

PREFACE

It gives me great pleasure to introduce the Travel Health Information Booklet for Travellers within South Africa. As South Africa enters the "Global Village" on trade, investments and tourism, travellers may be exposed to existing and new health risks. It is therefore important that travellers be informed on health risks associated with travel prior to their departure.

The objective of this booklet is to inform travellers of possible health risks associated with travel in South Africa, their presentation and management.

The content deals with pre-travel preparation; important travel related medical conditions, precautions, clinical presentation and management. This travel health information booklet is based on the World Health Organization International Travel and Health guidelines as well as other peer reviewed literature.

It is envisaged that the travel booklet will be a source of useful information for travellers and better prepare travellers whilst travelling within South Africa. In addition to using this booklet, travellers are urged to seek additional medical advice from their clinician or travel clinic prior to departure, following any possible exposure to infectious diseases on return if unwell.



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This material is intended for use by travellers in South Africa. It has been compiled from information currently available, and although the greatest care has been taken the Department of Health does not accept responsibility for errors or omissions. Readers are referred to the reference articles for further information. This travel booklet was issued on 1 March 2004 by the National Department of Health, and replaces all previous travel health booklets.

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1. GENERAL INTRODUCTION


South Africa is one of the most diverse and enchanting countries in the world. Exotic combinations of landscapes, people, history and culture offer a larger-than-life experience for the traveller in search of a truly unique and inspiring experience.

South Africa's vast landscape includes savannahs, snow-covered mountains, forests, tropical swamps, endless beaches, tranquil rivers and bustling urban centres. South Africa is known for its abundant wildlife (and of course the famous "big five") as well as its fantastic birding and eco-tourism possibilities.

However, the real heart of this vibrant country is the diversity of people and cultures. According to

a statistics census taken in 2001 (Census '01), South Africa's population was recorded as 44,8 million people. There are 11 official languages spoken in South Africa, namely: English, Afrikaans, isiNdebele, isiXhosa, isiZulu, Sepedi, Sesotho, Setswana, siSwati, Tshivenda and Xitsonga. However, English is widely spoken in most urban areas of the country.

The Republic of South Africa occupies the southern most part of the African continent, stretching from 22° to 35° S (latitude) and from 17° to 33° E (longitude) and is surrounded by the ocean on three sides - to the west, south and east. Important differences in climate and vegetation between the east and west coasts of South Africa occur. South Africa is renowned for almost seven months of sunshine. From May to August, temperatures drop. However, generally speaking, April and May are the most temperate months. Temperatures above 32°C are fairly common in summer, and frequently exceed 38°C in the lower Orange River valley and the Mpumalanga Lowveld.



South Africa's rainfall is unreliable and unpredictable. Large fluctuations in the average annual figure are the rule rather than the exception in most areas of the country.

The infrastructure in urban areas is well developed with a wide array of shopping centres, entertainment centres, hotels, bed & breakfasts, good road network, good communication and advanced medical services. However, in contrast the infrastructure may not be as well developed in certain rural areas of the country. Access to good health care services is generally available throughout the country. Both private and public medical and emergency rescue facilities are available 24hrs. Blood transfusion services, laboratory services and medical supply outlets are available. Clinics are widely distributed throughout the country with secondary and tertiary facilities being located in most major towns and cities. In urban areas, the quality of food preparation is high with tap water being of high quality and safe to drink. Infectious diseases of the developing world are not a major problem. However, there are several diseases / health risks that the traveller in South Africa may be exposed to and precautions should be taken to minimise

the risk of exposure to these diseases. The diseases / health risks include:

1. Bilharzia (Schistosomiasis)
2. Cholera
3. Hepatitis A and B
4. Malaria
5. Rabies
6. Road and general accidents
7. Sexually transmitted infections
8. Tick bite fever
9. Travellers diarrhoea
10. Tuberculosis (TB)
11. Typhoid

2. PRE-TRAVEL INFORMATION

2.1 INTRODUCTION

The most common travel related disease is traveller's diarrhoea, which is related to what the traveller eats and drinks. The most common potentially life threatening travel related disease is malaria. Travellers understanding the predisposing factors involved and taking the necessary personal protective measures against them can positively influence the risk of acquiring the disease.

2.2 GENERAL

- All travellers should undergo a medical and dental examination prior to departure to exclude or confirm any underlying diseases

- Travellers should be equipped with a first aid kit (See section 2.4)
- Travel may be inadvisable during early or advanced pregnancy due to the potential risk of miscarriage and premature labour. The second trimester is the safer time for travel
- Persons with certain acute or chronic medical conditions e.g. cardiac failure, recent stroke, uncontrolled epilepsy, etc. must consult a doctor and inform the airline prior to flying
- Persons suffering from certain infectious diseases, e.g. active TB, should not fly as they pose a risk to other travellers. If in doubt seek expert advice
- Travel insurance to cover emergencies while abroad is advisable
- It is important to research the area that will be visited prior to travel with regards to potential health risks, specific recommended precautions, available health facilities and useful contact numbers

- Take along a list of useful contact numbers e.g. travel insurance contact number, General Practitioner and next of kin
- Take extra supplies of chronic medication as well as a prescription to cover for unforeseen circumstances, and an additional pair of spectacles in case you lose or break the pair in use
- Pregnant women and children aged under five years should be advised against visiting malaria risk areas

2.3 VACCINATIONS

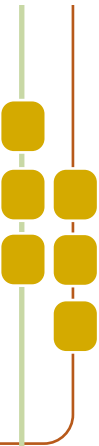
Travellers may be exposed to infectious diseases whilst away from home. Vaccination is one of the methods used for reducing the risk of becoming infected; however, vaccines do not provide 100% protection against disease and travellers must take additional precautions. The protective effect of vaccines takes some time to develop following vaccination and certain vaccines require more than one dose to provide optimal protection, another good reason for seeking professional advice early. As a result, travellers should visit a travel medicine physician or their personal physician 4-6 weeks prior to departure. All

commonly used vaccines can be simultaneously administered at separate sites. However, certain vaccines cause local reactions, which may be more common when several vaccines are administered simultaneously.

Vaccines approved for use in South Africa are generally safe and adverse reactions are uncommon. In South Africa, routine childhood vaccinations include: measles, TB (BCG), polio (OPV), *Haemophilus influenzae B* (Hib), hepatitis B, diphtheria, tetanus and pertussis. These vaccines are administered as part of the Expanded Programme on Immunisation.

2.3.1 Routine vaccines

All travellers to South Africa should ensure that their routine, childhood vaccinations are up to date. Several vaccines, which are routinely administered to children, require periodic booster doses throughout life to maintain an effective level of immunity. It is important that adults seek advice from their doctor and receive the required booster doses prior to their departure. Childhood vaccines that should be up to date include: measles, tetanus (booster every 10



years), pertussis (if less than 7 years of age), Hib (if less than 5 years of age). Vaccination against hepatitis B is recommended for certain travellers. The last confirmed case of polio in South Africa was 1989 and polio is highly unlikely to pose a threat to travellers.

2.3.2 Mandatory vaccines

Yellow fever vaccination is mandatory for travellers to South Africa who are coming from yellow fever endemic countries. There is no local transmission of yellow fever in SA and vaccination is to prevent the importation of the yellow fever virus into the country. Travellers will be required to produce proof of vaccination (valid World Health Organization approved card) upon entry to South Africa if they are coming from or travelled through a yellow fever epidemic area. Those who are unable to produce proof of vaccination will be given the choice of returning home or being quarantined at their own expense for a period of 6 days reckoned from the date of last possible exposure to infection has elapsed. The vaccine is valid for a period of 10 years.

2.3.3 Selective vaccines

- Typhoid fever - vaccination may be considered, although the risk, especially in urban areas, is low.
- Cholera – vaccination is not required legally for entry into South Africa.
- Rabies – pre-exposure rabies vaccination is recommended if travelling to high-risk areas e.g. rural areas.
- Hepatitis A – Vaccination is recommended for non-immune individuals visiting South Africa.
- Hepatitis B: Transmission is by blood products and sexual contact, and vaccination is recommended for ‘at risk’ persons.

TABLE 1: Summary of vaccine/prophylaxis recommendations for travellers within South Africa

See next page

Summary of vaccine/prophylaxis recommendations for travellers within South Africa

Vaccine	Recommended	Mandatory	Optional
Measles/ mumps/ rubella	Yes		
Tetanus	Booster every 10 years		
Diphtheria/ pertussis	For ages <7 years		
Polio			
Hib	For ages < 1 years		
Hepatitis B			For high risk groups: certain occupations and risky sexual behaviour

Vaccine	Recommended	Mandatory	Optional
Yellow fever		Visitors to and from yellow fever endemic areas only	
Typhoid			If visiting rural areas
Cholera	Not recommended		
Hepatitis A	Recommended		
Rabies			If visiting rural areas especially in KwaZulu-Natal, Northern Cape and Eastern Cape

Vaccine	Recommended	Mandatory	Optional
Meningococcal disease			May be considered if travel taking place between May to October
Influenza			Recommended if travel taking place during winter season (May - September)
Malaria prophylaxis and precautions against mosquito bites			If visiting malaria transmission areas

2.4 CHECKLIST FOR MEDICAL KIT AND PERSONAL PROTECTION ITEMS

- First aid kit containing wound antiseptic, bandages (sterile pads, gauze bandage, elastic strapping, adhesive tape), scissors, tweezers, safety pins
- Routine personal medication (with a prescription description from a medical practitioner) and medic-alert bracelet
- Oral rehydration solution
- Antihistamine tablets and ointments
- Sun screen protection
- Antifungal powder and cream
- Water disinfectant for rural travel e.g. iodine or other tablets
- Mosquito repellent (DEET based) and if travelling to mosquito areas malaria prophylactic drugs
- Clinical thermometer
- Anti-motion sickness tablets, antacids, decongestants, pain tablets
- Condoms
- Contact lens wearers should take an extra pair of glasses or lenses, a copy of the prescription, extra solution and eye drops

3. DISEASES TRAVELLERS MAY BE EXPOSED TO

3.1 BILHARZIA/ SCHISTOSOMIASIS

Bilharzia (or schistosomiasis) occurs over much of the eastern half of South Africa and is caused by parasitic flukes, which live in the portal blood system of humans – hence their name "blood flukes". They undergo a complex life cycle in which certain species of fresh water snails serve as the parasites' intermediate hosts. These snails are infected when urine and faeces from fluke-infested humans contaminate fresh water. Infected snails release large numbers of tiny free-swimming larvae (cercariae). These larvae can penetrate unbroken human skin and develop in the body into the adult flukes. These flukes live in the veins

draining the bladder or intestine/rectum and release large numbers of eggs daily. In South Africa, there are two kinds of bilharzia, namely urinary bilharzia and intestinal bilharzia.

Distribution

Urinary bilharzia (caused by *Schistosoma haematobium*) occurs over most of Limpopo, North-West, Mpumalanga and KwaZulu-Natal provinces below about 1000m altitude and in limited foci in Eastern Cape (Transkei). It also occurs over most of Zimbabwe, Swaziland, Mozambique, northern parts of Namibia and Botswana. The Orange river, on which a great deal of white water rafting takes place, is of present free of bilharzia and is considered safe.

Intestinal bilharzia (caused by *Schistosoma mansoni*) has a more limited distribution. It occurs in the eastern most parts of Limpopo, Mpumalanga and KwaZulu-Natal provinces.

Symptoms: Bilharzia symptoms are usually non-specific. Urinary bilharzia is indicated by the presence of blood in the urine and painful urination. Intestinal bilharzia is indicated by bloody diarrhoea, abdominal pain and, rarely in South Africa, enlargement of the liver. Complications (renal failure, cancer of bladder) may arise from chronic infections. Bilharzia eggs laid by the female fluke may be deposited in various parts of the body e.g. brain and spinal cord resulting in additional complications. In some individuals however, the symptoms may be very mild and non-specific, e.g. malaise, tiredness.

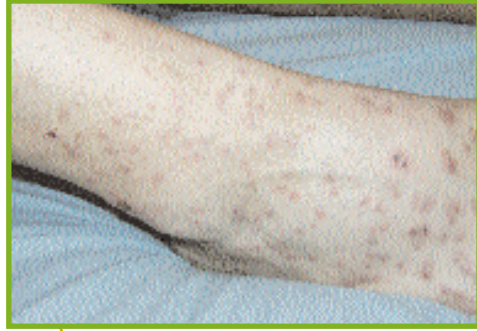
Prevention: Since there is no practical way for the traveller to distinguish bilharzia-infested from non-infested water, swimming in fresh waters in endemic areas should be avoided. If such water is to be used for bathing, one of the following precautions should be considered: heat it to 50° C for 5 minutes, treat it with iodine or chlorine in a manner similar to the measures recommended for drinking water (see section 2.1.3.2) or leave it to stand overnight. The first two precautions will kill any bilharzia cercariae that may be present and so render the water safe while the last precaution ensure that the cercariae are no longer able to

infect a person (they do not live more than 48 hours and are unable to successfully infect a person after about 10 hours). Swimming in chlorinated swimming pools should always be safe.

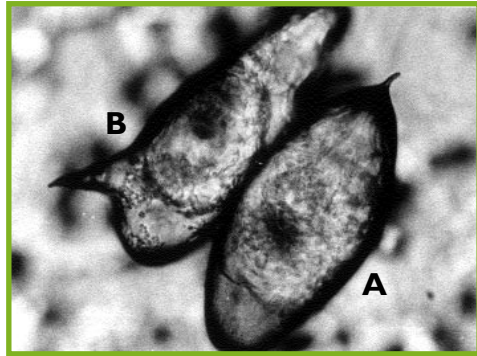
If accidental exposure to suspected bilharzia-infested water occurs, immediate and vigorous towelling or rapid application of rubbing alcohol or a DEET based mosquito repellent to the exposed areas may reduce the risk of infection.

Treatment: The only drug registered for treatment of bilharzia in South Africa is praziquantel at a dosage of 40mg/kg body weight.

"Swimmers itch" is an itchy skin condition which humans may get following infection by non-human blood flukes, e.g. the bird bilharzias. The skin irritation may last for about 72 hours and the lesions for a week or two. Treatment is symptomatic and aimed at reducing the itchiness and topical calamine-based creams that contain a local anaesthetic are usually adequate. Swimmer's Itch may occur after contact with both fresh waters and intertidal rock pools along the coast, the latter especially in the Western Cape.



Cercarial dermatitis, probably due to non-human schistosome cercariae, acquired in Mozambique.
Picture: Dr E Schuts



Urinary bilharzia (A) and intestinal bilharzia (B) eggs
Picture: CL Johnson

3.2 CHOLERA

Cholera is a bacterial infection of the gastro-intestinal tract. Infection is acquired primarily by ingesting contaminated water or food, and person-to-person transmission is rare. Although cholera remains an important public health problem worldwide, tourists and business travellers to South Africa are generally at low risk of infection due to the high standard of water and sanitation facilities. In South Africa, cholera occurs in certain rural areas of KwaZulu-Natal, Eastern Cape and Mpumalanga.

Cholera may present as an asymptomatic to mild illness, which may be difficult to differentiate from any other diarrhoeal illness. In most cases the diarrhoea will correct itself after 4-6 days as long as the patient drinks enough fluids (refer to section 3.19.3). Signs and symptoms of more severe cases include normal or subnormal temperature, profuse diarrhoea with "rice water" stools, sunken eyes and wrinkling of the skin. Dehydration can occur rapidly, shock and death may follow.

To avoid contracting cholera the same food and water hygiene recommendations for preventing

traveller's diarrhoea should be followed (refer to section 3.19.3). Cholera, by causing profuse diarrhoea and vomiting, can cause an extremely rapid loss of water and salts; this can prove fatal even in adults. For such cases, oral rehydration to replace salt and water losses must be administered quickly and copiously (refer to section 3.19.4).

The cholera vaccine is not required legally as a condition of entry into South Africa or any other country. In general, vaccination against cholera is not recommended for travellers to South Africa as:

1. The vaccines efficacy is only in the region of 60-70%
2. The chance of travellers contracting cholera in South Africa is low
3. Prevention methods practiced correctly offer better protection against contracting cholera

According to the latest World Health Organization Guidelines for Cholera Control, no country should require travellers to be in possession of a cholera vaccination certificate. Despite this, some developing countries, particularly in Africa, persist in asking travellers to produce a cholera vaccination certificate. These are generally countries for which yellow fever vaccination is necessary. Even so, the majority

of these countries will accept a letter or cholera vaccine exemption stamp – this requirement is NOT an indication for vaccination per se. The necessary documentation can be obtained from a well-informed travel clinic. A physician should be consulted regarding contra-indications and precautions specially when concurrently using antimalarials and antibiotics if the traveller decides to be vaccinated.

3.3 DIPHTHERIA

Diphtheria is an acute bacterial disease of the tonsils, pharynx, larynx and nose. Diphtheria remains a serious medical disease that requires emergency treatment throughout much of the world, and travellers to areas where diphtheria remains a problem should receive a special booster. Most people are now immunised in childhood against these three diseases. People who have not been immunised should receive vaccination. It is given as a "triple vaccine" – DTP (diphtheria/tetanus/pertussis). After the initial course of three doses, additional doses may be given as DT until 7 years of age, after which a vaccine with reduced diphtheria (Td) content is given. The Td booster should be given every 10 years. In South Africa, isolated cases of diphtheria occur and the risk to travellers is low.

3.4 HEPATITIS B

The risk of hepatitis B infection for international travellers is generally low but increases with increased length of stay in developing countries. Hepatitis B is highly endemic in all of Africa including South Africa. In many of these areas, 5-15% of the population are chronically infected carriers of the hepatitis B virus.

Hepatitis B is transmitted through sexual contact and infected blood. Travellers at particular risk are medical workers and people who are likely to engage in sex with inhabitants of endemic areas. Immunisation is advisable for these groups. Prevention involves sexual abstinence or the adoption of safe sex practices including the use of condoms, and the avoidance of contaminated blood and surgical instruments in less developed countries.

The vaccine should be considered for all persons travelling to Africa including South Africa, particularly those likely to be at increased risk of exposure through occupational or sexual activity. Vaccination should ideally commence at least a month prior to departure to ensure immunity.

Immunisation provides protection for at least 15 years with three doses necessary for adequate protection. The first two doses are administered one month apart and the third 6–12 months later.

The vaccine is now part of the South African Expanded Programme on Immunisation (EPI) and routinely given to all babies at birth, at six weeks and three months of age. The vaccine should be considered for all persons travelling to or living in endemic areas (whole of South Africa) who have not had a full course in childhood including all South Africans born after the introduction of hepatitis B vaccination as part of EPI in 1995.

3.5 HEPATITIS A

Hepatitis A is the most common vaccine-preventable infection of travellers. Hepatitis A is a viral disease that attacks the liver thus presenting with jaundice. It is transmitted by faecally-contaminated food and water. It is very common throughout the developing world, but is much less common in the developed countries of northern Europe and North America. In developing countries the majority of adults are immune due to often- asympto-

matic childhood infection that confers life-long immunity.

Immunisation should be recommended to non-immune individuals visiting South Africa. Food and water hygiene measures to avoid contact with unsafe water or contaminated food should be followed (refer to section 3.19.3).

Travellers should be vaccinated 4 weeks prior to departure. A booster dose 6-24 months later is recommended. This schedule provides 10 years protection.

3.6 HAEMOPHILUS INFLUENZAE TYPE B (HIB)

HIB is a common cause of bacterial meningitis and a number of other serious and potentially life-threatening diseases, including pneumonia. All unprotected children under the age of 5 are at risk and thus should receive vaccination in the first year of life. The vaccine is now part of the South African Expanded Programme on Immunisation (EPI).

3.7 INFLUENZA

All travellers to areas of the world experiencing influenza outbreaks (seasonal in temperate areas and all year round in the tropics) are at potential risk of contracting this disease. Persons suffering from respiratory and cardiac disease, diabetes mellitus or any immunosuppressive condition are at increased risk of severe disease. Anyone travelling from one hemisphere to the other shortly before or at the onset of the influenza season should be vaccinated before arrival at the travel destination with the currently recommended vaccine. Although principally a winter disease in South Africa, influenza occurs the whole year round in the tropics. Travellers to South Africa during the southern winter should be vaccinated with the appropriate southern hemisphere influenza vaccine recommended for that season. There may be differences between the northern and southern hemisphere vaccine for that particular year.

3.8 MALARIA

3.8.1 What is malaria?

Malaria is a parasitic infection of the red blood cells and is one of the most important parasitic disease of humans. It can be fatal if not diagnosed and treated at an early stage.

Malaria in humans is caused by any one of 4 parasites, namely *Plasmodium falciparum* (*P. falciparum*), *Plasmodium ovale*, (*P. ovale*) *Plasmodium vivax* (*P. vivax*) or *Plasmodium malariae* (*P. malariae*). In Sub-Saharan Africa, over 90% of human malaria infections are due to ***Plasmodium falciparum***. This species is responsible for complicated malaria and deaths. The parasite requires a human and a specific mosquito host during its life cycle. Not all mosquitoes transmit malaria. The *Plasmodium* parasites are transmitted to humans by infected *Anopheles* female mosquito bites. Once the parasite has entered the human body, it reproduces in the liver (6-30 days) and later in the blood resulting in the destruction of red blood cells. Following appropriate treatment *P. falciparum* and *P. malariae* infections are normally permanently cured, but latent stages in the liver may be responsible for

relapses of *P. ovale* and *P. vivax* many months after the original infection.

When a female mosquito feeds on blood from infected humans containing malaria parasites, the parasites continue their life cycle in the mosquito. After development of the parasite in the mosquito, which usually takes ten or more days, the mosquito becomes infective and remains infective for life. When the female mosquito now feeds on another human, parasites are transmitted to this human via the insect's saliva. Mosquitoes that transmit malaria feed during sunrise and sunset and only occur in certain parts of the country.

3.8.2 Where does malaria occur?

Malaria occurs in almost all countries in sub-Saharan Africa with the exception of Lesotho. The following countries in southern Africa have proven to be high malaria risk areas for travellers: Mozambique, Zambia, Malawi, Angola, Botswana, Namibia, Tanzania, Zimbabwe and the Democratic Republic of the Congo. Within each country, the geographical distribution of malaria will vary, and year-round transmission with seasonal disease

peaks is common. In South Africa these peaks occur from October to May.

In South Africa, malaria control operations have substantially reduced the incidence of malaria in some provinces. In South Africa where malaria was previously common in the low-lying northern and eastern districts, control measures introduced from 1930 have reduced malaria transmission to low levels. Malaria occurs in the low altitude areas (<1000 metres above sea-level) of Limpopo, Mpumalanga, and northeastern part of KwaZulu-Natal provinces (see Figure 1). Occasionally limited focal transmission may occur in the Northwest and Northern Cape provinces along the Molopo and Orange rivers. Infections are very seldom contracted outside the malarious areas and may then be the consequence of importation of infected mosquitoes by motor or other transport.

In all the risk areas precautionary measures to prevent mosquito bites should be used throughout the year.

In **high-risk areas** (see figure 1) drugs to prevent malaria are recommended throughout the year. The **intermediate-risk** areas include the follow-

ing tourist areas: Kruger National Park, Kosi Bay, Sodwana Bay and St Lucia Lake (not the town of St Lucia and the river mouth). In these areas the use of antimalarial drugs is recommended only for **high-risk people (pregnant women, splenectomised patients, children under 5, immunosuppressed patients)** throughout the year, and for other visitors between October and May. In **low-risk areas** no antimalarial drugs are recommended.

In the North-West and Northern Cape provinces **it is not necessary to take antimalarial drugs when visiting these areas.** Since nuisance mosquitoes may be present along these rivers during the rainy season, non-medical measures to prevent mosquito bites are advised e.g. mosquito repellents.

Kruger Park visitors: Malaria does occur throughout the year. The highest risk is from October–May (rainy season). During the rest of the year, risk is low. Visitors must always be aware of the risk and take precautionary measures. Precautionary measures against mosquito bites should be taken all year whilst medication to prevent malaria should be taken from October–May.

3.8.3 Travellers "A, B, C" of malaria

Awareness – Be aware of malaria risk

Going somewhere? Find out whether there is a risk of getting malaria there. The risk is lower during the cold and dry seasons.

- **Location**
Cities – less risk
Camping near river – high risk
- **Accommodation**
Air conditioned hotels – low risk
Huts or tents – higher risk
- **Time of the year**
Transmission is less during dry cold months
- **Time of the day**
Malaria carrying mosquitoes bite at night
- **Length of stay**
The longer the stay, the higher the risk

Bites – Avoid mosquito bites. Measures taken should include:

- Remain indoors between dusk and dawn
- Wear long sleeved clothing (preferably light coloured), long trousers (preferably light coloured) and socks
- Apply an insect repellent containing DEET to exposed skin, repeat as recommended on the container label. Avoid eyelids, lips, sun burnt or damaged skin, do not spray on the face and do not overdose young children
- Protect doors and windows with screens, but if not available, windows and doors should be closed at night
- Overhead fans or air conditioners are effective in hindering mosquitoes from landing
- Use a mosquito-proof bed net over the bed (preferably impregnated with an insecticide registered for this purpose, e.g. permethrin, a pyrethroid), with edges tucked in under the mattress. Ensure that the net is not torn and that there are no mosquitoes inside
- Spray inside the house with an aerosol insecticide (for flying insects) at dusk, especially the bedrooms, after closing the windows

- Use mosquito mats, impregnated with an insecticide (heated electrically or by a non-electric lamp), or burn mosquito coils in living and sleeping areas during the night
- Treat clothes with an insecticide registered for this purpose, e.g. a permethrin

Chemoprophylaxis – take appropriate chemoprophylaxis. Compliance is most important.

The right medication, taken according to instructions, will reduce the chances of contracting malaria enormously. Medication taken in this way also reduces the chances of serious malaria complications and death. Using medication in this way to prevent malaria is known as 'prophylaxis'. There is no prophylaxis that is 100% effective, but the correct medicine will reduce your risk of severe illness. Consult with doctor for appropriate medication (it is important to note that high levels of chloroquine resistance have been documented in malaria transmission areas of South Africa. This should be taken into account when selecting appropriate prophylaxis).

Choice of regimen depends on patient factors

- Age and weight
- Pregnant or breastfeeding
- Other medical conditions such as porphyria, epilepsy, depression
- Concomitant medication
- Activities, such as scuba diving or flying
- Another factor to consider is the degree to which chloroquine resistance occurs in the area

Take your medicines correctly

- Take only the medicines recommended by a health professional
- Take the appropriate medication as directed
- Start before entering the malaria risk area (the recommended period prior to travel differs with different drugs)
- Take the medicine at the same time every day (or week, for weekly medication) with plenty of water, after a meal
- Continue while in the malaria area and for the recommended period after leaving the area

Diagnosis – early diagnosis is critical to survival.

Symptoms of malaria infections commonly develop 10–14 days after an infective mosquito bite but this period may be prolonged especially if prophylactic drugs have been taken.

Fever is very common, but may be absent in some cases. In addition some of the following symptoms may present; rigors, headache, sweating, tiredness, myalgia (pain in back and limbs), abdominal pain, diarrhoea, loss of appetite, nausea and vomiting, and cough. "Flu-like" symptoms are particularly common presenting symptoms of malaria. Seek immediate medical attention if you have any "flu-like" symptoms for up to 6 months after leaving a malaria area. In young children malaria may present with **fever, lethargy, poor feeding and vomiting.**

Effective treatment.

Malaria can progress very rapidly (within 24-48hrs) and must be treated as a medical emergency. The sooner effective treatment is started, the better the outcome.

3.8.4 How is malaria diagnosed?

Since malaria mimics other diseases, ideally one should confirm the diagnosis. This is done in a laboratory by microscopic examination of a blood smear and/or by a rapid malaria antigen test. The smear is examined for the presence of the malaria parasites in the red blood cells. In South Africa access to good laboratories is available in all cities and most towns.

Self-test kits are available, but these are intended only for use in situations where adequate medical services are not available and are not an alternative for competent medical care. The majority of rapid tests will only detect *P. falciparum* species and not the other parasites. Thus infections with other malaria parasites may go undetected. Tests should be stored correctly, used according to instruction guide and results interpreted appropriately. The

use of the test should preferably be practiced under supervision prior to departure. Experience has shown that the test is frequently incorrectly performed and results are often unreliable in inexperienced hands. Tests should only be used for diagnosing malaria infections and not for follow-up as they remain positive for several weeks even after successful treatment.

3.8.5 Malaria, pregnancy and other high risk groups

Pregnant women and children under 5 years of age should avoid travelling to malaria endemic areas. There is no prophylactic regimen that provides total protection against malaria, and malaria poses a significant risk to the health of both the mother and foetus. Malaria increases the risk of stillbirth, miscarriage, neonatal death and maternal death. Pregnant women are also more likely to suffer from severe malaria than non-pregnant women. This is especially true of primigravida (first pregnancy) women. The mechanism is unclear but may be related to cellular immune function suppression, the greatest risk being spontaneous abortion. **If travel to a malaria area is unavoidable, both meticulous non-drug measures**

and chemoprophylaxis are essential. Infants should not be taken to malarious areas, as they are at a significantly higher risk of developing severe malaria. If it is absolutely necessary for them to enter a malarious area then breast-fed as well as bottle-fed babies must receive the full recommended paediatric doses of appropriate antimalarials. The amount of antimalarial agent excreted into breast milk is insufficient to provide adequate protection against malaria in the infant.

Other high risk groups include:

- Children under 5 years of age
- AIDS/HIV patients
- People with deficient immune systems for other reasons
- People without a functioning spleen

Where possible people in these high-risk groups should avoid travelling to malaria risk areas.

3.8.6 Changing from one chemoprophylactic to another

If it is necessary to change from one antimalarial drug to another, a doctor should be consulted.

3.9 MEASLES

Measles is a highly contagious disease occurring worldwide in a seasonal pattern. In South Africa most adults are immune to measles, either from previous infection or childhood immunisation. Unimmunised individuals, including visitors to South Africa, who have not had measles previously, should ensure that they are immunised. Immunity following measles immunisation at 9 months of age or thereafter is usually life-long.

3.10 MENINGOCOCCAL DISEASE

Meningococcal disease is an acute bacterial disease. South Africa is not a meningococcal disease hyperendemic area, however localised sporadic outbreaks of meningococcal disease occur in South Africa usually from May to October. Vaccination may be considered. Meningococcal disease is endemic in many parts of Africa and large outbreaks are experienced from time to time. Vaccination against meningococcal disease with the quadrivalent polysaccharide vaccine is required for pilgrims to Mecca, Saudi Arabia, but is not required for travel in South Africa.

3.11 PARASITES

3.11.1 Intestinal parasites:

Travellers may be exposed to parasitic worms (helminths) that infect the intestine, notably the soil-transmitted worms (common roundworm, whipworm and hookworm) and tapeworm. The risk of acquiring these worm infections is associated with low standards of hygiene and sanitation, and in the case of *Taenia* tapeworms, poor food preparation practices. The clinical effects of these parasites may only become evident once the traveller has returned home.

Hookworm:

Human hookworm (*Necator americanus*) is limited to the low-lying sandy coastal plain of KwaZulu-Natal (below about 150m altitude) and parts of Mpumalanga; canine hookworm (*Ancylostoma caninum*) may be expected on sandy areas that are polluted by dog faeces. Humans become infected with the larval forms of these parasites which are able to penetrate the skin, usually the soft skin between the toes, from contaminated soil. The larvae of the dog hookworm cannot penetrate human skin beyond the outermost layer (epidermis) but nevertheless

cause itchy skin lesions and as they move between this and the layers beneath. This is called sandworm, creeping eruption or cutaneous larval migrans.

Prevention: Wear closed shoes in endemic areas

Symptoms: Once in the gut, heavy infestations of human hookworm, which feed on blood, can cause anaemia, nausea and vomiting. Diarrhoea (sometimes bloody) and abdominal pain may also occur.

Treatment: Human hookworm infection can be treated with anthelmintic drugs such as albendazole or mebendazole. Sandworm can be treated with oral albendazole; freezing of the worm through the skin with ethyl chloride, carbon dioxide or liquid nitrogen (cryotherapy) is obsolete.



Cutaneous larva migrans (sandworm), acquired in Mozambique

Picture Dr J Freen

Other Soil-transmitted Roundworms:

Like hookworm, the intestinal roundworm parasites *Ascaris lumbricoides* and *Trichuris trichiura* are transmitted to people from the faecally-contaminated soil but in these cases, it is the eggs that are infective. Infection commonly occurs via eggs adhering to soil-contaminated fruit and vegetables that have not been properly washed. Infection may also be transmitted by the hand-to-mouth route following the handling of soil-contaminated foods in street markets.

Prevention: Good personal hygiene and wash all fruits and vegetables before eating them.

Symptoms: Heavy infestation can cause nausea, vomiting, loss of appetite. In extreme circumstances, *A. lumbricoides* can form a bolus which obstructs the bowel and may lead to fatal complications.

Treatment: Like hookworm, *A. lumbricoides* and *T. trichiura* can be treated with either albendazole or mebendazole but *T. trichiura* is less sensitive than *A. lumbricoides* or hookworm.

Tapeworm:

The beef (*Taenia saginata*) and pork (*T. solium*) tapeworms are acquired from eating undercooked beef or pork containing the larval forms (cysts) of the parasite. Ingestion of the eggs of *T. solium* in food contaminated by infected faeces can cause a disease known as cysticercosis and because the larvae that develop from these eggs have a predilection for nerve tissue, they often become lodged in the brain causing a serious condition called neurocysticercosis.

Prevention: Purchase meat from reputable butchers and cook pork and beef well; minimise risk of faecal contamination of raw vegetables etc to prevent cysticercosis.

Symptoms: Infections by adult tapeworms are usually mild with vague abdominal discomfort being the most common. Occasionally weight loss, diarrhoea or vomiting may occur. The most frequent symptom of neurocysticercosis is epilepsy.

Treatment: Adult tapeworm infections (in the intestine) can be treated with praziquantel but at a lower dose than bilharzia, viz. 10mg/kg.

Cysticercosis is treated with a longer course of praziquantel or albendazole and steroids if necessary. Generally, however, this will depend on the nature of the infection.

3.12 PERTUSSIS

Pertussis (whooping cough) is a highly contagious acute bacterial disease involving the respiratory tract, which occurs worldwide. Unprotected infants, children and young adults are at risk. Most people are now immunised in childhood against these three diseases. The vaccine is generally not recommended beyond 7 years of age. Pertussis vaccine is not used outside the routine childhood immunisation programme.

3.13 PLAGUE

The last South African human plague outbreak was in 1982, and plague still occurs cryptically in some wild, rural rodent populations. The threat to travellers in South Africa is considered extremely small.

3.14 POLIOMYELITIS

Poliomyelitis (usually referred to "polio") is an acute viral infection that can cause severe and permanent paralysis in a proportion of infected people. Polio is a disease of the central nervous system, with the causative virus being spread by the faecal-oral route. Polio was last notified in 1989. There is a surveillance programme in place to monitor polio.

3.15 RABIES

Rabies is an acute viral disease, and once symptoms develop it is invariably fatal. It is transmitted to humans through the bite, scratch or lick of a rabid animal. Dogs are the main source of human infection, although the epidemiology of animal rabies infection varies from country to country. It is endemic in developing countries in Africa including South Africa. Rabies is endemic in South Africa, particularly in rural areas. KwaZulu-Natal and the Eastern Cape are particular risk areas for dog rabies. Travellers to these areas must ensure they are well informed concerning their risk of rabies exposure and the local reservoir species so that they can avoid contact with potentially rabid animals. Travellers should be aware of wound cleaning procedures, importance of correct post-exposure treatment with vaccine and immunoglobulin and the availability of these at their holiday destination. Vaccination against rabies is available to protect people who are likely to be exposed to infected animals (e.g. animal handlers, wildlife officers, travellers to endemic areas where access to post-exposure treatment is limited) and those that have been exposed to rabies. Pre-exposure immunisation consists of three intramuscular doses

administered on specific days. The risk to travellers is proportional to their contact with potentially rabid animals in endemic areas.

In areas of endemic rabies, dogs and cats should not be petted and contact with wild animals, especially bats, jackals, foxes, skunks, racoons and mongooses, and meerkats should be avoided. In South Africa the major host species include: dogs (Eastern Cape, Mpumalanga and KwaZulu-Natal), black backed jackal (Limpopo), bat-eared fox (Northern Cape, Free State and Eastern Cape) and yellow mongoose.

No animal bite, scratch, or lick should be ignored and after thoroughly cleaning the wound with anti-septic or soap under copious running water, a competent opinion should be sought as to whether the contact may pose a rabies risk. Post-exposure vaccination, preferably within 24 hours of the suspected exposure, together with the simultaneous administration of rabies-specific immunoglobulin, is 100% effective in preventing rabies provided it is administered in accordance with accepted protocols.

Pre-exposure immunisation may be offered to people at high risk of exposure, including:

- People who are working (even for a short time) in a rabies-infected area of South Africa or if their activities may involve exposure to rabies risk
- People travelling in regions far from competent medical assistance e.g. hiking
- People spending time in areas where rabies is a constant threat

Pre-exposure immunisation does not eliminate the need for prompt administration of rabies prophylaxis following contact with a suspect or rabid animal but reduces the post-exposure regimen and obviates the need for rabies immunoglobulin which may be difficult to obtain.

Rabies post-exposure treatment

See next page

Rabies post-exposure treatment

If a person is bitten in a rabies endemic area, medical advice should be obtained immediately. The circumstances of the bite, type of contact with the animal, the animal's behaviour and appearance are important in assessing the risk following exposure.

Rabies post-exposure treatment to prevent the establishment of rabies infection involves first aid treatment of the wound followed by the administration of rabies vaccine and antirabies immunoglobulin. The treatment depends on the type of contact. The vaccine must be administered by a physician.

Type of contact	Recommended treatment
Touching or feeding animals.	
Licks on the skin	none
Nibbling unbroken skin.	
Minor scratches without bleeding	Administer vaccine immediately
Licks on broken skin	

Type of contact

Single or multiple bites or scratches with skin penetration.
Contamination of mucous membrane by saliva from licking

Recommended treatment

Administer vaccine and antirabies immunoglobulin immediately

First aid treatment

Wash wound thoroughly under running water with soap or an antiseptic e.g. chlohexidine for 5 minutes. An iodine-based disinfectant or 70% alcohol should be applied to the wound.

Urgent post exposure treatment is essential whether or not patients have been previously vaccinated. Immunoglobulin is not given in post exposure in patients who have been vaccinated pre-exposure. Antibiotic therapy and a booster tetanus vaccine should be considered.

NB: If there is any chance there has been a rabies exposure - vaccinate. There is no blood test that can be done in humans to confirm or exclude a rabies transmission from an animal.

3.16 SEXUALLY TRANSMITTED INFECTIONS

Sexually transmitted diseases (STIs) include hepatitis B, gonorrhoea, syphilis, HIV (the cause of AIDS) and many other infections. STIs are frequently acquired in the course of travel. Many travellers, including tourists, business travellers, long-distance truck drivers, migrants and contract workers engage in casual sex while travelling. Some travellers indulge in "sexual tourism" and a number of countries cater for the demand for casual sex.

Infection with the human immunodeficiency virus (HIV) has reached pandemic proportions. This virus poses a risk to travellers. The long latent period, the silent transmission, the expensive and problematic treatment and its almost inevitably lethal outcome are compelling reason to abstain or adopt safer sex practices. One must also avoid contact with contaminated blood and medical supplies e.g. injection needles. No group or individual is immune to HIV-infection and AIDS. Transmission occurs through vaginal, oral and rectal intercourse. Prevention relies upon the adoption of safe sex practices.

The traveller's sexual behaviour is a much more important determinant of HIV risk than the local conditions in a country. **Measures for preventing STIs are the same whether an individual is travelling or not, i.e. travellers should avoid sex altogether, or limit it to a single faithful uninfected partner and use a condom. Intercourse with multiple partners or with persons who have multiple partners (e.g. male or female prostitutes) is dangerous.** Do not judge by appearance – most infected people look healthy and have no visible symptom of disease, yet are highly infectious. Alcohol, which is commonly consumed prior to casual sexual encounters, tends to lower inhibitions and make people less likely to use precautions, such as a condom. Men should always use a condom, each time, from start to finish, and women should make sure their partners use one. Women can also protect themselves from sexually transmitted infections by using a female condom – essentially, a vaginal pouch – which is now commercially available in South Africa. Condoms are not always of good quality in all countries, and may not be readily available in many countries, especially where there are religious taboos concerning extra-marital sex; travellers are advised to take condoms with them.

Many people who contract an STI are asymptomatic. However, when symptoms occur they include: unusual vaginal or penile discharge; genital pain, itching or irritation; pain, increased frequency or difficulty in passing urine; genital ulceration; abnormal vaginal bleeding; testicular pain; lower abdominal pain and pain during intercourse.

A number of STIs, but especially HIV, hepatitis B and syphilis can also be transmitted through blood, blood products and contaminated needles. Unsterile dental and surgical instruments, needles used in tattooing and acupuncture, ear-piercing devices, and other skin-piercing instruments can transmit infection. If an injection becomes essential while travelling in a developing country, the traveller should ensure that the needle and syringe come from a sterile package (alternatively, but less satisfactorily, they can be sterilised in steam or boiling water for 20 minutes).

Patients under medical care who require frequent injections (e.g. diabetics) should carry sufficient sterile needles and syringes for the duration of their trip and a doctor's letter authorising their use. If a blood transfusion is essential, the traveller should request blood that has been screened for

HIV, hepatitis B and C, syphilis, and malaria. Standards of medical care follow international best practices in South Africa. This means that medical procedures, including injections and blood transfusions, are safe.

Some countries have adopted HIV/AIDS-related entry restrictions and people who are infected with HIV should have a medical consultation and detailed assessment prior to travel. The World Health Organization has taken the position that there is no public health justification for entry restrictions that discriminate solely on the basis of a person's HIV status. No HIV/AIDS related entry restrictions exist for South Africa.

Other STIs also pose a threat to travellers, but these can be largely avoided by adopting safe sex practices. Female travellers need to be aware that many STIs can be passed from an infected mother to her unborn or new-born baby.

There is no risk of acquiring STI infections from casual day-to-day contact in the home, at work or socially. People run no risk of infection when sharing communal transport, food or crockery. Toilet seats and swimming pools cannot transmit STIs. There is no evidence that HIV or any other STI can be acquired from insect bites.

3.17 TETANUS

Tetanus is acquired through environmental exposure to spores of *Clostridium tetani*, which can be found in soil worldwide and may contaminate dirty wounds and animal bites. Every traveller should be protected against tetanus. Most people are now immunised against tetanus in childhood along with diphtheria and pertussis immunisation. People who have not been immunised should receive vaccination. The primary immunizing course of three doses of DTP is given in the first three months of life followed by boosters every 10 years. It is advisable to be vaccinated against tetanus every ten years. This precaution is especially important for campers or visitors to rural areas. A booster dose of tetanus toxoid should only be given following trauma particularly if regular Td boosters had been given in the preceding 10 years. Mild local reactions occur in 95% of vaccine recipients.

3.18 TUBERCULOSIS (TB)

TB is a major health problem in South Africa but the risk of travellers, especially short term travellers, contracting it is low. The risk may be significantly increased for persons working in the following settings: health care facilities, prisons and shelters for the homeless. The transmission of TB usually requires sustained close contact with an untreated infected person in a closed environment. Short-term travellers have little risk of acquiring infection. Tuberculosis infection is acquired by inhaling particles from individuals with active TB in the lungs and there is therefore virtually no danger of it being spread by dishes, linen, and food. It can however be transmitted through unpasteurised milk or milk products and this can be a risk in some less developed countries.

Although TB is endemic in South Africa most travellers would be at low risk of contracting the disease and vaccination with BCG is of very limited use for preventing TB in adult travellers. Pre-departure skin testing could be considered in addition to skin testing and/or chest x-ray on return in the case of long-term travellers or people working

in high-risk settings who were not previously vaccinated or exposed to TB.

Symptoms

TB can remain latent with no apparent symptoms for many years. Symptoms of pulmonary TB include shortness of breath, cough which produces blood stained sputum, weight loss, poor appetite, fevers and night sweats.

3.19 TRAVELLERS' DIARRHOEA

3.19.1 Introduction

Travellers' diarrhoea is by far the commonest cause of ill health in travellers, affecting an estimated 20-50% of all travellers. Symptoms can vary in severity from simple embarrassment and inconvenience to misery and disruption of travel and business plans. Travellers' diarrhoea typically results in abdominal pain and a number of loose or watery stools per day. In the majority of patients diarrhoea will be self-limiting but can last up to 3 to 4 days. However, travellers' diarrhoea may prove fatal, sometimes within a few hours, if not promptly and effectively treated.

Consumption of contaminated food or water may also result in a number of other diseases. These include typhoid and paratyphoid fevers, poliomyelitis, viral hepatitis A and various parasitic infections. It is important to know that diarrhoea may also be a symptom of many other travel-related diseases, most notably malaria.

Dysentery (diarrhoea with bloody stools and high fever) may be a serious condition in some persons and medical attention should be sought as soon as possible. The risk of travellers contracting cholera is extremely small. The disease is confined to a few rural areas. The best prevention against cholera is to follow safe water and food practices (refer to section 3.19.3). Cholera presents with watery diarrhoea ("rice water" stools in extreme cases), may prove fatal within a few hours, and therefore requires prompt medical attention. Rehydration to replace salts and water losses must be administered quickly and copiously (refer to section 3.19.4).

3.19.2 Risk by geographic location

The risk of intestinal infections is, to a large extent, determined by the geographic location. High-risk destinations include most of the developing countries of Latin America, Africa, the Middle East and Asia. Intermediate risk destinations include most of the southern European countries and some of the Caribbean islands. Low-risk destinations include Canada, northern Europe, Australia, New Zealand, the United States and more developed Caribbean islands. South Africa has been graded as an intermediate-risk country.

The risk of acquiring diarrhoea while travelling is also associated with the country of origin and socio-economic status of the traveller. Travellers from developed countries, and those of high socio-economic status, are at greater risk than travellers of low socio-economic status from developing countries. This is attributed to previous exposure, which conveys a degree of immunity to a variety of intestinal infections.

3.19.3 Prevention

Food and water contaminated with faeces are the most common source of infectious diarrhoea and other intestinal infections. Attention to food and water hygiene is therefore important in minimising infection.

Currently, there is no vaccine capable of offering general protection against the multiple causes of bacterial diarrhoea. The use of prophylactic antibiotics is not recommended as they can contribute to the development of drug resistant bacteria and side effects.

3.19.3.1 Food

Careful selection and preparation of food and drink offer the best protection. Unfortunately, the appearance of food is no guide to its safety, and contaminated food can appear and taste normal.

Foods that are more likely to be contaminated include: raw fruit and vegetables, salads, raw or undercooked meat, fish, shellfish and dairy products such as ice-cream and cheese are likely to be contaminated and therefore unsafe. Similarly, dishes containing raw or undercooked eggs, such as home-made mayonnaise, some sauces (e.g. hollandaise) and some desserts (e.g. mousses) may be contaminated.

Even with cooked food, the traveller should ensure that it has been thoroughly and freshly cooked, i.e. that it is piping hot. Foods that are cooked in advance need to be held at a temperature below 10°C or above 60°C to ensure their safety. Cooked food that has been allowed to stand at ambient temperatures (15-40°C) for some time (more than 4-5 hours) constitutes one of the greatest risks of food-borne diseases, since contaminating or surviving bacteria may multiply in it.

These foods should be thoroughly reheated before serving.

"Good advice is **COOK IT, PEEL IT OR LEAVE IT**".

It is important to note that the standard of food safety and preparation in South Africa is generally good and therefore poses little threat to the travellers' health.

3.19.3.2 Water

Unless the purity of drinking water can be ensured, only bottled water in sealed containers should be used. Where water may be contaminated, ice should also be considered contaminated. Purified water should be used when brushing teeth, as well as water used for preparing food.

The following water purification methods are recommended:

1. Boil water for a minimum of one minute. Water should be brought to a vigorous boil and allowed to cool at room temperature – do not add ice
2. Mechanical filtering to remove as much contaminants as possible, preferably with a floccu-

- lating agent, prior to the addition of disinfectants will make the latter much more effective
3. Water purification tablets are readily available and should be used according to directions
 4. Household bleach eg JIK® or sterilising fluid e.g. Milton® may be used to chlorinate water. Household bleach is available from most supermarkets whilst sterilising fluid is available from most pharmacists. Generally, household bleach contains 3%-15% chlorine whereas Milton® contains 1% chlorine. If using a sterilising fluid (1% chlorine), add three drops of 1% chlorine solution to 1 litre water or 1 teaspoon to 25-30 litres of water. The water should be left to stand for 30 minutes before use. Turbid water should be filtered prior to chlorination

In South Africa, municipal tap water is usually safe to drink. The quality and safety of water in urban areas is very good. However, in more rural settings better water precautions should be taken. In areas where safe water is uncertain, precautions listed above should be considered e.g. bottled water, boiling water or treating water with purification tablets. The same precautions should be taken for the consumption of ice and brushing teeth.

3.19.3.3 Other beverages

Beverages such as pasteurised milk, hot tea or coffee, wine, beer, carbonated soft drinks or fruit juices that are bottled or otherwise packaged are usually safe to drink. Either boil or avoid unpasteurised milk, and avoid ice-cream from unreliable sources. Unpasteurised milk that is to be added to tea or coffee should also be boiled. In South Africa the majority of dairy products are pasteurised.

3.19.3.4 Recreational water

Recreational water, such as the sea, dams and rivers, is often contaminated and swimming in faecally contaminated water should always be avoided.

3.19.4 Treatment of diarrhoea

Travellers should be aware of the importance of countering the dehydration that follows diarrhoea by drinking plenty of fluids. Rehydration fluids that contain salt and glucose are particularly helpful in replacing water and electrolytes lost through diarrhoea. While dehydration can be dangerous at any age, it is particularly so in small children.

An effective rehydration solution can be made by mixing together the following:

Rehydration Solution

1. 1 litre of clean water (contaminated water should be filtered through a piece of cloth and boiled)
2. 8 teaspoons of sugar
3. $\frac{1}{2}$ teaspoon of table salt

Commence treatment with this mixture by mouth as soon as diarrhoea starts. Give a baby a half to one cup of the mixture slowly by teaspoon for every loose stool passed. Older children and adults should drink as much as they want, but with at least one to two cups after each loose stool. Continue to give babies breast milk. It is safe for babies to continue foods such as porridge and rice.

Authoritative opinion should be sought before anti-diarrhoeal preparations are used because although they can provide adults with symptomatic relief, they can cause undesirable side effects. Anti-diarrhoeal drugs are usually best avoided in children. Travellers' diarrhoea that lasts beyond 48 hours may be due to bacterial dysentery or various parasites, and requires specific treatment.

If any of the following occur, the traveller should consult a health care professional without delay and not attempt self-medication:

- If a person loses a lot of water and feels or looks weak
- If the diarrhoea is severe or does not improve after 48 hours
- If there is mucous or blood in the stool
- If there is fever with shaking chills/rigors occurs
- If there is dehydration e.g. loss of skin elasticity, sunken eyes, dry tongue with persistent diarrhoea

3.19.5 Travellers' Diarrhoea Treatment Plan

For the first 24 hours it is important to provide adequate oral rehydration. If diarrhoea continues longer than 48 hours from onset or stool contains blood and/or mucous or if vomiting is a problem and dehydration is present, medical attention should be sought without delay.