MEETING OF MALARIA PROGRAMME MANAGERS IN THE WESTERN PACIFIC REGION ON THE DRAFT REGIONAL ACTION FRAMEWORK FOR MALARIA 2016–2020

18–19 May 2016
Manila, Philippines
Meeting of Malaria Programme Managers in the Western Pacific Region on the Draft Regional Action Framework For Malaria 2016–2020
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MEETING REPORT

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ON THE DRAFT REGIONAL ACTION FRAMEWORK FOR MALARIA 2016–2020

Convened by:

WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR THE WESTERN PACIFIC

Manila, Philippines
18–19 May 2016
NOTE

The views expressed in this report are those of the participants of the Meeting of Malaria Programme Managers in the Western Pacific Region on the draft Regional Action Framework for Malaria 2016-2020 and do not necessarily reflect the policies of the World Health Organization.

This report was prepared by the World Health Organization Regional Office for the Western Pacific for governments of Member States in the Region and for those who participated in the Meeting of Malaria Programme Managers in the Western Pacific Region on the draft Regional Action Framework for Malaria 2016–2020, which was held in Manila, Philippines, on 18–19 May 2016.
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Malaria – prevention and control / Regional health planning
<table>
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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>ACT</td>
<td>artemisinin-based combination therapy</td>
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<tr>
<td>ERAR</td>
<td>Emergency Response to Artemisinin Resistance</td>
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<tr>
<td>GMS</td>
<td>Greater Mekong Subregion</td>
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<td>GTS</td>
<td>WHO <em>Global Technical Strategy for Malaria 2016–2030</em></td>
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<tr>
<td>HRP2</td>
<td>histidine rich protein 2</td>
</tr>
<tr>
<td>IRS</td>
<td>indoor residual spraying</td>
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<tr>
<td>LLIN</td>
<td>long-lasting insecticidal nets</td>
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<td>MDA</td>
<td>mass drug administration</td>
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<td>MVP</td>
<td>Malaria other Vectorborne and Parasitic Diseases</td>
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<tr>
<td>NAA</td>
<td>nucleic acid amplification</td>
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<tr>
<td>PBO</td>
<td>piperonyl butoxide</td>
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<tr>
<td>RDT</td>
<td>rapid diagnostic test</td>
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<td>UHC</td>
<td>universal health coverage</td>
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SUMMARY

The Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010–2015) guided all 10 malaria-endemic countries in 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 – to move towards malaria elimination. All malaria-endemic countries in the Region, except Papua New Guinea, have decreased presumed and confirmed malaria cases by over 83% between 2000 and 2014. Over the same period, deaths from malaria fell by over 87.42%. Malaria transmission remains most intense in Papua New Guinea, Solomon Islands and Vanuatu but is much more focal in other countries, disproportionately affecting ethnic minorities, migrant workers and populations along national borders.

To continue momentum and support countries facing challenges along the road to malaria elimination, a draft Regional Action Framework for Malaria Control and Elimination in the Western Pacific 2016–2020 was developed. The draft framework was presented to ministries of health, partners, stakeholders and experts at the Meeting of Malaria Programme Managers in the Western Pacific Region held in Manila, Philippines on 18–19 May 2016. The objectives of the meeting were: to review and achieve consensus on the draft Regional Action Framework for Malaria Control and Elimination in the Western Pacific 2016–2020 to be considered for endorsement by the sixty-seventh session of the Regional Committee for the Western Pacific; and to review the progress of malaria control and identify key challenges to be addressed in strengthening malaria control and elimination in the Region.

The framework is guided by the WHO Global Technical Strategy for Malaria 2016–2030 (GTS) which presents a broadly inclusive approach for addressing current challenges to malaria control and elimination at the global level. It is also strongly aligned with the Strategy for Malaria Elimination in the Greater Mekong Subregion (2015–2030), a subnational document that addresses the needs of a subset of countries in the Greater Mekong Subregion (GMS), with the specific threat of drug resistance. The framework was developed through a series of consultations between national malaria programmes and their partners, individual technical experts and WHO. Targets adopted in national malaria strategic plans and the East Asia Summit Leaders’ agreement to the goal of an Asia-Pacific free of malaria by 2030 have also been taken into consideration.

The goals of the regional framework are to: reduce malaria mortality by 50% and morbidity by at least 30% by 2020, relative to 2015 baselines; achieve malaria elimination in three countries by 2020; and establish and maintain elimination-capable surveillance systems in all malaria endemic countries by 2020.

The framework is modelled on the three pillars of the GTS, which are: (1) universal access to malaria prevention and case management services; (2) acceleration of efforts towards elimination and attainment of malaria free status; and (3) transformation of malaria surveillance into a key intervention with two supporting elements, (a) strengthening the underlying health system and the enabling environment, and (b) expanding research in support of improved service delivery and innovation.

Objectives and recommended activities of each pillar and supporting elements were discussed in detail and clarified as needed. Comments and suggestions on the draft framework included defining how countries move from universal health coverage (UHC) to foci-based interventions when nearing elimination, including setting separate indicators for countries in control/pre-elimination and elimination phase. Discussion on surveillance is lacking, considering this is one of the key strategies in the new framework. The term "elimination-capable" surveillance system should be clearly defined, including the indicators to be measured. Steps on how an elimination-capable system will be achieved by countries should be described.
Discussion on Supporting Element 1, "Strengthening the underlying health system and the enabling environment", is too long. This section needs to be more specific to the malaria programme by citing several examples on how the programme can be integrated into other programmes and to the larger health system. Several research topics for Supporting Element 2, "Expanding research for innovation and improved delivery of services", were suggested, such as improved tools to measure receptivity and vulnerability, better defining malaria burden among mobile/migrant populations and assessing the effectiveness of border posts. As a general comment, WHO needs to strengthen its own capacity to provide better technical assistance to countries.

At the end of the meeting, participants were given two weeks to provide comments and suggestions before the draft framework is finalized for submission to the WHO Regional Committee for the Western Pacific for endorsement later in October 2016.
1. INTRODUCTION

1.1 Background

All 10 malaria-affected countries in Western Pacific Region made significant progress towards achieving the 2015 targets of the Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010–2015) and are now considering malaria elimination a feasible goal and have incorporated elimination into their national malaria strategic plans. All malaria-endemic countries in the Region, except Papua New Guinea, have decreased presumed and confirmed malaria cases by over 83% between 2000 and 2014. Over the same period, deaths from malaria fell by over 87.42%. One of the biggest challenges to global malaria control is the emergence of artemisinin-resistant *Plasmodium falciparum* in the GMS. Malaria transmission remains most intense in Papua New Guinea, Solomon Islands, and Vanuatu but is much more focal in other countries, disproportionately affecting ethnic minorities, migrant workers and populations along national borders.

Since the Regional Action Plan for Malaria Control and Elimination in the Western Pacific 2010–2015 has expired, it is necessary to develop a new regional action plan for malaria aligned to the Global Technical Strategy for Malaria 2016–2030 (GTS) (recently endorsed by the World Health Assembly) as well as the Strategy for Malaria Elimination in the Greater Mekong Subregion 2015–2030 which was recently adopted by the ministers of health. The GTS envisages an acceleration of malaria control efforts by reducing global malaria burden by at least 40% by 2020, and by at least 90% by 2030, while the GMS strategy aims to eliminate malaria in all Mekong Subregion countries by 2030 and eliminate *P. falciparum* by 2025. The WHO Regional Office for the Western Pacific has responded to this need and drafted a new framework for 2016–2020 based on a review of the progress achieved following the 2010–2015 plan and informal consultations with technical experts and national malaria programme managers. Aligned with the global and GMS strategies, the regional framework aims to address regional priorities and challenges, such as weak surveillance, improving access to quality-assured interventions, especially for mobile and migrant populations, managing drug and insecticide resistance, addressing the challenge of vivax malaria and accelerating implementation towards malaria elimination.

The WHO Regional Office for the Western Pacific organized the regional malaria programme managers' meeting to discuss the draft Regional Action Framework for Malaria Control and Elimination in the Western Pacific 2016–2020 and achieve consensus. Attending the meeting were 17 representatives from national malaria programmes of ministries of health, 13 partners, stakeholders, and independent malaria experts, and 18 WHO staff working on malaria. The draft framework, following the discussions and achievement of consensus, will be submitted to the Regional Committee for consideration and endorsement.

1.2 Objectives

The objectives of the meeting were to:

1. review and achieve consensus on the draft Regional Action Framework for Malaria Control and Elimination in the Western Pacific 2016–2020 to be considered for endorsement by the the WHO Regional Committee for the Western Pacific at its sixty-seventh session;

2. and review the progress of malaria control and identify key challenges to be addressed in strengthening malaria control and elimination in the Region.

1.3 Opening remarks

Dr Mark Jacobs, Director of Division of Communicable Diseases, delivered the welcome address on behalf of Dr Shin Young-soo, WHO Regional Director for the Western Pacific. Dr Jacobs highlighted the significant progress the 10 malaria-endemic countries in the Region have made towards achieving
the 2015 targets of the *Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010–2015)* as well as targets set under the Millennium Development Goals. Endorsement of the *Global Technical Strategy for Malaria 2016–2030* by the World Health Assembly in 2015, the political leadership demonstrated by leaders of the Asia Pacific region in calling for elimination by 2030, the unprecedented commitment of donors and the success achieved by Member States over the past few years has brought malaria elimination within reach for many Member States. However, he also cited that one of the biggest malaria challenges is the increasing and expanding problem of multidrug-resistance, including artemisinin-based combination therapy (ACT) resistance in *falciparum* malaria that affects countries of the GMS. The draft Regional Action Framework for Malaria Control and Elimination in the Western Pacific 2016–2020, which was drafted after extensive consultations with Member States and experts, was developed to address malaria challenges and achieve the goal of elimination. He emphasized that the inputs from this meeting will guide the finalization of the draft plan which will be submitted to the WHO Regional Committee for the Western Pacific for consideration later in October 2016.

1.4 Nomination of Chair, Vice-chair and Rapporteur

On behalf of the Regional Director, Dr Rabindra Abeyasinghe, Coordinator, Malaria other Vectorborne and Parasitic Diseases (MVP) unit in the WHO Regional Office for the Western Pacific, presided over the election of officers for the meeting. For Day 1, Dr Sibauk Vivaldo Bieb, Executive Manager of Public Health, National Department of Health in Papua New Guinea, was nominated as Chair. Dr Rekol Huy, Director of National Center of Parasitology, Entomology and Malaria Control in Cambodia was nominated as Vice-chair. Dr Ummi Kalthom Shamsudin, Public Health Physician of the National Malaria Elimination Program, Vectorborne Disease Section of the Ministry of Health Malaysia was nominated as Rapporteur. For Day 2: Dr Rattanaxay Pheysouvanh, Senior Officer of Hygiene and Prevention Department, Centers for Disease Control and Prevention, Ministry of Health, Lao People's Democratic Republic, was nominated as Chair. Dr Raffy Deray, Medical Officer of Disease Prevention and Control Bureau, Infectious Disease Office, Department of Health, Philippines, was nominated as Vice-chair. Dr Tran Thauh Duong, Director of the National Institute of Malariology, Parasitology and Entomology, Ha Noi, Viet Nam, was nominated as Rapporteur. The nominations were endorsed by all participants.

2. PROCEEDINGS

2.1 Technical session 1: Updates

2.1.1 Global malaria situation: *Global Technical Strategy for Malaria 2016–2030*: brief overview

Dr Pedro Alonso, Director of the WHO Global Malaria Programme, presented the global malaria situation and a brief overview of the GTS. The GTS is building on the five guiding principles applicable to all WHO Regions. These principles are: (1) all countries can accelerate efforts towards elimination through combination of interventions tailored to local contexts; (2) country ownership and leadership, with involvement and participation of communities, are essential to accelerating progress through a multisectoral approach; (3) improved surveillance, monitoring and evaluation, as well as stratification by malaria disease burden, are required to optimize the implementation of malaria interventions; (4) equity in access to services, especially for the most vulnerable and hard-to-reach populations, is essential; and (5) innovation in tools and implementation approaches will enable countries to maximize their progression along the path to elimination.

GTS has three pillars and two supporting elements, which are:

Pillar 1: ensure universal access to malaria prevention, diagnosis and treatment
Pillar 2: accelerate efforts towards elimination and attainment of malaria-free status
Pillar 3: transform malaria surveillance into a core intervention
Supporting element 1: harnessing innovation and expanding research
Supporting element 2: strengthening the enabling environment

The estimated cost for implementing the GTS is around US$ 8.7 billion by 2030, which includes programme management, chemoprevention, vector control, diagnostic testing, surveillance and treatment.

Globally, 90 countries have malaria, with 10 countries accounting for 80% of global mortality. Estimated global and regional malaria case incidence and death rate globally from 2000–2015 were presented. Significant progress has been made in all regions, particularly in Africa. Innovative interventions were developed and used. The key now is how to sustain this achievement in the next 15 years, given challenges such as funding and coverage gaps, biological challenges (such as resistance of vectors to pyrethroid and multidrug resistance), and continuous support from countries in achieving and maintaining elimination goals.

There are a number of countries aiming for malaria elimination. In the Western Pacific Region, China, Malaysia and the Republic of Korea are the three countries with the potential to eliminate local transmission of malaria by 2020. All countries can accelerate progress towards malaria elimination. To this end, WHO highlights the need for malaria responses that are tailored to local settings, country ownership and leadership, strong surveillance systems, equity in access to health services, and innovation in malaria control tools.

2.1.2 Technical updates

Dr Alonso continued his presentation with technical updates on malaria, noting that guidance on malaria changes over time. He emphasized the need for current guides to be evaluated, improved and revised as appropriate.

Vector control

There are three new policy recommendations on vector control that are included in the following documents: (1) GTS (http://www.who.int/malaria/publications/atoz/9789241564991/en/); (2) an information note on the risks associated with the scaling back of vector control in areas where transmission has been reduced (http://www.who.int/malaria/publications/atoz(scale-back-vector-control/en/); and (3) conditions for use of long-lasting insecticidal nets treated with pyrethroid and piperonyl butoxide (PBO) (http://www.who.int/malaria/publications/atoz(use-of-pbo-treated-llins/en/).

Universal coverage with effective malaria vector control of all persons should be pursued and maintained. The scale-back of core vector control interventions should be based on a detailed analysis that includes assessment of receptivity, vulnerability, active disease surveillance, capacity of case management and vector control response. Countries and partners should invest in health systems, particularly strengthening of disease and entomological surveillance, as identification of areas for geographical scale-back, as well as timely detection and appropriate response to resurgence, depends on this capacity.

Evidence on the efficacy of PBO long-lasting insecticidal nets (LLIN) use is still limited and does not justify, at this point, a complete switch from pyrethroid-only LLINs to PBO LLINs across all settings. PBO LLINs with a WHO Pesticide Evaluation Scheme (WHOPES) interim or full recommendations can be considered to be at least an equivalence option to other LLINs in all settings, and probably superior in some settings. However, there is neither evidence to assume higher efficacy or greater utility as a resistance management strategy across all settings. PBO LLINs should not be used in areas programmed for indoor residual spraying (IRS) with pirimiphos methyl (actellic-cs). For the Asia-Pacific region, priority actions and strategies include targeting delivery of vector control interventions to at risk populations, development of new vector control tools especially targeting outdoor
transmission, especially in areas of low malaria transmission, and monitoring of entomological indicators including regular monitoring of insecticide resistance.

**Artemisinin resistance**

Artemisinin resistance is defined as delayed parasite clearance following treatment with an artesunate monotherapy, or after treatment with an ACT. Such resistance represents partial resistance. Delayed parasite clearance will not necessarily lead to treatment failure. In the GMS, a high treatment failure rate following treatment with an ACT has only been observed where there is resistance to the partner drug, regardless of the presence of artemisinin resistance. However, artemisinin resistance could facilitate the selection of partner drug resistance. Suspected endemic artemisinin resistance is defined as ≥ 5% of patients carrying K13 resistance-validated mutations; or ≥10% of patients with persistent parasitaemia by microscopy at 72 hours (+/- 2 hours, i.e. day 3) after treatment with ACT or artesunate monotherapy; or ≥10% of patients with parasite clearance half-life of ≥5 hours after treatment with ACT or artesunate monotherapy. Confirmed endemic artemisinin resistance is defined as ≥5% of patients fulfil both of the following criteria: ≥5% of patients carrying K13 resistance-validated mutations, all of whom have been found, after treatment with ACT or artesunate monotherapy, to have either persistent parasitaemia by microscopy on day 3, or a parasite clearance half-life of ≥5 hours. Delayed parasite clearance after treatment with an ACT is of great concern. Failure to rapidly clear parasites could compromise the use of artemisinin for the treatment of severe malaria. Also, slow parasite clearance causes more parasites to be exposed to the partner medicine alone, increasing the risk of selection of partner drug resistance, which in turn increases the risk of treatment failure. Currently, most patients with a delayed parasite clearance are still cured by ACTs, provided that the partner drug remains effective.

**Malaria diagnostic tools for detection of subclinical infections**

Recommendations on malaria diagnostics are quality-assured rapid diagnostic tests (RDT) and microscopy as the primary diagnostic tools for the confirmation and management of suspected clinical malaria in all epidemiological situations, including areas of low transmission, due to their high diagnostic performance in detecting clinical malaria, their wide availability and relatively low cost. Similarly, RDT and microscopy are appropriate tools for routine malaria surveillance (of clinical cases) in the majority of malaria-endemic settings. A number of nucleic acid amplification (NAA) techniques are available and are more sensitive in detection of malaria compared to RDTs and microscopy. Generally, the use of more sensitive diagnostic tools should be considered only in low transmission settings where there is already widespread implementation of malaria diagnostic testing and treatment and low parasite prevalence rates (for example, < 10%). Use of NAA-based methods should not divert resources from malaria prevention and control interventions and strengthening of the health-care services, including the surveillance system. Submicroscopic Plasmodium falciparum and Plasmodium vivax infections are common in low as well as in high transmission settings. The use of NAA methods by malaria programmes should be considered for epidemiological research and surveys aimed at mapping submicroscopic infections at low transmission intensity. There may also be a use for NAA methods for identifying foci for special intervention measures in elimination settings. The majority of infections with asexual parasites have gametocytes detectable by molecular amplification methods, at low density not detectable by microscopy or RDTs. Most malaria infections (microscopic and submicroscopic) should be considered as potentially infectious and able to contribute to ongoing transmission. There is no need for routine detection of gametocytes using sensitive mRNA amplification methods in malaria surveys or clinical settings. Common standards for nucleic acid based assays should be developed, including the use of the WHO International P. falciparum DNA Standard for NAA assays and development of standards for other Plasmodium species, particularly P. vivax, should be undertaken. A standard operating procedure should be developed which defines methods for sample collection, extraction, and the recommended equivalent quantity of blood to be added to the assay. Development of an international, external quality assurance system is strongly recommended to ensure that data obtained from NAAs are reliable and comparable. In order to establish the role of serological assays in epidemiological assessments, there is a need for
standardization and validation of reagents (antigens and controls), assay methodologies and analytical approaches.

*P. falciparum* histidine rich protein 2 (HRP2) deletions

HRP2 is a malaria protein specific to *P. falciparum* which can be found in cytoplasm and the surface of *P. falciparum* infected erythrocyte. Most RDTs that are capable of diagnosing *P. falciparum*, target PfHRP2. Interim recommendations regarding HRP2 deletions include the following.

1. Investigation of suspected false-negative RDT results.
2. **Pf-hrp2/hrp3** gene deletions should be suspected on an individual basis, when a patient sample tests negative on the HRP2 test line of at least two quality-assured malaria RDTs and positive on the pan- or pf-plasmodium lactate dehydrogenase (pLDH) test line of a combination RDT and the sample is confirmed by microscopy to be positive for *P. falciparum* by two qualified microscopists; and on a programmatic basis when the rates of discordance between RDT and microscopy results show systematically higher positivity rates with microscopy (≥ 10–15%) compared to RDTs.
3. Where **hrp2/hrp3** gene deletions have been reported, the prevalence should be determined in the affected country and neighbouring countries. This may require specific surveys or adaptation of planned surveys, such as malaria indicator surveys or therapeutic efficacy studies.
4. Analysis of well-preserved archived specimens may be useful for identifying the existence and geographical location of **hrp2/hrp3**-deleted parasite populations.
5. In the absence of confirmed reports of **hrp2/hrp3** gene deletions, new initiatives to find these gene deletions are not recommended, unless they are prompted by findings for programmes described under 2.

**Mass drug administration**

The objective of mass drug administration (MDA) in the context of transmission reduction is to provide therapeutic concentrations of antimalarial drugs to as large a proportion of the population as possible in order to cure asymptomatic infections, to prevent re-infection during the period of post-treatment prophylaxis, and, in some circumstances, to interrupt transmission. To impact on transmission, MDA requires high coverage of the target population which, in turn, demands a high level of community participation and engagement. WHO considers that MDA can rapidly reduce the prevalence and incidence of malaria in the short-term. However, if malaria transmission is not interrupted or importation of malaria is not prevented, transmission eventually returns to its original level once MDA is terminated, unless the vectorial capacity is reduced and maintained at a very low level during the post MDA period. If malaria is not eliminated, MDA may provide a significant selective pressure for the emergence of resistance, particularly in the case of *P. falciparum*. For this reason, MDA should not be started unless there is a good chance that elimination is feasible in the area where MDA is being administered.

Based on a recent evidence review, the WHO Malaria Policy Advisory Committee made the following recommendations on the role of MDA, mass screening and treatment and focal screening and treatment for malaria.

1. Use of MDA for the elimination of *P. falciparum* malaria can be considered in areas approaching interruption of transmission where there is good access to treatment, effective implementation of vector control and surveillance and a minimal risk of re-introduction of infection.
2. Given the threat of multidrug resistance and the WHO call for malaria elimination in the GMS, MDA may be considered as a component of accelerated malaria elimination efforts in areas of the GMS with good access to treatment, vector control and surveillance.
3. Use of time-limited MDA to rapidly reduce malaria morbidity and mortality may be considered for epidemic control as part of the initial response, along with the urgent introduction of other interventions.

4. Use of time-limited MDA to reduce malaria morbidity and mortality may be considered in complex emergencies and during exceptional circumstances when the health system is overwhelmed and unable to serve affected communities.

5. In the absence of sufficient evidence, WHO does not recommend the use of MDA in situations other than for areas approaching elimination, epidemics, and complex emergencies, as specified above (see 1–4).

6. Mass primaquine prophylactic treatment, requiring pre-seasonal MDA with daily administration of primaquine for two weeks without glucose-6-phosphate dehydrogenase (G6PD) testing, is not recommended for the interruption of vivax transmission.

7. Mass screening and treatment and focal screening and treatment for malaria are not recommended as interventions to interrupt malaria transmission (with the tests currently available).

8. Medicines used for MDA must be of proven efficacy in the implementation area and preferably have a long half-life. WHO recommends that a medicine different from that used for first line treatment be used for MDA. Programmes should include monitoring of efficacy, safety and the potential emergence of resistance to the antimalarial medicines deployed for MDA.

9. WHO supports the need for more research on the optimum methods of implementing MDA programmes, promoting community participation and compliance with treatment, and evaluating their effectiveness. Modelling can help guide the optimum method of administering MDA in different epidemiological circumstances and predict its likely impact.

2.1.3 Update on the malaria situation in the Western Pacific Region

Dr Rabindra Abeyasinghe gave an update on the malaria situation in the WHO Western Pacific Region. Currently, there are 10 countries that have ongoing malaria transmission – Cambodia, China, the Lao People's Democratic Republic, Malaysia, Papua New Guinea, the Philippines, the Republic of Korea, Solomon Islands, Vanuatu and Viet Nam. An estimated 730 million people in the Region are at risk of malaria, of which 30 million are estimated to be at high risk. There were 401,928 cases of malaria and 268 deaths reported in 2014. The scale-up of interventions helped to reduce malaria incidence rates by 37% globally, and 79% in the Region between the years 2000 and 2014. The global malaria mortality rate was reduced by 60% during the same period, and in the Region by 87.4%. Approximately 89% of the reported burden in 2014 is from three countries – Cambodia, the Lao People's Democratic Republic and Papua New Guinea. Confirmed malaria cases and deaths from 2000 to 2014 were presented for each country.

The GMS has been the epicentre of malaria drug resistance and efforts to control it have been made since detection of resistance. In 2008, an artemisinin resistance containment project was started in the Thailand-Cambodia border area. With the expansion of resistance in April 2013, WHO launched the Emergency Response to Artemisinin Resistance (ERAR) framework for the GMS that included establishing a regional hub in Phnom Penh, Cambodia to coordinate activities. In May 2015, a *Strategy for Malaria Elimination in the GMS (2015–2030)* was developed and endorsed by GMS countries. Currently the ERAR framework is being transitioned to focus on accelerated malaria elimination. Despite significant success in reducing malaria burden in the Region, there are programmatic and technical challenges that need to be addressed in transitioning towards accelerated elimination. Programmatic challenges include inadequately trained human resources, poor understanding of malaria, weakness in reorientation from control to accelerated control, weak surveillance systems and use of surveillance data, systems weakness in procurement and supply management systems and limited access among remote population groups to malaria commodities and services. Technical challenges include drug and insecticide resistance, high burden of *P. vivax* and the problem of glucose 6-phosphate dehydrogenase deficiency in affected populations, financial gaps and dependence on international support.
2.1.4 Presentation of the draft Regional Action Framework for Malaria Control and Elimination in the Western Pacific 2016–2020

Dr Abeyasinghe continued his presentation on the draft Regional Action Framework for Malaria Control and Elimination in the Western Pacific 2016–2020, starting with a brief description of the salient points of the GTS and the *Strategy for Malaria Elimination in the Greater Mekong Subregion (2015–2030)*. The new framework has an overall vision of a Western Pacific Region free of malaria. The goals of the draft framework are to: (1) reduce mortality due to malaria in the Region by 50%, and morbidity by at least 30%, by 2020, relative to 2015 baselines; (2) achieve malaria elimination in three countries by 2020; and (3) establish elimination-capable surveillance systems in countries of the GMS by 2017, and in all countries of the Region by 2020.

The framework is modelled on the three pillars of the GTS, with objectives under each pillar.

1. Universal access to malaria prevention and case management services.
   a. To achieve universal coverage with long-lasting insecticidal nets and/or indoor residual spraying for all at-risk populations no later than 2020, especially in areas of high malaria transmission.
   b. To achieve universal access to quality assured malaria diagnosis and treatment no later than 2020.

2. Acceleration of efforts towards elimination and attainment of malaria-free status.
   a. Interrupt transmission of *P. falciparum* in areas (baseline 2015) of multidrug resistance, including resistance to ACT, by no later than 2020.
   c. Reduce malaria incidence in identified high-transmission areas to less than 1 case per 1000 population-at-risk by 2020.
   d. Define first-level subnational administrative units where malaria transmission has been interrupted, and prevent the re-establishment of malaria in those areas.

3. Transformation of malaria surveillance into a key intervention.
   a. To establish elimination-capable surveillance systems in countries of the GMS by 2017, and in all other malaria-affected countries of the Western Pacific Region by 2020.

Following the GTS, the draft framework has also two supporting elements, which are:

1. strengthening the underlying health system and the enabling environment; and
2. expanding research for innovation and improved delivery of services.

Priority activities at the regional level are as follows.

- Establish an elimination-capable surveillance system for malaria in all malaria-affected countries of the Region, ensure appropriate use of data for effective targeting of interventions, and ensure regular monitoring of their malaria situation.
- Respond aggressively to and eliminate malaria from areas with multidrug resistance (including ACT resistance) in Cambodia, the Lao People’s Democratic Republic and Viet Nam.
- Respond aggressively to and reduce transmission throughout Papua New Guinea, and in high-transmission areas of the Lao People’s Democratic Republic, the Philippines, Solomon Islands and Vanuatu.
- Strengthen technical support to countries that have made significant progress towards malaria elimination, facilitating acceleration of elimination efforts by 2020.
- The surveillance system may be specific for malaria, or may be a component of broader national systems for surveillance and for communicable disease control and elimination. The
structure and approach will be determined by national policies and priorities, matched to their progress towards malaria elimination.

Priority activities at the country level are as follows.

- Strengthen health system components (including surveillance, procurement and supply management, and logistics management information systems) to maximize efficiency and facilitate universal, uninterrupted access to quality-assured primary and preventive care for malaria.
- Eliminate malaria in areas of multidrug resistance, including resistance to ACT.
- Determine malaria burden among mobile and migrant population groups and ensure equity in access to services (including by developing services tailored to the needs of those populations).
- Achieve rapid reduction of transmission in highly endemic areas through targeted delivery of both proven and innovative interventions.
- Ensure adequate uptake of interventions through sound monitoring and evaluation.
- Local analysis may identify additional priorities.

Milestones and targets were also drafted that include the following.

By the end of 2017
- All countries have updated (or revalidated) their malaria strategic plans and defined targets for malaria elimination, and have included those targets in their broader national health policies and planning frameworks.
- All countries have a costed annual implementation plan for their national malaria strategic plan.
- Countries of the GMS have established case-based surveillance for elimination in all areas, including in areas with ACT and other drug resistance.

By the end of 2018
- At least 80% coverage with LLINs and/or IRS achieved for all at-risk populations, especially in areas of high malaria transmission (as defined in each country’s national malaria strategic plan).
- At least 80% of targeted, at-risk populations have access to parasite-based malaria diagnosis and treatment (as defined in each country’s national malaria strategic plan).
- Each country has established a national level surveillance system that is capable of accelerating toward elimination through case-based surveillance in areas with low burden, and has substantially strengthened epidemiological surveillance in areas of high burden (including case reporting by the smallest administrative unit).
- Malaria incidence rate reduced by at least 40% in Vanuatu and in high transmission areas of the Lao People’s Democratic Republic and Viet Nam.
- Malaria mortality reduced by at least 50% in Solomon Islands.
- Malaria prevention, diagnosis and treatment should be included in packages of essential health care under national UHC policies.

By the end of 2019
- Malaria incidence rate reduced by at least 40% in Solomon Islands.
- Malaria incidence rate reduced by at least 40% in high transmission areas of Cambodia and the Philippines.

By end of 2020 (or earlier)
- At least 90% coverage of targeted populations with malaria preventive interventions (LLINs and/or IRS), as defined in each country’s national malaria strategic plan.
At least 90% of targeted, at-risk populations have access to parasite-based malaria diagnosis and treatment, as defined in each country’s national malaria strategic plan.

Transmission of falciparum malaria interrupted in all areas of multidrug resistance, including ACT resistance.

Malaria eliminated in Yunnan Province, China, in the Republic of Korea and in Malaysia.

Falciparum malaria eliminated in Cambodia.

Malaria incidence rate reduced by at least 25%, and mortality reduced by 50%, in Papua New Guinea.

Elimination capable case-based surveillance is maintained in areas with low burden, and epidemiological surveillance continues to be enhanced in areas of higher transmission.

No re-establishment of local transmission of malaria in first-level subnational administrative units where malaria transmission has been interrupted.

Following presentation of the draft Regional Action Framework for Malaria Control and Elimination 2016 – 2020 there was further consultation and discussion about the proposed framework, its structure and milestones. There was broad consensus among all participants regarding the framework.

2.1.5 Progress on malaria elimination in the GMS with special reference to making malaria surveillance a core intervention

Dr Maru Aregawi, acting ERAR Coordinator, presented malaria surveillance and response activities and strategies starting with a background on how much is invested for malaria globally, which was US$ 2.5 billion in 2014. However little investment is made in surveillance, as evidenced by the World Malaria Reports stating that many countries, particularly in Africa and Eastern Mediterranean Regions (no Western Pacific Region country was in the list), have insufficient surveillance and neither adequate strategies nor resources in place to fix this gap. This could be brought about by countries having poor surveillance systems in general, stemming from poor health systems, and data not being used for programme management and monitoring progress due to poor quality (inconsistent and/or incomplete).

There are different kinds of surveillance, depending on the goal of national programmes: burden reduction, elimination, or prevention or re-introduction. In countries where the goal is to reduce malaria burden and move towards elimination, surveillance system should include:

- aggregate-based surveillance, passive case detection
- monthly summarization with standard graphs and tables
- stratification of areas with higher incidence
- micro-stratification based on case-based surveillance
- weekly for epidemics monitoring
- line-listing of inpatients and deaths, investigate clustering of cases
- intensify and adjust interventions in high burden areas, reduce morbidity.

For countries in elimination phase (the goal is to interrupt transmission) where each case is parasitologically confirmed irrespective of presence of clinical symptoms; where cases are sporadic and mostly imported and where cases are localized in very few foci, surveillance system should include:

- case-based surveillance including in the private sector
- immediate case notification
- case investigation and classification
- foci investigation and classification.

Malaria diagnosis in countries aiming for elimination should be more accurate, sensitive to differentiate strains, recrudescence, relapse, and detect asymptomatic infections. This will entail a
high quality laboratory network to ensure all cases are detected and to minimize false negative and avoid secondary cases. Technology, such as geographic information system for stratification and risk mapping, are needed, as well as real time reporting (such as using short-messaging system, mobile devices, and online databases).

For countries aiming to prevent re-introduction of malaria where all cases are reported, surveillance system must:

- be vigilant and watchful
- scale-down case based surveillance
- assess vulnerability, receptivity
- ensure that general service maintains capacity for early detection, investigation and response.

Surveillance characteristics in high-low transmission, elimination and prevention of re-introduction are summarized below.

<table>
<thead>
<tr>
<th>Surveillance components/systems</th>
<th>Reduction of burden</th>
<th>Low-very low</th>
<th>Elimination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data elements</td>
<td>Aggregate counts</td>
<td>Case-based, foci</td>
<td>Case-based, foci Import cases</td>
</tr>
<tr>
<td>Case definition</td>
<td>Confirmed + fever</td>
<td>Any malaria infection</td>
<td>Any malaria infection</td>
</tr>
<tr>
<td>Case listing</td>
<td>Admissions, deaths</td>
<td>All cases (if cases are manageable)</td>
<td>All cases</td>
</tr>
<tr>
<td>Investigation and classification</td>
<td>Stratification (by area)</td>
<td>Case and foci investigation</td>
<td>Case and foci investigation and classification</td>
</tr>
<tr>
<td>Time scale</td>
<td>Monthly summary, weekly for epidemics</td>
<td>Monthly summary, weekly for epidemics, daily (if few and linked to response)</td>
<td>Immediate notification</td>
</tr>
</tbody>
</table>

Key malaria indicators for each setting were also presented.

2.2 Technical session 2: Discussion on the draft Regional Action Framework for Malaria Control and Elimination in the Western Pacific 2016–2020

2.2.1 Capacity-building to accelerate progress towards malaria elimination

Dr Leonard Ortega, Team Leader, Technical Support and Capacity Building, WHO/GMP, opened Session 2. He discussed WHO’s capacity-building activities to reach targets set by the GTS. He highlighted that malaria elimination requires institutional and human capacities and that sufficient staff and the right mix of technical and managerial skills are needed. He also highlighted that these skills are not only for programme managers but also for WHO staff. These skills are: malaria control planning and management; epidemiology; entomology, vector ecology and vector control; surveillance, epidemic preparedness and response; monitoring and evaluation; quality assurance/quality control of malaria diagnostics; training; procurement and logistics management; integrated delivery of basic health services; advocacy for political commitment; and behaviour change communications, especially for hard to reach populations, such as migrant and mobile populations and ethnic minorities. Tools are available from WHO and could be easily translated and adapted to local settings. International and in-country collaboration or linkages with partners, such as WHO Collaborating Centres and training institutions, and choosing the right staff to undergo training are important.
2.2.2 Pillar 1: Ensure universal access to malaria prevention, diagnosis and treatment

Dr Robert Condon introduced the first pillar which is to "Ensure universal access to malaria prevention, diagnosis and treatment ". This pillar has three components: vector control; chemoprevention; and diagnostic testing and treatment. It has two objectives: to achieve universal coverage with LLINs and/or indoor residual spraying for all at-risk populations no later than 2020, especially in areas of high transmission; and to achieve universal access to quality assured malaria diagnosis and treatment no later than 2020. These objectives are related to UHC’s three elements: equity of access (everyone who needs health services should get them, not only those who can pay for them); quality (health services should be of good enough quality to improve the health of those receiving services); and financial risk protection (ensuring that the cost of using services does not put people at-risk of financial harm). Pillar 1 is the entry point for countries with higher malaria incidence rates and transmission intensity. Its cornerstones are universal coverage of the population at-risk with appropriate vector control and other preventive interventions and effective information on how to reduce the risk of malaria, backed up by ready access to quality-assured diagnosis, treatment and clinical follow-up.

Comments and suggestions on Pillar 1 included requests to provide clear guidance on how countries move from UHC to foci-based interventions when moving from control to pre-elimination/elimination phase; define indicators for both control and pre-elimination/elimination phase; explain the possible role of MDA and its use in isolated areas or communities reaching elimination.

2.2.3 Pillar 2: Accelerate efforts towards malaria elimination and attainment of malaria free-status

Pillar 2 was presented and discussed by Dr Kevin Palmer. This pillar aims to "Accelerate efforts towards malaria elimination and attainment of malaria free-status ". It has four objectives: interrupt transmission of \textit{P. falciparum} in areas (baseline 2015) of multidrug resistance, including resistance to ACT, by no later than 2020, accelerate progress towards malaria elimination in countries aiming for elimination by 2020, reduce malaria incidence in identified high-transmission areas to less than 1 case per 1000 population-at-risk by 2020 and define first-level subnational administrative units where malaria transmission has been interrupted, and prevent the re-establishment of malaria in those areas. Pillar 2 described the importance of programme re-orientation, ensuring integration with and strengthening of health systems to achieve malaria free-status. Mitigating the risk of further drug resistance and ensuring treatment policies include the most efficacious treatment were emphasized. In areas with a high burden of malaria, there needs to be a major effort to reduce malaria to low levels using existing intervention strategies. As transmission is reduced and malaria incidence starts to approach low levels, countries need to intensify efforts to reduce onward secondary transmission through better targeting of control interventions. Programmes are encouraged to establish or strengthen malaria surveillance systems to better defining areas where actual transmission is happening (see Pillar 3).

There are several hurdles in the path towards malaria elimination. Among these are: artemisinin resistance in the GMS; \textit{P. vivax}, which will be a determining factor for countries elsewhere in the Region, thus expanded use of primaquine is necessary; addressing the challenge of \textit{P. knowlesi}, although zoonosis; mobile and migrant populations, especially in the Mekong and the Southern Philippines; addressing the challenge of outdoor biting mosquitoes; and human resources capacity. The transition towards elimination will require continued government commitment until the last parasite has been eliminated; continued funding from government and partners; and a strengthened health delivery system, including adequate staff and commodities, as malaria is integrated into the general health services.

An estimated malaria annual parasite incidence trajectory based on recent trends was presented. It shows that China, Malaysia, and, the Republic of Korea can achieve elimination by 2020. The Philippines, Papua New Guinea, Solomon Islands and Vanuatu are expected to reach elimination by 2030. Several indicators were discussed that could be used to monitor regional progress. However, it
was emphasized that all indicators used by countries should have the same denominator to allow comparability across countries. *P. vivax* and the challenge of using primaquine in areas with known glucose 6-phosphate dehydrogenase deficiency was also discussed. There is an existing WHO guideline on this and it was suggested that this should be used, while waiting for approval of point-of-care tests to determine G6PD deficiency.

2.2.4 Pillar 3: Transform malaria surveillance into a key intervention

Professor Gao Qui presented Pillar 3, "Transform malaria surveillance into a key intervention". This pillar has one objective: to establish elimination-capable surveillance systems in countries of the GMS by 2017, and in all other malaria-affected countries of the Western Pacific Region by 2020.

In this pillar, the importance of establishing an elimination-capable surveillance system was described highlighting that without this system, malaria elimination will not be realized. Key actions, the design and implementation of the system itself were also described. Investment in human resources and infrastructure for surveillance are highlighted as important backbones of the surveillance system. The difference between surveillance in a malaria control setting versus elimination setting was described. In a control setting, surveillance is part of the programme and the goal is to find high-risk areas and populations. Surveillance in a control setting is used to plan and evaluate national/regional annual control activity, with data collected and analysed periodically. In an elimination setting, surveillance is the key strategy in a programme and the goal is to find each case and foci. Surveillance in an elimination setting is used to block transmission on foci before secondary transmission occurs. Also, data reporting, analysis and feedback is regular and timely, based on individual cases.

Surveillance is key in both control and elimination settings, including for the malaria case reporting system, malaria surveillance and response system, case finding and reporting, case investigation and classification, foci investigation and classification and foci response. As areas and countries achieve interruption of transmission, programmatic efforts need to also focus on prevention of reintroduction. The probability of malaria becoming re-established in a malaria-free area varies according to the area's receptivity and vulnerability. Thus, in areas reaching malaria-free status, health systems should maintain the capacity for: early diagnosis of all malaria cases through a system of case-based surveillance and rapid response; treatment of all malaria cases promptly and prevent onward transmission and risk of death from imported malaria; and improvement of preventive practices among travellers through effective and evidence-based pre-travel health advice. As an example, China's 1-3-7 surveillance and response strategy was described where all malaria cases are reported within one day by the hospital, the case is confirmed and classified within three days by CDC, and foci investigation and response is conducted within seven days by CDC.

Participants noted that the framework highlights surveillance as a key intervention. However, the discussions on surveillance were not adequate and countries requested further discussion on how best to transform surveillance into a key intervention. During the discussion it was highlighted that it will be useful for countries to better understand the indicators that will be used to measure progress in both control and elimination settings; the use and adaptation of existing surveillance systems; and importance of data quality and completeness.

2.2.5 Closing remarks

Dr Jacobs gave the closing remarks. He thanked everyone for coming to Manila to review and discuss the draft Regional Action Framework for Malaria Control and Elimination in the Western Pacific 2016–2020, which will be a key document for countries as well as WHO in the next five years to accelerate malaria elimination in the Region. He stated that the actions proposed in the draft framework will lay the groundwork for countries to accelerate towards elimination.
3. CONCLUSIONS AND RECOMMENDATIONS

The draft Regional Action Framework for Malaria Control and Elimination in the Western Pacific 2016–2020 will be based on the GTS and will be harmonized with the *Strategy for Malaria Elimination in the Greater Mekong Subregion 2015–2030*. The draft framework will have an overall vision of a Region free of malaria. Its goals are to: (1) reduce mortality due to malaria in the Region by 50%, and morbidity by at least 30% by 2020, relative to 2015 baselines; (2) achieve malaria elimination in three countries by 2020; and (3) establish elimination-capable surveillance systems in countries of the GMS by 2017, and in all countries of the Region by 2020.

Similar to the GTS, the draft framework will have three pillars with separate objectives for each pillar and two enabling factors. The following consensus was reached regarding changes to the draft framework at the conclusion of the meeting.

- Pillar 1: provide clarity on how countries move from universal health coverage to foci-based interventions when nearing elimination; and clearly define the indicators for both control and elimination settings.
- Pillar 2: suggested indicators to guide countries should be clearly defined and results made comparable.
- Pillar 3: provide reference to an elimination-capable surveillance system; provide more information on surveillance; and provide a link to details necessary for vector surveillance in elimination settings.
- Supporting element 1: provide examples of synergies or activities that can be integrated for efficiency. For example, consider pooled procurements of small quantities of commodities in elimination phase.
- Supporting element 2: two other research elements for consideration are improved tools to measure receptivity and vulnerability, and better defining malaria burden among mobile/migrant populations.
- Other suggestions/comments included that WHO needs to strengthen technical assistance, and coordination of activities including implementation support.
### Day 1: Wednesday, 18 May 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter</th>
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<tbody>
<tr>
<td>08:30 – 09:00</td>
<td>Registration</td>
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<tr>
<td>09:00 – 09:30</td>
<td>Welcome address</td>
<td>Dr Shin Young-soo Regional Director</td>
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<tr>
<td></td>
<td>Opening remarks</td>
<td>Dr Mark Jacobs Director, Division of Communicable Diseases</td>
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<tr>
<td></td>
<td>Meeting objectives</td>
<td>Dr Rabindra Abeyasinghe Coordinator, Malaria, other Vectorborne and Parasitic Diseases</td>
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<tr>
<td></td>
<td>Self-introduction of participants and observers</td>
<td>Dr Rabindra Abeyasinghe</td>
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<tr>
<td></td>
<td>Nomination of Chair, Vice-chair and rapporteurs</td>
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<td>Administrative announcements</td>
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<tr>
<td>09:30 – 10:15</td>
<td>Group photograph on the lawn followed by coffee/tea break</td>
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<tr>
<td>10:30 – 11:00</td>
<td>Technical updates</td>
<td>Dr Pedro Alonso</td>
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<tr>
<td></td>
<td>Discussion (10–15 minutes)</td>
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<tr>
<td>11:00 – 11:15</td>
<td>Update on malaria situation in the Western Pacific Region</td>
<td>Dr Rabindra Abeyasinghe</td>
</tr>
<tr>
<td>11:15 – 11:30</td>
<td>Presentation of the draft Regional Action Framework for Malaria 2016–2020: Overview</td>
<td>Dr Rabindra Abeyasinghe</td>
</tr>
<tr>
<td>11:30 – 12:10</td>
<td>Progress on malaria elimination in the Greater Mekong Subregion with special reference to making malaria surveillance a core intervention</td>
<td>Dr Maru Aregawi Acting Coordinator, ERAR Hub</td>
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<tr>
<td></td>
<td>Discussion (10–15 minutes)</td>
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<tr>
<td>12:10 – 13:10</td>
<td>Lunch break</td>
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<tr>
<td>13:10 – 13:30</td>
<td>Capacity building to facilitate implementation of Regional Action Framework for Malaria</td>
<td>Dr Leonard Ortega Global Malaria Programme</td>
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<tr>
<td>Time</td>
<td>Pillar or Activity</td>
<td>Speaker(s)</td>
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<tr>
<td>13:30 – 13:50</td>
<td>Pillar 1: Ensure Universal Access to Malaria Prevention, Diagnosis and Treatment</td>
<td>Dr Robert Condon</td>
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<tr>
<td></td>
<td>Vector Control</td>
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<td></td>
<td>Chemoprevention</td>
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<td></td>
<td>Diagnostic testing and treatment</td>
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<tr>
<td>13:50 – 14:50</td>
<td>Discussion</td>
<td>Moderators: Chair and Vice-chair</td>
</tr>
<tr>
<td>14:50 – 15:00</td>
<td>Summary of discussions and agreements</td>
<td>Dr Chitsavang Chanthavisouk</td>
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<td></td>
<td>NPO, WHO Lao PDR</td>
<td>Dr Xiao Hong Li</td>
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<td>NPO, WHO China</td>
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<tr>
<td>15:00 – 15:15</td>
<td>Coffee/tea break</td>
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<tr>
<td>15:15 – 15:30</td>
<td>Pillar 2: Accelerate Efforts Towards Elimination and Attainment of Malaria-Free Status</td>
<td>Dr Kevin Palmer</td>
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<tr>
<td>15:30 – 16:10</td>
<td>Discussion</td>
<td>Moderators: Chair and Vice-chair</td>
</tr>
<tr>
<td>16:10 – 16:20</td>
<td>Summary of discussions and agreements</td>
<td>Dr Luciano Tuseo</td>
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<td></td>
<td>Coordinator, WHO Cambodia</td>
<td>Dr Jean-Olivier Guintran</td>
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<tr>
<td></td>
<td>Medical Officer, WHO Cambodia</td>
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<tr>
<td>16:20 – 16:30</td>
<td>Pillar 3: Transform Malaria Surveillance into a Core Intervention</td>
<td>Prof Gao Qi</td>
</tr>
<tr>
<td>16:30 – 17:00</td>
<td>Discussion</td>
<td>Moderators: Chair and Vice-chair</td>
</tr>
<tr>
<td>17:00 – 17:10</td>
<td>Summary of discussions and agreements</td>
<td>Dr Gawrie Loku Galappaththy</td>
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<tr>
<td></td>
<td>Coordinator, WHO Viet Nam</td>
<td>Dr Tran Cong Dai</td>
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<td>NPO, WHO Viet Nam</td>
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<tr>
<td>17:30 – 19:30</td>
<td>Reception dinner</td>
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</table>

Day 2: Thursday, 19 May 2016

Session 3: Discussion on the draft Regional Action Framework for Malaria 2016–2020 (continuation)

<p>| Time          | Supporting Element 1: Strengthening the enabling environment                      | Dr Rob Condon                                                            |
| 09:00 – 09:15 | Summary of Day 1                                                                  | Dr Ros Seyha                                                             |
|              |                                                                                | Technical Officer, WHO Solomon Islands                                   |
|              |                                                                                | Ms Glenda Gonzales                                                       |
|              |                                                                                | Technical Officer, MVP/WPRO                                               |
| 09:15 – 09:30| Supporting Element 1: Strengthening the enabling environment                      |                                                                             |
| 09:30 – 10:15| Discussion                                                                        | Moderators: Chair and Vice-chair                                         |
| 10:15 – 10:25| Summary of discussions and agreements                                              | Dr Zaixing Zhang                                                         |
|              |                                                                                | Medical Officer, WHO Philippines                                          |
|              |                                                                                | Dr Md Abdur Rashid                                                       |
|              |                                                                                | Technical Officer, WHO Papua New Guinea                                   |
| 10:25 – 10:55| Coffee/tea break                                                                  |                                                                             |
| 10:55 – 11:10| Supporting Element 2: Harnessing innovation and expanding research                | Dr Pedro Alonso                                                           |
| 11:10 – 11:55| Discussion                                                                        | Moderators: Chair and Vice-chair                                         |</p>
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:55 – 12:05</td>
<td>Summary of discussions and agreements</td>
<td>Mr Matthew Shortus, Technical Officer, WHO Vanuatu</td>
</tr>
<tr>
<td></td>
<td>Monitoring the implementation of the framework (15 mins)</td>
<td>Dr Rob Condon</td>
</tr>
<tr>
<td>12:05 – 13:05</td>
<td>Lunch break</td>
<td></td>
</tr>
<tr>
<td>13:05 – 13:45</td>
<td>Session 4: Meeting conclusions and recommendations</td>
<td></td>
</tr>
<tr>
<td>13:05 – 13:45</td>
<td>Presentation and discussion on the country posters</td>
<td>All</td>
</tr>
<tr>
<td>13:45 – 14:45</td>
<td>Finalization of changes on the draft regional framework</td>
<td>Dr Kevin Palmer, Dr Rob Condon, Professor Gao Qi, Dr Gawrie Loku Galappaththy</td>
</tr>
<tr>
<td>14:45 – 15:00</td>
<td>Improving use and compliance of Primaquine in the Region</td>
<td>Dr Chansuda Wongsrichanalai</td>
</tr>
<tr>
<td>15:00 – 15:30</td>
<td>Coffee/tea break</td>
<td></td>
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<tr>
<td>15:30 – 16:30</td>
<td>Prioritization of key activities to achieve targets under the following categories</td>
<td>Each country will identify three challenges, priorities and solution</td>
</tr>
<tr>
<td></td>
<td>Elimination countries (Republic of Korea, Malaysia, China, Philippines)</td>
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<tr>
<td></td>
<td>GMS (Cambodia, Lao PDR, Viet Nam)</td>
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</tr>
<tr>
<td></td>
<td>Pacific countries (Papua New Guinea, Solomon Islands, Vanuatu)</td>
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<tr>
<td>16:30 – 16:45</td>
<td>Summary of key activities</td>
<td>Dr Rob Condon and Dr Kevin Palmer</td>
</tr>
<tr>
<td>16:45 – 17:00</td>
<td>Closing remarks</td>
<td>Dr Pedro Alonso and Dr Mark Jacobs</td>
</tr>
</tbody>
</table>
ANNEX 2

LIST OF PARTICIPANTS

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