

Clinical Guidance

Paediatric Critical Care: Severe Malaria

Summary

This guideline is for use by clinical staff when managing patients with confirmed or suspected malaria who require admission to hospital. Patients who are well with low risk of complications can be managed with oral medication-please see [national guideline](#).

This clinical guideline has been produced by the South Thames Retrieval Service (STRS) at Evelina London for nurses, doctors and ambulance staff to refer to in the emergency care of critically ill children. It represents the views of STRS and was produced after careful consideration of available evidence in conjunction with clinical expertise and experience. The guidance **does not** override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient.

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Change History		
Date	Change details, since approval	Approved by
Feb 2019	Artesunate dosing changed as per WHO recommendations. Risk stratification changed to reflect national guideline advice. Cardiac monitoring stipulated for quinine.	ELCGC ASC

Paediatric Critical Care: Severe Malaria

Incidence: Rare in the U.K, increasing worldwide. **Aetiology:** Majority of cases due to *Plasmodium falciparum*

Stratify risk of complications

Low risk (manage as per [national guidance](#)):

- Non-*falciparum* malaria
- Low parasitaemia (<2%) of *falciparum* malaria
- No anaemia (Hb >100 g/l)

High risk (discuss with PICU/HDU):

Resp

- Hypoxia (Saturations <95%) or respiratory distress

CVS

- Low BP (systolic <80 mmHg if > 1yr or <70 mmHg <1yr)

Neuro

- Depressed level of consciousness or seizures

Metabolic

- Hypoglycaemia (<3mmol/l)
- Metabolic acidosis (pH <7.3)

Infection and hameolysis

- Hyperparasitaemia (>2%)
- Anaemia (Hb <100g/l)
- Visible jaundice or hyperkalaemia (>5.5mmol/l)
- Co-existing sickle cell disease/ asplenia & *falciparum*

History:

- Should be considered in any pyrexial child with history of travel to endemic area.
- Flu-like illness including fever, cough, headache, malaise, vomiting and diarrhoea.
- Document travel area for possible chronic exposure

Examination:

- May reveal pallor, jaundice and/or splenomegaly

Baseline investigation:

- FBC, coagulation and group & save
- Malaria screen (will include immunoassay and blood film)
- Blood culture to exclude secondary bacterial infection
- Electrolytes, renal & liver function.
- LDH, glucose & blood gas (arterial or venous)

Modified Glasgow Coma Scale for non-verbal children

Children < 6months (max score 9)

EYES: 4 Spontaneous
3 To voice
2 To pain
1 None

VERBAL: 2 Cries
1 None

MOTOR: 3 Flexion to pain
2 Extension to pain
1 No response

Initial Management

- High flow oxygen or ventilatory support as clinically indicated
- Cautious fluid resuscitation:
 - 20ml/kg 0.9% sodium chloride if shocked and no decreased level of consciousness
 - Signs of coma, treat with 3-5ml/kg 3% NaCl
- Hypoglycaemia - 3ml/kg 10% glucose (beware hyponatraemia in repeated doses)
- Monitor electrolytes - anticipate hyperkalaemia
- If signs of intracranial hypertension, osmotherapy recommended
- Treat seizures as per seizure protocol
- Anticipate anaemia and thrombocytopenia – transfuse on clinical grounds
- Paediatric infectious diseases referral

No evidence of benefit:

- Steroids
- Exchange transfusion no longer recommended as artesunate lowers parasitaemia count faster than quinine

Treatment for high risk cases

1st Line:

Artesunate: <20kg: 3mg/kg IV or ≥20kg: 2.4mg/kg IV

Give on admission, repeat at 12 hours, 24 hours then 24hourly until oral medication can be reliably taken (max duration 7 days). Infuse over 2-5 minutes depending on formulation.

2nd Line (if artesunate not immediately available):

Quinine dihydrochloride (in glucose) infuse over 4 hours (prolongs QT: ECG daily, continuous cardiac monitoring, liaise with cardiology if concerns)

- 20mg/kg loading dose (if no quinine/mefloquine in previous 12 hours). Max quinine dose 700mg.
- Then 10mg/kg infusion 8 hourly until oral medication can be reliably taken – monitor glucose

• Decision to switch to oral medication based on review by paediatric infectious disease team

• If failure to respond within 1st few days, seek microbiological advice

Other considerations:

Monitor parasite count daily

- Secondary bacterial infection may occur: start IV Ceftriaxone 80mg/kg daily if evidence of shock or reduced GCS
- Artesunate-related haemolysis can occur and this can be delayed to after discharge: warn parents and follow up appointment at 2 weeks recommended