Committee: World Health

Question of: The question of Eradicating Malaria (B)

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Introduction:

Malaria is a life-threatening disease. It’s typically transmitted through the bite of an infected *Anopheles* mosquito that carry the *Plasmodium* parasite. When this mosquito bites, the parasite is released into the bloodstream. This disease is usually found in tropical and subtropical climates where the parasites that cause it live. It can cause a number of life-threatening complications: swelling of the blood vessels of the brain, or cerebral malaria; an accumulation of fluid in the lungs that causes breathing problems, or pulmonary edema; organ failure of the kidneys, liver, or spleen; anemia due to the destruction of red blood cells; low blood sugar.

Malaria *elimination* is the interruption of local transmission (reduction to zero incidence of indigenous cases) of a specified malaria parasite species in a defined geographic area; continued measures are required to prevent re-establishment of transmission.

Malaria *eradication* is defined as the permanent reduction to zero of the worldwide incidence of malaria infection caused by all species of human malaria parasites. Once eradication has been achieved, intervention measures are no longer needed.

The question is no longer whether international agencies and national health authorities should be mobilized to pursue the goal of malaria eradication, but rather when and how.

A key question to consider, is whether elimination from all regions of the world (eradication) is feasible with the current tools and state of knowledge. For a number of reasons, the logic answer is “no.” First, malaria is not a single disease. The five *Plasmodium* species (falciparum, vivax, ovale, malariae, knowlesi) that cause human malaria are transmitted by more than 30 Anopheline mosquito species with diverse breeding and feeding habits, and result in different disease spectra in different population target groups and epidemiological settings.

The issue:

The World Health Organization (WHO) stated that about half of the world’s population were at risk of being infected with malaria in 2015. In the United States, the Centers for Disease Control and Prevention (CDC) report 1,700 cases of malaria annually. There were 216,000,000 cases registered in 2016 and 445,000 deaths due to Malaria worldwide. Most cases are developed in people who travel to
countries where malaria is more common. The symptoms of malaria typically develop within 10 days to four weeks following the infection. In some cases, symptoms may not develop for several months.

As one of the consequences of climate changes, the raising temperatures are causing the raise of malaria cases. This is because the *anopheles mosquito* needs warm temperatures to live and these temperatures are now extended worldwide. Some countries are more infected than others and that depends mostly on where they are located and the temperature they have.

Countries are situated at different points along the road to elimination. The rate of progress will depend on the strength of the national health system, the level of investment in malaria control and a number of other factors, including biological determinants; the environment; and the social, demographic, political and economic realities of a particular country.

Malaria elimination efforts are driven by ministries of health in endemic countries. As countries approach elimination, they continue to receive technical support from WHO and other partners and, in some cases, financial support from the Global Fund and other donors. However, most elimination efforts are financed largely through domestic resources.

In countries with high or moderate rates of malaria transmission, national malaria control programs aim to maximize the reduction of malaria cases and deaths. There are also some organizations, committees, non governmental organizations, etc which aim to eradicate malaria amongst other issues.

**World Health Organisation (WHO):**

WHO began on 7 April 1948 – a date now celebrated every year as World Health Day. There are more than 7000 people working in 150 country offices, in 6 regional offices and at the headquarters in Geneva. Their primary role is to direct and coordinate international health within the United Nations’ system. It created the Malaria Policy Advisory Committee (MPAC) which was established in 2011 to provide independent strategic advice to WHO on developing policy recommendations on malaria control and elimination.

**Center for Disease Control and Prevention (CDC):**

The CDC is one of the major operating components of the Department of Health and Human Services. CDC conducts critical science and provides health information that protects the nations against expensive and dangerous health threats, and responds when these arise.

**Malaria Elimination Oversight Committee (MEOC):**

In March 2017, MPAC endorsed the creation of two new committees to support malaria elimination goals: the Malaria Elimination Oversight Committee (MEOC) and the Malaria Elimination Certification Panel (MECP). The responsibilities of the MEOC are to: evaluate national and regional progress towards malaria elimination according to established milestones and timelines; determine the need for corrective actions to address programmatic or operational bottlenecks, and evaluate plans developed to address such issues; identify any risks to malaria elimination that need to be addressed by WHO, regional initiatives or national programs; provide WHO and the Global Malaria Program (GMP)
with observations and/or draft recommendations with respect to policies or guidance related to malaria elimination for MPAC’s consideration; question the status quo and confront difficult issues.

**Malaria Elimination Certification Panel (MECP):**

The MEOC is charged with helping countries reach malaria-free status, whereas the MECP is responsible for reviewing evidence and recommending when a country has met the criteria for elimination and therefore should be certified by the Director-General. The specific duties of the MECP are to: review submitted country documentation and national elimination reports; conduct country assessments and field missions to verify findings in the national elimination report; develop a final evaluation report and submit it to MPAC through WHO/GMP with a recommendation either to certify malaria elimination or to postpone certification, based on the analyses described above.

**Seasonal malaria chemoprevention (SMC):**

Seasonal malaria chemoprevention is defined as the intermittent administration of full treatment courses of an antimalarial medicine to children in areas of highly seasonal transmission during the malaria season.

Their objective is to prevent malarial illness by maintaining therapeutic antimalarial drug concentrations in the blood throughout the period of greatest malarial risk. WHO recommends SMC with sulfadoxine-pyrimethamine + amodiaquine in areas with highly seasonal malaria transmission in the Sahel sub-region of sub-Saharan Africa, where *P. falciparum* is sensitive to both antimalarial medicines.

**Action and Investment to defeat malaria 2016–2030 (AIM):**

Action and Investment to defeat Malaria 2016–2030 (AIM) – for a malaria-free world builds on the success of the first Global Malaria Action Plan – for a malaria-free world, serving as both a clarion call and a guide for collective action for all those engaged in the fight against malaria.

As the result of an extensive consultative process, AIM complements the WHO Global Technical Strategy for Malaria 2016–2030 by positioning malaria in the wider development agenda. It illustrates how reducing and eliminating malaria creates healthier, more equitable and prosperous societies, and promotes a broadly inclusive and multisectoral response.

Both documents share the 2016–2030 timeline of the Sustainable Development Goals, and provide direction towards the 2030 malaria goals.

**Affordable medicine Facility-malaria (AMFm):**

The AMFm is a financing mechanism whose aim has been supply quality-assured artemisinin-based combination therapies (ACTs) at highly subsidized prices in the public, private not-for-profit, and private for-profit sectors. Beginning in 2010, phase 1 of AMFm included nine pilots in eight countries: Cambodia, Ghana, Kenya, Madagascar, Niger, Nigeria, United Republic of Tanzania (mainland and Zanzibar), and Uganda. The AMFm’s stated objectives have been to: a) increase ACT affordability; b) increase ACT availability; c) increase ACT use, including among vulnerable groups; and d) increase the market share of ACTs relative to oral artemisinin-based monotherapies and other less effective antimalarial medicines.
The AMFm is hosted and managed by the Global Fund to Fight AIDS, Tuberculosis and Malaria, with financial support provided by UNITAID and other donors. At the end of 2011, an independent evaluation was conducted of the pilot, and the final assessment report was published in September 2012. At its next board meeting in November 2012, the Global Fund decided whether to continue, modify, expand, suspend or terminate the AMFm. The IE was not able to give a clear and unambiguous answer as to whether AMFm had a clear and indisputable impact on malaria mortality and morbidity. Mortality and morbidity benefits of any package of malaria control interventions are difficult to assess, and separating out the relative contribution of several concomitant malaria control interventions may not be technically feasible even if more time were available for the assessment of impact. However, there is sufficient evidence from the Phase 1 pilot programmes and other related studies that a manufacturer-level subsidy can increase access to effective antimalarial treatments (in this case QAACtS). In order to improve targeting of malaria treatment, efforts to improve access to affordable and quality assured malaria diagnostic testing should be an integral part of initiatives aiming at improving access to QAACtS in both the public and private sectors. Modification was recommended. In September 2012, the Global Fund board extended Phase 1 until 31 December 2013 to ensure an orderly transition to the chosen future arrangement. WHO has been participating in the AMFm Working Group of the Global Fund’s Market Dynamics Advisory Group, and has contributed to the broad-based consultation on the future of AMFm.

Key events:

- World Health Organization (WHO) embarked on the Global Malaria Eradication Program (GMEP) in 1955. Fourteen years later, the campaign was discontinued when it was recognised that eradication was not achievable with the available means in many areas, although the long-term goal remained unchanged. During the GMEP, malaria was permanently eliminated from many regions. In other areas, however, substantial gains were lost in resurgences, sometimes of epidemic proportions.

- In 1987 the first vaccine against malaria was produced by Manuel Elkin Patarroyo with a 30-60% efficiency. Later in 1994 he founded a second and more efficient vaccine for this illness.

- Discovery of the Malaria Parasite (1880)Charles Louis Alphonse Laveran, a French army surgeon stationed in Constantine, Algeria, was the first to notice parasites in the blood of a patient suffering from malaria.

- The Panama Canal (1905-1910)The construction of the Panama Canal was made possible only after yellow fever and malaria were controlled in the area.

- Malaria Control in War Areas (MCWA) (1942-1945)MCWA was established to control malaria around military training bases in the southern United States and its territories, where malaria was still problematic.

- Elimination of Malaria in the United States (1947-1951)The National Malaria Eradication Program, a cooperative undertaking by state and local health agencies of 13 Southeastern states and the CDC, originally proposed by Louis Laval Williams, commenced operations on July 1, 1947. By the end of 1949, over 4,650,000 housespray applications had been made. In 1947, 15,000 malaria cases were
reported. By 1950, only 2,000 cases were reported. By 1951, malaria was considered eliminated from the United States.

- Eradication Efforts Worldwide: Success and Failure (1955-1978) Stamps highlighting malaria eradication. With the success of DDT, the advent of less toxic, more effective synthetic antimalarials, and the enthusiastic and urgent belief that time and money were of the essence, the World Health Organization (WHO) submitted at the World Health Assembly in 1955 an ambitious proposal for the eradication of malaria worldwide. Eradication efforts began and focused on house spraying with residual insecticides, antimalarial drug treatment, and surveillance, and would be carried out in 4 successive steps: preparation, attack, consolidation, and maintenance. Successes included elimination in nations with temperate climates and seasonal malaria transmission. Some countries such as India and Sri Lanka had sharp reductions in the number of cases, followed by increases to substantial levels after efforts ceased. Other nations had negligible progress (such as Indonesia, Afghanistan, Haiti, and Nicaragua). Some nations were excluded completely from the eradication campaign (most of sub-Saharan Africa).

Previous attempts to solve the issue:

Possible solutions:

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<th>Event/date</th>
<th>Explanation</th>
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<td>May 2005</td>
<td>The Fifty-eighth World Health Assembly was held at the Palais des Nations, Geneva, from 16 to 25 May 2005, in accordance with the decision of the Executive Board at its 114th session. (WHA58.1) <a href="http://apps.who.int/gb/ebwha/pdf_files/WHA58-REC1/english/Resolutions.pdf">http://apps.who.int/gb/ebwha/pdf_files/WHA58-REC1/english/Resolutions.pdf</a></td>
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<td>1955</td>
<td>the World Health Organization (WHO) launched the Global Malaria Eradication Programme (GMEP), an ambitious plan to eradicate malaria worldwide. The Programme relied heavily on two tools: the drug chloroquine for prevention and treatment of malaria and the chemical DDT for mosquito control</td>
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<td>Amsterdam 1992.</td>
<td>A Ministerial Conference convened by WHO, marked a turning point in global efforts to contain malaria. In view of the increasing gravity and complexity of malaria, senior health leaders from 65 countries called for a renewed attack on the disease. A new WHO Global Malaria Control Strategy, endorsed by the Conference, was adopted the following year by the World Health Assembly.</td>
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-Providing access to the WHO-recommended package of effective tools that prevent, diagnose and treat malaria for all people at risk of the disease. This package of tools – including quality-assured vector control, chemoprevention, diagnostic testing and treatment of confirmed malaria cases – can dramatically reduce morbidity and mortality. The metrics of success are reductions in malaria case incidence and in rates of malaria mortality.

- High burden countries can also work towards malaria elimination through enhancing and optimizing malaria prevention and treatment measures, and strengthening the malaria surveillance system.

- As countries approach elimination, enhanced surveillance systems can help ensure that every infection is detected, treated and reported to a national malaria surveillance system. Patients with parasitological confirmation of malaria (i.e. a positive laboratory test result) should be treated promptly with effective antimalarial medicines for their own health and to prevent onward transmission of the infection in the community.

- In some countries nearing elimination, a high proportion of cases are found among migrant and mobile populations living in hard-to-reach areas, often near international borders. Infections imported by visitors and migrants must be identified and treated rapidly.

**Bibliography:**

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