



## CONTENTS

### 1 SEASONAL DISEASES

Influenza	1
-----------	---

### 2 ZOOBOTIC DISEASES

Rabies	2
--------	---

### 3 FOOD- AND WATER-BORNE DISEASES

FOCUS FEATURE: Hepatitis E virus infection	3
--	---

### 4 INTERNATIONAL ALERTS

Ebola haemorrhagic fever alert	4
--------------------------------	---

### 5 ANTIMICROBIAL RESISTANCE

Update on carbapenemase-producing Enterobacteriaceae	6
--	---

### 6 BEYOND OUR BORDERS

	9
--	---

## 1 SEASONAL DISEASES

### Influenza

Data from the influenza surveillance programmes, influenza-like illness (ILI) (at primary healthcare clinics and Viral Watch sites) and severe respiratory illness (SARI), which monitors severe disease in hospitalised patients, show that during the 2013 influenza season the predominant circulating influenza subtype was influenza A(H1N1)pdm09. The start of the annual influenza season in South Africa has typically been defined as the week in which the influenza detection rate has risen above 10% and is sustained at  $\geq 10\%$  for two consecutive weeks or more. For the past 30 years, the average start of the influenza season in South Africa has been epidemiological week 22 (last week of May).

In the first ten weeks of 2014, 23 specimens were received from Viral Watch sites. Influenza A(H1N1)pdm09 was detected in two patients, one of whom had recently returned from Europe, and the other had been in contact with European visitors. Influenza A(H3N2) was detected in a tour guide who had been in contact with travellers (mostly from Russia). Influenza B was detected in a patient from KwaZulu-Natal Province with no history of travel. In addition, 17 specimens were taken from persons entering South Africa from abroad; influenza A(H1N1)pdm09 was detected in two and

influenza B in five of these persons respectively. During the same period, 113 patients with ILI were tested at three sentinel healthcare clinic sites, but influenza was not detected in any of these patients. Other respiratory viruses were detected in 61 ILI patients, the majority being rhinovirus (37/61, 61%) followed by respiratory syncytial virus (20/61, 33%).

Between 01 January and 09 March 2014, 274 patients with SARI at the four SARI sentinel sites were tested. Influenza was not detected in any of these patients. Other respiratory viruses were detected in 139 patients, the majority being respiratory syncytial virus (78/139, 56%) followed by rhinovirus (64/139, 46%).

#### **Recommended composition of influenza virus vaccine for use in the 2014 southern hemisphere influenza season**

The following strains have been recommended by the World Health Organization (WHO) for the 2014 southern hemisphere influenza season:

- an A/California/7/2009 (H1N1)pdm09-like virus<sup>a</sup>
- an A/Texas/50/2012 (H3N2)-like virus<sup>b</sup>
- a B/Massachusetts/2/2012-like virus.

<sup>a</sup>A/Christchurch/16/2010 is an A/California/7/2009-like virus.

<sup>b</sup>A/Texas/50/2012 is an A(H3N2) virus that following adaptation to growth in eggs has maintained antigenic properties similar to the majority of recently circulating cell-propagated A (H3N2) viruses including A/Victoria/361/2011.

The WHO recommendations are available at:

[http://www.who.int/influenza/vaccines/virus/recommendations/201309\\_recommendation.pdf?ua=1](http://www.who.int/influenza/vaccines/virus/recommendations/201309_recommendation.pdf?ua=1)

### Timing of influenza vaccination

Influenza vaccine is currently available from public sector clinics and private pharmacies. Since it takes about two weeks after vaccination for protective

antibodies to develop, it is recommended that people be vaccinated as soon as possible to ensure that they are protected before the influenza season starts. Healthcare workers are encouraged to discuss influenza vaccination with their patients, in particular those who are at increased risk for severe influenza-associated complications.

Detailed recommendations on target groups, dosages and contraindications for the 2014 influenza vaccine can be accessed in the March issue of the South African Medical Journal, available at: <http://www.samj.org.za/index.php/samj/article/view/8010/5832>

**Source:** Centre for Respiratory Diseases and Meningitis, NICD-NHLS

## 2 ZOO NOTIC DISEASES

### Rabies

A case of probable\* rabies was reported in a 13-year-old boy from Graskop, Mpumalanga Province. The patient was bitten by a dog in August 2013, but did not present to a healthcare facility for rabies post-exposure prophylaxis. He fell ill in February 2014 with symptoms including fever, headache, vomiting, muscle spasms and priapism. On admission to hospital, he was noted to be confused, agitated and hydrophobic. The patient died after a short period of hospitalisation. Saliva specimens collected on three consecutive days, cerebrospinal fluid and serum were submitted to the National Institute for Communicable Diseases for ante-mortem rabies investigation. Although all the samples tested negative, this does not exclude a diagnosis of rabies. Post-mortem laboratory testing on brain specimens remains the gold standard for diagnosis, being the most sensitive and reliable test for excluding or confirming rabies disease.

For 2014 to date, a single case of rabies has been laboratory confirmed; this patient acquired infection in Limpopo Province. In addition to the probable case reported here, another probable case (from Limpopo Province) has also been reported for the year to date. A total of seven laboratory-confirmed cases was reported in South Africa during 2013. These cases originated from Limpopo (n=3), Free State (n=2), KwaZulu-Natal (n=1) and Mpumalanga (n=1) provinces. In addition, 5 clinical cases (3 probable and 2 suspected) were recorded during 2013; these hailed from Limpopo (n=2),

Mpumalanga (n=1), KwaZulu-Natal (n=1) and Eastern Cape (n=1) provinces.

### Rabies in KwaZulu-Natal Province

KwaZulu-Natal has historically been the province most profoundly affected by rabies in South Africa. The disease was introduced into the province from neighbouring territories in the 1950s, after which it was brought under control, but was re-introduced in the late 1970s and early 1980s; the disease has been raging in domestic dogs ever since. Since 1983, the National Institute for Communicable Disease has confirmed a total of 298 human cases of rabies from the province. This represents 71% (298/420) of the laboratory-confirmed rabies cases in South Africa during this period. These cases are mostly as a result of exposures to domestic dogs, with children and young adults (<20 years of age) being the age groups most affected. In 2009, a collaborative project between the Bill and Melinda Gates Foundation and the World Health Organization was piloted in the province, with the goal of achieving rabies elimination by 2014 ([http://www.who.int/rabies/bmgf\\_who\\_project/en/](http://www.who.int/rabies/bmgf_who_project/en/)).

Significant strides have been made in controlling rabies in the province, particularly with regards mass vaccination of domestic dogs. Laboratory-confirmed domestic dog rabies cases decreased from 235 in 2012 to 60 cases in 2013 (Disease Database, Department of Agriculture, Forestry and Fisheries).

\*Classification of clinical cases according to the WHO Recommended Surveillance Standards, WHO/CDS/CSR/ISR/99.2

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

### 3 FOOD- AND WATER-BORNE DISEASES

#### FOCUS FEATURE: Hepatitis E virus infection

##### Case report

A 29-year-old female was admitted to hospital on 21 February 2014 for investigation. She had recently returned from India where she had been living and working for five months. In early January 2014, she developed diarrhoea and consulted a doctor in India; she received treatment (presumed to be antibiotics) and the symptoms resolved. She returned to South Africa on 27 January 2014, travelling directly to the Kruger National Park for a few days before returning to Johannesburg; she did not take malaria chemoprophylaxis but did recall being bitten by mosquitoes. About two weeks later she experienced symptoms that included fever, malaise, faint transient rash, nausea, arthralgia and headaches. On examination, no rash or eschar was noted; no joint swelling was evident, the patient did not appear jaundiced, and no other abnormal findings were noted. Initial admission laboratory investigations included a full blood count (white cell count of  $3.4 \times 10^9/L$  and platelet count of  $139 \times 10^9/L$ , normal haemoglobin level); U&E (normal); elevated CRP (62.3 mg/L); negative malaria smear and antigen; and deranged liver function parameters (ALP = 179 IU/L, GGT = 129 IU/L, ALT = 647 IU/L, AST = 798 IU/L). Investigation of the clinically inapparent hepatitis included an abdominal ultrasound (which was unremarkable) and further laboratory tests. Repeat malaria smear and antigen tests were negative; tests for common infectious causes of hepatitis in the context of the patient's clinical presentation were negative (including hepatitis A IgM, all hepatitis B markers, hepatitis C Ab, Coxsackie virus serology, rubella IgM, measles IgM, rickettsia serology, *Coxiella burnetii* serology, CMV IgM, acute EBV infection markers, *Brucella* spp. serology, arbovirus HA screen – including chikungunya, Sindbis, West Nile and Rift Valley fever viruses). Auto-immune markers also tested negative. Blood, urine and stool cultures were all negative. In view of the travel history, hepatitis E serology was also requested; hepatitis E IgM and IgG were both positive. The patient's liver function parameters deteriorated over the following few days, with ALT and AST levels peaking at 2 904 IU/L and 2 816 IU/L respectively, and bilirubinemia peaking at 76.4 mmol/L (predominantly conjugated). She subsequently improved clinically,

and by 17 March 2014 her liver function parameters were near normal (ALT = 37 IU/L, AST = 31 IU/L, ALP = 106 IU/L, GGT = 69 IU/L).

#### FOCUS ON HEPATITIS E VIRUS

##### Epidemiology and transmission

Hepatitis E virus (HEV) causes an acute hepatitis syndrome. It is spread by the faeco-oral route, typically through contaminated water, but increasingly also through contaminated food. Uncommon routes of transmission include blood-borne and vertical transmission. Unlike hepatitis A however, person-to-person transmission is uncommon. Although HEV infections have been reported worldwide, the highest incidence is in Asia, Africa, Middle East and Central America, where faecally contaminated waterborne transmission occurs. Waterborne outbreaks in developing countries have high attack rates and may result in massive, prolonged outbreaks; in a recent outbreak in Uganda (late 2013), 967 cases and 23 deaths (including 15 deaths in pregnant women) were reported. In the developed world, autochthonous cases are more typical, and outbreaks have been linked to consumption of insufficiently cooked HEV-contaminated meat products (mostly pork products, but also deer meat in one outbreak). Recent surveillance data have shown that HEV is abundant in pig populations and can be shed into the environment, and directly or indirectly be transmitted to humans.

##### Clinical features

The incubation period of HEV infection ranges from 15 – 60 days, with an average of 5 – 6 weeks. Asymptomatic infection does occur, notably in children in endemic areas. In developed countries, seroprevalence studies have shown relatively high HEV seropositivity rates, particularly in persons working in pig/pork-related occupations. Symptoms of acute HEV infection include fever, fatigue, jaundice, nausea and vomiting, abdominal pain and hepatomegaly. Less common symptoms include diarrhoea, arthralgia, pruritus and urticarial rash. HEV infection is clinically indistinguishable from disease caused by hepatitis A virus. Usually the disease is self-limiting, but fulminant hepatitis

can occur, with a case fatality rate of <3%. Fulminant hepatitis and liver failure is more common in pregnancy (where up to 25% of cases in the third trimester are fatal), solid organ transplant recipients, and people with underlying chronic liver disease. Chronic disease is not a feature of HEV infection, but has been noted in some solid organ transplant recipients and immunocompromised persons (including one documented case in an HIV-infected individual).

#### Laboratory findings

Elevated hepatic transaminase levels and serum bilirubin levels are typical. Resolution of abnormal biochemical tests usually occurs 1-6 weeks after the onset of illness.

#### Diagnosis

The diagnosis of HEV infection can be made on the basis of positive serological tests, or where available, positive HEV PCR on serum or stool samples. Antibody tests are not ideal, given that both false-positive and false-negative results do occur; importantly, serological tests may be negative in a substantial proportion of patients with acute infection. PCR tests are the preferred method for diagnosis where available.

#### Management

There is no specific vaccine, antiviral or immunoglobulin therapy currently recommended for hepatitis E infection. Treatment is generally

supportive. Case reports have suggested a benefit from ribavirin, particularly in solid organ transplant patients, but more data are needed to recommend this as standard treatment for HEV infection.

#### Hepatitis E virus infection in South Africa

The incidence of hepatitis E virus infection in South Africa is unknown, but seroprevalence of hepatitis E IgG antibodies ranging from 1%-15% has been reported in various high risk populations.

Laboratory testing for HEV infection in the public sector (serology for IgM) is available at the NHLS Immunology Laboratory in Braamfontein (Johannesburg), and serology is also offered by most private sector laboratories. At present, PCR testing is limited to academic research units and not widely available.

HEV infection should be borne in mind as a possible cause of acute infectious hepatitis. Viral hepatitis ('non-A non-B') is a notifiable condition in South Africa, and all cases of HEV infection must be reported to the Department of Health using the standard notification system (GW 17/5 forms) so that potential sources of infection can be investigated.

**Source:** Division of Public Health Surveillance and Response and Centre for Vaccines and Immunology, NICD/NHLS; NHLS Immunology Laboratory, Braamfontein; Pathlink, Pathcare, Lancet and Ampath Laboratories

## 4 INTERNATIONAL ALERTS

### Ebola haemorrhagic fever outbreak in Guinea, West Africa

#### Summary of current outbreak in Guinea

The Ebola virus has been confirmed as the cause of an outbreak of haemorrhagic fever in Guinea, West Africa. This is the first recorded outbreak of Ebola haemorrhagic fever in Guinea, where Lassa fever is commonly reported. The most recent outbreaks of Ebola haemorrhagic fever were reported from the Democratic Republic of Congo and Uganda in 2012. This outbreak is reported to have started in early February 2014. According to the World Health Organization (WHO), as of 26 March 2014, a total of 86 cases including 62 deaths have been reported (case fatality rate: 72%). Eleven of the cases have been confirmed by the Pasteur Institute (Lyon, France) using RT-PCR assays. Preliminary molecular sequencing of the virus has shown a high level of homology with the Ebola Zaire virus, suggesting that this species is responsible for the outbreak. Ebola Zaire virus is highly lethal with CFR of up to 90% reported in previous outbreaks.

The WHO and a number of international organizations, including MSF France/Belgium are supporting government authorities. To date, all cases have been in persons or healthcare workers attending to cases or attending burials from three districts (Guekedou, Macenta and Kissidougou) in the forested, mostly rural areas of south eastern Guinea (Figure 1). The WHO has confirmed that suspected cases in Conakry (the capital city) have tested negative for Ebola virus. At present, suspected cases in the border areas of Sierra Leone and Liberia are also under investigation.

#### Ebola haemorrhagic fever: the basics

The ecology of the Ebola virus is not completely understood. The current prevailing hypothesis is that the virus is introduced into the human population through close contact with infected animals (including chimpanzees, gorillas, bats,

monkeys, forest antelope and porcupines). The likely reservoir of the virus includes specific species of arboreal bats, and contact with these animals and/or their excretions/secretions may also result in transmission of the virus to humans. Human-to-human transmission often occurs, and is a predominant feature of outbreaks. The disease can be spread from person to person through contact with blood, secretions, organs, or other body fluids. Ebola haemorrhagic fever outbreaks have been reported most commonly from the Democratic Republic of Congo, Uganda, South Sudan, Congo and Gabon.

The incubation period of the disease is 2 - 21 days. An acute onset of prodromal symptoms which include fever, malaise, myalgia, diarrhoea, vomiting and abdominal pain is usual, followed by progressive multisystem disease with bleeding as a cardinal feature in the majority of patients. Currently, there is no known specific treatment or preventative vaccine for this highly contagious virus.

#### Risk of imported Ebola haemorrhagic fever cases

Since the current outbreak is reported in predominantly rural areas which are not frequented by many tourists or travellers, the risk of Ebola haemorrhagic fever 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 Ebola haemorrhagic fever cases is extremely important.

#### Recommendations for travel to/from Guinea and West Africa

The World Health Organization (WHO) does not recommend that any travel or trade restrictions are applied to Guinea. There are no special precautions or directives for commercial flights, passengers or crew departing on flights bound for Guinea or returning from Guinea. The regulations for evidence of a valid yellow fever vaccination certificate apply. Any ill persons reported on flights from Guinea and neighbouring countries will need to be evaluated by the relevant Port Health officials. All requests for medical evacuation of persons from Guinea 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 Ebola

haemorrhagic fever), 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 Ebola haemorrhagic fever in health workers from the affected region with unexplained fever.

#### Evaluation of illness in travellers from Guinea 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 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 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.

Lassa fever virus is transmitted to humans through direct contact with urine and droppings of infected multimammate 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. Mortality rates approach 20%, with pregnant women in their third trimester being at highest risk for severe disease and death. Given that the incubation periods and clinical presentations of Lassa fever and Ebola haemorrhagic fever may overlap, both diseases must be excluded in persons who have a suggestive travel history and present with a febrile illness.

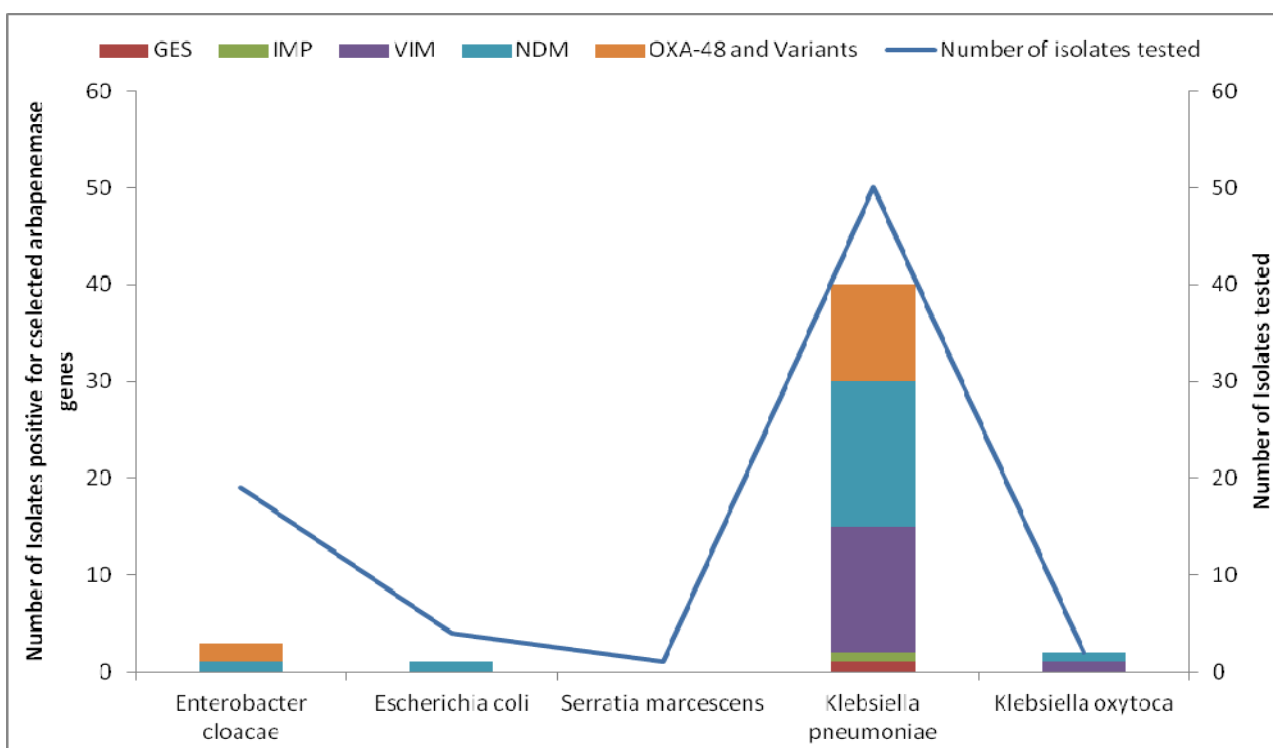


## 5 ANTIMICROBIAL RESISTANCE

### Update on carbapenemase-producing Enterobacteriaceae

The Johannesburg and Cape Town Antimicrobial Resistance Reference Laboratories (AMRRL) of the Centre for Opportunistic, Tropical and Hospital Infections (CO THI) at NICD/NHLS test referred isolates of suspected carbapenemase-producing Enterobacteriaceae (CPE) for the presence of selected carbapenemase genes. For February 2014, a total of 76 isolates were screened, 60% (46/76)

of which were confirmed as carbapenemase-producing Enterobacteriaceae. The commonest referred isolates were *Klebsiella pneumoniae* (50/76, 66%) followed by *Enterobacter cloacae* (19/76, 25%) - Figure 2.



**Figure 2. Enterobacteriaceae isolates screened (n=76) and confirmed CPE (n=46), February 2014 at AMRRL (NICD-NHLS)**

Eighteen NDM-positive isolates were identified (three from private hospitals in KwaZulu-Natal and Gauteng provinces, and 15 from public hospitals in Gauteng, Western Cape and KwaZulu-Natal provinces). Twelve OXA-48 positive isolates were identified (four from one private hospital in Gauteng Province and eight from public hospitals in Western Cape and Eastern Cape provinces). Fourteen VIM-positive isolates (all from public sector hospitals in Gauteng Province), one IMP-positive isolate from the public sector in Eastern Cape Province and one GES-positive isolate from the public sector in Western Cape Province were identified (Figure 3).

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.

Please telephone (011) 555 0342/44 or email:

[ashikas@nicd.ac.za](mailto:ashikas@nicd.ac.za) and [olgap@nicd.ac.za](mailto:olgap@nicd.ac.za) for queries or further information.

In Western Cape Province and surrounds, please email: [clintonmoodley@yahoo.com](mailto:clintonmoodley@yahoo.com) and [colleen.bamford@nhls.ac.za](mailto:colleen.bamford@nhls.ac.za).

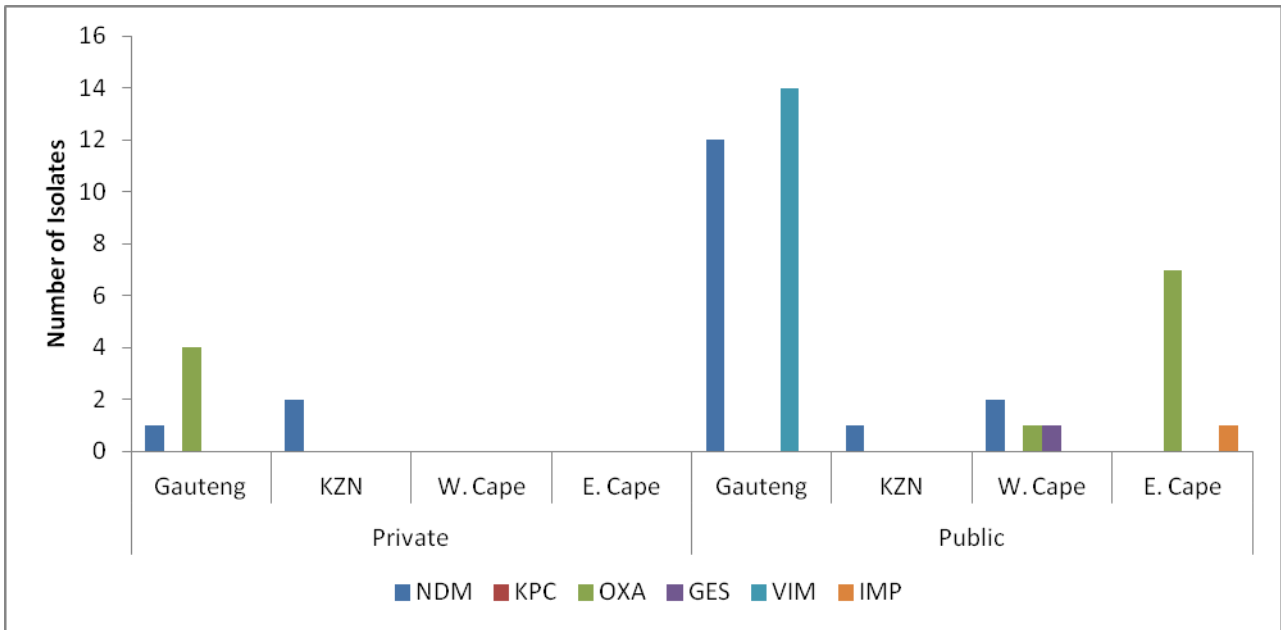


Figure 3. Laboratory-confirmed CPEs (n=46) by province and healthcare sector

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
<b>1. <u>Vector-borne diseases</u></b>		
<b><u>Chikungunya</u></b> Caribbean Basin	St Martin Island: 50 confirmed cases. Local transmission confirmed on St Martin, Martinique, St Barthelemy, Guadeloupe, British Virgin Islands, Dominica, Anguille & French Guyana. As of 15 March 2014, there have been more than 15 000 probable and confirmed cases in the region, including 5 fatalities.	Chikungunya, dengue fever and Zika virus infection are mosquito-borne viral infections transmitted by <i>Aedes</i> 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.
<b><u>Dengue fever</u></b> <u>Africa</u> : Mauritius	As at 22 March 2014, 26 cases were reported; most cases (23) in Triolet locality.	
<u>Asia</u> : Malaysia	As at 5 March 2014, 18 165 cases reported; 64% of cases in Selangor, Kuala Lumpur and Putrajaya.	
Pakistan	127 cases since 1 January 2014; most affected area is Karachi, with 120 cases.	
<u>Pacific</u> : Cook Islands, Fiji	Ongoing transmission; cases continue to be reported.	
<u>Americas</u> : <u>Central</u> El Salvador Honduras Panama <u>South America</u> Bolivia, Peru	Ongoing transmission; cases continue to be reported.	
Brazil	Sao Paulo: as at 06 March 2014, 804 cases were reported.	
<b><u>Zika Virus</u></b> <u>Pacific</u> : French Polynesia	The outbreak began in October 2013 in French Polynesia; estimates of >30 000 cases to date.	
New Caledonia Easter Island	Zika virus continues to spread to new areas in the Pacific, most recently Easter Island.	

Disease & countries	Comments	Advice to travellers
<b>2. <u>Water- and food-borne diseases</u></b>		
<b><u>Cholera</u></b> Africa: Namibia	As of 04 March 2014, 554 cases including 18 deaths had been reported. The outbreak started in November 2013.	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. Vaccines offer delayed and incomplete protection and should therefore not be used as a substitute for good hygiene and infection prevention practice.
<b>3. <u>Respiratory viruses</u></b>		
<b><u>Influenza</u></b> Globally	Increased activity in North America (H1N1) and China (H1N1 and H3N2). Activity remains low for the rest of the Northern & Southern hemispheres. In countries of tropical areas variable influenza activity has been reported.	
<b><u>MERS-CoV</u></b> Saudi Arabia	On 20 March 2014, three new cases were reported in Riyadh, Saudi Arabia. The global total now stands at 204 cases including 85 deaths.	
<b><u>Avian influenza A (H7N9, H5N1 and H9N2 )</u></b>  <u>Cambodia</u> H5N1  <u>China</u> H7N9	Sporadic cases continue to be reported, with 9 cases reported this year to date.  As of 19 March 2014, a total of 385 confirmed cases of human infection have been reported from China, with most cases from Zhejiang, Guangdong and Jiangsu provinces.	Good hygiene and basic infection prevention practices can minimise risk of respiratory infections in travellers: <ul style="list-style-type: none"> <li>• cough etiquette</li> <li>• avoiding contact with sick people</li> <li>• avoid handling of animals</li> <li>• frequent hand washing with soap and water or the use of an alcohol-based hand rub.</li> </ul> Travellers should contact a medical practitioner if they develop acute respiratory symptoms upon return from a known risk area.
<b><u>Measles</u></b> <u>Africa</u> Democratic Republic of Congo (East and South)  <u>Asia</u> Vietnam, Phillipines  <u>New Zealand</u> Auckland	Outbreaks are ongoing.  Outbreaks are ongoing.  58 cases since 01 January 2014.	

**References and additional reading:**

ProMED-Mail ([www.promedmail.org](http://www.promedmail.org))

World Health Organization ([www.who.int](http://www.who.int))

Centers for Disease Control and Prevention ([www.cdc.gov](http://www.cdc.gov))

Last accessed: 25 March 2014

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