



QUESTIONS AND ANSWERS ON MALARIA

About malaria

Q1 - What is malaria exactly?

In a few words, can you tell me about malaria?

A1 - Malaria is a life-threatening disease caused by a parasite and transmitted to humans by mosquito bite.

- Incidence: today, between 350 and 500 million people a year are infected with malaria..
- Health impact: malaria notably results in debilitating fevers, low birth weight, anaemia, epilepsy and death.
- Death toll: over 1 million people a year die from the disease.

Q2 - Who are the most vulnerable populations?

A2 - The most vulnerable populations are pregnant women and children - malaria kills one child every 30 seconds. Malaria is indeed the biggest killer disease for children in Africa (more than AIDS, TB or any other disease) and a primary cause of death and poverty.

Q3 - Can you tell me a little bit more about the disease?

How is malaria caused? What are the symptoms / complications?

A3 - The parasite:

Malaria is caused by a one-celled parasite called *plasmodium*. The most common strain, *plasmodium falciparum* is also the deadliest, being responsible for 95% of malaria related deaths, worldwide, especially in Africa.

The process:

Malaria works by infiltrating human cells - first the liver, then the blood stream - growing and multiplying until the infected red blood cells rupture, freeing the parasites to attack and enter other red blood cells.

The symptoms

Symptoms of malaria include fever, headache, and vomiting, and usually appear between 10 and 15 days after the mosquito bite. If not treated, malaria can quickly become life-threatening by disrupting the blood supply to vital organs. In many parts of the world, the parasites have developed resistance to a number of malaria medicines. (Source: WHO).

Complications

Complications of the infection may lead to life-threatening anaemia or cerebral malaria and even death. In the case of cerebral malaria, the infected red cells obstruct the blood vessels in the brain. Other vital organs can also be damaged. Most vulnerable populations are children and pregnant women.

**Q4 - What is the best approach to fight against malaria?
How can we contain malaria today?**

A4 - Experts agree that, to control malaria, a comprehensive approach is necessary, which is threefold:

- Prevention, meaning providing insecticide-treated bed nets, spraying the inside walls of houses with insecticides and administering intermittent preventative treatment to infants and pregnant women.
- Diagnosis and treatments, meaning providing prompt access to diagnosis and anti-malarial drugs, and a packet of interventions through strengthened antenatal care services for pregnant women.
- Education, meaning empowering families and communities with the knowledge and resources to combat this disease.

Geographical coverage and impact

**Q5 - Which countries are the most affected by malaria?
Who are the most affected populations?**

A5 - Malaria is a major public health problem in more than 90 countries, inhabited by close to 2.5 billion people, or 40% of the world's population. Large areas of Central and South America, Hispaniola (Haiti and the Dominican Republic), Africa, the Indian subcontinent, Southeast Asia, the Middle East, and Oceania are considered malaria-risk areas - and even parts of Europe are concerned. Yet, over 60% of malaria cases and 90% of malaria deaths are recorded in Africa. (Source: UNESCO)

Q6- What is the economic impact of malaria?

A6 - Malaria is an immense barrier to development for malaria-endemic countries, and it costs for instance to Africa US12 billion dollars in lost productivity each year.

- Malaria-endemic countries' annual economic growth of is 1.3% lower than non malaria-endemic ones. Countries where malaria has been brought under control have experienced immediate accelerated economic growth, as shown in specific areas in Mozambique.
- Sub-Saharan Africa's GDP would be up to 32% greater today had malaria been eliminated 35 years ago. This would mean up to \$100 billion added to the region's current GDP, a sum nearly five times greater than all development aid provided to Africa last year.

Q7 - What is the Trans Zambezi Project?

A7 - The Trans Zambezi Project is a unique collaborative effort to address the malaria burden in the remote communities along the contours of the Zambezi River in southern Africa, and which will begin at the end of 2008.

- **Phase one** of the project will involve 5 countries, Angola, Zambia, Namibia, Botswana and Zimbabwe in an intensified cross-border strategy focusing on 14 districts along the river - and affecting more than 1.5 million people. A proposal for significant funding is being prepared which will be submitted to the Global Fund this year. If successful, some countries, specifically Namibia and Botswana, may succeed in eliminating malaria altogether.
- **Phase two** of the project will include Mozambique and all the remaining districts and will take place in 2009/2010.

Treatments for malaria

Q8 - What are the most effective malaria treatments available today?

A8 - Artemisinin-based combination therapies (ACTs) are the most effective treatments currently available for treating malaria. Indeed, ACTs:

- Produce a very rapid therapeutic response
- Are well tolerated by patients
- Have the potential to reduce transmission of malaria.

Q9 - Why is it necessary to combine drugs for treating malaria?

A9 - The combination of artemisinin derivatives with another effective anti-malarial medicine (artemisinin-based combination therapies or ACTs), is currently the most effective treatment for falciparum malaria - the most lethal form of the disease.

Q10 - What about resistance to treatments?

A10 - The malaria parasite can quickly build up resistance to a single drug which, in turn, will render the drug ineffective. That is why drugs used in combination are currently recommended.

WHO has requested that all pharmaceutical companies immediately stop marketing and selling artemisinin malaria medicines as a stand alone treatment for uncomplicated malaria, because of risk that malaria parasites will develop resistance to the drug. WHO recommends instead that companies market artemisinin combination therapies (ACTs) only. (Source: WHO)

**Q 11 - Are the current anti-malarial combination treatments affordable for populations/government of most impacted territories?
What about the price of these treatments ?**

A 11 - ACTs are more expensive to produce than the older drugs. Even at cost, it could be 10 to 20 times more than widely available drugs like chloroquine or SP. A number of producers such as Novartis sell their ACTs at cost to the public health sector in disease endemic countries. They in turn provide them at low or no cost to the population. However, many people cannot easily access these public health facilities. ACTs are still not widely available in the private sector where between 40 to 60 percent of the population get their antimalarials. The overarching factor is the price. That is the reason the global community is exploring innovative methods such as a global subsidy to ensure that the most vulnerable populations have access to these life-saving medicines.

Q 12 - What the main prospects in terms of research?

A 12 - There are two main areas of research today:

- The development of a vaccine. Finding a vaccine to protect individuals from malaria would create an additional defence against the disease. However, the malaria parasites have proven to be remarkably adaptable, meaning they change their characteristics as antibodies are developed; such adaptability has made finding a vaccine especially challenging. There is a potential vaccine candidate being tested right now. If successful, this partially protective vaccine, the first one ever for a parasitic disease, could be available as early as 2012.
- The development of cheaper artemisinin-based combination therapies and alternative effective antimalarials. The most effective cure for malaria today

is artemisinin-based combination therapies (ACTs). However, with a price 10 to 30 times greater than that of older drugs, ACTs are beyond the means of the most vulnerable families. Innovation is therefore urgently required to rapidly develop new drugs or synthetic replacements to the plant-based artemisinins, New drugs are also needed to replace ACTs when they fall to drug resistance (Source: MMV).

Prevention and education

Q13 - What are existing means of prevention?

A13 - Main existing means of prevention include long-lasting insecticide-treated bed nets, to avoid bites, and indoor residual spraying to kill mosquitoes. There is also a preventive treatment for pregnant women, based on treatment doses of sulfadoxine-pyrimethamine (SP), which can be administered to pregnant them in addition to artemisinin-based combination therapies, during the second and third trimesters of pregnancy. The research community is also exploring using preventative treatment for infants and children, the most vulnerable group.

Q14 - What is their efficiency?

A14 - Insecticide treated bed nets

It is important to state that long-lasting insecticide-treated bed nets (LLINs) do work, especially as most dangerous bites occur at night. Indeed, while there are other types of mosquitoes that bite during the day or early evening, the malaria mosquitoes bite late at night, and long-lasting insecticide-treated bed nets are far more cost effective than aerosols or burning mosquito coils.

Indoor residual spraying

Some dedicated teams may be organized to spray an insecticide on the inside walls of houses (a process known as Indoor Residual Spraying, or IRS), which helps kill the female mosquito after she feeds on a person, reducing malaria transmission to others. There are 13 types of insecticide which can be used for indoor residual spraying; the most commonly known is DDT. DDT was approved for use in malaria control in 2001 by the POPs (Persistent Organic Pollutant) Treaty which emphasized the conditions in which it should be used. Recommendations on IRS are currently available from WHO.

Q15 - How can affected communities be better informed about malaria to minimize its impact?

A15 - Affected communities are currently engaged in education, information and communication programs to increase their ability to protect and treat themselves and their children. Main focus is on:

- Appropriate bed net use and sleeping regularly under a long lasting Insecticide treated bed nets especially as mosquitoes bite late at night.
- Prompt malaria diagnosis.
- Prompt malaria treatment and administration of appropriate doses of drugs, taking into consideration the age of the patient
- The protection of pregnant women and unborn children
- The importance of regular indoor residual spraying.

Key existing initiatives to fight against malaria

Q16 -
A16 -

What are the main existing initiatives to control malaria?

The main existing initiatives to control malaria are mostly based on public-private partnerships involving governments, NGOs, donor agencies, IGOs, and private foundations and charities. Currently nearly all the existing initiatives are focussed on ensuring that national scale is achieved with effective malaria control and that 80 % coverage of all at risk populations can be achieved with agreed prevention and treatment strategies by 2010. This is an ambitious goal - but one that has been agreed upon and to which the key malaria stakeholders are working towards.

The Roll Back Malaria Partnership.

- The Roll Back Malaria Partnership (RBM) was launched in 1998 by the World Health Organization, UNICEF, the United Nations Development Program, and the World Bank to provide cohesive and comprehensive support to countries burdened by malaria. The RBM Partnership has expanded exponentially since its launch and is now made up of a wide range of partners - including malaria-endemic countries, their bilateral and multilateral development partners, the private sector, nongovernmental and community-based organizations, foundations, and research and academic institutions - who bring a formidable assembly of expertise, infrastructure and funds into the fight against the disease.
- A key role of the RBM Partnership is to coordinate global efforts to scale up malaria control at country level and lead continuing advocacy campaigns to raise awareness of malaria at the global, regional, national and community levels, thus keeping malaria high on the development agenda, mobilizing resources for malaria control and for research into new and more effective tools (including vaccine), and ensuring that vulnerable individuals are key participants in rolling back malaria. (www.rollbackmalaria.org)

The World Bank's Booster Program for Malaria Control.

The Booster Program is planned to last ten years, including an intensive phase spanning the Bank's fiscal years 2006/2008, meaning July 1, 2005 through June 30, 2008, during which the Bank will contribute to an aggressive effort to achieve control of malaria. The Bank's approach is proactive while promoting country leadership and ownership. In the initial three-year intensive phase the Booster program has committed approximately US\$500 million in IDA allocations to support countries willing and ready to improve and expand their malaria control efforts. (Source: World Bank)

The (US) President's Malaria Initiative

- In June 2005, President Bush launched the President's Malaria Initiative (PMI). He pledged to increase U.S. malaria funding by more than \$1.2 billion over five years to reduce deaths due to malaria by 50 percent in 15 African countries and challenged other donor countries, private foundations, and corporations to help reduce the suffering and death caused by this disease. PMI is a collaborative U.S. Government effort led by the U.S. Agency for International Development (USAID), in conjunction with the

Department of Health and Human Services (Centres for Disease Control and Prevention), the Department of State, the White House, and others.

- The PMI goal will be achieved by reaching 85 percent of the most vulnerable groups - children under 5 years of age and pregnant women - with proven and effective prevention and treatment measures. PMI uses a comprehensive approach to prevent and treat malaria, supporting four key areas - indoor spraying of homes with insecticides, insecticide-treated mosquito nets, lifesaving antimalarial drugs, and treatment to prevent malaria in pregnant women.
- PMI is already saving lives and has reached more than 6 million Africans. In the first three focus countries (Uganda, Tanzania, and Angola) PMI
 - (1) Distributed more than 1 million mosquito nets to protect pregnant women and children under age 5;
 - (2) Conducted indoor residual spraying campaigns to shield over 2 million people;
 - (3) And procured over a million treatments of highly effective artemisinin-based combination therapies (ACTs) and other antimalarial drugs to treat the disease.
- PMI coordinates with national malaria control programs and international partners, including the Global Fund to Fight AIDS, Tuberculosis and Malaria; the World Bank Malaria Booster Program; the Roll Back Malaria Partnership; nongovernmental organizations (NGOs), including faith-based and community groups; and the private sector. (Source: <http://www.fightingmalaria.gov/>)

The Global Fund to Fight HIV AIDS TB and malaria

- The Global Fund was created to finance a dramatic turn-around in the fight against AIDS, tuberculosis and malaria. These diseases kill over 6 million people each year, and the numbers are growing.
- As a financing mechanism, the Global Fund works closely with other multilateral and bilateral organizations involved in health and development issues to ensure that newly funded programs are coordinated with existing ones. In many cases, these partners participate in local Country Coordinating Mechanisms, providing important technical assistance during the development of proposals and implementation of programs.
- To date, the Global Fund has committed US\$ 10.1 billion in 136 countries to support aggressive interventions against all three diseases.
- With regards to malaria, the Global Fund helps to
 - (1) Finance 109 million bed nets to protect families from transmission of malaria, thus becoming the largest financier of insecticide-treated bed nets in the world
 - (2) Deliver 264 million artemisinin-based combination drug treatments for resistant malaria. (Source: <http://www.theglobalfund.org/en/>).

Initiatives relating to Research & Development (R&D)

Various bi-lateral donor agencies, philanthropic foundations and industries are involved in accelerating research and development of better tools to fight malaria. More than half of the funding comes from the Bill and Melinda Gates Foundation. Most of their R&D funding goes to support Product Development Partnerships (PDPs) such as Medicines For Malaria Venture (MMV), the PATH Malaria Vaccine

Initiative and the Innovative Vector Control Consortium. These PDPs leverage their funding by partnering with research centres and industry, all committed to developing the most innovative, effective and appropriate intervention in the fight against malaria.

Useful sources of information on malaria

(To be completed – any input/suggestion welcome)

General information on malaria

Roll Back Malaria Partnership
<http://www.rollbackmalaria.org>

WHO's malaria portal
<http://www.who.int/topics/malaria/en/>

Malaria No More
<http://www.malarianomore.org>

Malaria Consortium
<http://www.malariaconsortium.org/>

Nothing But Nets
<http://www.nothingbutnets.net/>

Voices for Malaria Free future
<http://www.malariafreefuture.org/>

On treatments and research

Medicines for Malaria Venture
<http://www.mmv.org>

Malaria Vaccine Initiative
<http://www.malariavaccine.org/>

Innovative Vector Control Consortium
<http://www.ivcc.org>

Bill & Melinda Gates Foundation
<http://www.gatesfoundation.org>

On costs, delivery and access

Rollback malaria review 'Improving access to anti-malarial medicines', 2002
http://www.who.int/malaria/cmc_upload/0/000/016/746/2002-sept_meeting.pdf

Affordable Medicines Facility for Malaria – Rolla Back Malaria's website:
<http://www.rbm.who.int/globalsubsidytaskforce.html>

World Bank Booster Program on malaria control

[http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/EXTAFRBOOPRO/0,,
menuPK:2128629~pagePK:64168427~piPK:64168435~theSitePK:2128617,00.html](http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/EXTAFRBOOPRO/0,,menuPK:2128629~pagePK:64168427~piPK:64168435~theSitePK:2128617,00.html)

President's Malaria Initiative

<http://www.fightingmalaria.gov/>

The Global Fund to Fight HIV AIDS , TB and malaria

<http://www.theglobalfund.org/en/>