Meeting Report

Regional Meeting for Malaria Programme Managers: Achieving the 2015 Targets and Moving Towards Malaria Elimination

8-10 May 2013
Manila, Philippines

World Health Organization
Western Pacific Region


REGIONAL MEETING FOR MALARIA PROGRAMME MANAGERS:
ACHIEVING THE 2015 TARGETS AND MOVING TOWARDS MALARIA ELIMINATION
8 - 10 May 2013, Manila, Philippines

WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR THE WESTERN PACIFIC

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MEETING REPORT

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Convened by:

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NOTE

The views expressed in this report are those of the participants of the Regional Meeting for Malaria Programme Managers: Achieving the 2015 Targets and Moving Towards Malaria Elimination 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 Regional Meeting for Malaria Programme Managers: Achieving the 2015 Targets and Moving Towards Malaria Elimination, which was held in Manila, the Philippines, from 8–10 May 2013.

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Keywords
Malaria – prevention and control / Regional health planning / Disease vectors

ACRONYMS

ACT	Artemisinin-based combination therapy
ACTMalaria	Asian Collaborative Training Network for Malaria
APLMA	Asia Pacific Leaders Malaria Alliance
APMEN	Asia Pacific Malaria Elimination Network
CQ	Chloroquine
ERAR	Emergency Response to Artemisinin Resistance
Global Fund	Global Fund to fight AIDS, Tuberculosis and Malaria
G6PD	Glucose 6-Phosphate dehydrogenase
GIS	Geographic information system
GMP	Global Malaria Programme
GMS	Greater Mekong Subregion
ITN	Insecticide-treated net
IVM	Integrated vector management
LLIN	Long-lasting insecticide-treated net
MPAC	Malaria Policy Advisory Committee
MPR	Malaria programme review
MSAT	Mass screening and treatment
NGO	Nongovernmental organization
NMCP	National Malaria Control Program
NMSP	National Malaria Strategic Plan
NSP	National strategic plan
PhilMIS	Philippine Malaria Information System
PQ	Primaquine
PSI	Population Services International
Pv	*Plasmodium vivax*
QA	Quality assurance
RBM	Roll Back Malaria Partnership
RDT	Rapid diagnostic test
SME	Surveillance, monitoring and evaluation
SOP	Standard operating procedures
TAG	Technical advisory group
TES	Therapeutic efficacy study
UHC	Universal health coverage
VMW	Village malaria worker
WHO	World Health Organization

SUMMARY

To accelerate the achievement of the 2015 global and regional targets and move towards malaria elimination, the WHO Regional Office for the Western Pacific convened a meeting for Malaria Programme Managers. Guided by the Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010–2015), the move towards malaria elimination by endemic countries in the Western Pacific Region has gained momentum. Remarkable progress was reported between 2000 and 2011, with a 46% reduction in malaria morbidity and a 75% reduction in malaria mortality rates. However, there is a great variation between countries, and the burden of malaria is still substantial in parts of the Region.

Global and regional commitments, including the Millennium Development Goals and several World Health Assembly resolutions on malaria, urged Member States to ensure adequate coverage of at-risk populations with preventive and curative interventions, with the goal of reducing the burden of malaria by at least 50% by 2010 and 75% by 2015. The commitments in the Asia-Pacific region were strengthened by high-level support received during the Malaria 2012: Saving Lives in the Asia-Pacific conference in Sydney, Australia, as well as the Declaration of the 7th East Asian Summit on Regional Responses to Malaria Control and Addressing Resistance to Antimalarial Medicines in Brunei Darussalam in 2013.

The meeting was held back-to-back with the second meeting of the Pacific Malaria Drug Resistance Monitoring Network on 6–7 May 2013.

The objectives of the three-day meeting were:

1) review country progress towards 2015 targets in the reduction of malaria burden and agree on the way forward to accelerate the achievement of these targets;

2) updated the current developments pertaining to malaria control and elimination in the Region, including artemisinin resistance and vivax malaria;

3) share country experiences and receive guidance on malaria programme reviews; and

4) agree on the way forward for surveillance, monitoring and evaluation; and elimination, especially at the subnational level.

The meeting brought together malaria programme managers, government decision-makers, partners, experts, and other stakeholders, to review progress towards achieving global and regional commitments, and define the way forward for each malaria-endemic country in the Region. Participants shared technical updates and reviewed recent developments in the fight against malaria in the Region, including regional initiatives, and identified country gaps and reviewed operational plans, with a view to achieving the objectives listed above.

There was a significant reduction in the regional average of confirmed malaria cases (73%) and deaths (46%) in 2011 compared with the 2000 baseline, despite challenges. However, progress varies from country to country. While some have achieved World Health Assembly resolutions on reducing malaria cases and deaths by 75% by 2015 compared to the 2000 baseline, others need to scale up and sustain high coverage of effective interventions. Nine out of 10 countries in the Region have switched national

goals to include elimination objectives and there is a real chance that the 2015 targets can be achieved in all countries.

Reversing the threat of artemisinin resistance recorded gains as well. Four countries in the Greater Mekong Subregion (GMS) – Cambodia, Myanmar, Thailand, and Viet Nam – have identified artemisinin-resistant *Plasmodium falciparum* in some provinces. A joint assessment report in GMS concluded: "Not enough is yet being done, with enough intensity, coverage and quality." The Emergency Response to Artemisinin Resistance in the Greater Mekong Subregion – Framework for Action 2013-2015 (ERAR) has been launched and implementation is being coordinated by a WHO-ERAR hub based in Phnom Penh, Cambodia. Technical assistance to countries is being intensified for the rapid update of national strategic plans with ERAR activities and gap analysis. Resource mobilization, including coordinating the Global Fund to fight AIDS, Tuberculosis and Malaria (Global Fund) US$ 100 million for the Regional Artemisinin-resistance Initiative (RAI), is ongoing. Antimalarial drug resistance monitoring networks (Mekong and Pacific) are being strengthened to intensify antimalarial drug efficacy monitoring. Over the past two years, artemisinin resistance has attracted unprecedented political commitment at the highest level of government,

A malaria programme review (MPR) was conducted in Cambodia and Papua New Guinea and is ongoing in the Philippines, Solomon Islands and Vanuatu, while China, the Lao People's Democratic Republic, and the Republic of Korea are in the planning phase.

Participants agreed that the way forward for surveillance, monitoring and evaluation; and elimination, especially at the subnational level, is to mandatorily define at-risk populations at regular intervals based on malaria data and other factors, including the characteristics of the vectors, climate and vegetation. The use of absolute values instead of rates is advised, especially in low-transmission areas. Participants encouraged countries to engage in country consultations for estimating the burden of malaria and to promote use of data for programme decision-making.

Recommendations of the meeting are as follows.

For Countries

1) All countries need to collaborate in the containment of artemisinin resistance, including conducting routine therapeutic efficacy studies (TES), engagement with the private sector, strengthening surveillance and national regulatory mechanisms to avoid the use of monotherapies, substandard and counterfeit drugs.

2) Considering persistent difficulties in maintaining high-quality malaria microscopy in the periphery, and the satisfactory specificity and sensitivity of several malaria rapid diagnostic tests (RDTs) observed in recent years, RDTs can now be considered a standard diagnostic method for malaria and should be deployed in outpatient health services and at the community level.

3) All countries should apply confirmatory diagnosis universally, update stratification on the basis of malaria surveillance indicators, and use data for analysis and decision-making especially at subnational level.

4) Countries should strengthen national procurement and supply management systems, address bottlenecks and monitor availability of quality-assured products in public and private sectors.

5) Countries where primaquine sensitivity is a concern should enhance strategies for safety in the treatment of *P. vivax* (e.g. by deploying Glucose 6-Phosphate dehydrogenase (G6PD)

deficiency testing at the periphery of the health services, including pharmaco-vigilance for reporting adverse effects) as well as strengthening health education for adherence.

6) Strengthen entomological capacities and undertake regular insecticide resistance monitoring as detailed in the Global Plan for Insecticide Resistance Management.

7) Programmes should prioritize the control of malaria among internal and cross-border mobile populations. Deployment of special tools, targeted intersectoral action and innovative procedures make it possible to engage more effectively with these population groups.

8) Based on findings from malaria programme reviews, update national strategic plans, including detailed costing, and actively advocate at all levels to generate sustained domestic and international support.

WHO

1) Headquarters should provide advice on application of focused screening and treatment, mass screening and treatment (MSAT), mass drug administration (MDA) in elimination settings.

2) Headquarters should provide operational definition of outbreaks at national and sub-national levels.

3) Develop guidelines on *P. vivax* control and elimination, including evidence on the efficacy of therapies for *P. vivax*.

4) Headquarters should provide guidance on the role and use of recently developed point-of-care use of glucose 6-phosphate dehydrogenase (G6PD) deficiency tests.

5) WHO, in consultation with experts/national programmes, should provide definitions of cross-border migrants and operational strategies in different settings/migratory patterns, including recommendations for multisectoral involvement.

6) At all levels, support national efforts to advocate at a political level concerning migration and related issues.

7) Advocate for sustained availability of resources, through support to countries for assessment of the impact of investments in terms of reduction of burden as well as potential risks from termination of external financing.

8) The WHO Regional Office for the Western Pacific, in collaboration with partners, should establish a regional platform to rapidly respond to shortfalls/stock-outs**.**

9) Establishment of a regional malaria technical advisory group should be considered by the WHO Western Pacific Regional Office.

Partners

1) The Global Fund should adapt voluntary pooled procurement of long-lasting insecticide nets (LLINs), RDTs and medicines based on country needs and not on cost alone**.**

2) Regional efforts should be made by partners to improve coordination and intensify advocacy among donors and other stakeholders.

1. INTRODUCTION

1.1 Background

The move towards malaria elimination by endemic countries in the Western Pacific Region has gained momentum, with guidance from the Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010–2015). Global and regional commitments, including the Millennium Development Goals and several World Health Assembly resolutions on malaria, urged Member States to ensure adequate coverage of at-risk populations with preventive and curative interventions, in order to reduce the burden of malaria by at least 50% by 2010 and 75% by 2015, compared with a 2000 baseline. The commitments in the Asia-Pacific region were strengthened by the high-level support received during the Malaria 2012: Saving Lives in the Asia-Pacific conference in Sydney, Australia, as well as the Declaration of the 7th East Asian Summit on Regional Responses to Malaria Control and Addressing Resistance to Antimalarial Medicines in Brunei Darussalam in 2013.

This three-day meeting took place at the WHO Regional Office for the Western Pacific in Manila, Philippines, back to back with the preceding two-day Pacific Malaria Drug Resistance Monitoring Network meeting. The meeting brought together malaria programme managers, government decision-makers, partners, experts, and other stakeholders to review progress and define the way forward for the region and each malaria-endemic country (for program and list of participants see Annexes 1 and 2).

1.2 Objectives

The objectives of the meeting are included in the summary page.

1.3 Opening remarks

In his opening remarks Dr Shin Young-soo, WHO Regional Director for the Western Pacific, mentioned the goal of a malaria-free Asia Pacific, with a 46% decline in morbidity and 73% decrease in mortality between 2000 and 2011. Dr Shin also noted that nine out of 10 malaria-endemic countries in the Region are now embarking on malaria elimination.

He commended the commitment of everyone working on malaria for the significant reduction in malaria burden. However, he explained that progress has not been uniform with some countries, such as the Philippines and Viet Nam, having already reached their 2015 targets while others were progressing more slowly. He also acknowledged the remarkable investment made by development partners, and expressed his gratitude for their generosity and commitment.

Dr Shin cited the surge of political support from the international community and world leaders. He pointed out that there remains a great need for both financial and political support in light of the challenges that lie ahead for malaria control and elimination, stressing the emergence of artemisinin resistance in four countries of the GMS as the most serious. WHO recently launched its Framework on Emergency Response to Artemisinin Resistance (ERAR) in the Greater Mekong Subregion, which is designed to contain and eliminate artemisinin-resistant malaria parasites. A WHO regional hub located in Phnom Penh, Cambodia, has been established to coordinate response activities. Other challenges include the need to find ways to reach marginalized communities and achieve universal access, including improving the capacity of health systems to facilitate this, Dr Shin said.

Dr Shin reminded participants that 2015 is approaching and urged everyone to work together to achieve the targets. He encouraged the group to make use of the available effective tools and the support from committed partners to get the job done. He also acknowledged the presence of four former regional advisers who are now working in various parts of the world as technical advisers for malaria and other vectorborne diseases.

1.4 Nomination of chair, vice-chair and rapporteur

On behalf of the Regional Director, Dr Eva Maria Christophel, Team Leader, Malaria other Vectorborne and Parasitic Diseases (MVP) unit in the WHO Regional Office for the Western Pacific, presided over the election of the officers for the meeting. Dr Mario Baquilod, Medical Officer, in charge of Infectious Disease Control in the Department of Health, Philippines was nominated as Chair. Mr Leo Makita, Manager of the National Malaria Control Program of Papua New Guinea was nominated as Vice-chair. Dr Kheng Sim, Deputy Director of the National Center for Parasitology, Entomology and Malaria Control Program of Cambodia was nominated as rapporteur. The nominations were endorsed by all participants.

2. PROCEEDINGS

2.1 Progress towards 2015 targets in the Region

Dr Eva Maria Christophel reviewed the commitments made by Member States to achieve the Millennium Development Goals (MDG 6: to have halted by 2015 and begun to reverse the incidence of malaria), World Health Assembly Resolution 58.2 (75% reduction in malaria cases and deaths by 2015 from 2000 baseline), and the Regional Action Plan for Malaria Control and Elimination in the Western Pacific 2010–2015 (50% reduction in malaria cases and deaths by 2015 from 2007 baseline). She also reminded the body about the agreement to work together to achieve goals, targets and priority actions in the Asia Pacific region, namely: elimination of malaria in the longer term in half of endemic countries by 2025 and a reduction of malaria cases and deaths by 75%, including containment of artemisinin resistance by 2015.

Dr Christophel cited the success of the Philippines and Viet Nam having already reached the target reduction for both morbidity and mortality, while other countries are at various stages. Nine out of 10 countries have switched national goals to include elimination goals. She also pointed out that there continue to be all four malaria species in the Region with the proportion of vivax malaria increasing and *falciparum malaria* decreasing, with attendant implications.

Major issues highlighted include achieving and sustaining universal access and obtaining sustainable funding. Achieving universal access includes the challenge of mobilizing and ensuring people use mosquito nets, and the lack of clear measures in terms of universal access for treatment and diagnosis. There is also concern that unreached population groups in different countries, especially migrants and other mobile populations, might be left out of the normal distribution and activities of the malaria programme for lack of a residence certificate, or because they are illegal workers, among other reasons.

Dr Christophel welcomed the funding support provided to programmes by the Global Fund (almost US$ 900 million over the past decade) and other donors, particularly the Australian Government Department of Foreign Affairs and Trade and the United States Agency for International Development, as well as the increase in government budgets in some countries. However, she also

pointed out that some countries have become so dependent on the Global Fund that reductions in support could result in the possible collapse of national programmes. She cited how countries such as China have been cut off from the Global Fund because they have moved to a higher income level. The Lao People's Democratic Republic and Viet Nam are suffering from cancellation of the Round 11 grant. There is some uncertainty about future funding, both in terms of actual amounts and the mechanisms by which this may be accessed. If unresolved, these issues would affect the achievement of regional and global targets.

Despite successes, there is still a risk of malaria resurgence. Dr Christophel shared the actions the Region has committed to in response to artemisinin resistance, such as the Emergency Response to Artemisinin Resistance in the GMS, intensification of malaria surveillance, antimalarial drug efficacy monitoring, research, and resource mobilization. Such actions go beyond the malaria programme by also working closely with pharmaceuticals and other health programmes, such as maternal and child health and the expanded programme on immunization.

There is unprecedented political commitment from international bodies and world leaders for malaria control and elimination, including combating malaria drug resistance. This and the available tools and funding support make the achievement of the 2015 targets possible for all countries, but this will necessitate a "not business as usual" approach with strong commitment and collaboration among partners.

2.2 Global direction in malaria

Dr Richard Cibulskis, Coordinator of the Strategy, Economics and Elimination unit in the Global Malaria Program at WHO Headquarters, gave the global overview of malaria. He said there was a significant rise in funding for malaria control (both from domestic funding and the Global Fund) until 2010 and 2011, but since then it has more or less stagnated.

The global target for malaria financing to ensure universal coverage is US$ 5 billion a year, but the global community is falling short of this target, with only half of this amount available. The money invested in malaria control has led to great improvements in control programmes, with an increased number of households with at least one insecticide-treated net (ITN), but with a corresponding plateau as funding stagnated in the latter years. There was also a substantial increase in patients receiving diagnostic tests (particularly in East Mediterranean and Sub-Saharan Africa) mainly because of the availability of RDTs and artemisinin-based combination therapies (ACTs) for the treatment of *Plasmodium falciparum*. This resulted in a dramatic decrease in malaria incidence.

Dr Cibulskis reported that they have been able to judge trends in 58 out of 99 countries using surveillance data, noting that 50 of the 58 are on track to reduce cases by 75% by 2015. All six endemic countries in the European Region are on track, while in the Western Pacific Region, nine out of 10 malaria endemic countries are on track. The data are not perfect and there is still room for improvement and systems strengthening. The 50 that are on track tend to be the smaller countries, accounting for only 3% of global cases. This is partly because progress is faster in smaller countries (investments were also bigger in smaller countries) and also because surveillance is poorer in big countries. Surveillance is weakest in those countries where the malaria burden is greatest. Trends in these countries are estimated using different models.

There were 219 million cases and 600 000 deaths globally in 2010 concentrated in a handful of countries. Progress in these countries has been slower, and greater investments for malaria control are needed. Dr Cibulskis explained that 17 countries accounted for 80% of estimated cases and 14 countries accounted for 80% of estimated deaths in 2010.

He emphasized the need for continued investment because the greatest single threat to continued success in malaria control and elimination is financial rather than biological. He showed examples of how malaria resurged with interrupted investment.

The thrust is to ensure universal access to interventions (vector control, LLIN, diagnostic testing and treatment) but as the burden gets lower and moves towards elimination, vector control can be more focal, with increased emphasis on case investigation, active case detection and accessing hard-to-reach populations. In high-burden countries, much of the programme costs are on commodities. Further down the burden scale, more of the resources are devoted to personnel and health systems.

As malaria control becomes more focal there is a need for better surveillance. WHO has launched the T3 system: test, treat, track. To spend resources wisely, it is critical to determine where malaria is actually occurring and how it varies over time. Dr Cibulskis said that with a changing landscape, there is a need for a new global strategy, and this has to be aligned with the post-2015 MDG agenda.

2.3 Technical Session 1: Progress in countries towards 2015 targets

2.3.1 Papua New Guinea

The presentation started with an illustration of the magnitude of the problem of malaria in the country, with 90% of the population at risk.

There was a downward trend in malaria cases and deaths from 2000 to 2012, which, according to the presenter, was made possible through Global Fund resources. The current trends may be attributed to increased LLIN coverage and increased access to diagnostic and treatment services. RDT has been rolled out for only 18 months together with the new treatment. The treatment policy requires diagnostic confirmation with RDT before treatment with an ACT. Another key factor in the success of the national programme is the strong public-private partnership, with research institutions, provincial health offices and the WHO involved. One challenge is the need to strengthen the capacity of health workers for case management. The field health facilities are more adapted to the new treatment policy than hospitals, which resulted in patients being referred to the former. There is also an increasing use of and preference for RDTs (over microscopy).

Challenges cited are as follows: (1) maintaining the level of funding and technical support to sustain progress; (2) improving coverage and quality of interventions, particularly the roll-out of ACT use and increase compliance to it; (3) maintaining LLIN coverage; (4) resource mobilization; and (5) the need for better support for business planning for malaria at the provincial level and capacity building, surveillance and monitoring and evaluation.

In response to a question from the floor regarding the availability of community-based diagnosis and treatment, it was explained that home-based management of malaria is being piloted by Population Services International (PSI), with support from the Global Fund Round 8 grant.

2.3.2 Solomon Islands

Nine out of 10 provinces in Solomon Islands are endemic for malaria, where 98% of the population is at risk. Annual Parasite Incidence (API) decreased from 420 per 1000 in 1992 to 49 per 1000 in 2011 (88% reduction). While there is case reduction at the national level, the proportion of *Plasmodium vivax (*relative to *Plasmodium falciparum)* has been increasing in areas with lower endemicity. Malaria mortality rate has also been on the decline, at 25.3 per 100 000 in 2006 to 3.2 per 100 000 in 2012. A phased elimination strategy is being implemented in Isabel and Temotu provinces. Work is continuing on a malaria risk stratification map to direct appropriate interventions.

The goals and objectives of the programme were presented. Key achievements in coverage were 85.5 % of uncomplicated malaria infections treated with ACTs, 91.4% of population protected by LLINs (based on 2011 Malaria Indicator Survey) and 69.4% of children under age five sleeping under an LLIN/ITN the previous night.

Successes cited were attributed to financial support from international agencies, sustenance of a proper programme structure, macro- and micro-planning, and strong partnership with international, regional and national agencies including nongovernmental organizations (NGOs).

Challenges in achieving the 2015 targets include the late release of funds from the Global Fund, sustaining motivation of staff, strengthening procurement and logistics management, and improving surveillance and community mobilization.

2.3.3 Vanuatu

A high proportion (85%) of LLIN coverage for the general population at risk, but lower coverage for children under five (66%) and pregnant women (51%) achieved. Also a high proportion of confirmed cases and a relatively good proportion (95%) of confirmed cases treated with ACT. The prevalence (for 2011) was also shown—0.6% by microscopy and 2% by PCR. Incidence, on the other hand, was 12.6 per 1000 population. The roll-out of RDT and ACT use were cited as among the key successes of the programme. The programme is faced with a decision on whether to continue relying on microscopy or shift completely to RDT. Significant reduction has been attributed to partnerships, funding support, and political commitment for malaria. Challenges include the difficulty in ensuring complete reporting from all facilities, the uncertainty of funding after 2014.

2.3.4 Philippines

Currently, 58 out of 80 provinces are endemic for malaria. The Philippines is going for a phased (province by province) elimination, and as of mid-2013, 27 provinces have been declared malaria-free. Two provinces are up for evaluation as malaria-free in 2013. The country has already achieved the MDG targets for both morbidity and mortality, with declining rates since 2007 and 2005, respectively. The improvement in trends is consistent with the period of support from Global Fund.

With regard to the burden of *P. vivax*, the proportion relative to *Pf* has remained the same at a range of 25% to 28%. Currently, chloroquine (CQ) plus primaquine (PQ) are being used with ACT as second-line treatment. Intervention coverage is also high for patients treated with ACT (95%), the population protected by LLIN (97%), and children under five sleeping under an ITN (99%).

Key successes include the strengthening of diagnostic facilities (microscopy and RDT) and establishment of a quality assurance (QA) system for malaria microscopy; high coverage in LLINs among endemic populations; guidelines and strategic plans developed including the Malaria Manual of Operations 2009 and Malaria Medium Term Development Plan (2011–2016); and national, regional, subnational or provincial, implementation and funding partnerships from the national and local government, regional health offices and external support from the Australian Government Department of Foreign Affairs and Trade and the Global Fund.

Key challenges include the need for strengthening of the surveillance system (classification and containment of imported cases); sustaining logistics supply and human resources in all areas; and the need to update the strategic plan to address control and elimination goals for the Philippines 2014–2020.

2.3.5 Malaysia

Malaria cases were maintained at a low level and in 2011 the country moved to implement the strategic elimination plan, with a target of eliminating locally acquired malaria by 2020.

There was a 70% reduction in incidence and a 67% decline in mortality rate from 2000 to 2012. *P. knowlesi* comprises the majority of cases (about 38%), followed by *P. vivax* (31%), *P. falciparum* (19%), and *P. malariae* (10%), *P. ovale* (0.2%), and mixed infections (1.4%). Sabah and Sarawak have always had the most number of malaria cases despite a significant decline over the past 12 years.

The features of the malaria elimination programme highlighted were a web-based program where cases are encoded and can be monitored real-time at the national, state, or district level, integrated vector management (IVM) implementation in partnership with other agencies and communities, nationwide enforcement of standard guidelines for the management of malaria, guidelines on outbreak management, community participation in malaria prevention activities through public health volunteers, and allocation of 40% of the disease control budget to vector control activities, training, and equipment.

A success factor cited was the support from plantations located in rural areas, particularly in Sabah and Sarawak. The plantations have provided housing and transport for malaria control staff, supplies such as ITNs and insecticides for spraying, health clinics with microscopy services as well as office facilities for field staff.

Challenges mentioned were the prevalence of *P. knowlesi*, reaching isolated communities living in mountainous areas with dense forests, the diversity of vectors, and the influx of foreign workers from neighbouring endemic countries to work in the plantations, a problem worsened by porous sea and land borders, making undocumented migration a significant challenge.

Malaysia aims to have no locally acquired malaria cases in Peninsular Malaysia by 2015 and in Sabah and Sarawak by 2017. The country intends to achieve elimination by sustaining interagency collaboration and primary health care volunteers' participation in malaria control and prevention activities, sharing best practices from the Sabah programme partnerships with other state vector offices including assessment of the impact of these partnerships.

2.3.6 Republic of Korea

The presentation started with an illustration of the distribution of malaria cases in the country—focused mostly in the areas near the demilitarized zone bordering the Democratic People's Republic of Korea.

Malaria was eliminated in the late 1970s but it re-emerged in 1993 and since then cases have been fluctuating. By 2011, there was a significant reduction, with only 500 cases reported as of 2012. Incidence decreased by 88% from 2000 to 2012. With a rate of 0.01 per 1000 population, the Republic of Korea is now moving towards eliminating malaria.

Mapping using a geographic information system (GIS) is helpful in monitoring risk areas and the distribution of cases. Transmission occurs mostly from June to September.

The Communicable Disease Control Act designated malaria as the third national notifiable disease. All laboratory-confirmed cases must be reported to the National Infectious Disease Surveillance System without delay. Management of cases and other control measures are based on malaria control

guidelines. The use of chemoprophylaxis among soldiers was also highlighted as an effective strategy in bringing cases down.

2.3.7 China

The National Malaria Elimination Agenda was formally launched in May 2010, targeting zero locally transmitted malaria cases (except for the border areas of Yunnan Province) by the end of 2015, and indigenous malaria eliminated in the whole country by the end of 2020.

Malaria cases started to decrease in the 1980s, mostly with the roll-out of ITNs. Cases fluctuated by 2000 onwards, with a peak in 2006 due to residual reservoirs in some areas in central China, where cases could not be treated. By 2012, incidence decreased by 95% from 2006. The malaria mortality rate declined by 67% in 2012 compared to 2000.

Vivax malaria has also been on the decline, currently comprising 42% of the total malaria burden in the country. Current treatment consists of chloroquine and primaquine, which is prescribed for eight days.

Stratification of malaria endemic areas (with the county as the basic geographic unit) is done according to the number of indigenous cases per 10 000 population over a three-year period. Laboratory confirmation of reported cases has improved with a current rate of 94%. The proportion of uncomplicated malaria infections treated with ACTs is also high (100%). Vector control is one area that needs further strengthening.

Key successes cited are the significant decline in the malaria burden, limited local transmission and improvement in the laboratory capacity for diagnostic confirmation. These are attributed to strengthened political commitment and programme management, effective malaria strategies guided by technical protocols, domestic and international support and strong cooperation among different sectors. An improvement in the socioeconomic conditions has also contributed to better living conditions and increased access to preventive measures.

Challenges in achieving the 2015 targets in China would be the sustainability of financial inputs and human resources, the potential risk of imported malaria cases with increased migration and the inadequate technical knowledge and skills of medical staff.

2.3.8 Cambodia

Malaria transmission in Cambodia occurs mainly in remote and forested areas. The populations at highest risk are adult males who go to forests to work and who are more likely to be exposed to the vector. From 2000 to 2012, there was a 72% decline in incidence rate, and 93% in mortality rate. Over this period, an increasing proportion of vivax malaria (5% in 2000 versus 47% in 2012) has also been observed. The treatment of vivax malaria has shifted from CQ to ACT.

Diagnosis is both by microscopy and RDT, with an increasing use of the latter over recent years. An improvement in coverage of ACT treatment (87.6% in 2006 to 95.4% in 2012) and LLIN coverage has been reported, with the nets-per-person ratio increased from 1:2 in 2006 to 1:1 in 2010.

Key successes cited were a significant decrease in malaria incidence and mortality rates, and a decreasing number of severe malaria cases. Factors contributing to this improvement were increased political support, improved political conditions, better tools and strategies for malaria control, and socioeconomic development, resulting in greater access to transport, better roads, information and services.

Challenges include: (1) emerging resistance to ACT; (2) the presence of asymptomatic carriers with low parasitemia that are difficult to detect; (3) an increasing proportion of vivax malaria and the fact that the safe and tolerable dose of primaquine has not yet been determined; (4) mobile population that includes migrant workers; and (5) coordination and engagement of private sectors.

2.3.9 The Lao People's Democratic Republic

Based on the number of malaria cases and deaths, it appears that the Lao People's Democratic Republic may not achieve the regional target. The country met the target for the reduction of malaria cases (as specified by the Regional Action Plan for Malaria Control and Elimination in the Western Pacific) but there was an outbreak of falciparum malaria in the southern part of the country in 2012 that covered about six provinces, which contributed 95% of the cases for that year.

Coverage of treatment of confirmed cases has improved, reaching 86% by 2012. ACT is being used for all species, with artesunate used for severe falciparum cases. Stratification is done at the village level but the current criteria using interpolation is difficult to operationalize so the stratification will be modified to consider incidence rates, access to diagnostic facilities and district incidence rate.

Most of the cases are in the southern part of the country. The booming economic development in the south due to rubber plantations, dam construction, mining (gold) and logging has resulted in population movement to this part of the country, contributing to increased transmission risk.

Success factors include the high level of political commitment in support of malaria control and the strong leadership of the Ministry of Health, and diversification of partnerships and funding support being mobilized in view of a pending withdrawal of Global Fund support. The active involvement of different sectors such as the Ministry of Education, Agriculture, Forest, Industry and Energy, among others, mobilized through advocacy meetings called for by the Prime Minister's office, was cited as contributory to the control of the outbreak in 2012.

Challenges include delayed procurement, population mobility, and the increase in vivax malaria. Funding shortfalls will affect the achievement of targets specified in the national strategic plan. Large scale population movement related to economic development in the South and the emergence of artemisinin resistance requires a revision of the national strategic plan 2012–2015.

2.3.10 Viet Nam

There was an 87% decline in incidence and a 95% decline in mortality from 2000 to 2012. There is an observed increasing proportion of *P. vivax*, distributed mostly in the northern part of the country. Vivax malaria is treated with CQ and PQ. ACT is used only if there is mixed infection with *P. falciparum.*

There is improving treatment coverage with ACT (93.8% in 2012), while LLIN coverage of the population at risk is (36.4%), inadequate. There is, however, a high level of LLIN coverage for children under age five (87.2%).

Key successes include strong government support, as illustrated by the fact that malaria is among top priorities. Efforts include: high investment; the national strategy on malaria control and elimination; programme implementation integrated into the general health system for primary health care; support from both civilians and the military; 95% of facilities equipped for malaria diagnosis and treatment with ACT; access to free antimalarial drugs nationwide; and more than 95% village health workers trained on basic malaria control.

Challenges include the large numbers at risk in remote and mountainous areas, uncontrolled population movement (seasonal and cross-border migrants) and emerging drug resistance.

Working closely with the Food and Drugs Department was identified as the key to their strategy of successfully withdrawing monotherapies. They shared information and conducted trainings and joint planning. Through public-private partnership, RDTs and ACTs were introduced, coupled with orientation on proper diagnosis and treatment of malaria in both private and government-run clinics.

2.3.11 Wrap-up

Dr Alan Schapira commended programme managers on how malaria has been reduced in most countries, which he described as a dream come true. He pointed out that even in the difficult countries of the Pacific major inroads have also been made. Aside from the impressive morbidity reductions, there was no mortality resurgence even in countries that had some morbidity resurgences. This, he explained, is a testimony to the soundness of case management, and the antimalarial treatment policy, and most of all, a compliment to the strength of health systems.

A major concern was how to sustain financing. Supply chain management through capacity building and the need to plan ahead (at least one year in advance) were highlighted as important activities to be supported.

He emphasized the value of ensuring availability of services for case management, follow-up and surveillance at the community level, which in many countries are facilitated by health volunteers.

A common challenge in Asian countries, and to some extent Pacific countries, is population movement, which requires intersectoral action. Dr Schapira cited how people in some communities now say they cannot sleep without a mosquito net – a fundamental cultural change from 20 years ago when promoting consistent bed net use seemed a formidable challenge.

Dr Schapira also pointed out the variability in the pace at which malaria morbidity reduction is taking place across different countries. What seems to be slow progress may actually be huge progress in terms of the burden reduction achieved.

Dr Christophel pointed out the need for a consensus on the definition of the population at risk and risk stratification criteria, which should include incidence data. She also raised the issue of imported cases and their management, which is becoming an issue, not only in China but also in other countries. She emphasized the need for diagnosis and treatment facilities in these areas.

2.4 Technical Session 2: Gap Analysis to Achieve 2015 Targets

2.4.1 Overview of gap analysis: overview of different models in use

Richard Carr of the Roll Back Malaria Partnership (RBM) and a member of the RBM Harmonization Working Group presented the comprehensive programmatic gap analysis tool that was developed by the working group in 2011 and has since been rolled out to more than 40 countries in Africa. He said that one benefit of a tool such as this is having standardized costs, so when a gap analysis is conducted it can be compared with other countries.

The gap analysis covers different intervention areas: LLIN distribution, case management, diagnosis and treatment, vector control, IRS, severe malaria and other issues, such as intermittent treatment for pregnant women (IPT) and seasonal chemotherapy and chemo prevention. The tool can be useful to the region where planners and implementers can focus on and adapt to the regional situation (e.g. on

vivax malaria). He pointed out that the tool is helpful in the gap analysis of commodities but its weak point is the difficulty in estimating the cost of human resources and some aspects of management activities.

Mr Carr went through the four main steps of the gap analysis: (1) identify the programmatic need; (2) identify what is currently financed; (3) identify the gap; and (4) define the financial gap from the commodity and activity gap analysis. The gap analysis looks at the programmatic needs based on the strategic plan and what the country currently has to do to meet the targets and goals of the programme, and in the process identifying the gaps. He went on to say that the tool is available at the Roll-back Malaria Harmonization Group website. (http://www.rbm.who.int/toolbox/tool_ProgrammaticGapAnalysis.html)

Dr Kevin Palmer, gave additional inputs on the development of a fully costed national strategic plan and gap analysis. He emphasized the need to look further at the 2015 goals now that there is a new funding mechanism from the Global Fund. He also stressed the need for countries to update their national strategic plans to include elimination and resistance containment. Part of the revision and updating is the gap analysis, which he pointed out was basically what is contained in the concept note required by the Global Fund. He introduced the templates used for the programmatic gap and geographic gap analysis.

2.4.2 Experience from countries in the Western Pacific Region

Philippines: malaria costing studies

Dr Mario Baquilod presented the results of the costing study conducted in 2012, which was a collaboration between the Philippine Department of Health, WHO, APMEN and the Malaria Elimination Group of Global Health Group.

The aim of the expenditure study was to understand the levels and changes in malaria programme expenditures over the course of elimination, and their determinants (e.g. organizational structure, ecology, malaria epidemiology, economic development). It covered four provinces, namely Apayao, Benguet, Laguna and Cavite, which represent a range of experiences with epidemiology and environmental challenges, and different stages along the path to elimination.

2.4.3 Group work on country gap analysis to achieve the 2015 targets

The goal of the group work was to determine, by country, the major programmatic gaps and obstacles, and make recommendations to address them. The participants were divided into three main country groups: (1) Elimination Group (China, Malaysia, the Philippines and the Republic of Korea); (2) Mekong Group (Cambodia, Lao People's Democratic Republic, and Viet Nam); and (3) Pacific Group (Papua New Guinea, Solomon Islands and Vanuatu). Facilitated by temporary advisers, partners and WHO MVP staff: groups used a draft gap analysis template to identify the programme needs to achieve the 2015 targets vis-à-vis the current status and determined the gap based on what is available (currently and potentially) in terms of finance and commodities. Potential challenges were identified and possible solutions to address them were described.

Representative countries were selected to share their outputs.

Malaysia (Elimination Group)

The following gaps were cited:

1) sustaining and/or expansion of operational partners and need to look at the commitment of other agencies;

2) LLINs not yet in use because there are still adequate chemicals for the conventional nets. The plan is to adopt LLIN by 2014;

3) drug resistance monitoring requires a closer review;

4) there is no specific funding allocation for operational research;

5) incomplete implementation of behaviour change communication because of difficulty in access to rural areas;

6) inadequate training of local staff due to fast turnover; and

7) presence of illegal migrants resulting in cross-border migration of cases.

Vanuatu (Pacific Group)

Gaps identified: (1) inadequately trained staff; (2) need to develop clear stratification for target areas for IRS application; (3) need to conduct operational research for policy development on IVM; (4) weak procurement and supply management system resulting in delayed net delivery; (5) poor QA for microscopy; (6) need training on insecticide resistance monitoring; and (7) case management issues on treating vivax malaria, in the absence of primaquine.

Lao People's Democratic Republic (Mekong Group)

Major gaps identified pertain to: (1) Programme management/human resources with limited staff and untrained personnel; (2) sustaining and expanding donors in view of the pending termination of Global Fund support; and (3) procurement and supply chain.

2.4.4 Wrap-up

Each country has its own understanding on gaps is and what is being done to meet needs. Common concerns include the presence of mobile populations and special groups, cross-border issues and the need for sustainable financing.

Dr Palmer pointed out that the presentations made no mention of what the countries need in terms of regional support. The countries were urged to identify activities or concerns that can be more efficiently handled by regional entities such as WHO and the Global Fund.

2.5 Technical session 3: Updates on malaria control and elimination

2.5.1 Containment of artemisinin resistance in the Greater Mekong Subregion

Dr Christophel gave an overview of the updates on the GMS resistance situation and response. She gave the official WHO definition of antimalarial drug resistance but also added that this definition would need some adaption for artemisinin. Tools needed to confirm resistance include pharmacokinetics, *in vivo* efficacy and molecular markers. She showed the trends of failure rates after treatment with an artemisinin-based combination therapy and the areas where they occur in Cambodia and results of TES in selected sites in Thailand.

Dr Christophel discussed the consequences of artemisinin resistance, among which are how the change in parasite sensitivity is not reflected in routine TES results (i.e. adequate clinical and parasitological response of ACTs is not compromised), prolonged clinical resolution which may lead to dissatisfied patients and incorrect treatment practices and the potential increased risk of mortality associated with severe and complicated malaria with artesunate monotherapy.

She discussed the Global Plan for Artemisinin Resistance Containment, which aims to protect ACTs as an effective treatment for *P. falciparum*. She explained the four pillars of action of the plan and the tier classification of areas with suspected artemisinin resistance with the corresponding recommended action for each tier. Related issues include monotherapy and substandard and counterfeit drugs, which also justifies working closely with the pharmaceutical companies. Dr Christophel mentioned that the regional hub of the ERAR has a pharmaceutical expert based in China, while drug regulatory bodies are collaborating with the malaria programme in the various countries. Compliance is another aspect that needs to be addressed.

Dr Christophel cited the role of village malaria workers (VMW) in diagnostic and treatment activities, LLIN distribution, and enforcement of the artemisinin monotherapy ban in Cambodia.

The joint assessment of GMS response recognized the progress made and acknowledged the appropriateness of the approach and strategies outlined in the Global Plan for Artemisinin Resistance Containment. However, it also showed gaps which could be addressed through expansion of coverage and improvement of the quality of strategy implementation.

2.5.2 Cambodia: Artemisinin resistance containment working with the private sector

Dr Kheng Sim gave a background on the containment strategy, which involves 10 provinces on both sides of the Thai-Cambodian border with a total population of 4.2 million. The project combined aggressive implementaiton of already existing malaria control activities and new approaches such as use of short messaging system (SMS) by VMWs to alert on potential drug-resistant cases, and the use of taxi drivers as health educators. Cambodia put a ban on monotherapy to remove fake or sub-standard drugs. Private-public partnerships changed diagnostic and treatment practice in the private sector. The network of VMW brings diagnosis and treatment services to the community.

The project accomplished the main targets but artemisinin resistance elimination was not fully achieved. Transmission has gone down in key areas such as in Pailin and most border areas where transmission was once highest. Cambodian experts also know more now about mobile migrant workers—the most at risk for malaria. However, there are still gaps.

Population Services International (PSI) presented on how the private sector can be engaged to deliver public health services. Cambodia has been running a programme for the last 10 years that facilitated private-sector outlets to test for malaria, treat simple malaria cases and refer pregnant women, children under five and severe malaria cases to hospital. She emphasized how case management is a package of services and not simply a commoditiy, hence it is important to have accessible quality drugs and test kits, responsible providers and informed patients.

One part of the package is communications in order to drive behaviour change, targeting both the service provider and the patient. The former is reached through training and medical detailing programmes while the latter through mass communications and mobile video units.

Commodities (ACTs and RDTs) are packaged consistently with products in the public sector. The price for RDTs is set so that the patients can easily afford a test but at this pricing structure, the

provider gets a 400% profit so that he would be motivated to test every person who has a fever. This is made possible through a significant subsidy from the programme.

Private providers undergo annual training on early diagnosis and treatment. In 2012, a total of 1854 providers and 1550 graduate nursing students completed this training. To ensure quality services, the service providers need continued updating and support, which is done through medical detailing—regular visits by doctors and pharmacists who answer questions and give practical help and through programmatic updates.

For prevention activities, both public and private sector approaches have been employed. PSI worked with importers to bundle Malatab with the nets being sold, at no extra cost, to the consumers. Based on the 2010 coverage survey, 80% of net outlets nationwide had bundled nets and Malatab in stock.

Lessons learned include: (1) Expand practice of test, treat, track; (2) selecting outlets is important (deal only with registered outlets); (3) quality case management includes safety, respecting the test results and inclusion of a QA; (4) importance of creating an effective policy environment (i.e., enforcement of a monotherapy ban); and (5) managing negative results for which providers need clear guidance and job aid algothrims.

2.5.3 Viet Nam: Reaching out to mobile and migrant populations

One of the major challenges is the control and prevention of malaria among people living in forest and mountainous areas, particularly cross-border, migrant and mobile populations.

Dr Ho Van Hoang discussed the incidence of malaria among migrant and mobile populations (6% to 8.8%) and the increasing proportion of deaths among this at-risk group. Vector control measures are difficult to apply for this group. There is low ITN use and the programme still has no policy for provision of hammocks and hammock nets.

A standby treatment policy, which has been enforced since 2003, enables health staff to give antimalarial drugs as standby treatment to people temporarily visiting highly endemic areas for more than one week (e.g. travellers, people staying in the forest, border crossers). The health staff must guide them on how and when to use the drug. Currently, piperaquine (Arterakine) is being used for standby treatment. An evaluation of standby treatment showed that only 60% use, and among those who do, only 50% complete the full dose. There is a lack of follow-up of standby treatment at all levels. There is a high risk of resistance due to incomplete doses, which is also due to the difficulty in managing drug use.

Highlighted challenges are the difficulty in contacting migrants, lack of funding for monitoring migration patterns, artemisinin resistance and poor collaboration between countries for the control of malaria at the borders.

2.5.4 Pharmaceutical issues and malaria

Dr Klara Tisocki explained how efficacy in real life is different from that in an ideal set-up because extraneous factors that are present during the former are absent in the latter. She cited some key challenges in real life situations such as drug quality problems, availability and affordability of quality-assured effective treatment, availability of poor-quality and irrational treatments, geographic accessibility and compliance by patients and usage problems (irrational use, monotherapy).

Artemisinin resistance is also a major challenge. To address this, she emphasized the need to think “out of the box”. Different approaches may be employed to determine what drugs are available and

which ones are actually being used. She raised the use of real-time supply chain data and other ways to capture private sales.

Monitoring quality of pharmaceuticals is done through the WHO prequalification system. However, she also raised the option of regional harmonization to confirm quality production by manufacturers, such as the possibility of joint Global Malaria Programme (GMP) inspections. Quantification should also be improved as part of quality assurance even during the procurement process. There is a need to increase the speed of quality-control testing and to link with regulatory actions, together with supply chain actions.

She suggested joint or synchronized regulatory actions between cross-border regions and evoking regional trade and political commitments to eliminate monotherapy as well as substandard/counterfeit drugs.

Finally, she mentioned the need for accurate diagnosis and complete effective treatment in hard-to-reach containment areas, strengthening the skills of providers and improving patient compliance to ensure appropriate and responsible use.

2.5.5 Wrap-up and recommendations

Dr Christophel gave an overview of drug resistance in the South-East Asia Region. She said it is important to realize that this is a phenomenon that started not just two years ago but 50 years ago.

An overview on the containment project in Cambodia and Thailand highlighted its innovativeness in many ways. The engagement of PSI with the private sector in Cambodia is a good illustration of the importance of a public-private partnership in helping solve problems. Viet Nam presented the challenges in reaching mobile and migrant populations, especially those living in border areas. Forest residents who stay there for economic opportunities were cited as extremely difficult to reach because they are not registered during their stay in the forests since their activities are illegal and they probably want to avoid detection. These people could possibly be reached with mobile malaria clinics such as those used in Cambodia.

2.5.6 Malaria diagnosis and quality assurance

Dr John Storey, highlighted that national programmes should have a functioning QA system for microscopy and RDT that includes routine testing of microscopists, refresher training of microscopists, accreditation of microscopists, sample of slides submitted to reference laboratories for cross-checking, procurement and provision of quality microscopy supplies. He also emphasized the need for standard operating procedures (SOPs).

He then presented a summary of some challenges:

- Knowledge and skills on national SOPs need improvement.
- Many senior staff do not understand what an SOP is and how to use it.
- Where available, the SOPs are in draft form and not translated into local languages.
- The important role of external competency assessment (ECA) and accreditation has still to be completely defined and agreed upon.

- Most programmes find it difficult to re-evaluate staff every third year under the present arrangement.

- Nationally, malaria diagnosis quality assurance is seen as difficult and not necessarily welcome.

- Creation, utilization and maintenance of national slide-banking is difficult because of the few positive cases being seen, among other factors.

He explained that the challenges mentioned above in QA mirrors the challenges of improving routine diagnostic activities. He emphasized the importance of internal competency assessment (ICA), the objectives and content of which are essential for functional national programmes, which should be a component of supportive supervision. Its implementation requires adequate planning, financing and reporting. ICA should look at areas of staining, slide preparation, and other aspects of laboratory work.

Dr Storey concluded that the quality assurance of malaria diagnosis is sub-optimal with problems that need to be addressed before real progress can be made.

2.5.7 Solomon Islands: Implementation of the malaria diagnosis QA programme

Dr Lyndes Wini of the Solomon Islands Vectorborne Disease Control Program shared the country's experience in setting up the diagnosis QA programme in their country. The QA action plan developed in 2011 was based on needs assessment. The country is yet to develop a policy on QA. To facilitate coordination, there is a National Malaria QA Coordinator, a Malaria QA Working Group and a national core (expert) group.

An estimated 15% of microscopists have undergone external competency assessment and the process of developing a national slide bank is ongoing. Training and refresher courses are adapted from WHO manuals. Currently, the national laboratory is non-functional and still awaiting major renovation. The support network consists of microscope maintenance, which is integrated with the national tuberculosis control programme.

Mr Wini identified challenges faced by the programme such as a non-functional central/reference laboratory, weak national supply management system and inadequate procurement of microscopes.

2.5.8 ACTMalaria's role in malaria diagnosis in the Region

Ms Cecilia Hugo, Executive Coordinator of ACTMalaria, recounted the history of how ACTMalaria got involved in malaria diagnosis in 2004 with the first external competency assessment conducted in the Philippines. She presented the member countries' ECA results conducted from 2005 to 2012.

Essentially, ACTMalaria is an advocate of quality-assured malaria control services (including maintenance of the database of assessed malaria microscopists in Member States), and coordination and networking of countries and partners. In addition, it facilitates capacity building through training and information exchange. Ms Hugo recommended that programmes should look into the totality of the quality assurance system and not just focus on the slide-reading aspect alone.

2.5.9 Wrap-up and recommendations

The presentation on the status of microscopy in countries in the Region showed that there is room for significant improvement. Dr Schapira noted the broad range of training and QA activities being

conducted through the coordination of ACTMalaria and in collaboration with WHO. These are intended to strengthen the quality and role of microscopy.

He recommended more concrete guidance on the preparation of SOPs and also that WHO headquarters should solve the problem of setting up slide banking to meet the needs of countries in the Region. WHO should provide guidance to countries on specifications for high-quality microscopes. He emphasized that microscopy is necessary for all endemic countries. Countries should first solve the problem of quality before expansion of microscopy networks. He encouraged the use of appropriate RDTs, especially in peripheral health units where microscopy may no longer be needed.

2.5.10 Vivax malaria and implications for malaria elimination

Dr Kevin Baird gave an overview on *P. vivax*, citing the following reasons to highlight its burden: vivax is often misconceived as harmless when in fact, it causes harm, including relapses and its prevention is extremely difficult to deal with. The use of primaquine in G6PD deficient populations remains a significant problem.

Recalling the life cycle of the parasite, he emphasized how the hypnozoite poses challenges in vivax control and proposed the use of an alternative drug for PQ, Tafenoquine, the only one of such drugs still in the pipeline. Currently there is no standard technology for G6PD deficiency testing suitable for point of care use, especially in rural areas.

In summary, Dr Baird reiterated that limitations in primaquine use in G6PD deficiency patients are the primary problem with management of vivax malaria and malaria elimination. Standard G6PD diagnostic technologies are not suitable for peripheral point of care use. The new CareStart kit appears suitable for use at the periphery, but will need further evaluation. While it is important to ensure correct assessment of G6PD status, the consequences of poor access to PQ by those who need it must also be considered.

2.5.11 China: Vivax malaria policy and practice

The China Malaria Elimination Action Plan (2010–2020) was jointly issued by 13 national departments, including Health, Development, Education, Science, Finance, Travel, and the Military. They developed the “1-3-7” model on case reporting and investigation to ensure timely investigation and treatment of cases. Day 1 involves case reporting via the Internet, after which investigation should be completed by Day 3. By Day 7, risk sites must be identified and an appropriate response implemented to control the outbreak.

Challenges identified include: the increasing number of imported cases, leading to possible onward local transmission; difficulty in eliminating malaria along border areas; and the weak supply chain of antimalarial drugs.

2.5.12 Lao People’s Democratic Republic: G6PD deficiency testing in provincial hospitals

One of the objectives of the national strategy for malaria control 2011–2015 is to improve access to early, effective diagnosis for malaria that includes conducting G6PD deficiency testing at all public sector health facilities and by all VMWs once standard technology is available. The national plan advocates the use of AL and PQ as the current treatment for *P. vivax.*

A study was conducted to evaluate the prevalence of G6PD deficiency among the general population using a laboratory-based fluorescence-based test called Trinity Biotech. It was conducted in 13 provincial, two central and Centre for Malaria, Parasitology and Entomology laboratories. Out of

1553 blood samples collected and tested, 59.6% were normal, while 16.8% showed intermediate deficiency and 23.6% showed severe deficiency.

2.5.13 Cambodia: Primaquine safety and tolerability study

In Cambodia, recent study indicates that there is a 10%–12% prevalence of G6PD deficiency in the population. Medical personnel do not use primaquine because of fear of its adverse side effects.

A clinical study was launched in January 2013 to determine if 0.75mg/kg PQ can be safely given without G6PD testing. The objectives of the study were to asses if a single dose is safe for *Pf* infections and to asses if 8 weekly doses are safe for vivax infections. The methodology was to enrol 150 patients with *P.vivax*, (with 50 G6PD normal and 100 G6PD deficient) from hospitals and health centres in Pailin. Research protocol was reviewed and approved by both the Cambodian National Ethics Review Committee and the WHO Ethics Review Committee.

Preliminary results showed that of the 30 patients enrolled since late January 2013, 27 were G6PD-normal and 3 were G6PD-deficient. Of the three, one had adverse side-effects and was given transfusion based on the protocol. The study will continue into the main malaria transmission season, until the sample size is reached.

2.5.14 Wrap-up and recommendations

Dr Lasse Vestergaard, WHO Philippines, reiterated that *P. vivax* is an important infection and that it cannot be eliminated without primaquine. G6PD deficiency is a concern. Some countries have used primaquine heavily and were able to control *P. vivax* infections. He also cited how the prevalence of G6PD deficiency is variable across countries, with some having high prevalence and others have none or very low.

The use of primaquine is essential to eliminate malaria. Countries should move forward to explore the use of testing methods while studies are being conducted to improve them. There should be careful evaluation of whether or not primaquine can be given based on results of the rapid test.

2.5.15 Vector control and insecticide resistance

Dr Rabindra Abeyasinghe, WHO Papua New Guinea gave an overview of vector control and insecticide resistance status and related activities in the Region. There has been unprecedented progress in malaria control over the past decade with increased funding leading to a major scale-up of vector-control interventions, diagnostic testing and effective treatment. Estimates suggest that more than 1 million lives have been saved over 10 years, which is primarily attributed to increased coverage with indoor residual spraying (IRS) and long-lasting insecticidal nets (LLINs). Vector control will always remain a central pillar in the control and elimination of malaria.

He said mosquito resistance to at least one class of insecticides was reported from, or confirmed through, independent studies in 64 countries with ongoing malaria transmission. Existing prevention tools (LLINs and IRS) remain highly effective in all endemic countries but urgent action is needed to prevent further development of insecticide resistance and to preserve effectiveness of vector control interventions and the remarkable recent gains in malaria control. He cited the following challenges or threats to vector control use:

- poor insecticide resistance management;
- lack of adequate new products and technologies;

- inability to take into account the expected life span of products on procurement decisions (e.g. LLINs);
- weak systems to deliver and manage vector control interventions;
- limited capacity for entomological monitoring and vector control; and
- lack of clear policy advisory mechanisms for malaria vector control.

Innovative and new vector control tools are urgently needed. Current products in the pipeline for reformulations of existing insecticides and new active ingredients are promising but more investment is required to speed up the research and development process.

Dr Abeyasinghe explained the importance of net replacement in the pursuit of universal coverage. Since the rate at which nets wear out is highly variable, WHO recommends that LLIN distribution should be given equal priority, together with antenatal care and an expanded programme for immunization services. He discussed WHO methods for monitoring LLIN durability and the revised guidelines on insecticide resistance. As part of the regional updates, he highlighted the importance of controlling outdoor transmission of malaria. In the GMS countries, workers in road construction, mining, rubber tappers and palm oil farmers, and security personnel are considered at risk.

With regard to vector-resistance status, all countries in GMS have reported resistance to at least one insecticide and some have also reported resistance to pyrethroids. He pointed out that some data are several years old (2003–2005) and that except in GMS, there are no systematic and coordinated efforts to screen for insecticide resistance in anophelines.

Capacity-building activities include Integrated Vector Management training organized jointly by the Ministry of Health Malaysia and WHO, with travel facilitated by APMEN.

2.5.16 Papua New Guinea: Rollout of LLIN

Mr Tim Freeman from Rotarians Against Malaria, an NGO and a Global Fund Principal Recipient, based in Papua New Guinea, presented the Malaria LLIN Programme.

A significant scale-up of nets started with the Round 3 Global Fund Grant (2005 to 2009) coordinated by the National Department of Health covering about 80% of the population. During this phase, about 2.5 million nets were procured and distributed. Further scale-up of LLINs occurred with the Round 8 Global Fund grant when Rotarians Against Malaria was asked to coordinate the programme together with the National Department of Health to cover every household in the county.

Between 2005 and 2010 during the Global Fund Round 3 project, about 2.4 million nets were distributed throughout Papua New Guinea. In the last three and a half years, around 3.58 million LLINs were distributed (3 million LLINs to household level and almost half million to vulnerable groups). LLINs were distributed to 72 out of 90 districts in 18 provinces.

The implementers and partners realized that a staggered approach allows much greater opportunities for improved management and technical consistency that would lead to good coverage in all areas. They also found that the distribution campaign was a good venue for health education. The impact on malaria has been encouraging. Malaria prevalence has decreased by 75% in some regions. People have been generally very happy with the programme. As Global Fund funding ends in September 2014, questions were raised regarding the LLIN programme.

2.5.17 The Lao People's Democratic Republic: Repellents and other outdoor transmission tools, and the use of IRS for outbreak control

Dr Rattanaxay Phetsouvanh, Department of Disease Control, Ministry of Health of Lao People's Democratic Republic, discussed the vector-control strategies being employed. Of the vector-control and personal protection tools specific for the outbreak, insecticides for IRS were the most adequately available and appeared to be the most cost-effective.

Outbreaks were confined to people engaging in forest-based activity, including unregulated logging, land clearing for development projects and plantations. The mobility of populations and the nature of work rendered traditional LLIN as an unsuitable vector-control measure. Hammock nets were of limited quantity due to higher cost and their acceptability was not yet adequately assessed.

The national strategic plan (2011–2015) includes the use of focal IRS in response to outbreaks and in areas of intense transmission. Dr Phetsouvanh presented the criteria to implement IRS in addition to LLIN distribution. Challenges include population mobility, forest transmission and delayed IRS response.

Hammock nets should be made more user-friendly and expert advice must be sought on how to treat these nets with insecticide. With regard to IRS, the Center for Malaria, Parasitology and Entomology needs to decide on the policy to implement preventive and/or reactive spraying. The programme should train entomology staff as well as provincial and district malaria staff on case investigation and patient interview techniques for more effective outbreak response.

2.5.18 Update on the Asia Pacific Network for Vector Resistance

Ms Cecilia Hugo gave a background on the objectives of the network. She said that to date, they have received reports only from the Lao People's Democratic Republic and Viet Nam. The system is limited since report generation is not interactive.

2.5.19 Wrap-up and recommendations

Dr Bjorge said the recycling of bed nets to make floor mats and other useful materials is a good idea. He also commended the progress made in Papua New Guinea through partnership with a private organization. He recommended that the case study be further analysed to come up with an evaluation of the system.

2.6 Technical session 4: Surveillance, monitoring and evaluation strengthening for malaria elimination

2.6.1 Global and regional perspectives

Dr Richard Cibulskis, Global Malaria Programme in WHO headquarters, started the discussion with how surveillance, monitoring and evaluation (SME) can help an organization achieve its goals. What is needed is improved system for data collection and management, and use of information for programme decision-making and actions.

Dr Bayo Fatunmbi, WHO Regional Office for the Western Pacific, concluded the discussion with the assessment of the SME profile of the countries in the Region. He mentioned that SME has improved. Dr Fatunmbi emphasized the importance of SME to improve management, accountability, advocacy, and learning. He encouraged participants to work together to further strengthen the SME system.

2.6.2 Vanuatu: From patient card to malaria line list

Mr Timothy Quai, Deputy Malaria Program Manager of the Vanuatu Vectorborne Disease Control Program, discussed how the different phases of malaria control would require different types of information and different ways of management. He discussed the different data collection tools and the respective characteristics of information collected through each type.

The different methods and tools have varying data set, with routine health information system having limited data set, the malaria line list having a larger data set, with the malaria patient card the largest. The malaria patient card was designed to capture the data generated from the consultation flow – from the time a patient goes to a health facility up to the actual administration and outcome of treatment. He showed a sample form used for the malaria patient card.

Mr Quai cited some of the challenges encountered in the use of these different tools, such as the difficulty in collecting information from all levels of the health care system, the inconsistency in the use of the forms (i.e. the malaria patient card) across the different health facilities and the inaccuracy and incompleteness of forms submitted from the Aid Post level, resulting from limited clinical knowledge and varying understanding of some terminologies.

To improve the quality of data collection, the malaria patient card was replaced by monthly malaria line list (MMLL) containing only information related to routine information about basic clinical practice. Health workers were trained on the revised tool, data platform and the redesigned reporting format. The malaria patient card was also redesigned to become the “Case Investigation Form” with relevant data fields required for elimination phase.

2.6.3 Solomon Islands: Monitoring tools

Mr Albino Bobogare, Solomon Islands Vectorborne Disease Control Program and Dr Zaixing Zhang of WHO Solomon Islands, emphasized the purpose of monitoring, which is to check progress against what was planned in terms of quantity, quality, timing, geographic and population coverage, and to feedback results to implementers for appropriate action and follow-up. Solomon Islands applied two types of monitoring tools: internal (self) and external.

Tools for internal monitoring include revised field activity reports for the province level, data collection monitoring sheet for the central level and data entry control, which covers epidemiologic data. Programme outputs included in the reports were LLIN distribution, IRS coverage, and timely submission of reports.

2.6.4 Philippines: Malaria reporting system

Ms Jeunessa Sto. Nino-David presented the Philippine Malaria Information System (PhilMIS) on behalf of Dr Baquilod. She explained the flow of data and reports from village to provincial and national level. The software makes use of patient-based records, captures and generates programme/project indicators, generates reports with disaggregated details (such as name, sex, age, species classification, level of administration among others), and generates data for analysis in Excel and Epi Info.

2.6.5 Malaysia: Surveillance system for malaria

Dr Jenarun Jelip, Malaysian Vectorborne Disease Program described the standardized formats and reporting procedures. The VEKPRO online system is an electronic database established in 2010, and

maintained in-house. It contains modules on epidemiology, vector control and malaria outbreak. She walked the participants through the system, and showed the malaria line listing generated from it.

2.6.6 Wrap-up and recommendations

Countries have achieved significant strides in setting up and improving their information/surveillance system. Dr Deyer Gopinath of WHO Lao People's Democratic Republic cited the challenges faced by the national programme in Vanuatu as they moved from control to elimination. He expressed his appreciation on how they were able to do it. He also highlighted the experience in Solomon Islands where the field activity report was a starting point for improving the routine reporting and how there is an attempt to make this a more programmatic tool.

2.7 Malaria elimination and programme reorientation

2.7.1 Overview

Dr Allan Schapira explained the phases of elimination and the threshold at which a country moves from one phase to the next. He highlighted the point in spectrum at which programme orientation should take place.

2.7.2 Republic of Korea: National elimination of vivax malaria

Dr Kim Jungyeon discussed the history and evolution of the malaria programme of the Republic of Korea. Malaria re-emerged in 1993 and has been under control since. By 2001 the country had entered the elimination phase. The country launched its malaria re-elimination five-year plan in 2011. The programme has a central malaria control task force and a malaria elimination task force responsible for coordination, control and command of malaria activities.

The Republic of Korea has a web-based surveillance system that facilitates real-time analysis of data and also maintains a spot map of reported malaria cases. The surveillance system requires weekly reporting.

One key challenge is the new definition and subdivision of former risk areas. Dr Kim enumerated the specific interventions for risk and non-risk areas, and the activities for scientific and organic surveillance (patient and parasite surveillance). Ways forward include a plan to intensify vector surveillance and to reduce the time between first contact of a patient with a health worker, the diagnostic confirmation and administration of treatment.

2.7.3 Philippines: Subnational malaria elimination certification

The steady and large reduction in the level of malaria incidence within the past seven years has made the Philippines seriously consider malaria as a top priority for elimination by the year 2025. Currently, 53 of 80 provinces are malaria-endemic and 27 malaria-free.

A Department of Health Administrative Order provides the mandate for the assessment of the malaria situation in low-endemic/sporadic provinces for declaration as malaria-free. Dr Baquilod explained the evaluation process carried out in provinces. An evaluation of the malaria situation in the province must be done, proving that no single indigenous case has been confirmed in the province in the last five years.

The systems pre-requisites for declaration as malaria-free are as follows: functional malaria surveillance system; organized case investigations and response teams; availability of vector-control logistics support for appropriate response to any occurrence of outbreak and antimalarial drugs for

imported cases; and continued intensive health education and advocacy on malaria prevention and control implemented at all levels.

2.7.4 Wrap-up and recommendations

Dr Richard Cibulskis said data collection and data use are the weakest parts of monitoring and evaluation. He then went on to the highlights of the individual country presentation. Systems vary from sophisticated in Malaysia and the Philippines, to simple mechanisms in Vanuatu. These reflect and are appropriate for the current capacity of the countries. Solomon Islands focused on data use to identify weaknesses in the programme.

Dr Schapira and Dr Fatunmbi introduced the group work on malaria elimination. The goal of the group work is for each country to determine the status of malaria programmes, discuss obstacles and determine roadmaps and needs.

The participants were divided into three groups as follows:

Group 1: China, Malaysia, Republic of Korea, and the Philippines

Group 2: Viet Nam, the Lao People's Democratic Republic, and Cambodia

Group 3: Solomon Islands, Vanuatu, Papua New Guinea

The countries were grouped based on their level of implementation of malaria elimination strategies, with the first group implementing elimination strategies at either national or subnational level, while the second and third are Mekong and Pacific Island countries, respectively, either partially implementing or in an intensified control phase of malaria programme.

The groups prioritized the provinces/districts according to malaria status (level of transmission) and identified appropriate strategies for each with a focus on case management and surveillance systems (for both malaria cases and vectors).

Outputs were presented in plenary (see annex 3).

During the discussion, Dr Schapira pointed out how entomology details were missing in the feasibility assessment and emphasized the importance of entomological data since the level of feasibility would differ depending on the vector. He mentioned the need to look into the risk of importation and ensure that case investigation becomes a major activity in the elimination phase.

2.8 Technical session 5: Malaria programme reviews

2.8.1 Global and regional perspectives on malaria programme reviews

Dr Cibulskis explained the reasons for conducting a programme review as a component of the management cycle. He described how reviews are done and explained the conditions when they are conducted, such as when there is a need for programme re-orientation, and when there are changes in the external environment. Dr Cibulskis emphasized the need to be guided by evidence and experience.

Based on lessons learned, he recommended that preparations for a malaria programme review (MPR) be done as early as possible. While the review is a country-led process, external technical assistance may be necessary for objectivity and to fill in technical gaps. It is also important to ensure prompt dissemination of MPR findings and implementation of recommendations.

Dr Bayo showed the status of MPR implementation across the region. Cambodia and Papua New Guinea have completed the reviews and are implementing the recommendations. A programme review is ongoing in the Philippines, Solomon Islands and Vanuatu, while China, the Lao People's Democratic Republic and the Republic of Korea are preparing to conduct reviews.

2.8.2 Papua New Guinea – Malaria programme review – planning and implementation

Mr Leo Makita shared experience on the recently concluded malaria programme review. Preparations for the review included appointment of a review team leader and other institutional arrangements, requesting technical support and development of a review checklist and proposal. Review activities included a thematic desk review, joint field visits, a workshop to review/validate findings and agree on recommendations and joint presentation of an aide memoire. A gap analysis tool provided by WHO and the WHO checklist were used for both the desk review and field visits.

The programme plans to prioritize recommendations, finalize the MPR report with inputs from all review team members, and develop the new National Malaria Control Program (NMCP) strategic plan. The plan is to conduct business planning and resource mobilization targeting with the national government, bilateral agencies and other potential donors.

2.8.3 Cambodia: Malaria programme review – dissemination, follow up and implications for national strategic planning

Dr Kheng Sim, Vice-Director-CNM, presented the objectives and process of, and the tools used in, the MPR. She cited WHO's leadership and previous experience with MPRs and development partners (e.g. the Global Fund) as strengths. Lessons learned include the importance of strong advocacy and communication to solicit support for the review, and the value of the review results and recommendations, particularly in the development of proposals for continued funding to donors such as the Global Fund.

Key recommendations for future MPR include: more inclusive involvement of in-country partners during planning, implementation; and debriefing processes; sharing of the methods and tools with the NMCP in advance and seeking feedback; assembling a diverse group of external reviewers; and inclusion of an economist in the review team in order to provide an analysis of the cost-effectiveness of the recommendations. WHO should facilitate NMCP in filling the financial gaps for implementing the elimination strategy through advocacy and negotiations with potential donors.

2.8.4 Wrap-up and recommendations

Dr Rabindra Abeyasinghe, WHO Papua New Guinea cited the usefulness of the MPR in helping the programme progress. He synthesized the highlights of the countries' experiences and the insights gained from these reviews, such as how they can be done at a lower cost, the usefulness of the framework and tools developed by WHO, and the need for the review team members to be strategic—focusing on what is important. He encouraged the countries to be strategic about their exercises, and to adopt the MPR as a tool to enhance the opportunity to access funds for their programmes.

2.9 Technical session 6: Programme issues

2.9.1 National strategic plans and their revision

Dr Fatunmbi explained that a review of the plans will help determine whether they are aligned with regional and global strategies. A country strategic plan is expected to guide all players in the country, and to draw lessons from the past for the sake of moving into the future. The quick review was done

through consultation with national programme managers where WHO has a country presence. Six out of 10 Western Pacific Regional endemic countries responded.

Country strategic plans were assessed based on the adequacy of partnership in the development process, whether a situation analysis was conducted and if it had the following components:

a strategic framework based on regional and global guidance; a business plan; a human resources and capacity development plan; a procurement supply management plan; a monitoring and evaluation (M&E) plan; and a detailed budget. The review also assessed the perception of the implementation performance as well as health system strengthening support. Most programmes had strategic plans developed with adequate engagement of partners, conducted situation analysis and contained essential components such as strategic framework, business and M&E plans. However, inadequacy was reported for the human resources plan, the procurement and supply management plan and detailed budget in at least four of six respondent programmes. Only one of six country programmes felt satisfied with the programme implementation performance.

Other variables of interest were a malaria indicator survey and a malaria programme review. Only four endemic countries (Cambodia, Papua New Guinea, Solomon Islands and Vanuatu) conducted a malaria indicator survey between 2010 and May 2013. As of May 2013, comprehensive malaria programme reviews were conducted in Cambodia (2012), Papua New Guinea (2013), and are ongoing in the Philippines, Solomon Islands, Vanuatu and the Lao People's Democratic Republic. Discussion is ongoing in other endemic countries.

2.9.2 Resource mobilization – overcoming health systems barriers to successful programme management

Dr Ayesha de Lorenzo, WHO's Health Systems Development unit highlighted how the vertical approach in the health system has been successful, and the importance of maintaining gains with a view to integration into mainstream health service provisions. This approach, she said is guided and is in line with the "new" global direction of aiming for Universal Health Coverage.

She presented the supply and demand barriers to service delivery, citing specific illustrations for the malaria programme based on the country presentation earlier. She pointed out the weaker focus on the demand side and how this is important in an elimination phase programme. She recommended that a detailed health system strengthening (HSS) gap analysis of malaria services be done.

The study from the Philippines showed that contrary to prevailing thought, elimination strategies may be cheaper than expected and even cheaper than control. In the Philippines this was achieved by the smaller amount of treatment drugs needed, as well as services being provided by general hospital staff, not dedicated malaria staff. Malaria strategic plans should be re-examined, keeping these newer and integrated strategies in mind. A more realistic, lower costing will make resource mobilization easier.

Dr de Lorenzo presented possible options to address the barriers to supply and demand, but reminded participants that these may not all be relevant for each country. Thus there is a needs to undertake an HSS gap analysis to determine what applies to a specific country and subsequently what activities need to be undertaken. She highlighted examples of financing schemes, such as the voucher and health equity fund in Cambodia. This scheme provides the poor with access to public hospitals. She suggested adoption of this model through the provision of vouchers for receiving subsidized mosquito nets for women who come for their first ante-natal care or for children to have their nets re-impregnated.

As next steps, Dr de Lorenzo suggested the conduct of malaria programme reviews which would include comprehensive malaria-relevant HSS gap analysis to look at key priorities and a full health systems assessment, where it is feasible. Malaria should be embedded in national health plans for 2015. She also recommended cost savings by linking to common programmes across the three diseases being supported by the Global Fund.

2.9.3 Programme management capacity building: needs and opportunities

Ms Cecilia Hugo of ACTMalaria enumerated the various courses facilitated by ACTMalaria vis-à-vis the needs and priorities in the Region.

2.9.4 Regional initiatives and Regional Malaria Regional Technical Advisory Group

Dr Christophel commended the group for the fruitful discussions to date, and said how coming together provides a great opportunity. She recounted major regional initiatives for advocacy, resource mobilization and sharing of technical expertise such as the Asia-Pacific Leaders Malaria Alliance (APLMA), the Emergency Response to Artemisinin Resistance in the GMS (ERAR), the Regional Advisory Board (now known as Regional Steering Committee—RSC), the Asia-Pacific Malaria Elimination network (APMEN), ACTMalaria and malaria drug resistance monitoring networks (MDRMN) in the Mekong and Pacific.

She also cited the Malaria Policy Advisory Committee (MPAC), which provides independent strategic advice and technical input to WHO for the development of guidelines. She then posed the question to participants on whether there is a need for a regional malaria technical advisory group (TAG). She added that if the group decides to form an advisory group, they should also determine whether the group will focus on malaria only or on vectorborne diseases in general.

Dr Christophel presented the proposed terms of reference for a regional malaria technical advisory group:

The Regional Body will function as an independent group of experts to advise WHO Regional Office for the Western Pacific on:

1) Monitoring of progress in the Region towards the set regional goal for malaria elimination and control;

2) Translation of global policies (based on MPAC and WHO recommendations) into national and/or regional policies;

3) Specific technical issues as they may arise;

4) Research priorities; and

5) Advocacy/resource mobilization.

Dr Christophel also presented the proposed membership, including experts from the Region and beyond and people appointed by the Regional Director based on the proposal of the Secretariat. There is also an option for an open call for membership, with a three-year term subject for renewal. The Secretariat will consist of the WHO regional focal point(s). It is also proposed that the advisory group meet once a year, usually jointly with the programme managers' meeting.

In the plenary discussion, the group decided that a regional technical advisory group is needed. The group also affirmed the terms of reference but added that issues on providing feedback and relationship with MPAC should be clarified.

2.9.5 Wrap-up and recommendations

Dr Richard Carr gave a recap of the status of development and implementation of strategic plans across the Region. Six out of 10 endemic countries in the Region responded to the questionnaire. All have completed or are working on their strategic plans and four have used malaria surveys to inform their plans and two have used the results of the MPR to inform an update of their strategic plan. He recalled the different criteria to rate strategic plans and pointed out that five out the six countries have no human resources plan and the costing is weak.

Dr Carr recommended that countries complete the MPR, use results to feed into a strategic plan, and also review previous strategic plans. He emphasized the importance of having all donors move towards programmes based on strategic plans. The issue of a technical advisory group was put to the group and after some discussion, there was an agreement on the terms of reference, with a suggestion to add providing feedback to MPAC of issues and concerns for further discussion.

2.9.6 Group work, by country, on closing the gaps to achieve the 2015 targets – The concrete way forward

Dr Rose Nani Mudin, Malaysia Ministry of Health presented a comprehensive summary of issues and recommendations identified throughout the first two days of the meeting. The last group work focused on the development of concrete country action plans to implement the recommendations (including key actions, timeframes, lead and supporting implementers, and cost implications). WHO and partners facilitated the different country groups.

3. CLOSING THE GAPS TO ACHIEVE THE 2015 TARGETS – THE CONCRETE WAY FORWARD

Dr Baquilod presented the programme managers' recommendations, to which everyone concurred. Dr Christophel presented the conclusions and recommendations of the meeting (see Summary). It was agreed that the two documents will be condensed and disseminated so that these could be translated into work plans for both WHO and countries.

The groups also agreed that establishment of the TAG will take time but the WHO Regional Office for the Western Pacific will focus on this and provide updates for Member States and partners.

As the meeting drew to a close, the Chair requested some last words from selected participants. Dr Schapira encouraged everyone to look at the conclusions and recommendations carefully and express their opinions or objections, if any.

George Taleo of the Vanuatu Ministry of Health affirmed the body's agreement to make the network stronger. He encouraged countries to pay close attention to all the discussions and as they go back home, to continue to move forward. Country representatives expressed their gratitude for being part of the meeting and affirmed their commitment to achieve set targets.

In closing Dr John Ehrenberg, WHO Regional Office for the Western Pacific, Director of Combating Communicable Diseases Division, on behalf of the Regional Director, thanked the Chair and all the participants for their active participation. He cited the tremendous progress achieved to date because of everyone's hard work. Dr Ehrenberg thanked everyone for their time and acknowledged the contribution of temporary advisers, partners, and key stakeholders.

Dr Ehrenberg said malaria is a development issue and there is a need to find a way to make the disease the business of other sectors as well, such as education. Dr Ehrenberg acknowledged the regional TAG as a good idea and also cited the need for continued research to contain artemisinin resistance. Dr Ehrenberg then declared the meeting officially closed.

REGIONAL MALARIA PROGRAMME MANAGERS' MEETING
Theme: Achieving the 2015 Targets and Moving Towards Malaria Elimination
08-10 May 2013 – Manila, Philippines

TIMETABLE

Time	Day 1	Time	Day 2	Time	Day 3
08:00 – 08:30 08:30 – 9:15	**Registration** **Opening Ceremony** Opening remarks by the Regional Director Self-introduction of participants Nomination of Chair, Vice Chair and Rapporteur Group photograph	08:00 – 08:45 08:45 – 10:00 10:00 – 10:45	**Summary of Day 1 -** *Steve Bjorge, WHO Cambodia and Zhang Zaixing, WHO Solomon Islands* **Technical session 3: Updates on Malaria Control and Elimination** *Organized as panels, with main speaker and country experiences* **3.1 Containment of artemisinin resistance in the Greater Mekong Subregion** - Overview – *Eva Christophel, WHO WPRO (10)'* - CAMBODIA: Artemisinin resistance containment - Working with the private sector – *Henrietta Allen, PSI, and Cambodia National Malaria Program (10')* - VIET NAM: Reaching out to mobile and migrant populations – *Viet Nam National*	08:30 – 09:30 09:30 – 09:45 09:45 – 10:45	**Presentation of group work on Malaria Elimination** - 3 country groups Discussion Wrap-up & recommendations – *Jean-Olivier Guintran, WHO Vanuatu* **Summary of Day 2 –** *Richard Cibulskis, WHO GMP, Abdur Rashid, WHO Cambodia and Ros Seyha, WHO Vanuatu* **Technical session 5: Malaria Program Reviews** *Organized as a panel, with main speaker and country experiences* - Global and regional perspectives on malaria program reviews - *Richard Cibulskis, WHO GMP/HQ, and Bayo Fatunmbi, WHO WPRO (10')* - PAPUA NEW GUINEA – Malaria program review – planning and implementation - *PNG National Malaria Program (10')* - CAMBODIA: Malaria

Time	Day 1	Time	Day 2	Time	Day 3
			Malaria Program (10') - Pharmaceutical issues and malaria - *Klara Tisocki, Essential Medicines and Health Technologies, WPRO/WHO (10')* Discussion Wrap-up & recommendations – *Kevin Palmer and Steve Bjorege, WHO Cambodia* **3.2 Malaria diagnosis and quality assurance** - Overview - *John Storey (15')* - SOLOMON ISLANDS: Implementation of the malaria diagnosis QA program –*Solomon Islands Vectorborne Disease Control Program (10')* - ACTMalaria's role in malaria diagnosis in the Region – *Cecil Hugo, ACTMalaria (7')* Discussion Wrap-up & recommendations – *Walter Kazadi, WHO Papua New Guinea*		program review – dissemination, follow up and implications for national strategic planning- *Cambodia National Malaria Program (10')* Discussion Wrap-up & recommendations - *Rabindra Abeyasinghe, WHO Papua New Guinea*
09:15 – 9:45	Tea/Coffee Break		Tea/Coffee Break		Tea/Coffee Break
09:45 – 10:05	Introduction to the meeting Progress towards 2015 targets in the Region - *Eva Maria Christophel,*	11:15 – 12:15	**3.3 Vivax malaria and implications for malaria elimination** - Overview - *Kevin Baird (15')* - CHINA: Vivax malaria policy and	11:15 – 12:15	**<u>Technical Session 6:</u> Program Issues** *Organized as a panel* - National strategic plans and their revision – *Bayo Fatunmbi, WHO*

Time	Day 1	Time	Day 2	Time	Day 3
10:05 – 10:25	*Malaria, other Vectorborne and Parasitic Diseases, WPRO/WHO (15' followed by 5' discussion)* Global direction in malaria - *Richard Cibulskis, Global Malaria Program, WHO HQ, (15' followed by 5' discussion)'*	12:15 – 13:15	practice – *China MOH (7')* - LAO PDR: G6PD deficiency testing in provincial hospitals – *Lao National Malaria Program (7')* - CAMBODIA: Primaquine safety study - *Cambodia National Malaria Program (7')* Discussion Wrap-up & recommendations – *Lasse Vestergaard, WHO Philippines* **3.4 Vector control and insecticide resistance** - Overview - *Rabindra Abeyasinghe, WHO Papua New Guinea (10')* - PAPUA NEW GUINEA: Rollout of LLIN – *Tim Freeman, Rotarians Against Malaria, and Papua New Guinea Malaria Control Program (10')* - LAO PDR: Repellents and other outdoor transmission tools, and the use of IRS for outbreak control – *Lao National Malaria Program (10')* - Update on the Asia Pacific Network for Vector Resistance – *Cecil Hugo /ACTMalaria (7')* Discussion Wrap-up &	12:15 – 12:45	*WPRO and Tran Cong Dai, WHO Viet Nam (5')* - Resource mobilization – regional financing – *Patricia Moser/ADB or Global Fund (10')* - Program management capacity building: needs and opportunities - *Cecil Hugo/ ACTMalaria (10')* - Regional initiatives and Regional Malaria Regional Technical Advisory Group - *Eva Christophel, WHO WPRO (10')* Discussion Wrap-up & recommendations – *Richard Carr, RBM Partnership* **Closing the gaps to achieve the 2015 targets – The concrete way forward** Summary of issues and recommendations identified on Days 1 and 2 – *Rose Nani Mudin, Malaysia*
10:25 – 10:40	**<u>Technical Session 1:</u> Progress in countries towards 2015 targets** *Each country presents for 10 minutes followed by 5 minutes discussion* - Papua New Guinea - Solomon Islands - Vanuatu - Philippines - Malaysia - Republic of Korea - China				
10:40 – 10:55					
10:55 – 11: 10					
11:10 – 11:25					
11:25 – 11:40					
11:40 – 11:55					
11:55 – 12:10					

Time	Day 1	Time	Day 2	Time	Day 3
			recommendations – *Steve Bjorge, WHO Cambodia*		
12:10 – 13:15	Lunch		Lunch		Lunch
13:15 – 13:30 13:30 – 13:45 13:45 – 14:00 14:00 – 14:30 14:30 – 14:45 14:45 – 15:00 15:00 – 15:15 15:15 – 15:30	*Technical session 1 (contd.)* - Cambodia - Lao People's Democratic Republic (PDR) - Viet Nam Discussion Wrap-up and recommendations – *Allan Schapira* **<u>Technical Session 2:</u> Gap Analysis to Achieve 2015 Targets** Overview of gap analysis: Overview of different models in use - *Richard Carr/RBM, Kevin Palmer/Sean Hewitt* Experience from WPR countries: PHILIPPINES: Malaria costing studies – *Philippines National Malaria Program (10')* Introduction to group work on country gap analysis - *Kevin Palmer, Deyer Gopinath*	14:15 – 15:30	**<u>Technical session 4:</u> Surveillance, Monitoring and Evaluation Strengthening for Malaria Elimination** *Organized as panels, with main speaker and country experiences* **4.1 Surveillance, monitoring and evaluation** - Global and regional perspectives -*Richard Cibulskis, Global Malaria Program, WHO HQ, and Bayo Fatunmbi, WHO WPRO (10')* - VANUATU: From patient card to malaria line list – *Vanuatu Vectorborne Disease Control Program (7')* - SOLOMON ISLANDS: Monitoring tools – *Solomon Islands Vectorborne Disease Control Program (7')* - PHILIPPINES: Malaria reporting system (PHILMIS) – *Philippines National Malaria Control Program (7')* - MALAYSIA: Surveillance system for malaria elimination – *Malaysia*	13:45 – 15:30	**Group work, by country, on closing the gaps to achieve the 2015 targets – The concrete way forward** Development of **<u>concrete country action plans</u>** to implement the recommendations (including key actions, timeframe, lead and supporting implementers, cost implications) *Facilitators: WHO and partners*

Time	Day 1	Time	Day 2	Time	Day 3
			Vectorborne Disease Program (7') Discussion Wrap-up & recommendations – *Deyer Gopinath, WHO Lao PDR*		
15:30 – 16:00	Tea/Coffee Break		Afternoon Tea		Afternoon Tea
16:00 – 17:00 17:00 – 17:30	**Group work on country gap analysis to achieve the 2015 targets** Goal: to determine, by country, major programmatic gaps and obstacles, make recommendations to address them *Facilitators: Kevin Palmer and WHO staff* **Feedback from countries on country gap analysis** *3 countries will present:* - 1 Mekong country - 1 country in national malaria elimination phase - 1 Pacific country	16:00 – 16:40 16:40 – 18:00	**4.2 Malaria elimination and program reorientation** - Overview - *Allan Schapira (10')* - KOREA: National elimination of vivax malaria – *Korea CDC (7')* - PHILIPPINES: Subnational malaria elimination certification- *Philippines National Malaria Control Program (7')* Discussion **Group work on malaria elimination and program reorientation** Goal: to determine status, discuss obstacles, determine roadmap and needs Introduction to group work on malaria elimination - *Allan Schapira, Bayo Fatunmbi* Country groups: - Malaysia, Korea, Philippines - China, Viet Nam, Lao PDR, Cambodia - Solomon Islands,	16:00 – 16:45 16:45 – 17:00	Meeting conclusions and recommendations – *Eva Christophel* Closing

Time	Day 1	Time	Day 2	Time	Day 3
			Vanuatu, Papua New Guinea		
17:30	Close for the Day	From 18:00	Satellite session on the Regional Artemisinin Resistance Initiative proposal to the Global Fund		
18:00	Refreshments hosted by WHO/MVP				

ANNEX 2

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GROUP WORK ON ELIMINATION STRATEGIES

Questions/Task	PHILIPPINES	CAMBODIA	SOLOMON ISLANDS
Select few provinces / districts where elimination is feasible over time?	La Union Zamboanga Sibugay	Kep Sihanoukville B. Meanchey	1.Isabel Provinces (IP) 2.Temotu Provinces (TP) 3.Western Province (WP)
Why do you think elimination is feasible (criteria)?	Technical Feasibility Operational	•Low incidence (past 5 years) •Low absolute number of indigenous cases. •No malaria deaths (2012) •Strong political will and support •Strong public health system for malaria –Provincial Strategic Implementation Plans –Strong local govt support –Strong Public-Private Partnership –Strong reporting system: Community -> National •Universal full Net Coverage (1 : 1) •Very high coverage of Diagnosis and Treatment availability –Public : Private •Building surveillance system –Reporting Case Investigation	1.SPR <5% IP = 0.9 TP = 6.7 WP = 4.2 2.Manageable Case Load (<1000 positives) IP = 28 TP = 248 WP = 926
Can you prioritize the provinces / districts? Give reasons?	La Union Zamboanga Sibugay		1.Isabel Provinces 2.Temotu Provinces

Questions/Task	PHILIPPINES	CAMBODIA	SOLOMON ISLANDS
	Reached the Zero case for the last 3-5 years		
What interventions will you put in place in each of them?	**Case management - diagnosis and treatment** All RHUs, BHS and hospitals with personnel trained in microscopy or RDT (hard-to-reach areas); Positives (confirmed by RDT) to be slide-confirmed QA in place; all positives and 10% negative; panel testing at least once a year ACT and gametocyte treatment for Pf, radical treatment for Pv (primaquine) TES **Vector control** LLIN Reactive IRS in foci Larval source management for areas with larval habitats that has 3 Fs – Fixed, Finite and Findable Entomological surveillance – mapping of breeding sites **Surveillance** Passive case detection Proactive case detection in a defined foci or within 1 kilometre radius where there is active/residual transmission Private Sector partnership - Special population group **Epidemiological investigation** Foci/case investigation Foci classification **Epidemic detection and response**	•Maintain Bednet coverage where risk exists •Maintain/scale up early diagnosis and treatment (VMW) •Maintain health facility services •Maintain private sector services •Improve surveillance system –Rapid/real time reporting –Case investigation •Human •Vector –Response •Active case detection (to be developed) –For special circumstances •Primaquine for vivax (to be developed)	1.Planning & Coordination 2.Surveillance 3.Vector Control 4.Case Management 5.Malaria Volunteers 6.Malaria Outbreak Management Committee 7.SOP a. Remedial Measures b. IRS Spray Team Supervisor c. MSAT d. Case Investigation e. DOTs & Follow-up f. Surveillance g. Malaria Case Management

Questions/Task	PHILIPPINES	CAMBODIA	SOLOMON ISLANDS
	PHO and MHO/CHO **Reporting and Recording** PhilMIS in the province and all endemic areas PIDSR in non-endemic areas Foci database – province/regional/ national **Additional M and E** Annual Program Review Genotyping **Advocacy and Health Promotion** Health education Community organizing Advocacy Multi-sectoral collaboration, Private-public partnerships **Basic Malaria Program Management Skills** Provincial Health Officers and Municipal Health Officers/City Health Officers of all areas **Malaria Diagnostic & Treatment Capacities** Among all personnel in all areas regardless of endemicity **Malaria in the annual operational plan** Province and all endemic municipalities		
Possible scenarios to select which intervention? What is your plan B to plan A?			
What do you need to implement the selected interventions	▪ Capability Building ▪ Disease Surveillance ▪ Rapid response	▪ Rapidly adaptable funding ▪ Constant stable staffing at all levels	▪ Manpower ▪ Materials ▪ Management

Questions/Task	PHILIPPINES	CAMBODIA	SOLOMON ISLANDS
(3Ms)	▪ Case Management/Referral Systems ▪ Resources ▪ Trained staff, funds (local, national and partners)		++ Money

ANNEX 4

LIST OF DOCUMENTS DISTRIBUTED

Malaria diagnosis

- Universal access to malaria diagnostic testing – An Operations Manual, WHO 2011 (English version) (hard copy)
- Malaria Rapid Diagnostic Test Performance. Results of WHO product testing of malaria RDTs: Round 4 (2012), 2012
- Malaria Rapid Diagnostic Test Performance. Summary results of WHO product testing of malaria RDTs: Round 1-4 (2008-2012), 2012
- Good practices for selecting and procuring rapid diagnostic tests for malaria, WHO 2011
- Malaria slide bank film – ACTMalaria/WHO (DVD)

Articles

- Developing standards for malaria microscopy: external competency assessment for malaria microscopists in the Asia-Pacific (Malaria Journal 2012, 11:352)

Malaria Drug Resistance

- Reviewing and planning therapeutic efficacy studies to monitor antimalarial drug resistance in the Greater Mekong Subregion. Meeting Report, Kunming, 12-13 June 2012 (hard copy)
- Pacific Malaria Drug Resistance Monitoring Network. Meeting Report, Manila, 08-09 August 2011 (hard copy)
- Emergency Response to Artemisinin Resistance in the Greater Mekong Subregion, Regional Framework for Action (2013-2015) (hard copy)

Malaria treatment

- Management of severe malaria – A practical handbook, 3rd edition (hard copy)
- Test, track, treat. Scaling up diagnostic testing, treatment and surveillance for malaria (hard copy)
- Case management Guide for Tutors and Guide for Participants, WHO 2012
- Good procurement practices for artemisinin-based antimalarial medicines, WHO 2010

Articles

- Performance of the CareStartTM G6PD Deficiency Screening test, a Point-of-Care Diagnostic for Primaquine Therapy Screening, PLOS 2011
- von Seidlein L, Aubur S, Espino F, Shanks D, Cheng Q, McCarthy J, Baird K, Moyes C, Howes R, Menard D, Bancone G, Winasti-Satyahraha A, Vestergaard LS, Green J, Domingo G, Yeung S, Price R. Review of key knowledge gaps in glucose-6-phosphate dehydrogenase deficiency detection with regard to the safe clinical deployment of 8-aminoquinoline treatment regimens: a workshop report. Malaria J. 2013 Mar 27; 12(1):112.

Vector control

- Guidelines for laboratory and field testing of long-lasting insecticidal nets (2013) (hard copy)
- Indoor residual spraying – an operational manual (2013) (hard copy)
- "Monitoring and Evaluation indicators for IVM" (2013)
- Test procedures for monitoring susceptibility of mosquitoes to insecticides (2013) (hard copy)

- Global Plan for Insecticide Resistance Management in malaria vectors (GPIRM) (2012) and executive Summary (hard copy)
- Guidance on policy-making for integrated vector management (2012)
- Handbook for integrated vector management, (2012)
- Core structure for training curricula on integrated vector management (2012)
- Global Strategy for Dengue Prevention & Control 2012 – 2020 (2012) (hard copy)
- WHO (2012) Guidelines for Procurement of Public Health Pesticides
- Guidelines for monitoring the durability of long-lasting insecticidal mosquito nets under operational conditions (2011), WHO
- Biregional Workshop to Monitor Insecticide Resistance and Mapping of Malaria Vectors in the Greater Mekong Subregion, March 2012, Bangkok (hard copy)
- Insecticide resistance monitoring forms (2013)

Articles

- A qualitative study on the acceptability and preference of three types of long-lasting insecticide-treated nets in Solomon Islands: implications for malaria elimination, Malaria Journal publication, 2009
- Review of delivery strategies for insecticide treated mosquito nets- are we ready for the next phase of malaria control efforts? Article in Tropika.net 2010
- Long-lasting Insecticide Hammocks for Controlling Forest Malaria: A Community-based Trial in a Rural Area of Central Vietnam, PLOS publication 2009

Surveillance and Monitoring & Evaluation

- World Malaria Report 2012
- World Malaria report country profiles for 10 WPR endemic countries – 2007 – 2012
- Defeating malaria in Asia, the Pacific, Americas, Middle East and Europe and Policy brief (hard copy)
- Progress in malaria control and moving towards elimination in Solomon Islands and Vanuatu (hard copy)
- Disease Surveillance for Malaria Control (hard copy)
- Disease Surveillance for Malaria Elimination (hard copy)
- Lao Surveillance Bulletin

Malaria elimination

- Eliminating Malaria: Learning from the Past, Looking Ahead (hard copy)
- Eliminating Malaria – Case study 1: Achieving elimination in Turkmenistan
- Eliminating Malaria – Case study 2: Moving towards sustainable elimination in Cape Verde
- Eliminating Malaria – Case study 3: Progress towards elimination in Sri Lanka

Article

- Malaria control and elimination in Sri Lanka: Documenting progress and success factors in a conflict setting – PLOS 2012
- Malaria control in Bhutan: case study of a country embarking on elimination – Malaria Journal 201
- A high-resolution geospatial surveillance-response system for malaria elimination in Solomon Islands and Vanuatu. Malaria Journal. 2013 Mar 21; 12(1):108.

Malaria program issues

- Malaria program reviews: a manual for reviewing the performance of malaria control and elimination programs (2010) WHO

- World Health Assembly resolutions on malaria: 2007, 2011 & 2013 (hard copies)
- Political commitment: (hard copies)
  - ASEAN MOH declaration
  - Joint Statement, 11th ASEAN Health Minister Meeting, 5 July 2012, Phuket, Thailand
  - Joint Statement, 5th ASEAN Plus Three Health Ministers Meeting, 6 July 2012, Phuket, Thailand
  - Joint Statement, 4th ASEAN-China Health Ministers Meeting, 6 July 2012, Phuket, Thailand
  - Malaria 2012 Sydney:
  - Australian Government, AusAID Communique, Sydney, 2 November 2012 – (hard copy)
  - Malaria 2012 Issues Papers 1-5
  - ASEAN Declaration of the 7th East Asia Summit on malaria, Phnom Penh, Cambodia, 20 November 2012

- Template for malaria program review plan, proposal and partnerships, WHO 2013

Research

- Research strengthening with emphasis on infectious diseases of poverty – update Jan 2013, MVP WHO, WPRO

Others

- Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010 – 2015) (hard copy)
- Regional Meeting for Malaria Program Managers: Progress towards Malaria Elimination in the Western Pacific, August 2011, Manila. Meeting Report. WHO (hard copy)
- Informal Consultation on the Public Health Importance of *Plasmodium knowlesi* (hard copy)
- Strengthen control of vectorborne diseases to lessen the impact of climate change in the Western Pacific Region with focus on Cambodia, Mongolia and Papua New Guinea. Final project report. WHO 2012

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