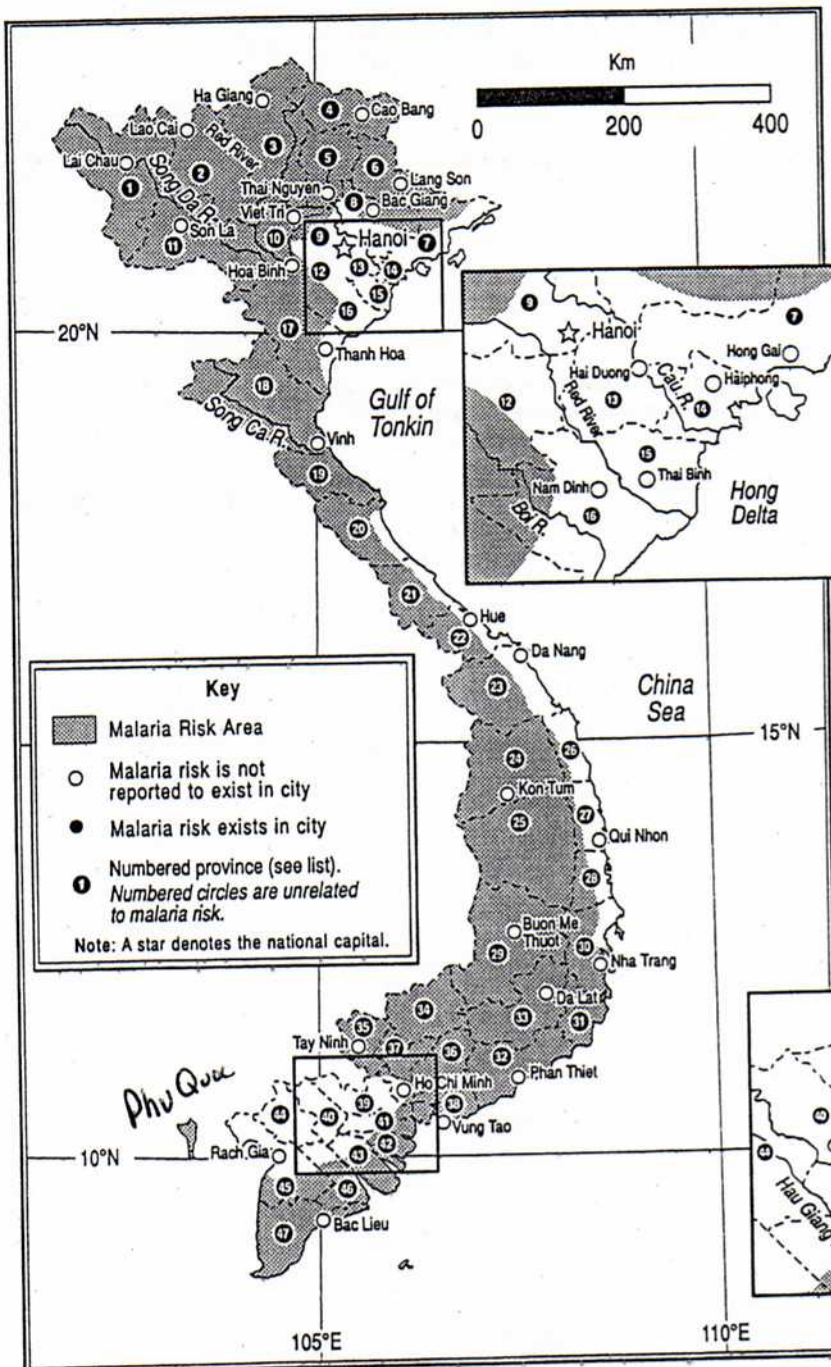


**Risk areas:** Risk (predominantly *P. falciparum*) exists throughout the year in many rural areas. Highest risk areas are in the north along the border with China, highland and forested areas below 4,900 feet (1,500 meters) south of 18.5°N (notably the central highlands provinces of Dac Lak, Dac Nong, Gia Lai, and Kon Tum), Binh Phuoc province, and the western parts of the coastal provinces Quang Tri, Quang Nam, Ninh Thuan, and Khanh Hoa. No risk exists in the Red River delta region, the coastal plain north of Nha Trang, the area from Ho Chi Minh City (Saigon) southwest to Rach Gia, or in the cities of Hanoi, Ho Chi Minh, Da Nang, Nha Trang, Qui Nhon, and Hai Phong.

**Protective measures:** Medicines that protect against malaria in this area include mefloquine (Lariam), doxycycline, or atovaquone/proguanil (Malarone). Primaquine may be used in special circumstances (G6PD testing is required). The best drug for you depends on your itinerary and on a number of personal factors that should be discussed between you and your health care provider. Mefloquine resistance may occur in some areas.



**Key**

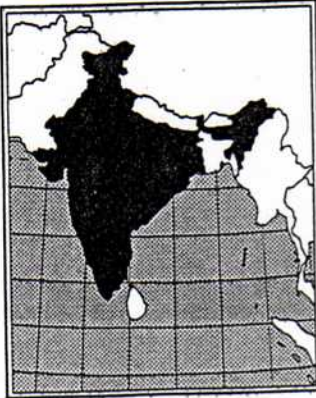
- Malaria Risk Area
- Malaria risk is not reported to exist in city
- Malaria risk exists in city
- ① Numbered province (see list).
- Numbered circles are unrelated to malaria risk.

Note: A star denotes the national capital.

**Provinces**

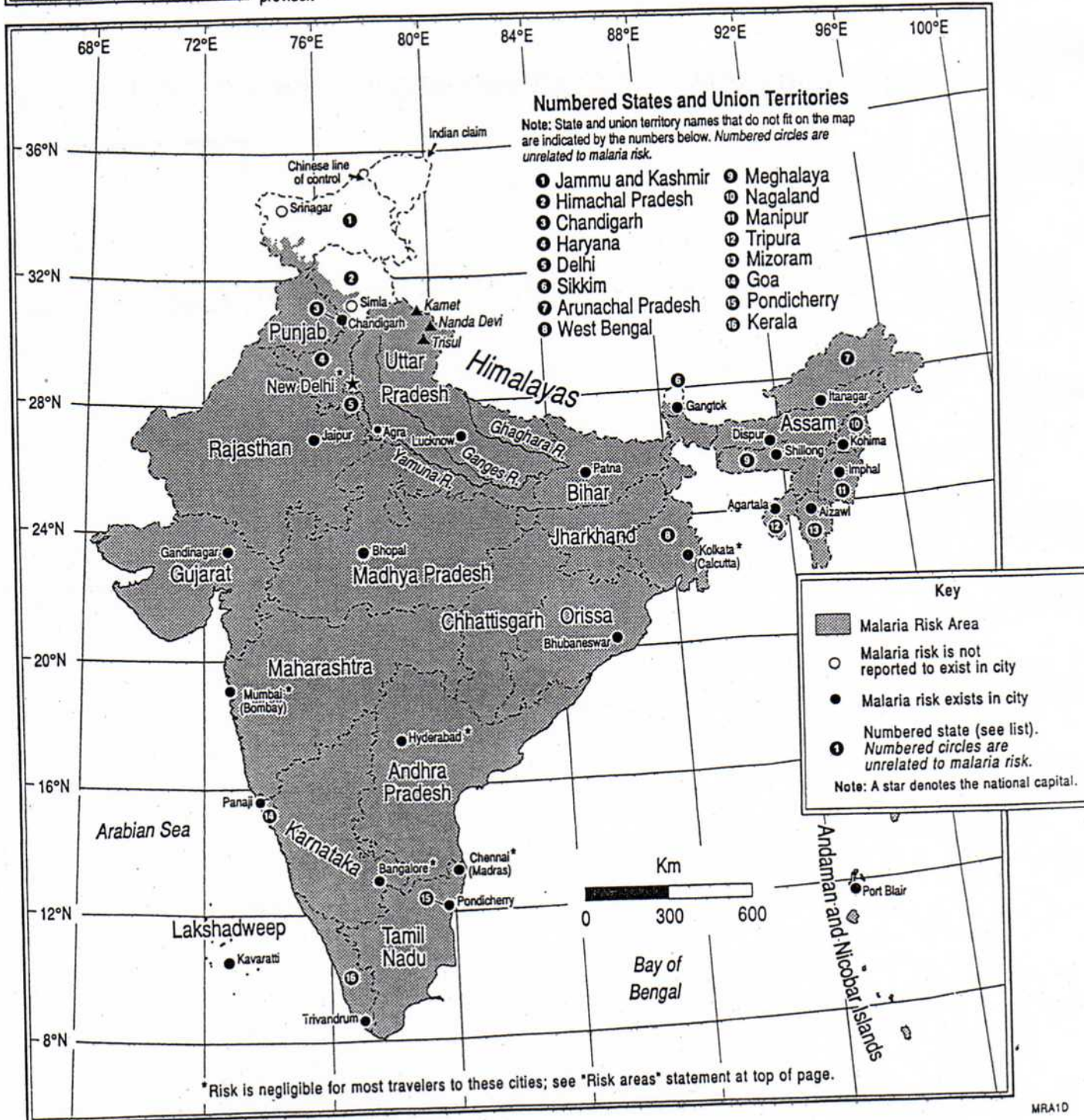
Note: Province names that do not fit on the map are indicated by the numbers below. Numbered circles are unrelated to malaria risk.

① Lai Chau	⑭ Gia Lai
② Hoang Lien Son	⑮ Quang Ngai
③ Ha Tuyen	⑯ Binh Dinh
④ Cao Bang	⑰ Phu Yen
⑤ Bac Thai	⑱ Dac Lak - Dac Nong
⑥ Lang Son	⑲ Khanh Hoa
⑦ Quang Ninh	⑳ Minh Thuan
⑧ Ha Bac	㉑ Binh Thuan
⑨ Hanoi	㉒ Lam Dong
⑩ Vinh Phu	㉓ Binh Phuoc
⑪ Son La	㉔ Tay Ninh
⑫ Ha Son Binh	㉕ Dong Nai
⑬ Hai Hung	㉖ Binh Duong
⑭ Haiphong	㉗ Dac Khu Vung Tau Con Dao
⑮ Thai Binh	㉘ Long An
⑯ Ha Nam Ninh	㉙ Dong Thap
⑰ Thanh Hoa	㉚ Tien Giang
⑱ Nghe An	㉛ Ben Tre
⑲ Ha Tinh	㉜ Cuu Long
㉑ Quang Binh	㉝ An Giang
㉒ Quang Tri	㉞ Kien Giang
㉓ Thua Thien Hue	㉟ Soc Trang
㉔ Quang Nam - Da Nang	㊱ Ca Mau - Bac Lieu
㉕ Kon Tum	



**Risk areas:** Risk (approximately 50% *P. falciparum*) exists throughout the year and peaks after the monsoon season, which is usually June to September. Risk is widespread, though patchy, in the whole country, except there is no risk above 6,600 feet (2,000 meters) in Himachal Pradesh, Sikkim, and Jammu & Kashmir states. Risk is highest in the flood plain states of the northeast, with significant risk as well in coastal plain areas of both east and west coasts. Significant risk occurs in forest and forest fringe areas of Orissa, Jharkhand, Gujarat, Madhya Pradesh, Chhattisgarh, Maharashtra, Bihar, and Goa states. Malaria within metropolitan areas accounts for 15% of all endemic cases, but the risk is negligible for typical short-stay business and leisure travelers visiting highly urbanized city centers in the large cities, including New Delhi, Mumbai (Bombay), Chennai (Madras), Bangalore, and Hyderabad. While risk is also negligible for most travelers to Kolkata (Calcutta), it is higher for those such as aid and relief workers visiting poor areas of the city.

**Protective measures:** Medicines that protect against malaria in this area include mefloquine (Lariam), doxycycline, or atovaquone/proguanil (Malarone). Primaquine may be used in special circumstances (G6PD testing is required). The best drug for you depends on your itinerary and on a number of personal factors that should be discussed between you and your health care provider.



\*Risk is negligible for most travelers to these cities; see "Risk areas" statement at top of page.

**MALARONE (ATOVAQUONE/PROGUANIL): Malaria Prophylaxis  
Information Sheet**

Please read the following and let your nurse know if you have any questions.

Antimalarial options for areas of travel
The <b>side effects</b> of Malarone include nausea, vomiting, headache, diarrhea, anorexia, dizziness. These are more likely to occur with treatment doses than with prophylactic doses.
Malarone should not be used with <u>Tetracycline, Reglan, Rifampin.</u>
Persons with <b>allergies</b> to <b>atovaquone</b> or <b>proguanil</b> should not take Malarone.
Persons with <b>kidney disease or impaired kidney function</b> should not take Malarone
Persons with <b>liver disease</b> should use Malarone with caution.
<b>Pregnant</b> or <b>breastfeeding</b> women should not use Malarone.
Malarone is <b>not</b> 100% effective.
<b>The symptoms of malaria are:</b> Fever, chills, flu-like symptoms, muscle-joint-body aches, fatigue. Symptoms may come and go and return in a pattern.
Malaria can be fatal within 2 weeks. Prompt medical care is essential. As many as 4 blood smears may be required for diagnosis.
The incubation period for malaria is 7 days (minimum). It can be as long as 6-12 months after exposure.
<b>Mosquito precautions:</b> (20-35% DEET repellants, regular application, clothing, netting, limit evening exposure, permethrin)
Dosing schedule for Malarone (Atovaquone/Proguanil) 250mg/100mg: Take once a day, start 2 days before entering the malaria risk area, take each day while in the risk area, and for 7 days after). <b>For _____ risk days you will need _____ doses.</b>
Persons experiencing problems with Malarone should seek medical care to discuss changing to a different anti-malarial. Caution should be used if changing to another antimalarial containing proguanil.
Malarone should not be used to treat malaria if it was used for malaria prophylaxis.
Elderly persons (>70yo) should use Malarone with caution due to decreased renal function

5/25/06

## PLAN/EDUCATION: DOXYCYCLINE

The following have been discussed with client AND the client understands (have client read):

Antimalarial options for areas of travel
<b>Side effects of Doxycycline</b> (nausea, vomiting, diarrhea, photosensitivity, vaginal yeast infections, rashes, renal toxicity, hives, anaphylaxis, pericarditis, exacerbation of systemic lupus, hemolytic anemia, discoloration of the thyroid gland)
Clients on <b>anticoagulant</b> therapy should see their doctor for a prescription because concurrent use with doxycycline can increase the anticoagulant effect.
Doxycycline should not be given with <b>penicillin</b> because it reduces the effectiveness of penicillin
The <b>absorption</b> of Doxycycline is <b>decreased</b> if taken with antacids, iron preparations, Pepto-bismol, alcohol, Molindone (Moban). Take 3 hours apart from doxycycline.
The <b>effectiveness</b> of Doxycycline is <b>decreased</b> if taken with, barbiturates, tegretol, dilantin, kaolin, Rifampin, Zinc.
Do not use when being given <b>Penthrane</b> (anesthetic)
Doxycycline can reduce the effectiveness of <b>Oral Contraceptives</b>
Using mercury containing contact lens solutions when on Doxycycline may lead to conjunctivitis.
<b>Toxic levels of digoxin, lithium, methotrexate, and theophylline</b> can occur when these drugs are taken with Doxycycline
Taking Doxycycline with <b>Phenformin</b> can lead to lactic acidosis
Taking Doxycycline with <b>Accutane</b> can increase the risk of pseudomotor cerebri
Doxycycline is not 100% effective
The <b>symptoms of malaria</b> are fever, chills, flu-like symptoms, muscle-joint-body aches, fatigue. Symptoms may come and go and return again in a pattern.
<b>Malaria can be fatal</b> within 2 weeks. Prompt medical care is essential. As many as 4 blood smears may be required for diagnosis.
The incubation period for malaria is 7 days (minimum). It can be as long as 6-12 months after exposure.
<b>Mosquito precautions:</b> (20-35% DEET repellants, regular application, clothing, netting, limit evening exposure, permethrin).
Dosing schedule for Doxycycline 100mg is once a day, start two days before arriving in a malarious area, take each day you are there, and for 4 weeks after you leave the area. For _____ days risk you will need _____ doses of doxycycline.
Seek medical care if you need to change to a different antimalarial drug
If Doxycycline is to be used >4 months, renal, and hepatic screening may be needed
Clients should wait at least 24 hours after completing the oral typhoid vaccine to start doxycycline. Oral typhoid can be started 4 days after the last dose of doxycycline (serum half life is 18-22 hours).

2/7/06

**MEFLOQUINE (LARIAM): Malaria Prophylaxis Information Sheet**

Please read the following and let your nurse know if you have any questions.

Anti-malarial options for areas of travel
<b>Side effects of mefloquine (Lariam):</b> vertigo, lightheadedness, nausea, vomiting/GI disturbances, nightmares, visual disturbances, hallucinations, headache, rash, itchy skin, hives, facial lesions, confusion, convulsions, anxiety, depression, psychosis, paresthesias, hepatotoxicity.
Simultaneous or subsequent use of <b>halofantrine</b> can cause potentially fatal cardiac changes. <b>DO NOT take halofantrine</b> for malaria treatment if you have taken mefloquine for malaria prophylaxis.
Do not take while taking <b>propranolol, try-cyclic antidepressants, antipsychotics, lithium, or protease inhibitors, or chloroquine</b>
Do not take if you have a seizure disorder or have had one in the past
Do not take Mefloquine if you are taking <b>anti-arrhythmics, beta Adrenergic blockers, Calcium channel blockers, anti-histamines,</b>
Mefloquine administration should be delayed for 12 hours after the last dose of chloroquine, quinidine or quinine. ECG abnormalities or cardiac arrest can occur if taken at the same time.
Liver function tests should be performed periodically for long term (>1yr) use of mefloquine
Seek medical care if you need to change to a different antimalarial drug
Use caution if scuba diving/driving/ operating large equipment/flying a plane or surfing while taking mefloquine
Mefloquine is not 100% effective at preventing malaria
The <b>symptoms of malaria</b> are fever, chills, flu-like symptoms, muscle-joint-body aches, fatigue. Symptoms may come and go and return again in a pattern.
<b>Malaria can be fatal</b> within 2 weeks. Prompt medical care is essential. As many as 4 blood smears may be required for diagnosis.
The incubation period for malaria is 7 days (minlmmum). It can be as long as 6-12 months after exposure.
<b>Mosquito precautions:</b> (20-35% DEET repellants, regular application, clothing, netting, limit evening exposure, permethrin).
<b>Pregnancy:</b> Mefloquine is safe for use during pregnancy and breastfeeding. It is excreted in small quantities (3-4%) in breast milk.
<b>The dosing for Mefloquine (Lariam) 250mg</b> for malaria prophylaxis is: take once per week on the same day each week for 2 weeks before entering a malaria risk area, <b>take once per week for each week of risk, and once per week for 4 weeks after.</b> For _____ weeks of risk you will need _____ doses.

Revised 5/25/06 MEFLOQUINE