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**REGIONAL ACTION PLAN FOR MALARIA CONTROL AND  
ELIMINATION IN THE WESTERN PACIFIC (2010–2015)**

Malaria continues to be a significant public health burden in the 10 endemic countries of the Western Pacific Region. Morbidity and mortality have been greatly reduced in most countries in recent years. Funding at unprecedented levels has become available to scale up malaria control interventions, and new tools are being employed. Several countries in the Region have reduced malaria to the point at which they can change their programme goal from control to elimination, if funding is available.

However, new threats have emerged in the Region, including signs of resistance to artemisinin, the most effective malaria drug, as well as the influx of ineffective counterfeit medicines and the emergence of insecticide-resistant mosquitos. As the battle against malaria continues, vulnerable groups need to be targeted more effectively, malaria interventions must be better integrated and efforts to fight malaria must be linked to broader health systems strengthening.

The Regional Committee is requested to review and consider endorsing the Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010–2015) (Annex 1). The plan calls for consolidating and building on recent achievements in malaria control in the Region, and for progressively moving towards malaria elimination, where possible. The Action Plan is considered a critical step towards securing sustained political commitment, ensuring adequate allocation of resources and improving coordination among partners and Member States.

## 1. CURRENT SITUATION

According to the World Malaria Report 2008, one half of the world's population is at risk of malaria, and an estimated 189 million to 327 million cases occurred in 2006, resulting in an estimated 610 000 to 1.2 million deaths. While roughly 86% of cases and over 91% of deaths occurred in Africa, the health and economic impact of the disease in the Western Pacific Region remains considerable. In 2008, there were 248 141 confirmed malaria cases and 1005 malaria deaths reported in the 10 malaria-endemic countries in the Region: Cambodia, China, the Lao People's Democratic Republic, Malaysia, Papua New Guinea, the Philippines, the Republic of Korea, Solomon Islands, Vanuatu and Viet Nam. The morbidity and mortality figures are based on reports from the public sector alone, and thus seriously underestimate the true burden of disease.

Effective control of malaria in the Region is exceptionally challenging. The epidemiology of the disease is extremely variable, and different situations require different malaria control strategies, adapted to risk groups, vector behaviours, local health infrastructure and environmental conditions. Multidrug-resistant *Plasmodium falciparum* and the presence of inappropriate, substandard and counterfeit drugs add considerably to the difficulties associated with this complex situation. During the last decade, many countries in the Western Pacific Region have been very successful in reducing the burden of malaria. Strong political commitment, increasing technical expertise and the integration of malaria control into community-based health systems have been key elements of this success. The main strategies have included improving access to and utilization of prompt diagnosis and appropriate treatment, and ensuring high coverage with insecticide-treated mosquito nets through net distribution and treatment campaigns for malaria prevention. In addition, focal indoor residual spraying with insecticides is used in some countries. Efforts related to improving knowledge and promoting behaviour change among target groups have contributed to increased utilization of services. Socioeconomic development and rampant deforestation also have had an impact in many areas.

Despite the achievements, the burden of disease is still unacceptably high in a few countries, and hyperendemic foci can be found in many other countries. In several areas, the risk of serious resurgence of malaria remains. Malaria control and elimination still face a daunting array of challenges relating both to technical and programmatic issues, to political and economic constraints, to environmental changes and to the rapidly evolving donor and partner landscape. The new and long overdue emphasis on improving the quality of malaria diagnostic and treatment services provided by

the private sector places an extra burden on the partners involved. At the same time, the political profile of malaria has risen dramatically over the past decade and external funding has grown at an unprecedented rate, making this a time of great opportunity.

## 2. ISSUES

(1) The Western Pacific Regional Office has provided technical support to Member States to mobilize external funding for their national malaria control programmes, especially through the Global Fund to Fight AIDS, Tuberculosis and Malaria. Since the inception of the Global Fund in 2002, more than US\$ 605 million have been approved for malaria in the Region and additional funding from major donors has become available. This has led to an unprecedented scale up of national programmes, including the use of new, previously unaffordable tools such as artemisinin-based combination therapy, malaria rapid diagnostic tests and long-lasting insecticidal nets. Some countries started later and the impact has yet to be consolidated, but in most countries in the Western Pacific malaria has been reduced to an extent that the elimination of malaria has become an option. For countries that have decided to embark on elimination, implementation will be a considerable challenge, including the need to secure sustainable funding. Due to the characteristics of vivax malaria, the emphasis in the near future will need to be placed on operational research into feasible, effective and safe relapse treatments if elimination is to be achieved.

(2) Antimalarial drug resistance is a serious threat to malaria control and elimination in the Region and globally. The Thai-Cambodia border has a long history of emergence of antimalarial drug resistance. A trial conducted in 2007 but published only recently confirmed the reduced efficacy of artemisinin, the most effective antimalarial medicine for treatment of falciparum malaria. The widespread use of artemisinin monotherapy and the availability of low-quality and counterfeit medicines are key factors driving the development of antimalarial drug resistance in this Region. WHO is now coordinating efforts to contain artemisinin-resistant malaria. Key strategies include maximizing coverage and utilization of long-lasting insecticidal nets, intensifying case detection, banning artemisinin-based monotherapies, promoting the use of appropriate drug combinations, and interrupting the production and distribution of counterfeit antimalarial medicines through regulation, monitoring and international policing.

(3) The new Action Plan was developed by the Regional Office for the Western Pacific in close association with Member States and in consultation with the WHO Regional Office for South-East Asia. It calls for consolidating and building on achievements made in malaria control in the Western Pacific Region, and progressively eliminating malaria where possible, as a partner effort. It is meant to be a road map for the Region, a framework for updating national plans, and a tool for monitoring national programmes and for mobilizing internal and external resources. It is a "living document" that will be updated periodically and will be available online.

### **3. ACTIONS PROPOSED**

The following actions by Member States are proposed for consideration by the Regional Committee:

(1) Update national malaria plans based on the Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010–2015) and use the action plan as a framework for monitoring implementation, documenting success and mobilizing resources.

(2) Ensure that sufficient human and financial resources are made available to implement and sustain national malaria control or elimination programs, and incorporate health system strengthening whenever feasible.

(3) Halt any further development of artemisinin resistance, including the containment and elimination of artemisinin resistance on the Cambodia-Thailand border by: promoting the sole use of artemisinin-based combination therapy (ensuring quality and uninterrupted supply); prohibit the marketing of oral artemisinin monotherapies; combating the production and sale of counterfeit antimalarial medicines; ensuring rational use of antimalarials in the public sector, and improving use in the private sector .

(4) Ensure free universal access for all populations at risk of malaria to appropriate vector control, early good quality parasite-based diagnosis and safe and effective antimalarial combination treatment, taking into account the special needs of vulnerable, poor and/or marginalized populations especially women and children, ethnic minority groups, mobile populations and persons with HIV/AIDS.

- (5) Strengthen national surveillance systems to: monitor malaria trends (relying on parasite-based diagnosis); monitor antimalarial drug efficacy and insecticide resistance; assess programme impact; detect and control outbreaks in a timely fashion; and, report annually to WHO on agreed upon key regional indicators.
- (6) Foster partnerships with non-governmental organizations and technical agencies and support inter-programmatic, intersectoral and intercountry cooperation to comprehensively address malaria and optimize use of resources.
- (7) Promote and accelerate the elimination of malaria (all species) where feasible.

The Regional Committee is requested to review and consider endorsing the Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010–2015).



**REGIONAL ACTION PLAN FOR MALARIA CONTROL  
AND ELIMINATION IN THE WESTERN PACIFIC  
(2010–2015)**



Manila, 2009





## Executive summary

Effective control of malaria is exceptionally challenging in the 10 endemic countries of the Western Pacific Region: Cambodia, China, the Lao People's Democratic Republic, Malaysia, Papua New Guinea, the Philippines, the Republic of Korea, Solomon Islands, Vanuatu and Viet Nam. The epidemiology of the disease is extremely variable and different situations require different malaria control strategies, adapted to various risk groups, vector behaviours, local health infrastructure and environmental conditions. Multidrug-resistant *Plasmodium falciparum* and the presence of inappropriate, substandard and counterfeit drugs add considerably to the difficulties associated with this complex situation. Despite these difficulties, during the last decade many countries in the Western Pacific Region have been very successful in reducing the burden of malaria: from 2003 to 2008, mortality in the Region was reduced 40%, and confirmed malaria cases were reduced by 30%. Nevertheless, the burden of disease remains unacceptably high. Hyperendemic foci can still be found in many countries. The situation is particularly serious in Papua New Guinea. Furthermore, in several areas the risk of a serious resurgence of malaria remains.

Malaria control and elimination efforts in the Western Pacific Region still face a daunting array of challenges relating both to technical and programmatic issues, to political and economic constraints, to environmental changes and to the rapidly evolving donor and partner landscape. Furthermore, the new and long overdue emphasis on improving the quality of malaria diagnostic and treatment services provided by the private sector places a considerable extra burden on the various partners involved. At the same time, the political profile of malaria has risen dramatically since 2000 and funding has grown at an extraordinary rate, making this a time of great opportunity.

Efforts are now needed to further expand coverage and strengthen delivery of existing services. Continued innovation is needed to maximize coverage of hard-to-reach populations at greatest risk. An immediate priority issue is halting the development and preventing the spread of artemisinin-resistant malaria parasites in the border areas of Cambodia and Thailand. Another important regional focus over the next five years will be developing a transition towards phased malaria elimination; one prerequisite will be to find feasible strategies to implement a radical cure for vivax malaria. There will need to be increased emphasis on regional collaboration and on multisectoral efforts if required outcomes are to be achieved.

The *Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010–2015)* will be the Region's malaria road map for the next six years. The proposed regional goal is to

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reduce malaria mortality and morbidity by 50% by 2015 compared with 2007, and to achieve the interruption of malaria transmission in targeted areas in at least seven countries. The plan is the result of extensive consultations and forums involving national programmes and multiple stakeholders. It is in line with resolution WHA60.18, adopted by the World Health Assembly on 23 May 2007, the Roll Back Malaria Partnership's Global Malaria Action Plan, and resolution A/RES/63/234 of the United Nations General Assembly, adopted 13 March 2009. The plan is expected to serve not only as a framework for updating national plans but also as a tool for monitoring national programmes and for mobilizing internal and external resources.

## Current situation

Although sub-Saharan Africa bears the greatest burden of malaria, the health and economic impact of the disease in the Western Pacific Region remains considerable. In all, 248 141 confirmed cases of malaria were reported by public sector health facilities in 2008, of which 49 408 cases required hospital treatment. A total of 1005 malaria deaths were reported that year. However, low coverage of diagnostic services in some countries and low reliance on public health services in others, exacerbated by low public sector coverage in many high transmission areas, mean that these figures grossly underestimate the true burden of malaria.

Effective control of malaria in the Western Pacific Region is exceptionally challenging. The epidemiology of the disease is extremely variable and different situations require different malaria control strategies, adapted to various risk groups, vector behaviours, local health infrastructure and environmental conditions. Multidrug-resistant *Plasmodium falciparum* and the presence of inappropriate, substandard and counterfeit drugs add considerably to the difficulties associated with this complex situation. Nevertheless, during the last decade many countries in the Western Pacific Region have been very successful in reducing the burden of malaria. Between 2003 and 2008, malaria mortality was reduced by 40%, and confirmed malaria cases were reduced by 30%. Strong political commitment; growing technical expertise; the availability of funding and therefore availability of supplies including antimalarial medicines, diagnostics and insecticide-treated mosquito nets; and the integration of malaria control into community-based health systems have been key elements of this success. The main strategies have included improving access to and utilization of prompt diagnosis and appropriate treatment services, ensuring high coverage with insecticide-treated nets and, in some countries, focal indoor residual spraying with insecticides for vector control. Efforts related to improving knowledge and promoting behaviour change among target groups have also resulted in increased utilization of services. In addition, socioeconomic development has substantially contributed to the decline of malaria and rampant deforestation has also played a significant role in reducing transmission in many areas.

The evolution of malaria control interventions is a continuous process and a range of highly effective new tools and innovative approaches to service delivery are currently revolutionizing malaria control efforts globally. Many of these new tools and approaches were pioneered in the Western Pacific Region during the 1990s. Long-lasting insecticidal nets, easy-to-use malaria rapid diagnostic tests, artemisinin-based combination therapies and heat-stable suppositories containing artemisinin derivatives

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are all now having a profound impact on the prevention, diagnosis and treatment of malaria in the Region and beyond. Support for the provision of health care through the private sector and through community-based "volunteer" networks has massively improved the coverage of these new malaria control measures and has greatly improved the malaria situation in many countries.

### **Challenges and opportunities**

Although there has recently been an overall improvement in the malaria situation in the Western Pacific Region, the burden of disease remains unacceptably high. Hyperendemic foci can still be found in many countries. The situation is particularly serious in Papua New Guinea. Furthermore, in several areas the risk of a serious resurgence of malaria remains.

Malaria control and elimination efforts in the Western Pacific Region still face a daunting array of challenges relating both to technical and programmatic issues, to political and economic constraints, to environmental changes and to the rapidly evolving donor and partner landscape. Furthermore, the new and long overdue emphasis on improving the quality of malaria diagnostic and treatment services provided by the private sector places a considerable extra burden on the various partners involved. At the same time the political profile of malaria has risen dramatically since 2000 and funding has grown at an extraordinary rate, making this a time of great opportunity.

The key issues facing malaria control in the Region at present are many and varied:

- **Diagnosis** plays a key role for the rational treatment of malaria (and non-malarial fevers), yet diagnostic issues have been given low priority by some programmes and funding agencies. Presumptive antimalarial treatment for any fever with no obvious alternative cause is widely practised and leads to significant overuse of antimalarial medicines with serious health and cost implications.
- Oral artemisinin monotherapy continues to be widely available in the Region with very serious implications. **Artemisinin-resistant falciparum malaria** has emerged along the Cambodia- Thailand border. All WHO's recommended regimens for the management of uncomplicated falciparum malaria globally are now based on artemisinin-based combination therapies, and there are currently no viable alternatives. The spread of artemisinin-resistant *P. falciparum* would have disastrous consequences on malaria treatment and elimination

globally. Hence, the ongoing artemisinin-resistance containment effort in Cambodia and Thailand is therefore a global priority.

- **Counterfeit antimalarials** are still being produced and marketed in the Region, but multisectoral efforts to halt this are now advancing.
- Evidence is emerging that **vivax** malaria may not be as benign as previously thought. Due to the existence of dormant liver stages, vivax malaria is more difficult to control than falciparum malaria and as a result—as control efforts in the Region advance—it is progressively becoming the predominant species. The situation is further complicated in the Region where some strains are characterized by late relapses (which may occur years after initial infection) and where high incidence of a particular enzyme deficiency (G6PD deficiency) in the human population in some areas precludes the general use of primaquine, the only drug currently available for radical cure. More emphasis needs to be placed on developing effective tools for vivax control and elimination.
- The **private sector** plays a major role in health care provision in many countries; however, the services offered are often critically weak. Engaging the private sector represents a huge opportunity to decisively improve health care delivery across the board and is a key focus over the next few years if malaria control and elimination targets are to be achieved. A comprehensive policy for private sector strengthening providing clear and locally appropriate strategies needs to be developed urgently.
- Although the use of conventional bednets is high in most countries, **insecticide-treated bednet coverage** overall is still low in the Region. Increasing coverage with long-lasting insecticidal nets should therefore be a primary objective of future efforts.
- Despite recent improvements to road networks in many countries in the Region, accessibility remains the key issue for some. The many different categories of **mobile groups** in the Region present a particular challenge to health services. They are difficult to target and malaria prevention tools such as long-lasting insecticidal nets and delivery mechanisms such as community-based diagnostic and treatment services are not well suited to their transient nature.
- Early indications from Papua New Guinea suggest that **global warming** may be resulting in increased malaria transmission in the Highlands, where unstable seasonal transmission is now

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found in areas which were until recently free of malaria. Programmes must monitor epidemiological trends and respond promptly to any changes that might occur.

- Major **development projects** such as hydroelectric dams, new roads, pipelines and other large-scale development projects can also lead to the creation of important new transmission foci, as can changing agricultural practices and mining activities. National programmes need to maintain a high degree of vigilance and work closely with multisectoral partners to prevent the development of new transmission foci.
- Regional policies relating to a number of key issues such as malaria in pregnancy, the role of the private sector in malaria control and special interventions for **vulnerable groups** are overdue. This can be largely attributed to the scarcity of quality operational research on these key issues. This situation has been hampered in many countries by the myriad of competing priorities and insufficient technical capacity for operational research at the national level, sometimes further complicated by uncoordinated partner-driven research agendas. Even though the key issues listed above have long been a high priority, there are still no effective malaria control measures for some vulnerable groups, such as mobile populations. In addition, maternal and child health and mortality are still not adequately addressed. There is clearly a role for continued innovation. Further work is needed to develop new tools and to adapt existing tools and associated delivery strategies to suit the various target populations at greatest risk.
- Adequate **human resources** are crucial to achieving programmatic success. Staffing levels within most national malaria programmes fell dramatically in the post-eradication years, and although there has been some recovery in recent years a serious shortfall remains in most endemic countries.
- Most malaria programmes in the Region tend to be vertical in nature. **Integration** of activities is generally limited, and valuable opportunities for synergy are often lost as a result. The massive increase in funding earmarked for malaria as a result of its recent prioritization on the global health agenda may increase this verticality unless special means are established to encourage programmes to integrate activities, where appropriate. Many other areas are under resourced. For example, village-based diagnosis and treatment for malaria is now available at the community level in many of the Region's transmission hotspots, but children in these same communities do not have access to treatment for acute respiratory tract

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infections or diarrhoea. Greater efforts are needed to develop practical mechanisms to effectively operationalize integration across health programmes, in order to take full advantage of all opportunities for life-saving synergies between malaria and other health initiatives and to strengthen health systems in general.

- It is especially difficult to sustain **political commitment** and maintain funding levels as malaria control moves to malaria elimination and to the prevention of malaria reintroduction. There are a number of well-documented cases in recent years where a reduction in the malaria burden has led to political complacency, withdrawal of funding and ultimately a major resurgence of disease. Strenuous efforts will be required to secure continued funding as the malaria situation improves.
- **Political factors** also present a number of important challenges to malaria control and elimination in the Western Pacific Region, for example unrest currently hampers local malaria control efforts in some parts of the Region.
- With so many new organizations now involved in malaria control and with so many **new partnerships and networks** in existence there is a risk of duplication of efforts, unnecessary competition, confusion and the loss of strategic direction. Significant improvements in interagency coordination, together with the formation of strategic partnerships and strong leadership of national programmes, will be needed if these problems are to be avoided.

### The way forward

Efforts are now needed to further expand coverage and strengthen delivery of existing services including long-lasting insecticidal bednets, health facility-based public sector health care provision, community-based diagnostic and treatment services, and private sector healthcare provision. Continued innovation is needed to maximize coverage, adapting newly developed tools and service delivery mechanisms to suit the various target populations at greatest risk. An immediate priority issue is halting the development and preventing the spread of artemisinin-resistant malaria parasites in border areas of Cambodia and Thailand. Another important regional focus over the next five years will be securing the way for a move towards phased malaria elimination. There will need to be increased emphasis on regional collaboration and on multisectoral efforts if required outcomes are to be achieved.

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**Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010–2015)**

This Action Plan (2010–2015) is the result of extensive consultations and forums involving national programmes and multiple stakeholders. The issues described above were discussed at various levels and based on those discussions the Action Plan was developed. The final draft was analysed and refined in July 2009 during a five-day workshop attended by national malaria programme managers and representatives from the ministries of health from the 10 malaria-endemic Member States of the Western Pacific Region (Cambodia, China, the Lao People's Democratic Republic, Malaysia, Papua New Guinea, the Philippines, the Republic of Korea, Solomon Islands, Vanuatu and Viet Nam) and two Member States from the WHO South-East Asian Region (Myanmar and Thailand). In addition, key stakeholders were represented including the Asia-Pacific Malaria Elimination Network (APMEN), the Asian Collaborative Training Network for Malaria (ACTMalaria), the Australian Agency for International Development (AusAID), the Eijckman Institute/Jakarta, the Global Fund to Fight AIDS, Tuberculosis and Malaria, the Malaria Consortium, Measure/EVALUATION, the Secretariat of the Pacific Community (SPC), the Research Institute for Tropical Medicine of the Philippines, the Roll Back Malaria Partnership, the Shell Foundation/Philippines, the Tropical Disease Foundation/Philippines, the United States Agency for International Development (USAID), the US Centers for Disease Control and Prevention (CDC), and the University of Queensland/Australia.

The Action Plan is in line with the United Nations Millennium Development Goals, resolution WHA60.18 adopted by the World Health Assembly on 23 May 2007, the Roll Back Malaria Partnership's Global Malaria Action Plan, and resolution A/RES/63/234 of the United Nations General Assembly, adopted 13 March 2009.

**Goal and objectives**

The **overall goal** of the *Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010–2015)* is to consolidate and build on the recent achievements in malaria control in the Region and progressively eliminate malaria, where possible. This will be achieved through the implementation of activities grouped under seven objectives.

**Objective 1 "Strengthen malaria programme management based on firm political commitment and strong partnerships"**, will be achieved through comprehensive means. Malaria control policies, strategies, guidelines and standard operating procedures will be strengthened. Legal



frameworks will be upgraded where necessary to support malaria control and elimination. Commitment to malaria control will be increased at all levels through advocacy. Funding sources will be identified and adequate financial support secured. Technical and administrative management capacity will be strengthened through a combination of recruitment and training. Partner coordination will be improved and key technical support networks reinforced. Cross-border collaboration will be strengthened. Programmatic monitoring and evaluation will be improved and needs-based operational research will be coordinated to maximize relevance and minimize duplication.

**Objective 2, "Ensure full coverage of the population at risk with appropriate vector control measures"**, will be achieved through the implementation of two key strategies: universal coverage of populations at risk with long-lasting insecticidal nets/insecticide-treated bednets; and spraying homes in selected areas with residual insecticides. Supporting activities will include quality assurance of insecticides and netting, risk mapping, strengthening the management and judicious use of insecticides, and needs-based operational research. Integrated vector management<sup>1</sup> will be encouraged where feasible.

**Objective 3, "Maximize utilization of malaria control services (through appropriate information, education and communication materials and behaviour change communication) and dramatically strengthen community mobilization efforts"**, will be achieved through the implementation of two key strategies: comprehensive behaviour change communication; and community mobilization. Both strategies will be supported by periodic evaluations and needs-based operational research.

**Objective 4, "Ensure access for all to early diagnosis and affordable, safe, effective and prompt antimalarial combination treatments through active public and private sector initiatives"**, will be achieved through the implementation of two key strategies through both public and private sector health care channels: provision of quality parasite-based diagnosis; and the provision of safe effective antimalarials for treatment of all species of malaria, including radical treatment for vivax malaria. Supporting activities will include capacity development, supervision, quality assurance, raising awareness about the prevention of artemisinin resistance and withdrawal of oral artemisinin monotherapy from the public and private sector, strengthening differential diagnosis of fevers, improving procurement and supply management, and conducting relevant operational research.

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<sup>1</sup> Integrated Vector Management: Using a range of interventions in combination to synergistically target the vectors of more than one disease.

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**Objective 5, "Ensure comprehensive coverage of vulnerable, poor and/or marginalized populations at high risk of malaria with appropriate malaria control measures"**, will be achieved through a number of different means: Target groups and existing public health interventions will be reviewed and mapped. Comprehensive new intervention mechanisms (covering prevention, diagnosis and treatment, as well as behaviour change communication and community mobilization) will be developed (based on integrated primary health care models, where appropriate) and implemented; this includes the roll-out of intermittent preventive treatment for malaria during pregnancy (IPTp) through antenatal care services in malaria high-transmission areas. Supporting activities will include the development of national policies and strategies, the development of regional cooperation frameworks, advocacy, monitoring and support for relevant operational research (including building capacity for social research). A focal person will be assigned at the national programme level to manage these activities and coordinate capacity development.

**Objective 6, "Establish and/or strengthen the routine malaria surveillance system (all species) and ensure adequate outbreak response capability"**, will be achieved through a number of activities: biregional (WHO South-East Asia and Western Pacific Regions) guidelines on malaria surveillance and outbreak preparedness and response will be finalized and nationally adapted and endorsed at national stakeholder workshops; national capacity for implementation of these guidelines will be strengthened; progress will be monitored; national malaria risk stratifications will be developed (where necessary) and regularly updated; antimalarial drug efficacy as well as insecticide resistance will be monitored; and the sharing of malaria epidemiological information among Member States will be facilitated.

**Objective 7, "Accelerate malaria (all species) elimination efforts in participating countries"**, will be achieved through a number of means: the global malaria elimination guidelines will be adapted to the Asia Pacific context and these will be adopted and implemented by participating countries; strong technical collaboration networks will be developed; intercountry coordination and harmonization will be supported; rigorous elimination-specific surveillance will be established; progress will be monitored; and needs-based operational research carried out. This objective also incorporates the containment and ultimately elimination of artemisinin-resistant *P. falciparum*.

Detailed activities associated with each of these objectives are presented in Annex 1-Appendix 1.

**Successful implementation** of programme activities is expected to result in:

- (1) Deaths due to malaria (number and rate) reduced by at least 50% by 2015 compared with the 2007 baseline.
- (2) Confirmed malaria cases (number and rate) reduced by at least 50% by 2015 compared with the 2007 baseline.
- (3) Percentage of cases due to *P. falciparum* decreased compared with the 2007 baseline.
- (4) Admitted malaria cases (number and rate) reduced by at least 50% by 2015 compared with the 2007 baseline.
- (5) Malaria test positivity rate (for microscopy and rapid diagnostic tests) reduced to less than 5% in at least six countries by 2015.
- (6) At least seven countries have achieved interruption of malaria transmission in targeted areas by 2015.

#### **Immediate impact of the Regional Action Plan (2010–2015) and next steps**

This *Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010–2015)* will be the Region's malaria road map for the next six years. The Action Plan will not only serve as a framework for updating national plans but also as a tool for monitoring national programmes and for mobilizing internal and external resources. The Action Plan is a "living document" that will be updated periodically as appropriate—the most recent version will be available online at the Western Pacific Regional Office's malaria webpage <http://www.wpro.who.int/sites/mvp/overview.htm>. It sets out the goal, objectives and main activities, together with goal- and objective-level indicators and targets for impact. Most of the indicators in the Action Plan are "global malaria indicators" that are reported to WHO annually by all malaria endemic countries. In addition, a number of other indicators has been developed during extensive consultations and included to provide essential region-specific information. Regional objective-level targets, together with a timeframe, will be compiled from country-level targets and timeframes, once these have been developed later this year. A detailed description of each indicator will be available as an appendix to the Action Plan on the Western Pacific Regional Office's malaria webpage.



**MALARIA ACTION PLAN**  
**(2010-2015)**



Annex 1-Appendix 1

Planning elements	Indicators	Verification source	Assumptions and risks
<p><b>Objective 2:</b> Ensure full coverage of the population at risk with appropriate vector control measures.</p>	<ol style="list-style-type: none"> <li>1. Percentage of population at risk covered by long-lasting insecticidal net or insecticide-treated bednet distribution [GMI].</li> <li>2. Percentage of population at risk covered by re-treated nets.</li> <li>3. Percentage of population at risk covered by indoor residual spraying [GMI].</li> <li>4. Percentage of target population covered by indoor residual spraying [GMI].</li> <li>5. Percentage of households at risk of malaria with at least one long-lasting insecticidal net or insecticide-treated bednet and/or sprayed by indoor residual spraying in the last 12 months.</li> </ol>	<p>Annual malaria programme reports</p> <p>Periodic household survey</p>	<p>Policies are applied by Member States.</p> <p>Malaria tools continue to be effective.</p> <p>No shortage of long-lasting insecticidal nets.</p> <p>Sustained interest in partnerships by key stakeholders.</p>
<p><b>Objective 3:</b> Maximize utilization of malaria control services (through appropriate information, education and communication materials or behaviour change communication) and dramatically strengthen community mobilization efforts.</p>	<ol style="list-style-type: none"> <li>1. Percentage of persons (or target groups) at risk of malaria who know the cause, symptoms and treatment of or preventive measures for malaria.</li> <li>2. Percentage of persons (all ages) or children under five years or women of childbearing age or pregnant women at risk of malaria who reported sleeping under a long-lasting insecticidal net or insecticide-treated bednet during the previous night. <i>Note: Bednet use tends to be seasonal so surveys should be conducted at the same time each year, ideally during the peak transmission season if logistically practical.</i></li> <li>3. Percentage of persons residing in malaria risk areas with fever in the last two weeks who sought health care within 48 hours of onset of fever.</li> </ol>	<p>Periodic household survey</p> <p>Periodic household survey</p> <p>Periodic household survey</p>	<p>Change in knowledge will lead to a positive change in behaviour.</p> <p>Human resources can be rapidly mobilized and trained.</p> <p>Political commitment is sustained.</p> <p>Sustained interest in partnerships by key stakeholders.</p>
<p><b>Objective 4:</b> Ensure access for all to early diagnosis and affordable, safe, effective and prompt antimalarial combination treatment through active public and private sector initiatives.</p>	<ol style="list-style-type: none"> <li>1. Percentage of suspected malaria cases with parasite-based diagnosis [GMI]. Country has functional quality assurance system for microscopy and rapid diagnostic tests.</li> <li>2. Percentage of malaria cases with (a) confirmed <i>P. falciparum</i> malaria that received artemisinin-based combination therapy, and (b) confirmed <i>P. vivax</i> malaria that received appropriate antimalarial treatment including radical treatment, according to national guidelines [GMI]. Country has functional quality assurance systems for antimalarial medicines.</li> </ol>	<p>Monthly health information systems and/or malaria programme reports</p> <p>Annual malaria programme reports, quality assurance reports</p> <p>Monthly health information systems and/or malaria programme reports</p>	<p>Malaria tools continue to be effective.</p> <p>No shortage of artemisinin-based combination therapy.</p> <p>Policies are applied by Member States.</p> <p>Official acceptance of quality control mechanism(s).</p> <p>Sustained interest in partnerships by key stakeholders.</p>

Annex 1-Appendix 1

Planning elements	Indicators	Verification source	Assumptions and risks
	<p>3. Percentage of health facilities without stock-outs of first-line antimalarial medicines and diagnostics during the last 12 months (based on monthly reporting) [GMI].</p>	<p>Annual reports of drug regulatory authorities</p> <p>Annual malaria programme reports</p>	
<p><b>Objective 5:</b> Ensure comprehensive coverage of vulnerable, poor and/or marginalized populations at high risk of malaria with appropriate malaria control measures.</p>	<p>1. Comprehensive interventions for vulnerable populations at high risk of malaria (pregnant women, children under five years, ethnic minority groups, mobile or migrant populations, HIV-positive persons and others, as applicable) are implemented according to policy.</p> <p>2. Percentage of vulnerable populations at high risk of malaria covered by long-lasting insecticidal net or insecticide-treated bednet distribution [GMI].</p> <p>3. Percentage of pregnant women attending antenatal care receiving at least two doses of intermittent preventive therapy [GMI]. <i>Note: Only for high transmission areas in Pacific countries.</i></p>	<p>Annual reports from malaria or other involved programmes</p> <p>Annual reports from malaria or other involved programmes</p> <p>Monthly health information systems or malaria programme reports</p>	<p>Political commitment for addressing malaria in vulnerable populations is increased and sustained.</p> <p>Political and security situations do not interfere with programme implementation.</p>
<p><b>Objective 6:</b> Establish and/or strengthen the routine malaria surveillance system (all malaria species) and ensure adequate outbreak response capability.</p>	<p>1. Completeness of monthly health facility reports on surveillance and logistics [GMI].</p> <p>2. Country has functional system for outbreak detection, preparedness and timely response.</p> <p>3. The country's malaria risk stratification is developed and updated at least every five years, based on the surveillance data (confirmed cases).</p> <p>4. Systematic monitoring of antimalarial drug efficacy is carried out at least every two to three years, according to World Health Organization protocol.</p> <p>5. Systematic monitoring of insecticide resistance is carried out at least every two to three years, following World Health Organization guidelines.</p>	<p>Monthly health information systems reports</p> <p>Annual malaria programme reports</p> <p>Stratification (or re-stratification) report</p> <p>Annual antimalarial drug efficacy monitoring report</p> <p>Annual malaria programme reports, regional insecticide-resistance monitoring network reports</p>	<p>Political commitment all levels available.</p> <p>Human resources can be rapidly mobilized and trained.</p> <p>Sustained interest in partnerships by key stakeholders.</p>
<p><b>Objective 7:</b> Accelerate malaria (all species) elimination efforts in participating countries.</p>	<p>1. Country has an elimination strategy in line with regional guidelines.</p> <p>2. Country has reoriented the national malaria control programme towards an elimination programme in targeted areas.</p> <p>3. Percentage of administrative units in a country with an annual parasite incidence of &lt;1 malaria case per 1000 in the population at risk.</p>	<p>Review of national elimination strategy</p> <p>National malaria elimination monitoring committee report</p> <p>Health information systems and malaria programme reports</p>	<p>Political commitment is sustained.</p> <p>Human resources can be rapidly mobilized and trained.</p> <p>Currently available tools are adequate and can effectively address the diversity of vivax malaria</p>



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Planning elements	Indicators	Verification source	Assumptions and risks
	4. Percentage of confirmed malaria cases investigated in the population targeted for elimination. 5. Number of active foci reported per year [GMI]. 6. Annual blood examination rate [GMI]. 7. Number of malaria cases by classification [GMI]. 8. Percentage of private facilities reporting to a national malaria surveillance system [GMI].	Health facility record review  National malaria elimination database  National malaria case register Survey of private facilities	and its elimination in the Region, or effective tools for vivax malaria become available.

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Activities	Responsible
<b>Objective 1: Strengthen malaria programme management based on firm political commitment and strong partnerships.</b>	
<p><b>1.1 Strengthen malaria control policies, strategies, guidelines and standard operating procedures.</b></p> <p>1.1.1 Review and update national malaria policies, strategies, guidelines and strategic plans and carry out an independent or joint review, at least every five years.</p> <p>1.1.2 Review the malaria programme management structure to achieve programme outcomes at all levels, taking into account decentralization and a programme's move to malaria elimination where applicable.</p> <p>1.1.3 Develop a comprehensive human resource capacity development plan, taking into account decentralization and malaria elimination, and include it in the national malaria control and elimination strategic plan.</p> <p>1.1.4 Carry out a monitoring and evaluation needs assessment, using the Monitoring and Evaluation System Strengthening Tool,<sup>2</sup> and develop plans for strengthening the overall national monitoring and evaluation framework.</p> <p>1.1.5 Develop and/or strengthen a rational approach for integrating malaria programme activities into relevant health programmes at various levels of the health system (e.g. Integrated Management of Childhood Illnesses).</p>	<p>1.1.1 National Malaria Control Programme and Ministry of Health, World Health Organization.</p> <p>1.1.2 National Malaria Control Programme and Ministry of Health.</p> <p>1.1.3 Ministry of Health and public service departments (World Health Organization to facilitate).</p> <p>1.1.4 National Malaria Control Programme and Ministry of Health.</p> <p>1.1.5 Ministry of Health, National Malaria Control Programme and other relevant programmes.</p>
<p><b>1.2 Ensure that the legal framework is adequate for malaria control and elimination.</b></p> <p>1.2.1 Review existing legal frameworks regarding public health legislation, insecticides, medications, etc., and amend if required.</p> <p>1.2.2 Ensure adequate implementation of legal systems regarding public health legislation, insecticides, medications, etc., as required, including enforcement processes to address counterfeiting of medicines.</p>	<p>1.2.1 National Malaria Control Programme and Ministry of Health, other government sectors, World Health Organization.</p> <p>1.2.2 National government and partners, including Interpol.</p>
<p><b>1.3 Strengthen commitment for malaria control at all levels through advocacy.</b></p> <p>1.3.1 Document and consolidate malaria programme experiences, best practices, successes and lessons learnt for use in advocacy, and disseminate among stakeholders.</p> <p>1.3.2 Provide regular briefings to high-level government officials and opinion leaders.</p> <p>1.3.3 Implement appropriate communication strategies targeting all partners of malaria programmes at all levels within each country.</p> <p>1.3.4 Promote the malaria agenda through high-level political regional forums.</p>	<p>1.3.1 National Malaria Control Programme and Ministry of Health, World Health Organization and partners.</p> <p>1.3.2 National Malaria Control Programme and Ministry of Health, other government sectors.</p> <p>1.3.3 National Malaria Control Programme and Ministry of Health, partners.</p> <p>1.3.4 World Health Organization, United Nations Special Envoy and partners.</p>
<p><b>1.4 Identify funding sources and secure adequate financial support.</b></p> <p>1.4.1 Have a costed national malaria strategy in the short- and medium-term.</p> <p>1.4.2 Identify funding gaps.</p>	<p>1.4.1 National Malaria Control Programme and Ministry of Health, other relevant government and nongovernment sectors.</p> <p>1.4.2 National Malaria Control Programme and Ministry of Health.</p>

<sup>2</sup> [http://www.theglobalfund.org/documents/me/M\\_E\\_Systems\\_Strengthening\\_Tool.pdf](http://www.theglobalfund.org/documents/me/M_E_Systems_Strengthening_Tool.pdf)

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Activities	Responsible
<p>1.4.3 Secure flexible, consistent and adequate funding from internal and external sources to ensure sustainability of programmatic efforts.</p> <p>1.4.4 Support countries to secure adequate funding, for example, through technical support for proposal writing.</p> <p>1.4.5 Incorporate malaria as a key agenda item in other development initiatives.</p>	<p>1.4.3 National Malaria Control Programme and Ministry of Health, other relevant government and nongovernment sectors.</p> <p>1.4.4 World Health Organization and other partners.</p> <p>1.4.5 National Malaria Control Programme and Ministry of Health, other relevant government and nongovernment sectors.</p>
<p><b>1.5 Strengthen technical and administrative management capacity.</b></p> <p>1.5.1 Strengthen human resources (based on the human resource plan, see activity 1.1.3 through recruitment, retention, professional development, training, supervision and other methods to improve staff capacity [Special emphasis on capacity development will be required in countries adopting a malaria elimination approach]).</p> <p>1.5.2 Ensure adequate infrastructure and strengthen logistics capability to support malaria programme operations.</p> <p>1.5.3 Strengthen financial management.</p>	<p>1.5.1 Ministry of Health and National Malaria Control Programme, public service departments and human resource specialists in the health sector.</p> <p>1.5.2 National Malaria Control Programme and Ministry of Health, partners.</p> <p>1.5.3 National Malaria Control Programme and Ministry of Health, Ministry of Finance.</p>
<p><b>1.6 Strengthen country and international stakeholder coordination.</b></p> <p>1.6.1 Strengthen national coordination of malaria programme activities.</p> <p>1.6.2 Promote integration of malaria control with other public health programmes, maximizing synergies where possible.</p> <p>1.6.3 Develop mechanisms for intersectoral cooperation, and promote integration of malaria control, involving the private sector and nongovernmental organizations.</p> <p>1.6.4 Incorporate malaria into environmental impact assessments for all major development projects, and work closely with multisectoral partners to prevent the development of new malaria transmission foci.</p> <p>1.6.5 Promote and facilitate regional, subregional and interregional cooperation and coordination of malaria control and elimination programmes.</p>	<p>1.6.1 National Malaria Control Programme and Ministry of Health, World Health Organization.</p> <p>1.6.2 National Malaria Control Programme, Ministry of Health and relevant public health programmes.</p> <p>1.6.3 National Malaria Control Programme and Ministry of Health, relevant sectors and partners, World Health Organization.</p> <p>1.6.4 National Malaria Control Programme and Ministry of Health.</p> <p>1.6.5 World Health Organization, Mekong Malaria Program, Roll Back Malaria Partnership, Association of Southeast Asian Nations, Asia-Pacific Malaria Elimination Network, and other regional and subregional networks.</p>
<p><b>1.7 Strengthen key technical support networks.</b></p> <p>1.7.1 Promote dissemination, adoption and implementation of best practices through technical networks (see activity 1.3.1).</p> <p>1.7.2 Develop annual workplans and sustainable financing mechanism for implementation of designated activities at World Health Organization collaborating centres.</p> <p>1.7.3 Collaborate with existing and emerging regional and subregional malaria networks (e.g. ACTMalaria, Asia Vivax Network, Asia-Pacific Malaria Elimination Network, SEAMEO TROPMED).</p>	<p>1.7.1 World Health Organization and partners.</p> <p>1.7.2 World Health Organization, Member States, collaborating centres and partners.</p> <p>1.7.3 Member States, World Health Organization and partners.</p>
<p><b>1.8 Strengthen programmatic monitoring and evaluation.</b></p> <p>1.8.1 Improve and implement monitoring and evaluation for the malaria programme based on the national monitoring and evaluation plan, through the routine health information system and other methods as appropriate (including periodic malaria indicator surveys, sentinel site surveillance).</p>	<p>1.8.1 National Malaria Control Programme, Ministry of Health and partners.</p>

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Activities	Responsible
<p>1.8.2 Prepare annual reports for the malaria programme and submit them to key stakeholders including World Health Organization.</p> <p>1.8.3 Harmonize regional malaria minimum data-sets.</p> <p>1.8.4 Conduct regular malaria programme reviews.</p>	<p>1.8.2 National Malaria Control Programme and Ministry of Health.</p> <p>1.8.3 World Health Organization to facilitate.</p> <p>1.8.4 National Malaria Control Programme and Ministry of Health, World Health Organization and partners</p>
<p><b>1.9 Strengthen cross-border collaboration.</b></p> <p>1.9.1 Develop and implement cross-border malaria action plans, and synergize with existing cross-border collaborations, both internationally and nationally (interprovincial collaboration).</p> <p>1.9.2 Support international and national border meetings at district, provincial and central levels.</p> <p>1.9.3 Monitor progress based on identified meeting recommendations and cross-border actions.</p>	<p>1.9.1 National Malaria Control Programme and Ministry of Health, Ministry of Foreign Affairs, relevant government sectors and partners.</p> <p>1.9.2 Member States, World Health Organization and partners.</p> <p>1.9.3 World Health Organization, National Malaria Control Programme and Ministry of Health.</p>
<p><b>1.10 Coordinate operational research and set priorities.</b></p> <p>1.10.1 Periodically identify regional, subregional and national research priorities (with special attention to social science gaps including gender).</p> <p>1.10.2 Support regular technical reviews of national research findings and update national plans, policies and research priorities accordingly.</p> <p>1.10.3 Promote the conduct of joint operational research between the malaria programme and academia to fill programmatic gaps.</p> <p>1.10.4 Support advocacy for biregional, regional and subregional malaria research initiatives.</p>	<p>1.10.1 World Health Organization and partners (regional), National Malaria Control Programme and Ministry of Health and partners (national).</p> <p>1.10.2 National Malaria Control Programme and Ministry of Health and partners.</p> <p>1.10.3 World Health Organization, National Malaria Control Programme, Ministry of Health and partners.</p> <p>1.10.4 World Health Organization and partners.</p>
<p><b>Objective 2: Ensure full coverage of the population at risk with appropriate vector control measures.</b></p>	
<p><b>2.1 Achieve and maintain universal coverage of the at-risk population (static and mobile) with free long-lasting impregnated materials, e.g. long-lasting insecticidal nets, hammock nets or conventional nets treated or re-treated with long-lasting insecticide to achieve effective vector control.</b></p> <p>2.1.1 Develop standard operating procedures.</p> <p>2.1.2 Conduct periodic planning and quantification of needs.</p> <p>2.1.3 Procure commodities.</p> <p>2.1.4 Develop human resources as necessary.</p> <p>2.1.5 Conduct quality assurance for commodities (including tenacity and bursting strength for nets).</p> <p>2.1.6 Develop and implement distribution and re-treatment plan (macro and micro).</p> <p>2.1.7 Monitor quality and coverage of service delivery and utilization of nets.</p>	<p>2.1 National Malaria Control Programme, World Health Organization Pesticide Evaluation Scheme and qualified quality assurance facilities, partners.</p> <p>2.1.5 National Malaria Control Programme and other stakeholders. World Health Organization Pesticide Evaluation Scheme to facilitate).</p>
<p><b>2.2 Develop and periodically review quality assurance for vector control products using standard protocols (World Health Organization Pesticide Evaluation Scheme, Global Malaria Programme), and identify and certify quality assurance laboratories.</b></p>	<p>2.2 World Health Organization Global Malaria Programme, World Health Organization Pesticide Evaluation Scheme.</p>

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Activities	Responsible
<p><b>2.3 Implement high quality preventive and/or responsive indoor residual spraying where appropriate, based on vector behaviour and malaria risk stratification (see 6.5).</b></p> <p><b>2.3.1 Develop regional guidelines on the use of indoor residual spraying and the combined use of long-lasting insecticidal nets and indoor residual spraying.</b></p> <p><b>2.3.2 Develop standard operating procedures.</b></p> <p><b>2.3.3 Conduct geographical reconnaissance, planning and quantification of needs.</b></p> <p><b>2.3.4 Procure insecticides and equipment.</b></p> <p><b>2.3.5 Develop human resources as necessary.</b></p> <p><b>2.3.6 Conduct quality assurance for insecticides and equipment.</b></p> <p><b>2.3.7 Implement indoor residual spraying as appropriate.</b></p> <p><b>2.3.8 Monitor quality and coverage of indoor residual spraying.</b></p>	<p>2.3 National Malaria Control Programme, supported by World Health Organization and technical partners.</p>
<p><b>2.4 Strengthen management and judicious use of public health insecticides.</b></p> <p>2.4.1 Adhere to World Health Organization Pesticide Evaluation Scheme recommendations during procurement of insecticides.</p> <p>2.4.2 Develop and implement guidelines on management and judicious use of public health insecticides, including annual reporting of insecticide usage (to the World Health Organization) and safe disposal of expired insecticides.</p>	<p>2.4 National Malaria Control Programme, supported by World Health Organization (including World Health Organization Pesticide Evaluation Scheme) and technical partners.</p>
<p><b>2.5 Introduce Integrated Vector Management where appropriate.</b></p> <p>2.5.1 Conduct vector control needs assessment.</p> <p>2.5.2 Develop and implement regional and national Integrated Vector Management strategic plan where appropriate.</p> <p>2.5.3 Build national capacity to implement Integrated Vector Management principles and practices.</p>	<p>2.5 National Malaria Control Programme, supported by World Health Organization (including Neglected Tropical Diseases and Vector Ecology and Management units) and technical partners.</p>
<p><b>2.6 Conduct needs-based operational research on vector control and personal protection.</b></p> <p>2.6.1 Develop innovative and appropriate vector control and personal protection measures with special emphasis on high-risk groups and high-risk behaviour (epidemiological, entomological and social research).</p> <p>2.6.2 Develop improved quality assurance assay methodologies for long-lasting insecticidal nets and residual insecticides.</p> <p>2.6.3 Investigate the additional impact and cost-effectiveness of combining long-lasting insecticidal nets and indoor residual spraying interventions.</p>	<p>2.6 National research institutions and groups (including National Malaria Control Programme) and World Health Organization at the global level (Tropical Disease Research, Global Malaria Programme, World Health Organization Pesticide Evaluation Scheme) and at the Western Pacific Regional Office (Healthy Settings and Environment, Health Systems Development, Malaria and other Vectorborne and Parasitic Diseases).</p>

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Activities	Responsible
<p>2.6.4 Conduct environmental and climate impact studies on malaria transmission and investigate the role of malaria vectors in development projects.</p> <p>2.6.5 Develop an approach and mechanisms for dealing with old long-lasting insecticidal nets.</p>	
<p><b>Objective 3: Maximize utilization of malaria control services (through appropriate information, education and communication materials and/or behaviour change communication) and dramatically strengthen community mobilization efforts.</b></p>	
<p><b>3.1 Implement comprehensive health promotion and behaviour change communication campaigns.</b></p> <p>3.1.1 Develop and/or update the policy or strategy for health promotion and behaviour change communication.</p> <p>3.1.2 Regularly assess behaviour change communication methodology and approaches and revise as appropriate.</p> <p>3.1.3 Strengthen capacity in relation to behaviour change communication.</p> <p>3.1.4 Coordinate behaviour change communication activities with relevant partners and with other health programmes.</p> <p>3.1.5 Implement targeted behaviour change communication campaigns and/or activities for key aspects of the malaria programme, including:</p> <p>Diagnosis and treatment among providers and the population (<i>key messages</i>):</p> <ul style="list-style-type: none"> <li>- <b>diagnosis before treatment;</b></li> <li>- <b>early diagnosis and treatment;</b></li> <li>- correct medicines, dosages and compliance; and</li> <li>- awareness about counterfeit medicines.</li> </ul> <p><b>Vector control (key messages):</b></p> <ul style="list-style-type: none"> <li>- <b>importance of habitual use of long-lasting insecticidal net or conventional insecticide-treated net;</b></li> <li>- <b>regular insecticide re-treatment of conventional mosquito nets; and</b></li> <li>- <b>importance of compliance with indoor residual spraying.</b></li> </ul>	<p>3.1 National Malaria Control Programme, centres for health education, other government programmes and departments, nongovernmental organizations and civil society, supported by World Health Organization, United Nations Children's Fund and other partners.</p>
<p><b>3.2 Implement comprehensive community mobilization activities.</b></p> <p>3.2.1 Engage communities to ensure ownership and participation in comprehensive malaria control activities.</p> <p>3.2.2 Engage local government units and other key stakeholders to ensure smooth implementation and sustainability of the malaria programme.</p>	<p>3.2 National Malaria Control Programme, nongovernmental organizations, partners, and government at all levels.</p>
<p><b>3.3 Carry out periodic evaluations to assess the impact of information, education and communication materials and behaviour change communication on the utilization of malaria control services.</b></p>	<p>3.3 National Malaria Control Programme and Ministry of Health, and partners.</p>

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Activities	Responsible
<p><b>3.4 Conduct needs-based operational research</b> (e.g. community preferences and acceptability of various vector control measures).</p>	<p>3.4 National Malaria Control Programme, research organizations and technical partners.</p>
<p><b>Objective 4: Ensure access for all to early diagnosis and affordable, safe, effective and prompt antimalarial combination treatments through active public and private sector initiatives.</b></p>	
<p><b>4.1 Ensure country-wide coverage with quality parasite-based diagnosis (microscopy and malaria rapid diagnostic tests), including for <i>P. vivax</i>.</b></p> <p>4.1.1 Ensure adequate coverage of quality diagnostic services at health facility and community levels, as part of the national health system.</p> <p>4.1.2 Develop policies and implement quality assurance of diagnostics (microscopy and rapid diagnostic tests).</p> <p>4.1.3 Expand and maintain regional quality assurance in malaria diagnostics (including management of slide bank).</p>	<p>4.1.1 Ministry of Health, National Malaria Control Programme.</p> <p>4.1.2 Ministry of Health, National Malaria Control Programme, World Health Organization.</p> <p>4.1.3 World Health Organization, Foundation for Innovative New Diagnostics, Research Institute of Tropical Medicine of the Philippines, Pasteur Institute Cambodia and other laboratories, Asian Collaborative Training Network for Malaria.</p>
<p><b>4.2 Ensure uninterrupted availability of antimalarial medicines and diagnostics at all public health facilities serving populations at risk, as well as at community level where appropriate and in the private sector where possible.</b></p> <p>4.2.1 Develop and/or update procurement and supply management guidelines.</p> <p>4.2.2 Support timely procurement of quality diagnostics and antimalarials, including quantification.</p> <p>4.2.3 Improve storage, regular stock management and distribution of diagnostic and antimalarial supplies at all levels.</p> <p>4.2.4 Improve the storage of rapid diagnostic tests and artemisinin-based combination therapy at the peripheral level where electricity is not available, e.g. through the use of cooler boxes, and monitor their implementation.</p>	<p>4.2.1 Ministry of Health, National Malaria Control Programme, Food and Drug Administration, World Health Organization.</p> <p>4.2.2 Ministry of Health, National Malaria Control Programme, World Health Organization, United Nations Children's Fund.</p> <p>4.2.3 Ministry of Health, National Malaria Control Programme, central medical stores, hospitals.</p> <p>4.2.4 Ministry of Health, National Malaria Control Programme.</p>
<p><b>4.3 Ensure access to safe and effective antimalarial treatment for all populations at risk, including for <i>P. vivax</i>.</b></p> <p>4.3.1 Regularly review and, if necessary, update national malaria treatment guidelines based on available evidence (see activity 6.6), in the context of elimination where appropriate.</p> <p>4.3.2 Provide antimalarial treatment according to national treatment guidelines.</p> <p>4.3.3 Incorporate community-based treatment targeting hard-to-reach populations (including ethnic minorities) into national health systems (including financing).</p> <p>4.3.4 Develop appropriate training and information, education and communication materials to improve the acceptability and use of artemisinin-derivative suppositories for pre-referral treatment of suspected severe malaria.</p> <p>4.3.5 Develop and implement appropriate strategies to address G6PD deficiency in <i>P. vivax</i> radical cure treatment.</p> <p>4.3.6 Establish and maintain pharmacovigilance system.</p> <p>4.3.7 Conduct regular quality monitoring of antimalarial medicines</p>	<p>4.3.1 Ministry of Health and National Malaria Control Programme, supported by World Health Organization.</p> <p>4.3.2 Ministry of Health, National Malaria Control Programme.</p> <p>4.3.3 Ministry of Health.</p> <p>4.3.4 National Malaria Control Programme.</p> <p>4.3.5 National Malaria Control Programme, hospital department, Ministry of Health.</p> <p>4.3.6 Drug Regulatory Authority and Ministry of Health.</p> <p>4.3.7 Drug Regulatory Authority, National Malaria Control Programme, partners.</p>

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Activities	Responsible
<p>(public and private sector).</p> <p>4.3.8 Support appropriate actions in case substandard or counterfeit antimalarials are found, including enforcement of legislation.</p> <p>4.3.9 Participate in intercountry and regional coordination efforts on case management issues.</p>	<p>4.3.8 Drug Regulatory Authority, National Malaria Control Programme, Police, Customs, Interpol, World Health Organization.</p> <p>4.3.9 National Malaria Control Programme, Ministry of Health, World Health Organization, partners and networks.</p>
<p><b>4.4 Build awareness and ensure commitment at all levels to prevent development and spread of artemisinin resistance.</b></p> <p>4.4.1 Promote rational use<sup>3</sup> of artemisinin-based combination therapy for uncomplicated malaria among care providers and users.</p> <p>4.4.2 Withdraw oral artemisinin mono-therapy from public and private sector and enforce this.</p>	<p>4.4.1 Ministry of Health, National Malaria Control Programme, Drug Regulatory Authority, training institutions, partners.</p> <p>4.4.2 Ministry of Health, Drug Regulatory Authority.</p>
<p><b>4.5 Engage the private sector in effective diagnosis, treatment and reporting of malaria.</b></p> <p>4.5.1 Develop regional and national policies to engage with the private sector in malaria diagnosis, treatment and reporting (including task forces, country pilots and evaluations).</p> <p>4.5.2 Evaluate and document existing private sector initiatives.</p> <p>4.5.3 Establish and expand engagement of the private sector in malaria diagnosis and treatment, where appropriate.</p> <p>4.5.4 Coordinate with the Affordable Medicines Facility malaria (AMFm) to ensure that treatment will be linked to parasite-based diagnosis.</p>	<p>4.5.1 Ministry of Health, National Malaria Control Programme, Drug Regulatory Authority, hospital department, medical and pharmacists associations, supported by World Health Organization and technical partners.</p> <p>4.5.2 Ministry of Health, National Malaria Control Programme, World Health Organization, medical and pharmacists associations.</p> <p>4.5.3 Ministry of Health, National Malaria Control Programme, medical and pharmacists associations, medical registration boards, partners.</p> <p>4.5.4 National Malaria Control Programme, Drug Regulatory Authority, Ministry of Health.</p>
<p><b>4.6 Build and maintain human and health systems capacity at all levels for adequate management of malaria and other febrile conditions (differential diagnosis).</b></p> <p>4.6.1 Conduct training and regular refresher training, covering parasite-based diagnosis, microscope repair and maintenance, supplies quantification, procurement and supply management, treatment of uncomplicated and severe malaria, etc.</p> <p>4.6.2 Conduct supportive supervision during integrated supervisory visits, including follow-up on training effectiveness.</p> <p>4.6.3 Expand differential diagnostic and treatment capacity of febrile illnesses and ensure adequate supplies and equipment at health facility and community levels.</p> <p>4.6.4 Develop and share training modules.</p>	<p>4.6.1 National Malaria Control Programme, medical training institutions.</p> <p>4.6.2 National Malaria Control Programme, Ministry of Health.</p> <p>4.6.3 National Malaria Control Programme, Ministry of Health, Centre for Disease Control, Maternal and Child Health.</p> <p>4.6.4 National Malaria Control Programme, ACTMalaria, World Health Organization, training institutions.</p>

<sup>3</sup> "Rational use" is defined according to national treatment guidelines.



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Activities	Responsible
<p><b>4.7 Ensure adequate monitoring and evaluation of diagnostic and treatment coverage and practices and supply management at health facility and community levels.</b></p> <p>4.7.1 Update monitoring and evaluation guidelines, including those for the community level.</p> <p>4.7.2 Strengthen routine monitoring of malaria treatment quality and diagnostic practices, e.g. through the use of a malaria patient card.</p> <p>4.7.3 Strengthen routine monitoring of the management of antimalarial medicines and diagnostics, including at the community level.</p> <p>4.7.4 Conduct surveys to evaluate diagnostic and treatment practices and availability of supplies and equipment.</p>	<p>4.7.1 National Malaria Control Programme, Ministry of Health, World Health Organization, partners.</p> <p>4.7.2 National Malaria Control Programme, Ministry of Health.</p> <p>4.7.3 National Malaria Control Programme, central medical store, drug regulatory authority, Ministry of Health.</p> <p>4.7.4 National Malaria Control Programme, Ministry of Health, institutes of public health, World Health Organization, partners.</p>
<p><b>4.8 Conduct relevant operational research related to malaria diagnosis and treatment, including:</b></p> <p>4.8.1 Develop a simple and rapid test for G6PD deficiency.</p> <p>4.8.2 Conduct surveys of G6PD deficiency and map findings.</p> <p>4.8.3 Develop and execute a series of research studies (clinical and laboratory) leading to the safest possible application of primaquine against <i>P. vivax</i> malaria, by country, including short-course treatment.</p> <p>4.8.4 Evaluate therapies for radical cure that may be applied to either <i>P. falciparum</i> or <i>P. vivax</i> malaria or both.</p> <p>4.8.5 Explore improved adherence to national treatment guidelines, including those for <i>P. vivax</i> (packaging, formulation, supervised treatment, training, information, education and communication and behaviour change communication).</p> <p>4.8.6 Assess the feasibility and acceptability of use of pre-referral artemisinin-derivative suppositories for severe malaria.</p> <p>4.8.7 Evaluate and document experiences with community-based malaria diagnosis and treatment in countries across the Region.</p> <p>4.8.8 Assess local causes of non-malaria febrile illnesses for development of case management algorithm.</p> <p>4.8.9 Complete development and validation of the cooler box system for rapid diagnostic tests and artemisinin-based combination therapy storage.</p>	<p>4.8 National Malaria Control Programme, Ministry of Health, research institutions national and international partners including World Health Organization.</p>
<p><b>Objective 5: Ensure comprehensive coverage of vulnerable, poor and/or marginalized populations at high risk of malaria with appropriate malaria control measures.</b></p>	
<p><b>5.1 Identify and characterize target groups, their health problems and their basic health behaviours.</b></p> <p>Vulnerable groups who live in or move into malaria risk areas include:</p> <ul style="list-style-type: none"> <li>• pregnant women;</li> <li>• children under five years;</li> <li>• ethnic minority groups;</li> <li>• mobile and/or migrant populations, including miners and forest goers;</li> <li>• people living with HIV/AIDS;</li> <li>• neglected, poor and marginalized groups;</li> </ul>	<p>5.1 Ministry of Health, National Malaria Control Programme, other programmes and sectors, partners including World Health Organization.</p>

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Activities	Responsible
<ul style="list-style-type: none"> <li>• military;</li> <li>• prisoners;</li> <li>• refugees;</li> <li>• remote island populations; and</li> <li>• others where applicable.</li> </ul>	
<p><b>5.2 Review and map existing public health interventions for these groups, examining:</b></p> <ul style="list-style-type: none"> <li>• stakeholders and partners within and beyond the health sector;</li> <li>• infrastructure; and</li> <li>• existing public health intervention and other non-health-related resources.</li> </ul>	<p>5.2 Ministry of Health, National Malaria Control Programme, other programmes and sectors, partners.</p>
<p><b>5.3 Develop and implement comprehensive intervention packages for the target populations which:</b></p> <ul style="list-style-type: none"> <li>• are innovative, evidence-based and cost-effective (e.g. impregnated hammock nets, standby treatment, impregnated blankets, new approaches to surveillance);</li> <li>• include appropriate delivery systems (e.g. community outreach);</li> <li>• include appropriate community empowerment and mobilization and information, education and communication materials and/or behaviour change communication;</li> <li>• are gender sensitive; and</li> <li>• include appropriate training models targeting communities and health care providers.</li> </ul>	<p>5.3 Ministry of Health, National Malaria Control Programme, other programmes and sectors, partners including World Health Organization.</p>
<p><b>5.4 Develop integrated service delivery where possible, building on existing initiatives where appropriate, to increase coverage of vulnerable populations at different levels</b> (e.g. for pregnant women and small children through Integrated Management of Childhood Illnesses, maternal and child health and/or antenatal care clinics; for HIV-positive persons through voluntary counselling and testing and antiretroviral treatment centres; outreach).</p> <p>5.4.1 Introduce intermittent preventive treatment for pregnant women (IPTp) living in high transmission areas in antenatal care facilities.</p>	<p>5.4 Ministry of Health, National Malaria Control Programme, other health programmes (e.g. Expanded Programme on Immunization, Mother and Child Health, Integrated Management of Childhood Illnesses), other sectors and partners.</p>
<p><b>5.5 Establish a focal point in the National Malaria Control Programme to manage activities in 5.3 and 5.4 and coordinate capacity development.</b></p>	<p>5.5 Ministry of Health, National Malaria Control Programme.</p>
<p><b>5.6 Monitor intervention success by disaggregating relevant data by vulnerable group.</b></p>	<p>5.6 Ministry of Health, National Malaria Control Programme, health information systems unit.</p>

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Activities	Responsible
<p><b>5.7 Raise the profile of these groups and mobilize resources.</b></p> <p>5.7.1 Support advocacy for interprogrammatic and intersectoral cooperation through groups including Asia-Pacific Economic Cooperation (APEC) and Association of Southeast Asian Nations (ASEAN) (e.g. through intersectoral task forces).</p> <p>5.7.2 Implement advocacy campaigns promoting interprogrammatic and intersectoral cooperation.</p> <p>5.7.3 Mobilize resources from the Asian Development Bank, World Bank, bilateral donors, Global Fund to Fight AIDS, Tuberculosis and Malaria, private sector and others.</p> <p>5.7.4 Stimulate the development of meaningful public-private partnerships.</p>	<p>5.7 Governments, Ministry of Health, partners including World Health Organization.</p>
<p><b>5.8 Conduct relevant operational research to address issues.</b></p> <p>5.8.1 Map vulnerable populations, and map malaria burden in vulnerable populations.</p> <p>5.8.2 Define barriers to access.</p> <p>5.8.3 Conduct intervention research on malaria control strategies for different categories of mobile and/or migrant populations, including feasibility and use of standby treatment.</p> <p>5.8.4 Assess delivery of malaria control to vulnerable populations in decentralized systems.</p> <p>5.8.5 Explore strategies for controlling malaria at international borders.</p> <p>5.8.6 Conduct economic analysis of requirements to adequately address vulnerable populations.</p> <p>5.8.7 Assess the use of chemoprophylaxis to prevent malaria in pregnancy in low to moderate transmission areas.</p> <p>5.8.8 Assess the effectiveness of routine screening of pregnant women for malaria in low to moderate transmission areas.</p> <p>5.8.9 Continue to evaluate the effectiveness of intermittent preventive treatment for pregnant women (IPTp), including for <i>P. vivax</i>, in areas of moderate to high malaria endemicity.</p>	<p>5.8 Research organizations, National Malaria Control Programme and partners, including World Health Organization.</p>

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Activities	Responsible
<p><b>Objective 6: Establish and/or strengthen the routine malaria surveillance system (all malaria species) and ensure adequate outbreak response capability.</b></p>	
<p><b>6.1 Finalize biregional guidelines on malaria surveillance (specific to programme stage) and outbreak preparedness and response (WHO South-East Asia and Western Pacific Regions).</b></p> <p>6.1.1 Identify essential components of country malaria surveillance (incorporating gender and age) and outbreak preparedness and response systems.</p> <p>6.1.2 Draft guidelines on malaria surveillance and malaria outbreak preparedness and response.</p> <p>6.1.3 Harmonize guidelines with those of other disease systems where possible (Communicable Disease Surveillance and Response, Expanded Programme on Immunization, dengue, etc.).</p> <p>6.1.4 Hold consensus workshop, then finalize guidelines and disseminate.</p> <p>6.1.5 Develop training module.</p>	<p>6.1 World Health Organization with stakeholders and partners.</p>
<p><b>6.2 Facilitate country ownership of malaria surveillance systems and outbreak preparedness and response guidelines.</b></p> <p>6.2.1 Establish and support technical working group to adapt malaria surveillance and outbreak preparedness and response guidelines to fit national context.</p> <p>6.2.2 Draft, endorse and finalize national malaria surveillance and outbreak preparedness and response guidelines.</p> <p>6.2.3 Explore opportunities to integrate malaria surveillance into the overall health information system.</p>	<p>6.2 Ministry of Health, National Malaria Control Programme and partners.</p>
<p><b>6.3 Strengthen national capacity and implement malaria surveillance and outbreak preparedness and response strategies.</b></p> <p>6.3.1 Strengthen national capacity to achieve data management requirements (e.g. malaria case register, case investigation form, laboratory register, national malaria database).</p> <p>6.3.2 Draft and finalize malaria surveillance and outbreak preparedness and response training modules (based on World Health Organization and ACTMalaria prototypes).</p> <p>6.3.3 Conduct training of trainers.</p> <p>6.3.4 Train national and subnational staff on malaria surveillance and outbreak preparedness and response.</p> <p>6.3.5 Ensure adequate staff and technical assistance to support implementation of malaria surveillance and outbreak preparedness and response (including information technology support for national malaria database).</p>	<p>6.3 Ministry of Health, National Malaria Control Programme and partners.</p>
<p><b>6.4 Monitor and report on progress of implementing the activities described in the guidelines.</b></p>	<p>6.4 National Malaria Control Programme.</p>

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Activities	Responsible
<p><b>6.5 Develop and regularly update national malaria risk stratification and estimates of the population at risk.</b></p>	<p>6.5 National Malaria Control Programme with World Health Organization and partner support.</p>
<p><b>6.6 Periodically monitor antimalarial drug efficacy (including <i>P. vivax</i>) in strategic sentinel sites.</b></p> <p>6.6.1 Strengthen capacity for in-country antimalarial drug efficacy monitoring, following the World Health Organization standard protocol, including molecular markers.</p> <p>6.6.2 Conduct monitoring.</p> <p>6.6.3 Advocate for continued support to regional and subregional surveillance activities.</p>	<p>6.6.1 National Malaria Control Programme with World Health Organization and partner support.</p> <p>6.6.2 National Malaria Control Programme.</p> <p>6.6.3 World Health Organization, partners.</p>
<p><b>6.7 Systematically monitor insecticide resistance and bionomics in malaria vectors.</b></p>	<p>6.7 National Malaria Control Programme with partner support including World Health Organization, ACTMalaria.</p>
<p><b>6.8 Effectively share malaria surveillance information among Member States (especially across borders between administrative units).</b></p>	<p>6.8 National Malaria Control Programme, World Health Organization.</p>
<p><b>Objective 7: Accelerate malaria (all species) elimination efforts in participating countries.</b></p>	
<p><b>7.1 Adapt global malaria elimination guidelines for the Asia Pacific Region and develop appropriate standard operating procedures (biregional – WHO South-East Asia and Western Pacific Regions).</b></p>	<p>7.1 World Health Organization and Asia-Pacific Malaria Elimination Network, other stakeholders and partners.</p>
<p><b>7.2 Countries committed to malaria elimination in the Region adopt modified biregional guidelines.</b></p> <p>7.2.1 Align national malaria elimination strategies with biregional guidelines (once these become available).</p> <p>7.2.2 Ensure adequate technical support to adjust and/or implement the national strategy for malaria elimination.</p>	<p>7.2 National Malaria Control Programme, with support of World Health Organization and partners.</p>
<p><b>7.3 Implement progressive elimination of malaria from selected geographical areas.</b></p> <p>7.3.1 Re-orient the malaria programme.</p> <p>7.3.2 Familiarize public sector, private sector and other stakeholders with elimination strategy and associated roles and responsibilities.</p> <p>7.3.3 Mobilize and sustain community support, participation and resources.</p> <p>7.3.4 Establish fast, effective communication systems for health workers at all levels.</p> <p>7.3.5 Establish and maintain monthly collection of malaria data from all private sector health care providers.</p> <p>7.3.6 Establish a geographical information system for planning and monitoring progress in elimination.</p> <p>7.3.7 Implement comprehensive investigation for all cases identified</p>	<p>7.3 National Malaria Control Program with partner support.</p>

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Activities	Responsible
<p>through routine passive case detection and follow-up.</p> <p>7.3.8 Conduct prompt in-depth investigations in all suspected transmission foci according to elimination guidelines.</p> <p>7.3.9 Provide timely and effective focal indoor residual spraying according to standard operating procedures.</p> <p>7.3.10 Ensure radical treatment for all <i>P. vivax</i> cases identified, and gametocyte treatment for <i>P. falciparum</i> cases.</p>	
<p><b>7.4 Ensure strong technical cooperation with countries, relevant networks and research institutions committed to malaria elimination.</b></p> <p>7.4.1 Formulate and coordinate an elimination research agenda (with special attention to <i>P. vivax</i>).</p> <p>7.4.2 Provide necessary technical support.</p> <p>7.4.3 Disseminate annual progress and technical reports.</p> <p>7.4.4 Encourage and support the development and funding of cross-border elimination operations.</p>	<p>7.4 World Health Organization with stakeholders and partners.</p>
<p><b>7.5 Monitor progress to malaria elimination.</b></p> <p>7.5.1 Establish a national malaria elimination monitoring committee to monitor progress.</p> <p>7.5.2 Conduct joint planning and monitoring with WHO Western Pacific and South-East Asia Regional Offices, Asia-Pacific Malaria Elimination Network and experts from countries which are implementing elimination.</p> <p>7.5.3 Support intercountry malaria elimination meetings.</p>	<p>7.5 National Malaria Control Program with World Health Organization, Asia-Pacific Malaria Elimination Network and other partners.</p>
<p><b>7.6 Contain and ultimately eliminate artemisinin-resistant malaria parasites (<i>P. falciparum</i>) in affected areas.</b></p> <p>7.6.1 Eliminate artemisinin-resistant parasites by detecting all malaria cases in target areas and ensuring effective treatment and gametocyte clearance.</p> <p>7.6.2 Decrease drug pressure for selection of artemisinin-resistant malaria parasites.</p> <p>7.6.3 Prevent transmission of artemisinin-resistant malaria parasites by high coverage mosquito control and personal protection efforts.</p> <p>7.6.4 Limit the spread of artemisinin-resistant malaria parasites by effectively targeting mobile and/or migrant populations.</p> <p>7.6.5 Support containment and/or elimination of artemisinin-resistant parasites through comprehensive behaviour change communication, community mobilization and advocacy.</p> <p>7.6.6 Undertake basic and operational research to fill knowledge gaps and ensure that containment and/or elimination strategies applied are evidence-based.</p> <p>7.6.7 Provide effective management and coordination to enable rapid and high-quality implementation of the containment and/or elimination strategy.</p> <p>7.6.8 Explore mechanisms that would trigger international reporting under the International Health Regulations (IHR) in the context of artemisinin resistance.</p>	<p>7.6 National Malaria Control Programme in containment area, World Health Organization with stakeholders and partners.</p>

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Activities	Responsible
<p><b>7.7 Conduct operational research to support elimination efforts as appropriate.</b></p> <p>7.7.1 Develop, assess and/or adapt feasible highly sensitive diagnostic tests for mass screening.</p> <p>7.7.2 Conduct economic analysis of targeted elimination over the medium-term.</p> <p>7.7.3 Conduct operational research aimed at developing a strategy for the elimination of zoonotic <i>Plasmodium knowlesi</i>.</p>	<p>7.7 Research organizations, National Malaria Control Programme, partners, World Health Organization.</p>