

Malaria

Student Background Information Sheet

WHAT IS MALARIA?

Malaria is one of the world's worst killer diseases. It is a disease that causes a blood disorder due to lysis of red blood cells. The damaged cells may then stick to the walls of the blood vessels. This results in anaemia and acute exhaustion. In more serious cases the blood vessels to the brain, lungs, kidneys and intestines can be affected causing convulsions, coma, brain damage, kidney failure and pneumonia. Death may result in a few days if left untreated.

During the 1950's the annual death toll world-wide was estimated at 2.5 million. In 1956 the World Health Organisation launched a campaign to rid the world of malaria. The elimination has proved to be a very difficult task. Indeed after early successes in the 1960's there has been a resurgence of the disease with more recorded cases in 1985 than 1965.

Malaria still exists in about 100 countries mainly in Africa, Central and South America, and Asia. In Africa about 1 million people a year (10% of those infected), mainly infants and children, die from the disease. Today about 200 to 400 million people a year are currently affected.

With global temperatures on the increase the incidence of malaria will also increase. The average warming is predicted to range from 1°C - 3.5°C by 2100.

What does this mean for malaria?

The existence and activity of mosquitoes and mosquito-borne diseases is strongly linked to temperature. In Zimbabwe, for example, the prevalence of malaria is determined by altitude, which in turn determines temperature. But global warming may not just cause mosquitoes to proliferate; it may also allow malaria to spread. The malaria parasites cannot develop below the 16°C winter isotherm. But if, as predicted, global warming raises winter temperatures more than summer ones, there could be a dramatic expansion of range for malaria.



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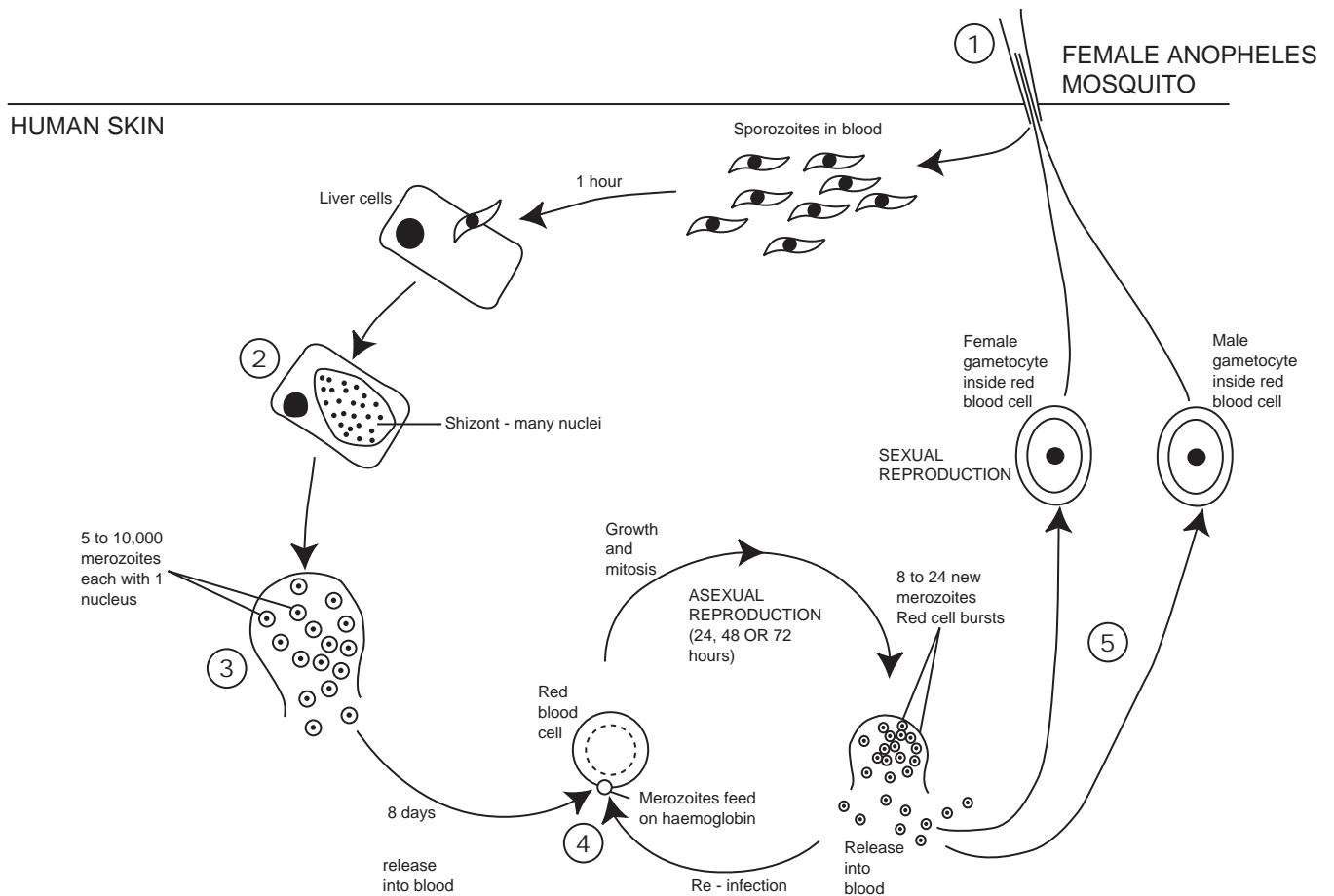
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WHAT CAUSES MALARIA?

Malaria is caused by the protozoan parasite Plasmodium. Four species of Plasmodium are responsible for the disease, *Plasmodium vivax* (benign malaria) *P.malariae*, *P.ovale* and *P.falciparum falciparum* (malignant malaria), the latter being the most lethal.

HOW DO YOU GET MALARIA?

Malaria is transmitted by female mosquitoes of the Anopheles genus. The mosquito is referred to as a vector, i.e., an organism that transmits disease from person to person or from an infected animal to a human.



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WHAT ARE THE SIGNS AND SYMPTOMS?

The incubation period for the disease is 10 to 14 days. The early symptoms are similar to flu, headache, tiredness, general body ache and vomiting. There are three stages to the disease:

- a) **Cold Stage** - Shivering, lasts 1-3 hours, caused by release of merozoites from red blood cells
- b) **Hot Stage** - Body temperature rises rapidly to 40°C lasts 3-4 hours
- c) **Sweating Stage** - Profuse sweating period lasts 2-4 hours, body temperature drops to normal

Fever occurs at different intervals depending on species.

Malaria can lie dormant for months and recur even after initial treatment. If malaria is suspected, see a doctor immediately even if it is some months since your visit to an infected country.



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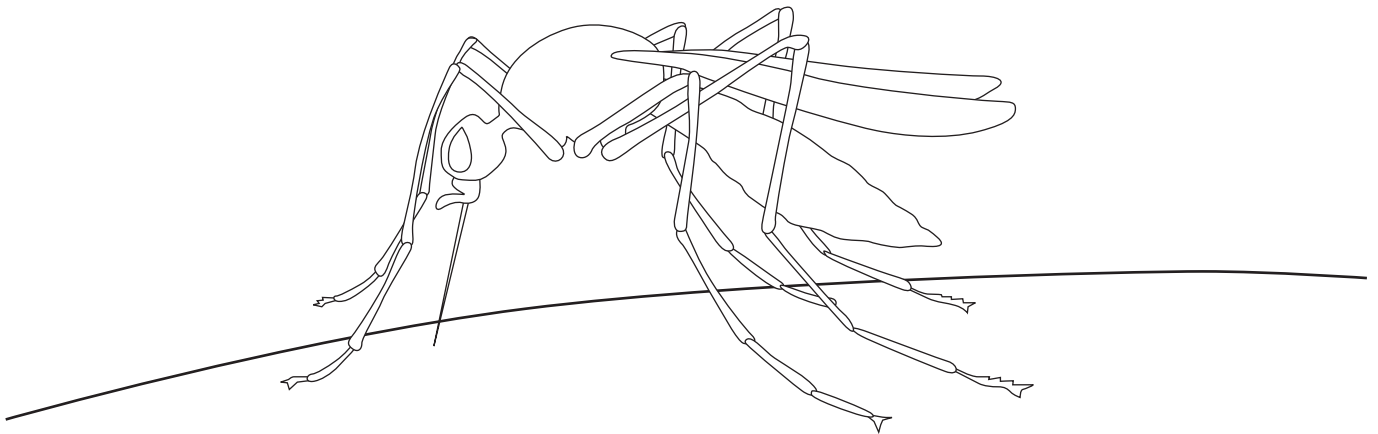
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Antimalarial tablets

Prior to visiting a known malarial area travellers are required to take a course of antimalarial tablets and continue to do so during and after return from infected area. Pharmacists and doctors advise on the most appropriate antimalarial tablet for a particular infected region.



Avoiding mosquito bites

- i) Netting - Preventing female mosquito bites
- ii) cover skin at dusk - wear long sleeved clothing
- iii) avoid dark coloured clothing - attracts mosquitos
- iv) spray exposed areas of skin, especially neck, arms and legs
- v) choose an appropriate product that contains DEET. A product containing DEET is not suitable for young children and pregnant women
- vi) use an insecticide spray in the evening to spray rooms
- vii) electrical insecticide vapourisers give continuous protection through the night



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HOW IS MALARIA CONTROLLED?

Eradication of vector

- i) Drainage of mosquito breeding grounds - expensive and difficult to achieve
- ii) Use of oil - film of oil applied to breeding waters to suffocate larvae - pollution issue and kills all other life
- iii) Biological Control - use of carnivorous fish - can upset food chain
- iv) Insecticides - Pyrethrum and benzene hexachloride ordieldrin used to spray indoor surfaces - expensive and environmentally harmful

Eradication of parasite

- i) Drugs - no single drug available. When patient acutely ill aim is to stop multiple fission in red blood cells. Over use of anti-malarial drugs has caused parasite immunity in some areas.
- ii) Vaccines - Recently developed but only available in developed world for travellers visiting malaria endemic areas.

