SEVERE MALARIA (MULTI ORGAN FAILURE)

The Prehospital Care Library
La Bibliothèque de Soins Préhospitaliers

Severe malaria is a medical emergency characterised by high parasite burden and organ dysfunction, most commonly due to Plasmodium falciparum. Mortality is driven by cerebral involvement, metabolic derangement, shock, and inappropriate fluid management.

ED priorities:

- Rapid recognition
- Immediate antimalarial therapy
- Prevention of secondary injury
- Careful supportive management
- Early ICU level escalation

Delay in antimalarial treatment is a leading cause of death.

RECOGNITION

Severe malaria is **malaria + organ dysfunction.**

NEUROLOGICAL

- Altered consciousness
- Seizures
- Coma (cerebral malaria)

METABOLIC / SYSTEMIC

- **Hypoglycaemia** (common, recurrent)
- Metabolic acidosis
- Severe anaemia
- Jaundice (haemolysis + hepatic dysfunction)
- Acute kidney injury
- Shock
- Pulmonary oedema / ARDS
- Bleeding / DIC (late)

Absence of fever does **not** exclude severe malaria.

PATHOPHYSIOLOGY

- Parasitised RBCs adhere to microvasculature
- Leads to:
  - Microcirculatory obstruction
  - Tissue hypoxia
  - Lactic acidosis
- Capillary leak + anaemia → high output failure, pulmonary oedema
- Hypoglycaemia from:
  - Parasite glucose consumption
  - Antimalarial therapy
  - Hepatic dysfunction

IMMEDIATE ED PRIORITIES

1. ABCs
2. Immediate glucose check
3. Start IV antimalarial therapy
4. Treat seizures and hypoglycaemia without delay
5. Early ICU planning

Do not wait for full confirmatory testing before treatment if suspicion is high.

DIAGNOSIS

- Blood film / rapid diagnostic test if available
- Parasite quantification useful for prognosis
- Treatment is clinical in unstable patients

DEFINITIVE ANTIMALARIAL TREATMENT

IV ARTESUNATE (PREFERRED)

- Treatment of choice for severe malaria
- Rapid parasite clearance
- Lower mortality compared to quinine

Start immediately once severe malaria suspected.

GLUCOSE & SEIZURE MANAGEMENT

- Hypoglycaemia is **common and recurrent**
- Seizures worsen cerebral malaria prognosis

Management:

- Frequent glucose monitoring
- Treat low glucose immediately
- Benzodiazepines for seizures
- Avoid prolonged post ictal hypoxia

FLUID MANAGEMENT

Patients are:

- Intravascularly depleted and
- At high risk of pulmonary oedema

Principles:

- **Small cautious boluses only**
- Frequent reassessment
- Early vasopressors if hypotensive
- Avoid routine large volume resuscitation

Fluid overload is a **leading cause of death** in severe malaria.

HAEMATOLOGICAL MANAGEMENT

- Severe anaemia common from haemolysis
- Reduced oxygen delivery worsens lactic acidosis

Blood transfusion:

- Indicated if severe or symptomatic anaemia
- Improves survival when used appropriately

MULTI ORGAN COMPLICATIONS (EXPECT THEM)

CEREBRAL MALARIA

- Reduced consciousness
- Seizures
- High mortality

RESPIRATORY

- Pulmonary oedema
- ARDS

RENAL

- AKI
- Often requires renal support

METABOLIC

- Acidosis
- Electrolyte disturbances

MONITORING

- Glucose (frequent)
- Urine output
- RR and work of breathing
- Mental state
- Temperature
- Signs of fluid overload

Deterioration can be rapid even after treatment initiation.

WHAT TO AVOID

- Delayed artesunate
- Large fluid boluses
- Infrequent glucose monitoring
- Missing hypoglycaemia
- Assuming improvement after first dose

DISPOSITION

- Severe malaria = **ICU level care**
- Early referral improves outcome
- Transfer urgently if ICU unavailable

CHECKLIST
SEVERE MALARIA (MULTI ORGAN FAILURE)

IMMEDIATE STABILISATION (ABCDE)

Airway

- [ ] Protect airway if reduced GCS
- [ ] Prepare for intubation if seizures/coma

Breathing

- [ ] Oxygen (target SpO_2 ≥94%)
- [ ] Monitor for pulmonary oedema

Circulation

- [ ] IV access ×2
- [ ] BP and HR monitoring
- [ ] Cautious fluids only

Disability

- [ ] GCS
- [ ] Seizure activity
- [ ] Treat seizures promptly

Glucose

- [ ] Finger stick glucose
- [ ] Treat hypoglycaemia immediately
- [ ] Recheck frequently

DIAGNOSTIC STEPS (DO NOT DELAY TREATMENT)

- [ ] Blood film / malaria test if available
- [ ] Baseline labs if feasible (Hb, U&E, lactate)

ANTIMALARIAL THERAPY

- [ ] IV artesunate started immediately
- [ ] Document time of first dose

SUPPORTIVE CARE

- [ ] Fluids cautiously titrated
- [ ] Blood transfusion if severe anaemia
- [ ] Early vasopressors if hypotensive
- [ ] Control fever
- [ ] Treat acidosis supportively

MONITORING

- [ ] Frequent glucose checks
- [ ] Urine output (catheter)
- [ ] Respiratory status
- [ ] Mental state
- [ ] Signs of fluid overload

COMPLICATIONS TO WATCH FOR

- [ ] Cerebral malaria
- [ ] Pulmonary oedema / ARDS
- [ ] AKI
- [ ] Severe anaemia
- [ ] Recurrent hypoglycaemia

WHAT TO AVOID

- [ ] Delayed antimalarial therapy
- [ ] Fluid overload
- [ ] Missing hypoglycaemia
- [ ] Minimal monitoring after treatment initiation

DISPOSITION

- [ ] ICU admission
- [ ] Early senior / critical care involvement
- [ ] Arrange transfer if ICU unavailable
- [ ] Clear handover:
  - Time of artesunate
  - Glucose trends
  - Fluid balance
  - Organ dysfunction present