

NHS **CATS**
Children's Acute Transport Service



Clinical Guidelines

Malaria

Document Control Information

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Summary

- Malaria is a parasitic infection which is endemic throughout large areas of the tropics.
- There are approximately 200 paediatric cases diagnosed in the UK each year.
- *Plasmodium falciparum* is usually responsible for severe disease, but *P. vivax* and *P. knowlesi* can also cause severe disease.
- Incubation period 6 days or more; most presentations are within 3 months.
- Treated cerebral malaria has a 25% mortality.
- Travel history should be obtained. Malaria may coexist with other infectious diseases.

Clinical recognition

- Nonspecific flu-like symptoms
- Fever
- Headache
- Confusion
- Seizures
- Vomiting/diarrhoea
- Hepatosplenomegaly
- Jaundice

Diagnosis

- The gold standard is detection of parasites on a Giemsa-stained blood smears by light microscopy of thin and thick blood films. The species and the parasite count should be reported.
- Rapid diagnostic tests (RDTs) are less sensitive than microscopy. In the event of a positive RDT the child should be started on treatment until the microscopy results are available.

Complications

- Cerebral malaria is the most life-threatening form: seizures, coma, encephalopathy (usually <3yrs).
- Bleeding: DIC.
- Haemolysis and anaemia.
- Hypoglycaemia (also occurs with quinine).
- Renal failure, haemoglobinuria ('blackwater fever').

- ARDS/pulmonary oedema.

If malaria is confirmed, collect data regarding severity

- Organ involvement / failure (particularly U&E / LFT / coagulation profile / FBC / blood gas / glucose).
- Parasite count.

Medical management

- Supportive measures for fever, respiratory and circulatory compromise.
- Cell hypoxia and acidosis can result from microcirculatory compromise and malarial anaemia, rather than hypovolaemia. Aggressive fluid loading risks complications such as pulmonary or cerebral oedema. Resuscitation should be consultant led.
- Check blood sugars regularly and act accordingly.
- Treat seizures as per APLS protocol.
- Start IV artesunate (if not stocked locally, start IV quinine whilst awaiting artesunate).
- Cover with high dose ceftriaxone is indicated.
- Insert urinary catheter and monitor fluid input/output.

Notes:

Artesunate:

< 20kg 3mg/kg/dose IV at hour 0,12 and 24, and every 24 hours thereafter.

>20kg 2.4mg/kg/dose IV at hour 0,12 and 24, and every 24 hours thereafter.

Quinine dihydrochloride:

Loading dose of 20mg/kg IV (max 1.4g). Followed by 10 mg/kg IV (max 700g) every 8 hours. Quinine should be co-administered with clindamycin PO 7-13mg/kg/dose (max 450mg per dose) every 8 hours

- Children on IV quinine require ECG monitoring.
- Contact paediatric ID team for advice on length of therapy.

Indications for transport to PICU/NICU

- All children with parasite count > 10%.
- < 5 yrs of age and parasite count > 5%.
- Cerebral malaria (low GCS or AVPU).

- Evolving organ failure.
- Continuous infusion of an inotrope or vasopressor.
- Invasive mechanical ventilation.

Indications for management at referring hospital

- Low parasite count and no schizonts.
- Normal FBC + biochemistry.
- Well children, older children, semi-immune children.
- Treatment has already started.

In borderline cases, a conference call with CATS consultant + Paediatric ID consultant at GOSH/SMH, +/- relevant PIC consultant, for options appraisal:

- CATS transport to PICU, or
- Local team transport to ID ward, or
- Remains at local with ID advice.

Management of children awaiting CATS transport

- Supportive management of respiratory and circulatory system.
- Do not delay starting antimalarials: start IV artesunate, if artesunate is not available, start IV quinine.
- Monitor blood glucose.
- Start IV ceftriaxone as antibiotic cover.