Malaria

Malaria – Diagnosis and Management

Malaria is a medical emergency
Do not delay treatment
Do *NOT* delay therapy if pregnant as benefit outweighs risk

Malaria should be suspected in all patients with pyrexia and recent travel to/from a malarial area (within the previous 6 months)
- Request urgent Malaria Screen – malaria antigen and thick and thin blood film
- For recent outbreak information and guidelines available see "*Additional Information*" section below

Admission and ID consult advised
Blood cultures & tests (FBC, U&E, blood glucose, ABG & CXR where applicable)
Routine and directed diagnostic work-up recommended to exclude other travel related infections
Complete HIV testing

ASSESSMENT of patient with possible malaria

- Symptoms may be non-specific: fevers/chills/sweats, malaise, myalgia, headache, diarrhoea and/or cough
- Consider which malaria prophylaxis was taken (drug, dose, adherence). Note full adherence does not exclude malaria
- Assess for features of complicated malaria:
  - Impaired consciousness
  - Renal impairment
  - Acidosis (base deficit of >8mmol/L *or* bicarbonate of <15mmol/L *or* venous lactate ≥5 mmol/L)
  - Hypoglycaemia
  - Pulmonary oedema
  - Anaemia
  - Prostration
  - Jaundice
  - Spontaneous bleeding/Disseminated Intravascular Coagulation (DIC)
  - Shock
- Note three negative diagnostic samples over 24-48 hours are necessary to exclude malaria

MANAGEMENT

- Consider broad spectrum antibiotics if evidence of shock or secondary bacterial infection
- Consider ICU review and monitored bed
- IV fluid resuscitation with strict observation and management of fluid status
- Close monitoring of blood glucose (hypoglycaemia), renal function, Hb, clotting and electrolytes recommended
- Consider cerebral malaria – impaired consciousness or seizures

CLASSIFICATION

Severe/Complicated
- Parasitaemia >2%
- Parasitaemia <2% with features of complicated malaria/unable to tolerate oral medications/other comorbidities

Non Severe/Uncomplicated
- Parasitaemia <2% and able to tolerate PO and no comorbidities/complications

Malaria - Treatment

Factors to consider when deciding treatment

1. Severity Of Illness
   - Severe/Complicated
     - Parasitaemia >2%
     - Parasitaemia <2% with one or more of the following:
       1. Features of complicated malaria
       2. Unable to tolerate oral medications
       3. Other comorbidities
   - Non-Severe/Uncomplicated
     - Parasitaemia <2% *AND* able to tolerate oral *AND* no comorbidities/complications
2. Organism Involved
   - *P. falciparum*
   - *P. knowlesi*
   - *P. ovale*
   - *P. vivax*
   - *P. malariae*
   - Not identified

OUT OF HOURS MEDICATION SUPPLY
Please refer to local hospital policy for out of hours medication supply

MEDICATION CONSIDERATION
- **Artesunate®**: Monitor for haemolysis and renal function 4 weeks after administration
- **Primaquine**: Check G6PD deficiency before using. Contraindicated in pregnancy
- **Quinine:** Continuous cardiac monitoring & glucose monitoring required for IV therapy
- **Riamet®** (Artemether/Lumefantrine): Limited safety data and not recommended in 1st trimester of pregnancy without specialist advice.
- Artesunate and Quinine can be given IM as a last resort. IV route preferred
- Artesunate, Primaquine, Quinine and Riamet are unlicensed medications, thus the prescribing doctor must take full responsibility

PREGNANCY

Severe/Complicated

1st Line: As for *P. falciparum.* IV Artesunate for all trimesters. Please discuss with specialist on oral therapy following IV Artesunate.

2nd Line: Quinine IV: As for *P. falciparum* **AND** PO clindamycin 450mg TDS. Switch to PO quinine 600mg TDS **AND** PO clindamycin 450mg TDS once PO tolerated/parasite count decreased. Complete full course of 7 days of PO therapy.

Non-Severe/Uncomplicated

1st trimester
PO quinine 600mg TDS ***AND*** PO clindamycin 450mg TDS for 7 days

2nd /3rd trimester
Treat with artemeter/lumefantrine (Riamet®) as above
OR
PO quinine 600mg TDS ***AND*** PO clindamycin 450mg TDS for 7 days
For hepatic hypnozoite eradication in pregnancy discuss with ID

***P. falciparum*/*P. knowlesi*/*P. malariae*/unidentified**

Severe/Complicated

1st Line: Artesunate ® IV: 2.4mg/kg, repeat after 12 and 24 hours, then once daily to a total dose of 12mg/kg (5 doses over the 3 days). Followed by completion of oral therapy: Artemether/Lumefantrine (Riamet ®) (Body weight ≥35kg) 80mg/480mg at 0,8,24,36,48 & 60 hours.

2nd Line: Quinine Dihydrochloride IV: loading dose 20mg/kg (max dose=1.4g) infused over 4 hours, then 8 hours after the start of the loading dose infusion, give 10mg/kg (max dose=700mg) every 8 hours. Switch to PO quinine sulphate 600mg TDS and PO doxycycline 200mg OD once PO tolerated/parasite count decreased. Complete full course of 7 days of PO therapy.

Non-Severe/Uncomplicated

Treat with Artemether/Lumefantrine (Riamet®) as above.

P. ovale*/*P. vivax

As per *P. falciparum*

Subsequent use of Primaquine 0.5mg/kg OD PO(max dose of 30mg) for 14 days (for hepatic hypnozoite eradication)
For Hepatic hypnozoite eradication in pregnancy discuss with ID.

References:
1. WHO Guidelines for Malaria 4th edition (2022). https://www.who.int/publications/i/item/guidelines-for-malaria
2. BIA UK Treatment of Malaria guideline 2016 j infect (2016) 72. 635-649
3. RCOG Malaria in Pregnancy diagnosis and treatment (2010)

Adapted from UHW Malaria Guideline
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Additional Information

- For recent outbreak information see www.cdc.gov/travel
- Guidelines available at www.who.int/publications/i/item/guidelines-for-malaria