

Intervention Area	Current Year (2010)	Planned (within next 5 years)
<b>Case Management</b>		
<b>Diagnosis</b>		
National diagnosis policy (confirmed, clinical)	National diagnosis policy: all clinical cases are notified but only confirmed cases are registered; early detection, diagnosis and free treatment of malaria available at all government health clinics; a portion of cases sent for PCR at medical research facility	National diagnosis policy: all confirmed cases are registered, all clinical cases are notified; early detection, diagnosis and free treatment of malaria cases at all government health clinics
Tools (microscopy, RDT, PCR, parasite genotype, algorithm for clinical diagnosis)	Microscopy, RDT, PCR	Microscopy, RDT, PCR and parasite genotype
Monitoring/ QA	Real-time patent monitoring of clinical and confirmed malaria cases using web-based notification system; registration of confirmed malaria cases using <i>Vekpro</i> software at all district, state and national levels and monthly returns of aggregated data from district, state and national level; QA for malaria deaths as a national indicator; incidence of locally acquired malaria cases	Real-time monitoring of clinical and confirmed malaria cases using web-based notification system; registration of confirmed malaria cases using <i>Vekpro</i> software in real-time QA for malaria deaths, TAT for diagnosis and treatment; incidence of locally acquired malaria cases
<b>Treatment</b>		
<i>P. vivax</i> – 1 <sup>st</sup> line treatment protocol (radical cure, type, unit, dose); contraindicated populations (type, unit dose)	Early detection, diagnosis and free treatment of malaria at all government health clinics; Chloroquine 10mg/kg (max 600mg) stat, then 5mg/kg (max 300mg) 6 hours later, D2 and D3+Primaquine 15mg/day (by month) (14 days)	Same; ACT may be considered
<i>P. vivax</i> – 2 <sup>nd</sup> line treatment protocol	Quinine (7 days)+Tetracycline (7 days) or Mefloquine In case of relapse, repeat 1 <sup>st</sup> line treatment	Same  In case of relapse, repeat 1 <sup>st</sup> line treatment
<i>P. falciparum</i> – National treatment protocol/policy (type, unit dose)	ACTs not used as first line therapy for <i>P. falciparum</i> : Chloroquine/Sulfadoxine- Pyrimethamine/Chloroquine+Sulfadoxine (day 3) +/- Primaquine (3 days) for treatment in field  For hospitalized patients: Adult >35kg D1-D3: Artequin (Artesunate 200mg/day; Mefloquine 500mg/day) or Riamet D1 4 tablets stat and 8hrs later; D2-3: 4 tablets	All cases (hospitalised/field) to use ACTs

	q12h; Adult <35kg D1-D3: Artequiner (Artesunate 100mg q24h; Mefloquine 250mg q24h) or Riamet: D1: 3 tablets stat then 3 tablets 8 hours later for treatment failure, Riamet as above + Doxycycline 100mg (by mouth) q12h for 7 days	
<i>P. falciparum</i> – Complicated Malaria	Quinine + Tetracycline D1: IV artesunate 2.4mg/kg stat and 1.2mg/kg IV at 12 hrs; D2-7: IV Artesunate 1.2mg/kg q24h or IV Quinine 7mg/kg over 1 hour and 10mg/kg over 4 hours; Then IV or (by mouth) Quinine 10mg/kg q8h plus Doxycycline 100mg (by mouth) q12h for 7 days	D1: IV artesunate 2.4mg/kg stat and 1.2mg/kg IV at 12 hrs; D2-7: IV Artesunate 1.2mg/kg q24h or IV Quinine 7mg/kg over 1 hour and 10mg/kg over 4 hours
Mixed infections – National treatment protocol/policy (type, unit dose)	Treatment as <i>P. falciparum</i> infection	Same
Directly Observed Therapy (DOT) and Case Follow-up (drug adherence)	Cases preferably treated in hospital when possible for DOT Case f/up <i>P. falciparum</i> : weekly x 4 weeks <i>P. malariae/P.knowlesi</i> : weekly x 4 weeks then monthly x 5 month <i>P.vivax/P.ovale</i> : weekly x 4 weeks then monthly x 11 month	Same
G6PD screening	Prior to using Primaquine	Same
G6PD prevalence survey	Done routinely for all newborns	Same
Mass screening & treatment/Focal screening	Mass screening done in outbreak situations and specific high risk population groups such as migrants in endemic areas, foreign workers, armed forces	Same
Focused Mass Drug Administration (MDA)	Not Practiced	Not Practiced
Monitoring/QA/Policies	Yes, treatment coverage and compliance	Same
<b>Chemoprophylaxis</b>		
Prophylaxis - travellers	Sulfadoxime/pyrimethamine + Chloroquine weekly for not more than 6 months or Mefloquine 250mg weekly or Doxycycline 100mg q24h for up to 6 months	Mefloquine 250mg weekly or Doxycycline 100mg q24h for up to 6 months
Prophylaxis – high risk populations (esp. Armed forces, loggers, surveyors and others working in malaria risk areas)	Sulfadoxime/pyrimethamine + Chloroquine weekly for not more than 6 months or Mefloquine 250mg weekly or Doxycycline 100mg q24h for up to 6 months	Mefloquine 250mg weekly or Doxycycline 100mg q24h for up to 6 months

Prophylaxis – pregnant women	Not practiced	None
Intermittent Preventive Treatment – infants (IPTi), Children (IPTc) or in Pregnancy (IPTp)	None currently	None
<b>Prevention</b>		
<u>Vector Control</u>		
IRS Strategy (e.g., spatial or temporal rotation)	Primary vector control intervention; temporal rotation normally 6 monthly	Same
Insecticides	Deltamethrin / lambda-cyhalothrin	Same
LLIN	LLINs used as pilot project	
Expired LLIN collection & replacement		
ITN (and insecticides used)	Primary vector control through ITN distribution and IRS using deltamethrin, permethrin or lambda-cyhalothrin	Same
Larval control & environmental modification	Environmental management and anti-larval activities	To continue environmental management and anti-larval activities
QA	Total, Complete, Sufficient, and Regular (ToCoSuRe) – referring to the coverage, dosage, and frequency (e.g., of planned activities and pesticide use; IRS coverage and ITN usage	ToCoSuRe, IRS coverage and ITN usage
<u>Advocacy &amp; Education</u>		
Mass media		Focused to specific areas
IEC/BCC campaigns	IEC materials on malaria signs and symptoms and treatment	IEC materials; BCC campaigns; as well as community engagement towards elimination
Community-based interventions	Emphasis on community participation via integrated approaches (ITNs) and health promotion	Same
<b>Surveillance</b>		
<u>Case detection and reporting</u>		
Case reporting system	Mandatory notification of detected malaria cases to nearest District Health Office	Web-based (real time) notification system, or mandatory notification of detected malaria cases to nearest District Health Office
Active case detection (ACD)	Done in endemic areas by health staff or VHW, during outbreaks and high risk groups	Same
Passive case detection (PCD)	At all government health clinics	At all health clinics
Case investigation or “re-active surveillance”	Done for all cases detected	Same
Other surveillance (e.g., surveys)	Mass screening for specific areas especially in remote areas and among indigenous and mobile population;	Same

	Surveillance of at-risk population along international borders	
<b>Outbreak (Epidemic) detection and response</b>		
Outbreak/Epidemic Prediction & Response	SOP for Potential Infectious Diseases; Infectious Diseases Outbreak Rapid Response Manual; Reporting system for outbreak and response Crisis Preparedness and Risk Communication Centre at National and state level	Same
<b>Entomological Surveillance</b>		
Surveillance vector species, behaviour, or densities	Surveillance of vector species, behaviour and density done in outbreak areas	Surveillance to be done to map vector species and changes in behaviour as well as in outbreak areas
<b>Resistance monitoring</b>		
Insecticide and drug resistance activities		Setting up sentinel sites for monitoring insecticide resistance and response monitoring
Drug efficacy	Routine drug response monitoring	Same
<b>Prevention of reintroduction</b>		
High risk populations	Surveillance/screening of identified high risk populations such as indigenous and mobile populations, migrant workers, armed personnel, loggers, and those working in high risk areas	Strengthening of surveillance/screening of high risk populations such as indigenous and mobile populations, migrant workers, armed personnel, loggers, and those working in high risk areas
Border screening	1.1 million legal immigrants screened at the border; <20 cases detected; cost effectiveness analysis not yet done Border screening only done for specific groups such as seasonal workers. Compulsory screening for all documented foreign workers within one month of entry into country	Same
Cross border collaborations	There is cross border collaboration, and with ASEAN members and respective countries such as BIMST, SOSEK Malindo, BHGC at international, national, state as well as district levels	Continue cross border collaboration, and with ASEAN members and respective countries at international, national, state as well as district levels
Vector control specific POR activities		

<b>Program Management and health systems</b>		
<u>Program Finance</u>		
National elimination goal (by province, district)	Implemented at state (province), district and sub-district levels	To be implemented at state, district, sub-district and locality levels
Funding sources and funding budget from each source	Federal government funding	Same
<u>Stratification</u>		
Stratification strategies for defining risk areas, to allocate resources & activities	Micro stratification to sub-district level into high, moderate and low risk areas	Micro stratification to locality level into high, moderate and low risk areas and re-stratification every 3 years
<u>Program structure and organization management</u>		
Program management	Emphasis on increased strengthening for program management and supervision; differences between elimination and control	Emphasis on elimination strategies
Procurement & supply management	National level	Same
Financial management	State and District	Same
<u>Program integration</u>		
Level of integration of malaria elimination into public health	All levels of health care	Same
<u>Personnel</u>		
Reorientation, retraining, or restaffing & capacity development	Asian Collaborative Training Network for Malaria (ACTMalaria) Training Centre for the Transfer of Training Technology; conducts human resource development training courses Local universities; Institute for Medical Research, Kuala Lumpur; Public Health Institute, Kuala Lumpur, Malaysia; On-job training at national, state or district level	Same
<u>Legal Framework</u>		
Frameworks/policies/regulation/strategic plans	Prevention and Control of Infectious Diseases Act 1988; Destruction of Diseases Bearing Insects Act 1975 (Amended 2000); International Health Regulations 2005; Occupational Safety and Health Act; National Malaria Control Program; National Strategic Plan for Malaria Elimination; Public Health Ordinance 2000 (Sarawak); Mandatory screening of foreign workers for malaria	Same
Standard Operating Procedures (SOP) – list subject	Case Definition for Infectious Diseases in Malaysia;	Same

	Syndromic Notification and Laboratory Investigation Manual; SOP for Potential Infectious Diseases Outbreak; Infectious Diseases Outbreak Rapid Response Manual; Guidelines for Management of Malaria; Anti larval Permanent Works in Malaria Control; Use of Impregnated Bednets in Malaria Control; Bench Aids for Malaria Microscopy (WHO); Basic Malaria Microscopy I & II; National Antibiotic Guidelines 2008; Management of Severe and Complicated Malaria (WHO); Manual for Indoor Residual Spray (WHO, 2007)	
<b>Private sector – Providers</b>		
Engagement with formal providers (case management, reporting, other)	Mandatory notification of malaria cases under Prevention and Control of Infectious Diseases Act 1988; Reporting of malaria deaths; Mandatory screening and reporting of foreign workers for malaria parasite	Same
Engagement with informal providers (case management, reporting, other)		
Training		
Other		
Monitoring and QA	Slide for malaria parasite & quality; Slide positivity rate;	Same
<b>Private sector – Companies/Businesses</b>		
Employee or community programs (e.g., medical services, bed net campaigns)	Volunteer primary health care workers selected by community; trained to take blood smears and provide treatment; members of community assist health workers in malaria control activities and in retreatment of ITNs	Same
<b>Partners</b>		
Funding	Federal Government	Same
Implementation (list partners and type of collaboration)	Technical assistance from WHO and international institutions such as ACTMalaria, APMEN; ASEAN; BIMST	Same
<b>M&amp;E</b>		
M&E Elimination Plan, indicator development	Malaria elimination plan will be included in the 10 <sup>th</sup> Malaysia Development Plan	37 minor and 10 major indicators identified for M&E National Strategic Plan for Malaria Elimination

QA/QC (diagnosis, supply chain, etc)	Slide quality - EQA/EQC; Malaria Outbreak Control;		Same
Other			
<b>Operational Research</b>	<b>Research in Past 5-10 years</b>	<b>Present Research Projects</b>	<b>Planned Research Projects</b>
Parasitological research projects, in particular for <i>P. vivax</i> ; list major outcomes and please cite publications when relevant			
Entomological research projects; list major outcomes and please cite publications when relevant			
Behavioural research projects; list major outcomes and please cite publications when relevant			
Other research projects; list major outcomes and please cite publications when relevant			
Research Partners (national, regional and international) in operational research projects	Local Universities, Institute for Medical Research, Public Health Institute, Institute for Health System Research, WHO	Same	Same

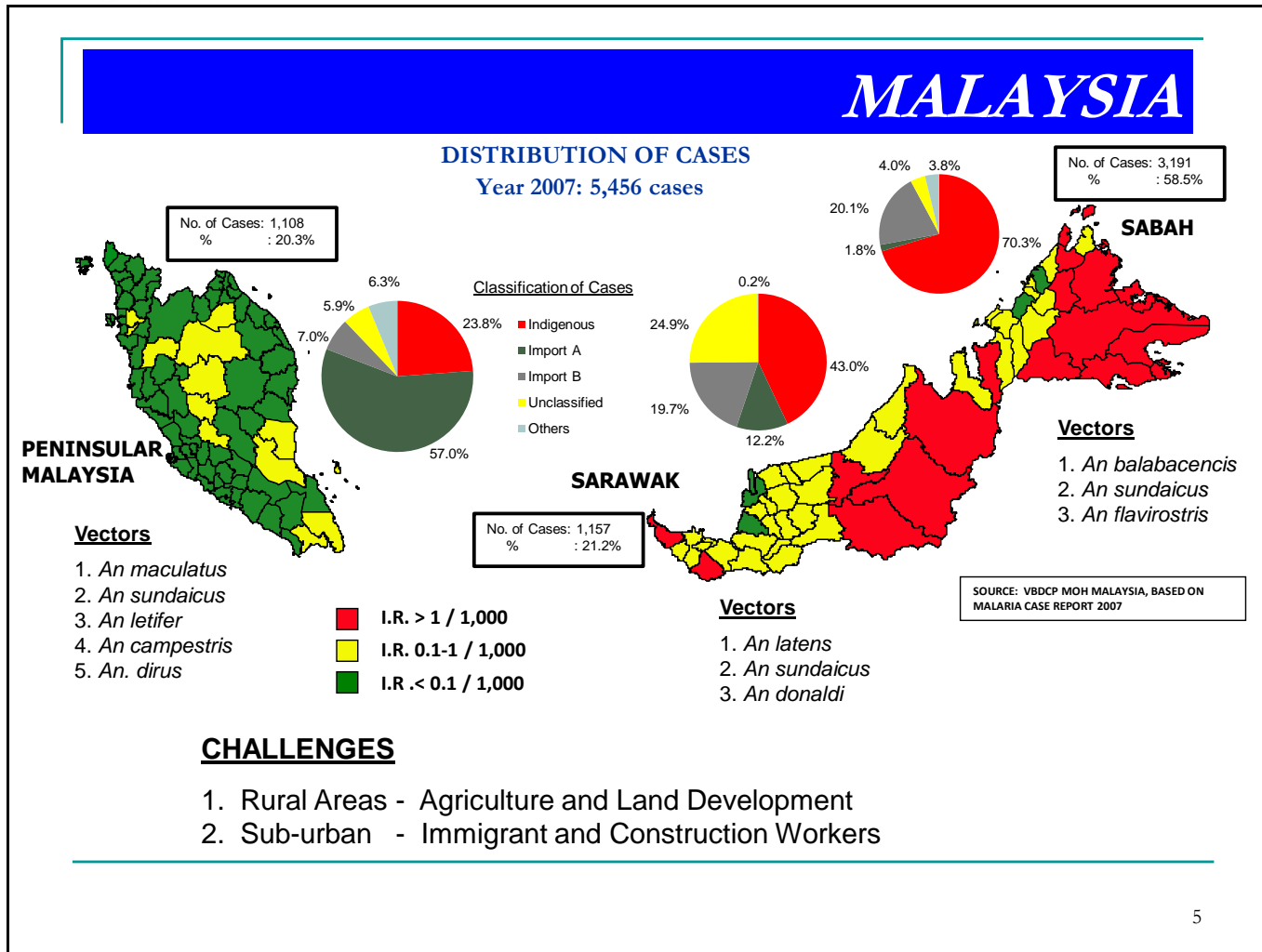
<b>Quantitative Data</b>			
<b>Variable</b>	<b>Data</b>	<b>Source</b>	<b>Notes (include year if not 2010)</b>
Total population	27,467,834	World Health Organization, World Malaria Report 2010	2009
	28,250,500	Dept of Statistics, Malaysia, Jan 2010	2010
Population at risk (PAR): Low Medium High	274,678	World Health Organization, World Malaria Report 2010	Risk population: Aboriginal people, traditional villagers, mobile ethnic groups, land-scheme settlers, jungle workers and immigrant workers from endemic countries
	NA		
	824,035	World Health Organization; APMEN Meeting I Meeting Minutes	
Total malaria deaths, Total estimated deaths	29, NA	World Health Organization, World Malaria Report 2010	2009; "attributed deaths"

	33, NA	MOH Surveillance Data (unpublished data 2011)	2010
Total malaria cases	7,010 6,650	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>	3,379 (3,376) 3,808	World Health Organization, World Malaria Report 2010 MOH Surveillance Data (unpublished data 2011)	2009 2010
Total positive slides – <i>P. falciparum</i>	1,885 (1,875) 1,686	World Health Organization, World Malaria Report 2010 MOH Surveillance Data (unpublished data 2011)	2009 2010
Total suspected cases	1,565,982 1,619,074	World Health Organization, World Malaria Report 2010 MOH Surveillance Data (unpublished data 2011)	2009 2010
G6PD deficiency % population	1.2%	Information & Documentation Unit, Ministry of Health, Malaysia	2009
# imported malaria cases (national)	584 833	World Health Organization, World Malaria Report 2010 MOH Surveillance Data (unpublished data 2011)	2009 2010
Slide positivity rate (SPR)	0.4%	MOH Surveillance Data (unpublished data 2011)	2010
Annual blood examination rate (ABER)	0.57%	MOH Surveillance Data (unpublished data 2011)	2010
Annual parasite index (API)	0.24/1,000	MOH Surveillance Data (unpublished data 2011)	2010
Parasite prevalence rate	0.02%	MOH Surveillance Data (unpublished data 2011)	2010

Main Sources (list up to five main sources):		
1. Asia Pacific Malaria Elimination Network. "APMEN Inaugural Meeting Notes." February 9, 2010.		
2. Nkhoma, E., "The global prevalence of glucose-6-phosphate dehydrogenase deficiency: A systematic review and meta-analysis." <i>Blood Cells, Molecules, and Diseases</i> 2009 42:267–278.		
3. Rahman, H.A., Disease Control Division (2009). "Malaria Control Activities in Malaysia." Asia-Pacific Malaria Elimination Network Meeting Presentation.		
4. World Health Organization. "Country Profile: Malaysia." <a href="http://www.who.int/malaria/publications/country-profiles/profile_mys_en.pdf">www.who.int/malaria/publications/country-profiles/profile_mys_en.pdf</a> . Accessed October 28, 2010.		
5. World Health Organization Regional Office for the West Pacific. "Malaysia Malaria Epidemiology." <a href="http://www.wpro.who.int/sites/mvp/epidemiology/malaria/maa_profile.htm">http://www.wpro.who.int/sites/mvp/epidemiology/malaria/maa_profile.htm</a> . Accessed October 20, 2010.		

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Malaria transmission in Malaysia, 2008