

2 ZOOBOTIC AND VECTOR-BORNE DISEASES

a Malaria

Malaria alert

The malaria season in southern Africa is from September to May each year, and an increase in both local (from malaria-endemic areas in South Africa) and imported (from other malaria-endemic countries) cases can be expected over the upcoming holiday season. Malaria is endemic in three South African provinces: Limpopo, Mpumalanga, and north-eastern KwaZulu-Natal (KZN). Travellers to malaria-endemic areas within South Africa or other malaria-endemic countries (notably Mozambique) need to take appropriate preventative measures. Mefloquine (Lariam[®], Mefliam[®]), doxycycline, and atovaquone-proguanil (Malanil[®]) are recommended chemoprophylactic agents for Southern Africa where chemoprophylaxis is indicated, and the choice of agent needs to be individualised. For advice on preventive measures, access the following link: http://www.doh.gov.za/docs/policy/2011/malaria_prevention.pdf.

Malaria must be considered in the differential diagnosis of acute febrile illness in returning travellers; diagnostic tests for malaria should be done urgently, since prompt and appropriate management is critical to improving patient outcomes. Delays in diagnosis, misdiagnosis (most commonly as influenza), and delayed treatment are the most common factors associated with adverse outcomes. Healthcare workers, especially those in non-endemic areas, must ensure that any case of malaria is notified.

The South African national guidelines recommend the use of artemether–lumefantrine (Coartem[®]) or quinine plus doxycycline/clindamycin for uncomplicated falciparum malaria. Severe falciparum malaria is treated using quinine plus doxycycline/clindamycin or intravenous artesunate where available. An initial loading dose of 20 mg/kg of quinine is required for all cases of severe malaria to rapidly reach a therapeutic level. Chloroquine and sulphadoxine-pyrimethamine are not to be used in the treatment of falciparum malaria due to high-level resistance. Non-falciparum malarial infections are less common in sub-Saharan Africa; artemether–lumefantrine or quinine as above can be used for treatment of acute non-falciparum malarial illness. Chloroquine should only be used if there is reliable laboratory confirmation of non-falciparum species. The addition of primaquine to the above initial treatment is indicated for *Plasmodium ovale* or *P. vivax* infections to prevent relapse.

Odyssean malaria case, Benoni, Gauteng Province

The patient, a 10-year-old boy, first complained of a headache on 15 November. He was admitted in the morning on 18 November to a private hospital in Kempton Park with a provisional diagnosis of possible meningitis, and malaria was diagnosed shortly afterwards. On admission, he was fully conscious (Glasgow Coma Scale 15/15) with neck stiffness; the CSF was normal. The Hb was 15.7 g/dL, WCC $3.2 \times 10^9/L$, platelets $46 \times 10^9/L$, urea and creatinine moderately raised. The infection was reported as *P. falciparum*, 10% parasitaemia. He was admitted to ICU under the care of a paediatrician and a loading dose of IV quinine was given. By 72 hours the clinical condition had improved and the parasitaemia was reported as <0.1%.

The family had moved to a plot in Benoni, from Glen Marais, Kempton Park (about 10 km away), on 1 November. There was no history of travel to a malaria risk area, nor of any blood transfusions or injections administered to the patient. The new house is about 6 km from local highways, and on a road that carries local traffic only. The previous owner is a manager at OR Tambo Airport, and had last been at the house on 28 October. He had not travelled outside Gauteng in the last 2 months. There had been no other residents or tenants on the plot, but there are house-building operations in progress on one of the adjacent properties. The family had run a printing business at the house in Kempton Park and had had frequent contact with couriers that came and went with deliveries.

The patient and his siblings are keen swimmers and spend much time at a local swimming school, including weekly club-evenings, when the children are present after dark. The swimming pool is indoors in a stable and humid environment. The swimming school owner employs a Malawian labourer, and stated that there were several other Malawians in the area, but there had been no new local arrivals from outside the country that she was aware of. However, her employee stated that a relative had visited from Malawi during the last month, but was unable to give a clear description as to exactly when the visit occurred.

An examination of the patient's residence, including the room he sleeps in, revealed no mosquitoes. Potential breeding sites in the adjacent grounds were examined and no mosquito larvae of interest were found. Similarly, no mosquito adults or larvae were found at the swimming school. It is most likely that this patient acquired malaria from the

bite of an infective *Anopheles* mosquito inadvertently translocated from a malaria endemic area via a vehicle such as a car, mini-bus taxi or bus – a phenomenon known as Odyssean malaria. Based on the date of onset of illness, it is highly likely that he was infected during the first week of November. The patient's residence seems an unlikely source of infection as it is not situated near a transport node or major highway and there is no clear indication that any of the family members have been involved in any activities that could have led to the importation of an infective mosquito. However, it is possible that a migrant worker on one of the nearby building sites could have inadvertently imported an infective mosquito. The swimming school is also a possible source of infection owing to the presence of a migrant community from a malaria-endemic region, and

because an indoor pool occupied by several people during the early evening is an attractive environment for an escaped *Anopheles* mosquito in search of a blood meal. As no further cases have been reported in the vicinity, no specific mosquito vector control interventions are recommended at this stage. Residents should minimise potential mosquito breeding sites by ensuring that no temporary bodies of water remain in their vicinity.

Source: Division of Public Health Surveillance and Response, Vector Control and Parasitology Reference Laboratories, Centre for Opportunistic, Tropical, and Hospital Infections; NICD-NHLS