



Infectious Disease Risk Profile for Sudan

While Sudan is not free from the threats of infectious diseases, the country is exposed to the public health risk from a selected number of infectious diseases which have high impact on the lives and deaths of the vulnerable population. Due to protracted war and conflict, collapsed health system, dilapidated health infrastructure, large scale population displacement enforced by poverty and war and limited access to health care, the country is at risk of the following infectious diseases to varying degrees and intensities:

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1.	Polio	25 cases of wild polio were detected in 2005 in Sudan. Most of these detected cases were reported from East Gadarif, Kassala, Sennar and Unity State.	<ul style="list-style-type: none"> • Since routine immunization coverage against polio is very low (40%) throughout Sudan, the population in the country are quite exposed to paralytic cases if polio viruses continue to be re-introduced. • Sudan is also at risk since it borders Egypt and very close to Niger and Nigeria, three of the six remaining polio-endemic countries in the world. 	Sudan is deemed to be at high risk of polio re-infection (<i>Polio importation will remain a risk until the disease is eradicated not only from Sudan but elsewhere</i>), but the country is not an endemic country for Polio	Until the disease has been certified as eradicated, the risk of acquiring the disease remains. Therefore, poliomyelitis vaccination is recommended for all people who are not properly immunized.

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2.	HIV/AIDS	<ul style="list-style-type: none"> The HIV sero-prevalence in the general population could be between 1.6% to 2.3%. More recently, results of limited sentinel surveillance testing conducted during 2004 by Sudan National Aids Programme yielded prevalence rates of 0.95% (18/1900) among pregnant women, 1.9% (9/465) among symptomatic Sexually Transmitted Disease (STD) patients, and 2.3% (33/1436) among TB patients. 	<ul style="list-style-type: none"> Protracted war and lack of quality epidemiological data make it difficult to generalise about the status of HIV/AIDS in Sudan but it is generally agreed that the country may be in the early stage of a generalized HIV/AIDS epidemic like any other African countries 	The country is in the early stage of a generalized HIV/AIDS epidemic but higher infection rate may be prevalent in Southern part than in the North.	<ul style="list-style-type: none"> Promoting safe sexual behaviour (Avoiding sex with people who engage in high risk activities or using latex condoms during sexual intercourse) is the key to preventing HIV/AIDS. In the event of an occupational accident, Post-Exposure Preventive Treatment (PEP) initiated quickly after the possible exposure-that is ideally within 2-3 hours and not later than 48-72 hours may be beneficial in preventing HIV infection. Using, always, disposable syringe for injection and avoiding transfusion of un-screened blood collected from professional blood donors also hold the key for preventing HIV infection.

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3.	Malaria	<ul style="list-style-type: none"> Symptomatic malaria accounts for 20-40% of outpatient clinic visits and approximately 30% of hospital admissions. 	<ul style="list-style-type: none"> In Sudan, almost 90% of all malaria cases are caused by falciparum malaria which causes the most severe form of disease and deaths attributable to malaria. High seasonal rainfall, variation in temperature and humidity which is observed during the rainy season in Sudan can favour mosquito breeding resulting in strong seasonal transmission. General poverty, limited access to health care and displacements enforced by poverty and/or conflict may also high intensity transmission of malaria in Sudan. The potential for epidemics can increase due to the influx of non-immune populations moving from areas of no malaria/low transmission to highly endemic areas. 	<p>Malaria risk is present all over the country although to different degrees. In the northern, eastern and western states, malaria is mainly low to moderate with predominately seasonal transmission and epidemic outbreaks. In Southern Sudan, malaria is moderate to high or highly intense generally with perennial transmission.</p> <p>Although, in Sudan, whole population may be at risk to contracting the disease when they travel to the high risk areas, the following special groups are at higher risk to malarial infection:</p> <ul style="list-style-type: none"> Travellers from malaria free areas (visitors) Pregnant women (specially during their first pregnancy) Children in steroids or immunosuppressive drugs; Expatriates and Sudanese returning from non-malarious areas 	<ul style="list-style-type: none"> Individual protection from mosquito bites between dusk and dawn should be regarded as the first line of defence against malaria. However, for special groups of people who are at higher risk of malaria infection, the National Malaria Control Programme (NMCP) of Sudan recommends the following prophylactic treatment: <ul style="list-style-type: none"> <i>For adults:</i> Mefloquine, 250 mg (one tab) every 7 days starting one week before entering the malarious area, once weekly while in the area, and once weekly for 4 weeks after leaving the area. <i>For children:</i> Mefloquine 5mg/Kg with the same interval as for adults. (The drug is not recommended before 3 months of age) For those who can not take mefloquine, the recommended drug is atovaquone-proguanil. <i>For adults:</i> One tablet (250 mg-atovaquone-100 mg proguanil) daily beginning one day before entering <i>the</i> malarious area and for 7 days after leaving. It is recommended to take the drug with food or milky drink at the same time each day. Atovaquone-proguanil is not recommended in pregnancy or in children weighing less than 11 kg

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4.	Meningitis	<ul style="list-style-type: none"> There has been an epidemic of meningitis in every 8-10 years in Sudan. Since 1988, three major epidemics have occurred in Sudan (1988, 1998 and 2005). In these epidemics, 128 persons in every 100,000 populations were seen to be affected by the disease. Young children than the older children and adults are and affected more during epidemics. 	<ul style="list-style-type: none"> Sudan is situated in the <i>“African Meningitis belt”</i> which extends from Ethiopia in the East, to Senegal in the West, mainly within the range of 300 mm to 1 100 mm annual rainfall. The situation of Sudan in <i>“African Meningitis Belt”</i> makes it vulnerable to meningitis outbreaks since countries in the belt suffer from periodic outbreaks of meningitis. (The geographic location of the following states of Sudan within the <i>“ African Meningitis Belt”</i> make these states relatively more vulnerable: West Darfur, South Darfur, North Darfur, West Kordofan, White Nile, Blue Nile, El Jazira, Gederaf, Kassala, Khartoum, River Nile, North Kordofan, Sennar, South Kordofan, Upper Nile and West Bahar el Ghazzal) Particular climate and social habits as seen during the dry season in Sudan, between December and June, such as dust winds and upper respiratory tract infections due to cold nights, increase the risk of meningitis. At the same time, the transmission of meningitis is favoured by overcrowded housing at family level and by large population displacements due to war and conflict. 	The central and southern Sudan is included in the African meningitis belt which makes these parts of Sudan subject to seasonal annual cycles as well as large-scale epidemics which might occur at greater intervals with irregular patterns.	<ul style="list-style-type: none"> Everyone working in, or travelling to Sudan should be vaccinated by the Tetravalent Meningitis Vaccine ACWY. Visitors should be vaccinated at least 10 days before travelling either to Sudan or to the states of Sudan which fall in the <i>“ African Meningitis Belt”</i>

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6	Dengue	<ul style="list-style-type: none"> Limited data is available to describe trend of the disease over time. However, since the disease is widespread in tropical areas of Africa, few states of Sudan may be at higher risk to infection 	<ul style="list-style-type: none"> Some states of Sudan like Red Sea state, Kassala and Khartoum which are urbanized are at greater risk of contracting the disease. In these areas, dengue is limited to altitudes below 600 metres (2000 feet) 	<p>Absence of limited data on the presence or existence of <i>Aedes aegypti</i>, the mosquito that causes Dengue, no conclusion could be derived about the degree of risk of Sudan to Dengue. Nevertheless, the frequent reporting of suspected cases of Dengue during the rainy season in Sudan pre-dispose the people living or traveling to Dengue endemic areas to risk of contracting Dengue. Therefore, every precautions should be taken to prevent mosquito bites to avoid contracting the disease.</p>	<ul style="list-style-type: none"> There is significant risk for UN staff in areas where Dengue is endemic. However no prophylactic treatment is available for prevention of Dengue. The UN staff travelling to Dengue prone states of Sudan should take precautions to avoid mosquito bites both during day and at night in areas where Dengue is known to occur as follows: <ul style="list-style-type: none"> – <i>Protecting from the bite.</i> <ul style="list-style-type: none"> (i) Wearing full sleeve clothes and long dresses to cover the limbs; (ii) Repellent – care should be taken in using repellents on small children and the elderly; (iii) Using mosquito coils and electric vapour mats during the daytime to prevent Dengue; (iv) Using mosquito nets to protect babies, old people and others, who may rest during the day. The effectiveness of such nets can be improved by treating them with <i>permethrin</i> (pyrethroid insecticide). Curtains (cloth or bamboo) can also be treated with insecticide and hung at windows or doorways, to repel or kill mosquitoes. (v) Protection of people sick with dengue – Mosquitoes

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					<p>become infected when they bite people who are sick with dengue. Mosquito nets and mosquito coils will effectively prevent mosquitoes from biting sick people and help stop the spread of dengue</p> <p>– <i>Prevention of multiplication of mosquitoes</i></p> <p>(i) Draining water from coolers, tanks, barrels, drums and buckets, etc.;</p> <p>(ii) There should be no water in coolers when not in use;</p> <p>(iii) Removing water from the household objects, e.g. plant saucers, etc. which have water collected in them;</p> <p>(iv) Removing water from refrigerator drip pans every other day;</p> <p>(v) All stored water containers should be kept covered all the time;</p> <p>(vi) Discarding solid waste and objects where water collects, e.g. bottles, tins, tyres, etc.</p>

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	Cholera	Even if no official data is available, cases of cholera are known to occur in the country.	<ul style="list-style-type: none"> • The conflict affected areas of Sudan with poor sanitation, lack of clean drinking water and overcrowded living conditions may be at risk. • Although no definite geographical distribution for the disease has been found to occur, cholera outbreaks in the past have occurred March and June 	Since conflict affected countries with dilapidated health system and at increased risk of contracting cholera, Sudan is no exception. Drinking contaminated water, eating uncooked food (fruits and vegetables which are contaminated through water, nightsoil and during preparation (rice, millet and food from street vendors) and eating contaminated seafood (indirect contamination by hands) will increase transmission of cholera.	<ul style="list-style-type: none"> • The risk for travellers to Sudan even when cholera epidemics are occurring is very low. UN Humanitarian workers working directly in the camps from where the outbreaks have been confirmed may be at higher risk. • However, travellers are not at significant risk from cholera provided that simple precautions are taken to avoid potentially contaminated food and water. • As for other diarrhoeal diseases, the four “golden” rules for preventing cholera should be followed to the extent it is possible: <ul style="list-style-type: none"> ○ Drinking water from a safe source or water that has been disinfected (boiled or chlorinated); ○ Cooking food or reheating it thoroughly and eating it while it is still hot; ○ Avoiding uncooked food unless it could be peeled or shelled; ○ Washing hands after any contact with excreta and before preparing or eating food; • Oral cholera vaccines (OCV) may also be used by travellers and those at occupational risk groups (emergency relief and health workers in refugee situations). The single dose live vaccine

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					<p>(strain CVD 103- HgR) can be taken, once , at-least 1 week before travelling to high risk areas and the killed vaccine can be taken twice, one week apart at-least 3 weeks before travelling to the high risk areas.</p>