THE FIGHT AGAINST MALARIA AND OTHER VECTORBORNE AND PARASITIC DISEASES
The World Health Organization’s Western Pacific Region is home to more than one quarter of the world’s population. It stretches over a vast area, from China and Mongolia in the north and west, to New Zealand in the south, and the Pitcairn Islands in the South Pacific in the east. The Region is exceptionally diverse, including some of the world’s least developed countries as well as rapidly emerging economies and developed nations. In all, there are 37 countries and areas in the Western Pacific Region.

Working together with a broad spectrum of partners from all sectors of society, WHO in the Western Pacific is involved in a host of closely related public health activities, including country programme support, research, databanking, evaluation, awareness raising and resource mobilization.

WHO’s mission: To support all countries and peoples in their quest to achieve a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.
Malaria, other vectorborne and neglected tropical diseases are a serious and persistent threat to public health in many parts of Asia. In the Western Pacific Region, WHO’s response to these diseases is led mainly by experts grouped in the MVP unit – for Malaria and other Vectorborne and Parasitic Diseases.

With its base in WHO’s Western Pacific Regional Office in Manila, the Philippines, and with specialists deployed across the Region, MVP has a force of some 19 malarialogists, entomologists, public health specialists, programme managers and health scientists.

MVP’s role is to contribute to the achievement of the Millennium Development Goals (MDGs) by reducing the health burden caused by vectorborne and parasitic diseases—and, where possible, to eliminate these diseases.

MVP’s activities include:

• Providing leadership and guidance;
• Ensuring country support and capacity building;
• Tracking and reporting progress, including the sharing of best practices;
• Sustaining donor interest and forging new partnerships;
• Working with other health programmes, organizations and partners;
• Research into infectious diseases related to poverty – and moving from evidence to action.

The unit’s activities break down into four key areas of work: malaria, dengue, neglected tropical diseases and research into infectious diseases related to poverty. Increasingly, it is also responding to the impact of climate change on MVP diseases.
Malaria is endemic in 10 countries in the Western Pacific Region, where it continues to present a significant threat to health and economic growth. About 694 million people are at risk of malaria.

Effective control of malaria in the Region is challenging. The epidemiology of the disease is variable, and different situations require specific control strategies, according to risk groups, vector behaviour, local health infrastructure and environmental conditions.

In the past decade, an unprecedented amount of funding for malaria control and elimination has become available. From the Global Fund to fight AIDS, TB and Malaria (GF) alone, more than US$ 860 million have become available for eight malaria-endemic countries in this Region. This has led to an enormous scale-up of interventions. The malaria burden has dropped to an extent that most countries have included malaria elimination objectives in their most recent national malaria strategies.

Challenges

• The diversity of malaria in this Region makes progress difficult. Multiple parasite species, complex vector species, varied socio-economic development status, rapidly changing environments/eco-systems all require dynamic and comprehensive approaches to malaria.

• New threats are appearing, including growing signs of resistance to artemisinin, the key component of the current cornerstone of malaria treatment: artemisinin-based combination therapies (ACTs). Four countries in the Greater Mekong Subregion (GMS) are currently affected, of which two, Cambodia and Viet Nam, are in the Western Pacific...
Region. Artemisinin resistance is becoming increasingly recognized but has yet to attract adequate high-level political commitment.

- Oral artemisinin monotherapies, which are regarded as the most important contributor to artemisinin resistance, continue to be produced and marketed in this Region. Dangerous counterfeit medicines continue to circulate. Substandard antimalarial medicines are available.

- Weak surveillance systems and the limited use of a radical cure for the increasing proportion of vivax malaria in a number of countries of this Region pose a big challenge to the malaria elimination agenda.

- New roads and railways, hydro dams, plantations and mining projects have increased prosperity in the GMS, but have also brought about changes in vector ecology and population movements.

- Mosquito resistance to insecticides is growing, potentially challenging the use of long-lasting insecticidal mosquito nets as a central pillar of malaria control, as well as indoor residual spraying of houses.

- Human resources for malaria programmes in some countries are decreasing with the disease burden diminishing and the increasing wealth of countries – with negative consequences for the intensity of the programme requirements for malaria elimination.

Many migrant workers travel to and from malaria-endemic to non-endemic areas, in country and across borders. This can reintroduce malaria in malaria-free areas, can contribute to the spread of drug resistance, and can place those with little immunity at risk of severe disease and possibly death.
• The sustainability of financing for malaria control and elimination is a cause for concern in those countries reliant on external funds. The situation is compounded by the global financial crisis and drastic cuts in funding available through major donors.

Achievements

• Malaria interventions in most countries have been successfully scaled up to high coverage with long-lasting insecticide-treated mosquito nets, malaria diagnosis using microscopy or rapid diagnostic tests, and all countries are now using ACT (except for the Republic of Korea which has vivax malaria only). At a household level, the growing use of long-lasting insecticide-treated bed nets has played a decisive role in reducing transmission.

• From 2000 to 2011, the number of confirmed malaria cases in endemic countries was reduced by 44%, while malaria deaths were down by 73%. However, many cases and deaths still go unrecorded in some countries.

• Several countries have reduced malaria to the point where 9 out of 10 malaria-endemic countries have included malaria elimination objectives in their most recent national malaria strategies.

• Even high-burden malaria countries in the Pacific, such as Papua New Guinea, Solomon Islands and Vanuatu, have significantly reduced malaria prevalence.

• Artemisinin resistance on the Cambodia-Thailand border has been comprehensively addressed through a major effort by governments and partners, coordinated by WHO; falciparum malaria has been reduced to almost zero per 1000 population at risk. Successfully piloted
innovative approaches are being scaled up.

- Increasing political commitment, strong partner support, increasing technical expertise and the integration of malaria control into community-based health systems have been key elements in this success.

**WHO in Action**

- WHO in the Western Pacific Region now has 15 experts working on malaria in eight endemic countries—an unprecedented number and a reflection of the commitment of the organization and its partners to fighting the disease in the field.
- WHO provides technical guidance and support to Member States and partners and coordinates action at all levels, including cross-border collaboration and harmonized malaria-related activities in the Region.

- The WHO response is guided by the Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010–2015), which was developed in close association with Member States and endorsed by the Regional Committee in 2009. The plan’s goal is to reduce malaria mortality and morbidity by 50% by 2015 compared with 2007, and to interrupt malaria transmission in targeted areas in at least seven countries. Key strategies include:
  - Strengthen malaria programme management based on firm political commitment and strong partnerships;
  - Ensure full coverage of the population at risk with vector control measures;
  - Maximize utilization of malaria services through health promotion and strengthen community mobilization;
WHO is doing its utmost to counter signs of resistance to artemisinin in the GMS, to prevent its spread, and to coordinate a regional response and engage partners such as ASEAN, in line with the Global Plan for Artemisinin Resistance Containment (GPARC, 2011).

- Access for all to early diagnosis and affordable, safe, effective and prompt antimalarial combination treatment, including community-based diagnostic and treatment services;
- Access of vulnerable, poor and/or marginalized populations at risk to malaria control services;
- Strengthen surveillance and outbreak response;
- Accelerate malaria elimination.
Dengue is the world’s fastest emerging mosquito-borne disease. Among the estimated 2.5 billion people at risk globally, about 1.8 billion—more than 70%—live in Asia Pacific countries.

The impact of dengue fever and severe dengue is enormous and places significant burdens on families, communities, health systems, and economic growth.

The epidemiology of dengue is rapidly evolving, with increased frequency of outbreaks and expansion to new geographical areas that were previously unaffected.

The virus is transmitted to humans mainly through the bites of infected female *Aedes aegypti* and *Aedes albopictus* mosquitoes. The *Aedes aegypti* mosquito breeds principally in containers used for water storage in urban and peri-urban settings, and in such items as discarded receptacles containing water.

**Challenges**

- There is no specific treatment or vaccine for dengue or severe dengue (previously known as dengue haemorrhagic fever or dengue shock syndrome), but early detection and access to proper medical care can lower fatality rates for severe dengue to below 1%.
- Dengue does not respect international boundaries. Effective control requires the adoption of a regional approach through collaboration among countries and through sustained partnerships.
  - *Aedes aegypti*, the principal vector, has adapted well to the urban environment and thrives under conditions of poor housing, overcrowding, and inadequate water supplies.
  - Pending the development of an effective vaccine, current dengue prevention depends on vector
control and social mobilization, but inadequate resources and capacity for sustained action have resulted in control measures being implemented mainly after outbreaks in many countries.

**Achievements**

- Improved case management in some countries has reduced case fatality rates for severe dengue to very low levels (less than 0.1%). In some other countries, case fatality rates have also dropped, but are still unacceptably high.
- Experiments in Cambodia and the Lao People’s Democratic Republic using guppy fish to devour mosquito larvae in household water containers showed that this is an effective, inexpensive, community-based way of fighting dengue.
- The inaugural ASEAN Dengue Day, on 15 June 2011, was heartening proof that member nations of ASEAN (the Association of Southeast Asian Nations) are increasingly aware of the threat posed by dengue and are committed to working together to contain the disease.

**WHO in Action**

- WHO provides critical support to Member States at times of dengue outbreaks. This includes coordinating local partner agencies, mobilizing resources and providing experts trained in field epidemiology, treatment and vector control field operations.
- WHO is heavily involved in building country capacity on vector surveillance and sustainable...
community-based control through its Integrated Vector Management concept, which includes advocacy, social mobilization, integrated interventions and evidence-based decision-making.

- WHO has established an online data centre for monitoring trends in mosquito insecticide resistance in the Asia Pacific, and is engaged in strengthening capacity at national level to manage the emergence and spread of insecticide resistance in disease vectors.

- WHO is supporting Member States on sound management of public health insecticides, including procurement, storage, transportation and safe handling, and field application.

- At WHO, the tasks of dengue prevention and control are divided. The Emerging Disease Surveillance and Response unit (ESR) is in charge of dengue outbreak control, surveillance and case management, while MVP provides support for vector control, social mobilization and research.

- WHO continues to stress that dengue prevention and control is an intersectoral issue requiring the mobilizing of national resources and commitment at the highest political level.
Neglected tropical diseases (NTDs) are a serious public health issue in at least 28 countries and areas in the Western Pacific Region. They are the most common infections of poor people, and indeed promote poverty through their long-lasting effects on child development and learning, on the outcome of pregnancy, and on worker productivity.

The priority NTDs in the Western Pacific Region are lymphatic filariasis, schistosomiasis, trachoma, leprosy, yaws, soil-transmitted helminthiases, and foodborne trematodiases. In addition, leishmaniasis, echinococcosis, taeniasis/cysticercosis, rabies, strongyloidiasi, Buruli ulcer and scabies are endemic in parts of the Region.

Many NTDs can be controlled or eliminated through preventive chemotherapy (the mass distribution of medicines to at-risk populations), while others require individual case management. The long-term solution to many of these diseases requires improvements in poverty, water supply, sanitation, hygienic practices, food safety, and agricultural methods.

With the rising global political profile of NTDs, as well as technological breakthroughs, this is a time of great opportunity for scaling up programmes and “finishing the job” for those diseases slated for elimination.

**Challenges**

- Limited funding is impeding progress towards control or elimination of these diseases. Sustainable programme management and well trained health-service staff are imperative, yet the diversity of the diseases and strategies, the co-endemicity of two or more NTDs in some
areas as well as often low political commitment make this difficult to achieve.

- Greater efforts are needed to further expand the coverage of interventions, specifically preventive chemotherapy, case management, and transmission control.

- Monitoring of changes in disease epidemiology, transmission, and treatment compliance remains a challenge. Monitoring and evaluation are crucial to track progress and modify strategies as needed.

- Poor investment in hygiene behaviour change, clean water and sanitation in schools and communities, as well as “unclean” agriculture practices in some countries and areas is compromising gains from mass drug administration.

- Sustained support is needed to further assess the burden of disease and adapt newly developed tools and guidelines to suit the various epidemiological situations and populations at risk.

- Countries and areas need to complete interventions to eliminate lymphatic filariasis, schistosomiasis, blinding trachoma, leprosy, and yaws and put appropriate surveillance in place to monitor for re-emergence and to adequately treat clinical cases.

- Increased emphasis on inter-sectoral collaboration and partnerships at all levels is necessary if required outcomes are to be achieved and sustained.

Achievements

- China, the Solomon Islands and the Republic of Korea have already eliminated lymphatic filariasis thanks to strong political commitment, dedicated national budgets and good community
support. Ten countries and areas are in the post-intervention surveillance phase and on their way to verify elimination by 2016.

- Cambodia and the Lao People’s Democratic Republic, which were among the earliest countries in the world to reach the WHO goal of 75% deworming coverage of school-aged children, show it is possible to scale up health interventions in collaboration with other sectors, especially education through school deworming.

- Cambodia, China, the Lao People’s Democratic Republic and the Philippines have significantly reduced morbidity from schistosomiasis and can now move from control to an elimination goal.

WHO in Action

- The WHO response to NTDs is guided by the *Regional Action Plan for Neglected Tropical Diseases in the Western Pacific (2012–2016)* and globally by *Accelerating Work to Overcome the Global Impact of Neglected Tropical Diseases – A Roadmap for Implementation*.

- The regional plan provides a framework for integrated country NTD plans, a tool for monitoring national NTD programmes, and a means to mobilize internal and external resources.

- The regional goal is to reduce the health and socio-economic impact due to NTDs, especially among vulnerable groups. This includes eliminating specific NTDs where feasible. Successful implementation of programme activities is expected to result in, by 2016:
  - Elimination of lymphatic filariasis in 10 additional countries and areas;
  - Elimination of schistosomiasis in Cambodia, China, and the
Lao People’s Democratic Republic;

▪ Elimination of blinding trachoma in Cambodia, China, and Viet Nam;

▪ Elimination of leprosy in Kiribati, the Marshall Islands, and the Federated States of Micronesia and further reduction of disease burden in other countries and areas;

▪ Reduction of clinical cases of yaws to zero in high-risk areas in Vanuatu and progress towards elimination in Papua New Guinea and Solomon Islands;

▪ Reduction in morbidity from soil-transmitted helminthiases through national deworming coverage of at least 75% of at-risk school-aged children in 12 countries, preschool-aged children in 10 countries, and women of childbearing age in four countries;

▪ Reduction in morbidity from foodborne trematodiases through preventive chemotherapy coverage of at least 75% of the at-risk population in the Republic of Korea, the Lao People’s Democratic Republic and Viet Nam.

MVP is in charge of the parasitic diseases among the NTDs as well as yaws, while trachoma, leprosy and other NTDs are under other units.
Research is one of WHO’s core functions, enabling programme managers and policy makers to make the right decisions to improve health outcomes.

In the Western Pacific Region, research is a vital component of key regional plans for infectious diseases associated with poverty, such as malaria, dengue and tuberculosis.

In collaboration with researchers, academic institutions and partners, WHO developed a draft Regional Research Framework to Strengthen Communicable Diseases Control and Elimination in the Western Pacific (2012–2016). The plan identifies key areas of work, and will serve as a guide for research strengthening.

Within the Region, some countries are advanced in research capacity and can be used as models for other countries. However, in some countries and areas, the capacity for research is limited and is dependent on outside support.

In order to help plug that gap, WHO has provided support for training young and/or new researchers in disease-endemic countries through the provision of small grants.

Although a considerable amount of research on infectious diseases of poverty is taking place in the Region, troublesome challenges to strengthening these activities remain. These include:
• Significant gaps in knowledge of communicable diseases, particularly NTDs. Knowledge gaps include the needs of vulnerable populations such as ethnic minorities, migrant populations and prisoners.

• Disease-specific operational research needs have not been clearly defined for some diseases, particularly NTDs, and needs that have been identified are not adequately communicated.

• Evidence-led decision making at policy and programme levels is still weak.

• Resource mobilization to support health research continues to be a challenge. Some currently available resources are sometimes not fully utilized by countries in need of research strengthening.

• There is limited research capacity, particularly in disease-endemic Member States.

Despite these challenges, research has resulted in important achievements. In the field of malaria, research—jointly with partners—has helped confirm artemisinin resistance on the Cambodia-Thailand border.
Climate change is estimated to cause over 150,000 annual deaths globally. Its effects will continue to be felt most in the poorest and most vulnerable population groups.

Key ways in which health may be affected by climate change include the direct impact of extreme weather events, a lack of clean water, impaired nutrition due to decreased food security, and an increase in infectious diseases, including vectorborne diseases. Low-lying Pacific nations are at risk of rising sea levels and problems associated with that phenomenon.

Vectorborne diseases are particularly affected by climate change because climate determines vector survival, reproduction and behaviour. Warming of the environment may expand the geographical range and seasonality of vectors of malaria, dengue and other diseases. It can increase their reproductive rate and shorten the maturation time of the pathogens they transmit.

Studies indicate that these impacts are likely to result in an increased threat from vectorborne diseases in the most vulnerable populations. Consequently, these diseases feature prominently in country climate-change health adaptation plans.

Addressing these risks, MVP in collaboration with the Environmental Health (ENH) and Emerging Disease Surveillance and Response (ESR) units has managed a climate change and vectorborne diseases project in priority areas in Cambodia, Mongolia and Papua New Guinea, funded by the Korean International Cooperation Agency (KOICA). It involved:

- Conducting vulnerability analyses in each country to identify priority geographical areas, diseases and populations most at risk. Interventions were planned accordingly;
- Strengthening capacity for monitoring changes in climatic...
conditions, vector densities and disease burdens, enabling prompt responses;

• Adaptation activities, including establishing and strengthening diagnosis and treatment capacity to minimize the impact of vectorborne diseases in the most affected and vulnerable communities;

• Identifying knowledge gaps and conducting research to further understand climatic determinants of outbreaks and to plan for disease early-warning systems;

• Working with intersectoral stakeholders to improve health and non-health sector collaboration to address this growing threat as well as working inter-programmatically.

• Providing non-health sector data and expertise to health sector experts in countries, enabling them to make informed decisions and better focus their communications.

Building on these strong interprogrammatic relationships with WHO colleagues, country networks and intersectoral partners, MVP continues to address the risks of climate change and other environmental determinants of disease. At the forefront are strengthened vector, climate and disease surveillance systems. Improved understanding of seasonal and inter-annual trends will make it easier to identify and respond quickly to disease outbreaks.

Responding to requests from Member States, MVP works closely with ENH to advocate climate change and vector-borne health interventions. We are actively seeking collaborations and partnerships with other stakeholders in this area, including with development banks, academic institutions and other UN agencies.
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