# Guidelines for management of adults diagnosed with malaria in the Emergency Department

## Epidiemiology and characteristics

Species infecting humans: *P.falciparum*, *P.vivax*, *P.ovale*, *P.malariae*, *P.knowlesi*

- *P.falciparum* and *P.vivax* represent the vast majority of cases.
- *P.falciparum* and *P.knowlesi* can cause severe malaria.
- In *P. vivax* and *P. ovale* infections, patients having recovered from the first episode of illness may suffer “relapses” after months or even years without symptoms, as these species have dormant liver stage parasites (“hypnozoites”) that may reactivate.

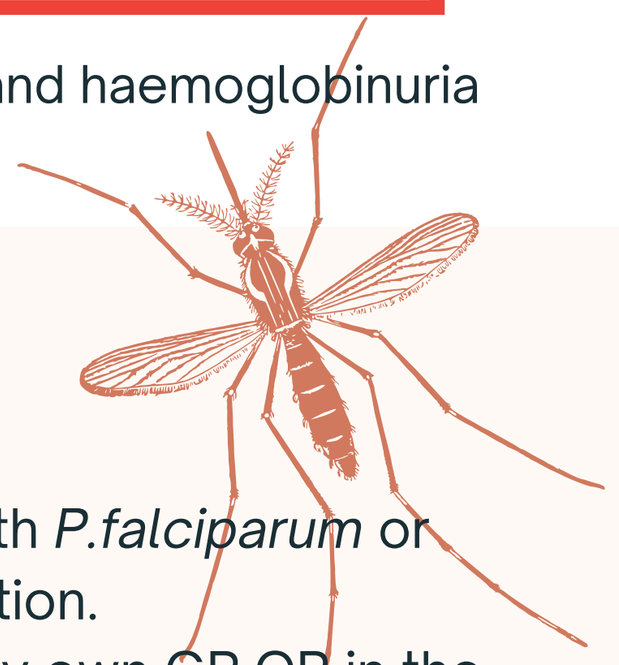
Incubation period variable: 1- 6 weeks.

**Fever paroxysms + headache are central features**, myriad of possible other symptoms (can be false localising)

## Features of Severe Malaria

- Cerebral malaria - abnormal behavior, impairment of consciousness, seizures, coma, or other neurologic abnormalities
- Prostration: generalised weakness so that the patient is unable to sit, stand or walk
- without assistance
- Respiratory distress / tachypnoea / acute pulmonary oedema /acute respiratory distress syndrome
- Circulatory collapse / hypotension or shock
- Acute kidney injury
- Coagulation abnormalities
- Hypoglycaemia
- Metabolic acidosis
- Hyperlactataemia (lactate > 5 mmol/L)
- Haemolysis with severe anaemia (Hb < 70 g/L, packed cell volume < 20%) and haemoglobinuria
- Hyperparasitemia (>5% of red blood cells infected by malaria parasites)

***Severe malaria is a medical emergency and should be treated urgently and aggressively.***



## Principles of Management

- Refer patients with severe malaria to ICU early.
- All patients who meet criteria for severe malaria OR who are infected with *P.falciparum* or *P.knowlesi* should be admitted to hospital (MAU) due to risk of deterioration.
- Patients who can be discharged home should to be followed up either by own GP OR in the ID outpatient clinic but referral should be sent only after discussion with the oncall ID Registrar or Consultant.
- They all need:
  - Daily parasite count until negative.
  - FBC and malaria microscopy at 7 and 28 days after completion of therapy, to assess for recrudescence of malaria parasites.
- Discharge letter to include any treatments given or started and follow up requirements

Guideline designed by Dr Ioana Vlad (ED) and Dr Darren Rebello (ED) in collaboration with Dr Thomas Gliddon (ID)

May 2023

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## Treatment of uncomplicated malaria

- Check Therapeutic Guidelines for updates before initiating treatment.
- If the patient is unable to tolerate oral therapy, treat as for severe malaria and contact ID for advice.
- Patients with uncomplicated malaria caused by *P. falciparum* or *P. knowlesi* are at risk of rapid deterioration—treatment should be initiated as soon as possible, in hospital.
- **Do not use** atovaquone+proguanil to treat malaria if it was used for prophylaxis.
- Seek ID advice for patients with *P. malariae* OR with *P. falciparum* acquired from the Greater Mekong Subregion (Thailand, Vietnam, Cambodia, Laos and Myanmar) due to risk of resistance.
- *P. vivax* and *P. ovale* can exist as dormant parasites (hypnozoites) in the liver that can reactivate. The treatment regimens for uncomplicated malaria do not eliminate hypnozoites, concurrent treatment with primaquine or tafenoquine is required – seek ID advice (as these drugs can cause haemolysis in patients who are G6PD deficient).

## Medications

- Artemether+lumefantrine 20+120 mg, 4 tablets PO at 0, 8, 24, 36, 48 and 60 hours

OR

- Atovaquone+proguanil 250+100 mg, 4 tablets PO daily for 3 days

OR

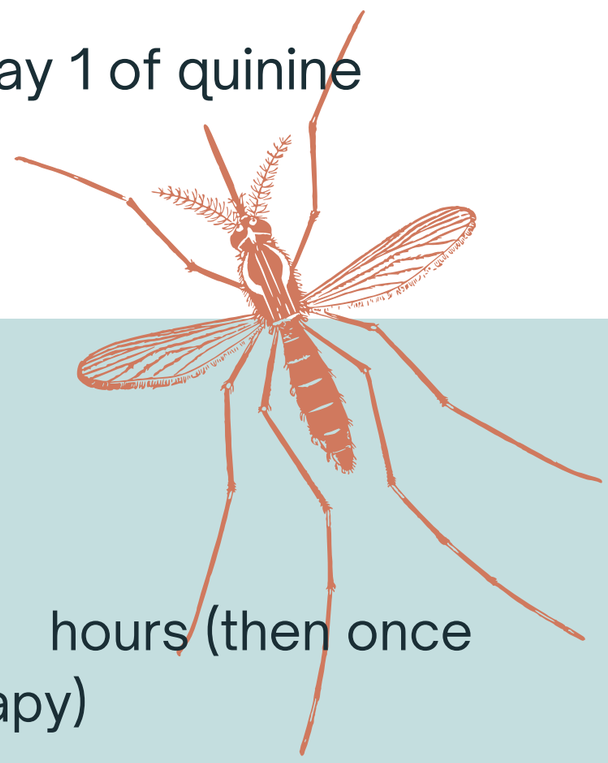
- Quinine sulfate600 mg (adult less than 50 kg: 450 mg) PO 8-hourly for 7 days

PLUS EITHER

- Doxycycline 100 mg PO 12-hourly for 7 days (which can start after day 1 of quinine therapy)

OR (for pregnant women)

- Clindamycin 450 mg PO 8-hourly for 7 days



## Treatment of severe malaria in adults

Treatment is initiated in ED and continued on the ward.

### Medications

- **Artesunate 2.4 mg/kg IV** on admission and repeat at 12 hours and 24 hours (then once daily until the patient has clinically improved and can tolerate oral therapy)

OR (if parenteral artesunate is not immediately available)

- **Quinine dihydrochloride loading dose: 20 mg/kg IV** over 4 hours followed by (starting 4 hours after the loading dose is completed): 10 mg/kg IV over 4 hours, 8-hourly until the patient has clinically improved and can tolerate oral therapy

AND

- Adjunctive therapy with **ceftriaxone 2 g IV** and paracetamol is recommended

***Check requirements for quinine administration as side effects are common***

References:
1. Therapeutic Guidelines 2021. Antibiotic. Malaria. Available from Topic | Therapeutic Guidelines (health.wa.gov.au)
2. Infectious Diseases / Returned Traveller section Emergency Care Institute Returned Traveller | Emergency Care Institute (nsw.gov.au) (Accessed April 2023)
3. Gherardin A, Sisson J. Assessing fever in the returned traveller. Aust Prescr 2012; 35: 10 – 14
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