NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
Division of the National Health Laboratory Service

Communicable Diseases Communiqué

APRIL 2014, Vol. 13(4)

CONTENTS

1 ZOONOTIC DISEASES

Anthrax

Current anthrax outbreaks in South Africa

Northern Cape Province

During March 2014 there were reports of an unusual increase in deaths among sheep and goats in Sanddrift (Namakwa District), close to the Namibian border. Animal specimens were submitted to Onderstepoort Veterinary Institute for testing, and anthrax was confirmed as the cause of the outbreak. Of concern was that some residents in the area had slaughtered sick animals, and had potentially consumed anthrax-contaminated meat.

The last recorded animal anthrax outbreak in this area was in 2006, and occurred in Kuboes, a small town neighbouring Sanddrift. One human case of probable cutaneous anthrax was identified, and 19 persons exposed to anthrax-contaminated goat and sheep carcasses were given antibiotic prophylaxis and monitored.

Namakwa District Municipality health officials instituted active case finding at public health clinics, and no suspected human cases have been identified to date. Community health education began on 21 March 2014 at schools and within the community, to raise awareness of the disease and highlight preventive measures. The Department of Agriculture, Land Reform and Rural Development has planned an animal anthrax vaccination campaign in response to the outbreak.

Northern Kruger National Park, Limpopo Province

An outbreak of anthrax among wildlife has been reported in the northern Pafuri area of the Kruger National Park. Although this area is known to be endemic for anthrax with wildlife cases reported every year, there was a sudden dramatic increase in the number of anthrax cases during February 2014. Affected wildlife species include impala, kudu, nyala and Burchell's zebra. Since the outbreak is in a remote area of the park, it poses no risk to travellers.

FOCUS ON ANTHRAX

Anthrax is endemic in parts of southern Africa and is commonly reported in livestock and wildlife. In 2013 and 2014, outbreaks have been reported in Namibia (human and animal cases), Zimbabwe (human and animal cases), Lesotho (human and animal cases), and the Kruger National Park, South Africa (animal cases only).

Bacillus anthracis is a spore-forming bacterium that can survive for extended periods in the environment. In anthrax-endemic areas, sporadic animal cases and occasional outbreaks (epizootics) occur, sustaining the persistence of the organism in the environment. Anthrax can be transmitted to humans by direct contact with infected animals or their products (e.g. wool, hides, animal-hair products), by inhalation of aerosolised spores from infected animal products, or by ingestion of undercooked anthrax-contaminated meat. Intentional release of weaponised anthrax spores have also caused cases and outbreaks of disease in humans.

Depending on the mode of transmission, disease usually manifests as one of three forms. Cutaneous anthrax, the most common form accounting for >95% of infections, occurs when the bacterium enters a cut or abrasion on the skin – typically on the hands, arms or face. Disease begins as a small, pruritic papule resembling an insect bite, which within 1-2 days develops a central vesicle which leaves a painless ulcer. The ulcer is characterised by the presence of a black necrotic centre (eschar), and is typically associated with extensive local oedema. Regional lymphadenopathy is often present. With timely diagnosis and appropriate antimicrobial therapy, the case fatality rate (CFR) is <1%; however, in untreated cases the CFR can approach 20%. Inhalational anthrax is usually a biphasic illness. An initial prodrome of influenza-like illness lasting 4-5 days is followed by a rapidly progressive severe respiratory illness and shock. Once the fulminant phase of illness manifests, the CFR is >90% despite appropriate antimicrobial therapy and supportive care. If antimicrobial therapy is initiated during the prodromal stage of disease, there is a greater chance of survival. Chest X-ray findings in inhalational anthrax classically include a widened mediastinum, with or without pleural effusion or pneumonic changes. Gastrointestinal anthrax follows the consumption of undercooked contaminated meat. After an incubation period of 1-6 days, intestinal necrotic ulcers develop. Symptoms include nausea, loss of appetite, vomiting (with blood in some instances), low-grade fever, and occasionally diarrhoea; the CFR ranges from 4-60%. Oropharyngeal infection is rare, and may occur following the consumption of contaminated meat; oropharyngeal necrotic ulcers develop, and disease manifests with oedema of the oropharynx and neck, cervical lymphadenopathy, pharyngitis and fever. Haematogenous spread following cutaneous, gastrointestinal or inhalational anthrax can occur, resulting in anthrax meningitis; the CFR of this severe complication is >90%.

A suspected case of human anthrax requires an immediate telephonic notification to local Department of Health officials. The appropriate laboratory investigations for suspected anthrax depend on the clinical presentation of disease. Vesicular fluid swabbed from previously unopened vesicles, or swabs from under the edge of the eschar, are the preferred specimens for suspected cutaneous anthrax. Other forms require the collection of blood for culture. Sputum or gastric washings may be submitted for suspected inhalational anthrax, and cerebrospinal fluid for suspected anthrax meningitis. Testing of human samples for anthrax is only performed at the Centre for Emerging and Zoonotic Diseases (NICD-NHLS) and employs a range of testing modalities, including microscopy, culture, and PCR. See the NICD-NHLS Quick Reference Guide for the Laboratory Diagnosis of Priority Communicable Diseases for further details.

A high index of clinical suspicion and prompt institution of appropriate antimicrobial therapy (preferably following specimen collection) is essential for the treatment of suspected anthrax disease. Cutaneous anthrax may be treated with oral amoxicillin, ciprofloxacin or doxycycline but should be guided by the results of antimicrobial susceptibility testing where available. A multidrug regimen is indicated for the treatment of systemic anthrax and expert advice should be sought in such cases.

Routine vaccination of livestock is the most effective preventive measure against anthrax in South Africa. Human vaccines are not available in South Africa. Prolonged post-exposure chemoprophylaxis (PEP) is

highly effective and should be started immediately if there is a strong suspicion of inhalation of aerosolised spores in a deliberate release scenario (bioterrorist attack). Screening tests following anthrax exposure are costly and ineffective, and thus are not recommended; however, PEP may be stopped following a negative finding from laboratory investigation of the implicated package/ material. See the NICD-NHLS Healthcare Workers Handbook on Bioterrorism for additional details. PEP is generally not recommended in the event of most natural exposures and the public health response consists of close monitoring for the development of symptoms in persons exposed, and prompt treatment should symptoms develop. Nonetheless, a short course of PEP may be considered in the setting of substantial risk in a natural exposure situation; for example, the consumption of poorly cooked meat from an anthrax-contaminated carcass. Where possible exposures are anticipated but have not yet happened, animal carcasses should be disposed of appropriately (i.e. incinerated, or buried deeply and covered in lime to prevent spore formation). Personal protective equipment should be donned when working with anthrax-contaminated carcasses and contaminated materials. Travellers to areas with current outbreaks should be advised to avoid contact with animals and high-risk animal-products such as hides. Additional information can be found in the WHO Anthrax in Humans and Animals Guideline.

Source: Division of Public Health Surveillance and Response and Centre for Emerging and Zoonotic Diseases, NICD/NHLS; Northern Cape Province Department of Health and Department of Agriculture and Land Reform; Department of Agriculture, Forestry and Fisheries

Rabies

For 2014 to date, one case of human rabies has been laboratory confirmed for South Africa; this patient was from Limpopo Province. In addition, three cases of suspected human rabies have also been recorded, originating from Limpopo (n=1) and Mpumalanga (n=2) provinces.

The most recent case-patient with suspected human rabies was a ten-year-old boy who presented to a Mpumalanga Province hospital during March 2014 with signs and symptoms suggestive of rabies and died shortly after. He was bitten by a dog during a visit to Mozambique earlier in the year, and it could not be ascertained whether he received any rabies post-exposure prophylaxis after the event. Unfortunately, the only sample collected for rabies investigation before the patient demised was a blood specimen (which is not useful for diagnosis of clinical rabies disease). Family members did not provide consent for post-mortem specimen collection, so the diagnosis could not be confirmed.

Rabies in humans can be investigated by laboratory testing of ante-mortem or post-mortem specimens. During the acute phase of rabies disease, saliva, cerebrospinal fluid and skin biopsies collected from the nape of the neck are useful for laboratory investigations. Reverse transcription PCR performed on these specimens may reveal the presence of rabies virus RNA, but negative PCR results should not be considered as evidence for exclusion of the diagnosis. It is recommended that three saliva specimens collected on consecutive days must be submitted for testing, since the rabies virus is shed intermittently in the saliva and specimens may test false-negative. The ante-mortem laboratory confirmation of rabies can be challenging and it is recommended that multiple specimens are submitted for a battery of tests, and appropriate care must be taken to maintain the cold chain during transport of specimens to the laboratory. The most sensitive test for rabies remains the direct fluorescent antibody test performed on post-mortem collected brain specimens, which can reveal the presence of rabies virus antigen in brain impression smears. This test is robust and sensitive, and remains the gold standard for rabies diagnosis. Brain specimens must be submitted to the laboratory preserved in glycerol saline (not formalin).

Source: Centre for Emerging and Zoonotic Diseases and Division of Public Health Surveillance and Response, NICD-NHLS

2 VECTOR-BORNE DISEASES

Malaria alert

Travellers and healthcare workers are reminded that April and May fall in the peak malaria transmission season, which in southern Africa extends from September to May each year. A spike in the number of malaria cases was noted in Limpopo Province during the last 2 weeks of March, following heavy rainfall and hot humid conditions earlier in the month which facilitated malaria vector proliferation. Malaria cases increased most notably in Giyani and Phalaborwa areas. The neighbouring province of Mpumalanga also reported an increase in cases during the same period, notably in the Bushbuckridge area. During March 2014, a total of 837 cases including 9 deaths was notified in Limpopo Province, 91% (765/837) of which were classified as local cases (indicating local malaria transmission). This observed increase has not been declared an epidemic, and cases have been on the decline since the first week in April. The Department of Health Malaria Control Programme continues to monitor the situation and interventions have been implemented. Active health promotion is ongoing, in order to raise awareness amongst community members and healthcare workers in the affected areas so as to facilitate early presentation, prompt diagnosis, and institution of appropriate treatment.

The malaria-endemic provinces within South Africa are KwaZulu-Natal, Mpumalanga and Limpopo. Within these provinces, local malaria transmission only occurs in certain areas. Zimbabwe and Mozambique, both countries that share borders with South Africa, are also known endemic areas. All our neighbouring countries except for Lesotho have autochthonous malaria, albeit to varying degrees. Figure 1 shows the malaria risk areas in South Africa.

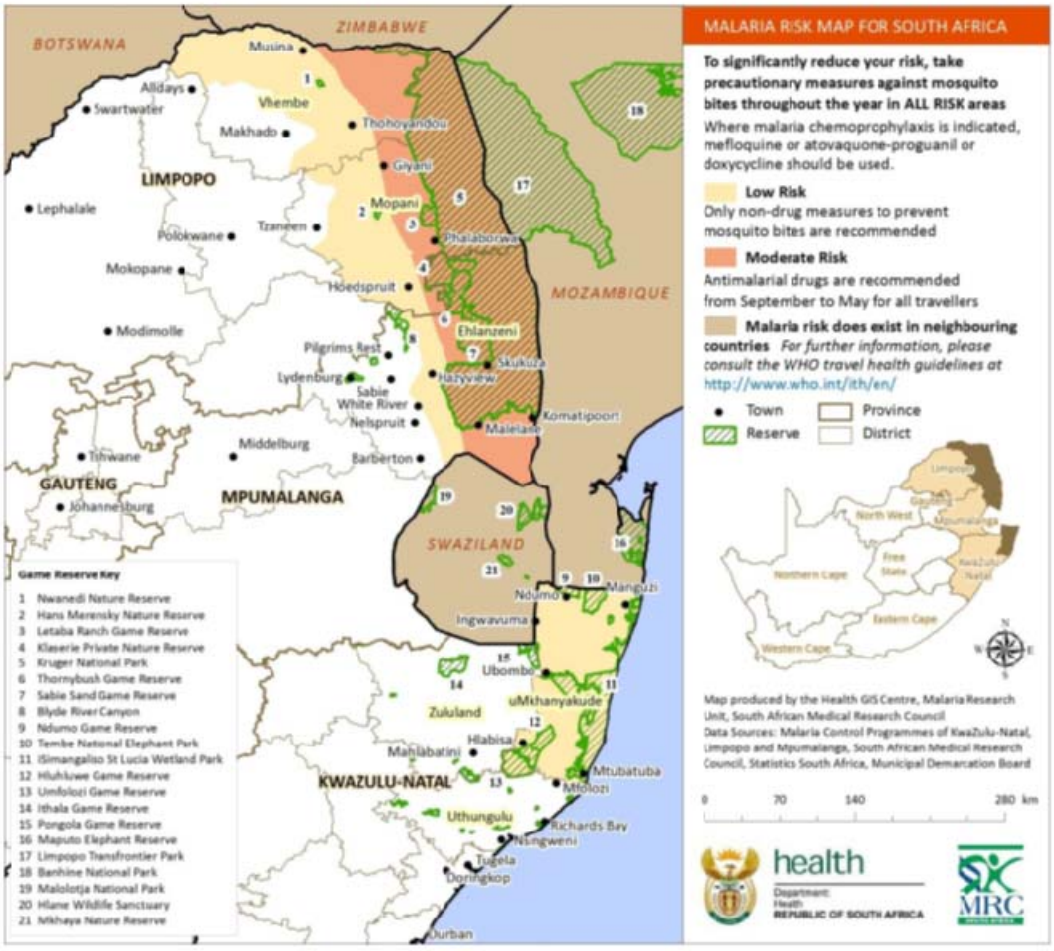

Figure 1.Malaria risk areas in South Africa

Malaria is a deadly disease; otherwise-healthy travellers die from malaria because of missed diagnosis, misdiagnosis (especially as influenza), delays in treatment, or incorrect treatment. Tick bite fever, and dengue fever in areas where the disease is known to occur, are important in the differential diagnosis of febrile illness in returning travellers at this time of the year. The diagnosis and treatment of malaria constitute a medical emergency. There should be a high index of suspicion for malaria in any person who develops a fever or influenza-like illness with headache, rigors, and myalgia/arthralgia during or after travel to a malaria-risk area, whether preventive measures have been taken or not. For further information regarding the diagnosis and treatment of malaria, refer to the South African guidelines for the treatment of malaria: http://www.doh.gov.za/docs/policy/2011/malaria_treatment.pdf.

Travellers to malaria-endemic areas in South Africa and neighbouring countries should take note of the increased risk of malaria and take the necessary precautions, which include the prevention of mosquito bites and chemoprophylaxis. Since malaria vector mosquitoes are most active from sunset to sunrise, insect repellents containing DEET should be applied to exposed parts of the body during this period. Use of fans, air conditioning, insecticide coils, the wearing of long sleeves & long pants and socks, and sleeping under mosquito nets can further reduce mosquito bites. Chemoprophylaxis is recommended when visiting high risk areas; refer to the South African guidelines for prevention of malaria: http://www.doh.gov.za/docs/policy/2011/malaria_prevention.pdf.

The majority of travel-related malaria in South Africa occurs in persons returning from Mozambique. South Africans travelling to Mozambique should be made aware of the increased malaria risk and appropriate preventive measures. The Kruger National Park and adjacent game reserves are also at some risk for malaria transmission, and personal preventive measures need to be reinforced. Pregnant women and young children under 3 years of age should be discouraged from travelling to high-risk areas, since they are at particularly high risk for severe and fatal malaria.

Source: Division of Public Health Surveillance and Response, NICD-NHLS; Malaria Control Programme, National and Provincial Departments of Health

Fatal tick bite fever cases

Three cases of fatal tick bite fever (TBF) have been investigated by the NICD in recent months.

Case 1

A 40-year-old female horse-back rider from Schweizer-Reneke in North West Province reported a tick bite before falling ill, and noted an eschar on her back. She complained of severe headache and fever which progressively worsened, and was admitted to a Bloemfontein hospital with signs suggestive of encephalitis; radiological imaging revealed a cerebral infarct with bleeding. Initial laboratory test results for TBF were confounding, and she died two weeks later. The patient was an organ donor, and a definitive diagnosis became critical to facilitate the organ donation process. Given the history of a tick bite together with the fulminant nature of the illness, Crimean-Congo haemorrhagic fever (CCHF) infection had to be excluded. All tests for CCHF were negative, but testing for rickettsia IgG and IgM using indirect immunofluorescence was positive, confirming the clinical and circumstantial evidence supporting the diagnosis of TBF.

Case 2

A 50-year-old female from Brackenfell, Western Cape Province, reported going on a picnic at the Breede River before she fell ill. The patient was admitted to hospital with fever (>40°C), headache and decreased level of consciousness. No typical eschar was found on examination, although the presence of a small, raised erythematous lesion on her leg was noted. Abnormal laboratory test results included moderately elevated hepatic transaminases and thrombocytopenia. The patient died approximately two weeks later. Laboratory investigation for CCHF was negative, but TBF was confirmed by serology and PCR.

Case 3

A 63-year-old farmer in Wellington, Western Cape Province, presented with an acute febrile illness and reported nausea and malaise. He was initially treated in hospital overnight for a suspected allergic reaction, but his condition deteriorated rapidly. He developed haematemesis, became hypotensive and experienced three cardiac arrests. A black eschar was found on his hairline, suggesting the possibility of TBF. Intravenous ciprofloxacin was commenced as he was unable to tolerate oral doxycycline, but he demised within 24 hours of admission to hospital. CCHF was considered as a possible diagnosis, given the exposure to ticks, geographical

location, and clinical presentation of the patient. However, the likelihood of CCHF was anticipated to be low, since liver transaminases were only marginally elevated, thrombocytopenia was moderate, and the presence of a typical eschar supported a diagnosis of TBF. Nevertheless, the patient was isolated and barrier-nursed, and specimens were submitted to the NICD for CCHF investigation. Reverse transcription PCR and CCHF-specific IgG and IgM serology were all negative. A diagnosis of TBF was confirmed by indirect immunfluorescence assay which was positive for anti-rickettsia IgM and IgG.

Discussion

Severe TBF disease with complications (including encephalitis, bleeding, DIC, hepatorenal failure, ARDS, digital gangrene and myocarditis) may mimic other diseases, including CCHF, meningococcal septicaemia, or fulminant Gram-negative septicaemia. Healthcare workers should be aware that TBF must feature in the differential diagnosis of acute febrile illness in at-risk persons. Risk factors include travel in Southern Africa, hiking in rural areas, living on small holdings in peri-urban areas, and living/working on farms. However, even persons living in urban areas who are exposed to ticks in the home setting may potentially be at risk. An eschar, often located by finding tender regional lymphadenopathy, together with fever and headache should prompt treatment with doxycycline. A maculopapular rash, typically including the palms and soles, may be noted in infections with *Rickettsia conorii* but is generally absent in *Rickettsia africae* infections. The classical triad of TBF (fever, eschar and rash) occurs in 50-75% of cases, but eschars may not be typical and the rash may be variable. Doxycyline is the treatment of choice, generally administered for 5-7 days; it is highly effective and a clinical response with symptom relief and defervescence can be expected within 48 hours. Since TBF can potentially be severe and life-threatening, all patients should initially be treated with doxycycline since it is the most effective treatment. For pregnant women and children <8 years of age, an initial 48 hours of therapy with doxycycline should be given followed by a macrolide such as clarithromycin or azithromycin for 3-5 days to complete the course of therapy. In critically-ill patients unable to tolerate oral doxycycline, intravenous ciprofloxacin is the only treatment option since intravenous doxycycline is not available in South Africa. Limited data and extrapolation from experience with Rocky Mountain spotted fever supports the use of corticosteroids in patients with fulminant TBF or TBF disease complicated by ARDS.

TBF is a clinical diagnosis, and a patient presenting with an acute febrile illness, eschar and rash should receive prompt doxycycline treatment. Laboratory confirmation of TBF in the first week of illness is challenging and results may be misleading given the low sensitivity of both PCR and serology. Antibody seroconversion usually occurs from day 10 of illness. PCR can be performed on buffy coat preparations (obtained from EDTA whole blood), and eschar swabs/biopsies. The historical Weil-Felix test is obsolete given its unacceptably low sensitivity and specificity.

Source: Centre for Emerging and Zoonotic Diseases and Division of Public Health Surveillance and Response, NICD/NHLS

3 SEASONAL DISEASES

Influenza

The number of patients consulting for influenza-like illness (ILI) at Viral Watch sites and sentinel primary healthcare clinics, as well as those admitted with severe acute respiratory illness (SARI) at sentinel hospitals has been increasing steadily. As at 06 April 2014, 65 specimens have been received from Viral Watch sites since 01 January 2014. Influenza A (H1N1)pdm09 was detected in two of these specimens; one of these patients had travelled to Europe, and the other had close contact with visitors from Europe. Influenza A(H3N2) was detected in one patient, a tour guide who had been in contact with travellers from the northern hemisphere. Influenza B was detected in two patients with no documented history of travel. In addition, 19 specimens have been received from a port of entry into South Africa. Influenza A(H1N1) pdm09 was detected in two, and influenza B in six of these patients. All these patients had travelled from the northern hemisphere. For the same period (01 January to 06 April 2014), 394 patients presenting with SARI were admitted at the SARI sentinel sites. Although none of these patients tested positive for influenza, 33% (130/394), 24% (100/394) and 7% (29/394) were positive for respiratory syncytial virus, rhinovirus and adenovirus, respectively.

Influenza and pregnancy

Pregnant women are at increased risk of developing severe influenza disease as compared to non-pregnant women. Pregnancy-related changes to the cardiovascular and respiratory systems leading to increased heart rate, oxygen consumption and reduced lung capacity, as well as immunity-related factors predispose the pregnant woman to more severe influenza disease, resulting in increased risk of hospitalisation and severe outcomes. In addition, influenza has implications for the outcome of pregnancy and may lead to spontaneous abortion, preterm birth and foetal distress. Since pregnancy (all stages, including two weeks post-partum), is such an important risk factor for severe influenza disease, influenza vaccination is recommended for all pregnant women. Influenza vaccination during pregnancy has been shown to protect both the pregnant woman and her unborn child from influenza-associated complications. Because the vaccine is contraindicated in children younger than 6 months of age, vaccinating the pregnant woman is the best option for protecting the young infant. The vaccine has been shown to be safe and efficacious in pregnancy. Although influenza vaccination is the best available option for prevention against influenza-associated complications, prompt administration of antiviral medication to patients admitted with influenza-associated illness is an important adjunct to the control of influenza-associated complications and is recommended. During the 2009 influenza pandemic, antiviral treatment in hospitalised pregnant women was reported to reduce complications. Treatment decisions should be based on clinical presentation and should not be delayed pending laboratory confirmation of influenza. There are no safety data on humans, but animal studies have shown no malformations, maternal toxicity or embryotoxicity and a number of pregnant women have been treated with oseltamivir without any adverse events. Although most benefit from oseltamivir therapy has been reported when started within 48 hours of symptom onset, there is still benefit even if treatment is started thereafter.

To improve the uptake of influenza vaccination in pregnant women, practitioners managing pregnant women are encouraged to discuss influenza vaccination with their patients and to encourage them to get vaccinated for influenza. They should also be advised to seek medical advice early when not feeling well.

Source: Centre for Respiratory Diseases and Meningitis, NICD/NHLS

4 INTERNATIONAL ALERTS

Ebola virus disease outbreak in West Africa

Ebola virus has been confirmed as the cause of an outbreak of haemorrhagic fever which has affected Guinea, Liberia, Sierra Leone and Mali. This is the first recorded outbreak of Ebola virus disease (EVD) in these Western African countries, where Lassa fever is commonly reported. The outbreak began in the forested areas of southern Guinea during early February 2014 and is due to the Zaire ebolavirus species, which is historically highly lethal with case fatality rates (CFR) of up to 90% reported in previous outbreaks. A summary of case numbers to date is shown in the Table, and the geographic location of affected countries is shown in Figure 2.

Risk of imported Ebola virus disease cases to South Africa

The risk of infection for travellers is very low since most human infections result from direct contact with the body fluids or secretions of infected patients, particularly in hospitals (nosocomial transmission) and as a result of unsafe procedures, use of contaminated medical devices (including needles and syringes) and unprotected exposure to contaminated body fluids.

Since the current outbreak is reported in countries and areas which are not frequented by many tourists or travellers, the risk of EVD cases being imported into South Africa is low. However, healthcare or international agency workers etc. involved in the outbreak response may travel to and present in South Africa for medical care, and a high index of suspicion is important for such cases. A detailed history regarding travel and level of contact with suspected/confirmed EVD cases is extremely important.

Recommendations for travel to/from Guinea, Liberia, Sierra Leone, Mali and West Africa

The World Health Organization (WHO) does not recommend that any travel or trade restrictions be applied to Guinea, Liberia, Sierra Leone or Mali. There are no special precautions or directives for commercial flights, passengers or crew departing on flights bound for or returning to Guinea, Liberia, Sierra Leone or Mali. The regulations for evidence of a valid yellow fever vaccination certificate apply.
Any ill persons reported on flights from Guinea, Liberia, Sierra Leone or Mali and neighbouring

countries will need to be evaluated by the relevant Port Health officials. All requests for medical evacuation of persons from Guinea, Liberia, Sierra Leone or Mali with febrile illness or suspected infectious disease will need careful evaluation by the Port Health officials.

While the risk of introduction of Ebola virus into South Africa is considered low, we strongly recommend that surveillance for viral haemorrhagic fevers (and at present, particularly EVD), be strengthened. This should be done primarily through Port Health services, but it is also extremely important that public and private practitioners are on the alert for any ill persons that have travelled to viral haemorrhagic fever risk areas. There needs to be a high index of suspicion for EVD in health workers from the affected region with unexplained fever.

Evaluation of illness in travellers from Guinea, Liberia, Sierra Leone, Mali and West Africa

It is critical to maintain a very high index of suspicion for common causes of febrile illness in persons who have travelled to Guinea, Liberia, Sierra Leone, Mali and surrounding countries, including: malaria, dengue fever, Lassa fever and other endemic diseases (e.g. typhoid fever). These may be severe and life-threatening, and healthcare workers are urged to do appropriate tests and institute appropriate therapy as a matter of urgency. Malaria is the most likely cause of an acute febrile illness in returning travellers from most African countries and has to be prioritised for testing. However, Lassa fever is endemic in certain West African countries, including Nigeria, Sierra Leone, Guinea and Liberia - and needs to be considered in the differential diagnosis for any traveller from these countries who has unexplained febrile illness and has visited rural areas.

Suspected Ebola virus disease case definition and laboratory testing

The case definition for suspected Ebola virus disease is as follows:

Any person* presenting with an acute onset of fever that has:
- Visited or been resident in Guinea, Liberia, Sierra Leone or Mali in the 21 days prior to onset of illness

AND
- Had direct contact or cared for suspected/confirmed EVD cases in the 21 days prior to onset of illness, or been hospitalised in Guinea, Liberia, Sierra Leone or Mali

OR
- Has unexplained multisystem illness that is malaria-negative

*Healthcare workers in particular are at high risk

Testing for viral haemorrhagic fever viruses (including Ebola virus) in South Africa is only available at the NICD.

EVD testing is neither warranted nor useful for persons that are not suffering from a clinical illness compatible with EVD, even in the event of compatible travel histories. The tests cannot be used to determine if the patient has been exposed to the virus and may develop the disease later.

Requests for testing (with a detailed clinical, travel and exposure history) should be directed to the NICD Hotline at 082 883 9920 (a 24-hour service, for healthcare professionals only).

Source: Centre for Emerging and Zoonotic Diseases and Division of Public Health Surveillance and Response, NICD/NHLS

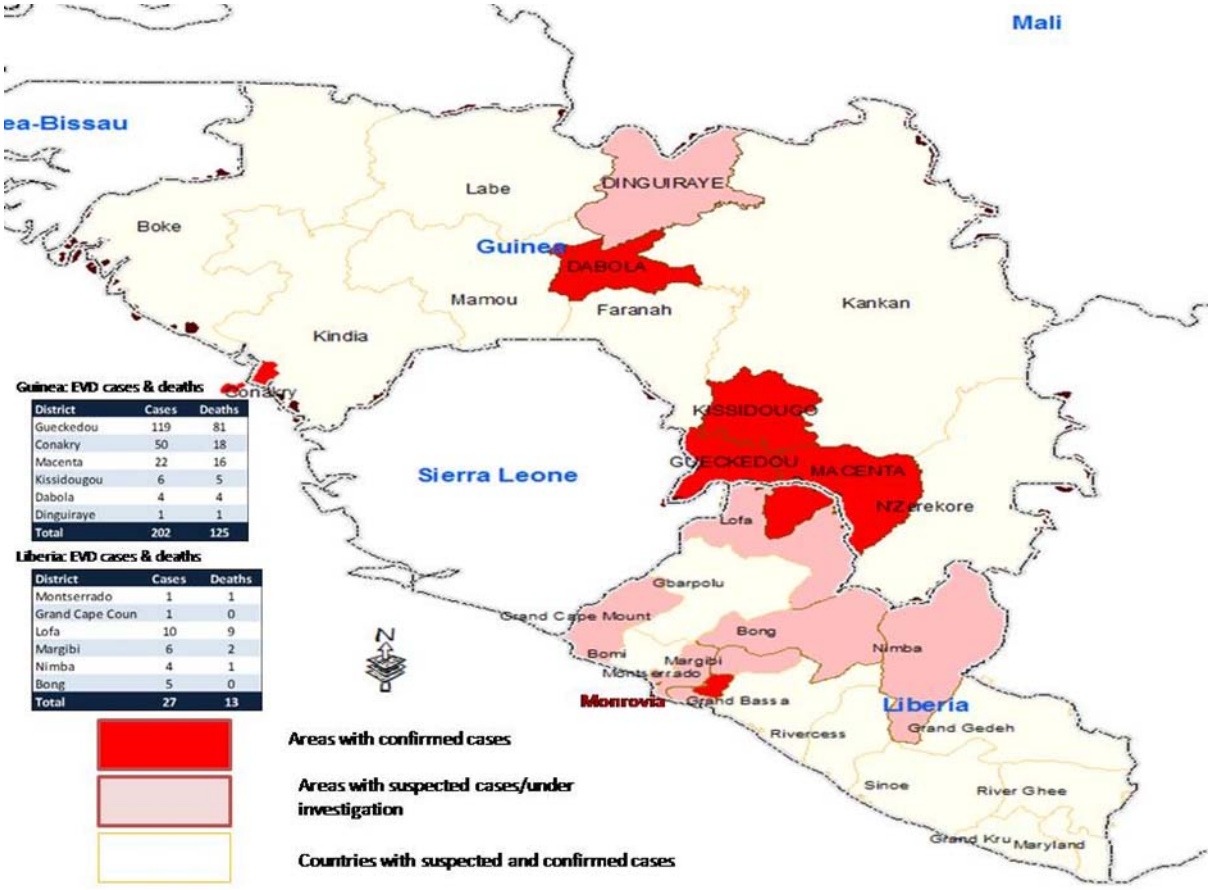

Figure 2: Geographic distribution of Ebola virus disease in West Africa as at 17 April 2014; World Health Organization (www.who.int).

Table: Ebola virus disease outbreak in West Africa: summary of cases as at 17 April 2014

Country	Total cases (laboratory-confirmed, probable and suspected)	Total deaths	CFR	Laboratory-confirmed cases	Laboratory-confirmed deaths	Date of illness onset in most recent case	Number of cases in healthcare workers
Guinea	203	129	64%	109	42	17 April 2014	24 (including 8 deaths)
Liberia	26	13	50%	6	6	11 April 2014	1

Dengue fever

Dengue fever in Zanzibar (Tanzania)

Dengue fever has been confirmed in European travellers returning from Zanzibar (Tanzania). The first dengue fever cases in Tanzania were reported in June 2010 in Dar es Salaam, and sporadic cases and clusters continue to be reported in that city. Zanzibar has not previously been regarded as a dengue fever risk area, and is a popular tourist destination, so many travellers are potentially at risk for infection.

Dengue fever outbreak in northern Mozambique

An outbreak of dengue fever has been confirmed in Pemba, a port city situated in the northern province of Cabo Delgado. Pemba is a popular tourist destination for water sports and diving enthusiasts. Thirty cases have been confirmed by laboratory testing since late March 2014, but the true extent of the outbreak is not known. The NICD has provided support to Mozambican health authorities for the laboratory testing of cases, and has identified dengue virus type 2 as being responsible for the outbreak. Dengue has not been reported from Mozambique since the mid-1980s when an outbreak was associated with dengue virus type 3. The current outbreak is reportedly attributed to exceptionally high rainfall that supported the proliferation of mosquito vectors.

Discussion

Dengue fever is widespread in sub-Saharan Africa and local outbreaks have been reported in 22 countries (see http://www.healthmap.org/dengue/en/ for regular updates of affected countries). In the past two years alone, sizeable outbreaks of dengue fever were reported in Angola and Kenya. There are recent reports of dengue in travellers to a number of West African countries including Senegal, Nigeria, Guinea, Mali, Ivory Coast and the Gambia. Dengue virus is not endemic in South Africa, although a transient outbreak of dengue fever was reported in Durban in the early 1900s. Dengue fever is commonly confirmed in travellers returning to South Africa from dengue-endemic countries in Africa, south-east Asia and South America.

Although malaria must always be the first consideration in travellers with acute febrile illness returning from most African countries (including Tanzania and Mozambique), dengue fever should be considered in the differential diagnosis. Dengue fever is typically characterised by a sudden onset of fever with frontal headache, retro-orbital pain, myalgia, arthralgia and rash, although the latter two symptoms are variable. Dermatological manifestations occur in up to 50% of patients as facial flushing, erythematous mottling or a maculopapular rash. Thrombocytopenia is a common finding and is typically self-limiting; leukopenia may also be present. A small proportion of patients develop severe dengue fever disease, which manifests as dengue haemorrhagic fever or dengue shock syndrome; severe disease is more common amongst children and patients who are re-infected with another dengue serotype. Treatment of acute dengue fever is supportive. For further information on management of patients with dengue, refer to the World Health Organization guidelines for dengue diagnosis, treatment, prevention and control at http://apps.who.int/iris/bitstream/10665/44188/1/9789241547871_eng.pdf.

Dengue viruses are transmitted by *Aedes* spp. mosquitoes, which usually bite during daytime. Travellers to dengue fever-risk areas should use mosquito repellents containing DEET, wear long-sleeved shirts and long pants during the day, and stay in well ventilated (fan/air-conditioned) rooms where possible. Burning mosquito coils at night and sleeping under a mosquito net in a well-ventilated room is also helpful. There are no available vaccines.

Laboratory testing for dengue fever is available at the Centre for Emerging and Zoonotic Diseases, NICD-NHLS. Molecular diagnostic tests and virus isolation are useful in the first week of illness, and demonstration of seroconversion helps to confirm a diagnosis.

Source: Centre for Emerging and Zoonotic Diseases and Division of Public Health Surveillance and Response, NICD-NHLS

5 ANTIMICROBIAL RESISTANCE

Update on carbapenemase-producing Enterobacteriaceae

The Johannesburg and Cape Town Antimicrobial Resistance Reference Laboratories (AMRRL) of the Centre for Opportunistic, Tropical and Hospital Infections (COTHI) at NICD/NHLS offer testing of suspected carbapenemase-producing Enterobacteriaceae (CPE) isolates for the presence of selected carbapenemase genes. For March 2014, a total of 75 isolates was screened, 56% (42/75) of which were confirmed as carbapenemase-producing Enterobacteriaceae. The most commonly referred isolates were *Klebsiella pneumoniae* (38/75, 51%) and *Enterobacter cloacae* (13/75, 17%) (Figure 3).

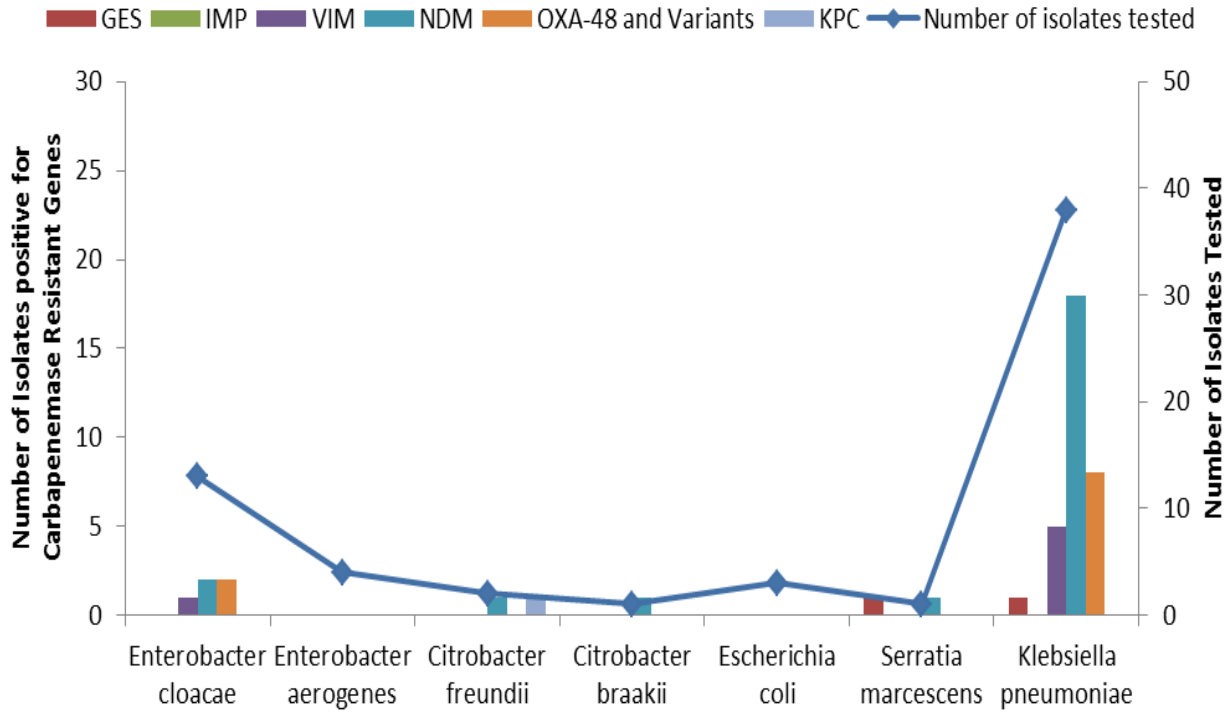

Figure 3. Enterobacteriaceae isolates screened (n=75) and confirmed CPE (n=42) during March 2014 at AMRRL (NICD-NHLS)

Twenty-three NDM-positive isolates were identified: 6 from private hospitals in KwaZulu-Natal and 17 from public hospitals in Gauteng and Western Cape provinces. Ten OXA-48 positive isolates were identified: 8 from one private hospital in Gauteng Province and one each from public hospitals in Western and Eastern Cape provinces. Six VIM-positive isolates from the public sector (5 from Gauteng Province and 1 from Eastern Cape Province), 2 GES-positive isolates (1 from the private sector in KwaZulu-Natal Province and 1 from the public sector in Western Cape Province) and one KPC-positive isolate (from the public sector in Gauteng Province) were also identified (Figure 4).

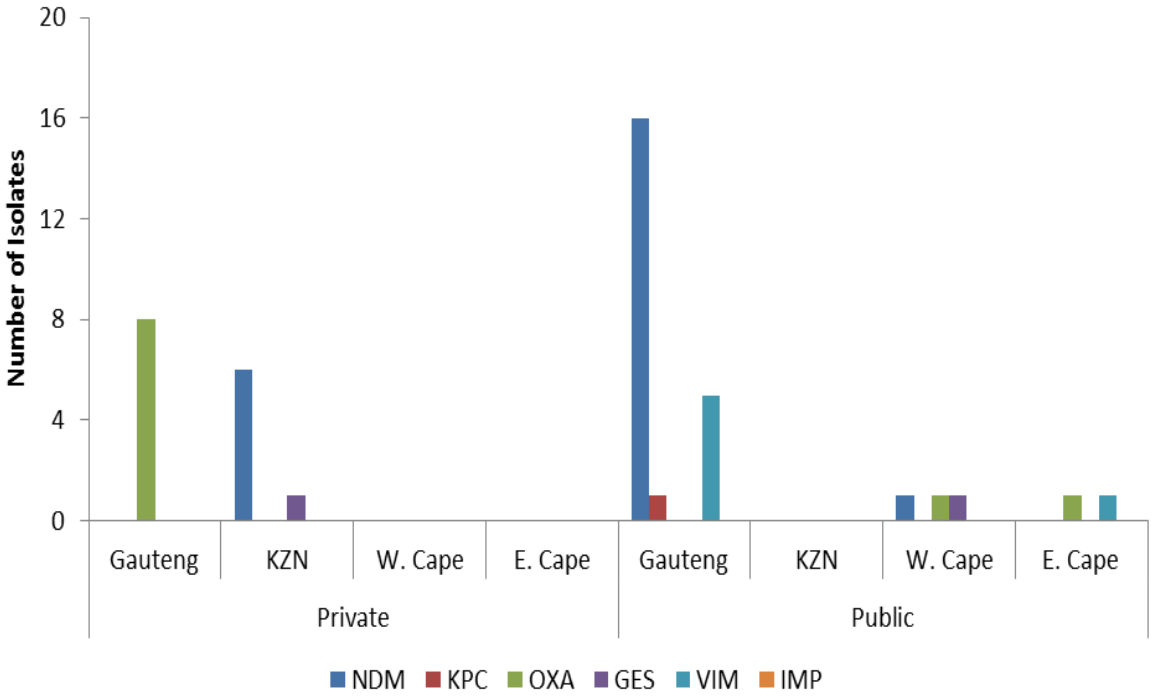

Figure 4. Laboratory-confirmed CPE (n=42) by carbapenemase gene, province, and healthcare sector

It is important to note that these figures do not represent the current burden of CPEs in South Africa. Given that CPE infections are currently not reportable or notifiable in South Africa, there is no platform for appropriate surveillance reports and consequently no locally representative data is available. This is of major concern, since meaningful data can inform public health policy and highlight priorities for action. Controlling the spread and limiting the impact of CPEs in South Africa will require intensive efforts in both the public and private healthcare sectors going forward. NHLS and private laboratories are encouraged to submit suspected CPE isolates based on antimicrobial susceptibility testing (AST) criteria to the AMRRL, NICD/NHLS.

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Source: Source: Centre for Opportunistic, Tropical and Hospital Infection, NICD-NHLS

6 BEYOND OUR BORDERS

The 'Beyond our Borders' column focuses on selected and current international diseases that may affect South Africans travelling abroad.

Disease & countries	Comments	Advice to travellers
1. Vector-borne diseases		
Chikungunya Caribbean Basin: St Martin Island, St Barthelemy, Martinique, Guadeloupe, French Guiana, Virgin Islands, St Maarten, Dominica, Anguilla, St Kitts and St Lucia	Chikungunya cases continue to be reported across the Caribbean Basin during March and April.	Chikungunya, dengue fever and Zika are mosquito-borne viral infections transmitted by *Aedes* spp. mosquitoes, which bite mostly during the day. Travellers should wear long-sleeved shirts and long pants during the day and stay in well-ventilated (fan/air-conditioned) rooms where possible; use mosquito repellents containing DEET to avoid being bitten.
Dengue fever Asia: Malaysia, Sri Lanka, Mayotte Island Africa: Ethiopia (Gode Zone), Nigeria, Tanzania (Dar es Salaam and Zanzibar) Americas: Mexico, Brazil, Honduras, Panama Caribbean: Dominican Republic	Numerous countries across Asia, Africa, the Americas and the Caribbean are reporting recent dengue fever cases, indicating ongoing dengue virus transmission.	
Zika virus Pacific: French Polynesia	Since October 2013, > 30 000 cases have been reported.	

Disease & countries	Comments	Advice to travellers
1. Vector-borne diseases (continued)		
Lassa fever Nigeria	10 April 2014: 5 suspected cases and 1 confirmed case were reported.	Lassa fever virus is transmitted to humans through direct contact with urine and droppings of infected multi-mammate rats, which contaminate the environment and food items. Transmission can also occur through the inhalation of aerosolised infected rodent excreta. Person-to-person transmission is also important, being common in both village and healthcare settings, and occurs through direct contact with blood, tissue, secretions or excretions of an infected person; therefore, VHF isolation precautions are recommended for nursing patients with Lassa fever. The incubation period is 1-3 weeks; symptoms include fever, retrosternal pain, sore throat, back pain, cough, abdominal pain, vomiting, diarrhoea, facial swelling and mucosal bleeding. No vaccine is available.
Haemorrhagic fever with renal syndrome (HFRS) Russia Udmurita	09 April 2014: 67 confirmed cases were reported.	Haemorrhagic fever with renal syndrome (HFRS) is a group of clinically-similar illnesses caused by hantaviruses from the family *Bunyaviridae*. Hantaviruses are carried and transmitted by rodents. Humans become infected after exposure to aerosolised urine, droppings, or saliva of infected rodents or after exposure to dust from their nests. Supportive therapy is the mainstay of care. No vaccines are available.
2. Water- and food-borne diseases		
Cholera Africa: Namibia; Zambia	Cases continue to be reported; outbreaks are ongoing.	Drink and use safe water (bottled water with an unbroken seal, boiled water or water treated with chlorine tablets). Wash hands with soap and safe water often. Eat hot well-cooked food, peel fruits and vegetables.
Hepatitis E Africa: Uganda (Karamoja District)	16 March 2014: Since mid-2013, approximately 1000 cases including 30 deaths (mostly pregnant women) were reported.	Hepatitis E virus is transmitted mainly through contaminated drinking water. Drink and use safe water (bottled water with an unbroken seal, boiled water or water treated with chlorine tablets). Wash hands with soap and safe water often. No vaccine is available.

Disease & countries	Comments	Advice to travellers
3. Respiratory Diseases		
Influenza Global	Increased activity in North America (H1N1) and China (H1N1 and H3N2) is reported.	Good hygiene and basic infection prevention practices can minimise risk of respiratory infections in travellers: • cough etiquette • avoiding contact with sick people • avoid handling of animals • frequent hand washing with soap and water or the use of an alcohol-based hand rub. Travellers should contact a medical practitioner if they develop acute respiratory symptoms upon return from a known risk area.
MERS-CoV United Arab Emirates Global	A cluster of 10 laboratory-confirmed cases was reported on 14 April 2014, among healthcare workers in contact with a previously laboratory-confirmed case from Abu Dhabi who died on 10 April 2014. Globally, the total number of laboratory-confirmed cases from September 2012 to date is 238 , including 92 deaths (CFR = 39%).	
Avian influenza A (H7N9, H5N1 and H9N2) China H7N9	Sporadic cases continue to be reported; the outbreak is ongoing.	
Measles Africa: Angola, Chad, Ethiopia, Somalia Americas: Canada, USA Asia: Japan, Phillipines New Zealand	Recent cases in ongoing outbreaks reported from numerous countries in Africa, the Americas, Asia and New Zealand.	

References and additional reading:

ProMED-Mail (www.promedmail.org); World Health Organization (www.who.int);

Centers for Disease Control and Prevention (www.cdc.gov). Last accessed 15 April 2014.

Source: Division of Public Health Surveillance and Response, NICD-NHLS