

Intervention Area	Current Year (2011)	Planned (within next 5 years)
Case Management		
Diagnosis		
National diagnosis policy (confirmed, clinical)	Free diagnosis and treatment in the public sector for both Thai citizens and Foreign Nationals	Free diagnosis and treatment in the public sector for both Thai citizens and Foreign Nationals
Tools (microscopy, RDT, PCR, parasite genotype, algorithm for clinical diagnosis)	All malaria cases are diagnosed with microscopy in malaria clinics and pan-Rapid Diagnostic Tests (RDTs) (those used for both species, primarily used in remote areas) in community malaria post (high transmission areas)	Evaluation of PCR for survey and diagnostic needs
Monitoring/ QA	Developing revised guidelines on RDT Management and Quality Control System; RDTs kept at temperature and humidity-controlled provincial warehouses and are distributed monthly to district offices for direct transport to malaria posts in villages; RDT samples will be tested for quality control and cross-checked against microscopy	Develop a network for malaria parasite laboratory services, continuous parasite culture, and drug sensitivity tests
Treatment		
<i>P. vivax</i> – 1 st line treatment protocol (radical cure, type, unit, dose); contraindicated populations (type, unit dose)	Day 1: Chloroquine 1500 mg + Primaquine 15 mg; Day 2-3: Chloroquine 500 mg + 15 mg Primaquine; Day 4-14: Primaquine 15 mg	
<i>P. vivax</i> – 2 nd line treatment protocol	Day 1: Chloroquine 1500 mg + Primaquine 15 mg; Day 2-3: Chloroquine 500 mg + 20 mg Primaquine; Day 4-14: Primaquine 20 mg	
<i>P. falciparum</i> – National treatment protocol/policy (type, unit dose)	Uncomplicated, lab-confirmed positive case: Artesunate 12 mg/kg/3 days + Mefloquine 25 mg/kg/2 days + Primaquine 30 mg/kg/1 day loose tablets ()	Fixed dose combination mefloquine+artesunate country wide (to avoid not completed doses, dose depend on drug direction)
<i>P. falciparum</i> – Complicated Malaria	Treatment failure: Quinine (7 days) + Doxycycline (7 days); Severe cases: Artesunate + Mefloquine or Quinine In hospital artesunate 2.4 mg/kg iv given on admission, then at 12 and 24 hours, then once daily for seven day if artesunate treatment duration is five days,	same

	<p>mefloquine 25 mg/kg in divided doses should be added on day 5.</p> <p>Or Initial dose: quinine dihydrochloride 20 mg salt/kg bw diluted in 10 ml/kg bw of 5% dextrose or dextrose saline administered by IV infusion over the period of 4 hours.</p> <p>Maintainance dose: quinine dihydrochloride 10 mg salt/kg bw diluted in 10 ml/kg bw of 5% dextrose or dextrose saline administered by IV infusion In adults, the maintainance dose is infused over a period of 4 hours and repeated every 8 hours. In children, it is infused over the period of 2 hours and repeated every 8 hours until the patient is in position to swallow. An oral medication can be given following this, to complete the 78 day treatment.</p>	
Mixed infections – National treatment protocol/policy (type, unit dose)	If <i>P. falciparum</i> , treat as for <i>P. falciparum</i> (above)	Same
Directly Observed Therapy (DOT) and Case Follow-up (drug adherence)	<p>Case follow-up conducted through home visits by Migrant Health Volunteers (MHVs) and Community Health Workers (CHWs) in A1 endemic areas. All confirmed positive cases are investigated and followed up:</p> <p>PF = Day 0, 7, 14, 21, 28 PV = Day 14, 28, 60, 90</p>	<p>DOT by patient visit MC or home visit by field staff, Villages Health Volunteer, migrant Health Volunteers (MHVs) and Community Health Workers (CHWs) at day 1,2,3 and follow up day 7,14,21 and 28 for PF and PV = Day 14, 28, 60, 90</p>
G6PD screening	Not done	Need research
G6PD prevalence survey		Need survey
Mass screening & treatment/Focal screening	Targeted mass screening conducted in border areas, targeting migrants (see Border screening, below)	Conduct under foci investigate or active case detection
Focused Mass Drug Administration (MDA)		Pilot study of mass drug administration to be conducted on Thailand-Cambodia border in late 2011 (see “Operational Research” section below)
Monitoring/QA/Policies	Treatment Guidelines were updated in 2007; currently monitoring drug resistance and will adjust drug policy as	Develop a network for counterfeit, limitation, and substandard malaria drugs

	necessary; established Pharmaceutical System Research & Intelligence Center (PSyRIC) drug quality monitoring database with help of US Pharmacopeia Promoting the Quality of Medicines (USP PQM)	with neighbouring countries
Chemoprophylaxis		
Prophylaxis - travellers	Not recommended (nor is daily doxycycline); self protection recommended	
Prophylaxis – high risk populations (esp. Armed forces, loggers, surveyors and others working in malaria risk areas)	Self protection and standby drug supply	
Prophylaxis – pregnant women	None currently	
Intermittent Preventive Treatment – infants (IPTi), Children (IPTc) or in Pregnancy (IPTp)	None currently	
PREVENTION		
Vector Control		
IRS Strategy (e.g., spatial or temporal rotation)	IRS used for vector control in endemic and highly receptive areas, effective against <i>Anopheles minimus</i> ; in 2010, there were an estimated 485,701 people protected by IRS and 53,099 people protected by emergency spray operations as a result of an epidemic	
Insecticides	Deltamethrin (5% wettable powder) at the target dosage of 20 mg/square meter	
LLIN		Goal to provide 1 LLIN for every 2 persons in unprotected Thai (40% of Thais estimated to be unprotected) and registered migrant population and 1 LLIN to all malaria-positive unregistered migrants that access care at health posts
Expired LLIN collection & replacement	1/3 of nets distributed to endemic villages to be replaced annually to account for wear and tear	
ITN (and insecticides used)	ITNs are distributed free of charge to all age groups during routine mass campaigns to Thai residents and unregistered migrants diagnosed with malaria at community malaria posts; an estimated 170,744 people were protected by ITN in 2010; aiming to retreat 100% of existing ITNs by 2010 and as of 2010 88,556 ITN received the first round of retreatment, 9,491 received	

	the second round	
Larval control & environmental modification	In 2010 1.5 million people were estimated to be protected through biological control methods; 27,183 were protected through source reduction methods	
QA		
Advocacy & Education		
Mass media	“Malaria Week” campaign to be held back to back with Global Malaria Day in endemic villages using mixed media to deliver malaria messages	
IEC/BCC campaigns	Development of bilingual IEC materials suitable for migrants and vulnerable communities, including posters, brochures, street theatre, village meetings, radio and TV advertisements Community Health Workers (CHWs) and Migrant Health Volunteers (MHVs) conduct regular home visits (at least 20 per month), community health education sessions and treatment outcome follow-up using the adjusted IEC materials mentioned above to migrants	Raise public awareness through various media about the dangers of counterfeit and substandard medicines
Community-based interventions	MHVs in highly endemic A1 areas (see “Stratification” section below) and CHWs in southern provinces shall be trained in screening, clinical diagnosis, referral, treatment follow-up, and health education campaigns with an overall goal to strengthen relations between communities and the Thai healthcare providers Regular meetings at district and provincial levels to inform local decision-makers as to malaria situation in their areas	Migrant Liaison Officer (MLO) to be trained in supervision and monitoring of MHVs at 1 MLO per 10 villages to serve as link in addressing barriers between MHVs and Government healthcare facilities
Surveillance		
Case detection and reporting		
Case reporting system	Thai surveillance system carried out by Vector Borne Disease Control Officers; passive and active case detection is reported routinely; a delay can occur in reporting from the district to the national level	Technical assistance from WHO and other partners on improving and consolidating data from various sources into the health information system along with incorporation of data on vulnerable populations and migrants; Developing a

		“Migrant Health Information System” (See “Operational Research” section below)
Active case detection (ACD)	Employed in villages with microscopy and/or RDTs; MHVs to seek out transient workers	
Passive case detection (PCD)	Employed in villages and towns with microscopy and/or RDTs	
Case investigation or “re-active surveillance”	All confirmed positive cases are investigated; malaria investigation experts to be available for consultation at district, provincial, and national level	
Other surveillance (e.g., surveys)	Household-based KAP surveys using pre-coded questionnaires to gather baseline information on target population and areas to serve as basis for designing activities and implementation	
Outbreak (Epidemic) detection and response		
Outbreak/Epidemic Prediction & Response	<p><u>Epidemic Prediction</u>: an alternative method for early detection of malaria epidemics employing the Poisson model has been found to detect increasing numbers of cases one to two weeks before their peak; this software is implemented in several endemic areas</p> <p><u>Epidemic response</u>: Rapid response includes the verification of data and then response, which includes mass blood surveys, strengthen treatment facilities, active case detection and foci investigation, radical treatment, IEC, entomological monitoring, and reporting to state and national levels; emergency vector control measures include space spray, IRS, fogging, anti-larval measures as a supplement to IRS, and entomological investigation</p>	Surveillance Rapid Response Team: create a facility to go into service during epidemics; each district would have a team comprised of a medical officer, a lab technician and microscopists, spray men, an entomologist and a driver; the regional entomologist should supervise
Entomological Surveillance		
Surveillance vector species, behaviour, or densities	<i>Anopheles dirus complex</i> , <i>Anopheles minimus complex</i> , <i>Anopheles aconitus</i> , and <i>Anopheles sondaicus complex</i> are the main malaria vectors; <i>Anopheles baimaii</i> and <i>Anopheles pseudowillmori</i> of the <i>Anopheles maculatus group</i> are considered malaria vectors with local importance	Plan to develop an entomological center that will conduct vector behaviour studies, monitor insecticide resistance, and improve chemical regulations for epidemic and control measures

<u>Resistance monitoring</u>		
Insecticide and drug resistance activities	<p>Eight active sentinel sites for monitoring drug-resistance in border areas; two sentinel sites for monitoring insecticide resistance; current resistance levels of artesunate are as high as 33% at the Cambodia-Thailand border, and 10-20% at the Myanmar-Thailand border</p> <p>ARCE (artemisinin-resistance containment project) programme between Cambodia and Thailand to eliminate artemisinin-resistant parasites from the border region (see “Cross-Border Collaboration” and “Operational Research” sections below)</p> <p>Major activities include: 1) in vivo therapeutic efficacy studies in patients, 2) in vitro sensitivity of parasite to drugs, 3) molecular studies to exclude resistant parasites from re-infection as well as exploration of drug-resistant molecular markers, 4) pharmacokinetics of drug in patients, 5) drug quality monitoring including counterfeit drug identification</p> <p>No DDT or Pyrethroid resistance has been detected for <i>An. minimus s.l.</i>, <i>An. dirus</i>, or <i>An. epiroticus</i></p>	Set up successful and sustainable drug resistance monitoring system through improvement of continuous monitoring
Drug efficacy	Nine sentinel sites monitoring artesunate-mefloquine efficacy through <i>in vivo</i> assays; treatment failure rates are currently low as long as there is not resistance to a partner drug	Support a network of partners including NGOs and universities for data-sharing and development of studies of first-line drug efficacy; including new treatment modes, follow-up of parasite sensitivity, drug quality surveillance, and drug resistance factors
<u>Prevention of reintroduction</u>		
High risk populations	Migrants (both legal and illegal) and the communities that live in remote and heavily forested areas along the Myanmar, Cambodia, Laos, and Vietnam border regions, as well as communities in the conflict zones in southern Thailand.	GF R7 grant specifically targets migrants by aiming to scale-up LLIN coverage, IEC/BCC, and increased access to malaria services by 2012 in the most vulnerable migrant populations in endemic provinces

	<p>Mahidol-Oxford Tropical Medicine Research Unit's Shoklo Malaria Research Unit (MORU-SMRU) runs 8 existing malaria clinics in the highly endemic province along the Myanmar border and serves mainly migrant patients; currently scaling-up efforts and hiring more personnel</p> <p>Thai population groups considered at high risk include farmers, rubber tappers, tourists, border-patrol policemen, soldiers, and forestry men.</p>	bordering Cambodia, Lao PDR, Malaysia, and Myanmar
Border screening	Increased screening of unregistered migrants with RDTs in endemic villages through newly established Malaria Posts (1 MP per A1 village) under supervision of Provincial Health Offices; screening done through mobile malaria clinics at all border crossings; screening is also done prior to issuing work permits and treatment is offered to positive malaria cases	GFTAM-funded projects focus on improving surveillance, reporting and treatment for local malaria transmission and outbreaks for transient migrant populations
Cross border collaborations	ARCE programme between Cambodia and Thailand to eliminate artemisinin-resistant parasites from the border region (see "Operational Research" section below for preliminary results)	<p>Develop cross-border elimination strategies, planning, and implementation through joint working groups</p> <p>Coordinate and synchronize IEC materials between neighbouring countries for migrant populations</p>
Vector control specific POR activities	Strong border monitoring and surveillance in 10 high risk provinces along Myanmar, Laos, Cambodian, and Malaysian borders; provision of ITNs to employers of migrant workers and to migrants who test positive for malaria	
Program Management and health systems		
Program Finance		
National elimination goal (by province, district)	Sub-national elimination with Phuket as the first targeted elimination province (6 cases in 2009)	Sub-national elimination with goal of 80% of the country to be malaria free by 2020; reduction of population at risk and morbidity/mortality rate by 50% in 2012

		Make long-term malaria sub-national elimination plans at the district level with support from the national level in all disease control activities
Funding sources and funding budget from each source	In 2010 the government funding for the NMCP was \$440,000 USD; the NMCP received (in USD) \$3.3 million from the Global Fund, \$2.5 million from WHO for a total of \$6.23 million for the NMCP	
Stratification		
Stratification strategies for defining risk areas, to allocate resources & activities	<p>Villages are classified on a yearly basis by the number of months during which indigenous malaria cases are reported:</p> <p>Control areas with perennial transmission (>6 months transmission; A1 villages) and periodic transmission (<6 months transmission: A2 villages)</p> <p>Control areas without transmission, separated into high-risk areas (no indigenous cases for three consecutive years but with vector presence; B1 villages) and low-risk areas (no transmission or vector presence within the last three years; B2 villages)</p> <p>Pre-integration areas (low risk for three years, and where local health services can perform case detection, treatment, and case investigation)</p> <p>Integration areas (areas with pre-integration for at least three years, where Provincial Health Office manages malarial control activities)</p>	Assessment and mapping of malaria burden with updated country-level stratification from via WHO control-level recommendations
Program structure and organization management		
Program management	<p>Department of Disease Control oversees the Bureau of Vector-Borne Diseases where the NMCP is merged with other vector-borne disease programs (Dengue & Filariasis)</p> <p>The NMCP is responsible for developing policies, strategies and standard treatment guidelines as well as research and development for prevention and control strategies; currently undergoing strategic decentralization of prevention and control activities to</p>	Management committees at the provincial level to be formed composed of representatives from the government sector, private sector, and selected community representatives; monthly meetings will focus on implementation difficulties and will work to improve recommendations, resolutions, and other NMCP-related issues

	<p>local organizations</p> <p>The program is implemented through 12 regional offices, 39 provincial centers, and 301 district-level units</p>	
Procurement & supply management	<p>LLINs procured through WHO; managed by Ministry of Public Health (MOPH), Department of Disease Control (DDC), and Bureau of Vector-Borne Diseases (BVBD)</p> <p>Central storage at MOPH warehouse in Bangkok, where large quantity items (i.e. LLINs) are purchased annually and contracted for distribution by a private firm for direct delivery to provincial offices; RDTs and anti-malarial drugs are delivered monthly and LLINs and insecticides are distributed biannually; private contractors have insurance to cover losses and terrain-appropriate vehicles for delivery to remote regions</p>	<p>Improve pharmaceutical management to prevent stock-outs or overstocks of ACTs and RDTs</p> <p>Increasing the distribution of commodities before the rainy season in case remote villages become inaccessible</p>
Financial management	Financial management governed by central government regulations	
Program integration		
Level of integration of malaria elimination into public health	Currently NMCP still a vertical program under Dept of Disease control where uncomplicated malaria treatment is carried out in 320 malaria clinics throughout the country; currently undergoing decentralization and integration into the 76 provincial public health service systems	Increasing and advancing integration of malaria control and prevention into general health services through clear delegation of responsibilities at every level and a collaborative plan for communication
Personnel		
Reorientation, retraining, or restaffing & capacity development	<p>Strengthening capacity of staff at all levels (district, provincial, health center); training provincial level staff in database management and reporting</p> <p>Working with MORU-SMRU/ARC to develop model for improved access and service delivery to vulnerable populations by the establishment of a Malaria Post (MP) to cover all A1 villages, staffed by a paid Malaria Post Worker (MPW) to be trained in screening, diagnosis, treatment, and supply management</p>	<p>Development of a Human Resource Development database and network for planning, training, and procuring curricula to meet operational standards for all occupations involved in malaria control</p> <p>Training in diagnosis, treatment, and integrated vector control for relevant agencies at all levels to hasten the integration of the NMCP into the public</p>

		health system
Legal Framework		
Frameworks/policies/regulation/strategic plans	<p>Mekong Roll Back Malaria Initiative, 1999; UC Scheme (30 Baht Universal Health Care Policy): all eligible people receive free medical care for 30 Baht per episode of illness Migrant Health Program Model 2009: To develop a migrant health plan that is embedded with current public health system Border Health Master Plan Strategic Plan to Strengthen Malaria Control and Elimination in the Greater Mekong Subregion: 2010–2014 10th National Health Development Plan (2007-2011) Global Plan for Artemisinin Resistance Containment (GPARC): To mobilize local and global stakeholders to prevent the spread of and eliminate artemisinin resistance Set up special provincial committees on migrants to advocate for increased provincial budget funds to sustain community-based activities in endemic villages; developing revised guidelines on RDT Management and Quality Control System</p>	<p>By 2012 30% of provinces to have a clear policy on domestic funding for malaria control activities in migrant populations</p> <p>Participation in Asia Pacific Malaria Elimination Network (APMEN)</p>
Standard Operating Procedures (SOP) – list subject	National Strategic Plan for Malaria Control and Elimination in Thailand 2011-2020; Treatment guidelines updated in 2007	<p>Develop manuals for sub-national elimination (provincial and district level) and work standards</p> <p>Develop manuals and standards for surveillance and follow-up effectiveness of anti-malarial drugs</p>
Private sector – Providers		
Engagement with formal providers (case management, reporting, other)	Working to organize a cooperative network of public and private sector organizations including the MOPH and other ministries, private sector organizations (i.e. hospitals), multinational organizations, and universities to coordinate national malaria control activities such as diagnosis, treatment, and research; there is no	Enhance collaboration between the public and private sectors concerning treatment standards; enhance collaboration among public and private sectors involved in sustainable malaria control

	reporting from the private sector	
Engagement with informal providers (case management, reporting, other)		
Training		Improve capacity of personnel in private sectors (along with public) in implementation of malaria control activities
Other		Develop innovative public-private partnerships
Monitoring and QA		
Private sector – Companies/Businesses		
Employee or community programs (e.g., medical services, bed net campaigns)	<p>Encouraged to increase financial contributions to address health concerns of migrants</p> <p>Seeking to increase participation of plantation owners (whom employ many migrant workers) in malaria education and prevention activities for their laborers</p>	Encouraging collaboration between private companies employing migrant labourers to finance healthcare for them
Partners		
Funding	GFATM provides majority of international funding for malaria control in the Greater Mekong Subregion	
Implementation (list partners and type of collaboration)	<p>Drug quality monitoring network: WHO, US Pharmacopeia Drug Quality Information (USP DQI), German Pharma Health Fund, and Thai Bureau of Drug and Narcotics; USP DQI has made televised public service announcements</p> <p>Kenan Institute Asia (KIA) & WHO-MMP have provided technical assistance for updating antimalarial drug policies and case management guidelines as well as conducting pilot projects on focal elimination (see “Operational Research” section below)</p> <p>SAMEO TROPMED Network; Strengthens capacity of health officials on malaria surveillance, uncomplicated malaria treatment, using GIS for data management,</p>	

	<p>performing inter county collaboration on tropical disease prevention and control, and conducting research on malaria treatments</p> <p>Ministry of Public Health: Office of Permanent Secretary, Provincial Health Offices (PHO), Department of Disease Control, Bureau of Vector-Borne Diseases, Bureau of Epidemiology, Office of Public Relations, Offices of Disease Prevention and Control, Bureau of Health Promotion, Food and Drug Administration, Department of Medical Sciences, and Department of Medical Services</p> <p>Ministry of Interior: Local Administration Organizations</p> <p>Ministry of Education</p> <p>Relevant private sector organizations (i.e. Malaria Association of Thailand)</p> <p>International and foreign organizations: WHO Mekong Malaria Programme (WHO-MMP), USAID-Greater Mekong Subregion Malaria Control Project, Borderless Action Against Microbes program (BAAM), and Management Science for Health (MSH), ACTMalaria, Mahidol-Oxford Tropical Medicine Research Unit's Shoklo Malaria Research Unit (MORU-SMRU), Asian Development Bank, American Refugee Committee (ARC), Bill & Melinda Gates Foundation (BMGF), Armed Forces Research Institute (AFRIMS), and many others</p>	
M&E		
M&E Elimination Plan, indicator development	<p>WHO M&E training with provincial staff on baseline surveys, managing external evaluations, and including NGO data into national health information system</p> <p>Supervision and evaluation to be conducted at all levels of MOPH agencies to ensure accurate data collection</p>	<p>One program assistant to be posted in each of 28 malaria endemic provinces to assist with management and reporting</p> <p>National institutions contributing to design of evaluation tools and indicator</p>

	and harmonization; technical expert in M&E employed to set up monitoring and evaluation system at all levels, with Malaria Association of Thailand (national association of experts) to be main evaluator; WHO Mekong Malaria Programme M&E Network working to harmonize and simplify indicators and improve data management across GMS countries	development with technical assistance as needed from WHO and country-level partners External evaluation planned for 2012 following implementation of GF R7 grant implementation	
QA/QC (diagnosis, supply chain, etc)	Drug quality monitoring network samples drugs 2-3 times per year in all six countries of Greater Mekong Subregion to test for counterfeit or substandard antimalarial drugs QC of purchased commodities at MOPH warehouse		
Other			
Operational Research	Research in Past 5-10 years	Present Research Projects	Planned Research Projects
Parasitological research projects, in particular for <i>P. vivax</i> ; list major outcomes and please cite publications when relevant	GMS sentinel sites have shown decreasing therapeutic efficacy rates and increasing parasite clearance times (Noedl et al, 2008; White, 2008; Dondorp et al 2009); Three efficacy trials at Thai-Cambodian border demonstrated reduced efficacy of artesunate-mefloquine with 15-20% recrudescence (Denis et al. 2006; Vijaykadga et al. 2006); Other efficacy studies have shown treatment failure rates from 1-21% for A+M, 0-68% for MEF, and 0-19% for AL From 1995-2007 treatment outcomes for patients on 3-day AS + MQ regimen have shown increases in proportion of patients parasitemic at day 3 in	ARCE (artemisinin-resistance containment project) is a programme to eliminate artemisinin-resistant parasites from Thailand-Cambodia border has shown: 1) Intensive screening to find and treat hidden cases of resistant malaria in target villages is working; 2) Vector control tools, like LLINs, are effective for reducing transmission in GMS; 3) Village malaria workers can improve access to diagnosis and treatment of hard-to-reach populations (World Health Organization: <i>Global Report on antimalarial drug efficacy and drug resistance: 2000-2010</i>) Kenan Institute Asia (KIA) to conduct pilot projects on focal elimination in Phuket, as well as	Pilot study of mass drug administration to be conducted on Thailand-Cambodia border in late 2011 with recommendations from WHO GMP Development of molecular biological methods to conduct further parasitological studies including genotyping of malaria parasites Continuous drug resistance surveillance in border areas with high transmission Improvement of G6PD screening and safe integration of primaquine therapy for radical treatment of <i>P. vivax</i> Emerging methods of detection,

	<p>both Cambodia and Thailand (Wongsrichanalai and Meshnick, 2008)</p> <p>2007-2009 ARC3 Project (Artemisinin resistance: pilot studies to confirm, characterize, and plan for containment) funded by BMGF</p>	<p>building public-private partnerships for healthy tourism and malaria elimination</p>	<p>including PCR for survey and diagnostic needs</p>
<p>Entomological research projects; list major outcomes and please cite publications when relevant</p>	<p>ITN have been shown to be more cost-effective than IRS in terms of personal protection and transmission control when coverage is high;</p> <p>Molecular identification of 5 new species of <i>An. dirus</i> complex (Obsomer et al. 2007; Walton et al. 1999)</p> <p>No <i>kdr</i> alleles (pyrethroid mutation gene) detected in <i>An. minimus</i>, or <i>An. dirus</i> (Verhaeghen et al. 2009)</p>		<p>Entomology studies of Integrated Vector Management (IVM)</p>
<p>Behavioural research projects; list major outcomes and please cite publications when relevant</p>	<p>WHO/ADB <i>Strengthening Malaria Control for Ethnic Minorities in the Greater Mekong Subregion</i> from 2005-2007 found improvements in malaria knowledge and practices among the Karen ethnic minority in Thailand after targeted community-level interventions</p> <p>In the remote malarious northwestern border area of</p>		<p>Need for study of: Community participation in malaria case-finding and treatment, prevention of transmission in tourism areas, and innovative approaches to effectively reach identified vulnerable groups</p>

	<p>Thailand, the early detection of malaria by trained village volunteers, using rapid diagnostic tests and treatment with mefloquine-artesunate was feasible and reduced the morbidity and mortality of multidrug-resistant <i>P. falciparum</i> (Carrara et al, 2006)</p> <p>The current first-line treatment and a three-day combination regimen of artesunate-mefloquine provides excellent patient compliance with good efficacy and tolerability in the treatment of highly multidrug resistant <i>P. falciparum</i> malaria (Congpuong et al, 2010)</p>		
<p>Other research projects; list major outcomes and please cite publications when relevant</p>	<p>Counterfeit drugs are problematic in the Greater Mekong sub-region, and multi-country studies in the early 2000s demonstrated 38-53% of oral artesunate were counterfeits; Vejaykadga et al, 2006 found 15.4% of artesunate, 11.1% of CQ, and 29.4% of quinine were substandard</p>	<p>M&E on the “MP model” (see “Reorientation” section above) being implemented by MORU-SMRU/ARC in A1 villages as a model for increased access to vulnerable populations</p> <p>WHO Border Health Programme and partners are currently scaling up the Migrant Health Information System (MHIS) developed in Ranong and Samutsakorn provinces based on an assessment that identified the current status quo, gaps and limitations of the MHIS as well as providing further recommendations (Assessment Report of Migrant Health Project:</p>	<p>Need for study of: Effects of special local projects such as the Global Fund and drug-resistant parasite elimination strategy projects</p> <p>Effects of health system reform; including decentralization, malaria integration into public health systems, sub-national elimination interventions, national insurance and civil service system changes</p> <p>Plan for randomized antimalarial drug quality survey in select Thailand-Cambodia border provinces through PSyRIC/USP DQI</p>

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Research Partners (national, regional and international) in operational research projects	Mahidol-Oxford Tropical Medicine Research Unit's Shoklo Malaria Research Unit (MORU-SMRU); WHO Mekong Malaria Programme		

Quantitative Data			
Variable	Data	Source	Notes (include year if not 2010)
Total population	67,764,038	World Health Organization, World Malaria Report 2010	2009
Population at risk (PAR): Low Medium High	28,460,896 NA 5,421,123	World Health Organization, World Malaria Report 2010	
Total malaria deaths, Total estimated deaths	26	World Health Organization, World Malaria Report 2010	2009; "attributed deaths"
Total malaria cases	49,186	World Health Organization, World Malaria Report 2010 MOH Surveillance Data (unpublished data 2011)	2009; reported for "microscopy positive" blood films 2010; reported for "microscopy positive" blood films
Total positive slides – <i>P. vivax</i>	3,206	World Health Organization, World Malaria Report 2010	2009
Total positive slides – <i>P. falciparum</i>	12,719	World Health Organization, World Malaria Report 2010	2009
Total suspected cases	2,907,219	World Health Organization, World Malaria Report 2010	2009
G6PD deficiency % population	5-10%	Nkhoma, et al. <i>Global prevalence of G6PD deficiency: A systematic review and meta-analysis.</i>	2009
# imported malaria cases (national)	22,899	MOH Surveillance Data (unpublished data 2011)	2010
Slide positivity rate (SPR)			2010

Annual blood examination rate (ABER)			2010
Annual parasite index (API)	0.36/1,000	MOH Surveillance Data (unpublished data 2010)	2009
Parasite prevalence rate	0.02%	MOH Surveillance Data (unpublished data 2011)	2010

Main Sources (list up to five main sources):		
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2. Bureau of Vector Borne Disease, Ministry of Public Health. "National Strategic Plan for Malaria Control and Elimination in Thailand 2011-2010." DRAFT document. June 2011.		
3. Satimai, W. (2010). "Thailand: Progress in Subnational Elimination." Asia-Pacific Malaria Elimination Network Meeting Presentation.		
4. World Health Organization (2010). World Malaria Report 2010. Geneva: Global Malaria Programme, 2010.		
5. Cui, L., et al., Malaria in the Greater Mekong Subregion: Heterogeneity and complexity. Acta Trop. (2011), doi: 10.1016/j.actatropica.2011.02.016		

