SEVERE MALARIA - ADULTS

For *P. falciparum* and *P. knowlesi*

For detailed information, please refer to Canadian Recommendations for the Prevention and Treatment of Malaria (last updated 2014)

http://publications.gc.ca/collections/collection_2014/aspc-phac/HP40-102-2014-eng.pdf

1. If there is a clinical suspicion of Malaria, order Malaria Screen.

NOTE: Consider alternative causes of fever in the returned traveller based on history of travel

2. If Malaria screen positive, please consult ID immediately

3. STAT bloodwork – CBC, ABG, electrolytes, BUN, Cr, INR, PTT, AST, ALT, Alk Phos, bilirubin, GGT, group and screen, lactate, venous blood gases, glucose, blood cultures x 2, urine culture, nasopharyngeal swab for respiratory viruses (if indicated), stool cultures (if indicated)

3. Assess for signs of severe malaria

Clinical manifestation	Laboratory test
Prostration/impaired consciousness	Severe anemia (hematocrit < 15%; Hb ≤ 50 g/L)
Respiratory distress	Hypoglycemia (blood glucose < 2.2 mmol/L)
Multiple convulsions (>2 in 24 hours)	Acidosis (arterial pH < 7.25 or bicarbonate < 15 mmol/L)
Circulatory collapse / shock (SBP < 80 mmHG in adults or < 50mmHG in children)	Renal impairment (creatinine > 265 umol/L or greater than upper limit for age in children)
Pulmonary edema (radiological)	Hyperlactatemia (lactate > 5 mmol/L)
Abnormal bleeding / DIC	Hyperparasitemia (≥ 2%)
Jaundice (total bilirubin > 45umol/L)	
Hemoglobinuria (macroscopic)	

4. If there is one or more sign of severe malaria, start IV access, admit to hospital to a monitored setting, and call the inpatient pharmacy at site .

- ARTESUNATE 2.4 mg/kg* (actual body weight) IV over 1-2 minutes as a bolus, give STAT then
    - 12 hours after first dose
    - 24 hours after first dose

    - 48 hours after first dose
        *for children under 20kg use 3mg/kg/DOSE
- 4 hours after last dose of artesunate start (Note: may switch to oral therapy after 3rd dose if patient can tolerate oral therapy):
    - Atovaquone-proguanil (do not use as follow-on oral therapy if previously used as malaria chemoprophylaxis) – 4 tablets (1000 mg atovaquone and 400 mg proguanil) daily x 3 days

    OR

    - Doxycycline (do not use as follow-on oral therapy if used as malaria chemoprophylaxis; contraindications – pregnancy, breastfeeding, age < 8 years) – 100mg po BID x 7 days

    OR

    - Clindamycin (only if unable to take doxycycline or atovaquone-proguanil): 10mg/kg (loading dose) IV followed by 5mg/kg IV q8h x 7 days

Patient MUST have CBC repeated weekly q4weeks for monitoring of late hemolysis

If there is a contraindication to ARTESUNATE (1st trimester pregnancy, hypersensitivity, significant delay or unable to tolerate po but NO severe disease

- Ensure patient is in a monitored setting with telemetry/cardiac monitor
- Accuchecks q2 hours and prn with any change in level of consciousness
- Quinine 5.8 mg/kg loading dose (quinine dihydrochloride [salt] 7 mg/kg) IV by infusion pump over 30 minutes
    - Omit loading dose if patient has received quinine or quinidine within preceding 24 hours or mefloquine in previous 2 weeks)
- Followed immediately by 8.3 mg base/kg (quinine dihydrochloride [salt] 10 mg/kg) diluted in 10 mL/kg isotonic fluid by intravenous infusion over 4 hours (maintenance dose). Repeat once every 8 hours until the patient can swallow
- THEN change therapy to
    - Atovaquone – proguanil 4 tablets (1000 mg atovaquone, 400 mg proguanil) PO daily x 3 days
    - OR notify ID if contraindications

Admit to hospital, IV fluids, repeat Malaria screens q12 hours x 48 hours

Consider adding empiric antibiotics until cultures return

Notify ID prior to discharging patient

NON-SEVERE MALARIA

All patients need repeat malaria screen 14 days after therapy

P. falciparum

- If unable to take oral therapy please see above orders for quinine
- Consider admission for 24 hours and repeat smears
- Atovaquone-proguanil (do not use as follow-on oral therapy if previously used as malaria chemoprophylaxis)
    - 4 tablets (1000 mg atovaquone and 400 mg proguanil) daily for 3 days;
- If unable to tolerate or contraindications to Atovaquone-Proguanil notify ID

P. vivax/ovale

- G6PD screen STAT – if positive, notify ID prior to treatment

- If no history of travel to Papua New Guinea or Indonesia
    - Hydroxychloroquine 800 mg PO x 1, then 400 mg at 6, 24, 48 hours
    - Primaquine phosphate*: 30 mg base po q daily x 14 days
- If history of travel to Papua New Guinea or Indonesia
    - Atovaquone-Proguanil 4 tablets (1000 mg atovaquone and 400 mg proguanil) daily for 3 days;
    - Primaquine phosphate*: 30 mg base po q daily x 14 days

P. malariae

- Hydroxychloroquine 800 mg PO x 1, then 400 mg at 6, 24, 48 hours

P. knowlesi

- Hydroxychloroquine 800 mg PO x 1, then 400 mg at 6, 24, 48 hours

For pregnant women, consult ID prior to treatment

- Primaquine phosphate is contraindicated in pregnancy or those who have severe G6PD deficiency