



Over-the-counter antimalarials

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Introduction

Malaria is a potentially life-threatening disease spread through the bite of an infected female *Anopheles* mosquito. Although malaria mainly occurs in tropical developing countries in sub-Saharan Africa, South America, the Caribbean, Asia, Eastern Europe and the South Pacific, it is estimated that nearly half of the world's population is at risk. Despite being preventable and curable, malaria remains a significant global health burden. In 2018, there were an estimated 228 million cases of malaria. Pregnant women and children under five years are at high risk of developing complications or dying from malaria. Of the estimated 228 million people infected with malaria in 2018, there were 405 000 deaths, with children under five years accounting for 67% of these deaths. More than 90% of malaria cases and deaths occur on the African continent.

Malaria risk in South Africa

Malaria is seasonal in South Africa, with the highest risk being during the wet summer months (September to May). Effective malaria control interventions have limited malaria transmission in South Africa to the north-eastern region, mainly in the low altitude (below 1 000 m) areas of Limpopo, Mpumalanga and northern KwaZulu-Natal provinces. There are, however, between 10 000 and 30 000 cases of malaria reported in South Africa every year. All South Africa's neighbouring countries, with the exception of Lesotho, have malaria transmission. Most imported malaria in South Africa is acquired in Mozambique, because of its high prevalence there and the large cross-border movement of people. Swaziland, Botswana, Namibia and Zimbabwe have more limited risk areas for malaria transmission.

Malaria prevention

Malaria prevention strategies are critical in all malaria risk areas, such as vector control programmes managed by government health

authorities. In addition, the ABCs of malaria prevention also remain an important, if not critical, intervention:

A: Awareness and assessment of malaria risk.

B: Avoidance of mosquito bites.

C: Compliance with chemoprophylaxis (preventative medication), when indicated.

D: Early detection of malaria disease.

E: Effective treatment.

These strategies are drivers in the effort to eliminate malaria in South Africa. The antimalarial medicines mefloquine, doxycycline or atovaquone-proguanil can be used for chemoprophylaxis, when necessary, and are equally effective if taken correctly. The down-scheduling of doxycycline and atovaquone-proguanil to schedule 2 (S2) has broadened the scope of the fight against malaria. Pharmacists and pharmacist's assistants are now actively involved in this elimination strategy. This article will focus on the antimalarials available over-the-counter (OTC).

OTC antimalarials for malaria prevention

The decision to recommend malaria chemoprophylaxis is far from simple. Patients should be referred to the pharmacist or doctor for individual assessment. Recommending the most suitable regimen for chemoprophylaxis for a particular patient depends on geographical region and associated malaria risk. The greater the risk of contracting malaria and developing complications, the greater the need for chemoprophylaxis. Other factors to be considered include (but are not limited to), duration of stay, individual patient factors such as comorbidities and concurrent medication use. Additionally, the choice of chemoprophylaxis must be tolerable to ensure optimal compliance.

It must be emphasised that the most reliable way of preventing malaria is by avoiding being bitten by mosquitoes as no malaria chemoprophylaxis is 100% effective. However, the disease in those taking chemoprophylaxis is likely to be milder or less rapidly progressive.

Table I: Atovaquone-proguanil for malaria prophylaxis

Atovaquone-proguanil	
Recommended regimen for malaria prophylaxis: <i>Before travel:</i> Start one to two days before entering malaria area. <i>During travel:</i> Take daily for the duration of stay in the malaria area. <i>After travel:</i> Take daily for seven days after leaving the area.	
Adult dosing	Each adult tablet contains 250 mg atovaquone and 100 mg proguanil. The recommended dose is one tablet daily and is suitable for persons weighing 45 kg or more.
Paediatric dosing	Each paediatric tablet contains 62.5 mg atovaquone and 25 mg proguanil and is suitable for use in children weighing 11 kg or more. The dose for children is weight-dependent: 11–20 kg: 1 paediatric tablet daily. 21–30 kg: 2 paediatric tablets daily. 31–40 kg: 3 paediatric tablets daily. > 40 kg: 1 adult tablet daily.
Administration notes <ul style="list-style-type: none"> • Tablets should be taken daily, preferably at the same time, with food or a milky drink. This is important, as it helps with the absorption of the active ingredients. • If a dose is missed, it should be taken as soon as possible and continued as prescribed. • If the patient vomits within one hour of taking dose, that dose should be repeated. 	
Safety <ul style="list-style-type: none"> • Headache, mouth ulcers and abdominal pain are the most common side-effects. • Due to a lack of safety information, atovaquone-proguanil is not recommended for pregnant or breastfeeding women. • Pregnancy should be avoided during and for two to three weeks after taking the last dose. • This option is not indicated for use in children under 11 kg. 	

Atovaquone-proguanil

In November 2017, atovaquone-proguanil was down-scheduled to S2 in South Africa “when co-formulated and intended and labelled for the chemoprophylaxis of malaria in those weighing 11 kilograms or more”. Table I outlines the summary of atovaquone-proguanil for malaria prophylaxis.

Doxycycline

In March 2016, doxycycline for malaria prophylaxis was down-scheduled to S2: “Doxycycline when intended and labelled for the chemoprophylaxis of malaria in those 8 years and older, for periods not exceeding 4 months of continuous use.” Table II summarises important aspects of the use of doxycycline for malaria prophylaxis.

Conclusion

Malaria is both preventable and curable. It is, however, a global health burden, particularly in Africa. Travellers to malaria areas are encouraged to prevent being bitten by mosquitoes and, if necessary, may also be prescribed chemoprophylactic antimalarial medicines. The OTC accessibility of antimalarials is an important development in the global fight against malaria. Doxycycline and atovaquone-proguanil can be purchased without a prescription in South Africa for malaria prevention. Both these medicines have been shown to be effective when used correctly. Therefore, the importance of taking malaria prophylaxis correctly, adhering to the regimen and completing the course after travel cannot be stressed enough. These OTC options are particularly helpful for last minute travellers since these regimens can be initiated a day before traveling to a malaria area. Furthermore, both are regarded

Table II: Doxycycline for malaria prophylaxis

Doxycycline	
Recommended regimen for malaria prophylaxis: <i>Before travel:</i> Start one day before entering malaria area. <i>During travel:</i> Take daily for the duration of stay in the malaria area. <i>After travel:</i> Take daily for four weeks after leaving the malaria area.	
Each capsule contains either 50 mg or 100 mg doxycycline.	
Adult dosing	The adult dose is 100 mg daily.
Paediatric dosing	The paediatric dose for children 8 years and older is 2 mg/kg. 8–15 years (31–45 kg): 2 mg/kg. 15 years and older (> 45 kg): adult dose.
Administration <ul style="list-style-type: none"> • Capsules should be taken after a meal, with a full glass of water and patients should be advised not to lie down for an hour after taking a dose. • Patients should be encouraged not to miss any doses. Missed doses may result in prophylactic failure. If a dose is missed, it must be taken as soon as possible. • If the patient vomits within one hour of taking dose, that dose should be repeated. 	
Safety <ul style="list-style-type: none"> • Side-effects experienced include photosensitivity, vaginal thrush (candidiasis) and gastrointestinal side-effects, particularly oesophagitis, if not taken correctly. • Use is contraindicated in pregnant women and in children younger than eight years of age. • Photosensitivity: patients should be advised against excessive UV exposure and to use a high SPF sunscreen. • Doxycycline is the preferred choice for patients with HIV on antiretrovirals or patients taking rifampicin. 	

as the safest options for patients with mood or mental disorders who require malaria prophylaxis. Chemoprophylaxis may not completely exclude the risk of contracting malaria since there is still a small risk of contracting malaria. Patients must be advised that if taking chemoprophylaxis, they must still make every effort to prevent being bitten by mosquitoes. Being at the forefront of patient care, pharmacists and pharmacist's assistants must remain mindful of when and how malaria symptoms develop and present. Symptoms of malaria infection may present as early as seven days after exposure. However, symptom development may be longer if chemoprophylaxis was taken. Therefore, if any 'flu-like' illnesses develop up to two months or even longer, after being in a malaria area, these patients must be referred for immediate medical attention. Early diagnosis and appropriate treatment are critical for saving lives.

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