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## 1 SEASONAL DISEASES

### a Seasonal influenza

#### Influenza surveillance

The 2014 influenza season has started. Testing of additional specimens, some of which are still to be subtyped, indicate that the influenza season started in epidemiological week 21 (week ending 25 May). The influenza season is considered to have started when the detection rate of specimens tested at the NICD-NHLS for the influenza-like-illness surveillance programme (the Viral Watch), has risen to  $\geq 10\%$  and is sustained for  $\geq 2$  consecutive weeks. The influenza detection rate of specimens submitted to the Viral Watch programme rose to 15.8% in epidemiological week 21 and continued to rise, reaching 82.4% in epidemiological week 27 (week ending 06 July).

Of the 267 Viral Watch specimens testing positive for influenza A, influenza A(H1N1)pdm09 virus has been detected in 9% (23/267), influenza A(H3N2) in 83% (223/267), and influenza B virus in 4% (11/267) of patients, with 10 specimens unsubtyped as yet.

In addition, 28 specimens have been received from patients at a point of entry into South Africa. Influenza A(H1N1)pdm09 and influenza A(H3N2)

were detected in two each, and influenza B in eight of these patients. As at 06 July 2014, 866 patients hospitalised with severe acute respiratory illness were tested for respiratory viruses at four sentinel sites. Of these, 16 patients tested positive for influenza. Influenza A(H3N2) was detected in 14, influenza A(H1N1)pdm09 in one, and influenza B in one of these patients. In addition, 28% (242/866), 23% (195/866) and 9% (75/866) of patients were positive for rhinovirus, respiratory syncytial virus and adenovirus, respectively.

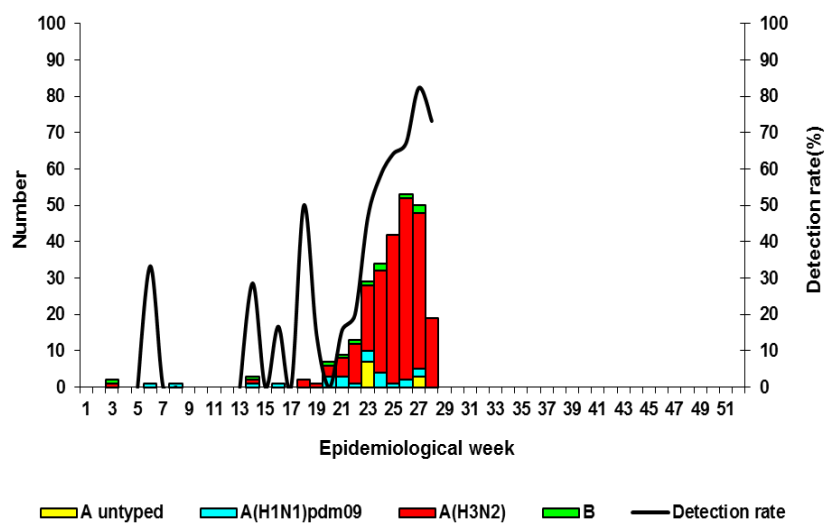
Although the influenza season has already started, clinicians are reminded that they should continue to encourage their patients to get vaccinated for influenza, and they should also consider influenza as a differential diagnosis when managing patients hospitalised with lower respiratory tract infection. Consideration should be given to including oseltamivir as empiric treatment in patients who **have complicated or severe influenza or are at higher risk for influenza complications**. Risk groups for severe/complicated influenza disease include:

- Pregnant women (including the first two weeks of the post-partum period)

- Infants and young children (particularly <2 years of age)
- Persons of any age with chronic diseases, including:
  - ◊ Pulmonary diseases (e.g. asthma, COPD, TB)
  - ◊ Cardiac diseases, except for hypertension (e.g. congestive cardiac failure)
  - ◊ Metabolic disorders (e.g. diabetes)
  - ◊ Renal disease
  - ◊ Hepatic disease
  - ◊ Certain neurologic and neurodevelopmental conditions, including: disorders of the brain, spinal cord, peripheral nerves, and muscle such as cerebral palsy; epilepsy (seizure

- disorders); stroke; mental retardation; moderate to severe developmental delay; muscular dystrophy; or spinal cord injury.
- ◊ Haemoglobinopathies (e.g. sickle cell disease)
- ◊ Immunosuppression (e.g. HIV, persons on immunosuppressive medication, malignancy)
- ◊ Persons ≤18 years receiving chronic aspirin therapy
- Persons aged ≥65 years
- Persons who are morbidly obese (i.e. BMI ≥40).

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



**Figure 1. Influenza detections by type and subtype, Viral Watch surveillance programme, 2014**

## b Meningococcal disease

In South Africa, meningococcal disease is endemic and cases occur year-round, but with seasonal peaks in winter and early spring. In addition, there is a natural cyclical pattern of meningococcal disease with peaks of disease occurring every 5 to 10 years. Current rates of meningococcal disease in South Africa are at a nadir and we are expecting an increase in rates based on known periodicity.

Currently, sporadic cases of meningococcal disease continue to be reported across the country, with no noticeable seasonal increase of laboratory-confirmed cases as yet. There are inherent delays in laboratory-based reporting, which lags behind clinical reports; in addition, because our laboratory-based surveillance system excludes disease diagnosed clinically without laboratory confirmation, reported rates represent a minimum estimate of the true burden of disease.

By the end of epidemiological week 26 (week ending 30 June 2014), a total of 51 laboratory-confirmed cases was reported to the Centre for

Respiratory Diseases and Meningitis (CRDM), NICD-NHLS (Table 1). The highest burden of disease is among the <1 year age group, where 12/51 (24%) cases have been reported so far. A higher number, but similar proportion, of cases for the equivalent time period and age group was reported in 2013 (n=21, 23%) .

The reported cases were caused by diverse serogroups, which is in keeping with sporadic endemic disease in the country. Serogroup data were available for 37/51 (73%) of cases. Serogroups B, C and W\* have been identified most commonly this year (11/37, 30% serogroup B; 9/37, 24% serogroup C and 11/37, 30% serogroup W\*). There were also 5 cases of serogroup Y and 1 case of serogroup X disease.

As the meningococcal season is due to start and an increase in cases may be expected this year, clinicians should have a high index of suspicion for meningococcal disease in patients who present with an acute febrile illness and nonspecific early signs

and symptoms. Disease typically has a rapid progression and should be managed as a medical emergency in order to reduce morbidity and mortality. All cases of suspected and/or confirmed meningococcal disease (meningitis and sepsis) should

be notified telephonically to the Department of Health within 24 hours.

\*Previously known as serogroup W135. Harrison OB, EID 2013: 19(4) 566-573

**Table 1. Number of laboratory-confirmed meningococcal disease cases reported until end of epidemiological week 26, 2013 and 2014, by province**

Province	Year	
	2013	2014
Eastern Cape	22	12
Free State	7	3
Gauteng	20	15
KwaZulu-Natal	17	2
Limpopo	0	0
Mpumalanga	1	0
Northern Cape	1	0
North West	2	0
Western Cape	22	19
	92	51

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

## 2 ZOO NOTIC DISEASES

### Rabies

In South Africa, a total of four cases of human rabies has been laboratory confirmed from January 2014 to date. These cases originated from Eastern Cape (n=2), North West (n=1) and Limpopo (n=1) provinces. In addition to the laboratory-confirmed cases, a total of four clinical rabies cases has also been documented for 2014 to date, reported from Limpopo (n=1), Mpumalanga (n=2) and Eastern Cape (n=1) provinces. These case-patients presented with a history of exposure to a dog and clinically-compatible disease suggestive of rabies, but rabies disease could not be confirmed by laboratory testing for a variety of reasons.

#### Eastern Cape Province

Two rabies cases have been reported from this province since last month's Communiqué.

An 11-year-old male from Qokolweni (a rural village near Mthatha) was scratched by a dog in May 2014, but no medical care was sought. The child was admitted to a Mthatha hospital in mid-June with fever, headache and confusion. His condition progressively deteriorated, with onset of symptoms including delusions, delirium, vomiting, hydrophobia and hypersalivation; he died the day after admission. Fluorescent antibody testing on a post-mortem brain sample tested positive for the presence of rabies virus antigen.

A three-year-old child was admitted to a Mthatha hospital for suspected rabies, and died a day later. He was reportedly bitten by a dog in May 2014, and was taken to a healthcare facility by his caregivers. Although he received a dose of rabies vaccine, rabies immunoglobulin was not administered; the child did receive the scheduled second and third doses of vaccine but not the fourth dose. Rabies IgG antibodies were detectable in a single cerebrospinal fluid specimen, but rabies RT-PCR tested negative on the same specimen. No further specimens were available for rabies testing.

#### North West Province: outbreak alert

The probable rabies case reported in the June 2014 issue of the Communiqué (a nine-year-old child from Mogwase town, near Rustenburg, who was bitten by a neighbour's dog), has since been confirmed through rabies fluorescent antibody testing on a post-mortem brain specimen. In addition, rabies IgG antibodies were detected in an ante-mortem cerebrospinal fluid specimen.

The current increase of dog rabies cases in North West Province is extremely concerning, since a rise in dog cases heralds the appearance of disease in the human population. Since 1981, only six human rabies cases (including the case mentioned above) have been reported from this province. This recent

case is noteworthy, since it is the first human case associated with a dog exposure ever to be reported in the province. Previous human rabies cases in this province were associated with the region's endemic wildlife rabies cycle, namely mongoose (n=2) and jackal (n=1) exposures. In 2006 rabies was confirmed in an elderly male who had been scratched by a bat in the Rustenburg surrounds and was infected with the Duvenhage lyssavirus variant ('bat rabies'). The upsurge in animal rabies cases in the province began almost two years ago, and has affected Brits, Rustenburg, the Moses Kutane local municipality (which includes the Pilanesberg Game Reserve and Sun City Resort), Zeerust and Potchefstroom areas. Rabies has been confirmed in dogs, jackal, livestock, and yellow mongoose. Recently, rabies was also confirmed in a slender mongoose found in Potchefstroom town. Dog vaccination and community awareness campaigns have been initiated in response to the situation.

#### Rabies acquired in Angola

A 51-year-old male South African national living and working in Luanda was reportedly bitten some time ago by a stray dog he adopted whilst living there. He sustained seemingly minor scratches and no medical care was sought. In July 2014, he became ill and was evacuated to a Johannesburg hospital for medical care. The patient presented with nonspecific symptoms which rapidly progressed to

agitation and apparent hydrophobia. Rabies immunoglobulin and vaccine was administered upon admission to hospital, but therapy was discontinued since neither vaccine nor immunoglobulin are indicated for the treatment of clinical rabies disease. A total of six saliva specimens was collected over three days, three of which tested positive by rabies RT-PCR. At the time of this report the patient remains alive but critically ill on life support.

Pre-exposure prophylaxis for rabies (Pre-PEP) is strongly recommended for expatriates working in rabies risk areas, particularly where access to post-exposure prophylaxis is limited, since it obviates the need for scarce rabies immunoglobulin. The recommended Pre-PEP regimen is one dose of vaccine given on days 0, 7 and 21 (i.e. three doses in total). Post-exposure vaccine boosters should be given on days 0 and 3 in the event of a potential rabies exposure. Rabies immunoglobulin must not be given to persons who have previously received a rabies vaccine course (whether for pre- or post-exposure prophylaxis), regardless of the category of exposure.

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

## 3 VECTOR-BORNE DISEASES

### Dengue in Africa

Dengue is an emerging disease and has caused major outbreaks in tropical and subtropical African, South East Asian and South American countries in recent years. It is thought to be the most common mosquito-borne disease globally, with the World Health Organization (WHO) estimating >50-100 million cases of dengue occurring across approximately 100 countries annually, with potential for further spread.

#### Dengue infection

Dengue is caused by infection with one of four different serotypes of dengue virus, which differ in geographic spread, but may co-circulate. The virus is transmitted primarily by urban-adapted, day-biting *Aedes aegypti* mosquitoes, which are closely associated with human dwellings.

Most dengue virus infections are asymptomatic, but symptomatic disease can range from mild to severe and fatal disease. Following an incubation period of

3-7 days, symptoms begin abruptly and follow three phases:

- The febrile phase is characterised by a high fever, with a range of accompanying symptoms including headache, retro-orbital pain, vomiting, myalgia, arthralgia, and sometimes a macular/maculopapular rash. Mild haemorrhagic features such as petechiae or purpurae (usually at venepuncture sites) and hepatomegaly often occur. Laboratory findings include mild to moderate thrombocytopenia, leucopenia, and moderate transaminasemia. This first phase lasts 3-7 days after which most patients recover.
- The critical phase develops in a minority of cases (mostly in children and young adults), and is characterised by a systemic vascular leak syndrome. This may lead to the rapid development of severe disease which manifests as dengue shock syndrome or haemorrhage,

both of which may be fatal. Vascular permeability normalises within 48-72 hours, accompanied by a rapid improvement in symptoms.

- The recovery phase is characterised by a rapid improvement and resolution of symptoms. A second rash may appear during this phase, ranging from a mild maculopapular rash to severe pruritic lesions which desquamate over a few weeks. Adults may experience marked fatigue for several weeks after resolution of other symptoms.

There are no effective antiviral agents for treating dengue infection. Treatment is supportive, with judicious fluid management and careful monitoring for the development of severe disease. Preventive dengue vaccines are in various stages of clinical evaluation.

### **Dengue alert for South Africans travelling abroad**

In South Africa, dengue fever is diagnosed in travellers returning from affected regions, mostly South East Asia (including, but not restricted to Bali, Phuket, Thailand, Vietnam, Cambodia) and African countries, and less frequently from South America. Of concern is the significant increase in dengue outbreaks/cases reported from African countries over the past two years; this is of particular importance to South African travellers or expatriates working in African countries.

### **Highlight: the most recent dengue outbreaks in Africa**

Figure 2 shows the distribution of dengue in Africa, highlighting countries and areas reporting recent outbreaks.

#### Angola

The country has reported an unprecedented increase in dengue cases since 2013, primarily in the capital city of Luanda and surrounds. Evidence of co-circulation of dengue viruses type 1 and 4 has been documented. Angola is considered endemic for dengue, and reports of dengue cases/outbreaks date back to the 1960s. The NICD-NHLS confirmed 17 cases of dengue fever in returning travellers to South Africa since the outbreak started. It is noteworthy that five of these cases tested PCR-positive, indicating that these patients had viraemia when presenting in South Africa. This raises the concern of possible autochthonous outbreaks of

dengue in South Africa, as was reported in Durban during 1926-1927. The NICD-NHLS also assisted in the laboratory confirmation of dengue fever in patients hospitalised in Angola during 2013.

#### Kenya

An outbreak of dengue fever was reported from Kenya in February 2013 and is ongoing, with the northern region of Kenya being most affected. A total of 190 cases was reported up until April 2014, after which the outbreak appeared to wane. However, an increase in cases from Mombasa (southern Kenya) was reported later that month, evidence of the first confirmed dengue outbreak in this area since 1982. The NICD-NHLS confirmed two cases of dengue fever in patients returning to South Africa after travelling in these affected areas.

#### Mozambique

On 10 April 2014 the Mozambican health authorities confirmed an outbreak of dengue centred in Pemba, the capital city of Cabo Delgado Province in northern Mozambique (bordering on Tanzania). The last report in the beginning of May 2014 counts the total number of cases as 243 (77 laboratory confirmed), with no deaths. Nampula Province, also in the northern Mozambique, reported 40 cases (21 laboratory confirmed) with no deaths. There is possibly co-circulation of Chikungunya virus in this outbreak, but this remains to be confirmed. Three cases of dengue fever have been laboratory confirmed in travellers returning to South Africa from Pemba and Maputo since this outbreak began.

#### Tanzania

The Ministry of Health and Social Welfare of Tanzania declared a dengue outbreak in February 2014. As of the end of May 2014, the outbreak is ongoing in Dar Es Salaam and surrounds with a total of 2 121 suspected cases (1 018 laboratory confirmed) including four deaths. Eight suspected cases (one laboratory confirmed) were reported from Zanzibar. The NICD-NHLS has confirmed a total of four travel-associated dengue fever cases from Tanzania since the onset of this outbreak.

#### Other affected African countries

Recent outbreaks of dengue have been reported from Senegal, Ethiopia and Somalia. One travel-associated dengue fever case from Ethiopia was documented in South Africa in 2013.

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

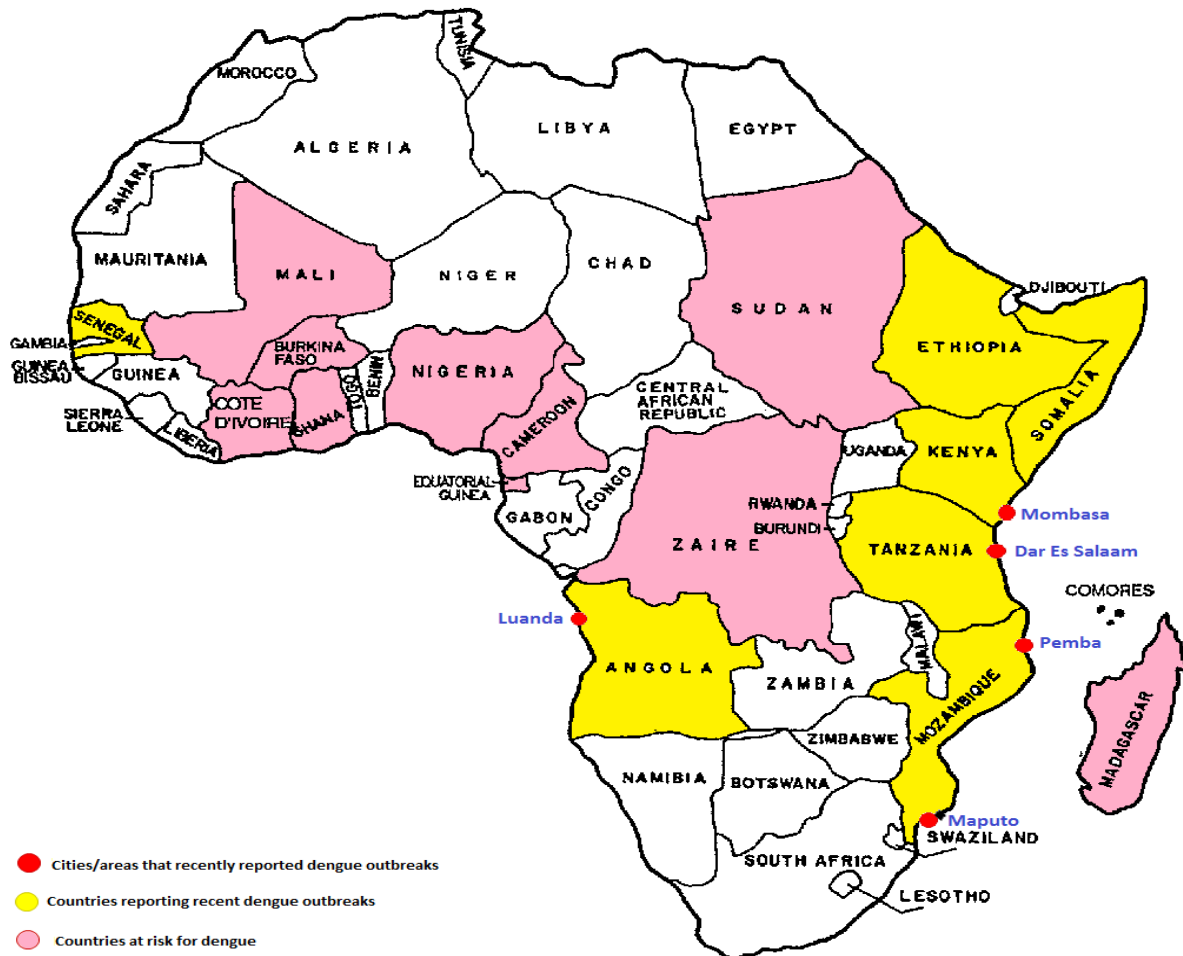


Figure 2. Map showing distribution of dengue in Africa

## 4 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 June 2014, a total of 38 Enterobacteriaceae isolates was screened, 66% (25/38) of which were confirmed as carbapenemase-producing Enterobacteriaceae. The commonest referred isolates were *Klebsiella pneumoniae* (66%, 25/38) followed by *Enterobacter cloacae* (13%, 5/38) (Figure 3).

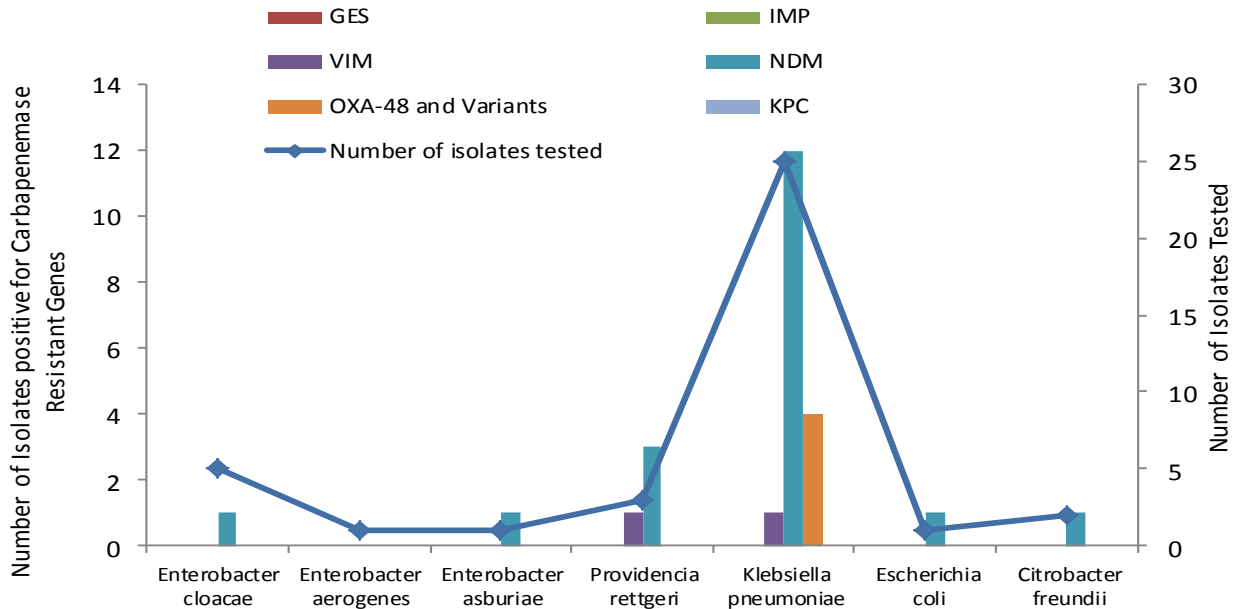
Nineteen NDM-1-positive isolates were identified (three from private hospitals in KwaZulu-Natal Province, and 16 from public hospitals in Gauteng and KwaZulu-Natal provinces). Four OXA-48-positive isolates were identified (one from a private

hospital in Gauteng Province and three from public hospitals in Gauteng and Eastern Cape provinces). Two VIM-positive isolates were identified, both from the public sector in Gauteng Province (Figure 4).

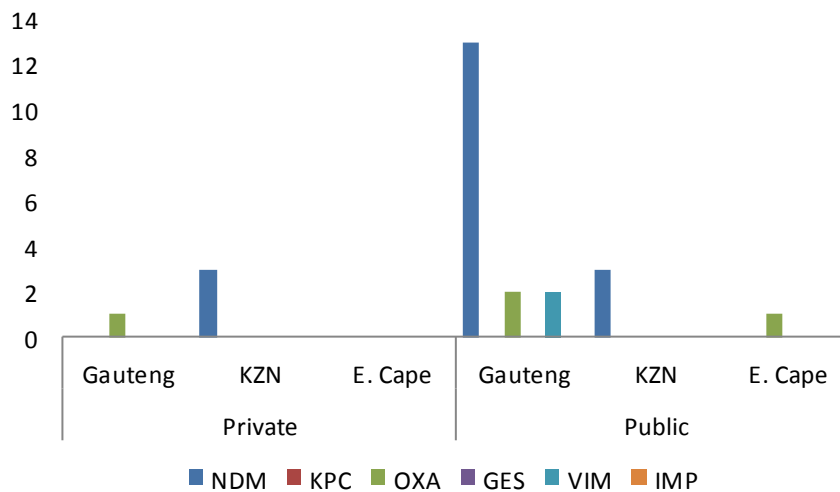
It is important to note that these figures do not represent the current burden of CPEs in South Africa. Given that CPE infections are currently not reportable or notifiable in South Africa, there is no platform for appropriate surveillance reports and consequently no locally representative data is available. 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 the Western Cape area, please email [colleen.bamford@nhls.ac.za](mailto:colleen.bamford@nhls.ac.za).

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



**Figure 3. Enterobacteriaceae isolates screened (n=38) and confirmed CPE (n=25) during June 2014, AMRRL (NICD-NHLS)**



**Figure 4. Distribution of CPEs by province and healthcare sector, June 2014, AMRRL (NICD-NHLS)**

## 5 INTERNATIONAL OUTBREAKS OF IMPORTANCE TO SOUTH AFRICAN TRAVELLERS AND HEALTHCARE WORKERS

### a Ebola virus disease outbreak in West Africa: update

The Ebola virus disease (EVD) outbreak in West Africa was first reported from Guinea in late March 2014 (although evidence suggests that the

outbreak began in Guinea's Guéckédou Prefecture during December 2013), and subsequently spread to neighbouring Liberia and Sierra Leone

establishing multiple outbreak foci. Although all three affected countries continued to report new cases during June 2014, the rapid increase in cases detected in Sierra Leone and Liberia is extremely concerning. This indicates a second wave of EVD transmission following the apparent decline observed in Guinea towards the end of April and early May. The cumulative numbers of cases and deaths are shown in Table 2.

The risk of infection for travellers is generally 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.

EVD cases with ongoing transmission have been reported from the capital cities of Conakry (Guinea)

and Monrovia (Liberia) during the current outbreak. Given the frequency of travel between southern and western African countries, there is a risk of EVD cases being imported into South Africa, but the risk is thought to be low at present. Healthcare or international agency workers etc. involved in the outbreak response may also 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.

Further information for South African healthcare workers regarding the case definition for suspected EVD and laboratory testing can be accessed at [www.nicd.ac.za](http://www.nicd.ac.za).

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

**Table 2. Ebola virus disease outbreak in West Africa: summary of cases as at 12 July 2014**

Country	Total cases (laboratory-confirmed, probable and suspected)	Total deaths	Case fatality rate
Guinea	406	304	75%
Liberia	172	105	61%
Sierra Leone	386	194	50%
Totals	964	603	62%

## **b Middle East respiratory syndrome coronavirus (MERS-CoV): update**

### **Current status**

As at 14 July 2014, the World Health Organization (WHO) has reported a total of 834 laboratory-confirmed cases of infection with Middle East respiratory syndrome coronavirus (MERS-CoV), including 288 deaths. Although there was a sharp increase in the number of reported MERS-CoV cases since April 2014, there has been an overall decline in numbers reported during recent weeks. To date, all the cases reported have been linked to countries in the Middle East region, with the majority of cases reported from Saudi Arabia. Other countries in the region with laboratory-confirmed cases include Jordan, Saudi Arabia, Yemen, United Arab Emirates (UAE), Qatar, Oman, Kuwait, Lebanon and Iran. Countries with travel-associated cases include United Kingdom (UK), Tunisia, Egypt, Greece, Germany, Italy, Malaysia, Philippines, Algeria, and the United States of America (USA).

### **Disease presentation**

Individuals with MERS-CoV disease have presented with a wide spectrum of clinical presentations ranging from asymptomatic infection to a rapidly progressive severe lower respiratory illness, characterised by respiratory failure, septic shock and multi-organ failure. Atypical presentations (including mild respiratory illness without fever, and diarrhoea preceding the development of pneumonia) have also been reported, especially in immunocompromised individuals.

### **Transmission and infection control**

To date, person-to-person transmission has occurred through close contact, both among family contacts and in healthcare settings. However, there is no evidence of sustained person-to-person transmission in community settings.



As with other respiratory infections, early symptoms of MERS-CoV are non-specific and it is not always possible to identify patients with MERS-CoV early in disease. Healthcare workers are therefore encouraged to practice appropriate infection prevention and control precautions consistently when caring for patients with respiratory illness, regardless of the diagnosis.

### Indications for testing

Healthcare practitioners and facilities should be aware of the possibility of MERS-CoV infection in patients with travel history from the Arabian region who present with acute respiratory illness. Details of case definitions, indications for testing and appropriate specimens for MERS-CoV testing can be accessed at the NICD webpage:

<http://www.nicd.ac.za/?page=alerts&id=5&rid=340>.

### Additional information on MERS-CoV can be accessed at the following websites:

WHO website:

[http://www.who.int/csr/disease/coronavirus\\_infections/en/](http://www.who.int/csr/disease/coronavirus_infections/en/)

[http://www.who.int/csr/bioriskreduction/infection\\_control/publication/en/](http://www.who.int/csr/bioriskreduction/infection_control/publication/en/)

NICD website: <http://www.nicd.ac.za>

CDC website: <http://www.cdc.gov/coronavirus/index.html>

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

### 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))