NATIONAL HEALTH LABORATORY SERVICE
NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES

Communicable Diseases Communiqué

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Influenza

Viral Watch: influenza-like illness (ILI) surveillance programme

The annual influenza season has started, and the number of influenza positive specimens from specimens submitted by the Viral Watch surveillance programme has risen sharply. The influenza detection rate has been >10% for two consecutive weeks since week 18 (week starting 2 May), the first week of the season (Figure). The average onset of the influenza season over the past 27 years has been week 23 (early June) with a range of week 17 (late April) to week 28 (early July). In only four of the previous 27 years of surveillance (1998, 1999, 2005 & 2006) has the season started before week 20 (third week of May).

Since week 18 influenza A (H1N1) 2009 has been detected in 49 patients and influenza A (H3N2) in two, bringing the total for the year to 69 A (H1N1) 2009, three A (H3N2) and six influenza B. To date influenza has been detected in patients from six of the nine provinces.

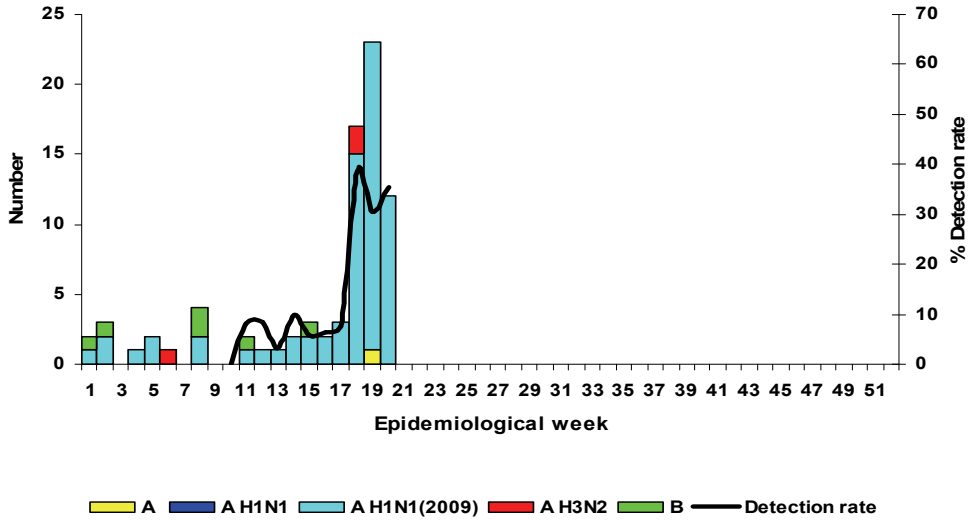


Figure: Number of positive samples by influenza types and subtypes and detection rate by week, Viral Watch surveillance programme 2011.

Severe acute respiratory illness (SARI) surveillance programme

For the period 1 January to 15 May 2011, 1828 patients were enrolled into the SARI programme. Of these 99% (1813) have been tested for influenza and other respiratory viruses and 23 were positive for influenza virus. As of week 20, influenza activity started to increase in SARI patients with influenza A (H1N1) 2009 predominating. Of the 23 patients that tested positive for influenza in 2011, 74% (17/23) were influenza A (H1N1) 2009 and 26% (6/23) were influenza B. As in the past two years, the increase in numbers of influenza cases in hospitalised patients seems to lag behind that of patients presenting with ILI.

Now that the influenza season has started, a diagnosis of influenza must be considered not only in patients presenting with typical ILI (usually a sudden onset of fever, cough, malaise, sore throat, headache, myalgia) but also in patients presenting with pneumonia and progressive ARDS. Influenza may cause severe illness, especially in patients belonging to risk groups such as infants and young children, pregnant women, and patients with chronic underlying disease. Treatment with oseltamivir should be started as early as possible for those

persons in risk groups with ILI, but early treatment is especially important if severe disease is present. Laboratory testing for influenza should be considered in persons with severe illness, but treatment should be started immediately and not be delayed pending laboratory test results. Of concern is the late diagnosis/ misdiagnosis, and hence delayed treatment of severe influenza in pregnancy (particularly in the third trimester and immediate post-partum period). While severe influenza-related disease is more commonly reported in the risk groups mentioned above, rapidly progressive pneumonia and ARDS is well documented in persons without apparent risk factors (particularly with influenza A (H1N1) 2009). Influenza vaccination provides protection for about 9-12 months. Even though the composition of the 2011 vaccine is the same as the 2010 vaccine, people who had the influenza vaccine in 2010 still need to be vaccinated in 2011 to ensure high levels of immunity. Those who have not been vaccinated are encouraged to do so as soon as possible, as it can take up to two weeks for the immune response to the vaccine to develop and for a person to be protected from influenza.

The influenza vaccine for the 2011 season is available with the following formulation:

- A/California/7/2009 (H1H1)-like virus
- A/Perth/16/2009 (H3N2)-like virus
- B/Brisbane/60/2008-like virus

For further guidance regarding case definitions, testing and management of influenza, please consult the 2011 Healthcare Workers Handbook on Influenza, available on www.nicd.ac.za.

Source: Divisions of Epidemiology and Virology, NICD-NHLS

Update on outbreak of highly pathogenic avian influenza (H5N2) in ostriches: Western Cape Province

In April 2011 highly pathogenic avian influenza (HPAI) H5N2 was identified amongst ostriches on five commercial farms in the Oudtshoorn and Uniondale areas, Western Cape Province. Diagnosis was confirmed on laboratory tests (serology and PCR). The veterinary services response to the outbreak included quarantining of the infected farms, movement control, a ban on the export and selling of any of the infected birds or products, and heightened surveillance on ostrich farms in a 10km radius of the affected farms.

As of 12 May 2011, the Department of Agriculture, Forestry and Fisheries (DAFF) reported that a further 16 ostrich farms within the avian influenza control area in Oudtshoorn have tested positive on PCR/serology. All these farms have been put under quarantine, with decisions regarding slaughter-out pending.

Surveillance for human HPAI (H5N2) cases in potentially exposed persons is ongoing. NICD-NHLS recommendations and guidelines (i.e. Advisory for Healthcare Workers; and Recommendations for Management of Potential Cases) were distributed to health facilities and health practitioners in the Oudtshoorn/ Uniondale areas. There have been no laboratory confirmed HPAI (H5N2) cases to date. One suspected case was identified (a veterinarian working in Oudtshoorn), but tested negative for influenza. A serosurvey amongst exposed persons at the abattoir, selected farms, and veterinary services staff is being planned in order to establish if any asymptomatic/ subclinical infections have occurred.

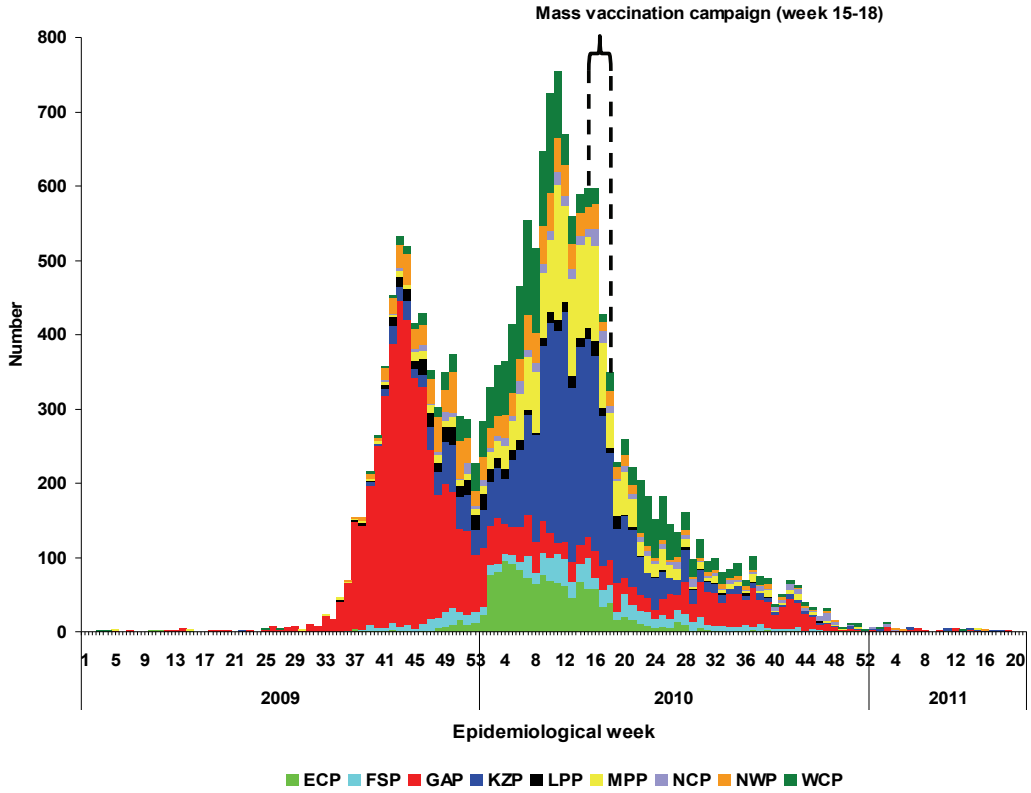
Source: Outbreak Response and Respiratory Virus Units, NICD-NHLS; Department of Agriculture, Forestry and Fisheries; Department of Health

Measles

There have been 15 additional laboratory-confirmed measles cases since the last published Communiqué, bringing the total to 18 435 cases from January 2009 to 12 May 2011. Cases have been reported from all nine provinces, with Gauteng (31%, 5 762/18 435), KwaZulu-Natal (23%, 4 280/18 435) and Western Cape (11%, 2 011/18 435) provinces accounting for the highest proportions of the cumulative total (Figure). Since January 2011 a total of 1 841 suspected measles cases was tested. Of these, 4% (76/1 841) were measles

IgM positive and 15% (274/1 841) rubella IgM positive. Two of the measles IgM positive cases were also positive for rubella IgM (i.e. had dual infection). Age was known in 92% (70/76) and 95% (261/274) of measles and rubella cases respectively. Of patients with measles, children <1 year accounted for 53% (37/70) of the cases, with 34% (24/70) occurring in those aged <9 months. Of patients with rubella, those in the age group 5-9 years accounted for the highest proportion of the total (52%, 137/261).

Source: Divisions of Epidemiology and Virology, NICD-NHLS



Province abbreviations: ECP=Eastern Cape; FSP=Free State; GAP=Gauteng; KZP=KwaZulu-Natal; LPP=Limpopo; MPP=Mpumalanga; NCP=Northern Cape; NWP=North West; WCP=Western Cape

Figure: Measles IgM positive results per province: South Africa, January 2009 to 12 May 2011

Rotavirus season 2011

Rotavirus infections are most common in children under two years of age. While children may be reinfected with rotavirus numerous times during childhood, it is the first infection that often results in severe disease and dehydration necessitating hospitalisation. Efforts to improve sanitation and access to clean water do not reduce the incidence of rotavirus disease and, therefore, vaccines were developed as the first line of prevention.

A monovalent rotavirus vaccine is available in the expanded program of immunization (EPI) to all infants in South African and is administered to children at their 6 and 14 week visits. The vaccine has been shown to be efficacious and safe, even in HIV-positive infants. For 2011, the Viral Gastroenteritis Unit has received a total of 535 stool samples up until 13 May; 15 samples were unsuitable for testing. Rotavirus was detected in 15% of samples (80/520) with the majority of positive samples (92%, 74/80) originating from Western Cape Province.

The rotavirus season in Western Cape Province typically begins in February and peaks in April, and summer peaks may also occur in October and November. The rotavirus season in the rest of South Africa usually starts a month later (i.e.

in March), and peaks in May to June. The first rotavirus cases for the 2011 season in Gauteng Province have recently been detected.

Preliminary analysis of the data from the rotavirus surveillance program has revealed that the introduction of the rotavirus vaccine in August 2009 has resulted in a substantial reduction in the numbers of rotavirus cases that require hospitalisation.

Source: Viral Gastroenteritis Unit, NICD-NHLS

Rabies

Human rabies was confirmed in a fourteen-year-old boy from Hamatsika, Vhembe district (Limpopo Province). He presented to a local hospital on 18 April, with a history of sustaining a dog bite in January 2011. This is the second case of human rabies to be confirmed for South Africa for 2011 to date; both cases were from Limpopo Province. This province has been afflicted with rabies since the outbreak in 2005, after introduction of the virus into the domestic dog population from Zimbabwe.[1] Prior to the outbreak, rabies in this province was mainly confined to wildlife species (particularly blackbacked jackals) with no human cases reported in the preceding 25 years.

Mpumalanga and Gauteng provinces have since also experienced rabies outbreaks in domestic canines where it was previously controlled. Dog rabies has been radiating northwards in Mpumalanga Province since 2008, with suspected and confirmed human cases reported annually since. Rabies transmission was also established in the domestic dog population of south western Johannesburg; since June 2010 to date, nearly 50 cases of dog rabies have been confirmed in Johannesburg Metro. Intensive dog vaccination campaigns are continuing in an effort to curb the outbreak. A single human case was confirmed in a two-year-old child from Soweto in October 2010, the first case of human rabies acquired in the Johannesburg area to be reported.[2]

The importance of appropriate post-exposure prophylaxis cannot be overstated. Rabies post-exposure management includes prompt wound care (copious washing of the wound with soap and water and application of antiseptic), administration of rabies vaccines (4 or 5 doses administered intramuscularly over a 2-4 week period) and in certain cases, the administration of rabies immunoglobulin. For more information refer to the rabies guidelines available on www.nicd.ac.za.

1. Cohen *et al.*, 2007. The re-emergence of rabies in Limpopo province, South Africa: epidemiology and viral molecular characterization. Emerg Infect Dis. 13, 1879-1886.
2. NICD Communiqué, Volume 9, issue 10, October 2010.

Source: Special Pathogens and Outbreak Response Units, NICD-NHLS

Rift Valley fever update

Sporadic human RVF infections have been detected in recent weeks and we encourage clinicians to continue to collect specimens and complete a case investigation form (available on www.nicd.ac.za) for all cases meeting the suspected RVF case definition.

From 1 January to 20 May 2011 a total of 32 laboratory-confirmed human RVF infections have been identified, with zero fatalities. This includes cases from Eastern Cape (n=15), Western Cape (n=12), Free State (n=3) and Northern Cape (n=2) provinces (Figure). Most cases work regularly with animals within the farming (n=24, 75%), veterinary (n=4, 13%) or hunting (n=2, 6%) sectors. Prior to onset of illness, 81% (n=26) of cases report direct contact with infected animal tissue and/or body fluids, 59% (n=19) report mosquito bites, 22% (n=7) report acquisition and handling of meat not sourced from a retail outlet (i.e. informal slaughter), and 15% (n=5) report consuming unpasteurised milk.

Source: Special Pathogens and Outbreak Response Units, NICD-NHLS; Department of Health; Department of Agriculture, Forestry and Fisheries

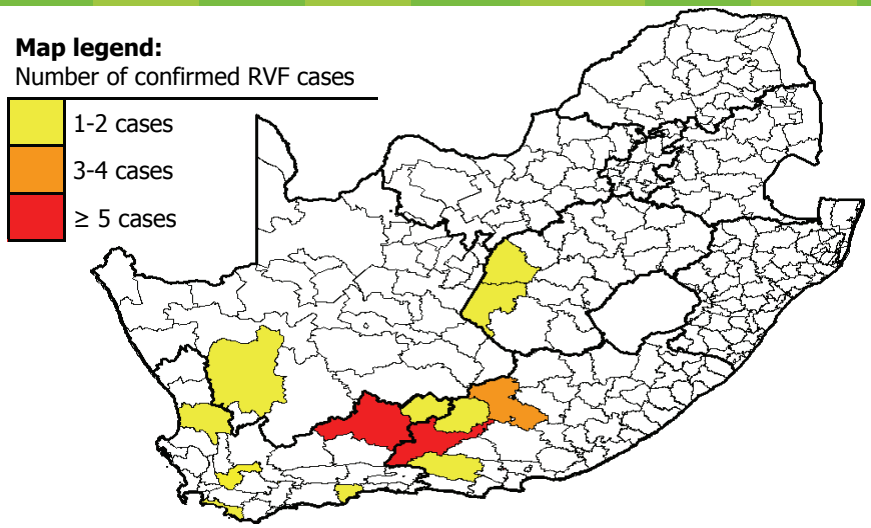


Figure: Map showing the number of laboratory-confirmed human RVF cases by administrative sub-district, South Africa, 1 January 2011 to 20 May 2011

West Nile virus

West Nile virus (WNV) is a mosquito-borne infection widely distributed throughout Africa, the Middle East, Asia, parts of Europe, Australia, North and South America, and the Caribbean. The WNV transmission cycle involves birds as vertebrate hosts and ornithophilic mosquitoes as maintenance vectors. WN has been known to occur in South Africa for many years; one of the largest WN outbreaks in humans ever reported (thought to have affected tens of thousands of people), occurred in the Karoo during the mid-1970s. Since then, WN has been reported almost annually in humans and equine, both serving as incidental hosts of the virus. Clinical recognition of WN disease is challenging. WNV infection may result in three distinct clinical entities: the vast majority of cases are asymptomatic, a small proportion of cases may have a mild febrile illness with maculopapular rash, and in rare cases WN may present with neuroinvasive disease (meningitis or encephalitis), which may have a fatal outcome. WNV infection should be confirmed by specialised laboratory testing, which includes serological, molecular and virologic tests. The clinical features together with exposure and travel history will aid in the final diagnosis of WN disease. In addition, since considerable clinical overlap exists with other arboviruses (particularly Sindbis), laboratory testing for exclusion of other likely arboviruses should also be done. Although there is no specific treatment for patients with these arboviral infections, a diagnosis will guide supportive management and exclude other possible aetiologies.

Coinciding with the Rift Valley fever (RVF) outbreak, an increased number of laboratory-confirmed WN cases has also been detected during 2010 and 2011. This is not surprising, given that these viruses are known to co-circulate, share the same mosquito vector (*Culex* spp.), and are widespread in South Africa (being most active on the inland plateau). For 2011 to date, a total of 39 WN cases has been identified. It is noteworthy that co-infections with WN, Sindbis and RVF viruses are not uncommon.

Source: Special Pathogens and Outbreak Response Units, NICD-NHLS

Foodborne illness outbreaks

On 22 March 2011, a nurse practitioner at a local clinic reported eight suspected foodborne illness cases to the KwaZulu-Natal Province Department of Health. These cases had consumed meat from a cow on 20 March. The cow had died on the 19 March, presumably from lung abscesses. The cases presented with symptoms including fever, diarrhoea, vomiting and dehydration. Treatment was given, including loperamide, oral rehydration solution or intravenous fluids. One case was referred to a hospital for assessment, but was not admitted.

Three stool specimens and a raw meat sample were collected for analysis. Non-typhoidal *Salmonella* species was isolated from the raw meat sample. *Bacillus cereus* and *Staphylococcus aureus* were also isolated, but enterotoxin tests were negative (NHLS Public Health Laboratory, KwaZulu-Natal Province). The non-typhoidal *Salmonella* isolate was referred to the Enteric Disease Reference Unit (NICD) for further characterisation, and shown to be *Salmonella typhimurium*. Interventions included health education to the family and community members.

On 20 April, 38 attendees of a workshop in Midrand (Gauteng Province) presented with vomiting and 'collapse', and 5 cases were admitted to a local hospital. Many of the cases implicated a meal served the previous night that included chicken. No food samples were available for analysis; however, stool specimens from 3 cases were submitted to NHLS Infection Control Services Laboratory (ICSL) in Johannesburg, and *Clostridium perfringens* was isolated on 2 of the 3 specimens.

Source: Outbreak Response and Enteric Diseases Reference Units, NICD-NHLS; NHLS Infection Control Services Laboratory, Johannesburg; NHLS Public Health Laboratory, KwaZulu-Natal; KwaZulu-Natal and Gauteng Department of Health

Cefixime is first-line treatment for gonorrhea in South Africa

New STI guidelines were produced for managing STIs in South Africa in 2008 by the National Department of Health (NDoH). The guidelines are available from the NDoH, and to assist with accessibility, an electronic PDF copy is also available on www.nicd.ac.za.

Oral cefixime is now South Africa's first-line treatment for presumptive gonorrhoea. Ciprofloxacin should no longer be used to treat presumptive gonococcal infections due to the high prevalence of resistance within South Africa (currently 25-30% in Johannesburg, but had already reached 40% in Durban a few years ago). Surveillance carried out by the STI Reference Centre (NICD-NHLS) in the last 4 years in Bloemfontein, Cape Town, East London, Kimberley and, most recently, Polokwane and Rustenburg has shown that the prevalence of ciprofloxacin resistance well exceeds the 5% resistance level at which first-line therapy for gonorrhoea should be changed (WHO recommendations).

First-line therapy to treat gonorrhoea should be preferably with oral cefixime (single 400mg dose). Cefixime has recently been made available in South Africa by Merck Serono and is available at pharmacies. Intramuscular (i.m.) ceftriaxone 250mg may be used as the alternative first-line therapy if oral cefixime is not available. For those with severe penicillin allergy (i.e. history of shock or anaphylaxis), alternatives include single dose spectinomycin 2g i.m. (first choice, if available), azithromycin 2g single oral dose (second choice) or single dose gentamicin 240mg i.m. (third choice). Where these are not available, single dose ciprofloxacin 500mg may be tried with the understanding that it may only work in 50-70% of patients. For those patients with a history of uncomplicated penicillin allergy (e.g. rash), it is warranted to prescribe oral cefixime or i.m. ceftriaxone as long as there is no previous history of allergy to cephalosporins.

The high likelihood of co-existent chlamydial infection in patients with gonorrhoea should be covered by co-treatment with either doxycycline 100mg 12 hourly for 7 days (public/private sector) or azithromycin 1g orally as a single dose (private sector).

Clinicians should also be aware that strains of *Neisseria gonorrhoeae* that are clinically resistant to oral cefixime, now exist in other continents. These strains first appeared in Japan at the turn of the millennium and have now increased in frequency to the extent that oral cephalosporins are no longer recommended in several countries in the Western Pacific Region, e.g. Japan (replaced by ceftriaxone 1g intravenously), China (replaced by ceftriaxone 1g .i.m.) and Australia (replaced by ceftriaxone 500mg i.m.). Recently, two cases of gonococcal genital tract infection, which failed treatment with oral cefixime, were reported in the UK. The UK is currently debating whether or not it should abandon oral cefixime in reference for i.m. ceftriaxone 500mg as a single dose.

At the present time, within South Africa or Africa as a whole, there have been no gonococcal strains which exhibit confirmed clinical or microbiological resistance to oral cefixime. Therefore, single dose oral cefixime 400mg should remain the first choice oral agent to treat presumptive gonorrhoea infection.

Any health practitioners seeing cases of gonorrhoea which fail to respond to oral cefixime should first rule out re-infection from an untreated partner. If re-infection is excluded and cefixime resistance appears a possibility, health practitioners are asked to take a sample for *N. gonorrhoeae* culture at their nearest laboratory and request susceptibility testing for cefixime. Additional swabs from anatomical sites thought to be infected with cefixime resistant *N. gonorrhoeae* (urethral/cervical/rectal/pharyngeal) can also be sent in Amies' transport medium to the STI Reference Centre at NICD-NHLS. Health practitioners are asked to report any suspected cases of cefixime resistant gonorrhoea to the Head of the STI Reference Laboratory at the NICD-NHLS (Prof. David Lewis, davidl@nicd.ac.za, tel: 011 555 0468, fax: 011 555 0470). In addition Prof. Lewis is happy to give clinical advice on the treatment of gonorrhoea in cases with management dilemmas as required.

Source: STI Reference Centre, NICD-NHLS

Beyond our borders: infectious disease risks for travellers

The "Beyond Our Borders" column focuses on selected and current international diseases that may affect South Africans travelling abroad. In this issue, we examine an outbreak of Ebola and the wide-spread occurrence of dengue fever.

Ebola: Uganda

Alert: There has been a death resulting from infection with the Ebola virus in Uganda. On 6 May 2011, a twelve-year-old girl from the Luwero District (75km north of Kampala) died a few hours after being admitted to Bombo Hospital. Preliminary testing carried out by the Uganda Virus Research Institute confirmed that Ebola virus infection had been the cause of death. Health officials have been attempting to identify additional cases in the area, and there are plans to set up isolation units at Bombo Hospital. There have been two previous outbreaks of Ebola in Uganda; in 2000 an outbreak in the north of the country caused 170 deaths, and in 2007 a second outbreak in western Uganda claimed the lives of 37 people.

The disease: The Ebola virus causes a viral haemorrhagic fever that has a high case fatality rate (25-90%). The virus has an incubation period of 2-21 days and is transmitted by person-to-person spread via blood and/or bodily secretions. It is, therefore, often spread to family members and friends who have been in direct contact with a case (mourners at burial ceremonies can also be exposed if they come into contact with the deceased's body). Healthcare providers have to take stringent precautions to avoid direct contact with cases and also need to carefully handle objects (e.g. needles) that have been contaminated by their secretions.

Advice to travellers: Travellers to the area should avoid close contact with suspected or confirmed Ebola cases (those who have been in close contact with such cases are advised to contact a healthcare provider immediately).

Dengue and dengue haemorrhagic fever (DHF): Tropical and sub-tropical regions

Alert: Dengue is the most common cause of fever in travellers returning from the Caribbean, Central America and South Central Asia. Dengue is endemic in many tropical and sub-tropical countries, including parts of Africa (Figure). Recent reports of increased activity include:

- Brazil: Several cities and states are currently affected. In the state of Rio De Janeiro, for example, the number of deaths due to dengue between 1 January and 12 May 2011 was 35% higher than the total number of deaths in the area in 2010.
- Hawaii, USA: 5 reported cases in Pearl City between March and May 2011. This includes 4 cases of locally contracted dengue and 1 travel-associated case (the index case).

The disease: The differential diagnosis of travellers returning with fever, myalgia and rash should include dengue fever**.** Classic dengue fever is characterized by sudden onset of fever with frontal headache, retro-orbital pain and myalgia. Dermatological manifestations occur in up to 50% of patients and present as an early facial flushing or erythematous mottling, or an eruption with an intense erythematous pattern with islands of normal skin between. Thrombocytopenia is common in dengue fever and is typically self-limiting. DHF is primarily a disease of children <15 years but can occur in adults. The critical stage in DHF occurs most frequently from about 24 hours after the temperature falls to normal or below normal. A spectrum of manifestations ranging from a positive tourniquet test with scattered petechiae (Grade 1) to profound shock (Grade 4) can occur. Thrombocytopenia and haemoconcentration indicating plasma leakage are constant features.

Advice to travellers: Dengue virus is transmitted by the *Aedes* mosquito, which breed commonly around households and are most active during the day. Travellers should take precautionary measures to avoid bites: use insect repellents (containing 30-50% DEET), wear light-coloured clothing and use insecticide-treated bed nets.

Source: Outbreak Response and Travel Health Units, NICD-NHLS; public health registrars, University of the Witwatersrand

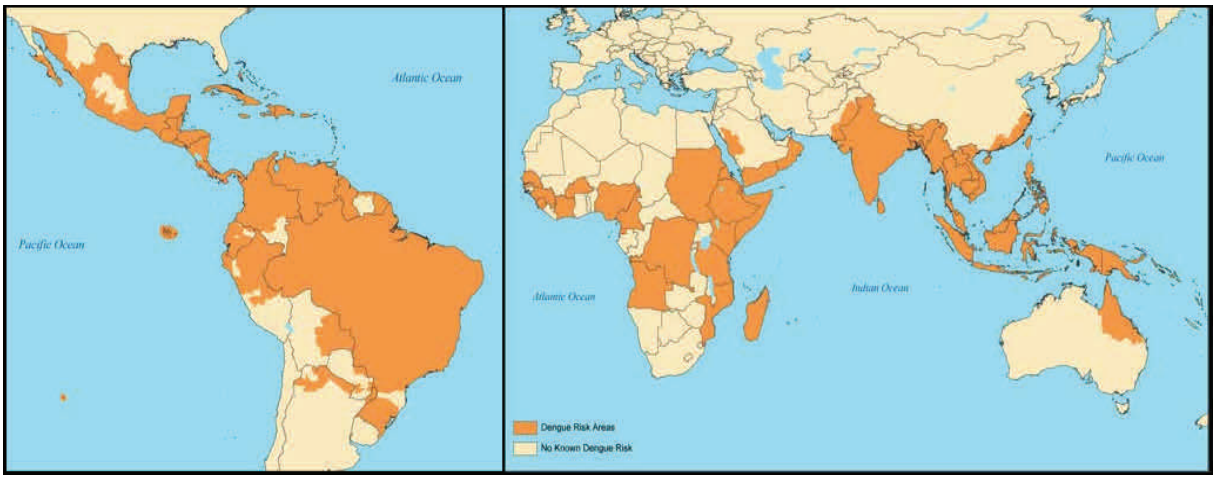


Figure: Maps showing distribution of dengue fever in the eastern and western hemispheres*

References and additional reading: ProMED-Mail (www.promedmail.org), World Health Organization (www.who.int), *Centers for Diseases Control and Prevention (*Yellow book 2010, Ch. 5, Dengue fever and dengue hemorrhagic fever,* wwwnc.cdc.gov/travel/yellowbook/2010/chapter-5/dengue-fever-dengue-hemorrhagic-fever.htm), and NHS Choices (Dengue. http://www.nhs.uk/Conditions/dengue/Pages/Introduction.aspx). Last accessed: 2011/05/20.

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