

SIMPLE STEP-BY-STEP GUIDE to the DIAGNOSIS and MANAGEMENT of SEVERE MALARIA

District hospital level

Severe Malaria is a Medical Emergency

STEP 1: Diagnose Malaria

High index of suspicion

- Suspect malaria in any patient presenting with fever or history of fever who lives in a malaria area or visited a malaria area.

Confirm the diagnosis of malaria

- Urgently perform a rapid malaria diagnostic test.

and/or

- Send blood specimen in a purple top tube to laboratory for malaria smears. Mark the lab request form as **URGENT** and chase the results.

- The treatment of malaria is **urgent** and any delays in diagnosis and treatment may result in severe malaria.

STEP 2: Assess Severity

URGENT!!

If malaria is confirmed, re-assess the patient for signs of severe malaria.

Features of Severe Malaria:

- Clinical History:**
 - Convulsions
 - Persistent vomiting
 - Severe diarrhoea
 - 'Black' urine
- Physical Examination:**
 - Prostration (severe general body weakness)
 - Impaired consciousness (sleepiness, confusion, coma)
 - Respiratory distress
 - Circulatory collapse (hypotension, shock)
 - Jaundice
 - Severe pallor
 - Abnormal bleeding
- Basic (Side Room) Tests:**
 - Glucometer (HGT) glucose < 2.2 mmol/L
 - Haemoglobin meter (Hb = ≤ 6 g/dL)
 - Urine dipstix (haemoglobinuria)

If any one of the above features is present, diagnose and treat as severe malaria.

STEP 3: Special Investigations

URGENT!!

As soon as severe malaria is diagnosed the following special investigations should be ordered urgently.

- FBC, ESR and/or CRP
- Malaria smears
- Urea, electrolytes, Creatinine
- Liver function tests
- 8mEq/L or plasma bicarbonate < 15 mmol/L or venous plasma lactate > 5 mmol/L
- Blood culture, if indicated (*should always be done in very sick patients, especially those with severe hypotension or shock*)
- Coagulation studies (if signs of abnormal bleeding)
- Chest X-ray (if indicated, e.g. respiratory distress)

STEP 4: Antimalarial Treatment

URGENT!!

- Commence parenteral antimalarial treatment

IV artesunate preferred (if available), **Dosing** (give at 0, 12 hours and 24 hours): children < 20 kg : 3 mg / kg bw per dose) ; children (> 20 kg) and adults: 2.4 mg / kg bw per dose. (see Artesunate poster for details)

OR

IV quinine – loading dose strictly followed by maintenance doses both given as a SLOW IV infusion over 2-4 hours and dosed strictly according to body weight. (see details below)

- NB: Severe malaria cannot be treated effectively with oral antimalarial drugs: Coartem® or quinine tablets.**

STEP 5: Hospital Admission

URGENT!!

- Admit patient to:
 - ICU
 - Or high care ward
 - Or high care bed
- Caution:** Severe malaria patients need intensive nursing so they should not be managed in a general ward

STEP 6: Collaboration / Referral

URGENT!!

Consider contacting a referral hospital early (if severely ill and/or present severe complications e.g.

- Cerebral malaria (unconsciousness).
- Respiratory distress syndrome
- Shock (severe hypotension).
- Metabolic acidosis
- Septicaemia
- Renal failure
- Liver failure
- Disseminated intravascular coagulation (DIC)

STEP 7: In-patient Monitoring

URGENT!!

The following monitoring is required:

- Routine vital signs observations (TPR and BP), 4 hourly.
- Strict input / output record of fluids
- Blood glucose (2 to 4 hourly)
- Haemoglobin (daily)
- Malaria parasite count (daily)
- Nurses must report abnormal observations immediately to doctor.**

STEP 8: Ancillary Treatments

URGENT!!

Consider ancillary treatments if indicated e.g.

- Oxygen
- IV Fluids
- Temperature control (paracetamol, tepid sponging)
- Anticonvulsants (hypoglycaemia must always be ruled out before giving anticonvulsants)
- Pipes (CVP line, urethral catheter, NG tube)
- Assisted ventilation
- Antibiotics recommended in all children with severe malaria-secondary bacterial infections are common.

STEP 9: Patient Review

URGENT!!

Chase and obtain the results of the initial **laboratory blood tests** (step 3) within 2-4 hours of commencing treatments.

Regularly review the patient looking for the following complications:

- Severe anaemia (Hb ≤ 6 g/dl)
- Septicaemia (high white cell count).
- Metabolic acidosis (pH < 7.25 , and/or high anion gap, and/or plasma bicarbonate < 15 mmol/L, and/or venous lactate > 4 mmol/L).
- Renal failure (creatinine > 260 μ mol/L).
- Liver failure (severe derangement of liver enzymes)

Make a clear plan for the effective management of each complications identified.

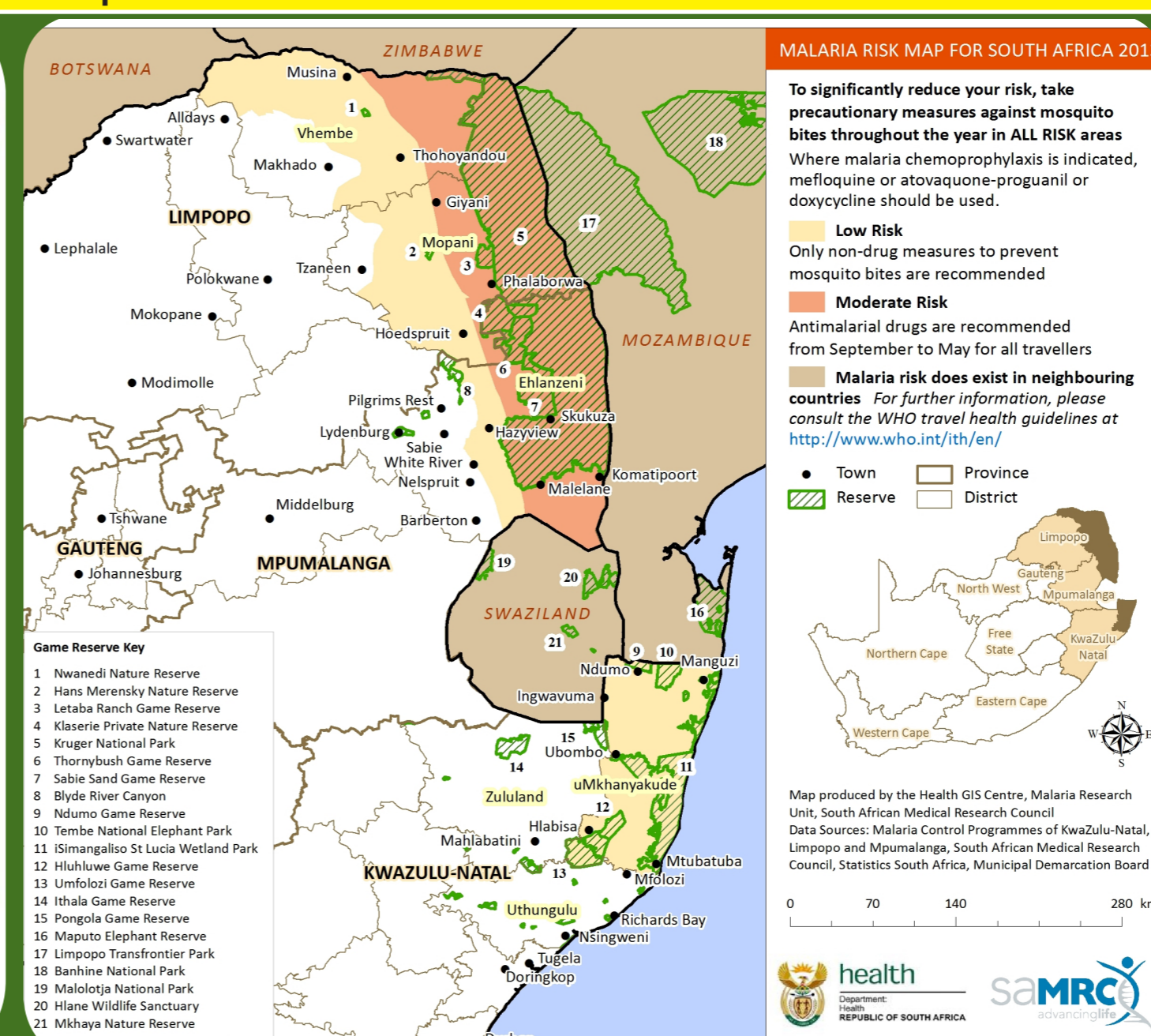
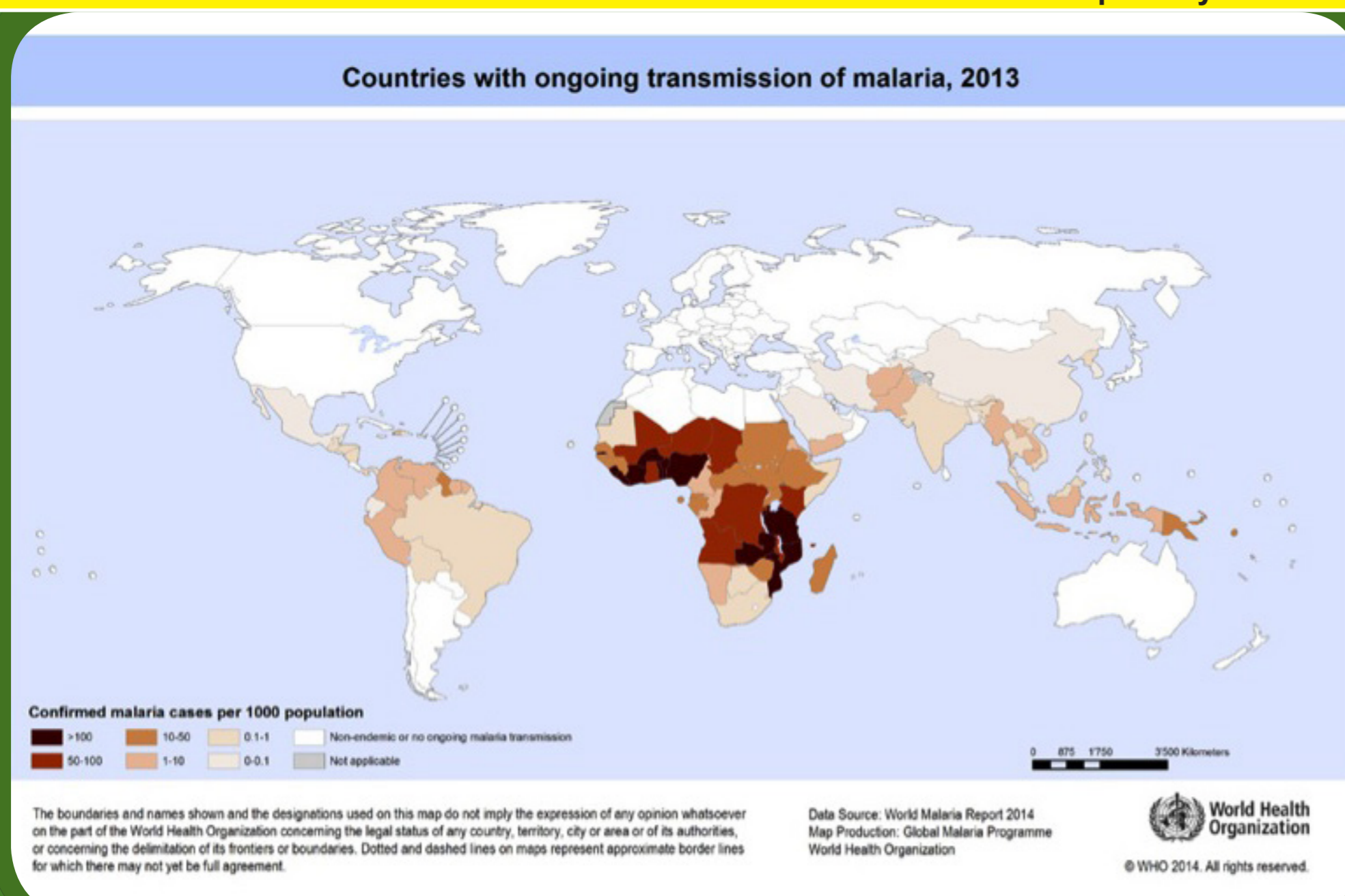
Note: Antimalarial medication only kills malaria parasites in the blood, it does not correct the complications. Complications must be actively managed.

STEP 10: Continuation of Care

CRUCIAL!!

- If transfer to referral hospital not necessary the patient should be reviewed twice daily in the ward with monitoring records and results of investigations until clinical condition improves and stabilizes.
- Blood tests (FBC, Malaria parasites, U/E/creatinine, LFT) should be repeated at least every two days and patient reviewed with the results.
- Monitor urine output.
- Patient should show clinical improvement by day 3 of treatment. If not, the referral hospital should be contacted to discuss the patient's condition.

Compiled by the National department of health 2016



How to treat severe (complicated) malaria with IV Quinine:

Calculate doses strictly according to body weight.

Start with a loading dose: 20mg/kg in 5% Dextrose drip, run slowly x4 hours.

Continue with maintenance doses: 10mg/kg in 5% dextrose drip 8 hourly. Each dose to run slowly x4 hours.

If renal failure, decrease maintenance doses by 1/3 to 1/2 from day 3.

Change to oral treatment as for uncomplicated malaria as soon as clinical condition improves and patient can tolerate orally.



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