

## Brief on Malaria

Malaria is a deadly mosquito-borne disease afflicting as many as 500 million people in 106 countries in Africa, Asia and Latin America. It is estimated that, annually, the disease causes nearly one million deaths. In Africa a child dies every 45 seconds of Malaria, the disease accounting for 20% of all childhood deaths.

Malaria is caused by a parasite called Plasmodium of which four types are known to cause disease in humans, namely,

- *Plasmodium falciparum*
- *Plasmodium vivax*
- *Plasmodium malariae*
- *Plasmodium ovale*.

Across the globe, most of the malaria cases are caused by either Plasmodium falciparum or Plasmodium vivax.

Plasmodium falciparum is the one that causes most of the fatal cases.

Recently, a few human cases of malaria have occurred with Plasmodium knowlesi, a parasite that causes malaria in monkeys.

### Transmission

Malaria is transmitted exclusively through the bites of *Anopheles* mosquitoes. The intensity of transmission depends on factors related to the parasite, the vector, the human host, and the environment.

### Clinical manifestations

Symptoms of malaria include fever, headache, and vomiting, and usually appear between 10 and 15 days after the mosquito bite. If not treated, malaria, more so falciparum malaria, can quickly become life-threatening by disrupting the blood supply to vital organs.

For both *Plasmodium vivax* and *Plasmodium ovale*, clinical relapses may occur weeks to months after the first infection, even if the patient has left the malarious area. These new episodes are caused by the reactivation of "dormant" parasites in the liver of infected persons

In many parts of the world, the parasites have developed resistance to a number of malaria medicines.

Key interventions to control malaria include: prompt and effective treatment with appropriate drugs; use of insecticidal nets by people at risk; and indoor residual spraying with insecticide to control the vector mosquitoes

Specific population risk groups include (source WHO):

- **Young children** in stable transmission areas who have not yet developed protective immunity against the most severe forms of the disease. Young children contribute the bulk of malaria deaths worldwide.
- **Non-immune pregnant women** are at risk as malaria causes high rates of miscarriage (up to 60% in *P. falciparum* infection) and maternal death rates of 10–50%.
- **Semi-immune pregnant women** in areas of high transmission. Malaria can result in miscarriage and low birth weight, especially during the first and second pregnancies. An estimated 200 000 infants die annually as a result of malaria infection during pregnancy.
- **Semi-immune HIV-infected pregnant women** in stable transmission areas are at increased risk of malaria during all pregnancies. Women with malaria infection of the placenta also have a higher risk of passing HIV infection to their newborns.
- **People with HIV/AIDS** are at increased risk of malaria disease when infected.
- **International travellers from non-endemic areas** are at high risk of malaria and its consequences because they lack immunity.
- **Immigrants from endemic areas and their children** living in non-endemic areas and returning to their home countries to visit friends and relatives are similarly at risk because of waning or absent immunity.

## Malaria in Mauritius

Mauritius has eliminated malaria since quite some time now and as such no indigenous case of Malaria has been detected in Mauritius since 1997. Most of the cases detected thereafter have been imported ones, with however, a few introduced ones. In 2006, 2007 and 2008, 38, 42 and 27 imported cases were detected respectively. In 2009, 23 imported cases have been detected, while in 2010, 52 cases were detected. This year, as at 15 April, 12 cases have been reported.

The actual Malaria Control Programme has as main objective to prevent the reintroduction of Malaria in the country. The main components of the programme are

malaria surveillance, early diagnosis, treatment and monitoring of resistance to anti-malarial drugs, vector control activities, including vector surveillance, chemoprophylaxis for travelers, health education and capacity building.

Surveillance activities remain one of the main pillars of the programme. Active surveillance is being achieved through the deployment of Health Surveillance Officers throughout the country. These Officers are visiting, at their place of residence, all passengers arriving from malarious countries.

There is a national protocol for treating patients. Artemisinin based combined therapy treatment (ACT) has already been introduced in Mauritius.

Public Health interventions are also undertaken around all positive cases with a view to preventing disease transmission and these include contact tracing, fever surveys, vector surveillance and larviciding.

Another pillar of the malaria control programme is vector control. This is a process that is ongoing throughout the island and all year round. We have adopted an Integrated Vector Management Strategy, of which, apart from use of chemicals, environmental interventions to eliminate breeding sites, legislation, community participation, health education and capacity building are other components.

### **Advice to international travelers**

1. Be aware of the risk of contracting malaria. Obtain the necessary information from the International vaccination centre of the Ministry of Health & Quality of Life, situated at Mutual Aid Building, Port Louis.
2. Avoid mosquito bites, more so between dusk and dawn by taking the following precautions:
  - Avoid unnecessary outings between dusk and dawn
  - Wear appropriate clothing, including long sleeved shirts and long pants made of light colored and thick enough material to protect against mosquito bites
  - Use mosquito repellants such as creams, sprays, coils, electric diffusers etc.
  - Sleep under a bed net or alternately in an air conditioned room
3. Take medicines as prophylaxis. Anti-malarial drugs are dispensed free of user cost at the International Vaccination Centre of the Ministry. Follow all instructions carefully.

**However, one should remember that NO ANTIMALARIAL PROPHYLACTIC REGIMEN GIVES COMPLETE PROTECTION. Prophylaxis should be complemented by measures outlined above.**

**4. Think of malaria in the event you develop fever up to three months or even more after your arrival from the journey.**

**To prevent proliferation of mosquitoes, the public is invited to implement the following precautionary measures:**

- Repair failed septic systems.
- Check and repair screens on windows and doors.
- Dispose of tin cans, plastic containers, ceramic pots, or similar water-holding containers.
- Remove old or discarded tires from your property. Keep them under shelter, pending collection by local authorities. Used tires are usually one of the common mosquito breeding places.
- For containers that must remain on your property, such as bird baths and wading pools, change the water regularly and at least once per week.
- Cover trash containers to keep out rainwater.
- Repair leaky water pipes.
- Aerate ornamental pools or stock them with predatory fish.
- Clean and chlorinate swimming pools even if they are not being used.
- Keep drains, ditches free of grass clippings, weeds, and trash so water will drain properly.
- Remove all leaf debris from the yard and in drains.
- Make sure roof gutters drain properly. Clean clogged gutters in the spring and fall to remove leaves or other debris that may clog the drains or gutters.
- Clean vegetation and debris from the edge of ponds.
- Drain water from pool covers.

- Use landscaping to eliminate standing water that collects on your property
- Check flat roofs for standing water
- Plates under flower pots should be overturned to prevent water collections.
- Drums and containers used for water collection for domestic or industrial use should be covered or screened.
- Fill in tree rot holes and hollow stumps with sand or concrete.
- Store boats/canoes covered or upside down so they will not collect and hold rainwater.

## **2. Eliminating mosquito harboring sites**

Adult mosquitoes prefer to rest on weeds and other vegetation. One can reduce the number of areas where adult mosquitoes can find shelter by cutting down weeds adjacent to the house foundation and in their yards, mowing the lawn regularly and trimming bushes. To further reduce adult mosquitoes harboring in vegetation, insecticides may be applied to the lower limbs of shade trees, shrubs and other vegetation.