

Intervention Area	Current Year (2010)	Planned (within next 5 years)
Case Management		
<u>Diagnosis</u>		
National diagnosis policy (confirmed, clinical)	Laboratory confirmation for all cases by RDT or microscopy in all districts and cities, yet currently only 13-16% of clinical cases are confirmed in a health facility; clinically suspected cases treated empirically until confirmed (see "Treatment" section below for details)	Will expand access to early, confirmed diagnosis by microscopy from 10% in 2008 to 80% in 2014.
Tools (microscopy, RDT, PCR, parasite genotype, algorithm for clinical diagnosis)	Ensure high quality microscopes and trained microscopists in all Community and Primary health centers; RDTs deployed in all peripheral health centers that lack microscopy or are far from nearest health centre (with geographical obstacles)	Microscopy examination available in all health facilities (8,000 health centers); address shortage of microscopy materials in primary health centers; continue RDT use for epidemics, mass surveys, and emergency cases in hospital settings
Monitoring/ QA	Program trains and monitors health workers & village midwives on RDT diagnosis, proper ACT treatment, and referral skills. Challenges include untrained laboratory staffs for microscopy examination, high microscopy diagnostic error rate, poor slide preparation, low compliance to laboratory standards, and lack of quality assurance in primary health centers; revised diagnostic guidelines and distribution to peripheral level	Strengthen cross-checking slide system at provincial level, including quality assurance by standardized slide set
<u>Treatment</u>		
<i>P. vivax</i> – 1 st line treatment protocol (radical cure, type, unit, dose); contraindicated populations (type, unit dose)	ACTs free of charge for all confirmed cases: Pre-referral treatment with quinine or artemether IM or artesunate suppositories; once case is confirmed, artesunate-amodiaquine (AS-AQ) for 3 days + single dose of primaquine (PQ) 0.25 mg/kg in areas with chloroquine resistance with a dosage of 4(AS)-10(AQ) mg/kg/day, also dihydro-artemisinin piperazine (DHA-PP) dosage is 2-4(DHA)-16-32(PP) mg/kg/day; CQ 25 mg/kg total	Planning to expand access to prompt treatment with ACTs in endemic areas from 10% in 2008 to 80% in 2013

	dosage over 3 days + PQ at 0.25 mg/kg weight for 14 days if ACTs aren't available; currently working to ensure availability of ACTs and their use in CHCs and hospitals in 2 high-risk provinces; Many patients either self-treating or waiting to seek treatment for 3 or more days; many citizens are not familiar with treatments of malaria and are unsure when to seek treatment	
<i>P. vivax</i> – 2 nd line treatment protocol	Quinine (QN) 3 times daily at 10 mg/kg/dose + PQ at 0.25 mg/kg for 14 days	
<i>P. falciparum</i> – National treatment protocol/policy (type, unit dose)	ACTs free of charge for all confirmed cases once case is confirmed, artesunate-amodiaquine (AS-AQ) for 3 days + single dose primaquine (PQ) given on first day as primary combination used with a dosage of 4(AS)-10(AQ)-0.75(PQ) mg/kg/day, also dihydro-artemisinin piperaquine (DHA-PP) + primaquine (PQ), dosage is 2-4(DHA)-16-32(PP)-0.75(PQ) mg/kg/day; Artemether + lumefantrin (A-L) (Coartem) used in private sector	Same as above
<i>P. falciparum</i> – Complicated Malaria	Artemether (AM) IM, artesunate (AS) IM or IV, or quinine (QN) IV for severe cases. Second line treatment: Quinine (QN) three times a day for seven days at 10 mg/kg/dose + doxycycline (DX) twice daily for seven days at 4 mg/kg/day in adults and 2 mg/kg/day for children 8-14 years or tetracycline (TC) four times daily for 7 days at 4-5 mg/kg/dose + primaquine (PQ) for treatment failure	
Mixed infections – National treatment protocol/policy (type, unit dose)		
Directly Observed Therapy (DOT) and Case Follow-up (drug adherence)		Will conduct follow-up of all cases under treatment: Pf at day 7 and 28 after treatment; Pv at days 7 and 28, and 3 months after treatment
G6PD screening	Very rarely occurs in Indonesia - few hospitals outside of major cities have the capacity to test	
G6PD prevalence survey	According to a recent global meta-analysis, most	

	studies have shown a G6PD deficiency prevalence in Indonesia ranging from 4-8% that appears to be variable among ethnic groups	
Mass screening & treatment/Focal screening	Periodic “mass blood surveys” done in highly endemic provinces and villages	
Focused Mass Drug Administration (MDA)		
Monitoring/QA	All artemisinin & chloroquine monotherapies banned; training and monitoring health workers & village midwives on proper ACT treatment	Establish Pharmacovigilance for anti-malaria drugs, and sentinel survey for drug efficacy
Chemoprophylaxis		
Prophylaxis - travellers	Non-pregnant adults and older children receive doxycycline at a daily dose of 2 mg/kg for 2 days before travel to endemic areas, and throughout duration of stay	
Prophylaxis – high risk populations	Studies have evaluated use of PQ as prophylaxis in G6PD-normal persons lacking clinical immunity and living in Papua, but is currently not approved for prophylactic use in Indonesia due to lack of regular G6PD testing in most areas	
Prophylaxis – pregnant women		
Intermittent Preventive Treatment – infants (IPTi), Children (IPTc) or in Pregnancy (IPTp)	IPT in pregnancy not currently used	Plan to carry out community study (including quantifying malaria burden in pregnancy) to identify regions for intermittent screening & treatment (IST) and intermittent preventive treatment (IPT)
Prevention		
Vector Control		
IRS Strategy (e.g., spatial or temporal rotation)	IRS targeted at endemic areas with API>5 cases per 1000 persons, areas with malaria positive infants, or high outbreak potential; total coverage by IRS used as the main preventive measure in active foci and for rapid containment of outbreaks, yet coverage is sporadic; monthly IRS of cattle shelters useful and encouraged in areas where <i>A. aconitus</i> is an important vector	IRS conducted in outbreak areas and in high endemic malaria villages
Insecticides	6 insecticides in 2 classes may be used in	No change

	Indonesia for IRS: pyrethroids (alpha-cypermethrin, bifentrin, cyfluthrin, deltamethrin, etofenprox, and lambda-cyhalothrin) & carbamates (bendiocarb)	
LLIN	ITNs/LLINs distributed free to all age groups with aim of >80% coverage in high-risk areas, focusing on pregnant women and children, presently 32% of households own at least one ITN; planning focused campaign distribution of two LLINs/household in 48 highly endemic districts for rapid mass protection coupled with other health interventions, such as EPI program, screening and treatment for malaria during ANC, and mass drug administration for filariasis	Coverage to be sustained via integration of LLIN distribution with ANC and Extended Program Immunization (EPI) programs, with intent to integrate malaria control with ANC/EPI programs in all provinces; will scale-up coverage and use of LLINs to 80% of pregnant women and children <5 by 2012 followed by further 5% increase for both children and pregnant women by 2013
Expired LLIN collection & replacement		
ITN (and insecticides used)	ITN ownership is 2.8% with a large discrepancy between east and west Indonesia; 3.4 million ITNs delivered in 2010; planning conventional or longer-lasting insecticide re-treatment to limited number of conventional ITNs	Increased ITN distribution for endemic areas
Larval control & environmental modification	Preferred larvicidal measures are insect growth regulators (pyriproxyfen and methoprene) and microbial insecticides (bacterium <i>Bacillus thuringiensis israelensis</i> or BTI); environmental control measures include synchronized cropping & intermittent irrigation in rice fields, removal of floating algae from lagoons and raising water salinity for larval control; some use of larvivorous fish; many studies have shown that deforestation and land-use change can result in higher <i>Anopheline</i> density	Will increase larvicidal measures and will determine correct dosing of larvicide to breeding sites following vector mapping (see "Entomological Surveillance" section below); midterm and final reviews of larval control program to be conducted; need for further studies on larvivorous fish efficacy in certain settings along with community acceptance and impact on malaria risk
QA	LLIN coverage & use system established for monitoring; assessment of Integrated Vector Management (IVM) activities; strengthening monitoring and evaluation and standardizing public health pesticide use	No change
Other	Other vector control methods that are used	Plan to extend electronic pesticides reporting

	include burning foliage, mosquito coils, and screening of houses to protect against night-feeding mosquitoes; there are 16 major malaria vectors in Indonesia; community-based vector control, using Participatory Learning and Action (PLA) approach; national, centralized electronic reporting system for vector control pesticides containing data on amount & history of insecticide usage and resistance	system to all district and municipality sites
Advocacy & Education		
Mass media	TV & radio spots; collaboration of UNICEF and NMCP to educate public about malaria transmission & proper routine use of LLINs	Will increase advocacy campaigns on new approaches to malaria control (e.g., public-private partnerships)
IEC/BCC campaigns	IEC materials on use of LLINs distributed with focus on continuing education through midwives, FBOs, CBOs, NGOs and village volunteers	Will increase production of IEC materials based on ITN/LLIN surveys
Community-based interventions	Education directed towards villagers on remote islands about how to dig channels from lagoons to sea to impede mosquito breeding	
Other	Advocacy and partnership meetings at national, provincial, and district levels (including mayors, parliament members, Planning Department officials and community leaders) to build awareness of social & economic costs of malaria, and need for tax revenue for public health activities	
Surveillance		
Case detection and reporting		
Case reporting system	Malaria case reporting system is a national malaria program mechanism (sub directorate malaria control, Ministry of Health) - it is the process of data collection and quality data management which informs decision-making and planning at every level (health center, hospital, district/municipal health office, provincial, and central level); the conducted activities strengthen the surveillance system; case data is variable	Developing case records based on case finding; information system guideline will be completed including reporting record system of malaria program; training and socialization at central, province and district/municipal level and nationally tested, evaluated and implemented

	(gender, types of parasites, age groups, pregnant women, malaria deaths) are currently in process of uniformity and improved standardized reporting forms which are applicable in all area in the country; data obtained from passive and active activities in health centers and hospitals, although not all health facilities (especially data obtained in hospitals) and data survey could easily obtained; trend analysis and mapping epidemiology (monthly parasite incidence (mopi)), annual parasite incidence (API) at: every village in districts, sub-district/health center, district in province, central level	
Active case detection (ACD)	ACD conducted by village malaria workers or village malaria cadres by informing health personnel to take blood slides of symptomatic patients during home visits; in regions with high (>5 cases per 1000 per year) to medium (>1 case per 1000 per year) API, home visits are either biweekly or monthly.	
Passive case detection (PCD)	Primary method of case detection in all areas outside of Java and Bali; all suspected malaria cases tested by RDT or microscopy in formal health sector and are referred for treatment	Improving PCD major goal in relatively high endemic settings; address major resource limitations in both diagnostic supplies and trained microscopists
Case investigation or “re-active surveillance”	Mass fever surveys collecting blood slides from all febrile patients in communities where a monthly parasite incidence exceeding 3 per 1000 people has doubled from one month to the next, or in low risk areas following a case in an infant	
Other surveillance (e.g., screening, prevalence surveys)	Mass blood surveys for all residents regardless of symptoms in active outbreak areas or areas of high endemicity; migration surveillance for residents of non- or low-endemic areas returning from highly endemic areas; contact surveys from at least five households neighbouring a confirmed malaria case	

<u>Outbreak (Epidemic) detection and response</u>		
Outbreak/Epidemic Prediction & Response	Data collected from sub-primary and primary health centers are aggregated by district health offices, who use data to graph trends, distribution and minimum-maximum case loads at primary health center level; a greater than twofold increase over normal in number of malaria cases is the threshold of an outbreak warning; data also used to create maps to better inform placement of limited outbreak control resources	Plan to improve routine surveillance and reporting; will investigate reported epidemics within 24 hrs in >90% of health facilities by 2011
<u>Entomological Surveillance</u>		
Surveillance vector species, behaviour, or densities	Geographical reconnaissance to map breeding sites, vector ecology, and human habitats; currently 3 insecticide resistance & mosquito behavior sentinel sites are established in low, moderate, and high transmission areas; conducting breeding site salinity testing	10 more sentinel sites to be established in high transmission zones in 2 different provinces; will conduct baseline entomologic surveys in sentinel sites to establish EIR in collaboration with local universities, along with sentinel entomological surveys over a 5 year period to monitor impact of LLINs on transmission and vector resistance
<u>Resistance monitoring</u>		
Insecticide and drug resistance activities	No formal database for drug resistance data currently exists; Entomological surveillance focuses on resistance to pyrethroids & carbamates; WHO bioassay tests, biochemical tests, and molecular detection of resistance genes are used; conducting field-based studies on the therapeutic response to chloroquine therapy by <i>Plasmodium vivax</i> ; genomic analyses of parasite DNA extracted from infections of known susceptibility or resistance to chloroquine	Will repeat insecticide resistance studies at sentinel sites yearly until 2015; need to conduct resistance studies on artesunate component of ACT
Drug efficacy	Treatment efficacy evaluated in sentinel areas in highly endemic regions with focus on artesunate-amodiaquine for Pf and chloroquine for Pv; compilation of antimalarial susceptibility tests over last century have shown Pf having 52% resistance to CQ <i>in vivo</i> , 18% to SP, 33% to QN; Pv has demonstrated resistance in 48% of <i>in vivo</i> tests; almost all studies have shown higher	Need for additional studies on the pharmacokinetics (to identify the optimum dosing) and long-term efficacy of dihydro-artemisinin piperazine (DHA-PQ) for treatment in pregnancy, particularly in reducing Pv relapses

	resistance in eastern compared to western Indonesia	
Prevention of reintroduction		
High risk populations	Targeting interventions towards migrant workers, socially marginalized and geographically isolated ethnic groups, and citizens engaged in illegal logging & mining; pregnant women receive locally effective ACT dihydro-artemisinin piperazine (DHA-PQ) if confirmed positive malaria case; challenging to control and treat highly mobile population that frequently travels between high and low endemic areas as well as transmigration villages with a high proportion of citizens that have moved from a low to high endemic area	To collaborate with midwives for conducting home visits to pregnant women with malaria; supporting implementation of Integrated Management Approach for Children under five years (IMA)
Border screening	Priority given to border areas for establishment of new village malaria posts	
Cross border collaborations		
Vector-control specific POR activities		
Program management and health systems		
Program Finance		
National elimination goal (by province, district)	All suspected malaria cases to have laboratory or RDT confirmation by 2010; Decreasing cases by 50% in all highly concentrated incidence (HCI) villages with malaria prevalence rates greater than or equal to 5 per 1,000 people; beginning stepwise elimination of all provinces by 2010	Goal of having all areas in Indonesia at pre-elimination stage in 2020: - National elimination by 2030 - Low transmission provinces of Java, Bali, & Batam to eliminate by 2015; intermediate/variable transmission provinces of Kalimantan & Sulawesi to reduce morbidity & mortality by 50% by 2015 - Sumatra to eliminate by 2020 - High transmission provinces of Papua (Irian Jaya) and smaller islands of East Indonesia to eliminate by 2030
Funding sources and funding budget from each source	As of 2010: Indonesian Government: \$ 18,589,838 USD (not including salary for health personal at central, province, district and health facility levels and Infrastructure); Global Fund: \$ 33,053,461 the ration between GF and Government fund 45% and 55%.	Additional funding of at least \$200 million USD needed per year to meet financial gap -Increased Government malaria financing sources (APBN, APBD) through the preparation of the RAD (Regional Action Plan) in accelerating the achievement of the MDGs: deconcentration fund,

	<p>UNICEF: \$ 2,000,000 – 3,000,000 by year for malaria control in some provinces and district/municipal</p> <p>WHO: \$ 200,000 by year including consultant fees</p> <p>Discussion of establishing a tax revenue for public health activities</p>	<p>DAK (special allocation of funds), Additional Duties, DAU (General Allocation Fund)</p> <p>-Proposing the Malaria control fund of GF ATM Round 11</p> <p>-Completion of National Action Plan</p>
Stratification		
<p>Stratification strategies for defining risk areas, to allocate resources & activities (tools may include sampling strategy, population-based statistics, GIS)</p>	<p>Risk Area is a unit of area in a village in health center/sub district / district / municipal / province where epidemiological malaria transmission found (case found in receptive area with vector borne at some time in the year). Currently not all areas do the mapping of malaria cases (number of positive malaria case/parasite) which can be made a model from data vector, the environment so it can be used for the allocation of funding priorities in every level.</p> <p>Not all malaria program managers or malaria entomology personnel at the district/municipal have got malaria basic training or entomology training</p>	<p>GIS mapping is based on case finding, vector borne and environment. the mapping are developed in 10 sentinel of Kalimantan and Sulawesi island in 2011 to determine the source and intervention required</p>
Program structure and organization management		
<p>Program management</p>	<p>Ministry of Health directs: (1) NIHRD: carries out malaria research activities; (2) Directorate General of Disease Control and Health Environment: oversees Directorate of Vector-borne Diseases that is responsible for malaria control activities; (3) Directorate General of Medical Care compiles malaria surveillance data.</p> <p>33 Provinces have CDC divisions and VBDC sections; 441 Districts also have CDC sections and VBDC Units; every district has at least 1 hospital in the capital, 10-20 Community Health Centers in major villages, hundreds of basic facilities in more remote villages, and some village malaria posts</p>	<p>Continue strengthening case reporting and management at district and provincial levels through M&E</p>
<p>Procurement & supply management</p>	<p>Central and provincial/district procurement distribute supplies to provinces and/or district</p>	<p>Aiming for 80% of health facilities with no reported stock-outs of nationally recommended first line</p>

	medical stores by air or sea; from district warehouses they are distributed to all health facilities	anti-malarial drugs lasting >1 week at any time during the past three months by end of 2015; will ensure supply of parenteral antimalarials (artemisinin-derivatives) and associated medical equipment and supplies at referral hospitals
Financial management	Government Budget (central and local governments) have financial management based on Ministry of Finance regulation; to manage the GFATM grant a Program management unit (PMU) at Director General of Centers for Disease Control & Environmental Health (DG-CDCEH) was established	
Program integration		
Level of integration of malaria elimination into public health	Access has been increased to village health posts with priority given to border areas, remote islands, and areas with unstable migrant populations; ANC/malaria and EPI/malaria models have been successfully piloted in certain districts, and NMCP is working to deliver basic high-quality malaria control services in partnership with immunization and maternal health services to be implemented in all high risk provinces by 2010	100 new village malaria posts will be established in remote endemic areas of Kalimantan & Sulawesi provinces and malaria posts in all endemic areas will be integrated with village health posts
Personnel		
Reorientation, retraining, or restaffing & capacity development	Large-scale training and refresher programs for laboratory technicians on proper malaria diagnosis using standard microscopy training guidelines developed by NMCP; many primary health centers lack capacity to analyse or produce local area monitoring reports	Establishment of “pre-service” training in malaria diagnosis, treatment, prevention or epidemiology for all health personnel; Will establish management training program with participants from all levels of the health system
Legal Framework		
Frameworks/policies/regulation/strategic plans	Primary health centers and district malaria control office are responsible for the malaria program, including managing vector control activities and providing progress reports; meeting with appropriate partners from industry and private sector to formulate national ITN policy; all artemisinin and chloroquine monotherapies are	

	banned.	
Standard Operating Procedures (SOP) – list subject	Have created preliminary guidelines for use of ACTs by village health workers; need for clear and effective microscopy quality assurance system and training	Standard microscopy guidelines to be reviewed and revised; developing guidelines for use of RDTs by nurses and village midwives at peripheral health facilities
Private sector – Providers		
Engagement with formal providers (case management, reporting, other)	Most citizens seek care in private clinics (except in rural areas where majority are seen in public sector) but still qualify for government subsidized treatment if malaria case confirmed	Will engage private or NGO/FBO hospitals & clinics in private sector to expand diagnosis & treatment coverage
Engagement with informal providers (case management, reporting, other)		
Training		
Other		
Monitoring and QA	Engagement of private sector to ensure quality ACTs	
Private sector – Companies/Businesses		
Employee or community programs (e.g., medical services, bed net campaigns)	Center for Occupational Health screens workers for malaria cases in 3 pilot areas	Exploring ways to work with mining, logging, fishing, and large-scale agriculture programs in highly endemic provinces to educate and treat employees at high-risk
Partners		
Funding	Global Fund: \$130M USD UNICEF/USAID: \$2.5 million, funding & implementation WHO/RBM: \$30,000 USD/yr, funding & support American, Chinese, Canadian Red Cross: providing LLINS to some provinces Bill and Melinda Gates Foundation: funding for MTC (research group)	Improve support for malaria control at community, district, provincial and national level so that district and provincial financial contributions to malaria control will be sufficient by 2015
Implementation (list partners and type of collaboration)	USAID/UNICEF funding and program implementation through maternal health & child immunization programs in several endemic areas; WHO provides technical assistance and some activities at central level. Bill & Melinda Gates support MTC activities; Red Cross (American, Chinese, Hong Kong,	Increase involvement of NGOs, CBOs, FBOs; scale-up of UNICEF's efforts from 10 to 58 districts in eastern Indonesia and integration with immunization campaigns

	Canadian) provides LLINS and funding for distribution; UNICEF, MENTOR, CARE, WHO, GF R1 provided large amount of support for malaria control in Tsunami Relief Program in Aceh/North Sumatra; Local NGOs/FBOs/CBOs work with MOH to increase access of interventions to remote populations for MCP: largest collaborators include Perdhaki (Assn of Voluntary Health Services of Indonesia) and BIF (Bangun Indonesia Foundation/Yayasan Bangun Indonesia)	
M&E		
M&E Elimination Plan, indicator development	The existing of National M&E Plan need to be updated and developed manual book. Surveillance malaria elimination manual, technical guidelines for malaria elimination, and National Action Plan are other supporting guideline for national M&E	Socialization and advocacy of the National Action Plan; establishing the elimination monitoring team at central, province and district/municipal level; evaluation and preparation of reports
QA/QC (diagnosis, supply chain, etc)	Improvement in microscope quality and customs clearance; drug quality to be monitored regularly (see above in diagnosis section)	Scale-up of provincial-level supervision capabilities by strengthening relationships of central government with provinces
Other		
	Challenges: decentralization impacts on procurement of insecticides and surveillance reporting (fragmented, financial autonomy, decrease in prompt and accurate reporting); massive use of pesticides in agriculture leading to vector resistance; weak vector resistance monitoring; weak regulation on standardization	

<i>Operational Research</i>	<i>Research in Past 5 years</i>	<i>Present Research Projects</i>	<i>Planned Research Projects</i>
Parasitological research projects, in particular for <i>P. vivax</i> ; list major outcomes and please cite publications when relevant	<i>P. knowlesi</i> in Kalimantan (Berens-Riha et al, 2009) <i>P. falciparum</i> : Therapeutic efficacy studies have been conducted on DHA + PP, AS + AQ, QN + DX, QN + TC, IV		Malaria Atlas Project and partners in Sub-Directorate for Malaria Control plan to conduct malaria parasite surveys across archipelago (Guerra 2007; Hay and Snow 2006); Need for

	<p>artesunate and QN.</p> <p>P. vivax: Therapeutic efficacy studies conducted on Pv for different areas of the country and contexts (e.g., areas with reported multidrug-resistance), uncomplicated cases in children and adults, and in complicated cases. Drugs tested include DHA + PP, AS + AQ, and CQ + PQ,</p> <p>Chemoprophylaxis: efficacy of PQ in G6PD-normal individuals lacking clinical immunity in Papua found a 30-mg adult daily regimen to be 93% protective against malaria and was safe and well-tolerated (Baird et al, 2001, 2003)</p>		<p>further study of health impact to mothers and infants of DHA-PQ treatment in pregnancy; Plans to measure effectiveness of intermittent screening and treatment (IST) in terms of the most feasible frequency of screening, especially in resource-constrained settings</p>
<p>Entomological research projects; list major outcomes and please cite publications when relevant</p>	<p>Larvicide: Liquid formulation of locally cultured strain of BTI from coconuts administered with water is effective against <i>A. Aconitus</i> and <i>A. maculates</i> larvae at different dosages and at different lengths of time (Blondine et al., 2008)</p> <p>Insecticide: In last five years, studies have been conducted on use of bifentrin (Sunaryo et al., 2007); other studies have been conducted on alpha-cypermethrin, cyfluthrin, deltamethrin, lambda-cyhalothrin, etofenprox, bendiocarb, propoxur, fenitrothion, malathion, pirimiphos-methyl</p>	<p>Baseline entomological survey in sentinel sites to establish EIR (entomological inoculation rate); Field trial of spatial repellents against mosquitoes on an endemic East Indonesian island for possible use in malaria control and elimination (Gates grant, 2010-2013)</p>	<p>Further entomological surveys</p>
<p>Behavioural research projects; list major outcomes and please cite publications when relevant</p>	<p>Malaria Knowledge, Attitudes and Practices (KAP):</p> <ul style="list-style-type: none"> Central Java: 52% of respondents had treated the last malaria illness in the family without going to a health facility, and got medications primarily from the local drug vendor (64%) or 		

	<p>community health worker (25%) (Sanjana et al., 2006)</p> <ul style="list-style-type: none"> • KAP survey conducted during a malaria epidemic in Central Java found no correlation between ITN ownership and malaria diagnosis within last year (OR=1.0, p=0.89) (Sanjana et al., 2006) • Higher risk of malaria in wooden or bamboo traditional houses (BPS 2008, Ompusunggu et al., 2006) • High acceptance of personal protective clothing and burning of coils/trash to prevent bites from night-feeding mosquitoes (Ompusunggu et al., 2006; Yahya et al. 2006) • Indigenous Papuans: less likely than immigrants to use health facilities as their source of malaria treatment (Karyana et al., 2007) • Treatment-seeking behaviors in mothers with children under 5: 21% took no action, 31% self-treated, and 48% obtained meds from health facilities (Pradono et al. 2005) • Sumatra and Lesser Sundas: high patient consultation rate (Kasnodihardjo and Manalu, 2008, and Yoda et al. 2007) • East Indonesia has lower rates of ITN ownership (IDHS 2008) 		
<p>Other research projects; list major outcomes and please cite publications when relevant</p>	<p>ACD: Utarini et al., 2007 recommended ACD only be used in highly endemic settings due to budget cutbacks and comparable results with PCD; “Ten Houses Grouping” community</p>	<p>Conducting baseline surveys of data on various malarionometric indices to help monitor activity impact on parasite prevalence; Baseline surveys on ITN & LLIN coverage in</p>	

	<p>participation scheme (Dasa Wisma) found to be more effective at collecting slides and case finding than village malaria workers, and that failure to provide compensation to village malaria workers diminished case detection coverage (Ompusunggu et al. 2005)</p> <p>Diagnosis: malaria ICT found to be reliable as a test when compared with microscopy (Arum et al. 2006); Parascreen Pan/<i>Pf</i> test only sensitive at high levels of parasitemia (Ginting et al. 2008); in Central Java, RDTs had high specificity but low sensitivity when compared to microscopy (Utami 2004, 2006); mean sensitivity of microscopic diagnosis to be lower in primary health centers vs. district level hospitals (42% vs. 86%), as well as a higher false positive rate (16% vs. 4%) (Chadijah et al., 2006)</p>	<p>target areas before distributing project nets; Spatial mapping of malaria in pregnancy (Dellicour 2010);</p>	
<p>Research Partners (national, regional and international) in operational research projects</p>		<p>Eijkman Institute for Molecular Biology, Hasanuddin University School of Public Health, and the Eijkman-Oxford Clinical Research Unit received the Gates grant 2010-2013 for a field trial of spatial repellents (see above)</p>	

Quantitative Data			
Variable	Data	Source	Notes (include year if not 2010)
Total population	229,964,723	WHO World Malaria Report, 2010	2009
Population at risk (PAR): Low	16,097,530	WHO World Malaria Report, 2010	2009
Medium			
High	85,086,947		
Total malaria deaths, Total estimated deaths	900	WHO World Malaria Report, 2010	2009; "attributed deaths"
Total malaria cases	544,470	WHO World Malaria Report, 2010	2009
Total positive slides – <i>P. vivax</i>	237,929	WHO World Malaria Report, 2010	2009

Total positive slides – <i>P. falciparum</i>	212,501	WHO World Malaria Report, 2010	2009
Total suspected cases	2,733,407	WHO World Malaria Report, 2010	2009
G6PD deficiency % population	4-8%	Nkhoma, E. et al. <i>The global prevalence of glucose-6-phosphate dehydrogenase deficiency: A systematic review and meta-analysis</i> . Blood Cells, Molecules, and Diseases 42 (2009) 267–278.	2009
# imported malaria cases (national)			
Slide positivity rate (SPR)	20.69%	WHO-Malaria Profile of SEA Region	2009
Annual blood examination rate (ABER)	2.5	World Malaria Report, 2010	2009
Annual parasite index (API)	4.37%	WHO-Malaria Profile of SEA Region	2009
Parasite prevalence rate			

Main Sources (list up to five main sources):
1. Global Fund to Fight AIDS, Tuberculosis, and Malaria, Round 6 Proposal (2006). “Intensified and Integrated Malaria Control Program in Sumatra and Six Provinces of Eastern Indonesia.”
2. Global Fund to Fight AIDS, Tuberculosis, and Malaria, Round 8 Proposal (2008). “Intensified Malaria Control Program in Kalimantan and Sulawesi Islands.”
3. Hutajulu, W., et al. (2008). Review of National Vector Control Policy in Indonesia. Directorate of VBDC/DG/DC/EH: www.actmalaria.net .
4. Kusriastuti, R. Director of VBDC, Ministry of Health (2009). “Towards Malaria Elimination in Indonesia.” Asia Pacific Malaria Elimination Network, Meeting Presentation.
5. World Health Organization (2010). World Malaria Report 2010. Geneva: Global Malaria Programme, 2010.
6. Elyazar I, Hay S, Baird JK. Malaria Distribution, Prevalence, Drug Resistance and Control in Indonesia. <i>Advances in Parasitology</i> 2011; 74: 41-175

Malaria Incidence in Indonesia, 2010

