Malaria

This protocol is based on the Ministry of Health Communicable Disease Control Manual[1]

Contents

Associated documents

Case report form:
K:\CFS\ProtectionTeam\FinalDocs\NotifiableConditions\Malaria\FormsStdLettersQuest\Malaria_Sep2010.pdf

Fact sheet (there is no Ministry of Health Malaria fact sheet):
https://www.cph.co.nz/wp-content/uploads/Malaria.pdf

The Illness

Malaria, which predominantly occurs in tropical areas, can be a potentially life-threatening disease caused by infection with Plasmodium protozoa transmitted by the bite of an Anopheles mosquito. Rarely malaria can be acquired through blood transfusion. There are commonly four Plasmodium species that cause malaria in humans: vivax, ovale, malariae and falciparum. Each of the four species has a defined area of endemicity although geographic overlap is common. Malaria occurs in areas of Central America, South America, sub-Saharan Africa, the Indian subcontinent, Southeast Asia, the Middle East and Oceania. P falciparum infection can be fatal and may be resistant to prophylaxis and standard treatment.

Epidemiology in New Zealand

In 2017 there were 42 cases of malaria notified in New Zealand[2]. P. falciparum and P. vivax are responsible for most new infections. All cases of malaria in New Zealand to date have occurred in travellers either 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.

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.

Incubation
The time between the infective bite and the appearance of clinical symptoms is approximately:

- 9 - 14 days for P. falciparum
- 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.

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.

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
Immediate notification of laboratory-confirmed cases.

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.

Laboratory testing
- 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.

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 must not donate cellular components for 3 years following symptoms. (If a blood donor, case to discuss with Blood Donation Centre).
- A fact sheet is available: https://www.cph.co.nz/wp-content/uploads/Malaria.pdf

Management of contacts

Investigation and restriction
- Those with the same or similar exposure as 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.

Counselling
- Advise the contacts regarding the nature of the infection and its mode of transmission.
- If a blood donor, contact to discuss with the Blood Donation Centre.
- A fact sheet is available: https://www.cph.co.nz/wp-content/uploads/Malaria.pdf

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 preventive approach.
- Websites:
  - ◊ HealthInfo Canterbury https://www.healthinfo.org.nz/Travel.htm
  - ◊ Fit for Travel (UK/Scotland): http://www.fitfortravel.nhs.uk/home.aspx
  - ◊ Centres for Disease Control (Atlanta,USA): https://wwwnc.cdc.gov/travel
  - ◊ New Zealand Ministry of Foreign Affairs and trade: https://www.safetravel.govt.nz/

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.

References

1. Ministry of Health. *Communicable Disease Control Manual*. 2018; Available from: https://www.health.govt.nz/our-work/diseases-and-conditions/communicable-disease-control-manual/updates-communicable-disease-control-manual.

2. The Institute of Environmental Science and Research Ltd, *Notifiable Diseases in New Zealand: Annual Report 2017*. 2017: Porirua.

Document Control

Protocol review task	Responsibility	Date completed
Advise team of review (and planned timeframes)	PHS	
Create draft update document, including this table, and save in: Y:\CFS\Quality\NewDraftDocuments\CDProtocols	PHS	19/05/19
Review Ministry of Health (MoH) advice, literature, other protocols, and write draft update	PHS	22/05/19
Update Fact Sheet (or source link from MoH website) (CPH one ok)	PHS	22/05/19
Send drafts to MOsH, CD, Team Leader, and HPO for feedback	PHS	22/05/19
Update drafts further as required	PHS	31/05/19
Send final drafts to Com Dis MOH	PHS	4/06/19
Com Dis MOH sign-off	Com Dis MOH	4/06/19
Send final drafts to Clinical Director for approval	Com Dis MOH	4/06/19
Clinical Director approval (by email to PHS and QC, who will save in Y:\CFS\Quality\ApprovedDocuments\DAFApprovals).	CD	4/06/19
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Update **paper** copies (on-call folder/ vehicle)	HPO	
Advise operational/ regional staff of update, summarising any substantial changes (text highlighted in **blue** in document)	HPO	
Once finalised, save the original draft document incl. this table (recording update process) in: Y:\CFS\Quality\Archive\Protection\ComDisProtocolsArchive	QC	4/06/19