria cases detected in Meninting area by dusun in 2002

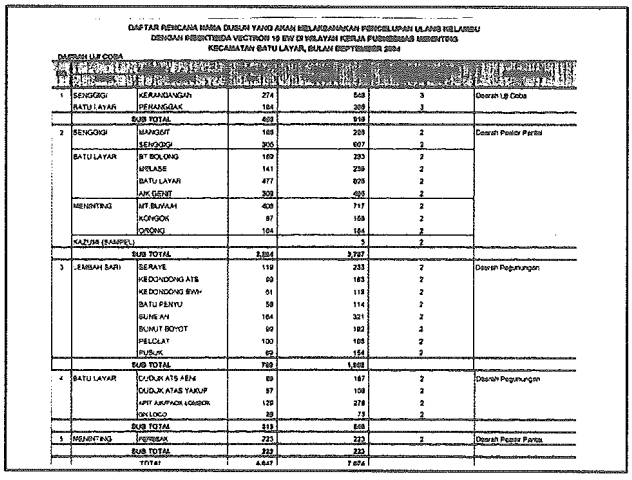








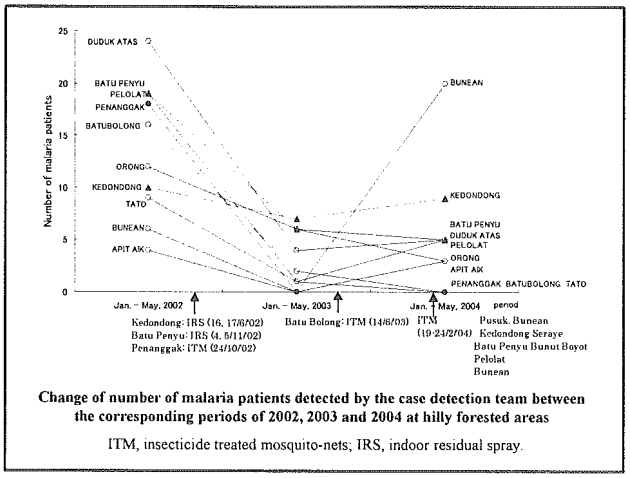
	Anopheles sundaicus *An. subpictus*	*Anopheles balabacensis*
Breeding place	Lagoons (Batulayar) Fish-ponds (Utan) In Batulayar *An. sundaicus* > *An. subpictus* In Utan *An. subpictus* > *An. sundaicus*	Small water pools along small streams or small springs in forested hilly areas Many subvillages in Batulayar Only sparse area in Utan
Biting behaviors	*An. subpictus* Zoophilic > Anthropophilic Exophilic ≒ Endophilic *An. sundaicus* Zoophilic ≒ Anthropophilic Exophilic ≒ Endophilic Through the night?	Anthropophilic Exophilic Active time 18:00 - 22:00
Density	Sometimes high Specially *An. subpictus*	Always low
Detection of sporozoites	*An. sundaicus* +	*An. Balabacensis* +
Control method		
Impregnated bed-nets	Effective	Unknown but probably ineffective
Indoor spray	Effective	Unknown but probably ineffective
Larval control by insecticide or by environmental change	Possible	Impossible
New method	?	?
Early detection and treatment	Possible Effect is dependent on coverage	Possible Effect is dependent on coverage
Mass treatment	Effective coverage? drug selection?	Effective coverage? drug selection?



DAFTAR RENCANA NAMA DUSUN YANG AKAN DILAKSANAKAN PENGELUPAN ULANG KELAMBU
DENGAN INSENTISIDA VECTRON 10 EW DI WILAYAH KERJA PUSKESMAS MENTONG
KECAMATAN BATU LAYAR, BULAN SEPTEMBER 2004

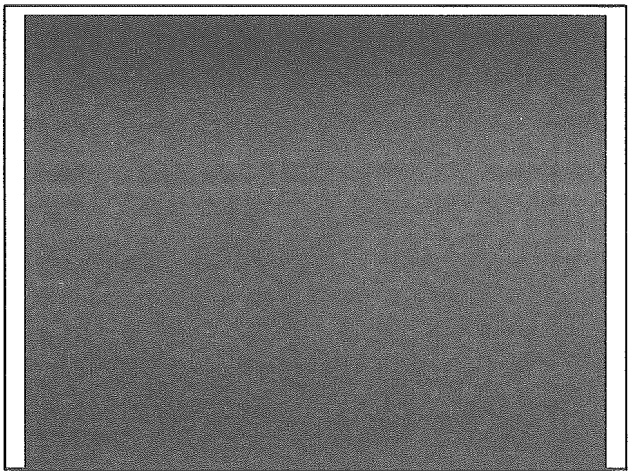
DAERAH UJI COBA

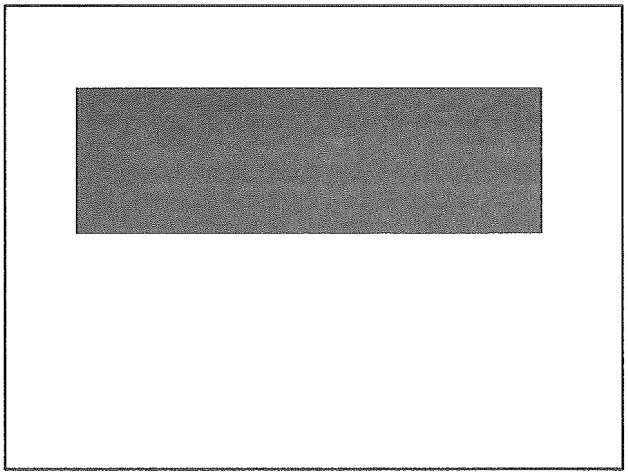
1	SENGGIGI	KERANDANGAN	274	548	3	Daerah Uji Coba
	BATU LAYAR	PENANGGAK	184	368	3	
		SUB TOTAL	458	916		
2	SENGGIGI	MANGGIT	169	209	2	Daerah Pesisir Pantai
		SENGGIGI	305	607	2	
	BATU LAYAR	BT BOLONG	169	283	2	
		MELASE	141	259	2	
		BATU LAYAR	477	928	2	
		AIK GENIT	309	495	2	
	MENINTING	MT. BUWUH	408	717	2	
		KONGOK	87	169	2	
		ORONG	184	184	2	
	KAZUMI (SAMPEL)			5	2	
		SUB TOTAL	2,004	3,797		
3	LEMBAH SARI	SERAYE	119	233	2	Daerah Pegunungan
		KEDONDONG ATS	89	183	2	
		KEDONDONG BWH	61	118	2	
		BATU PENYU	58	114	2	
		BUNEAN	164	321	2	
		BUNUT BOYOT	99	192	2	
		PELOLAT	130	168	2	
		PUSUK	82	154	2	
		SUB TOTAL	799	1,608		
4	BATU LAYAR	DUDUK ATS KEM	89	167	2	Daerah Pegunungan
		DUDUK ATAS TAKUP	87	168	2	
		APIT AIK/PADA LOMBOK	139	278	2	
		SN LOCO	38	73	2	
		SUB TOTAL	313	668		
5	MENINTING	PERSIAK	223	223	2	Daerah Pesisir Pantai
		SUB TOTAL	223	223		
		TOTAL	4,647	7,674		



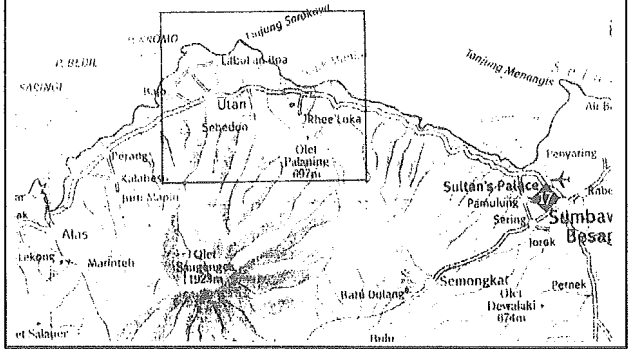
Change of number of malaria patients detected by the case detection team between the corresponding periods of 2002, 2003 and 2004 at hilly forested areas

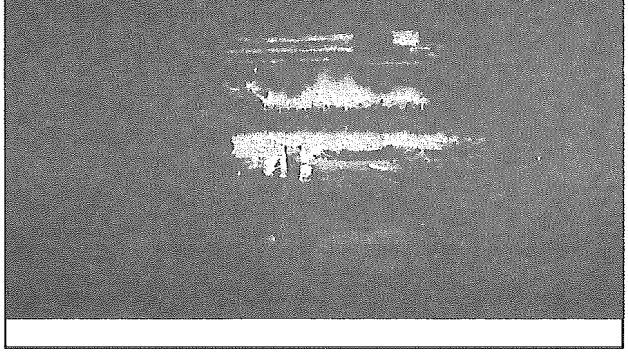
ITM, insecticide treated mosquito-nets; IRS, indoor residual spray.

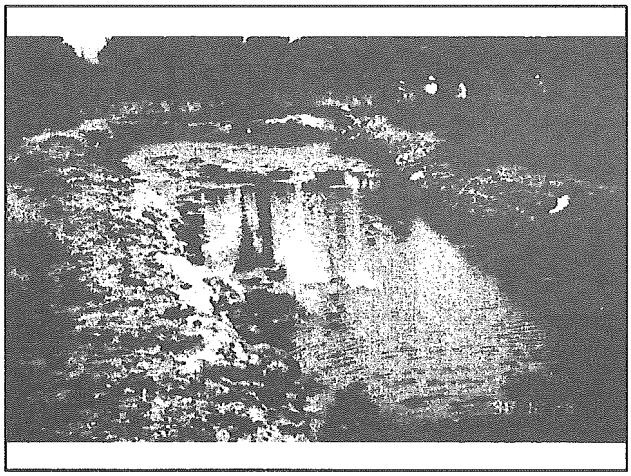




Map of Utan area





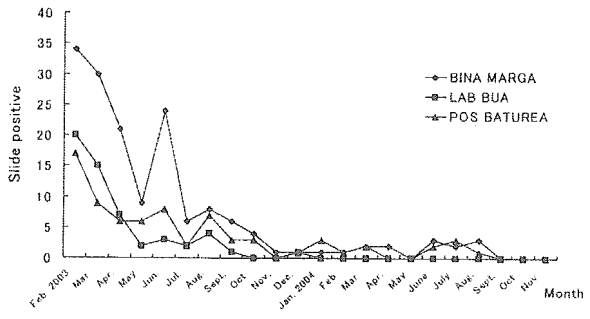


RENCANA PENCELUPAN ULANG KELAMBU
DI WILAYAH PUSKESMAS UTAN
TAHUN 2004

TAHAP DISTRIBUSI	DESA	DUSUN	JUMLAH KELAMBU YG DIDISTRIBUSI	JML KELAMBU YG AKAN DICELUP	WAKTU PENCELUPAN ULANG	KET.
I Maret 2003	Stw. Brang	Bina Marga	470	470	Apr-04	Permanet
	Pukat	Lab. Bua	406	406		Permanet
		Lab. Pedi	405	405		Permanet
II Mei 2003	Pukat	Pukat	210	210	Apr-04	Bhlas Net
		Jerongko	305	305		Bhlas Net
	Stw. Brang	Penyenger	228	228		Bhlas Net
	Motong	Repang	175	175		Permanet
	Balebrang	Sakoluk	144	144		Bhlas Net
	Lab. Bajo	Penyorong	63	63		Bhlas Net
JUMLAH			2404	2404		
III Nov-03	Sampa	Basang	104	104	Mei-04	Bhlas Net
		Baru	68	68		
	Luk	Luk A	180	180		
		Luk karya	207	207		
	Rhee Baru	Pelo Padu	239	239		
	Rhee Loka	Mano	171	171		
	Sebedo	Bina Karya Mano	39	39		
		Bina Karya Lampok	91	91		
	Balebrang	Balebrang	147	147		
		Gelak Jongo	159	159		
		Lab. Teluk	79	79		
	Lab. Bajo	Lab. Bajo	293	293		
JUMLAH			1787	1787		
TOTAL JUMLAH			4191	4191		

KEBUTUHAN KELAMBU UNTUK TAHAP IV
PUSKESMAS UTAN RHEE
TAHUN 2004

NO	DESA	DUSUN	JUMLAH RUMAH	JUMLAH KK	JML KEBUTUHAN KELAMBU	KET.
1	Jorok	Koda Permai	203	210	210	
2	Molong	Koda Permai	119	128	128	
3	Sabedo	Sabedo I	142	167	167	
		Sabedo II	283	312	312	
		Kampung Tenang	161	173	173	
		Wanagiri	182	192	192	
4	Rhee	Rhee Baru	189	210	210	
		Rhee Gedong	192	204	204	
		Panyampang	61	68	68	
5	Rhee Loka	Karang Luar	416	440	440	
		Rhee Loka	137	150	150	
	JUMLAH		2085	2254	2254	

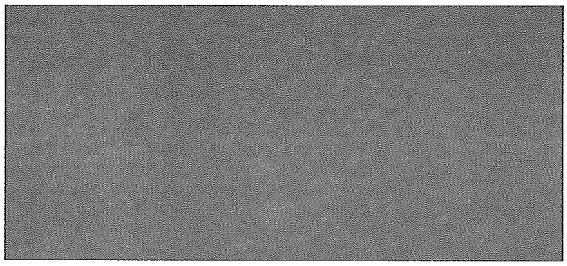


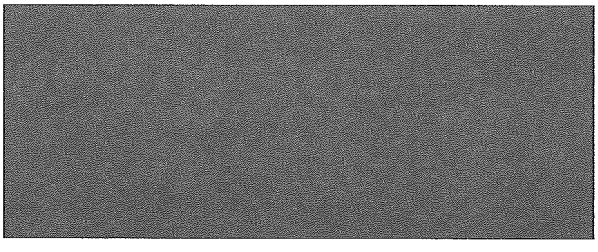
Parasite positive rate of suspected cases by subvillage and month in 2003 and 2004

Numbers of malaria patients diagnosed by the case detection team in Utan Rhee health center area besides three subvillages in 2004

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan
Karang Anyar	0	0/14	1/5 (1)	1/3 (0)	0	0	0	0	0	0	0/11	0	0
Lab Padi	0	1/7 (1)	0	0/1	1/2 (0)	0	0	0	0	0	0	0	0
Belebrang	1/8 (1)	0/15	0/12	1/8 (1)	0	0/4	0/2	0	0	0/3	0/3	0/7	0/4
Luh Karya	0	0	5/24 (3)	0/2	0/1	0	0	0	0	0/6	1/5 (1)	1/2 (1)	0/1
Wanagiri	0	0	2/7 (2)	0/4	1/3 (0)	1/5 (0)	0	0	2/3 (2)	1/14 (1)	0/10	0/8	
Badang	0	0	0/2	0/4	0	0/2	0/10	0	0/1	0/4	0/8	0	
Poto Padu	0	0	0	0/13	0/2	3/8 (4)	1/1 (1)	1/3 (1)	1/2 (1)	1/1 (1)	0/8	0	
Sabada	0	0	0	0/2	0/10	2/29 (1)	1/20 (1)	0/4	0	0/1	0/4	0	
Leb Teluk	1/8 (1)	0/1	0	0	0/4	0/3	0/1	0/1	0	0/1	0	0	
Sekokok	0/6	0	1/10 (1)	0/3	2/12 (2)	1/4 (1)	0/10	3/9 (3)	2/6 (2)	0/23	1/11 (1)	0/4	
Koda Kebun	0	0	0	0/3	0/10	2/28 (2)	0/6	1/6 (1)	0/6	0/11	2/20 (2)	0	
Jerongko	0	0	0	2/29 (0)	0/5	1/1 (1)	3/4 (3)	1/3 (1)	0/2	0/4	0/3	0	
Kampung Tenang	0	0	0	0/10	0/3	0/1	0	0	0	0	0	0	
Bermang	0	0	0/1	1/2 (1)	0	0	0	0	0	0	0	0	
Penyireng	0	0	0	0/6	0	0	0	0	0	0/7	0/2	0	
Jatisari	0	0	2/5 (1)	0	0	0	0	0	0	0	0	0	
Regang	0	0	0	0	0	0/10	0	0	0	0	0	0	
Tanong	0	0/3	0	0	0	0	-	-	-	-	-	-	
Meno Menini	0	0	0	0	0/1	0	-	-	-	-	-	-	

In each column the number of malaria patients / the number of examined subjects was shown for the number of falciparum malaria cases was shown.





Mutation of two genes related to chloroquine resistant Plasmodium falciparum

In Meninting.

VILLAGE	SUBVILLAGE	Sample No	Pfcrt haplotype	Pfmdr1 N86Y	GLURP typing
	Bunsan	1	SVMNT	Tyr & Asn	850
		15	SVMNT	Tyr	750
	Pemangkik	2	SVMNT	Asn	600
		30	SVMNT	Asn	600
		38	SVMNT	Tyr	600
		44	SVMNT	Asn	1100
		45	SVMNT	Asn	1000
		46	SVMNT	Asn	1000
		47	SVMNT	Tyr	900
	Orong	4	SVMNT	Tyr	450
		10	SVMNT	Tyr	750
		29	SVMNT	Asn	900
		61	SVMNT		700
	Sidomen Daya	5	CVIET	Tyr	450
		21	SVMNT	Asn	900
	Sidomen Laut	12	SVMNT	Asn	750
		13	SVMNT	Asn	550
		14	SVMNT	Tyr	850
		31	SVMNT	Tyr	600
	Sanaya	8	SVMNT	Asn	700
		16	SVMNT	Asn	600
		33	SVMNT	Asn	600
	Kedondong Atas	7	SVMNT	Asn	700
		18	CVIET	Tyr	450
		19	CVIET		450
		42	CVIET	Tyr	450
		43	SVMNT	Asn	700
		50	SVMNT	Tyr	900
		78	CVIET	Tyr & Asn	
	Apit Ah	9	SVMNT	Tyr & Asn	750
		9	SVMNT	Asn	750
		32	SVMNT	Asn	800
	Batu Belong	49	SVMNT	Asn	750
		70	SVMNT	Asn	850
	Batu Penyu	11	SVMNT	Tyr	750
		32	SVMNT	Tyr	750
		33	SVMNT	Tyr	750
		34	SVMNT	Asn	750
		48	SVMNT	Tyr	850
	Batu Penyu Atas	59	SVMNT	Tyr	750
		60	SVMNT	Asn	750
		66	SVMNT	Asn	750
		80	SVMNT	Asn	850
	Batudayar	26	SVMNT	Asn	700
	Duduk Atas	17	SVMNT	Tyr & Asn	800
		83	SVMNT	Asn	850
		85	SVMNT	Tyr	1000
	Pusuk	24	CVMNK	Asn	850
	Pelabat	65	SVMNT	Tyr	1000
		79	SVMNT	Tyr	800
	Sd. Kedondong	83	SVMNT	Tyr & Asn	700
	Sanggaji	27	SVMNT		700
		58	SVMNT	Asn	650 & 700

Pl. falciparum sensitivity to chloroquine treatment after 5 days of administration in Utan Rhee

Dusun	No. of treated	No. of cured (%)	No. of still positive (%)	No. of no-follow up
BINA MARGA	157	48 (30.6)	68 (43.3)	41 (26.1)
LABUAN BUA	45	10 (22.2)	27 (60.0)	8 (17.8)
POS BATU REA	63	17 (27.0)	38 (60.3)	8 (12.7)
SESENG	3	1 (33.8)	2 (66.7)	0
Total	268	76 (28.4)	135 (50.4)	57 (21.3)

This result must consider the following conditions;

1) Adequate chloroquine treatment was given as the first line of drug, immediately after the case detection team had found a *P. f.* patient.
2) The patient took the given dose of drug.
3) On the fifth day the second line of drug (Fansidar) was given to a still *P. f.* positive patient.
4) There was no severe complicated case among patients who were not cured by the first line or the second line of drug.

Bagaiman Cara Minum Obat ?

Obat diminum sesudah makan

Dosis ; Artesunate : 5 mg / Kg BB perhari

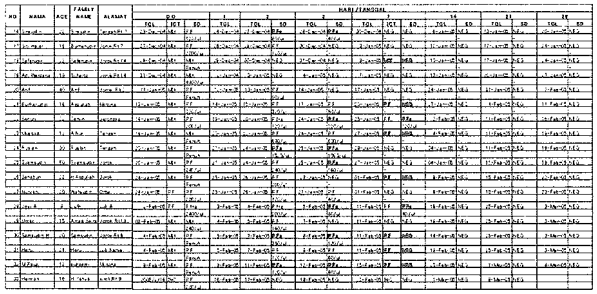
Amodiakuin : Dosis total 3 hr = 25 – 35 kg/kg BB

Hari	Obat	1 - 4 tahun	5 - 9 tahun	10 - 14 tahun	>15 tahun
I	Artesunate	1	2	3	4
	Amodiaquin	1	2	2	3
II	Artesunate	1	2	3	4
	Amodiaquin	1/2	1	2	3
III	Artesunate	1	2	3	4
	Amodiaquin	1/2	1	2	2

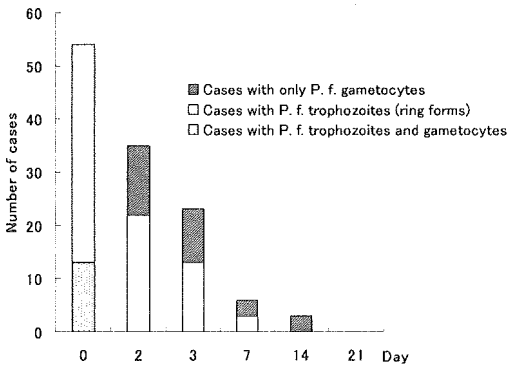
Created by dr. agung / tanjung/05

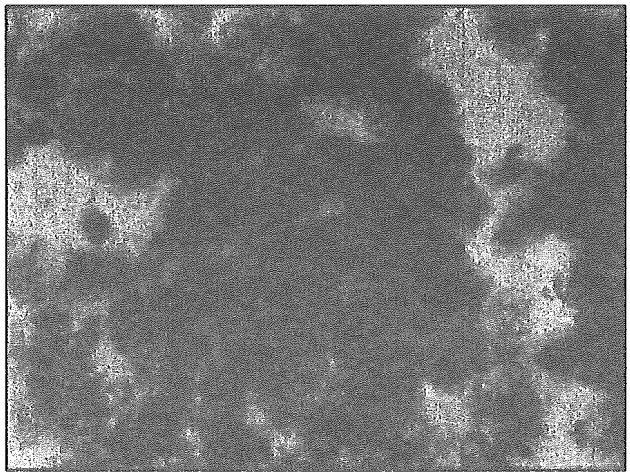
LOKASI STUDI		Rumah sakit/ Puskesmas :			Kota :		Kabupaten/ Propinsi :	
PENDERITA		No:	Nama:		Umur:	P / L	BB (Kg)	Tinggi badan (cm)
		Nama orang tua (Penanggung jawab):			Alamat:			
OBAT MALARIA		Artesunate Amodiaquine		Produsen: Artesdiaquine, Beijing Holley-Cotec Pharmaceuticals Co., Ltd.	No. produksi: 221203 MFD: 22122003	Kadaluarsa 12 / 2006	Total dosis (mg base)	
HARI	0	1	2	3	7 atau 8	14 (13 - 15)	21 (20 - 22)	28 (27 - 29)
DATA / KELUHAN								
TANDA BAHAYA *1								
PANAS BADAN≦24JAM								
TEMPERATUR AXILLA / TELINGA (℃)								
TES "ICT"								
HITUNG PARASIT (per ul) *2								
PENGOBATAN (mg/kgBB) *3								
PENGOBATAN TAMBAHAN *4								
EFEK SAMPING OBAT MALARIA *5								
OBSERVASI / TANGGAL								

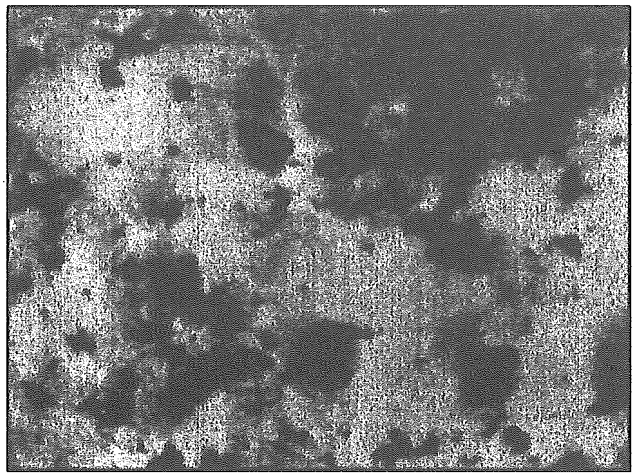
REGISTER PENDERITA MALARIA (CASE DETECTION & FOLLOW UP) DI WILAYAH KERJA PUSKESMAS UTAN



Parasitaemia after treatment with Artesunate-Amodiaquine combination in Utan, Sumbawa







Number of positive cases by microscopic observation or ICT *P. f.* / *P. v.* diagnosis kit after 7 days of ACT

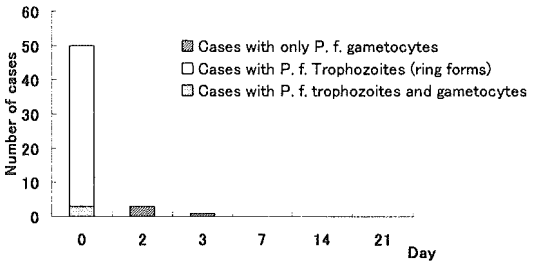
		ICT positive	ICT negative
Microscopic observation	Positive 6	5	1
	Negative 48	12	35

One microscopically negative case did not have ICT-examination.

Side effects of artesunate-amodiaquine combination after administration

	day 1	day 2	day 3
Patients with any symptom	21 (38.89%)	20 (37.04%)	15 (27.78%)
sweat	11	8	1
nausea	6	7	6
stomachache	1	–	–
headache	9	6	9
sleepiness	1	2	1
dizziness	1	–	1
Patients without symptom	33 (61.11%)	34 (62.96%)	39 (72.22%)

Parasitaemia after treatment with Artesunate-Amodiaquine combination in Tanjung, Lombok



Effect of Artesunate - Amodiaquine combination therapy

	Day 0	PCR posiive 21	Day 7	PCR posiive 6 (+1)
			gametocyte positive 3	
			negaitve 3	(+1)
pfcrt 72-76	SVMNT	21	SVMNT	6 (+1)
pfmdr-1 86	Asn	8	Asn	3
			negative 5	
	Asn/Tyr	4	Asn	1
			Asn/Tyr	1
			negative 2	
	Tyr	9	Tyr	1
			negative 8	
			Asn	(+1)

* not much polymorphism in the other positions, 184, 1034, 1042, 1246

Results and Discussion