Health Authority – Abu Dhabi		هـيئـــة الصحة- أبوظبي
Title: Standard for prevention of Malaria in travellers to Malaria endemic areas Reference: HCF/MPS/V0.9		Issue Date: October 2010 Next Review Date: October 2012

1. Purpose

1.1 This standard mandates the definitions and service specifications for malaria prophylaxis for adults and child travelers from Abu Dhabi Emirate to malaria endemic areas.

1.2 The standard also refers to guidelines for the reference of healthcare providers involved with malaria prevention services (Appendix 1).

2. Scope

2.1. This document applies to all HAAD licensed Healthcare Facilities and HAAD licensed health professionals in the emirate of Abu Dhabi.

3. Duties for Healthcare Facilities and Professionals

All licensed healthcare facilities and professionals specified in the scope of this standard must :

3.1. Report and submit data to HAAD via e-claims and in accordance with the HAAD Reporting of Health Statistics Policy and as set out in the HAAD Data Standards and Procedures.

3.2 Provide high quality and safe clinical advice and prophylaxis according to HAAD policies and standards and aligned with internationally accepted best practice.

3.3 Report suspected and diagnosed cases HAAD Standard for Notifying Infectious Diseases via e-notification.

4. Enforcement and Sanctions

4.1 HAAD may impose sanctions in relation to any breach of duties under this standard in accordance with the [HAAD Policy on Enforcement and Sanctions].

5. Standards

Standard 1- Definitions

5.1. Preventive measures including verbal and written education and advice and prophylactic medications for disease-free travelers.

5.2. Malaria endemic areas are defined by the World Health Organisation and subject to change at any time (see Appendix 1 and WHO website: http://www.who.int/topics/malaria/en/).

6. Standard 2- Service Specifications

6.1 The service must be supervised by a HAAD licensed physician. However where appropriate relevant duties may be delegated to a HAAD licensed nurse with suitable credentials, training and experience.

6.2 Preventive measures must be delivered as per internationally accepted best practice and HAAD Guidelines for Malaria Prevention in Travellers (Appendix 1 – Tables 1 and 2) using a risk based approach.

6.3 Client education must be delivered using culturally and socially relevant information, consistent with the relevant HAAD policies and standards.
6.4 All communication regarding malaria prevention must be in accordance with HAAD policies and standards, including general confidentiality and consent policies available at www.haad.ae

Appendix 1

Guidelines for Malaria Prevention in Travelers from the Emirate of Abu Dhabi

Introduction

These guidelines are for use by healthcare workers who advise travelers, may also be of use to prospective travelers who wish to read about the options themselves. These guidlines have been adapted and will be upgraded in accordance with WHO guidance.

Malaria is a common life-threatening disease. It is currently endemic in over 100 countries, which are visited by more than 125 million travelers every year. Each year between 2000 and 2500 persons are diagnosed with malaria on their return to the United Arab Emirates from endemic countries (MOH annual report). The number of diagnosed imported malaria cases in the Emirate of Abu Dhabi in 2009 was 1339 (Public Health, Malaria Control Program). Malaria is a complex disease that varies widely in epidemiology and clinical manifestation in different parts of the world. Any fever occurring in a traveler within three months of leaving a malaria-endemic area is a medical emergency and should be investigated properly. Immigrants from endemic areas who now live in non-endemic and return to their home countries to visit are at risk of malaria because of the waning or absent immunity. Young children, pregnant women, and non-immune visitors to malarious areas are at greater risk of severe or fatal illness.

Causative agent

In humans, malaria is caused by one or more of four species of intracellular protozoan parasites: Plasmodium falciparum, P. vivax, P. ovale and P. malariae. These species differ in geographical distribution, microscopic appearance, clinical features, and potential for development of resistance to antimalarial drugs. However, measures to prevent infection with all four species are similar.

Transmission

The malaria parasite is transmitted by female anopheles mosquitoes, which bite mainly between dusk and dawn

Geographical distribution

The current distribution of malaria is shown in the map. The risk for travelers contracting malaria is highly variable from country to country and even between areas in a country and this must be considered in any discussion of appropriate prevention measures

Malaria transmission does not occur in regions with temperatures below the 16°C isotherm (line on weather map joining all the places that have the same temperature). In many endemic countries, the main urban areas – but not necessarily the suburbs - are usually free of malaria transmission. However malaria can occur in the main urban areas of Africa and, to a lesser extent, India. There is usually less risk for transmission at altitudes above 1500 meters, but in favorable climatic conditions, the disease can

occur at altitudes up to almost 3000 meters. Seasonal rainfall increases mosquito breeding. The risk of infection is therefore highest at the end of the rainy season or soon after.

Prevention measures for travelers

A. Be aware of the risk, the incubation period, and the main symptoms. The longer the stay in endemic areas, the higher the risk of contracting malaria.
B. Avoid being bitten by mosquitoes, especially between dusk and dawn, although some species of mosquito which can transmit dengue fever bite during the day also.
- An impregnated bed net should be used unless the accommodation is fitted with functioning air conditioning and windows and doors are adequately screened to prevent mosquito entry.
- Backpackers staying in budget accommodation and those engaged in outdoor activities have a higher risk of being bitten compared to tourists staying in air-conditioned hotels

C. Cover exposed body parts with DEET-based (N-diethyl-m-toluamide) insect repellents. If DEET is not tolerated (or is not available), an alternative preparation can be used (citronella creams for example), but few preparation are as effective as DEET. Duration of protectionwith DEET is 1 to 3 hours for 20%, up to 6 hours for 30% and up to 12 hours for 50% DEET. The interval between applications depends on this as well as the DEET formulation and concentration used. When both sunscreen and DEET are required, DEET should be applied afterwards. DEET reduces the efficacy of sun block; however sunscreens do not reduce the effectiveness of DEET. DEET is not recommended for infant below the age of 2 months. Use of 20% DEET in the second and third trimesters of pregnancy was not associated with adverse effects on infants from those pregnancies followed for up to 12 months after birth. Given the seriousness of malaria in pregnancy, the use of DEET at a concentration of up to 50% as part of the malaria prevention regimen is not counter-indicated for pregnant women, including those in the first trimester. DEET may be used at a concentration of up to 50% while breastfeeding and for infants and children aged over 2 months.
D. Take antimalarial drugs (Chemoprophylaxis) to prevent infection when appropriate.
E. Immediately seek diagnosis and treatment if a fever develops one week or more after entering an area where there is malaria risk, and up to 3 months after departure.

Guidelines for Chemoprophylaxis

The most appropriate chemoprophylactic antimalarial drug (s) (if any) for the destination(s) should be prescribed in the correct doses.

- Travelers and their doctors should be aware that no antimalarial prophylactic regimen can give a complete protection against malaria infection. Risk avoidance as described above is still necessary
- Start weekly drug regimens one or two weeks before departure (except 1-2 days for malarone, two to three weeks for mefloquine), to get used to side effects before traveling. Drugs should be taken after meals
- Continue until four weeks after return to control any potential infection contracted towards the end of the stay. The single exception is atovaquone-proguanil, which can be stopped one week after return because of its effect on early liver-stage parasites.
- Adverse reactions attributed to malaria chemoprophylaxis are common, but most are minor and do not affect the activities of the traveler. Retinal toxicity is a concern in chloroquine when cumulative dose of 100 g of chloroquine is reached. Data indicate no increased risk of serious side effects with long term use of mefloquine if the drug is tolerated in the short- term. Available data on long –term chemoprophylaxis with doxcycycline (i.e. more than 12 months) is limited but reassuring

- Seek specialist advice if the client has severe hepatic or renal impairment
- Some countries have areas where P.Vivax is the predominant species and P.falciparum is the predominant species in others. In this case consider giving prophylactic treatment to cover P.falciparum due to the relatively higher clinical severity of its infection and potential complications.
- Depending on the type of malaria destination, travelers should be advised about possible late-onset P .vivax and P. ovale.

Table 1: Malaria risk and recommended prophylaxis

	Malaria risk	Type of prevention
Type I	Very limited risk of malaria transmission	Mosquito bite prevention only
Type II	Risk of P. vivax malaria only; or fully chloroquine sensitive P. falciparum	Mosquito bite prevention plus chloroquine chemoprophylaxis
Type III	Risk of P. vivax and P. falciparum, transmission combined with emerging chloroquine resistance	Mosquito bite prevention plus chloroquine+proguanil chemoprophylaxis
Type IV	(1) High risk of P. falciparum malaria, in combination with reported antimalarial drug resistance, or (2) Moderate/low risk of P. falciparum malaria, in combination with reported high level of drug resistance	Mosquito bite prevention plus, mefloquine, doxcycycline, or atovaquone-proguanil chemoprophylaxis (select according to resistance pattern)

WHO international travel www.who.int/ith/en/index.html

Table 2: Use of antimalarial drugs for prophylaxis in travelers (2010)

			Use in special group				
Generic name	Dosage regimen	Duration of prophylaxis	pregnancy	Breast feeding	Children	Main contraindication	Comments
Atovaquone-proguanil combination tablet	One dose daily. 11-20kg: 62.5 atovaquone plus 25 mg proguanil (1 pediatric tablet) daily 21-30kg; 2 pediatric tablets daily 31-40kg: 3 pediatric tablets daily > 40kg: 1 adult tablet (250mg atovaquone plus 100 mg daily)	Start one day before departure and continue for 7 days after return	No data, not recommended	No data, not recommended	Not recommended under 11 kg because of limited data	Hypersensitivity to atova-quone and /or proguanil; severe renal insufficiency (creatinine clearance < 30 ml/min).	Registered in European countries and UAE for chemoprophylactic use with restriction in the duration of use (varying from 5 weeks to 1 year) plasma concentration reduced when it is –co administered with rifampicin, rifabutin, metachlorpromide or tetracycline
Chloroquine	5 mg base/kg weekly in one dose , adults dose: 300 mg chloroquine base daily in one dose	Start one week before departure and continue for 4 weeks after return. I	Safe	Safe	Safe	Hypersensitivity to chloroquine; history of epilepsy; psoriasis	Concurrent use of chloroquine may reduce the antibody response to intradermally administered human diploid –cell rabies vaccine
Chloroquine – proguanil combination tablet	>50 kg. 100 mg chloroquine base plus 200 mg proguanil (1 tablet) daily	Start one day before departure and continue for 4 weeks after return	Safe	Safe	Tablet size not suitable for persons of <50 kg. body weight	Hypersensitivity to chloroquine and/or proguanil; liver or kidney insufficiency; history of epilepsy; psoriasis.	Concurrent use of chloroquine may reduce the antibody response to intradermally administered human diploid- cell rabies vaccine

Table 2: Use of antimalarial drugs for prophylaxis in travelers (continued)

			Use in special group				
Generic name	Dosage regimen	Duration of prophylaxis	Pregnancy	Breast feeding	Children	Main contraindication	Comments
doxycycline	1.5 mg salt/kg daily adult dose: 1 tablet of 100 mg daily	Start one day before departure and continue for 4 days after return	Contra-indicated	Contra-indicated	Contra-indicated under 8 years of age	Hypersensitivity to tetracycline, liver dysfunction	Doxcycycline make the skin more susceptible to sunburn. People with sensitive skin should use highly protective (UVA) sunscreen and avoid prolonged direct sunlight, or switch to another drug. Doxcycycline should be taken with plenty of water to prevent esophageal irritation.
Mefloquine	5 mg /kg weekly. Adult dose: 1 tablet of 250 mg weekly	Start at least one week (preferably 2-3 weeks) before departure and continue for 4 weeks after return.	Not recom-mended in the first trimester because of lack of data	Safe	Not recom-mended under 5 mg because lack of data	Hypersensitivity to mefloquine; psychiatric (including depression) or convulsive disorders; history of severe neuro-psychiatric disease; concomitant halofantrine treatment, treatment with mefloquine in last 4 weeks; not recom-mended in view of limited data for people performing activities requiring coordination e.g. pilots, machine operation.	Do not give mefloquine within 12 hours of quinine treatment. Mefloquine and other cardioactive drugs may be given concomitantly only under close medical supervision. Ampicillin, tetracycline, and metoclopramide may increase mefloquine blood levels.
Proguanil	3mg/kg daily Adult dose: 2 tablets of 100 mg daily	Start one day before departure and continue for 4 weeks after return	Safe	Safe	Safe	Liver or kidney dysfunction	Use only in combination with chloroquine. Proguanil may interfere with live typhoid vaccine

WHO international travel www.who.int/ith/en/index.html

Special groups Some group of travelers, especially young children, pregnant women and immunosuppressed travelers are at particular risk of serious consequences if they become infected with malaria. Recommendations for these groups are difficult to formulate because safety data are limited.

Pregnant women

- Malaria in pregnant women increases the risk of maternal death, miscarriage, stillbirth and low birth with associated risk of neonatal death.
- Pregnant women should be advised not to avoid travel to areas were malaria transmission occurs
- Effective malaria prevention measures should be taken
- Pregnant women are particularly susceptible to mosquito bites and should therefore be vigilant in using protection measures, including insect repellents and insecticide –treated mosquito nets
- In light of danger of malaria to mother and fetus, experts increasingly agree that travel to a chloroquine- resistant P. falciparum area during the first trimester of pregnancy should be avoided or delayed at all costs; if this is truly impossible, good preventive measures should be taken, including prophylaxis with mefloquine where this indicated.
- Doxcycycline is contraindicated during pregnancy

Young children

Falciparum malaria in young children is medical emergency. It may be rapidly fatal. Early symptoms are atypical and difficult to recognize, and life threatening complication can occur within hours of the initial symptoms

- Parents should be advised not to take babies or young children to areas with risk of falciparum malaria
- If travel cannot be avoided, children must be very carefully protected against mosquito bites and be given appropriate chemoprophylactic drug.
- Babies should be kept under insecticide- treated mosquito nets as much as possible between dusk and dawn
- Chloroquine, proguanil and mefloquine are considered compatible with breastfeeding.
- Dosage in children should be based on body weight, and tablets should be crushed and grounds as necessary

Immunosuppressed travelers

- Immunosuppressed travelers at increased risk of malaria
- Individual pre –travel advice should be carefully sought

Further reading

1. Guidelines for the treatment of malaria. Geneva, World Health Organization, 2008 (WHO/HTM/MAL/2008.1108).
2. Malaria vector control and personal protection: report of a WHO study group. Geneva, World Health Organization, 2006 (WHO Technical Report Series, No. 936).
   These documents are available on the WHO Global Malaria Program website: http://www.who.int/malaria
3. Guidelines for malaria prevention in travelers from the United Kingdom. http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/.