



INTERNATIONAL ASSOCIATION  
FOR MEDICAL ASSISTANCE  
TO TRAVELLERS

IAMAT

# World Malaria Risk Chart

(including geographical distribution of principal vectors, geographical distribution of *P. falciparum* malaria, areas where *Plasmodium falciparum* is resistant to chloroquine, and guidelines for suppressive medication by country)

Status as at March 15, 2010

Canada: 1287 St. Clair Avenue West, Toronto, Ontario M6E 1B8  
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## World Malaria Risk Chart

Status as at March 15, 2010

For the description of the disease see IAMAT's publication HOW TO PROTECT YOURSELF AGAINST MALARIA.

Afghanistan	Mab 1, 2000, V-IX, A21, A23, P.F. 10%, R7, S2	Côte d'Ivoire	Mabg, I-XII, A7, A8, A11, P.F. 88%, R7, S2	Jamaica	Mf 33, S5
Algeria	Mf 2, A19, P.F. <1%, S5	Djibouti	Mab, I-XII, A8, P.F. 90%, R7, S2	Kenya	Mabc 34, 2500, I-XII, A7, A8, P.F. >85%, R7, S2
Angola	Mabg, I-XII, A7, A8, P.F. 90%, R7, S2	Dominican Republic	Mf 18, 400, I-XII, A1, P.F. 100%, S1	Korea – North	Mf 35, P.F. 0%, S1
Argentina	Mf 3, 1200, X-V, A16, P.F. 0%, S1	East Timor	Mabg, I-XII, A22, P.F. 50%, R7, S2	Korea – South	Mf 36, P.F. 0%, S1
Armenia	Mf 4, VI-X, A10, A18, P.F. 0%, S5	Ecuador	Mabc 19, 1500, I-XII, A1, A16, P.F. 8%, R7, S2	Kyrgyzstan	Mf 37, VI-IX, P.F. 0%, S1
Azerbaijan	Mf 5, 1500, VI-X, A10, A18, P.F. 0%, S1	Egypt	Mi 20, VI-X, A15 A19, P.F. <1%, S5	Laos	Mabcg 38, I-XII, A3, A13, P.F. 97%, R6, S2, S4
Bahamas	Mf 6, P.F. 100%, S1	El Salvador	Mi 21, 1000, I-XII, A1 P.F. <1%, S1	Liberia	Mabg, I-XII, A7, A8, A11, P.F. 90%, R7, S2
Bangladesh	Mabcg 7, I-XII, A3, A13, A22, P.F. 44%, R7, S2	Equatorial Guinea	Mabg, I-XII, A7, A8, A11, P.F. >85%, R7, S2	Madagascar	Mabg, I-XII, A7, A8, P.F. >85%, R1, S2
Belize	Mab 8, 400, I-XII, A1, P.F. 5%, S1	Eritrea	Mabc 22, 2200, I-XII, A7, A8, P.F. 85%, R7, S2	Malawi	Mabg, I-XII, A7, A8, P.F. 90%, R7, S2
Benin	Mabg, I-XII, A7, A8, A11, P.F. 87%, R7, S2	Ethiopia	Mabc 23, 2000, I-XII, A7, A8, P.F. >85%, R7, S2	Malaysia	Mi 39, 1700, I-XII, A3, A22, P.F. 65%, P.K., R7, S2
Bhutan	Mi 9, 1700, I-XII, A13, P.F. 50%, R7, S2	French Guiana	Mabg, I-XII, A2, A5, P.F. 45%, R7, S2	Mali	Mabg I-XII, A7, A8, P.F. >85%, R7, S2
Bolivia	Mabc 10, 2500, I-XII, A5, A16, P.F. 9%, R7, S2	Gabon	Mabg, I-XII, A7, A8, P.F. 95%, R7, S2	Mauritania	Mabcg 40, I-XII, A8, P.F. >85%, R1, S2
Botswana	Mgi, XI-VI, A8, P.F. 90%, R1, S2	Gambia	Mabg, I-XII, A7, A8, P.F. >85%, R7, S2	Mayotte	Mabg, I-XII, A7 A8, P.F. 50%, R7, S2
Brazil	Mi, 12, 900, I-XII, A2, A5, P.F. 25%, R7, S2	Georgia	Mf 24, VII-X, P.F. 0%, S5	Mexico	Mi 41, 1000, A1, P.F. 1%, S1
Burkina Faso	Mabg, I-XII, A7, A8, P.F. 80%, R7, S2	Ghana	Mabg, I-XII, A7, A8, A11, P.F. >85%, R7, S2	Mozambique	Mabg, I-XII, A7, A8, P.F. 95%, R7, S2
Burundi	Mabg, I-XII, A7, A8, P.F. >85%, R7, S2	Guatemala	Mabc 25, 1500, I-XII, A1, A16, P.F. 5%, S1	Myanmar (Burma)	Mabc 42, 1000, I-XII, A13, A22, P.F. 85%, P.K., R6, R9, S2, S4
Cambodia	Mabcg 13, I-XII, A3, A13, P.F. 90%, R6, S2, S4	Guinea	Mabg, I-XII, A7, A8, P.F. 85%, R1, S2	Namibia	Mi 43, XI-VI, A8, P.F. 90%, R7, S2
Cameroon	Mabg, I-XII, A7, A8, A11, P.F. >85%, R7, S2	Guinea-Bissau	Mabg, I-XII, A7, A8, P.F. 85%, R7, S2	Nepal	Mi 44, 1200, I-XII, A13, P.F. 12%, R7, S2
Cape Verde	Mfg 14, VIII-XI, R7, S2	Guyana	Mabg 26, I-XII, A2, A5, P.F. 60%, R1, S2	Nicaragua	Mabc 45, 1000, I-XII, A1, A16, P.F. 10%, S1
Central African Republic	Mabg, I-XII, A7, A8, P.F. >85%, R7, S2	Haiti	Mabg 27, I-XII, A1, P.F. 100%, S1	Niger	Mabg, I-XII, A7, A8, P.F. >85%, R1, S2
Chad	Mabg, I-XII, A7, A8, P.F. >85%, R7, S2	Honduras	Mab 28, 1000, I-XII, A1, P.F. 7%, S1	Nigeria	Mabg, I-XII, A7, A8 A11, P.F. >85%, R7, S2
China	Mi 15, 1500, A24, P.F. 9%, R4, S3	India	Mabc 29, 2000, I-XII, A24, P.F. 45%, R7, S2	Pakistan	Mab, 2000, I-XII, A4, A23, P.F. 70%, R7, S2
Colombia	Made 16, 1800, I-XII, A5, A14, A16, P.F. 27%, R7, S2	Indonesia	Made 30, 1200, I-XII, A22, P.F. 66%, R7, R9, S2	Panama	Made 46, 800, I-XII, A1, P.F. 5%, R2, S3
Comoros	Mabg, I-XII, A8, P.F. 88%, R1, S2	Iran	Mi 31, 1500, III-XI, A10, A18, P.F. 11%, R2, S2	Papua New Guinea	Mab, 1800, I-XII, A6, A17, P.F. 82%, R7, R9, S2
Congo – Rep.	Mabg, I-XII, A7, A8, P.F. 90%, R7, S2	Iraq	Mi 32, 1500, V-XI, A10, A18, P.F. 0%, S1	Paraguay	Mi 47, X-V, A5, P.F. 4%, S1
Congo – Dem. Rep.	Mabg, I-XII, A7, A8, P.F. 93%, R7, S2			Peru	Mi 48, 2000, I-XII, A1, A5, A16, P.F. 30%, R7, S2
Costa Rica	Made, 17, 700, I-XII, A1, P.F. 10%, S1				

Philippines	Made 49, 600, I-XII, A12, P.F. 74%, P.K., R7, S2
Rwanda	Mabg, I-XII, A7, A8, P.F. 90%, R7, S2
São Tomé & Príncipe	Mabg, I-XII, A8, P.F. >85%, R1, S2
Saudi Arabia	Mabc 50, 2000, I-XII, A19, A21, P.F. 88%, R1, S2
Senegal	Mabg, I-XII, A7, A8, P.F. >85%, R7, S2
Sierra Leone	Mabg, I-XII, A7, A8, A11, P.F. >85%, R7, S2
Solomon Islands	Mab, 400, I-XII, A6, A17, P.F. 62%, R7, S2
Somalia	Mabg, I-XII, A7, A8, P.F. 95%, R7, S2
South Africa	Mf 51, I-XII, A7, A8, P.F. 90%, R7, S2

Sri Lanka	Mabc 52, 800, I-XII, A4, P.F. 12%, R7, S2
Sudan	Mabg, I-XII, A7, A8, P.F. 90%, R7, S2
Suriname	Mabc 53, 1300, A2, A5, P.F. 55%, R7, S2
Swaziland	Mf 54, I-XII, A8, P.F. 99%, R1, S2
Syria	Mf 55, 600, V-X, A18, A19, P.F. 0%, S5
Tajikistan	Mab 56, 2500, VI-X, A10, A18, P.F. 9%, R7, S2
Tanzania	Mab, 1800, I-XII, A7, A8, P.F. >85%, R7, S2
Thailand	Madg 57, I-XII, A3, A13, A20 A22, P.F. 56%, P.K., R6, S2, S4
Togo	Mabg, I-XII, A7, A8, A11, P.F. >85%, R1, S2

Turkey	Mi 58, V-X, A18, P.F. 0%, S1
Turkmenistan	Mf 59, VI-X, P.F. 0%, S5
Uganda	Mabg, I-XII, A7, A8, P.F. >85%, R7, S2
Uzbekistan	Mf 60, P.F. 0%, S5
Vanuatu	Mabg 61, I-XII, A6, P.F. 62%, R7, R9, S2
Venezuela	Mi 62, 600, I-XII, A5, A14, P.F. 16%, R7, S2
Vietnam	Made 63, I-XII, A3, A13, P.F. 72%, R6, S2, S4
Yemen	Mabc 64, 2000, I-XII, A21, P.F. 95%, R7, S2
Zambia	Mabg 65, I-XII, A7, A8, P.F. 90%, R7, S2
Zimbabwe	Mabc 66, 1200, XI-VI, A7, A8, P.F. 97%, R7, S2

## MALARIA RISK CODE

**M** = malaria risk

**a** = present throughout the country

**b** = including urban areas

**c** = except areas specified

**d** = excluding urban areas

**e** = and excluding the areas specified

**f** = absent in most of the country, risk exists only in specified areas

**g** = risk present at all altitudes

**h** = no official information available

**i** = present in the country; areas of risk are specified

**One or two digit numerals** = refer to detailed description of malarious areas in this country.

**Three or four digit numerals** = express the altitude levels in meters below which the risk is present. (1 meter is approximately 3.3 feet.)

**Roman numerals** = identify months during which the risk of contracting malaria is high: I = January to XII = December.

**A = Anopheles.** Followed by one or two digit numerals, the letter **A** refers to the principal *Anopheles* species which transmit malaria in this country. See box below for feeding habits and breeding places.

**P.F. followed by %** = the number of incidences expressed in percentage of *Plasmodium falciparum* malaria occurring in this country. Of the four species of human malaria parasites, *P. falciparum* is the most dangerous. The remaining percentage represents vivax group infections (benign forms of malaria caused by *Plasmodium vivax*, *Plasmodium ovale* and *Plasmodium malariae*.)

**P.K.** = Infection with *Plasmodium knowlesi*, a malaria parasite of Old World monkeys, has been reported in humans in this country.

< = Less than

> = More than

## ANOPHELES CODE

**A** = *Anopheles*, the principal vector for transmitting malaria in this country. (See chapter "The World of *Anopheles*" in IAMAT's publication HOW TO PROTECT YOURSELF AGAINST MALARIA.)

	Breeding places	Feeding habits and daytime resting places
<b>A1</b> = <i>A. albimanus</i>	Coastal mosquito of central and northern part of South America; breeds in sunlit water collections, pools, lakes, lagoons.	Feeds on humans from dusk to midnight; rests outdoors in shaded areas.
<b>A2</b> = <i>A. aquasalis</i>	Coastal mosquito; breeds in fresh or brackish water.	Starts feeding on humans at dusk; rests inside dwellings.
<b>A3</b> = <i>A. balabacensis balabacensis</i>	Hill forest mosquito; breeds in small water collections under shade, animal footprints, shallow pools.	Bites late at night, rests outdoors.
<b>A4</b> = <i>A. culicifacies</i>	Plains mosquito; breeds in fresh water with grassy edges, slow-moving streams, man-made containers, pools.	Feeds on humans and livestock at sunset; rests in dark corners of houses and cowsheds.
<b>A5</b> = <i>A. darlingi</i>	Domestic mosquito; breeds in shaded bodies of still water, water under swamp vegetation, grassy edges of rivers, pool.	Feeds on humans inside human habitation; rests inside houses, often near beds.
<b>A6</b> = <i>A. farauti</i>	Domestic mosquito; breeds in sunlit fresh or brackish water collections, pools, man-made containers.	Feeds in and outdoors at night; or during the day when skies are overcast; rests outdoors.
<b>A7</b> = <i>A. funestus</i>	Open country mosquito; breeds in fresh sunlit swamps, large rivers and grassy stream margins.	Feeds at night on humans, mostly indoors; rests inside human habitations.
<b>A8</b> = <i>A. gambiae</i>	Domestic mosquito; breeds in sunlit pools, footprints, pits, puddles close to human habitations, man-made containers.	Feeds on humans mostly indoors; biting peak: 2 a.m. - 4 a.m.; rests in dark places in and outdoors.
<b>A9</b> = <i>A. labranchiae labranchiae</i>	Maritime mosquito; breeds in fresh or saline water of swamps, marshes near the coast.	Feeds on humans indoors; rests in animal shelters and inhabited houses.
<b>A10</b> = <i>A. maculipennis</i>	Foothill mosquito; breeds in slow-moving streams, clear still water exposed to sunlight.	Feeds on humans and animals, rests in animal shelters.
<b>A11</b> = <i>A. melas</i>	Sea coast mosquito; breeds in saline water of lagoons, marshes and swamps.	Feeds on humans indoors; rests indoors.
<b>A12</b> = <i>A. minimus flavirostris</i>	Mosquito of foothills and rolling land; breeds in clear water of streams, ditches, wells and seepages.	Feeds on humans and livestock indoors, leaves dwellings early in the morning to rest in vegetation along the banks of streams.
<b>A13</b> = <i>A. minimus minimus</i>	Mosquito of mountain and hilly areas; breeds in clear water of streams, irrigation ditches, ricefields.	Feeds on humans and livestock indoors, biting peak: 10 p.m. - 2 a.m.; rests in houses and cattlesheds.
<b>A14</b> = <i>A. nunez-tovari</i>	Mosquito of open marshy areas, ponds and lakes, breeds also in temporary ground pools, animal or wheel tracks.	Starts to bite humans late in the evening indoors; rests outdoors.
<b>A15</b> = <i>A. pharoensis</i>	Breeds in small shallow pools, wells, stagnant desert water, large bodies of water with aquatic vegetation.	Feeds on humans in and outdoors starting at sunset; rests mainly outside among vegetation.
<b>A16</b> = <i>A. pseudopunctipennis pseudopunctipennis</i>	Highland valley mosquito; breeds in shallow pools, seepages, drying streams, tanks.	Feeds avidly on humans indoors; rests indoors.
<b>A17</b> = <i>A. punctulatus</i>	Domestic mosquito; breeds in puddles, footprints, streams, man-made water collections.	Feeds on humans and animals outdoors, rests outdoors.
<b>A18</b> = <i>A. sacharovi</i>	Mosquito of inland and coastal swamps; breeds in fresh or brackish water of marshes, swamps, man-made water collections.	Feeds indoors on humans and livestock, rests in houses and animal shelters.
<b>A19</b> = <i>A. sergentii</i>	Oasis mosquito; breeds in small pools, seepages, slowmoving water.	Feeds on humans indoors after dark; rests in houses and tents.
<b>A20</b> = <i>A. sinensis</i>	Mosquito of the plains; breeds in ricefields, swamps, lake margins.	Feeds outdoors on humans and livestock early in the evening; rests in animal shelters.
<b>A21</b> = <i>A. stephensi stephensi</i>	Domestic mosquito; breeds in man-made containers, water collections near human habitations, footprints, puddles, lake margins.	Feeds indoors on humans starting after sunset; rests in houses and shelters.
<b>A22</b> = <i>A. sudaicus</i>	Coastal mosquito; breeds in brackish water, sunlit lagoons, swamps and marshes.	Feeds indoors on humans and livestock; rests in houses and shelters.
<b>A23</b> = <i>A. superpictus</i>	Mountain mosquito; breeds in clear water of sunlit pools, hill streams and rivers.	Feeds indoors on humans, rests outdoors and in animal shelters.
<b>A24</b> = For the vector in this country see text describing malarious areas.		

## CODE FOR AREAS WITH DRUG RESISTANT *P. FALCIPARUM* MALARIA

**R1** = *P. falciparum* malaria is resistant to chloroquine. Resistance is present in all malarious areas.

**R2** = Refer to text for description of chloroquine resistant areas.

**R3** = Chloroquine resistant *P. falciparum* malaria must be assumed as surrounding areas report resistance.

**R4** = Chloroquine resistant *P. falciparum* malaria is present in parts of the provinces of Yunnan, Guangxi and Guangdong including the island of Hainan. Yunnan and Hainan also report *P. falciparum* resistance to sulfadoxine-pyrimethamine. See details in text.

**R5** = Chloroquine resistant *P. falciparum* malaria is present in all malarious areas, but accounts for only 10% of total malaria cases.

**R6** = The following areas report *P. falciparum* malaria resistance to chloroquine, sulfadoxine-pyrimethamine and mefloquine hydrochloride.

**Cambodia:** The following provinces have multi-drug resistant malaria: Siem Riep, Preah Vihear, Oddar Meanchey, Banteay, Battambang, Pailin, Pursat and Koh Kong.

**Laos:** The northwestern provinces of Bokeo and Louang Namtha bordering Myanmar and China; and the southern provinces of Salavan (Saravane) and Champasak bordering Thailand.

**Myanmar (Burma):** The states of Bago, Kayah, Kachin, Kayin, Shan and Tanintharyi (eastern half of the country including the areas bordering China, Laos and Thailand)

**Thailand:** The western border areas with Myanmar: forested hilly areas of Chang Rai, Chang Mai, Mae Hong Son, Tak, Kanchanaburi, Ratchaburi and Petchaburi provinces. The eastern border areas with Cambodia: forested hilly areas of Ubon Ratchathani, Si Sa Ket, Surin, Buriram, Sa Kaeo, Chantaburi, and Trat provinces.

**Vietnam:** The following provinces report multi-drug resistant malaria: Binh Phoc, Dak Lak, Dak Nong, Gia Lai, Khan Hoa, Kon Tum, Lam Dong, Ninh Thuan, Song Be, Tay Ninh.

**R7** = Multi-drug-resistant (chloroquine and sulfadoxine-pyrimethamine) *P. falciparum* malaria is present in all malarious areas of this country.

**R8** = No official information is available

**R9** = Chloroquine resistant *P. vivax* malaria has been reported from this country.

## SUPPRESSIVE MEDICATION CODE

**S** = Suppressive medication is required. (For dosages see IAMAT's publication HOW TO PROTECT YOURSELF AGAINST MALARIA.) In offering guidance on the choice of anti-malarial drugs the main concern is to provide protection against *P. falciparum* malaria. To prevent this fatal form of the

disease, chloroquine is the drug of choice where the parasites are still sensitive to it. Chloroquine is also the preferred drug for the suppression of the benign forms of malaria, but it will not always prevent a delayed first attack or relapses due to *Plasmodium vivax* and *Plasmodium ovale*.

The appearance of chloroquine resistant and multi-drug resistant *Plasmodium falciparum* in many malarious areas makes the choice of suppressive drugs problematic as none of the medications currently used is 100% effective. Regardless of the medication which has been taken, it is of utmost importance for travellers and their physician to consider fever and flu-like symptoms appearing seven days up to several months after leaving a malarious area as a malaria breakthrough. Early diagnosis is essential for successful treatment of such an infection.

**S1** = FOLLOW A CHLOROQUINE (ARALEN) REGIMEN IN WEEKLY DOSES OF 500mg (300mg base). START ONE WEEK BEFORE ENTERING THE MALARIOUS AREA, CONTINUE WEEKLY DURING YOUR STAY, AND CONTINUE FOR FOUR WEEKS AFTER LEAVING. (PLAQUENIL 400mg (310mg base) is an alternative for chloroquine)

**S2** = High incidence of chloroquine resistant and/or multi-drug resistant *Plasmodium falciparum* malaria is present in this country. Follow ONE of the following suppressive medication regimens:

### 1) FOLLOW A LARIAM (MEFLOQUINE HYDROCHLORIDE) REGIMEN:

TAKE ONE TABLET OF LARIAM 250mg ONCE A WEEK. START ONE WEEK BEFORE ENTERING THE MALARIOUS AREA, CONTINUE WEEKLY DURING YOUR STAY, AND CONTINUE FOR FOUR WEEKS AFTER LEAVING.

(LARIAM should not be taken by persons suffering from cardiac diseases, liver or kidney disorders, epilepsy, psychiatric disorders, pregnant women and children under 30 lbs/15kg in weight. For a description of anti-malarial drugs see IAMAT'S publication HOW TO PROTECT YOURSELF AGAINST MALARIA.)

### 2) FOLLOW A MALARONE (ATOVAQUONE + PROGUANIL) REGIMEN:

TAKE ONE TABLET DAILY (250mg atovaquone + 100mg proguanil). START 1 TO 2 DAYS BEFORE ENTERING THE MALARIOUS AREA, CONTINUE DAILY DURING YOUR STAY, AND CONTINUE FOR 7 DAYS AFTER LEAVING. MALARONE should be taken at the same time every day with food or milk. See IAMAT's publication HOW TO PROTECT YOURSELF AGAINST MALARIA for description, dosages, and contraindications of Malarone.

3) FOLLOW A DOXYCYCLINE (VIBRAMYCIN) REGIMEN: TAKE ONE TABLET DAILY OF 100mg DOXYCYCLINE (VIBRAMYCIN). START ONE DAY BEFORE ENTERING MALARIOUS AREA, CONTINUE DAILY DURING YOUR STAY, AND CONTINUE FOR FOUR WEEKS AFTER LEAVING.

When taking DOXYCYCLINE avoid exposure to direct sunlight and use sunscreen

with protection against long range ultraviolet radiation (UVA) to minimize risk of photosensitive reaction. Drink large amounts of water to avoid esophageal and stomach irritation.

DOXYCYCLINE should not be taken by persons with known intolerance to tetracyclines, pregnant women and children under eight years of age. For a description of anti-malarial drugs refer to IAMAT's publication HOW TO PROTECT YOURSELF AGAINST MALARIA.

### 4) ANTI-MALARIAL REGIMEN FOR PERSONS WHO CANNOT FOLLOW ONE OF THE ABOVE REGIMENS:

TAKE CHLOROQUINE (ARALEN) IN WEEKLY DOSES OF 500mg (300mg base). START ONE WEEK BEFORE ENTERING MALARIOUS AREA, CONTINUE WEEKLY DURING YOUR STAY, AND CONTINUE FOR FOUR WEEKS AFTER LEAVING. IT IS IMPERATIVE TO USE A MOSQUITO BED NET TO AVOID THE BITE OF THE NOCTURNAL *ANOPHELES* MOSQUITO. USE REPELLENTS AND INSECTICIDES AS DESCRIBED IN IAMAT'S PUBLICATION HOW TO PROTECT YOURSELF AGAINST MALARIA.

In countries with highly chloroquine resistant *P. falciparum* malaria, a REGIMEN OF PALUDRINE (proguanil hydrochloride) 200mg DAILY (adult dose) SHOULD BE ADDED TO THE WEEKLY CHLOROQUINE REGIMEN.

PERSONS FOLLOWING A CHLOROQUINE OR A CHLOROQUINE + PROGUANIL HYDROCHLORIDE REGIMEN MUST BE AWARE THAT THESE DRUGS ARE MUCH LESS EFFECTIVE THAN LARIAM, MALARONE OR DOXYCYCLINE. SEEK IMMEDIATE MEDICAL ATTENTION IN CASE OF FLU-LIKE SYMPTOMS — FEVER, HEADACHE, NAUSEA, GENERAL MALAISE — APPEARING ABOUT SEVEN DAYS OR LATER AFTER ENTERING THE MALARIOUS AREA.

Persons travelling to, or working in, remote areas where medical attention cannot be sought within 24 hours should consult with a specialist before leaving their home country for advice on a possible self-treatment regimen in case of a malaria breakthrough attack. For description of anti-malarial drugs see IAMAT's publication HOW TO PROTECT YOURSELF AGAINST MALARIA.

**S3** = See text for suppressive medication required in different areas of this country.

**S4** = Persons travelling to the multi-drug resistant *P. falciparum* malaria areas of this country should use a MALARONE (see S2 2) or a DOXYCYCLINE (see S2 3) regimen. Persons who cannot follow one of these regimens or contemplate a long term visit to these areas should seek advice from a specialist for a possible alternative drug regimen.

**S5** = Risk of contracting malaria is small. Travellers to risk areas should take anti-mosquito measures from dusk to dawn during the malaria season.

See Codes 1-62 on reverse

## CODE FOR DESCRIPTION OF MALARIOUS AREAS

- 1 = Afghanistan:** Note: Persons travelling overland from and to Pakistan, and to refugee camps should follow an S2 anti-malarial medication regimen.
- 2 = Algeria:** Risk is present in the southern and southeastern provinces (Wilayas) of Adrar, El Oued, Ghardaia, Illizi, Ouargla, and Tamanghasset. Risk period: March to October.
- 3 = Argentina:** Risk exists only in rural areas of the extreme northwestern corner of the country bordering Bolivia: Province of Salta (northwestern corner) in the departments of Santa Victoria, Iruya, and Orán; Province of Jujuy (southeastern area) in the departments of San Martín, Ledesma, Santa Bárbara and San Pedro; and along the border with Paraguay in the lowland areas of the provinces of Misiones and Corrientes. Malaria risk is present at Iguazu Falls.
- 4 = Armenia:** Risk is present in the villages of the Ararat valley (Masis District).
- 5 = Azerbaijan:** Risk is present in lowland regions between the rivers Kür (Kura) and Arax. Affected provinces: Agjabadi, Bârdâ, Beylagan, Bilasuvar, Jalilabad, Fizuli, İmişli, Kürdamir, Sabirabad, Saatli, Zardab, and the region of Nakhchivan. Sporadic cases of malaria have also been reported from the suburbs of Baki (Baku).
- 6 = Bahamas:** Risk is present only on the Island of Exuma.
- 7 = Bangladesh:** The city of Dhaka is risk free. Highest risk is present in the northeastern border areas with India and the southeastern border areas (Chittagong Division) with Myanmar (Burma).
- 8 = Belize:** Risk exists in the outskirts of Belize City, island resort areas, nature reserves and archeological sites. High incidence rates have been reported from the districts of Cayo, Stann Creek, and Toledo.
- 9 = Bhutan:** Risk is present in the following southern districts – Chukha, Tsirang (Chirang), Sarpang, Samtse (Samchi), Samdrup Jongkhar, and Zhemgang (Shemgang).
- 10 = Bolivia:** The city of La Paz and the highland areas above 2500 m are risk free.
- 11 = Botswana:** Risk is present in rural and urban areas in the northeastern parts Botswana including Boteti, Shobe, Ngamiland, Okavango, Tutume, as well as the areas along the border with Zimbabwe and the Limpopo River valley bordering South Africa's Northern (Limpopo) Province.  
Note: The city of Gaborone is risk free.
- 12 = Brazil:** Risk of multi-drug-resistant malaria is high throughout the states of the Amazon Basin, including cities and towns (main cities in brackets): Acre (Rio Branco), Amapá (Macapá), Amazonas (Manaus), the western part of Maranhão (São Luís), the northern part of Mato Grosso (Cuiabá), Pará (Marabá, Santarém, except the city of Belém), Rondônia (Pôrto Velho), Roraima (Boa Vista), Tocantins (Araguaina).  
High malaria transmission occurs along the trans-Amazon highway, the road from Cuiabá to Santarém and in the valleys of the Araguaia, Xingu, Jamanxim and Tapajós rivers. Localized malaria outbreaks caused by the migration of infected persons from the Amazon region have been reported in other areas of Brazil.  
Note: Persons on cruises on the Amazon and its tributaries, or travelling overland throughout the Amazon Basin, must follow anti-malarial medication guidelines. Malaria risk is present at Iguazu Falls.
- 13 = Cambodia:** The city of Phnom Penh is risk free.  
Note: Persons travelling to Angkor Wat must follow anti-malarial suppressive medication guidelines.
- 14 = Cape Verde:** Risk is present on the Island of São Tiago.
- 15 = China:** **Northern China** is now malaria risk free.  
**Central China:** Risk exists from May to December in the rural areas of the following municipalities and provinces (main cities in brackets are risk free): Anhui (Hefei), Henan (Zhengzhou), Hubei (Wuhan), Sichuan (Chengdu) where the eastern half of the province is infected, and Chongqing Shi (Chongqing). Main vectors: *A. sinensi*, *A. minimus minimus*.  
In central China *P. vivax* malaria infections are predominant. Follow S2 malaria suppressive medication guidelines.  
**Southern China, including the southeastern tip of Tibet:** Risk is present throughout the year in the rural areas of the following provinces (main cities in brackets are risk free): Fujian (Fuzhou), Guangdong (Guangzhou) including Hainan Island (Haikou), Guangxi (Nanning, Guilin), Guizhou (Guiyang), Hunan (Changsha), Jiangsu (Nanjing), Zhejiang (Hangzhou), Yunnan (Kunming), and the extreme southeastern part of Tibet in the area bordering India (Arunachal Pradesh state) and Myanmar (Burma) including Yarlung Tsanpo (Zangbo) river canyon. Main vectors: *A. minimus minimus*, *A. balabacensis balabacensis*.  
In southern China *P. falciparum* malaria is predominant. Follow S2 malaria suppressive medication guidelines when travelling through rural areas of Yunnan province bordering Myanmar (Burma), Laos, and Vietnam; the southern parts of Guangxi province bordering Vietnam and the Gulf of Tonkin; the areas of Guangdong province south and west of Guangzhou, including hilly areas of the Zhu Jiang River delta and the island of Hainan. Main vectors: *A. minimus minimus*, *A. balabacensis balabacensis* (see *Anopheles* code).  
**Macau** is risk free.  
**Hong Kong:** The urban areas of Hong Kong are risk free and there is no risk for travellers. Sporadic malaria cases have been reported from the northern rural border area of the special administrative region.
- Note:** The risk of contracting malaria in central China is small. Persons on the usual tourist itinerary visiting major cities and making daytime excursions into the countryside, or on Yangtze river cruises do not need to take suppressive medication.  
Persons travelling to southern China on educational or scientific assignments in rural areas, or travelling extensively through rural areas must follow an anti-malarial regimen.
- 16 = Colombia:** The cities of Bogotá, Manizales and other towns and villages in the Andean highlands above 1800 m are risk free. On the Caribbean coast, the city of Cartagena and the islands of San Andrés and Providencia are risk free.  
Note: Malaria risk is high in rural and jungle areas below 1800 m, and persons travelling to rural areas, making excursions on the Magdalena River (south of Barranquilla), travelling along the Pacific coast, or travelling east of the Cordillera Oriental must follow S2 suppressive medication guidelines.
- 17 = Costa Rica:** San José and the central highlands are risk free.  
Note: Malaria risk is present in the Province of Limón (except Puerto Limón town): the cantons (districts) of Guacimo, Limón, Matina, and Talamanca report the highest incidence. Use malaria suppressive medication in these areas. Sporadic cases of malaria have been reported from the provinces of Alajuela, Guanacaste and Heredia, use anti-mosquito measures when travelling in these areas.  
Note: Persons vacationing on the Caribbean coast, travelling to the northern provinces, or visiting nature reserves in the above mentioned provinces must take malaria suppressive medication.
- 18 = Dominican Republic:** Risk exists along the border with Haiti in the following urban and rural areas: Entire province of Monte Cristi; entire province of Dajabón; province of Elias Piña – municipalities of Bánica, Comendador and El Llano; province of Independencia – municipality of Jimani; province of Barahona – municipalities of Barahona and Cabral; province of Pedernales – municipality of Pedernales.  
Malaria cases have been reported from all parts of the country, including resort areas. An anti-malarial regimen of chloroquine is advised for travellers to the above described border areas with Haiti or when travelling in rural areas throughout the country. Recent outbreaks occurred in resorts in the province of Altagracia (Punta Cana, Baveiro), and travellers are advised to follow an anti-malarial regimen.  
Note: If you are vacationing in resort areas (Puerta Plata, San Pedro de Macoris, etc.), take meticulous anti-mosquito measures from dusk to dawn.
- 19 = Ecuador:** Guayaquil and the Galapagos Islands are risk free. There is also no malaria risk in the high-altitude cities of Quito (2879 m) and Cuenca (3530 m), and other cities and villages in the Andean highlands.  
Note: Risk is present in the provinces of El Oro, Esmeralda, Manabí, Cotopaxi, Loja, and Los Rios. Persons travelling to the upper Amazon Basin area: Pastaza River, Upano River, Coca, or Lago Agrio for cruises on the Napo River and its tributaries must follow a suppressive regimen.
- 20 = Egypt:** Small risk exists in the El Fayyum area.  
Note: Persons visiting the main tourist areas and archeological sites, or on Nile cruises are not at risk.
- 21 = El Salvador:** Risk is present in rural areas in the provinces of Santa Ana, Ahuachapan (bordering Guatemala), and La Union (bordering Honduras). Sporadic cases are reported from all parts of the country. Persons travelling extensively through rural areas must follow anti-malarial medication guidelines.  
Note: The city of San Salvador is risk free.
- 22 = Eritrea:** Asmara (2325 m) is risk free.
- 23 = Ethiopia:** Addis Ababa is risk free.
- 24 = Georgia:** Risk is present in the southeastern regions of Kvemo Kartli (municipalities of Gardabani and Mareneuli) and Kakheti (municipality of Signaghi) bordering Azerbaijan.  
Note: The city of Tbilisi is risk free.
- 25 = Guatemala:** Guatemala City and the high altitude areas of the central highlands are risk free.  
Note: Persons vacationing on the Pacific or Caribbean coasts, contemplating trips to the archaeological sites of Sayache and Tikal, the jungle of Petén, or travelling throughout the interior, must follow anti-malarial medication guidelines.
- 26 = Guyana:** Only the city centers of Georgetown and New Amsterdam are risk free. Risk of malaria is high in all rural areas.
- 27 = Haiti:** Persons vacationing in beach resorts must take malaria suppressive medication.
- 28 = Honduras:** Risk is present in the peripheral areas of Tegucigalpa and San Pedro Sula.  
Note: Persons vacationing in the resorts of Ceiba, Tela, and the Bay Islands (Islas de la Bahia), travelling along the Atlantic or Pacific coasts or extensively in the interior, must take malaria suppressive medication.
- 29 = India:** Only the high altitude areas (above 2000 m) of the following states are risk free: Himachal Pradesh, Jammu, Kashmir and Sikkim.  
Note: Risk is present throughout India, including Mumbai, New Delhi, and Goa. Travellers must take a full course of malaria suppressive medication.  
Main vectors: Northern India – *A. minimus minimus*; Ganges Plain – *A. stephensi stephensi* and *A. culicifacies*; Peninsular India – *A. culicifacies*.
- 30 = Indonesia:** Jakarta, Surabaya, Denpasar (Bali) and other large cities are risk free, including the beach resorts in southern Bali.  
Sporadic cases of malaria in travellers have been reported from rural areas of Bali (Padangbai area), Bintan and Lombok islands.  
Note: Persons travelling extensively in rural areas, on cruises between the islands, or making excursions to night festivals, must take a full course of malaria suppressive medication. Irian-Jaya reports a high incidence of malaria in all regions.
- 31 = Iran:** Risk is present in rural areas of the following southeastern provinces: Hormozgan, the tropical part of Kerman, and the southern part of Sistan-Baluchistan. In northern Iran, risk is present in rural areas of Ardabil and East Azerbaijan provinces.  
Chloroquine resistant *P. falciparum* malaria has been reported from the Baluchistan-Sistan border areas with Afghanistan and Pakistan.
- 32 = Iraq:** Risk exists in the provinces (including cities) of Dahuk, Arbîl, Ta'mim (formerly Kirkuk), Ninawa, Sulaymānyah and Basrah.
- 33 = Jamaica:** Very small risk of infection is present in Kingston (St. Andrew Parish).
- 34 = Kenya:** Risk is low in the city of Nairobi and in the high altitude areas (above 2500 m) of the provinces of Central, Eastern, Nyanza, and Rift Valley.  
Note: If you are contemplating safaris or vacationing in Mombasa and beach resorts along the coast, you must take suppressive medication.
- 35 = North Korea:** Risk is present along the border with South Korea.
- 36 = South Korea:** Risk is present in rural areas along the border with North Korea, particularly in Kyunggi Do and Gangwon provinces.  
Note: Persons on daytime excursions only to the DMZ (demilitarized zone) should use anti-mosquito measures.
- 37 = Kyrgyzstan:** Risk is present in the provinces of Batken, Osh, Jalal Abad (bordering Tajikistan and Uzbekistan). Risk is present in the suburbs and outskirts of Bishkek.
- 38 = Laos:** The city of Viangchan (Vientiane) is risk free.
- 39 = Malaysia:** Risk is present in the mountainous interior of the triangle shared by the states of Kelantan, Pahang, and Perak (Cameron Highlands). In Sabah, risk is present in rural areas throughout the year. The incidence of *P. falciparum* malaria is 80%.  
Note: Urban and coastal areas of peninsular Malaysia, including the island of Pinang are risk free. In Sarawak, coastal and urban areas are also risk free.
- 40 = Mauritania:** The northern areas of Dakhlet-Nouadhibou and Tiris Zemmour (north of 20°N) are risk free.  
Note: In Adrar and Inchiri regions, risk is present from July to October. In the southern part of Mauritania, risk is present throughout the year.
- 41 = Mexico:** Risk exists in the following rural areas –  
• Pacific coast from Guaymas to the southern border with Guatemala where risk is present throughout the year, except in Sonora and Sinaloa where risk is present from May to October;  
• Valleys of central Mexico where risk is present from May to October.  
• Coastal areas along the Gulf of Mexico from Tampico to, and including, the Yucatán peninsula where risk is present throughout the year.  
*P. vivax* malaria is predominant in these regions. *P. falciparum* malaria is present in localized areas of Chiapas, Tabasco, Quintana Roo, and the forested border areas with Guatemala and Belize.  
Note: Visitors to rural areas and major resorts along both coasts (Acapulco, Puerto Vallarta, etc.) should use mosquito repellents containing DEET after sunset. You do not require anti-malarial medication. However, persons camping and hiking along the coasts should take a full course of suppressive medication.  
**Archeological sites:** Daytime excursions from cities to popular archeological sites do not require anti-malarial medication. However, persons staying overnight in the vicinity or in nearby villages of the following sites should take a full course of suppressive medication:  
• Chiapas (Bonampak, El Cayo, La Mar, Palenque, Toniná, etc.). Cities of Villahermosa and Tuxtla Gutierrez are risk free.  
• Campeche (Becan, Calakmul, Edzná, Hochob, Xpuhil, etc.). City of Campeche is risk free.  
• Quintana Roo (Cobá, Muuyil, Tulum, Xelha, etc.). Cities of Cozumel and Cancún are risk free.  
• Yucatán (Balankanche Cave, Chichén Itza, Kabáh, Labná, Mayapán, Sayil, Uxmal, etc.). Cities of Mérida and Valladolid are risk free.
- 42 = Myanmar (Burma):** The urban centers of Yangon (formerly Rangoon) and Mandalay are risk free.
- 43 = Namibia:** Risk exists in the northern part of the country in the areas bordering Angola (Ovamboland), Zambia, and Botswana (Caprivi Strip, Otjozondjupa, and Omaheke). In the Kunene and Okavanga river valleys / Caprivi Strip, risk is present throughout the year (provinces of Kunene, Ohangwena, Oshana, Oshikoto, Otjozondjupa).  
Note: Persons visiting Etosha National Park must follow a suppressive regimen during the risk season.
- 44 = Nepal:** Multi-drug resistant *P. falciparum* malaria has been reported from the malarious areas in the southern part of Nepal: Districts of Khanukha, Mahotari, Sarlahi, Rautahat, Bara, Parsa, Rupendehi, Kapilvastu, and all areas along the border with India.  
Kathmandu and the northern high altitude areas of Nepal are risk free.  
Note: If you are flying into Kathmandu and visiting the northern Himalayan districts, you do not need to take

malaria suppressive medication. However, if you are travelling from India overland into Nepal, and throughout the southern parts of the country, you must follow S2 malaria suppressive medication guidelines.

- 45 = **Nicaragua:** Risk exists in the outskirts of towns and rural areas throughout Nicaragua, including the suburbs of Managua and the shore areas of Lake Managua. Travellers must take malaria suppressive medication.
- 46 = **Panama:** There is no risk along the Panama Canal Zone, the cities of Panamá and Colón, and the central highlands above 800 m.  
**Note:** Risk is present in the following areas east of the Canal: Indigenous region of Kuna Yala (formerly San Blas), including the islands of San Blas and the province of Darién where S2 suppressive medication guidelines must be followed. West of the Canal, risk is present along the Atlantic coast in the provinces of Panamá, Colón, Veraguas, Ngöbe Buglé, and Bocas del Toro where S1 anti-malarial guidelines must be followed.
- 47 = **Paraguay:** Risk exists in the rural areas of the southeastern departments of Alto Paraná, Canindeyú, Caaguazú, Caazapá, and Guairá.  
**Note:** Malaria risk is present at Iguacu Falls.
- 48 = **Peru:** Risk exists in all regions except the city of Lima and the coastal area south of Lima, the southern regions of Arequipa, Moquegua, Puno, and Tacna.  
**Note:** Persons visiting the high altitude areas of Cuzco, Machu Picchu, and Lake Titicaca are not at risk.
- 49 = **Philippines:** Metropolitan Manila, major urban areas, the islands of Bohol, Catanduanes, and Cebu are risk free.  
**Note:** Risk is generally low in rural areas except for the following provinces which still have a high incidence of malaria: Luzon Island (provinces of Kalinga-Apayao, Cagayan, Isabela and Abra), Mindanao (provinces of Surigao del Sur, Agusan del Sur, Davao del Sur), Mindoro, Basilan, Calamian, Palawan, and Sulu Archipelago (Tawi Tawi).
- 50 = **Saudi Arabia:** The cities of Jeddah, Medina, Mecca, and Taif are risk free.  
**Note:** Risk is present in the western emirates of Tabuk, Al Madinah, Makkah, Al Baha, Asir, Izan, and Najran.
- 51 = **South Africa:** Risk is present in the northeastern provinces of Limpopo, the low altitude areas of Mpumalanga and KwaZulu-Natal as far south along the coast to the Tugela River, including Kruger National Park.  
**Note:** Persons visiting Kruger National Park are advised to take malaria suppressive medication.
- 52 = **Sri Lanka:** The districts of Colombo, Gampaha, Kaluthara (Western Province), Galle and Matara (Southern Province), and Nuwara Eliya (Central Province) are risk free.
- 53 = **Suriname:** The city of Paramaribo and the seven coastal districts are considered risk free, although sporadic cases are reported.
- 54 = **Swaziland:** Risk exists in the northern and eastern grassland and plain areas, particularly in the areas of Big Bend, Mhlume, Simunye and Tshaneni.

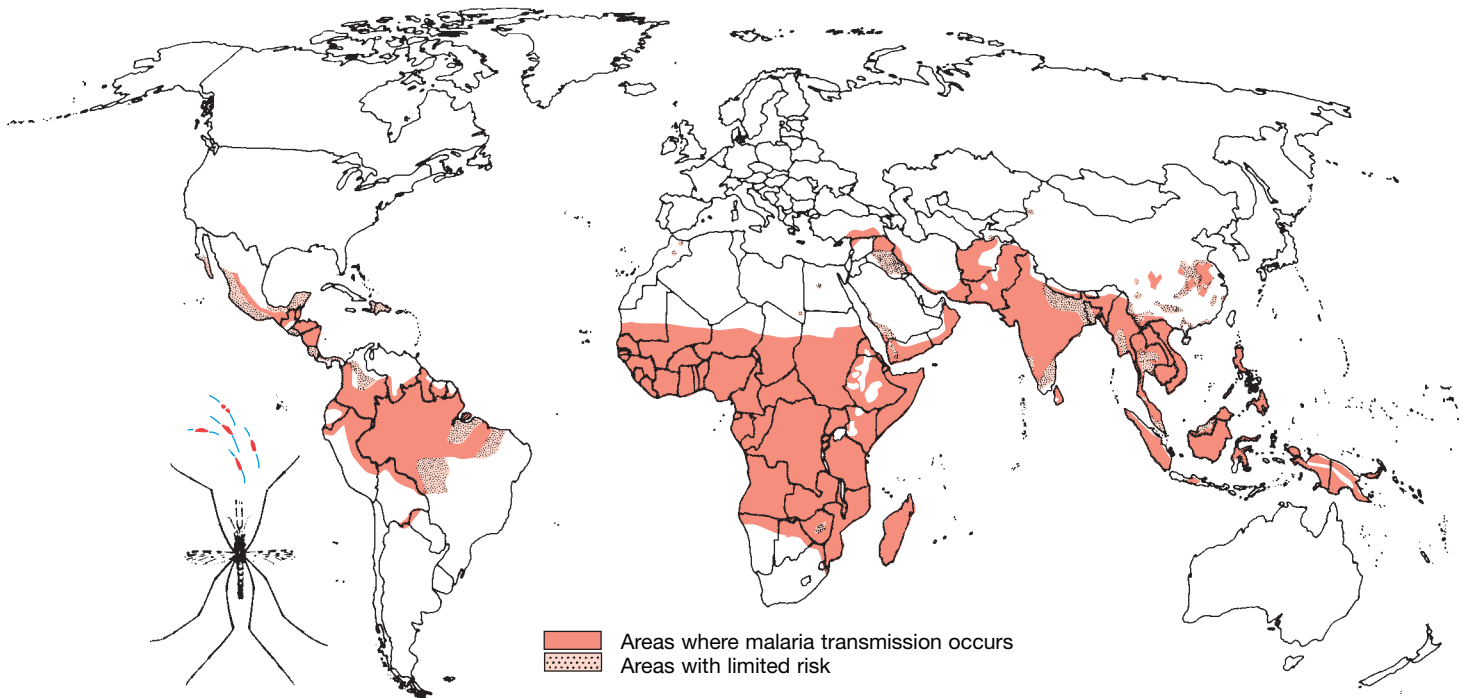
- 55 = **Syria:** Risk is present in the northeastern border area with Turkey in Al-Hasakah governorate.
- 56 = **Tajikistan:** Risk is highest in the southern region of Khatlon bordering Uzbekistan and Afghanistan, the central region of Dushanbe, and the southwestern region of Gorno-Badakhshan bordering Afghanistan.
- 57 = **Thailand:** **Note:** There is no risk in the cities of Bangkok, Chiang Mai, Songkhla, and the resort areas of Pattaya, Koh Samui and Koh Phangan. Persons flying into cities and making only daytime excursions to rural areas do not need to take malaria suppressive medication. Persons traveling by car, boat, or train through rural areas of the interior, especially forested and hilly areas, and to mining and refugee camps, as well as to the border areas with Myanmar (Burma), Cambodia, and Laos, should be aware of the presence of multi-drug resistant malaria. Follow S4 malaria suppressive medication guidelines.  
Sporadic cases are reported from Phuket and Phang Nga. Use anti-mosquito measures in these areas.
- 58 = **Turkey:** Risk is present in rural and urban areas in the southeastern provinces of Adana, Adiyaman, Batman, Bingöl, Bitlis, Diyarbakir, Elazig, Gaziantep, Hakkâri, Hatai, K. Maraş, Kilis, Mardin, Muş, Osmaniye, Şanlıurfa, Siirt, Şirnak and Van.
- 59 = **Turkmenistan:** Risk is present in the southeastern province of Mary bordering Afghanistan in the area between the Tejen and Gusgy (also called Murgap) rivers.
- 60 = **Uzbekistan:** The districts of Uzun, Sariosiyo, and Surchi in the southern province of Surxondaryo (formerly Surkhondaryo) bordering Tajikistan have reported sporadic cases of malaria.
- 61 = **Vanuatu:** Risk is present on all islands including Efate where locally transmitted cases have been reported in the capital Port Vila.
- 62 = **Venezuela:** **Northern Venezuela:** Sporadic cases are reported from rural areas below 600 m. Risk is present in rural areas of Sucre state where the municipality of Santa Fe reports the largest number of cases. There is no malaria risk in cities and resorts (Caracas, Maracaibo, Macuto, Isla de Margarita).  
**Western Venezuela:** Risk exists in the states of Apure (extreme western part in the areas west of the city of Guasdalto) and Barinas (western third of the state excluding the city of Barinas), as well as all rural and urban areas south of the Azauca river. Main vector: *A. nunez-tovari*.  
**Southern Venezuela:** Risk exists throughout the states of Amazonas (especially in the rainforest areas below 600 m in the Orinoco River basin and its tributaries) and Bolívar (Orinoco River in the areas bordering the states of Apure and Guarico west of Las Bonitas. Risk is also present in the central and southern parts of the state below 600 m in the valleys of the Paragua and Caroni Rivers). Main vector: *A. darlingi*.  
**Eastern Venezuela:** Malaria risk is present throughout the state of Delta Amacuro. Main vector: *A. darlingi*.

- Note:** Persons visiting Angel Falls must follow malaria suppressive medication guidelines.
- 63 = **Vietnam:** Malaria risk is present in all rural areas, especially in the provinces of Ca Mau and Bac Lieu and the forested highland areas; except the urban areas (Hanoi, Ho Chi Minh City), the Red River Delta and the coastal plain north of Nha Trang.
- 64 = **Yemen:** The city of Şana'ā (2377 m) is risk free.
- 65 = **Zambia:** **Note:** Persons visiting Victoria Falls must take malaria suppressive medication.
- 66 = **Zimbabwe:** **Note:** Harare (1472 m) and Bulawayo (1343 m) are risk free, although sporadic cases have been reported during the malaria season (November to June). In the Zambezi valley risk is present throughout the year. Persons visiting Victoria Falls must take malaria suppressive medication.

**MALARIA FREE COUNTRIES**

Albania, American Samoa, Andorra, Anguilla, Antigua and Barbuda, Australia, Austria, Azores, Bahrain, Barbados, Belarus, Belgium, Bermuda, Bosnia and Herzegovina, Brunei Darussalam, Bulgaria, Canada, Canary Islands, Cayman Islands, Chile, Christmas Island, Cocos Islands, Cook Islands, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Dominica, Estonia, Falkland Islands, Faroe Islands, Fiji, Finland, France, French Polynesia, Germany, Gibraltar, Greece, Greenland, Grenada, Guadeloupe, Guam, Hungary, Iceland, Ireland, Israel, Italy, Japan, Jordan, Kazakhstan, Kiribati, Kuwait, Latvia, Lebanon, Lesotho, Libya, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madeira Islands, Maldives, Malta, Marshall Islands, Martinique, Mauritius, Micronesia, Moldova, Monaco, Mongolia, Monserrat, Montenegro, Morocco, Nauru, Netherlands, Netherlands Antilles, New Caledonia, New Zealand, Niue, Norfolk, Northern Mariana Islands, Norway, Oman, Palau, Pitcairn, Poland, Portugal, Puerto Rico, Qatar, Réunion, Romania, Russia, St. Helena, St. Kitts and Nevis, St. Lucia, Saint Pierre and Miquelon, St. Vincent and the Grenadines, Samoa, San Marino, Serbia, Seychelles, Singapore, Slovakia, Slovenia, Spain, Sweden, Switzerland, Taiwan, Tokelau, Tonga, Trinidad and Tobago, Tunisia, Turks and Caicos, Tuvalu, Ukraine, United Arab Emirates, United Kingdom, United States of America, Uruguay, Virgin Islands (British and U.S.A.), Wake Island.

**This information has been compiled from numerous sources and WHO documents. The recommendations outlined in this document are intended as guidelines only. For a prophylactic malaria regimen tailored to your needs, seek further advice from your physician or travel health clinic.**



*Anopheles gambiae*