



Malaria in Canada

Malaria has undergone a resurgence in most of the tropics and is now responsible for 1.5 to 2.7 million deaths a year.¹ As international travel increases, imported cases of malaria will become more common in Canada. In 1991 a total of 674 cases, 5 of which were fatal, were reported.² Patients who present with febrile illness should always be questioned about recent travel or immigration. Fever occurring in a patient within 2 to 3 months of arrival from a region where *Plasmodium falciparum* malaria is endemic should be regarded as a medical emergency.³ Delays in diagnosis and treatment are responsible for almost all deaths and complications; malaria can be fatal in as little as 36 to 48 hours after symptoms appear.⁴

The emergence of drug-resistant strains of *P. falciparum* now presents a problem in most areas of the world where malaria is endemic. Chloroquine resistance is widespread except in the Caribbean, Central America and parts of the Middle East, and resistance to combined chloroquine and proguanil is important in sub-Saharan Africa. *P. falciparum* malaria resistant to chloroquine and mefloquine occurs on the Thai borders with Laos, Cambodia and Myanmar and is emerging in east Africa. Resistance to sulfadoxine-pyrimethamine occurs in the Amazon basin, Southeast Asia and, sporadically, in Africa.^{3,4} Physicians must obtain current information on drug resistance before selecting an antimalarial drug for prevention or treatment.

Diagnosis and treatment

Diagnosis is made on the basis of clinical symptoms, history of possible exposure and examination of a blood film. Clinical presentation can be nonspecific, consisting of fever and flu-like symptoms. *Falciparum* malaria usually presents within 2 months of exposure but can be delayed in patients who have used prophylactic mefloquine. Other types of malaria (particularly *P. vivax*) can occur months or even years after exposure.³

A thick blood film is urgently required for all symptomatic patients with a history of travel to a malarious area.⁶ Because a single film can give a false-negative result, repeat films may be needed until malaria is excluded. Because treatment is determined by the type of malaria, a thin blood film may be needed to determine the species of the *Plasmodium* parasite.³

It is essential to begin treatment as soon as the diagnosis is made. Patients infected with the *vivax*, *ovale* or

malariae species or who have uncomplicated *falciparum* infection can be treated on an outpatient basis with anti-malarial drugs; CATMAT provides recommendations for prescribing.³ Patients with severe *falciparum* malaria require admission to an intensive care unit under the care of a tropical diseases specialist.

Malaria treatment received by Canadian travellers in developing countries may be inadequate. Previous diagnosis and treatment of a febrile patient returning from an endemic region requires prompt reassessment.⁴

Prevention

It is essential to provide adequate advice on malaria prevention to patients travelling to the tropics. Risk of infection is lower in urban areas than in rural areas and at altitudes above 2500 m.³ It is best to obtain current information on the presence of malaria and of drug-resistant strains in the destination country from a local public health unit, travel medicine or tropical medicine centre. The US Centers for Disease Control also provides up-to-date travel information listed by country on their web site (<http://www.cdc.gov/travel2.htm>) and through their fax service (tel: 404 332-4565).

The first defence against malaria is to reduce the risk of mosquito bites. Travellers should avoid being outdoors at night (when female *Anopheles* mosquitoes feed), remain in well-screened or enclosed air-conditioned areas and wear clothing that reduces the exposure of skin. Insect repellents containing DEET and bed nets treated with permethrin also reduce the likelihood of infection. Insecticide-treated bed nets can be obtained in Canada by calling 1 800 880-TRIP.

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