Malaria

Epidemiology in New Zealand

All cases of malaria in New Zealand to date have occurred in travellers visiting the country or returning from overseas. There are no Anopheles species of mosquitoes in New Zealand, so there is no risk of local mosquito-borne transmission.

More detailed epidemiological information is available on the Institute of Environmental Science and Research (ESR) surveillance website at www.surv.esr.cri.nz.

Case definition

Clinical description

Malaria classically presents with high fever, rigors, sweats and headache, which may be paroxysmal. Other common symptoms include nausea, vomiting, diarrhoea, coughing, arthralgia, and abdominal and back pain. Anaemia, thrombocytopenia and abnormal liver function tests are typical. Infection with Plasmodium falciparum can be severe (sometimes fatal) and include neurological manifestations, hypoglycaemia, non-cardiogenic pulmonary oedema, renal failure, severe anaemia and vascular collapse.

Laboratory test for diagnosis

Laboratory confirmation requires demonstration of Plasmodium species in a blood film.

Positive antigen tests should be confirmed by blood film microscopy to identify the species. Nucleic acid testing can also be used to confirm Plasmodium species.

Case classification

- **Under investigation**: A case that has been notified, but information is not yet available to classify it as confirmed.
- **Probable**: Not applicable.
- **Confirmed**: A clinically compatible illness that is laboratory confirmed.
- **Not a case**: A case that has been investigated and subsequently found not to meet the case definition.
Spread of infection

Incubation period
The time between the infective bite and the appearance of clinical symptoms for those travelling through an endemic area is approximately:

- 9–14 days for *P. falciparum* and *P. knowlesi*
- 12–18 days for *P. vivax* and *P. ovale*
- 18–40 days for *P. malariae*.

Some strains of *P. vivax* may have an incubation period of months to years.

Suboptimal prophylaxis and treatment of other conditions (for example, co-trimoxazole for UTI) may prolong the incubation period.

Residents of an endemic area may develop a state of chronic low-grade parasitaemia that is maintained with few or no symptoms; if such a person leaves that area, symptomatic infection due to increasing parasitaemia may appear months to years later.

Relapses of *P. vivax* or *P. ovale* infection may occur months to years after treatment as a result of dormant hypnozoites in hepatocytes. Although *P. falciparum* and *P. malariae* do not have a hepatic hypnozoite phase, inadequately treated infections with these species may recur months later.

Mode of transmission
By the bite of an infective female anopheline mosquito. Most *Anopheles* species feed at night, but some feed at dusk or in the early morning.

Transfusion of infected blood and sharing of contaminated needles and syringes associated with intravenous drug use rarely transmit malaria.

Period of communicability
This varies with malaria species and response to therapy. Untreated or insufficiently treated cases may be a source of mosquito or transfusional infection for several years in *P. malariae* infection, up to 5 years in *P. vivax* infection and up to 1 year in *P. falciparum* infection. Mosquitoes remain infective for their life.

Notification procedure
Attending medical practitioners or laboratories must immediately notify the local medical officer of health of laboratory-confirmed cases.
Management of case

Investigation
Obtain a detailed travel history and details of prophylactic measures taken in relation to travel and enter details in EpiSurv.

If the case has had no international travel history or proximity to an international airport, review the diagnosis and enquire regarding blood transfusion and intravenous drug use.

Restriction
Nil.

Treatment
The case should be managed in a partnership between their primary health care practitioner and an infectious diseases physician.

Counselling
Advise the case regarding the nature of the infection and its mode of transmission. The case should not donate blood until asymptomatic and off all treatment, when the plasma can be accepted for fractionation. The case can donate cellular components 3 years following symptoms.

Management of contacts
Those with exposure the same as or similar to the case should not donate blood within the common incubation period and should seek early medical attention if symptoms develop. No investigations, other restrictions or prophylaxis are indicated.

Consider testing asymptomatic contacts when there is more than one case in a group with a shared exposure.

Other control measures

Disinfection
Not applicable.

Health education
Provide pre-travel advice for travellers to malaria-endemic countries well before the date of transit. Such advice should include details on appropriate anti-malarial medication and protection from mosquitoes in the form of repellents containing DEET, protective clothing and insecticide-impregnated mosquito nets.
Chemoprophylaxis is only part of a comprehensive public health preventative approach.

**Reporting**

Ensure complete case information is entered into EpiSurv.

If there is any suspicion that the disease was acquired locally, contact the Ministry of Health Communicable Diseases Team. The Ministry of Health will liaise with the Ministry for Primary Industries regarding biosecurity issues.