**Adriano M. Sancin**

# VADEMECUM

## HEALTH PRECAUTIONS
## &
## MEASURES OF PREVENTION
## IN
## TROPICAL AREAS
## *
## GUIDELINES FOR EXPATRIATE STAFF

Technical Series
CHU – LBS Tchad

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“The views were immensely. Everything that you saw made for greatness and freedom, unequalled nobility”.

*(Out of Africa - Karen Blixen).*

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Here are listed some advice
in order to inform both
staff and consultants of international organizations
operating in tropical areas.

# *Don’t spoil your trip!*

This manual is intended to make adaptation to local conditions easier for personnel of international organizations going to tropical or subtropical areas on a mission or on transfer.

The manual contains the basic information and guidance for some tropical diseases, especially for the recognition of malaria and its treatment.

Enquiries regarding adaptation are welcomed and should be addressed in the first instance to the author.

It is not possible to prepare a set of guidelines applicable to all regions but these suggestions are valid for most tropical countries.

The medical service will be pleased to provide further information upon request

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# 1. Before departure

Careful preparations should be made before departure. Here are listed the essential steps:

## *A. Preliminary medical examination*

- Evaluate the general state of your health.
- Consider what vaccinations & other measures of prevention are needed for your particular destination.
- An electrocardiogram (ECG) and a screening for G-6 PD deficiency should be performed prior departure and antimalarials usage.
- A dental check-up should be carried out if you will be away for several weeks and any dental treatment required should be given before departure.
- If spectacles are worn, it is wise to take a spare pair.

## *B. A check on vaccinations*

- ***Yellow Fever*** vaccination is required for entry into some countries (See Appendix, Tab. 3, *World Immunization Chart*, pg. 33). Pregnant women should not be vaccinated. Children less than 9 months old should not be vaccinated (WHO). Persons over 60 years of age may be at increased risk for systemic adverse events following vaccination.
  Period of duration: 10 years.
- ***Tetanus*** vaccination is recommended if you have not been revaccinated in the last 10 years. Period of duration: 10 years.
- ***Poliomyelitis*** vaccination is recommended for all people who are not properly immunized. If you are travelling to endemic areas (Nigeria, India, Afghanistan, Pakistan) or where polio is still a risk, you may need additional protection (one booster as an adult). Period of duration: 10 years.
- ***Hepatitis A*** vaccination is recommended for people who have not already visited highly endemic countries. Period of duration: more than 25 years.
- ***Hepatitis B*** vaccination is especially recommended for health professionals.
  Period of duration: 15 years. Booster doses are not recommended for most adults who have completed a primary immunization series. Persons who lose detectable antibody appear to retain immunologic memory against significant infections.
- ***Typhoid*** vaccination is recommended for all travellers to the Indian Subcontinent and other developing countries in Central and South America, the Caribbean, Africa, Asia, and Middle East; especially if they will be visiting friends or relatives or travelling outside routine tourist destinations. Booster every 5 years.
- ***Meningitis A,C,W135,Y*** vaccination is recommended for travellers who will be visiting hyperendemic areas and will be in close contact with the local population. Period of duration: 3-5 years.
- ***Rabies*** is highly endemic in Africa, Asia (particularly India) and parts of Latin America, but the risk to travellers is low. Pre-exposure immunization against rabies is recommended for travellers with an occupational risk of exposure, for those planning extended stays in endemic areas where immediate access to medical care might be limited, especially children, and for outdoor-adventure travellers. Period of duration: lifelong.

- ***Japanese encephalitis*** vaccination is recommended for travellers who will be visiting South Nepal, India, Sri Lanka, South-East Asia, and China.
  Period of duration: 2 years.

- ***Tick-Borne Encephalitis (TBE) —*** TBE occurs in Scandinavia, western and central Europe and countries of the former USSR, mainly in rural forested areas. Risk is greatest from March to November. Humans acquire the disease through the bite of a tick or, rarely, from eating unpasteurized dairy (mostly goat) products. Immunization is recommended only for travellers who will spend extensive time outdoors in rural areas. Period of duration: 2 years.

- ***Tuberculosis.*** The global number of TB cases is expected to continue to increase, particularly in countries where the human immunodeficiency virus (HIV) infection is epidemic. In several European countries, Canada, and United States is expected soon to have more TB cases among foreign-born persons than native-born persons. Although BCG vaccine is the most widely administered of all vaccines and has the highest coverage of any vaccine in the WHO Expanded Programme on Immunization, it appears to have had little epidemiologic impact on TB. For travellers from low-incidence countries who may be exposed to infection in relatively high-incidence countries (e.g. health professionals), a baseline tuberculin skin test is advisable for comparison with retesting after return. Booster doses of BCG are not recommended by WHO.

Other vaccinations may be recommended depending on the circumstances and geographic areas. Information on specific required and recommended immunizations is available in the Appendix.

NB! Simple infections with moderate fever, treatments with antibiotics or low doses of corticosteroids (less than 20 mg/day), malnutrition, diarrhoea, stable brain degenerative diseases, renal diseases, and epilepsy are not contraindicated for vaccination.

Because of the minimum periods required for performing the vaccinations, it is important to fix a time table with the attending physician in the light of immunity status, destination, length and nature of the journey.

**Immunocompromising conditions**
Inactivated vaccines generally are acceptable (e.g., pneumococcal, meningococcal, influenza [inactivated influenza vaccine]). Live vaccines (e.g., measles, yellow fever) generally are avoided in persons with immune deficiencies or immunocompromising conditions. Information on specific conditions is available at http://www.cdc.gov/vaccines/pubs/acip-list.htm.

**Last minute travellers**
Every vaccine has a time period necessary for the host to develop sufficient antibodies, and this period of time may vary depending on the vaccine. Some vaccines require more than one dose for best protection. The use of multiple reduced doses or doses given at less than minimum intervals can lessen the antibody response. Because some travellers visit their health-care providers without ample time for administration of the several vaccine doses recommended for optimal protection against certain diseases, studies have been performed and others are ongoing to determine whether accelerated scheduling is adequate. This concern is primarily the case for hepatitis B vaccine or the combined hepatitis A and B vaccine. With imminent travel, a clinician may opt to accelerate these vaccine schedules, with the understanding that such administration has not been FDA approved and thus not endorsed by CDC. However, many travel medicine experts are using shortened schedules, feeling that they may provide better protection than the administration of just one dose of vaccine before travel. It is unclear what level of protection any given traveller will have if a full series of vaccination is not completed when more than one dose is recommended.

For details see Appendix: IAMAT's World Immunization Chart.

## *C. Gear*

The idea is to travel as light as possible.
Since feet absorb more punishment than any other part of the body, suitable footwear is the single most important item of gear. If the feet cannot go, nothing can go!
Two pair of shoes are needed: one waterproof suitable for the wet, slippery conditions and another that meets the need for dryness and comfort at home.

Cotton socks should be worn to prevent the risk of blisters and reduce insect bites.

Clothing: military green, camouflage clothing is strictly contraindicated.
Wearing of perfumes and brightly coloured clothing should be avoided.
Windbreaker: lightweight and waterproof should be useful.

Hat: for protection from radiant heat a lightweight and light-coloured hat is advisable.
Shirts: two light coloured cotton shirts should be taken.
Pants: two pairs of lightweight cotton pants are needed. Jeans are unsuitable.
Sunglasses: should be polarized with full UV protection.

# 2. During your stay in the tropics

## *A. Life – style*

During the first few days, newcomers unused to the climate conditions are likely to have a lower resistance. They should avoid excessive physical and/or intellectual strain.

## *B. Diet*

**Water in the tropics**

Water-born disease is a risk for international travellers who visit undeveloped countries that have poor hygiene and inadequate sanitation. Natural water may be contaminated with inorganic or organic material from animal or human biologic wastes. Some estimates suggest that 80% of world diseases are linked to inadequate water supply and sanitation.

**Avoid**

- heavy meals,
- alcoholic drinks.

**On the other hand**

- enough liquid should be drunk to compensate for perspiration loses,
- it may be advisable to increase salt intake in the case of profuse perspiration.

**When meals are prepared by private domestic staff**

Gastro-intestinal infections can happen in any country. Moreover travel increases the chance of getting sick partly due to the physical and psychological stress of being in a different place. Your immune system tends to get weaker.

It is advisable to inspect the kitchen daily and rules of elementary hygiene can be enforced:

- cleanliness of the hands, crockery and cupboards,
- destruction of flies, cockroaches, rodents.

**Hands hygiene**

Dirty hands and contaminated food or water are the usual source of infection with amoebic dysentery and other enteric infections. Wash your hands with soap and water for at least two minutes before eating. If you don't have access to soap and water, alcohol-based hand sanitizers are a good alternative. These are very common in the tropics and they can be prevented by simple hygienic precautions:

**!!!** The fundamental rule is "*boil it, cook it, peel it or leave it*".

**!!!** Stay away from shellfish, eggs, meat, and dairy products that have been out for a long time.

**!!!** Avoid raw food.

**!!!** Food should be well cooked and served while hot.

**!!!** Ice should be avoided; it is not known whether it has been prepared from safe water.

**!!!** Ice-cream should not be eaten.

**!!!** Avoid unpasteurized products, including milk, cheese, juice, and cider.

**!!!** Eggs that have not been processed for safety require a minimum boiling period of 9 minutes, both the yolk and the white should be firm. Shell eggs should not be washed. If are soiled with faecal matter or blood and thus must be washed or cleaned, they should be used

immediately. Cracked eggs are more likely to be contaminated and thus present a higher health risk.

**!!!** If you are in doubt about the quality of water:

- **Boiling** is the safest method. To give a wide margin of safety many still suggest 3 minutes' boiling time at any altitude. All parasites, bacteria, viruses will be readily inactivated. Boil the water in the evening, and cool it overnight to pour into your water bottle before heading out for the day.
- **Filtration**: if a normal filter is used, it is also essential to boil the water or an additional treatment with chemicals, to ensure viral destruction after filtration, is required.
  Only ***reverse osmosis*** filters are inherently capable of removing viruses.
- **Chemical disinfection**:
  - Chiefly chlorine in different commercial formulations (see *Appendix*, Tab. 1),
  - Iodine (8 gtts/1L of water),
  - potassium permanganate (1 tablet 0.1 mg/4L of water),
  - Sodium dichloroisocyanurate /Aquatabs® Medentech Ltd. / (see *Appendix*, Tab. 2).
- Use only encapsulated bottled mineral water or carbonated drinks.

## *C. If you get diarrhoea …*

The aim of this discussion is to provide information that would decrease exposure to enteropathogens or reduce the chance of acquiring illness and to furnish a clinical approach to self-therapy.

Diseases spread by faecal **contamination** of drinking water (human and/or animal) include Salmonella, Shigella, Campylobacter, Giardia, Entamoeba, cholera, Hepatitis A infection.

The typical **symptoms** are: abdominal cramping, moderate illness with malaise, nausea, vomiting with watery diarrhoea.
Bloody stools are correlated with Shigella or Campylobacter.
In case of persistent diarrhoea (> 14 days) we must consider also a parasitic agent (Giardia, Entamoeba).

### Fluid, Diet & Treatment:

ORS (Oral Rehydration Solution) is the cornerstone of the WHO (World Health Organization) program to combat diarrhoeal diseases worldwide.
I emergency situations you may prepare a home made ORS with simple ingredients:

- half (½) a teaspoon of salt (= 2,5 grams)
- six level teaspoons of sugar (= 30 grams)
- one litre of safe drinking water.

Foods high in starch may even decrease diarrhoea. The major starch sources are tubers, such as potatoes, cassava, and cereals.
Only foods and drinks that increase intestinal motility should be avoided: foods that contain lactose, caffeine, alcohol, high fiber and fats.

Most diarrhoeal attacks are self-limiting and clear up in a few days.

- It is usually enough to compensate fluid loss by drinking safe water, clear soup, light tea and continuing to eat normally.
- The milk of mature coconuts has a laxative effect and should be avoided.
- In case of severe diarrhoea it is advisable to take oral rehydration salts.
- Stand by treatment: *fluoroquinolones* (norfloxacin, ciprofloxacin, ofloxacin) may be indicated if a doctor is not available and there is blood in the stools or fever (see *Basic Medical Kit for Personal Use*, pg. 24). Antimotility or antidiarrhoeal drugs

such as loperamide, diphenoxylate, and paregoric should never be used in patients who have fever or are passing bloody stools. They may cause severe adverse effects.

- *Fluoroquinolones* represent the treatments of choice when individuals are travelling to areas where ***trimethoprim*** resistance is common or has not been determined.
  The duration of antimicrobials needed in traveller's diarrhoea appears to be short. No person needs more than 4-5 days and many respond to single – dose treatment.
  If this treatment is not effective within 48-72 hours, it is essential to consult a doctor.

## *D. Personal hygiene*

### Perspiration

As a result of profuse perspiration, the skin can easily become the seat of fungal or other infections. Daily showers are recommended.

### Oral & dental hygiene

Water used for these purposes should be purified or boiled. If in doubt, mineral water should be used.

### Clothing

Should be light, loose, well ventilated and made of cotton. Sunglasses will also be useful.

## *E. Protection against insects*

Certain insects and particularly certain mosquitoes in hot countries can transmit infections such as malaria, filariosis, dengue, and yellow fever.
It is advisable to prevent insects from entering living quarters by protecting all access to rooms with metal mesh screening.

Mosquito nets, if possible impregnated with insecticide, should be used in areas where malaria is endemic.
Mosquito nets work properly only under certain conditions:

a) if material is made of sufficiently fine mesh (see ***Bed net***, Box 1, pg. 11),
b) if they are folded correctly during the day
c) if they are properly set up at night so that insects cannot get in.

Inside houses, insects must be killed by spraying an insecticide (***Pyrethrin***)
Especially in toilets, bedrooms (see ***Insecticides***, Box 2, pg. 11).

It is recommended:

a) to wear long-sleeved clothing and trousers,
b) to apply an insect repellent to exposed skin areas (see ***Chemical repellents***, Box 2, pg 11).

## *F. Malaria prophylaxis*

### What is malaria?

Malaria is one of the most serious infectious diseases in the world, causing hundred of millions of illnesses and an estimated 1 million death each year.
Malaria is endemic throughout most of the tropics (Central and South America, Island of Hispaniola, Southeast Asia, South Pacific, Middle East) but it is most readily transmitted in sub-Saharan Africa. Nearly all serious illnesses and deaths from malaria are caused by ***Plasmodium falciparum***, a tiny parasite which infects red blood cells. The malaria parasite is transmitted from human to human by the bite of infected female anopheles mosquitoes. The mosquito becomes infected by ingesting human blood containing the parasites.

An estimated 30.000 travellers from the developed world are infected yearly with malaria, and several hundred die due inappropriate preventive measures such as chemoprophylaxis and the avoidance of night-biting anopheline mosquitoes.
Malaria is a curable and preventable disease, but it still kills many people.

Herbal medications and homeopathy have no proven efficacy at present and should not be recommended.

***Remember:***

1. **Malaria prophylaxis reduce the risk of people getting the infection**
2. **Malaria is especially dangerous for young children**
3. **Malaria is especially dangerous for pregnant women**
4. **Prompt treatment of malaria reduces the duration of disease and its harmful effects on the human body**
5. **Prompt treatment of malaria infection saves lives.**

Adults coming from areas where malaria is not common can become very ill if they got the infection during their stay in endemic areas.
Malaria is especially dangerous in pregnant women and in young children (under 5 years old).
If a pregnant woman or young child gets malaria, severe illness may rapidly develop and may even result in death. Such patients need special care in addition to standard malaria treatment.

If you have no information, ask the medical service of the Organization concerned whether malaria is endemic in the region of the assignment.
If it is, regular prophylaxis with preventive medication is essential and should be strictly followed.

### How do people get malaria?

The malaria parasites enter and leave the body through mosquito bites.
When a mosquito bites a person it sucks up blood. If the person has malaria, some of the parasites in the blood will be sucked into the mosquito.
The malaria parasites multiply and develop in the mosquito.
After 10 – 14 days they are mature and ready to be passed on to someone else.
If the mosquito now bites a healthy person, the malaria parasites will enter the body of the healthy person. This person will then become ill in a few days.

### What do you always have to bear in mind?

Staffs on duty travel are reminded that:

a) protection from mosquito bites is the first line of defence against malaria,
b) no antimalarial prophylactic regimen gives complete protection,
c) prophylaxis should not be automatically prescribed for all travellers to malarious areas,
d) prompt treatment of malaria saves lives,
e) prompt treatment of malaria reduces the disease's duration and its harmful effects on the human body.

### How can you prevent malaria?

There are 3 main ways to prevent malaria:

1. Prevent mosquitoes from biting people (bed nets, repellents, burn coils).
2. Control mosquito breeding (usually in collection of water within 2 km of the place where you live, if possible reclaim land by filling and draining).
3. Kill mosquitoes (insecticides).

### Clinical features of malaria

The clinical features of malaria vary from very mild to very severe.
FEVER is the most important feature with attacks every 2-3 days.
Each attack may last several hours and often begin with SHIVERING (body shaking), then there is a period o fever and finally is profuse SWEATING. During the attack the patient often complains HEADACHE and PAINS in the back, joints and all over the body.
There may be also loss of APPETITE, VOMITING and DIARRHOEA.

### How to recognise malaria?

You can recognise malaria by asking and looking.

*Ask:* has the patient fever (above 39° C, 102.2° F) or a history of fever within the last 2-3 days?
Is the patient unable to drink?
Has the patient had convulsions?
Does the patient vomit repeatedly?
During an attack has the patient had headache, pains in the back, joints?

*Look:* measure the temperature with thermometer. If the temperature is more than 37,5°C or 99,5°F the patient has fever. If there is *no fever* and no history of fever during the past 2-3 days, the patient *does not have malaria*.
Patients with a history of fever within the last 2-3 days *may have malaria*.
Changes in behaviour: unconsciousness, sleepiness, confusion, inability to speak or to walk.
Repeated vomiting (inability to eat or to drink – retain oral medication).
Severe diarrhoea.
Unexplained bleeding from nose, gums.
Yellow whites of eyes.

Malaria parasites are so small that they can only be seen under a microscope.

**BOX 1**

**PROTECTION FROM MOSQUITO BITES**

## MOSQUITO BED NET

A mosquito net is a very good way to protect people from getting malaria. The use of a mosquito net, impregnated with insecticide, is not necessary when air conditioning is on. Often the best "repellent" is a fan or gentle breeze as mosquitoes do not like moving air. There are several mosquito control strategies as Vitamin B (thiamine), garlic, ultrasonic devices, incense, bats. Whether these methods are effective at deterring mosquitoes or significantly reducing mosquito populations remains disputed.
Moreover, some manufacturers of mosquito repelling ultrasonic devices have been found to be fraudulent. Although bats can be prodigious consumers of insects, less than 1% of a bat's diet will consist of mosquitoes.

A number of compounds are suitable for treating nets. The most commonly used ones are: *permethrin, deltamethrin, lambda-cyhalothrin, alpha-cypermethrin, cyfluthrin, etofenprox.* They are not harmful to people if used correctly.
Treated nets also kill bed bugs and other insects. The *permethrin* will be effective for several months if the bed net is not washed.

Mosquito nets will not prevent malaria if not used correctly and if they do not correspond to industry standards:

a) torn sections must be repaired with adhesive tape,

b) during the day the bed net should be left hanging in a knot from the ceiling. Before retiring, lower the net and search carefully if any mosquitoes are hidden inside; if so kill them. Mosquito nets should be hung up properly to cover the sleeping area and should be low enough to be tucked under the mattress,

c) material: *polyester,*
mesh size: *1.5 to 2.0 millimetres* or *156 & 196 holes per square inch.*

**BOX 2**

**PROTECTION FROM MOSQUITO BITES**

## CHEMICAL REPELLENTS

Repellents are chemicals you apply to the skin (avoiding the area around eyes and mouth) to keep mosquitoes away. Repellents prevent mosquitoes from getting close to your body.

Malaria mosquitoes usually bite from sunset to sunrise, for this reason repellents are very useful early in the evening.
They are active for 5 up to 8 hours, then they have to be applied again.
They have different brand names but the active substance or the chemical name of the most commonly used are: ***N,N –diethyl–meta–toluamide*** (33,5 g%) or ***dimethylphtalate-DEET.*** Repellents containing 30% to 50% ***DEET*** are recommended as the most reliable and long - lasting. Lower concentrations of ***DEET*** offer short-term protection, and require more frequent reapplication. A microencapsulated, sustained – release formulation can have a longer period of activity than liquid formulations at the same concentrations.
If sunscreen and ***DEET*** are used together, the repellent should be applied first to avoid decreasing the effectiveness of the sunscreen.
Avoid formulations containing higher doses, they may pose health hazards!
NB! Permethrin can be used on clothing, but not on skin.

**Repellents in children**
The American Academy of Paediatrics and the Centres for Disease Prevention and Control (CDC) approve and support the use of ***DEET*** (up to 30-50 %) in children older than 2 months. ***Picaridin***, another repellent that has demonstrated protective efficacy comparable with ***DEET*** against Anopheles mosquitoes, is currently available in low concentrations (15%) that are suboptimal for malaria protection and require frequent reapplications. Higher concentrations of ***Picaridin*** may be available in some countries.

Clothing, shoes, camping gear, can be sprayed with repellent containing ***permethrin***, it is highly effective both as an insecticide and as a repellent. Permethrin – treated clothing repels and kills ticks, mosquitoes, and other arthropods and retains this effect after repeated laundering. The insecticide should be reapplied after every five washings.
There appears to be little potential for toxicity from permethrin – treated clothing.
Clothing can be impregnated with a solution of ***toluamide*** (30 mL of ***toluamide*** in 250 ml of water).
Effectiveness: 4 - 10 hours.

Precautions:
- ▶ Do not apply the repellent to skin under clothing.
- ▶ Do not apply the repellent to cuts, wounds, or irritated skin.
- ▶ Do not apply the repellent directly to the face; spray your hands, and then rub them over the face, avoiding eyes and mouth.
- ▶ When using repellent on a child, apply it to your own hands and then rub them on the child; avoiding eyes and mouth.
- ▶ After returning indoors, wash treated skin with soap and water.

*Cont.*

## MOSQUITO COILS

When mosquito coils burn, their smoke keeps mosquitoes away. The coils are not very expensive and you can find them in pharmacies and some other shops. Use them at dusk and dawn in airy rooms.

## INSECTICIDES

Pyrethrin insecticides – (brand name RAID), kill mosquitoes instantly. Spray frequently the bed net, under the bed as well as walls, corners, furniture, behind pictures, inside closets and under the bathroom's sinks.

**CAUTION:** cover food and cooking utensils!

**BOX 3**

## CHEMOPROPHYLAXIS FOR ADULTS

Depending on the visited area, one of the following chemoprophylaxis regimens can be recommended:

**NIVAQUINE**® tab (*chloroquine sulfate* 100 mg): 300 mg/week = 3 tabs of 100 mg once a week
+
**PALUDRINE**® tab (*proguanil hydrochloride* 100 mg): 200 mg/day = 2 tabs of 100 mg once a day.

*Or*

**SAVARINE®** tab (is a combination of *proguanil* 200 mg + *chloroquine* 100 mg) 1 tab once a day.

*Or*

**MALARONE**® tab (*atovaquone* 250 mg + *proguanil* 100 mg): 1 tab once a day (maximum for 30 days).

VERY IMPORTANT:

1. All above mentioned antimalarial drugs, taken daily, should be started 1 day before departure and should be continued for 4 weeks after the last possible exposure to infection; with the exception of Malarone which should be continued for 1 week.
2. Swallow the tabs with some water always at the same time, each day and each week respectively.
3. In case of gastro-intestinal upsets caused by Chloroquine tabs, take the same drug dosage twice a week instead of only once, after a meal.
4. Keep the drugs at room temperature.

*Or*

**FANSIDAR**® tab (*sulfadoxine* 500 mg + *pyrimethamine* 25 mg): 1 tab once a week.

*Or*

**LARIAM**® tab (*mefloquine hydrochloride* 228 mg): 1 tab of 250 mg once a week (5 mg/kg of body weight).

VERY IMPORTANT:

1. All antimalarial drugs taken at weekly intervals should be started 1 week before departure and should be continued for 4 weeks after the last possible exposure to infection.
2. Swallow the tabs with some water always at the same time, each week.
3. For last minute travellers to high-risk areas, if start of prophylaxis one week before arrival in the endemic area is not possible the weekly dosage should be administered daily for three (3) consecutive days followed, thereafter, by standard weekly dosing. Day one: 1st dose; day two: 2nd dose; day three: 3rd dose; thereafter: regular weekly doses.
4. Mild side-effects as dizziness or gastro-intestinal problems may occur during early prophylaxis and they spontaneously resolve. Travellers who suffer from continuous and severe side effects should switch to the regimen described above.
5. *Mefloquine* is contra-indicated in case of history of epilepsy & psychiatric disorders, conduction disorders and during the first trimester of pregnancy.
6. Keep the drugs at room temperature.
7. Remember that no antimalarial medicine provides 100% protection.
8. If fever develops, think “malaria”.

**in case of high fever (> 39° C, 102.2° F):**

❶ Consult a physician immediately,
❷ If it is impossible to find him and/or establish a diagnosis within 2 hours, start immediately the treatment regimen (see *Annex* 2, pg. 46).
❸ Always have an emergency treatment course of antimalarials for stand-by treatment in case prompt medical help is unavailable (see pg. 28).
For example:
Artequin®, Malarone®, Coartem®, Arsucam® (or: Coarsucam® and Falcinon®), Arsumax®, Halfan®).

### Recommendations to travellers

The currently recommended first-line drugs for chemoprophylaxis are 80 – 90% effective in preventing clinical episodes of primary malaria infections. The antimalarial agents commonly used (e.g. chloroquine, mefloquine, atovaquone - proguanil) that are active against the blood stage parasites, however, do not prevent relapsing infection caused by *Plasmodium vivax* and *Plasmodium ovale*. These plasmodium species are biologically different and can cause latent infection with hypnozoites in the liver that are not killed by the antimalarials active against the blood stages. Relapses may be multiple, and can occur more than a year after travel to a malarious area. Primaquine is the only drug effective against hypnozoites in the liver (0,5 mg/kg per day for two weeks), and should never be given to patients with glucose-6-phosphate dehydrogenase deficiency (previous screening is recommended).

### How big is the problem?

*Plasmodium vivax* malaria is the most geographically wide spread of the malarial species and is estimated to cause 70 to 80 million acute episodes per year in endemic areas. *Plasmodium vivax* causes more than 50% of malaria infections outside of Africa, and about 10% of those in Africa. Among the vivax cases outside of Africa the majority (90%) occur in Asia, the Middle East, and Western Pacific; only 10 to 15% in Latin America.
*Plasmodium vivax* predominates in Asia (especially India and Pakistan), Africa (Ethiopia, Ghana, Kenya, Nigeria), Central America (Honduras, Guatemala), Oceania (Papua New Guinea), Mexico and South America.
Risks: vivax malaria can be severe, and rarely fatal. The complications include: acute respiratory distress syndrome, renal failure, jaundice, cerebral complications, bleeding and splenic rupture.

## *G. Dengue and Dengue Haemorrhagic Fever (DHF)*

### What is dengue?

Dengue is a disease transmitted by infected female mosquito *Aedes aegypti* and *Aedes albopictus*, frequently found in or near human habitations and prefers to feed on humans during the daytime. Mosquito breeding sites include artificial water containers, uncovered barrels, buckets, flower vases or pots, cans, and cisterns. The infection occurs when mosquitoes bite an infected person. The virus incubates in the mosquito for 8 to 10 days and can transmit the disease for the rest of her life. There are four dengue viruses (DENV-1, DENV-2, DENV-3, DENV-4). As global weather patterns are changing and some local temperatures get warmer, the mosquitoes transmit the infection to humans to more northern latitudes where dengue was previously unknown. In fact, the jungle-dwelling *A. albopictus* mosquito which is also a dengue carrier, was originally found in Asia, but is now well established in the United States, Central and South America and Caribbean, Southeast Asia, Oceania, Eastern Mediterranean, Europe and Africa.

Dengue haemorrhagic fever (DHF) is the most severe form of dengue infection. It can be fatal if unrecognized and not properly treated in a timely manner.

**What are the symptoms of dengue?**

The principal symptoms, after an incubation period of less than one week, are high fever that lasts from 2 to 7 days, severe headache, severe pain behind the eyes, joint pain, muscle and bone pain, rash, and mild bleeding (e.g.: nose or gums bleed, easy bruising).

Symptoms of DHF include severe abdominal pain, vomiting, diarrhoea, convulsions, bruising, and uncontrolled bleeding. It can lead to circulatory system failure and shock, and possibly death.

**What is the treatment for dengue?**

There is no specific medication, and there is no vaccine. Patients should use analgesics (acetaminophen), avoid aspirin! They should rest, drink plenty of fluids, and if feel worse (e.g.: vomiting, abdominal pain) in the first 24 hours after the fever declines, they should be immediately hospitalized.

**What can be done to reduce the risk of acquiring infection?**

Using air conditioning or window and doors screens reduces the risk of mosquitoes coming indoor.
For bed nets see Box 1. For chemical repellents, mosquito coils, and insecticides, see Box 2.

## *H. Prevention of schistosomiasis (bilharziasis)*

**What is schistosomiasis (also known as bilharziasis)?**

Schistosomiasis is caused by different types of Schistosoma blood flukes (flatworms) which larvae can enter the intact human skin when swimming in fresh water: ponds, lakes, and rivers, or coming into contact with infected water. It is a disease found mainly in rural areas with poor sanitation and lack of proper human waste disposal facilities.
After infection, flatworms can remain in the human body for long periods of time – even decades – mate, and produce thousands of eggs. The eggs migrate through the intestinal or bladder walls to be excreted in faeces or urine. If discharged into an open body of water, the eggs enter the snail hosts to restart the cycle.
In areas where this affection can be found and where there is no reliable information, it is important to avoid contact with unsafe water, as infestation is caused when the larval form of the parasite penetrates intact skin.
Avoid bathing in rivers, lakes, pools and marshes!
Stay away from the banks of streams and rivers; snails abound in shallow water where they feed on organic waste and aquatic vegetation. Snail presence is minimal in the center of rivers and streams where the water flow is faster.
Avoid contact with fresh water during peak daylight hours when the cercariae emerge from the snails and are most active.
If you accidentally come into contact with fresh water, rub your skin immediately with rubbing alcohol or other disinfectants, and a dry towel to reduce the possibility of infection.
Water from a river or lake used for bathing and washing should be boiled or chlorinated.
Avoid salads and fruits since they may have been washed with infected water.

## *I. What you should know about AIDS*

**What do HIV and AIDS mean?**

AIDS – the acquired immunodeficiency syndrome – is the late stage of infection caused by the human immunodeficiency virus (HIV).

After the virus enters a person's bloodstream, it slowly destroys the body's immune system, leaving the person increasingly defenceless against other infections and some cancers.
Over 90% of new infections now occur in developing countries.
HIV is currently a major tropical disease.

**How is HIV transmitted?**

Specific at-risk groups include female sex-workers (prostitutes), attenders at sexually transmitted disease clinics, intravenous drug users and some others.

Like some other sexually transmitted diseases, the virus that causes AIDS can also be transmitted through blood. The virus in these cases may be present in transfused blood that has not been screened for HIV antibodies, or on unsterilized needles or syringes and other skin-piercing instruments.

HIV can also be transmitted from an HIV-infected woman to her unborn or newborn child.

**How is HIV not spread?**

After a decade of scientific observation it's finally been proved that HIV is not spread through casual contact in school, workplace, swimming pool or at the market.
You will not get HIV by sitting on toilet seats, shaking hands, hugging, kissing, sharing the same dishes, drinking from the same glass, or eating food handled by HIV-infected people in restaurants.
HIV is not transmitted by mosquitoes or other insects because this particular virus cannot survive inside the insect's body.

**How can you protect yourself?**

Obviously, abstaining from sex will protect you from sexual transmission.
Always use a new latex condom with a water-based lubricant. Used correctly, and each time you have intercourse, condoms greatly reduce the risk of HIV infection.

Do not share razors, needles, or any other skin-piercing instruments with someone you suspect is HIV-infected. Do your best to avoid having unnecessary surgery, injections or blood transfusions especially in areas where the level of medical care is uncertain.
This is the current situation about HIV – AIDS prevention of infection but many questions remain to be answered.

## *J. Cholera*

**What is cholera?**

Cholera is an acute diarrhoeal disease caused by the bacterium *Vibrio cholerae*.
A person can become infected by drinking water or eating food contaminated by the bacterium.

**Common sources of infection**

Raw or poorly cooked seafood, raw vegetables and other food that might have been contaminated during preparation or storage should not be eaten.

**Symptoms**

Persons who have been infected may have no symptoms or only mild diarrhoea.
Others, however, develop very severe watery diarrhoea and vomiting. The loss of large amounts of fluids can rapidly lead to severe dehydration causing death – sometimes within three or four hours if the patient is not adequately treated.

**What should you do if you think you might have cholera?**

If you have severe diarrhoea in an area where there is cholera, immediately seek treatment from a physician.
Drink water and other non-sweetened fluids, such as soup, before getting specific medical care.

**Treatment of cholera**

Early rehydration can save the life of nearly all patients affected by cholera.
Most patients can be rehydrated quickly and simply with a solution of oral rehydration salts (ORS). It is useful to carry a supply when you travel. Follow the instructions on the packet when preparing the solution.
The solution should be drunk in large quantities in order to replace what has been lost with diarrhoea & vomiting.
Severely dehydrated patients may need to receive fluid intravenously.
During the outbreak, for prophylaxis, doxycycline tabs 100 mg/day are recommended.
An effective antibiotic can also help patients with severe cholera.
Do not use antidiarrhoeal drugs such as *loperamide*.

**Where are outbreaks of cholera commonly found?**

Cholera is present in many countries. New outbreaks can occur sporadically in any part of the world where water supplies, sanitation, food safety and hygiene practices are inadequate.
For information on whether there is cholera in the area where you will be travelling, contact your doctor or local health officer.

**Are vaccinations against cholera effective?**

The traditional injectable cholera vaccine conveys incomplete, unreliable protection of short duration. Therefore is not recommended.
However, two oral cholera vaccines that provide high-level protection for several months against cholera caused by *Vibrio cholerae 01* have recently become available.
No country requires the proof of cholera vaccination.

**What can you do to avoid cholera?**

Taking a few basic precautions when travelling is enough to prevent cholera and most other food and water-born diseases.
The main rule is: be always aware of the quality of what you eat & drink!
See *"Diet"*, page 8.

## *K. Poliomyelitis*

Polio is a highly contagious childhood disease, mainly affecting children under 5 years of age, although it has repercussions throughout a person's adult life. The poliovirus spreads from person to person through the faecal-oral route (ingestion of contaminated water and food) or through the respiratory system (infected air droplets and saliva). The incubation period (before symptoms show up) can be anywhere from 3 to 35 days, but a person is usually infectious between 7 days before and 10 days after the appearance of symptoms.

The difficulty with diagnosing polio is that some people do not exhibit symptoms or mild cases where patients suffer from headaches, fever, vomiting, neck and back pain, and extremities, including lethargy, are misdiagnosed for another illness. In severe cases (1 in 200 people), the virus attacks the central nervous system and patients see their muscles weakening, have difficulty controlling their movements, and become paralyzed.

However, if you are travelling to endemic areas or where polio is still a risk, you may need additional protection (one booster as an adult). Other prevention methods include washing your hands, eating well cooked foods and drinking bottled water or purifying your water (tablets,

purifier). Avoid crowded areas and places with poor sanitation.

**Risk of poliomyelitis is present in the following countries:**

| | | |
|---|---|---|
| Afghanistan | Equatorial Guinea | Nepal |
| Angola | Eritrea | Niger |
| Armenia | Ethiopia | Nigeria |
| Azerbaijan | Gabon | Pakistan |
| Bangladesh | Gambia | Russia |
| Benin | Georgia | Rwanda |
| Bhutan | Ghana | Senegal |
| Burkina Faso | Guinea | Sierra Leone |
| Burundi | Guinea-Bissau | Somalia |
| Cameroon | India | South Sudan |
| Central African Republic | Iran | Sudan |
| Chad | Kazakhstan | Tajikistan |
| China | Kenya | Tanzania |
| Congo-Democratic Republic | Kyrgyzstan | Togo |
| Congo - Republic | Liberia | Turkmenistan |
| Côte d'Ivoire | Mali | Uganda |
| Djibouti | Mauritania | Uzbekistan |
| | | Zambia |

Entry requirements: Saudi Arabia requests poliomyelitis vaccination.

## *L. Women adaptation in the tropical environment*

Increasing numbers of women have become participants in both vocational and recreational expeditions to remote areas for extended intervals of time.
Safe participation by women in tropical areas requires careful evaluation of gynaecologic health before departure.
In both women of reproductive age and postmenopausal women, particular attention should be directed toward preventing dangerous uterine bleeding and steps should be taken to avoid the dangers of pregnancy.
With the use of these precautions, women will be at no greater risk then men.

In the context of their exquisitely sensitive neuroendocrine system, women demonstrate more dramatic adaptation to physically and psychologically stressful situations with consequent variety of menstrual cycle abnormalities.
Menstrual cycle disturbances are more common during wilderness expeditions.

For a woman planning an expedition who is not currently using a hormonal contraceptive, the oral contraceptive pill is the agent of choice. 6-month trial before the expedition is possible. The trial is recommended to identify subjects susceptible to abnormal uterine bleeding and it serves to prevent early pregnancy just before or during the trip.

**Emergency contraception**
Two 0,75 mg tablets of levonorgestrel.
Dosage: take the first 0,75 mg levonorgestrel tablet as soon as possible after coitus and the second 12 hours after the first. Some Medical Letter consultants recommend taking both tablets at once within 72 hours after unprotected intercourse (effectiveness 98.5%).
Adverse effects: nausea and vomiting occur with levonorgestrel alone, but less frequently than with the oestrogen-progestin combination. Headache, abdominal pain and breast tenderness can occur.

All women who are sexually active should have a test for early **pregnancy** detection before an expedition.
*Nota bene*, pregnancy is not a contraindication to involvement in an expedition, provided the foetus is at least 8 weeks' gestational age (pregnancies earlier than 8 weeks carry a 25% chance of

miscarriage and may pose an unacceptably high risk of serious haemorrhage if travel is in remote areas) and clearly demonstrated by ultrasonographic examination to be intrauterine.

**Oestrogen supplementation in postmenopausal women** to maintain bone strength is frequent. Menses reliably occurs during the last few days of each calendar month with oestrogen and progestin administration in menopausal women and in the case of remote travel this is optimal treatment.
A variety of other schedules have been proposed for maintenance of bone strength. During this time bleeding may occur at irregular and unpredictable times. They are therefore less well suited to women on vigorous journeys remote from medical care.

*Vaginitis* generally is easily managed in wilderness settings, provided the medical kit includes an antifungal agent and metronidazole.

The association of menstrual blood with attacks by sharks has been suggested but has not been established. Swimming in shark – infested waters should always be considered dangerous. In particular, any open wound should be considered a risk factor for shark attack. Sharks can detect blood in water when concentrations are as low as one part per million.
Anyway the odour of menstrual blood may attract a variety of animals. Appropriate hygiene is enhanced by placing used tampons or sanitary napkins in sealed plastic bags.

Medicines specific to women's health see ***Basic Medical Kit for Personal Use.***

## *M. Heat-Related Illness & Prevention Guidelines*

Exposure to high ambient temperature without efficient heat loss may lead to heat cramps, heatstroke, or heat exhaustion. Acute (e.g. 3 to 4 hours of strenuous effort) or prolonged exposure to heat (e.g. 10 – 12 days) with excessive sweating uncompensated by fluid intake leads to dehydration. Associated vomiting and diarrhoea aggravate the situation.
Evaporation is the most important source of heat loss. It depends on relative humidity: the higher is the humidity, the less efficient is the heat loss.

**Heat exhaustion**

Excessive fluid and electrolyte loss due to sweating, resulting in hypovolaemia and electrolyte imbalance.
Heat exhaustion occurs in individuals who sweat profusely.
Early symptoms are often unrecognised: headache, confusion, drowsiness, nausea, and moderately elevated temperature. Heat cramps are a frequent complication.
Treatment: the victim should be removed from direct sunlight. Body temperature may be lowered by a variety of means (sprinkling with water and fanning).
Oral rehydration can be instituted with cold water.

**Heatstroke**

Inadequacy or failure of heat loss mechanisms resulting in dangerous hyperpyrexia.
In these patients body temperature is greater than 41°C or 105.8°F, loss of consciousness and cessation of sweating.
Heatstroke is a medical emergency. Rapid reduction of elevated body temperature is the keystone of management of heatstroke. The patient should be evacuated to an emergency medical facility.

**Heat cramps**

Exercise - induced cramps of striated muscle resulting from excessive fluid intake without sodium replacement.
Heat cramps occur in persons not acclimatized to hot, dry climates after exercise at temperatures > 38° C (> 100à F) when fluid lost through excessive sweating are replaced only by water. The result is a relative loss of sodium, potassium, and magnesium. Onset is abrupt and the muscles of

extremities are affected first. In most instances, heat cramps are prevented and rapidly relieved by drinking fluids containing sodium chloride.

The following guidelines should be considered to **prevent heat-related illness**:

1. Acclimation: on initial exposure to a hot environment, workouts should be moderate in intensity and duration for 7 days.
2. Avoid alcohol and certain drugs (e.g.: anticholinergics, antihistamines, phenothiazines).
3. Wear lightweight, light-coloured cotton clothing and a wide-brimmed hat.
4. Maintain adequate hydration. The individual should be well hydrated before beginning physical activity in the heat. Heat cramps tend to occur when large amounts of water are ingested without adequate salt replacement. Oral rehydration salts (ORS) when added to 1L of disinfected water provide an ideal balance for replacing lost electrolytes. Mild cases may be treated orally with salt solutions (¼ to ½ teaspoon table salt dissolved in a quart of water).

## *N. "Sun Poisoning"*

**Ultraviolet radiation** (UVR)

Solar radiation intensity varies substantially according to many factors, including time of day, altitude, latitude, and season. 80% of ultraviolet radiation delivered to the earth's surface reaches the ground between 9 AM and 3 PM.

UVR intensity increases 4% to 5% for every 300 m ascended. Closer to the equator the path the energy travels is also shorter, leading to more intense flux on the ground.
Radiation is reflected efficiently by snow, ice, sand, and water surfaces. In areas with little air pollution and low humidity such as the desert, a higher proportion of the UVR comes from sunlight. UVR penetrates well-hydrated skin up to four times as effectively as it does dry skin.

**Erythema**

The most familiar manifestation of UVR exposure begins 2 to 8 hours after exposure and reaches a maximum in 24 – 36 hours. Depending on the area involved, severe sunburn can cause the systemic symptoms of "sun poisoning" including fever, nausea, vomiting, severe headache, prostration, pruritus, herpes and even shock.
No truly effective therapies for the acute symptoms of sunburn have been developed. Herpes can be prevented with acyclovir tabs 800 mg/day. Cool compresses, frequent cool showers and lotions containing menthol may provide significant symptomatic relief.
The use of teabags, calamine, aloe, talcum powder, corticosteroids, has not been demonstrated to provide any additional benefits.
Oral analgesics (aspirin, ibuprofen) are usually sufficient.
When administered early in the course of sunburn, anti-prostaglandins such as non-steroidal anti-inflammatory drugs are helpful in reducing erythema.
The eyes are extremely sensitive to UVR overexposure. Sunburn like reaction of the cornea and conjunctiva is termed "snow blindness".

**Sun screening agents**

Sunscreen is essential in open areas.
Recently developed micronized titanium dioxide preparations provide an excellent option within the class of sunscreens.
Micronized titanium dioxide is cosmetically acceptable, chemically stable and does not cause any photo allergic or contact dermatitis.
Sunscreens designated "waterproof" retain their full sun protection factor rating for longer periods during sweating or water immersion than do products designated "water resistant".
Oral agents for sun screening purposes: they are convenient and provide coverage for the entire body. Included in the list of these products are: antihistamines, aspirin, indomethacin, retinol, ascorbic acid, vitamins A and E, corticosteroids, antimalarials.
If sunscreen and *DEET* are used together, the repellent should be applied first to avoid decreasing the effectiveness of the sunscreen.

## *O. Basic Medical Kit for Personal Use*

### Basic Medical Kit for Personal Use

1. **Antimalarial**, for prophylaxis
2. **Antimalarial**, for stand-by treatment
3. **Ciprofloxacin**, caps 500 mg
4. **Cream** (containing *betamethasone* + *neomycine*)
5. **Eye drops** (containing *dexamethasone* + *neomycine*)
6. **Insect repellent**, lotion or spray (DEET – *N, N-dietilthyl-meta-toluamide* 33.5 g %)
7. **Isoconazole**, vag. supp. 600 mg
8. **Metronidazole**, tab 250 mg
9. **Non-steroidal anti-inflammatory agents (NSAID)**
10. **ORS** (Oral Rehydration Salts)
11. **Paracetamol**, tab 500 mg
12. **Povidone iodine**
13. **Sunscreen**
14. **Alcohol-based hand rub**
15. **Aquatabs®** (tabs of sodium dichloroisocyanurate, different dosages)

During your stay in an international airport we suggest you to buy in a pharmacy one of the following

**Stand-by malaria treatment**:

| | |
|---|---|
| **Arsucam**® tab | (*artesunate* 50 mg + *amodiaquine* 153 mg) |
| **Arsumax**® tab | (*artesunate* 50 mg) |
| **Artequin**® tab[1] | (*artesunate* 200 mg +*mefloquine* 250 mg) |
| **Coartem**® tab | (*artemether* 20 mg + *lumefantrine* 120 mg) |
| **Coarsucam**® tab | (*artemisinin* 25 mg + *amino-4-quinolones* 67,5 mg) |
| **Halfan**® tab | (*halofantrine hydrochloride* 250 mg) |
| **Malarone**® tab | (*proguanile hydrochloride* 100 mg + *atovaquone*250 mg) |

[1] First line treatment.

| | Instructions for use | Dosage | Precautions for use |
|---|---|---|---|
| ad 1 | See *Chemoprophylaxis*, Box 3, pg. 17 – 18 | | |
| ad 2 | See *Chemoprophylaxis*, Box 3, pg. 17 - 18 | | |
| ad 3 | This antibiotic is active against numerous pathogenic agents responsible for respiratory, intestinal, urologic infections. | 2 tabs of 500 mg, every 12 hours a day for 4-5 days. The treatment should be continued for 5 days. If the patient vomits within 1 hour after administration, repeat the full dose. | In case of allergic reaction (cutaneous rash, erythema, urticaria) stop the drug. It may provoke photosensibilisation. |
| ad 4 | Cream containing a cortisone derivative (anti-inflammatory action) associated with an antibiotic. Can be used for minor skin infections (e.g. after insect bites). | 1-2 times a day apply a thin layer.<br>May be covered with a protective dressing. | This cream must never be applied to the conjunctiva of the eyes and to skin eruptions of viral origin (herpes). |
| ad 5 | Eye drops for conjunctivitis. | Some drops 2 times a day for 7 days. | |
| ad 6 | Insect repellent.<br>To repel biting pests such as mosquitoes and ticks, including ticks that may carry Lyme disease. Available to the public in a variety of liquids, lotions, sprays, and impregnated materials (e.g., wrist bands). Formulations registered for direct application to human skin contain from 4 to 100% DEET. | For direct application to human skin to repel insects, rather than kill them. | Do not apply over cuts, wounds, or irritated skin.<br>Do not apply to hands or near eyes and mouth of young children.<br>Do not allow young children to apply this product.<br>Use just enough repellent to cover exposed skin and/or clothing.<br>Avoid over-application of this product.<br>After returning indoors, wash treated skin with soap and water.<br>Wash treated clothing before wearing it again.<br>Use of this product may cause skin reactions in rare cases.<br>Do not spray in enclosed areas.<br>To apply to face, spray on hands first and then rub on face. Do not spray directly onto face. |
| ad 7 | Isoconazole vaginal suppositories to treat yeast infections. | One shot treatment. | |
| ad 8 | Excellent for treating giardiasis, acute amoebic dysentery, Trichomonas vaginalis. | Emergency treatment for:<br>Giardiasis: 1 tab 3×/day for 7 days<br>Amoebic dysentery: 3tabs 3×/day for 10 days<br>Trichomonas vaginalis: 8 tabs single dose. | Avoid alcohol. |
| ad 9 | For mild to moderate pain from such problems as menstrual cramps, elevated body temperature. | 1–2 tabs every 12 hours. | Take the drug after a meal. |
| ad 11 | Antalgic – antipyretic drug, used for the symptomatic treatment of painful and/or febrile diseases. | 1–2 tabs (500 mg) every 6h or 8h or 12 hours a day, according to clinical response.<br>For treatment of severe pain, ***paracetamol*** may be used in combination with a ***non-steroidal anti-inflammatory agent***. | In case of allergic reaction (cutaneous rash, erythema, urticaria) stop the drug. |
| ad 12 | Antiseptic and disinfectant for skin, mucous membranes and wounds. | Avoid repeated use on large surfaces. | Minimum contact of 1 minute is recommended. |
| Ad 13 | “Waterproof” sunscreen. | | Sunscreens designated “waterproof” are essential in open areas and retain their full sun protection factor rating for longer periods during sweating or water immersion. |
| Ad 14 | Alcohol-based hand rub | Apply always before too sit down at the table. | |

# 3. Coming back from the tropics

Keep in mind that most of the illnesses that occur **within 1 year** and especially **within 3 months** after the return from malarious areas, are malaria infections even if all recommended precautions against malaria have been taken. Travellers that develop malaria symptoms (fever, shivering, sweating, headache, pains, see page …) should see **a doctor** immediately and say they've been exposed to malaria risk.
Considering that each area requires a specific regimen and that there is a continuous development of resistant strains, **self-medication should be avoided**.

Urgent medical attention is required if fever (> 38°C, 100.4°F) develops after return from malarious areas and the condition of the patient is getting worse.

**See *Guidelines for Expatriate Staff*, Annex 2.**
**You can find some advice for your doctor!**

# 4. Appendix

Table 1: **Calculating the quantity of Sodium hypochlorite (*) needed for water disinfection**

**Tab. 1**

| Emergency Water Potabilization (10 litres) with different solutions of Sodium hypochlorite (1 - 3,6 - 5%) at required concentrations (from 10 to 200 ppm) | | | |
|---|---|---|---|
| Required concentration of Sodium hypochlorite (ppm) | Commercial Formulations with different percent of $AvCl_2$ | | |
| | **1%** solution in mL | **12° chl. (3,6%)** *eau de Javelle* in mL | **5%** solution in mL |
| 10 | 1 | 0,3 | 0,2 |
| 100 | 10 | 3 | 2 |
| 200 | 20 | 6 | 4 |

We usually suggest lower concentrations of sodium hypochlorite for clear water disinfection, but we must increase the concentration up to 100 ppm or 200 ppm, if a certain level of water contamination is suspected.

(*) Commercial formulations with various % of available chlorine

- *Chlorinated lime* or *Calcium hypochlorite* - $Ca(OCl)_2$ – [bleaching powder], 30-50%
- *Stabilized / tropical*, 25%
- *Sodium hypochlorite* solution – NaOCl – [household liquid laundry bleach], up to 5%
- *Javelle water*– NaOCl – [liquid laundry bleach], about 3%
- *Commercial sodium hypochlorite* solution, up to 12-17%
- *High test hypochlorite*, powder or granular (HTH), 70%
- *Sodium dichloroisocyanurate* (syn.: *Sodium dichloro-s-triazinetrione*, *Sodium troclosene*) - NaDCC – [tabs], 50-60%.

Table 2: **Calculating the Sodium dichloroisocyanurate (Aquatabs®) dosages needed for water disinfection**

**Tab. 2**

| **«AQUATABS»** *Sodium dichloroisocyanurate* (NaDCC) | | | | | |
|---|---|---|---|---|---|
| Strip-packed product (shelf-life: 5 years) | | | | | |
| **«Every day»** usage clear water | | | **«Emergency»** usage dirty/faecally contaminated water | | |
| Dosage: 2 mg/L AvCl (2 ppm) Dirty-looking water: double dosage | | | Dosage: 4-6 mg/L AvCl (4-6 ppm) | | |
| NaDCC content per 1 tablet | AvCl content per 1 tablet | Volume (in L) of water treated per 1 tablet | NaDCC content per 1 tablet | AvCl content per 1 tablet | Volume (in L) of water treated per 1 tablet |
| **3,5 mg** | 2 mg | 1 | **8,5 mg** | 5 mg | 1 |
| **17 mg** | 10 mg | 5 | **17 mg** | 10 mg | 2 |
| | | | **33 mg** | 20 mg | 4-5 |
| **67 mg** | 40 mg | 20 | **67 mg** | 40 mg | 8-10 |
| | | | **167 mg** | 100 mg | 20-25 |
| **500 mg** | 300 mg | 150 | | | |
| Tablets packed into tubs (shelf-life: 3 years) | | | | | |
| **1,67 g** | 1.000 mg | 500 | **1,67 g** | 1.000 mg | 200[2] |
| **8,68 g** | 5.000 mg | 2.500 | **8,68 g** | 5.000 mg | 1.000-1.250 |

[2] To treat smaller quantities: prepare first a 1.000 ppm available chlorine solution dissolving 1 (one) tablet in 1 litre of water; then add 5 mL of this solution per litre water to be disinfected (using for instance a syringe).

Table 3**: World Immunization Chart**

From IAMAT (International Association for Medical Assistance to Travellers), Canada, 67 Mowat avenue, Suite 036, Toronto, ON M6K 3E3.

## World Immunization Chart

**2011 EDITION**

| | |
|---|---|
| Afghanistan | **Y6δ, V4: RI, PO3, HA8, TF8**<br>SV: C9, HB36, PL13, RA16 |
| Albania | **Y6γ, V4: RI, HA8, TF8**<br>SV: HB36 |
| Algeria | **Y6γ, V4: RI, HA8, TF8**<br>SV: RA16 |
| American Samoa | **V4: RI, HA8, TF8**<br>SV: HB36 |
| Andorra | **V1, RI** |
| Angola | **Y5γ, V4: RI, PO3, HA8, TF8**<br>SV: C9, HB36, PL13, RA16 |
| Anguilla | **Y6γ, RI** |
| Antigua and Barbuda | **Y6γ, RI** |
| Argentina | **Y14, V4: RI, HA7, TF7**<br>SV: RA16 |
| Armenia | **V2: RI, PO3, HA8, TF8**<br>SV: HB36, PL13, RA16 |
| Australia | **Y6γ, 30, 22, RI**<br>SV: HB24, JE37 |
| Austria | **V1, RI**<br>SV: TBE20 |
| Azerbaijan | **V2: RI, PO3, HA8, TF8**<br>SV: HB36, PL13, RA16 |
| Azores | **V1, RI** |
| Bahamas | **Y6γ, RI** |
| Bahrain | **Y6γ, V4: RI, HA8, TF8** |
| Bangladesh | **Y6γ, V4: RI, PO3, HA8, TF8, RA16**<br>SV: HB36, JE37 |
| Barbados | **Y6γ, 47, RI** |
| Belarus | **V2: RI, HA7, TF7**<br>SV: TBE20, RA16 |
| Belgium | **V1, RI** |
| Belize | **Y6γ, V4: RI, HA8, TF8**<br>SV: RA16 |
| Benin | **Y5γ, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Bermuda | **V1, RI** |
| Bhutan | **Y6δ, V4: RI, PO3, HA8, TF8**<br>SV: HB36, RA16 |
| Bolivia | **Y6γ, 41, V4: RI, HA8, TF8**<br>SV: PL13, RA16 |
| Bosnia and Herzegovina | **V1, RI** |
| Botswana | **Y6γ, V4: RI, HA8, TF8**<br>SV: C9, HB36, PL13, RA16 |
| Brazil | **Y35, V4: RI, HA7, TF7**<br>SV: PL13, RA16 |
| Brunei Darussalam | **Y6γ, 30, V4: RI, HA8, TF8**<br>SV: HB36, JE37 |
| Bulgaria | **V2: RI, HA8, TF8**<br>SV: HB36 |
| Burkina Faso | **Y5γ, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Burundi | **Y5γ, V4: RI, PO3, HA8, TF8**<br>SV: C9, HB36, RA16 |
| Cambodia | **Y6γ, V4: RI, HA8, TF8**<br>SV: C9, JE37, PL13, RA16 |
| Cameroon | **Y5γ, V4: RI, HA8, M29, PO3, TF8**<br>SV: C9, HB36, RA16 |
| Canada | **V1, RI**<br>SV: HB25, L18 |
| Canary Islands | **V1, RI** |
| Cape Verde | **Y6γ, V4: RI, HA8, TF8**<br>SV: HB36 |
| Cayman Islands | **V1, RI** |
| Central African Republic | **Y5γ, V4: RI, PO3, HA8, M29, TF8**<br>SV: HB36, RA16 |
| Chad | **Y6δ, 8ε, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Chile | **V2: RI, HA7, TF7** |
| China – Mainland | **Y6β, V4: RI, HA8, TF8**<br>SV: C9, HB36, JE37, PL13, RA16, TBE20, PO52 |
| – Macao | **V2: RI, HA8, TF8**<br>SV: HB36 |
| – Hong Kong | **V2: RI, HA8, TF8**<br>SV: HB36 |
| – Taiwan | **V2: RI, HA8, TF8**<br>SV: HB36, JE37 |
| Christmas Island | **Y6γ, 30, 22, RI** |
| Colombia | **Y38, V2: RI, HA8, TF8**<br>SV: RA16 |
| Comoros | **V2: RI, HA8, TF8**<br>SV: HB36 |
| Congo (Republic of) | **Y5γ, V4: RI, PO3, HA8, TF8**<br>SV: C9, HB36, RA16 |
| Congo, Dem. Rep. | **Y5γ, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, PL13, RA16 |
| Cook Islands | **V2: RI, HA8**<br>SV: HB36 |
| Costa Rica | **Y6β, 42, V4: RI, HA8, TF7**<br>SV: RA16 |
| Côte d'Ivoire | **Y5γ, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Croatia | **V1, RI**<br>SV: TBE20 |
| Cuba | **V1, RI** |
| Cyprus | **V2: RI, HA7**<br>SV: HB36 |
| Czech Republic | **V1, RI**<br>SV: TBE20 |
| Denmark | **V1, RI** |
| Djibouti | **Y6γ, V4: RI, PO3, HA8, TF8**<br>SV: HB36, RA16 |
| Dominica | **Y6γ, RI** |
| Dominican Republic | **V2: RI, HA8, TF7**<br>SV: HB36 |
| Ecuador | **Y6γ, 10, V4: RI, HA8, TF8**<br>SV: PL13, RA16 |
| Egypt | **Y6γ, 31, V4: RI, HA8, TF8**<br>SV: HB36, RA16 |
| El Salvador | **Y6γ, V4: RI, HA8, TF8**<br>SV: RA16 |
| Equatorial Guinea | **Y6δ, 8ε, V4: RI, PO3, HA8, TF8**<br>SV: HB36, RA16 |
| Eritrea | **Y6δ, 48, V4: RI, PO3, HA8, M29, TF8**<br>SV: HB36, RA16 |
| Estonia | **V1, RI**<br>SV: TBE20 |
| Ethiopia | **Y6γ, 49, 8ε, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Falkland Islands | **V1, RI** |
| Faroe Islands | **V1, RI** |
| Fiji | **Y6γ, V4: RI, HA8, TF8**<br>SV: HB36 |
| Finland | **V1, RI**<br>SV: TBE20 |
| France | **V1, RI** |
| French Guiana | **Y5γ, V4: RI, HA8, TF8** |

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|---|---|
| French Polynesia | **V2: RI, HA8, TF8**<br>SV: HB36 |
| Gabon | **Y5γ, V4: RI, PO3, HA8, TF8**<br>SV: HB36, RA16 |
| Gambia | **Y6γ, 8ε, V4: RI, PO3, HA8, M29, TF8**<br>SV: HB36, RA16 |
| Georgia | **V2: RI, PO3, HA8, TF8**<br>SV: HB36, PL13, RA16 |
| Germany | **V1, RI**<br>SV: TBE20 |
| Ghana | **Y5β, V4: RI, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Gibraltar | **V1, RI** |
| Greece | **V1, RI**<br>SV: HB36 |
| Greenland | **V1, RI**<br>SV: HB26 |
| Grenada | **Y6γ, RI** |
| Guadeloupe | **Y6γ, RI** |
| Guam | **V2: RI**<br>SV: HB36, JE37 |
| Guatemala | **Y6γ, V4: RI, HA8, TF8**<br>SV: RA16 |
| Guinea | **Y6γ, 8ε, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Guinea-Bissau | **Y5γ, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Guyana | **Y6γ, 8ε, 44, V4: RI, HA8, TF8** |
| Haiti | **Y6δ, V4: RI, HA8, TF8**<br>SV: C9, HB36, RA16 |
| Honduras | **Y6γ, V4: RI, HA8, TF8**<br>SV: RA16 |
| Hungary | **V1, RI**<br>SV: TBE20 |
| Iceland | **V1, RI** |
| India | **Y6β, 45, V4: RI, PO3, HA8, TF8, RA16**<br>SV: C9, HB36, JE37, PL13 |
| Indonesia | **Y6β, V4: RI, HA8, TF8**<br>SV: HB36, JE37, PL13, RA16 |
| Iran | **Y6δ, V2: RI, PO3, HA8, TF8**<br>SV: C9, HB36, PL13, RA16 |
| Iraq | **Y6δ, V4: RI, HA8, TF8**<br>SV: C9, HB36, PL13, RA16 |
| Ireland | **V1, RI** |
| Israel | **V1, RI** |
| Italy | **V1, RI** |
| Jamaica | **Y6γ, RI** |
| Japan | **V1, RI**<br>SV: JE37 |
| Jordan | **Y6γ, V4: RI, HA8, TF8**<br>SV: HB36, RA16 |
| Kazakhstan | **Y6δ, V4: RI, PO3, HA8, TF8**<br>SV: HB36, PL13, RA16 |
| Kenya | **Y6γ, 50, 8ε, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, PL13, RA16 |
| Kiribati | **Y6γ, V4: RI, HA8, TF8**<br>SV: HB36 |
| Korea, North | **Y6γ, V2: RI, HA8, TF8**<br>SV: HB36, JE37, RA16 |
| Korea, South | **V2: RI, HA8, TF8**<br>SV: HB36, JE37, RA16 |
| Kuwait | **V2: RI, HA8, TF8** |
| Kyrgyzstan | **V2: RI, PO3, HA8, TF8**<br>SV: HB36, RA16 |
| Laos | **Y6δ, V4: RI, HA8, TF8**<br>SV: HB36, JE37, PL13, RA16 |
| Latvia | **V1, RI**<br>SV: TBE20 |
| Lebanon | **Y6α, V4: RI, HA8, TF8**<br>SV: HB36 |
| Lesotho | **Y6β, V4: RI, HA8, TF8**<br>SV: HB36, PL13, RA16 |
| Liberia | **Y5γ, V4: RI, PO3, HA8, TF8**<br>SV: C9, HB36, RA16 |
| Libya | **Y6δ, V4: RI, HA8, TF8**<br>SV: PL13, RA16 |
| Liechtenstein | **V1, RI**<br>SV: TBE20 |
| Lithuania | **V1, RI**<br>SV: TBE20 |
| Luxembourg | **V1, RI** |
| Macedonia | **V1, RI** |
| Madagascar | **Y6δ, V4: RI, HA8, TF8**<br>SV: C9, HB36, PL13, RA16 |
| Madeira Islands | **V1, RI** |
| Malawi | **Y6γ, V4: RI, HA8, TF8**<br>SV: C9, HB36, PL13, RA16 |
| Malaysia | **Y6γ, V4: RI, HA8, TF8**<br>SV: C9, HB36, JE37 |
| Maldives | **Y6γ, V4: RI, HA8, TF8** |
| Mali | **Y5γ, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Malta | **Y6β, 19, RI** |
| Marshall Islands | **V2: RI, HA8, TF8**<br>SV: HB36 |
| Martinique | **Y6γ, RI** |
| Mauritania | **Y6γ, 8ε, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Mauritius | **Y6γ, RI** |
| Mayotte & French Territorial Islands | **V2: RI, HA8, TF8**<br>SV: HB36 |
| Mexico | **V2: RI, HA8, TF7**<br>SV: RA16 |
| Micronesia, Federated States | **V2: RI, HA8** |
| Moldova | **V2: RI, HA8, TF8** |
| Monaco | **V1, RI** |
| Mongolia | **V2: RI, HA8, TF8**<br>SV: HB36, PL13, RA16 |
| Montenegro | **V1, RI** |
| Montserrat | **Y6γ, RI** |
| Morocco | **V2: RI, HA8, TF8**<br>SV: RA16 |
| Mozambique | **Y6γ, V4: RI, HA8, TF8**<br>SV: C9, HB36, PL13, RA16 |
| Myanmar (Burma) | **Y6δ, 12, V4: RI, HA8, TF8**<br>SV: HB36, JE37, PL13, RA16 |
| Namibia | **Y6δ, 11, 33, V4: RI, HA8, TF8**<br>SV: C9, HB36, PL13, RA16 |
| Nauru | **Y6γ, V4: RI, HA8, TF8**<br>SV: HB36 |
| Nepal | **Y6δ, V4: RI, PO3, HA8, TF8**<br>SV: C9, HB36, JE37, PL13, RA16 |
| Netherlands | **V1, RI** |
| Netherlands Antilles | **Y6α, RI** |
| New Caledonia | **Y6γ, V4: RI, HA8, TF8**<br>SV: HB36 |
| New Zealand | **V1, RI**<br>SV: HB23 |
| Nicaragua | **Y6γ, V4: RI, HA8, TF8**<br>SV: RA16 |
| Niger | **Y5γ, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Nigeria | **Y6γ, 8ε, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Niue | **Y6β, V4: RI, HA8, TF8**<br>SV: HB36 |
| Northern Mariana Islands | **V2: RI, HA8**<br>SV: HB36 |
| Norway | **V1, RI**<br>SV: TBE20 |
| Oman | **Y6γ, V4: RI, HA8, TF8**<br>SV: HB36, RA16 |
| Pakistan | **Y6δ, 32ε, V4: RI, PO3, HA8, TF8, RA16**<br>SV: C9, HB36, JE37, PL13 |
| Palau | **V2: RI, HA8**<br>SV: HB36 |
| Panama | **Y6δ, 34, V4: RI, HA8, TF8**<br>SV: RA16 |
| Papua New Guinea | **Y6γ, V4: RI, HA8, TF8**<br>SV: C9, HB36, JE37 |
| Paraguay | **Y6γ, 15, V4: RI, HA8, TF8**<br>SV: RA16 |
| Peru | **Y21, V4: RI, HA8, TF8**<br>SV: PL13, RA16 |
| Philippines | **Y6γ, V4: RI, HA8, TF8**<br>SV: HB36, JE37, RA16 |
| Pitcairn Island | **Y6γ, RI** |
| Poland | **V1, RI**<br>SV: TBE20 |
| Portugal | **V1, RI** |
| Puerto Rico | **V1, RI** |
| Qatar | **V2: RI, HA8, TF8**<br>SV: HB36 |
| Réunion | **Y6γ, RI, HA8 TF8** |
| Romania | **V2: RI, HA8, TF8**<br>SV: HB36, TBE20, RA16 |
| Russia | **Y6β, V4: RI, PO3, HA8, TF8**<br>SV: JE37, TBE20, RA16 |
| Rwanda | **Y5γ, V4: RI, PO3, HA8, TF8**<br>SV: C9, HB36, RA16 |
| Saint Helena | **Y6γ, RI** |
| St. Kitts and Nevis | **Y6γ, RI** |
| Saint Lucia | **Y6γ, RI** |
| Saint Pierre and Miquelon | **V1, RI** |
| Saint Vincent and the Grenadines | **Y6γ, RI** |
| Samoa | **Y6γ, V4: RI, HA8, TF8**<br>SV: HB36 |
| San Marino | **V1, RI** |
| São Tomé and Principe | **Y5γ, V4: RI, HA8, TF8**<br>SV: HB36 |
| Saudi Arabia | **Y6δ, V4: RI, PO46, HA8, M39, TF8**<br>SV: HB36, RA16 |
| Senegal | **Y6β, 8ε, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Serbia | **V1, R1** |
| Seychelles | **Y6γ, V4: RI, HA8, TF8** |
| Sierra Leone | **Y5δ, V4: RI, PO3, HA8, TF8**<br>SV: C9, HB36, RA16 |
| Singapore | **Y6γ, 30, RI**<br>SV: HB36, JE37 |
| Slovakia | **V1, RI**<br>SV: TBE20 |
| Slovenia | **V1, RI**<br>SV: TBE20 |
| Solomon Islands | **Y6δ, V4: RI, HA8, TF8**<br>SV: HB36 |
| Somalia | **Y6δ, 51, V4: RI, HA8, PO3, TF8**<br>SV: C9, HB36, RA16 |
| South Africa | **Y6γ, 53, V4: RI, HA7, TF7**<br>SV: C9, PL13, RA16 |
| South Sudan | **Y6β, 17, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Spain | **V1, RI** |
| Sri Lanka | **Y6γ, V4: RI, HA8, TF8**<br>SV: HB36, JE37, RA16 |
| Sudan | **Y6β, 17, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Suriname | **Y6γ, 8ε, V4: RI, HA8, TF8**<br>SV: RA16 |

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| Swaziland | **Y6δ, V4: RI, HA8, TF8**<br>SV: C9, HB36, RA16 |
| Sweden | **V1, RI**<br>SV: TBE20 |
| Switzerland | **V1, RI**<br>SV: TBE20 |
| Syria | **Y6α, V4: RI, HA8, TF8**<br>SV: HB36, PL13, RA16 |
| Tajikistan | **V2: RI, PO3, HA8, TF8**<br>SV: HB36, RA16 |
| Tanzania | **Y6γ, V4: RI, PO3, HA8, TF8**<br>SV: C9, HB36, PL13, RA16 |
| Thailand | **Y6β, V4: RI, HA8, TF8**<br>SV: C9, HB36, JE37, RA16 |
| Timor Leste (East Timor) | **Y6γ, V2: RI, HA8, TF8**<br>SV: JE37 |
| Togo | **Y5γ, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, RA16 |
| Tokelau | **V2: RI, HA8**<br>SV: HB36 |
| Tonga | **V2: RI, HA8**<br>SV: HB36 |
| Trinidad and Tobago | **Y6γ, 43, RI** |
| Tunisia | **Y6γ, V4: RI, HA8, TF8**<br>SV: RA16 |
| Turkey | **V2: RI, HA8, TF8**<br>SV: HB36, RA16 |
| Turkmenistan | **V2: RI, PO3, HA8, TF8**<br>SV: HB36, PL13, RA16 |
| Turks and Caicos | **Y6γ, RI** |
| Tuvalu | **V2: RI, HA8**<br>SV: HB36 |
| Uganda | **Y6γ, 8ε, V4: RI, PO3, HA8, M29, TF8**<br>SV: C9, HB36, PL13, RA16 |
| Ukraine | **V2: RI, HA7, TF7** |
| United Arab Emirates | **V2: RI, HA8, TF8**<br>SV: HB36, RA16 |
| United Kingdom | **V1, RI** |
| United States of America | **V1, RI**<br>SV: HB27, L18, PL13 |
| Uruguay | **Y6δ, V4: RI, HA7, TF7** |
| Uzbekistan | **V2: RI, PO3, HA8, TF8**<br>SV: HB36, RA16 |
| Vanuatu | **V2: RI, HA8, TF8**<br>SV: HB36 |
| Venezuela | **Y40, V2: RI, HA7, TF7**<br>SV: HB28, RA16 |
| Vietnam | **Y6γ, V4: RI, HA8, TF8**<br>SV: C9, HB36, JE37, PL13, RA16 |
| Virgin Islands – British | **V1, RI** |
| Virgin Islands – U.S.A. | **V1, RI** |
| Wake Island | **V1, RI** |
| Yemen | **Y6γ, V4: RI, HA8, TF8**<br>SV: C9, HB36, RA16 |
| Zambia | **V2: RI, PO3, HA8, TF8**<br>SV: C9, HB36, PL13, RA16 |
| Zimbabwe | **Y6δ, V4: RI, HA8, TF8**<br>SV: C9, HB36, PL13, RA16 |

## Immunization Code

**C** = Cholera
**HA** = Viral hepatitis A (immune globulin or vaccine)
**HB** = Viral Hepatitis B
**JE** = Japanese encephalitis
**L** = Lyme disease
**M** = Meningococcal meningitis
**PL** = Plague
**PO** = Poliomyelitis
**RA** = Rabies
**RI*** = Routine Immunizations
**SV** = Selective vaccination/s (These apply only to specific groups of travellers or persons on specific working assignments).
**T** = Louse-borne typhus
**TBE** = Tick-borne encephalitis (central European encephalitis)
**TF** = Typhoid fever
**V** = Vaccination/s
**Y** = Yellow fever

α = A vaccination certificate is required for children over six months of age. †
β = A vaccination certificate is required for children over nine months of age.
γ = A vaccination certificate is required for children over one year of age.
δ = A vaccination certificate is required for children of all ages. †
ε = Vaccination is not advised for children under 9 months of age.

† Yellow Fever vaccination is not recommended for children under nine months of age. If travel is unavoidable and the child's physician considers vaccination unwise, ask for a certificate on the physician's own stationary stating the child's age being less than one year as a contraindication to vaccination. Although this is in accordance with World Health Organization resolutions, some countries may not honour such a certificate and the infant may be put under surveillance upon arrival.

*** Your trip is a good occasion for a reminder to keep your routine immunizations updated; more than 80% of adults in developed countries have not maintained their immunization status. The following vaccinations are recommended for your protection and to prevent the spread of infectious diseases.**

**HEPATITIS A**: All travellers should be vaccinated against this food and water transmitted world-wide occurring viral disease. An anti-HAV antibody test is advised for persons born before 1945 or in developing countries to determine immunity.

**HEPATITIS B:** This vaccine is now given routinely as a childhood immunization. Unvaccinated frequent travellers should receive this vaccine, possibly in combination with hepatitis A. The combined vaccine (3 doses) affords excellent long term protection for both viral diseases.

**TETANUS-DIPHTHERIA** (Tetanus-Diphtheria toxoids, adult type) booster, given in a single injection, is recommended for all adult travellers and children over seven years of age, regardless of destination. A primary series is required for those not previously vaccinated. (Boosters: every ten years).

**POLIOMYELITIS:** booster is recommended for all travellers to areas where Polio has not been eradicated: Afghanistan, India, Nigeria and Pakistan. A booster is also recommended for travellers to countries who reported cases of imported Polio: Angola, Armenia, Azerbaijan, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, China (Xinjiang Uyghur Autonomous Region only) Congo, Cote d'Ivoire, Democratic Republic of Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Georgia, Ghana, Guinea, Guinea-Bissau, Iran, Kenya, Kazakhstan, Kyrgyzstan, Liberia, Mali, Mauritania, Nepal, Niger, Russia, Rwanda, Senegal, Sierra Leone, Somalia, South Sudan, Sudan, Tajikistan, Tanzania, Togo, Turkmenistan, Uganda, Uzbekistan, and Zambia. A primary series is necessary for those not previously or only partially vaccinated. Adults who have been fully vaccinated as children should receive a polio booster once only.

**MEASLES** vaccine is not required for persons born before 1963, who are regarded as immune as a result of previous illness or clinically inapparent infections when the organism circulated freely among the population before the advent of the vaccine. Unvaccinated adolescents and young adults with no documented history of measles infection should be vaccinated, since mass vaccination in the US, Canada and some other countries, interrupting transmission of the organism, makes them susceptible to the disease. If such persons become infected overseas, upon return they may cause outbreaks in schools, on University campuses and in other congregational places. Persons immunized before 1980 should receive a booster before travelling to developing countries.

**MUMPS** vaccine is indicated for adolescents and children approaching puberty. Adults born before 1957, can be considered immune as a result of previous illness or clinically inapparent infections acquired when the virus was widely circulating among the population before the availability of the vaccine. Unvaccinated adults should receive the vaccine if they are travelling to under-developed areas.

**RUBELLA** vaccine is recommended for women of child-bearing age who are not immune (after blood testing for rubella antibodies) provided they are not pregnant. Women who are vaccinated under these conditions should be advised not to become pregnant for the 30 days following vaccination.

**INFLUENZA** vaccine is recommended yearly for persons over 50 years of age, and for those of any age suffering from chronic heart disease, emphysema, asthma, renal disorders, organ transplant recipients and immunosuppressed patients. Flu seasonal patterns in the Southern hemisphere are opposite to the Northern patterns, therefore, if the vaccine is not available for a traveller, influenza anti-viral drugs may be an option for high risk travellers.

**PNEUMOCOCCAL** vaccine is recommended, one time only, for the groups described above, since pneumonia, ear infections, or meningitis are more severe in such cases.

**INFANTS AND CHILDREN** must follow the recommended immunization schedule for diphtheria, tetanus, pertussis, poliomyelitis, measles, mumps, rubella and haemophilus B, meningitis, varicella and viral hepatitis B.

*The recommendations for immunizations outlined in this document are intended as guidelines only. Your immunization needs depend on your health status, previous immunizations received, and your travel itinerary. Seek further advice from your physician or travel health clinic.*

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1 = No vaccinations are required to enter this country.

2 = No vaccinations are required to enter this country. The vaccinations listed for this country are recommended for the traveller's protection.

3 = A poliomyelitis booster is indicated for this country (see RI*).

4 = The following vaccination/s listed for this country is/are recommended for the traveller's protection.

5 = A vaccination certificate is required on arrival from **all** countries. The vaccination requirement is imposed by this country for protection against Yellow Fever since the principal mosquito vector *Aëdes aegypti* is present in its territory.

*If your medical practitioner has advised you against the Yellow Fever vaccine for medical reasons, a vaccination waiver should be issued. Be aware that problems may arise when crossing borders and your vaccination waiver may not be honoured.*

6 = A vaccination certificate is required **only** for travellers coming from, or in transit through, infected countries. The vaccination requirement is imposed by this country for protection against the introduction of Yellow Fever since the vector *Aëdes aegypti* is present in its territory.

The following countries are considered infected:

**AFRICA** – Angola, Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Republic of the Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Mali, Mauritania, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Sudan, Togo, Uganda.

Eritrea, São Tomé and Principe, Somalia, Tanzania, and Zambia have low risk of Yellow Fever transmission and vaccination is not recommended depending on your trip itinerary and health status. Despite these new recommendations this country may still require proof of vaccination if you are coming from, or are in transit through these countries.

**AMERICAS** – Argentina, Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago, Venezuela.

*If your medical practitioner has advised you against the Yellow Fever vaccine for medical reasons, a vaccination waiver should be issued. Be aware that problems may arise when crossing borders and your vaccination waiver may not be honoured.*

7 = Vaccination is recommended when going outside the areas usually visited by tourists such as travelling extensively in the interior of the country (trekkers, hikers) and for persons on working assignments in remote areas.

8 = Vaccination is highly recommended for all travellers, for your own protection.

9 = Although Cholera is active in parts of this country, the risk of infection to travellers is low and vaccination is advised only for medical and rescue personnel working in endemic areas.

The best protection is to avoid potentially contaminated water and food. See IAMAT's 24 World Climate and Food Safety Charts describing the sanitary condition of water, dairy products, and food in 1440 cities. Meticulous food and water hygiene are essential when travelling in endemic areas.

Persons living and working in inadequate sanitary conditions and those with impaired defence mechanisms (deficient production of gastric acid due to surgery for duodenal or gastric ulcers), persons on antacid therapy, and users of cannabis (smoking marijuana reduces acid secretion of the stomach) are more susceptible to cholera infection. The World Health Organization announced in 1991 that Cholera vaccination certificates are no longer required by any country or territory.

10 = IAMAT recommends Yellow Fever vaccination for all travellers over 9 months of age travelling at altitudes below 2300m / 7546ft to the Amazonian provinces of Orellana, Morona Santiago, Napo, Pastaza, Sucumbíos, and Zamora-Chinchipe.

The provinces of Esmeraldas, Guayas, Manabí, Los Ríos and low lying areas of the provinces of Azuay, Bolívar, Cañar, Carchi, Chimborazo, Cotopaxi, El Oro, Imbabura, Loja, Pichincha, Santa Elena, Santo Domingo de los Tsachilas, and Tungurahua have low risk of Yellow Fever transmission. Vaccination is not recommended for these areas depending on your trip itinerary, mode of transportation, and current health status. Take meticulous anti-mosquito bite measures during the daytime.

The cities of Quito and Guayaquil, and the Galapagos Islands are risk free.

Ecuadorian nationals and residents must have a certificate prior to departure for an area with risk of Yellow Fever transmission.

11 = Travellers on scheduled airlines whose flights have originated, or are in transit, from areas considered infected are not required to possess a certificate provided they have remained at the scheduled airport or in the adjacent town during transit.

12 = Nationals and residents leaving this country are required to have a vaccination certificate on their departure to a Yellow Fever risk area.

13 = Most travellers are not at risk from the Plague, however, persons who may be occupationally exposed to wild rodents (anthropologists, archeologists, geologists, spelunkers) or hunters, hikers, and campers in endemic areas must avoid contact with rodents. Plague is mostly a zoonotic bacterial infection of rodents caused by *Yersinia pestis* and is transmitted to humans and animals through bites by infected fleas. Person to person infection can occur through respiratory secretions. Rapid diagnosis and treatment with antibiotics is imperative since untreated infection has a high mortality rate. The Plague vaccine is no longer commercially available. Geographical distribution of risk for each country is listed below.

**Afghanistan:** A small area of risk is present in the extreme northeastern part of Afghanistan.

**Angola:** Areas of risk are present in the southern part of Angola along the border with Namibia (middle third).

**Armenia:** Areas of risk are scattered throughout Armenia.

**Azerbaijan:** Areas of risk are scattered throughout Azerbaijan.

**Bolivia:** Risk is present along the border with Peru (middle third) north of Lake Titicaca (province of La Paz) and the Cordillera Oriental between the provinces of Cochabamba and Santa Cruz.

**Botswana:** Risk is present in the northern part of the country. An outbreak was reported in the district of Boteti.

**Brazil:** risk is present in the northeastern part of Brazil in the states of Bahia, Ceará, and Paraíba. Localized risk is present in the area of Redonda (southern part of Minas Gerais).

**Cambodia:** Areas of risk are scattered throughout Cambodia.

**China:** Risk is present in the following provinces: Xinjiang, Heilongjiang, Jilin, the eastern part of Qinghai, the southern part of Gansu, Hunan and Jiangxi.

**Congo, Dem. Rep.:** areas of risk are present in the northeastern part of the country in the areas of Mts. Bleus (Haute Zaire) and Mts. Mitumba (Kivu). An outbreak occurred recently in the region of Ituri (Haute Zaire) around the towns of Bunia and Magagi.

**Ecuador:** known areas of risk are present in the southern part of the country in Loya province.

**Georgia:** Areas of risk are scattered throughout Georgia.

**India:** Known areas of risk are present in the states of Himachal Pradesh, the northern part of Uttar Pradesh, and the northwestern part of Tamil Nadu. Outbreaks have also occurred in the city of Surat in Gujarat and in Beed District in Maharashtra.

**Indonesia:** Risk is present on the island of Java, south of Surakarta.

**Iran:** Known areas of risk are present in the northwest of the country in the region around Manjil where the Talish Mountains meet the Elburz Mountains.

**Iraq:** Known areas of risk are present in the eastern part of Iraq, with a major focus of activity around Khanaqin.

**Kazakhstan:** Risk is present in the region of Gur'Yev on the northern shore of the Caspian Sea and in the Taldy Kurgan region south of Lake Balkash.

**Laos:** In recent years plague has been identified in Laos. No official details have been made available.

**Kenya:** Risk is present around Nairobi, the district of Machakos (Eastern Province), the region southward to the border with Tanzania, including the areas of Amboseli and Tsavo National Parks.

**Lesotho:** Risk is present in the western half of Lesotho.

**Libya:** Risk is present in the areas around Tobruk (northeastern part of the country) and in the areas around Sidra.

**Madagascar:** Areas of risk are present in the central highlands. Outbreaks have been reported from the provinces of Antananarivo, Antsiranana, Fianarantosa, Mahajanga and Toamasina.

**Malawi:** Risk is present along the border with Mozambique, Nsanje, Chikwawa and Ntchisi districts.

**Mongolia:** Areas of risk are scattered throughout Mongolia and outbreaks have occurred in the districts of Bayanhongor, Bayan-Olgiy, Govialtay and Dzavhan.

**Mozambique:** Known areas of risk are present in the north of the country: Niassa, Tete and Zambezia provinces. Outbreaks have occurred in Mutarara district (Tete) and in Murumbala district (Zambezia).

**Myanmar:** Outbreaks have been reported from the districts of Magway, Mandalay and Sagaing in central Myanmar.

**Namibia:** Known areas of risk are present in the north (Etosha national park) and along the eastern border with Botswana and South Africa.

**Nepal:** Risk is present in the western part of the country.

**Pakistan:** Risk is present in northern Kashmir.

**Peru:** Risk is present in northern part of Peru in the Department of Cajamarca (Chota, San Miguel, and San Pablo provinces), La Libertad, Lambayecque, Piura (Ayabaca, Huancabamba, Piura provinces), and Ancash (southern part).

**South Africa:** Known areas of risk are present along the northern and western border with Lesotho and in the Mountain Zebra National Park north of Port Elizabeth.

**Syria:** Known areas of risk are present in the northern and eastern parts of Syria bordering Iraq.

**Tanzania:** Known areas of risk are present south of Lake Victoria (provinces of Shinyanga and Tabora) and along the eastern part of the border with Kenya (including Kilimanjaro area). Outbreaks have been reported from Lushoto and Tanga districts (Tanga Province).

**Turkmenistan:** A large focus of risk is present in the area east of the Caspian Sea.

**Uganda:** Areas of risk are present along the border with the Democratic Republic of the Congo and Sudan. Outbreaks have occurred in Nebbi District of Western Region, Aurua District of Northern Region, and Masindi District (near Lake Albert).

**USA:** Known areas of risk are present in remote areas of Arizona (northeastern part), California (all areas bordering Nevada from Lake Tahoe to the Mexican border), Colorado (the central part of the state with scattered areas in the south bordering New Mexico), Idaho (areas bordering the southern part of western Montana and areas bordering Wyoming), Montana (southwest part), Nevada (northeastern part), New Mexico (the entire state), Oregon (all areas bordering California and Idaho), Texas (areas extending from the city of Lubbock to the border with New Mexico), Utah (scattered areas in the central and southern parts of the state), Washington (central and eastern parts of the state), Wyoming (the southern half and in the north around the Big Horn Mountains).

**Vietnam:** Risk is present in the central provinces from Da Nang and Qiang Nam extending south to Lam Dong province. Outbreaks have occurred in G.A. Lai, Kon T.m., Lam Dong, and Phu-Khan provinces.

**Zambia:** Risk is present in the district of Namwala (Southern Province). The towns of Katengwa, Makobo, Chilala, and Kabulamwanda have reported outbreaks.

**Zimbabwe:** Risk is present in the western part of the country where outbreaks have occurred in the Lupane and Nkayi districts north of Bulawayo.

14 = IAMAT recommends Yellow Fever vaccination for all travellers over 9 months of age travelling at altitudes below 2300m / 7546ft in the province of Corrientes (departments of Berón de Astrada, Capital, General Alvear, General Paz, Ituzaingó, Itatí, Paso de los Libres, San Cosme, San Martín, San Miguel, Santo Tomé) and any department in the province of Misiones. This recommendation also includes visits to Iguaçu Falls.

The provinces of Jujuy (departments of Ledesma, Santa Bárbara, San Pedro, and Valle Grande), Chaco (department of Bermejo), Salta (departments of Anta, General San Martín, Orán, and Rivadavia), and any department in the province of Formosa have low risk of Yellow Fever transmission. Vaccination is not recommended for these areas depending on your trip itinerary, mode of transportation, and current health status. Take meticulous anti-mosquito bite measures during the daytime.

15 = IAMAT recommends Yellow Fever vaccination for all travellers over 9 months of age visiting rural and forested areas, including Iguaçu Falls.

Asunción has low risk of Yellow Fever transmission. Vaccination is not recommended depending on your trip itinerary, mode of transportation, and current health status. Take meticulous anti-mosquito bite measures during the daytime.

16 = In this country, where Rabies is a constant threat, the pre-exposure rabies vaccination (3 shots) is advised for persons planning an extended stay or on working assignments. Although this provides adequate initial protection, a person bitten by a potentially rabid animal will require 2 additional post-exposure inoculations. Children should be cautioned not to pet dogs, cats or other mammals. Any animal bite or scratch must be washed repeatedly with copious amounts of soap and water. Seek medical attention immediately.

17 = A vaccination certificate may be required from travellers leaving Sudan since part of the country is in the Yellow Fever endemic zone.

IAMAT recommends Yellow Fever vaccination for travellers over 9 months of age, especially those travelling *south of* 15°N latitude and south of the city of Khartoum.

18 = Persons who have been bitten by a tick in a Lyme disease endemic area should seek medical attention. Studies have shown that a one time dose of 200mg doxycycline (adult dose) administered within 72 hours after exposure to the tick can prevent the development of the disease. Persons working in agricultural and forestry professions, or hiking and camping in high risk should use clothing treated with permethrin solution (available from Sawyer Products, Safety Harbour, FL 34695-0188). Use anti-tick measures such as longs pants tucked into socks or boots, insecticidal sprays and daily checks for ticks when engaged in outdoor activities. **High risk areas in Canada**: Populations of infected ticks are established in parts of southern Ontario, the southeastern corner of Manitoba, areas along the south shore of Nova Scotia and in British Columbia. Lyme disease does not seem to be very prevalent in Canada. The disease is often concentrated in specific regions that have large populations of deer or other wildlife. **High risk areas in U.S.A.:** Lyme disease has been reported from all continental states, except Alaska. High risk states are Connecticut, Delaware, District of Columbia, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Wisconsin. States with moderate to high risk are Arkansas, Indiana, Iowa, Kansas, Kentucky, Mississippi, Missouri, North Carolina, Oklahoma, Oregon, Virginia, West Virginia, Wyoming.
See www.iamat.org for risk in Europe.

19 = If indicated on epidemiological grounds, children under nine months of age coming from infected areas are subject to surveillance or isolation.

20 = Vaccination is recommended for persons involved in recreational activities in forested areas (camping, hiking) or working in forestry occupations. Risk season: March to November.
**Austria:** Risk is present in all forested areas of southern, eastern, and northern Austria (areas around Klagenfurt, Graz, Wiener Neustadt, Vienna, and Linz, extending to the border with Germany along the Danube River).
**Belarus:** Risk is present in all forested areas bordering Poland.
**China:** Risk is present in Heilongjiang province.
**Croatia:** Risk is present in the forested areas north and east of Zagreb, extending to the borders with Slovenia and Hungary.
**Czech Republic:** Risk is present in forested areas south and west of Prague, north of Brno, and the areas west of Plzen (Pilsen).
**Estonia:** Risk is present in all wooded and forested areas with high risk along the Gulf of Finland, the southern border areas with Latvia and a large belt along the shores of Lake Peipus.
**Finland:** Risk is present in forested areas along the coast of the Gulf of Finland from Kotka to the border with Russia, and all the islands south of Turku, including the Åland islands.
**Germany:** Risk is present in forested areas around Karlsruhe, Pforzheim, Stuttgart, Tübingen, and in areas around Regensburg extending south to Landshut and to Passau on the border with Austria. Risk is also present in forested areas south of Rostock and Schwerin, west of Frankfurt an der Oder, west of Erfurt including the areas of Gotha and Eisenach, as well as the areas around Dresden and Zwickau.
**Hungary:** Risk is present in forested areas extending from the Austrian border east to the outskirts of Budapest.
**Latvia:** Risk is present in all wooded and forested areas of Latvia, including city parks.
**Liechtenstein:** Risk is present in the area of Vaduz.
**Lithuania:** Risk is present in the areas bordering Poland.
**Norway:** Scattered areas of risk are present around Bergen.
**Poland:** Risk is present in the northern part of the country extending from the forested areas around Gdansk south and eastward to the Russian border, including the areas around Bialystock. Other areas of risk include forested lands around Warsaw, Lodz, and Lukow, and along the border with the Czech Republic and Slovakia south of Wroclaw.
**Romania:** Risk is present in forested areas in the western part of Romania.
**Russia:** Risk is present in the western parts bordering Poland (Kaliningrad province) and throughout Siberia. The infection is also known as Russian Far Eastern Encephalitis.
**Slovakia:** Note: Risk is present in all western and southern regions of Slovakia. A focus of risk is also present in the area of Povazská Bystrica.
**Slovenia:** Risk is present in all forested areas of Slovenia.
**Sweden:** Risk is present in an approximately 100km deep coastal strip extending from the area of Uppsala southwards to Kristianstad, including the archipelago around Stockholm and the islands of Gotland and Öland. Infection is also present in the wooded areas around Götenborg.
**Switzerland:** Known areas of risk are present in the following cantons: Schaffhausen (Hallau, Osterfingen, Stein am Rhein), Zürich (Unteres, Glattal, Eglisau, Elfikon am Rhein, Ossingen, Rehinau, Horgen), Graubünden (Grüsch, Seewis, Landquart), Bern (Erlenbach, Thun, Steffisburg, Spiez, Grosses Moos, Belp), and Luzern (Dagmersellen, Nebikon, Egolzwil and Santenberg area).

21 = IAMAT recommends Yellow Fever vaccination for all travellers over 9 months of age going to rural areas of Peru, especially jungle areas below 2300m / 7546ft in the Amazon Basin.
The regions of Lambayeque, Tumbes, and only the highlands areas (situated below 2300m / 7546ft) in Cajamarca and Piura have low risk of Yellow Fever transmission. Vaccination is not recommended for these areas depending on your trip itinerary, mode of transportation, and current health status. Take meticulous anti-mosquito bite measures during the daytime.
Travellers only visiting Machu Picchu, the Inca Trail, and the city of Cuzco do not need to be vaccinated. The regions of Lima, Callao, Ica, Arequipa, Moquegua, and Tacna are also risk free.

22 = A Yellow Fever vaccination certificate is required for travellers coming from from São Tomé and Principe, Somalia, and Tanzania. However, a certificate is not required if coming from the Galapagos Islands in Ecuador or the province of Misiones in Argentina.

23 = Due to the high rate of Hepatitis B carriers among the Maori population, vaccination is recommended for persons working in healthcare, education, or living in close contact with locals. This vaccine is often combined with the Hepatitis A vaccine and affords excellent long term protection for both viral diseases.

24 = Due to the high rate of Hepatitis B carriers among the Aboriginal population in the interior (mainly in the Warburton Creek area of central Australia), vaccination is recommended for persons working in healthcare, education, or living in close contact with locals. This vaccine is often combined with the Hepatitis A vaccine and affords excellent long term protection for both viral diseases.

25 = Due to the high rate of Hepatitis B carriers among the Inuit population in northern Canada, vaccination is recommended for persons working in healthcare, education, or living in close contact locals. This vaccine is often combined with the Hepatitis A vaccine and affords excellent long term protection for both viral diseases.

26 = Due to the high rate of Hepatitis B carriers among the Inuit population, vaccination is recommended for persons working in healthcare, education, or living in close contact with locals. This vaccine is often combined with the Hepatitis A vaccine and affords excellent long term protection for both viral diseases.

27 = Due to the high rate of Hepatitis B carriers among the local indigenous populations of Alaska, vaccination is recommended for persons working in healthcare, education, or living in close contact with locals. This vaccine is often combined with the Hepatitis A vaccine and affords excellent long term protection for both viral diseases.

28 = Due to the high rate of Hepatitis B carriers among the local Indigenous population of western Zulia state (on the border with Colombia) vaccination is recommended for persons working in healthcare, education, or coming in close contact with locals. This vaccine is often combined with the Hepatitis A vaccine and affords excellent long term protection for both viral diseases.

29 = Vaccination is advised for persons travelling extensively or on working assignments in the meningitis belt of Africa's northern Savannah. This semi-arid area extends from the Atlantic to the Red Sea. Peak season for transmission of the infection occurs in March and April.
**Benin:** The entire country is infected.
**Burkina Faso:** The entire country is infected.
**Cameroon:** the northern third of the country is infected.
**Central African Republic:** The northern half of the country is infected.
**Chad:** The southern half of the country is infected.
**Congo, Dem. Republic:** A recent outbreak occurred in this country.
**Côte d'Ivoire:** The northern area bordering Mali and Burkina Faso.
**Eritrea:** Risk is present in the southeastern corner of the country.
**Ethiopia:** The entire country is infected.
**Gambia:** Risk is present in the entire country.
**Ghana:** The areas bordering Burkina Faso are infected.
**Guinea:** The entire country is infected.
**Guinea-Bissau:** The entire country is infected.
**Kenya:** A recent outbreak occurred in this country.
**Mali:** The southern half of the country is infected.
**Mauritania:** Risk is present in the southern third of the country.
**Niger:** The southern third of the country is infected.
**Nigeria:** The northern half of the country is infected.
**Senegal:** The entire country is infected.
**South Sudan:** The entire country is infected.
**Sudan:** The southern two-thirds of the country is infected.
**Togo:** The entire country is infected.
**Uganda:** A recent outbreak occurred in this country.

30 = A vaccination certificate is required from travellers over 1 year of age who have stayed overnight or longer in a country with risk of Yellow Fever transmission within 6 days prior to arrival.

31 = All travellers arriving from Sudan must have a Yellow Fever vaccination certificate or a location certificate issued by a Sudanese official declaring that they did not visit the country south of the 15°N latitude within the last 6 days.

32 = A vaccination certificate is required for children of all ages, but infants under 6 months of age are exempt if the mother's certificate shows that she has been duly vaccinated prior to the birth of the child.

33 = A Yellow Fever vaccination certificate is generally not insisted for children under 1 year of age, however, they may be subject to surveillance.

34 = IAMAT recommends Yellow Fever vaccination for all travellers over 9 months of age going to all mainland areas east of the Canal Zone, including the indigenous regions of Emberá and Kuna Yala.
Panama City, the Canal Zone, and the Balboa and San Blas Islands are risk free.

35 = IAMAT recommends vaccination for all travellers over 9 months of age going to the following states and regions: Acre, Amapá, Amazonas, Federal District of Brasília, including the capital city of Brasília, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Piauí, Rondônia, Roraima, Tocatins, rural areas of the western third of Bahia, western half of São Paulo, the western half of Paraná, the southern part of Santa Caterina, and the central and western parts of Rio Grande do Sul.
The cities of Rio de Janeiro, São Paulo, Fortaleza, Recife, and Salvador are risk free. Vaccination is highly recommended for travellers visiting Iguaçu Falls.

36 = Due to the high rate Hepatitis B carriers in this country, vaccination is recommended for persons on working assignments in the health care field (dentists, physicians, nurses, laboratory technicians), or for those working in close contact with the local population (teachers, aid workers, missionaries), or persons foreseeing sexual relations with locals. This vaccine is often combined with the Hepatitis A vaccine and affords excellent long term protection for both viral diseases.

37 = Vaccination is recommended for persons travelling extensively in rural areas, living and working near rice growing rural and suburban areas, as well as other irrigated land where exposure to mosquitos transmitting the disease is high. Children are especially susceptible to the infection.
**Australia:** Risk is present all year on the Torres Strait Islands and Cape York peninsula.
**Bangladesh:** Sporadic cases are reported throughout Bangladesh. Transmission occurs from July to December.
**Brunei Darussalam:** From the scant data available on the infection in Brunei Darussalam, it is believed that transmission occurs all year as in neighbouring areas.
**Cambodia:** The infection is endemic throughout Cambodia. Transmission most likely occurs from May to October.
**China:** Cases have been reported from all provinces except Xinzang (Tibet), Xinjiang, and Qinghai. Infection is most prevalent in central and eastern China, and is endemic in southern and southeastern China. Occasional outbreaks also have been reported throughout Taiwan. Transmission occurs from May to September in northern China and from April to October in southern China and Taiwan. Children under 15 years of age are at high risk.
**East Timor:** The infection is endemic and transmission occurs all year.
**Guam:** The last outbreak in Guam occurred in 1947/48, and in Saipan in 1990.
**Hong Kong:** Sporadic cases are reported. Period of transmission: all year.
**India:** Infection is present throughout India, however, data is incomplete. Transmission occurs from May to October in Goa; from October to January in Tamil Nadu; from August to December in Karnataka, with a second peak occurring from April to June in Mandya District; from September to December in Andhra Pradesh; and from July to December in northen India. Children under 15 years of age are at high risk.
**Indonesia:** Note: Sporadic cases are reported throughout Indonesia and transmission occurs all year. Children under 15 years of age are at high risk.
**Japan:** Outbreaks occur in western and southern Japan, especially on the islands of Kyáshá and Okinawa. Transmission occurs from

June to October, and on Okinawa from April to December. The elderly are at high risk.

**Korea, North:** Outbreaks happen occasionally and transmission occurs from June to October.

**Korea, South:** Note: The infection is reported from all provinces, especially in the southwest. Transmission occurs from June to October. Children and young adults are at high risk.

**Laos:** The infection is endemic throughout Laos and transmission occurs all year.

**Malaysia:** Sporadic cases are reported throughout Malaysia and transmission occurs all year.

**Myanmar (Burma):** The infection is believed to be endemic and transmission occurs from May to October. Persons of all ages are at high risk.

**Nepal:** The infection is endemic in the southern plains bordering India (Terai Districts) and transmission occurs from June to January. Persons of all ages are at high risk.

**Pakistan:** Reports suggest that risk is present in the lower Indus valley and the Karachi area. Transmission occurs from June to January.

**Papua New Guinea:** Transmission occurs all year.

**Philippines:** Infection is present on all islands. Transmission occurs all year, with peaks from April to January.

**Russia:** Outbreaks occur occasionally in the southeast of Russia between the border with China and the Sea of Japan, with prevalence in the area of Vladivostok. The period of transmission is from June to October.

**Singapore:** Sporadic cases have been reported from the island and transmission occurs all year.

**Sri Lanka:** Sporadic cases occur throughout Sri Lanka with prevalence in the western part of the country. Transmission occurs all year. Children under 15 years of age are at high risk.

**Taiwan:** Occasional outbreaks occur throughout the country. Period of transmission: April to October

**Thailand:** Outbreaks occur mostly in the northern region (Chiang Mai valley) with sporadic cases reported from the areas of Sukhothai, the suburbs of Bangkok and Phitsanulok, as well as from the southern regions of the country. Transmission occurs from May to October in the north and all year in the south.

**Vietnam:** The infection is endemic throughout the country. Transmission occurs from May to October.

38 = IAMAT recommends Yellow Fever vaccination for all travellers over 9 months of age travelling at altitudes below 2300m / 7546ft.

The cities of Baranquilla, Cartagena, Cali, Medellin, the departments of Nariño, Cauca, Valle de Cauca, Chocó (except the municipalities of Acandí, Unguía, Juradó, and Riosucio) have low risk of Yellow Fever transmission. Vaccination is not recommended for these areas depending on your trip itinerary, mode of transportation, and current health status. Take meticulous anti-mosquito bite measures during the daytime.

Bogotá and the municipality of Uribia located in the department of La Guajira are risk free.

39 = All Hajj pilgrims to Mecca and Umra visitors over the age of two years, as well as seasonal workers are required to possess a certificate of vaccination upon arrival issued not more than three years and not less than 10 days before the date of arrival.

Further to the above requirements, persons arriving from countries in the African meningitis belt of Benin, Burkina Faso, Cameroon, Chad, Central African Republic, Côte d'Ivoire, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Mali, Niger, Nigeria, Senegal, South Sudan, and Sudan will be given meningococcal infection prevention medication or injections.

Non-pilgrim travellers may also be asked to show proof of vaccination during the yearly pilgrmage season. Persons without a certificate may be subjected to vaccination upon arrival.

40 = IAMAT recommends Yellow Fever vaccination for all travellers over 9 months of age going outside the areas usually visited by tourists or travelling extensively in the interior of the country (trekkers, hikers, bird watchers), and for persons on working assignments in remote areas.

The states of Aragua, Carabobo, Miranda, Vargas, Yaracuy, and the Distrito Federal have low risk of Yellow Fever transmission. Vaccination is not recommended for these areas depending on your trip itinerary, mode of transportation, and current health status. Take meticulous anti-mosquito bite measures during the daytime.

Vaccination is not recommended if only travelling to the states of Falcon and Lara, the peninsular section of Paez municipality in the state of Zulia, Margarita Island, and the cities of Caracas and Valencia.

41 = IAMAT recommends Yellow Fever vaccination for all travellers over 9 months of age travelling at altitudes below 2300m / 7546ft going to the departments of Beni, Santa Cruz, Pando, and the subtropical areas in the departments of La Paz, Cochabamba, Chuquisaca, and Tarija.

The cities of La Paz and Sucre are risk free.

42 = A Yellow Fever vaccination certificate is not required for travellers coming from Argentina, Panama, and Trinidad and Tobago.

43 = A Yellow Fever vaccination is recommended for all travellers over 9 months of age travelling to the island of Trinidad.

Port of Spain has low risk of Yellow Fever transmission. Vaccination is not recommended depending on your trip itinerary, mode of transportation, and current health status. Take meticulous anti-mosquito bite measures during the daytime.

Tobago is risk free. If you are only travelling to this island, you do not need to be vaccinated.

44 = A Yellow Fever vaccination certificate is not required for travellers coming from Argentina, Paraguay, Suriname, and Trinidad and Tobago.

45 = A vaccination certificate is required for travellers coming from, or in transit through, an infected Yellow Fever area within 6 days prior to arrival. In addition to the Yellow Fever endemic countries listed above (under code 6), India also requires a certificate from travellers coming from Zambia, formerly a Yellow Fever endemic country.

46 = All travellers coming from Afghanistan, Angola, Chad, Democratic Republic of Congo, India, Nigeria, and Pakistan, South Sudan, and Sudan, regardless of age and previous immunization, must show proof of having received one dose of oral polio vaccine (OPV) at least six weeks before departure for Saudi Arabia. These travellers will receive an additional dose at border entry points upon arrival.

All visitors under the age of 15 years coming from countries reporting imported polio cases (Burkina Faso, Côte d'Ivoire, Gabon, Guinea, Kazakhstan, Liberia, Mali, Mauritania, Nepal, Niger, Republic of Congo, Russia, Senegal, Sierra Leone, Somalia, Tajikistan, Turkmenistan, and Uganda) must show proof of having received one dose of oral polio vaccine (OPV) at least six weeks before departure for Saudi Arabia. These travellers will receive an additional dose at border entry points upon arrival.

47 = A Yellow Fever vaccination certificate is not required if coming from Guyana, and Trinidad and Tobago.

48 = The regions of Anseba, Debub (Southern Region), Gash Barka, Maekel (Central Region), and Semenawi Keih Bahri (Northern Red Sea Region) have low potential of Yellow Fever transmission. Take meticulous anti-mosquito bite measures during the daytime.

49 = The provinces of Afar and Somali have low risk of Yellow Fever transmission. Vaccination is not recommended for these areas depending on your trip itinerary, mode of transportation, and current health status. Take meticulous anti-mosquito bite measures during the daytime.

50 = The provinces North Eastern and Coast (districts of Kilifi, Kwale, Lamu, Malindi, and Tana River), as well as Nairobi and Mombasa have low risk of Yellow Fever transmission. Vaccination is not recommended for these areas depending on your trip itinerary, mode of transportation, and current health status. Take meticulous anti-mosquito bite measures during the daytime.

51 = The regions of Bakool, Banaadir, Bay, Galguduud, Gedo, Hiiraan, Lower Juba, Middle Juba, Middle Shabele, and Lower Shabele have low potential of Yellow Fever transmission. Take meticulous anti-mosquito bite measures during the daytime.

52 = Polio vaccination is recommended for Xinjiang Uyghur Autonomous Region.

53 = South Africa requires proof of vaccination from travellers coming from, or are in transit through the following countries with low risk of Yellow Fever transmission: São Tomé and Principe, Somalia, Tanzania, and Zambia.

Table 4**: Malaria free countries**

Albania
Andorra
Antigua Island
Australia
Austria
Azores Islands

Bahamas Islands
Bahrain
Barbados Islands
Belgium
Bermuda Islands
Brunei
Bulgaria

Canada
Canary Islands
Capo Verde
Cayman Islands
Chile
Christmas Islands
Cocos Islands
Cook Islands
Cuba
Cyprus
Czechoslovakia

Denmark
Dominica Island

Falkland Islands
Faroe Islands
Fiji Islands
Finland
France
French Polynesia

Germany
Gibraltar
Greece
Greenland

Grenada Island
Guadeloupe
Guam Island

Hawaii Islands
Hungary

Iceland
Ireland
Israel
Italy

Jamaica
Japan
Jordan

Kiribati (Gilbert Island)
Korea North
Korea South
Kuwait

Lebanon
Lesotho
Liechtenstein
Luxemburg

Macao
Madeira Islands
Malta
Martinique Island
Monaco
Mongolia
Montserrat

Nauru
Netherlands
Netherlands Antilles
New Caledonia Island
New Zealand
Niue Island
Norfolk Island

Norway

Pitcairn Island
Poland
Portugal
Puerto Rico

Qatar

Reunion Island
Romania

St. Christopher and Nevis
St. Helena
St. Lucia
St. Pierre and Miquelon
St. Vincent
Samoa Islands – USA
Samoa Islands – Western
Seychelles Islands
Singapore
Spain
Sweden
Switzerland

Taiwan
Tonga Islands
Trinidad & Tobago Islands
Tunisie
Tuvalu (Ellice Islands)

United Kingdom
United States of America
Uruguay

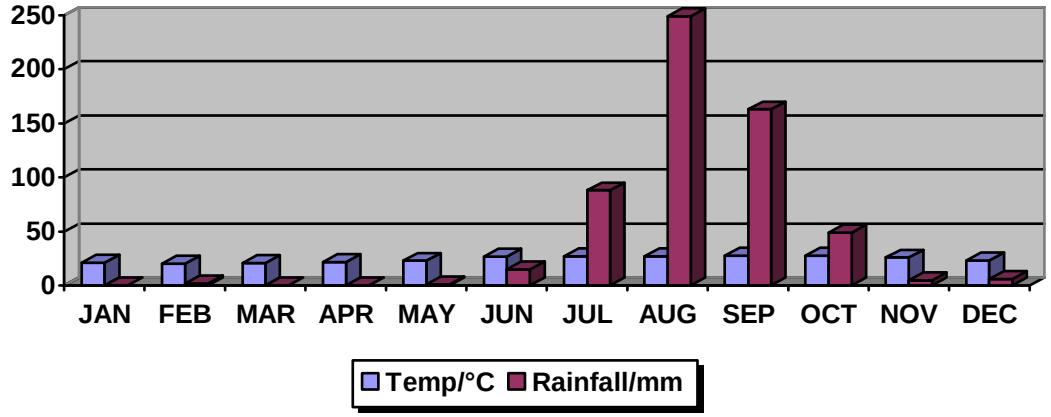
Virgin Islands – British
Virgin Islands – USA

Wake Island

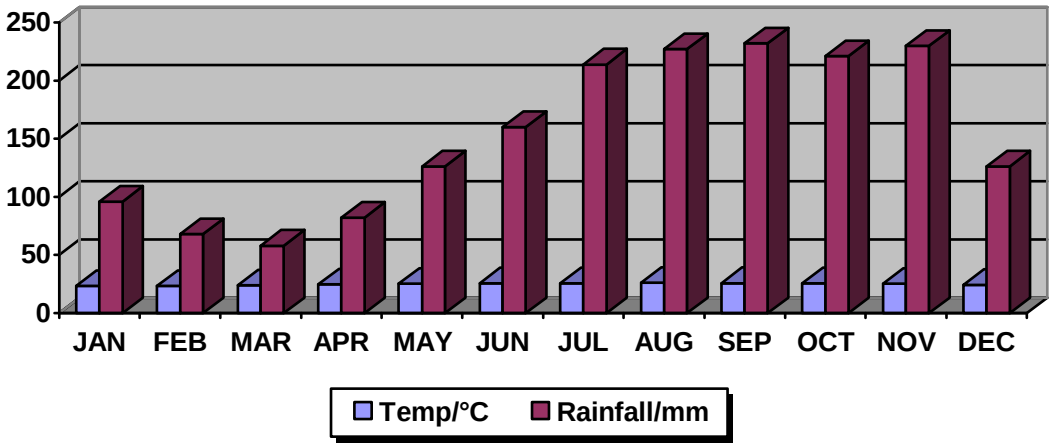
Yugoslavia

Table 5: **Climatological data**

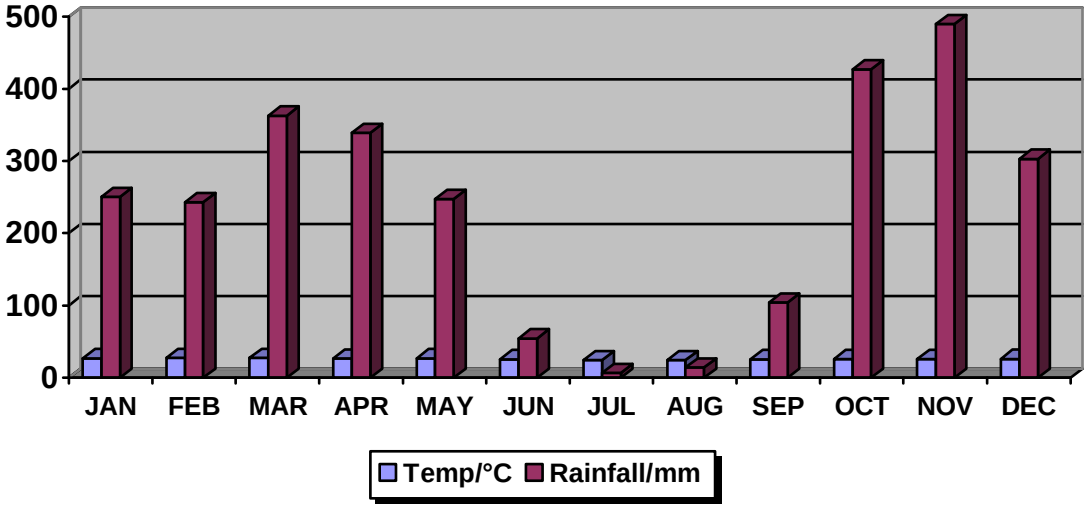
North Africa (Tunis)



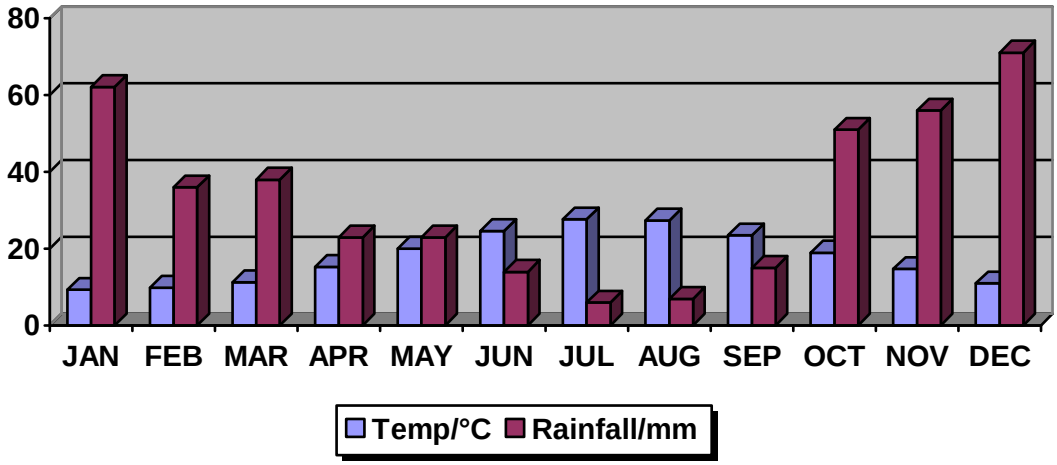

Sub-Saharan Africa (Dakar)



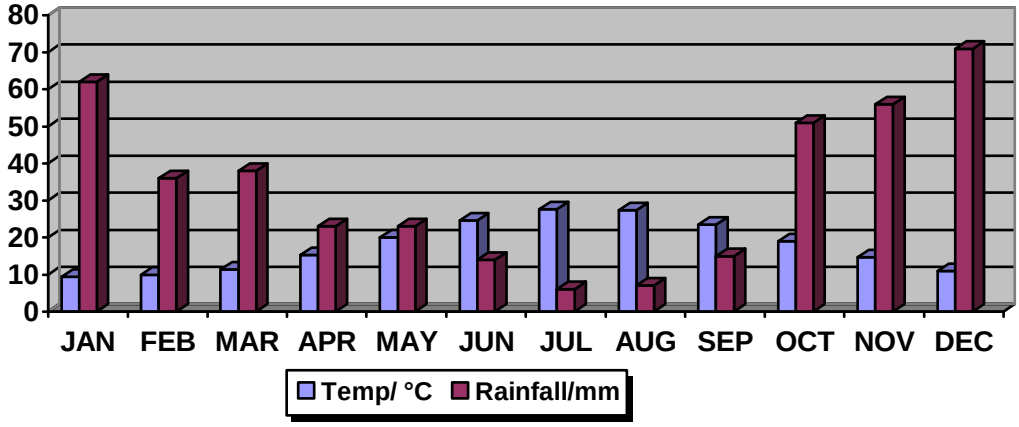

Equatorial Africa (Libreville)



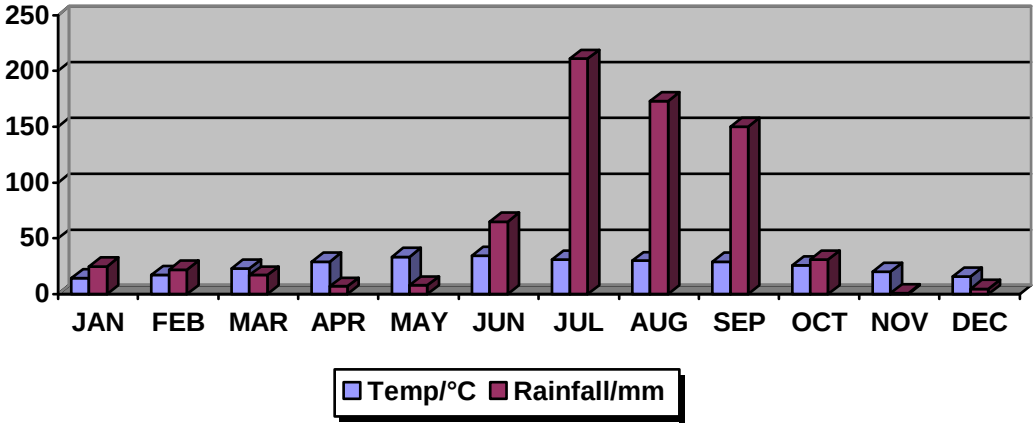
Caribbean (Fort de France)



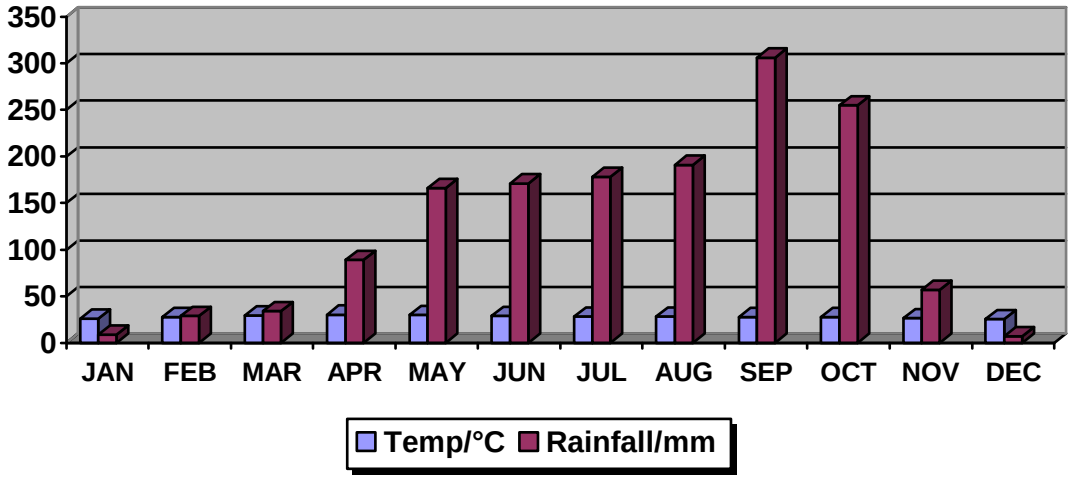

South Europe (Athens)



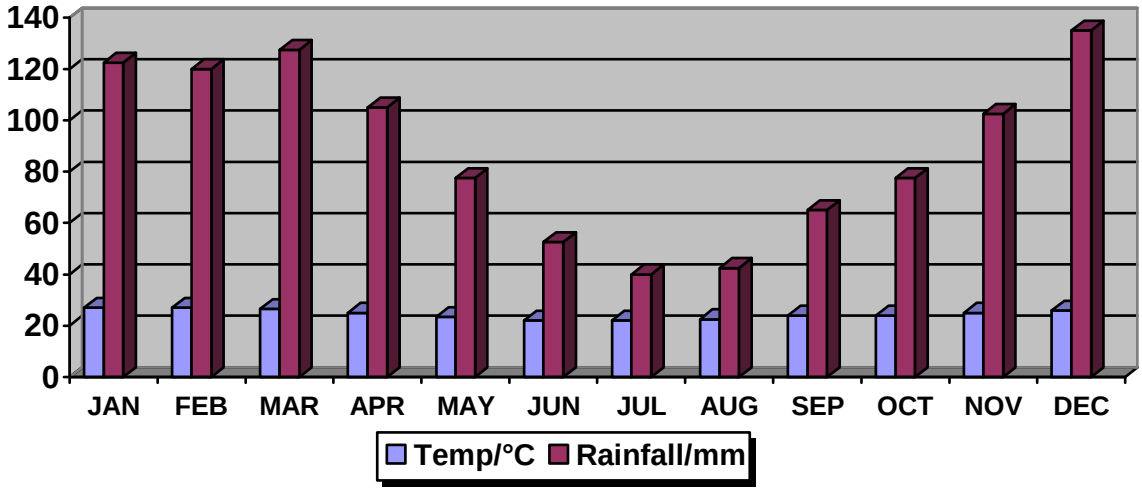

India (New Delhi)



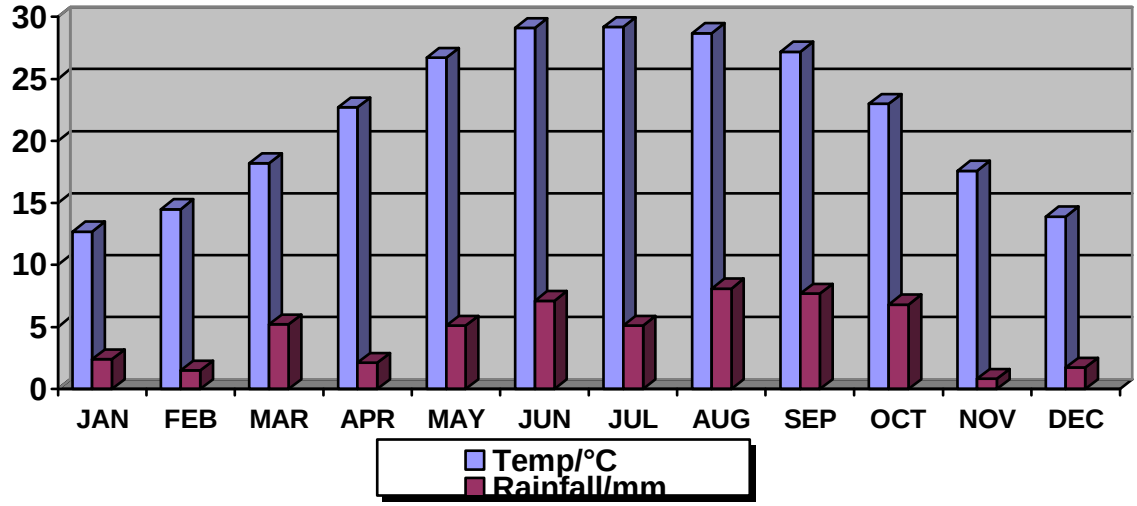
Asia South - East (Bangkok)




South America (Rio)




Algeria (Tamanrasset)



# Notes on

# High Altitude Medicine

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**Text available. Contact the Author.**

*Statement developed by the HEALTH INFORMATION DEPARTMENT of the University Teaching Hospital – LBS, N'Djamena, for medical assistance to travellers September 2000, was amended in November 2011. Advice particularly on malaria prophylaxis & treatment changes frequently. Therefore the HEALTH INFORMATION DEPARTMENT reserves the right to amend this statement in the light of further developments in the field of malaria treatment & prevention when sufficient scientific information becomes available. In any case, this information should not be used after December 30th 2012. A new chart will be sent to travellers, if necessary, at that time. For any additional information you can use the following co-ordinates: e-mail:*
*amsdp@libero.it*
*Comments and contributions are encouraged!*

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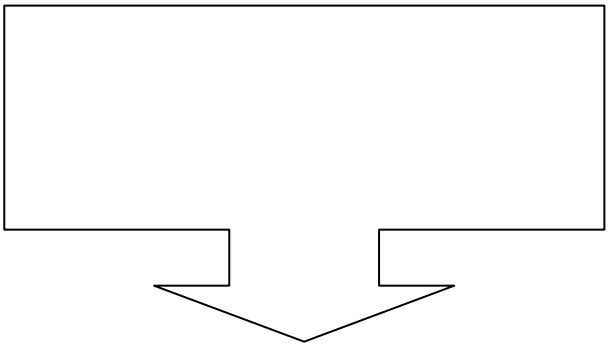
# GUIDELINES FOR EXPATRIATE STAFF

**Annex 1** & **Annex 2**



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*Sector:* human health
*Region:* West Africa Region

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