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1 SEASONAL DISEASES

Influenza

The 2015 influenza season has started. The influenza season is considered to have started when the influenza detection rate in specimens tested at the NICD from the Viral Watch influenza-like illness (ILI) programme has risen above 10% and is sustained for ≥ 2 weeks. While there have been low levels of influenza circulation since epidemiologic week 11 (week ending 22 March 2015), the number of specimens testing positive for influenza has increased. According to the data from the Viral Watch programme, the detection rate rose to 21.9% in epidemiologic week 19 (week ending 10 May 2015), and to 28.6% in epidemiologic week 20 (week ending 17 May 2015). The average week of influenza season onset over the past 30 years has been the last week of May (range last week of April to first week of July). In addition, the number of specimens submitted by Viral Watch sites has increased from an average of 10 specimens per week during March and April 2015, to 44 specimens for epidemiologic week 20 (week ending 17 May 2015). Influenza A (untyped as yet) has been detected in four patients, influenza A(H1N1)pdm09 in 29, influenza A(H3N2) in 11, and influenza B virus in four patients (Figure 1). In addition, 19

specimens have been received from patients at a point of entry into South Africa; influenza was detected in 11 of these patients.

From 01 January to 10 May 2015, 1 026 specimens from patients admitted with severe respiratory illness were tested from the six sentinel sites in the SARI surveillance programme. Influenza A(H1N1)pdm09 was detected in eight, influenza A(H3N2) in two, and influenza B in four of these specimens. In addition, other respiratory viruses were detected in specimens of 390 patients; rhinovirus (172/390, 44%) accounted for the majority followed by RSV (171/390, 43%).

Influenza vaccination

Influenza vaccination, which provides protection against at least three strains of influenza each season, remains the most effective measure to prevent illness and possibly fatal outcomes. Protecting those who are at increased risk of severe influenza outcomes plays an important role in the management of respiratory illnesses. Vaccines should be given sufficiently early to provide protection for the influenza season (a protective

antibody response takes about 2 weeks to develop), though it is never too late to vaccinate. The 2015 influenza vaccine has been available in South Africa since the end of April and it can be accessed at public health sector clinics and private healthcare providers (pharmacies and private practitioners etc.). Healthcare workers are encouraged to vaccinate individuals in the groups that are targeted for influenza vaccination; this includes, among others, pregnant women and those vulnerable due to pre-existing illnesses or risk factors.

Recommendations on target groups, dosages and contraindications for the 2015 influenza vaccine, and influenza antiviral treatment are available in the Healthcare Workers Handbook on influenza 2015, which can be accessed at: http://www.nicd.ac.za/assets/files/Healthcare%20Workers%20Handbook%20on%20influenza%20in%20SA_%205%20May%202015.pdf.

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

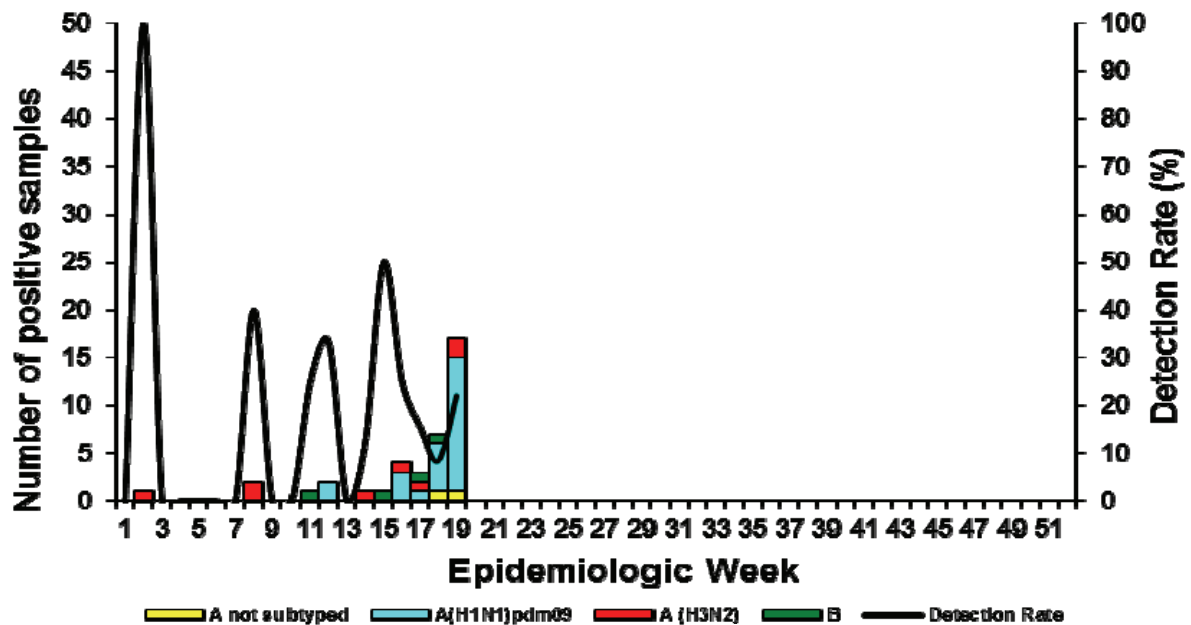


Figure 1. Number of positive samples by influenza types and subtypes and detection rate by week, Viral Watch programme, 2015

2 VACCINE-PREVENTABLE DISEASES

Diphtheria

Update on the outbreak in KwaZulu-Natal Province

The first confirmed diphtheria case-patient was hospitalised in Durban on 15 March 2015 (onset of symptoms 11 March 2015), and additional cases continue to be reported. As at 27 May 2015, a total of 13 diphtheria cases (eight confirmed, 1 probable and four suspected), including five deaths, has been reported (Figure 2). In addition, two asymptomatic carriers of laboratory-confirmed toxigenic *C. diphtheriae* were identified in contacts epidemiologically linked to two confirmed cases. To date, diphtheria case-patients have been reported from two districts (eThekwin and Ugu) in KwaZulu-Natal Province. Cases range in age from 20 months to 41 years (median 9 years). Children aged <15 years account for 77% (10/13) of the cases, with a higher proportion (46%, 6/13) occurring in those aged 5 to 9 years. Vaccination history is

known for five cases; only one case-patient had received all age-appropriate diphtheria-containing vaccine doses.

Diphtheria antitoxin treatment (DAT) has been procured through a generous donation by the Japanese government, and has been administered to three case-patients to date.

Alert to healthcare workers countrywide

Whilst there have been no reports of suspected diphtheria cases from elsewhere in the country, it is critical that healthcare workers in all provinces remain vigilant. An accumulation of children and adults susceptible to diphtheria results from suboptimal vaccination coverage rates and waning vaccine-induced immunity; as such, communities in all provinces are potentially vulnerable to outbreaks of diphtheria.

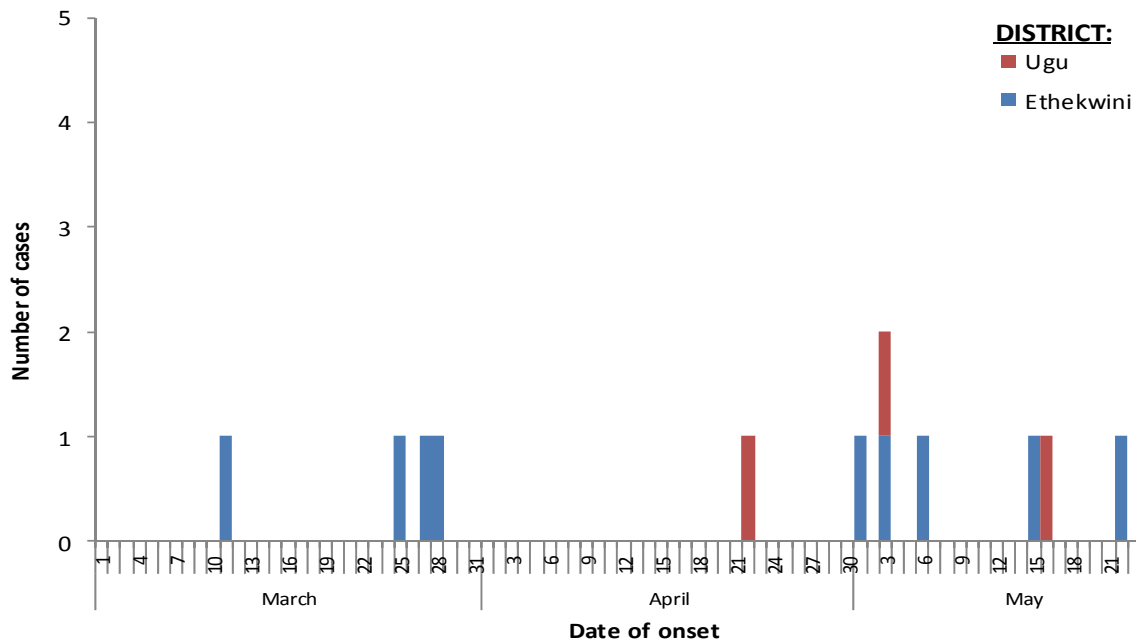


Figure 2. Epidemic curve illustrating the number of diphtheria cases by date of illness onset and district, KwaZulu-Natal Province, March to 27 May 2015

Suspected diphtheria case definition:

Any person presenting with: pharyngitis, nasopharyngitis, tonsillitis, laryngitis, tracheitis (or any combination of these), where fever is absent or low-grade

AND

one or more of the following:

- Adherent pseudomembrane which bleeds if manipulated or dislodged
- Features suggestive of severe diphtheria, including: stridor, bull-neck, cardiac complications (myocarditis, acute cardiac failure and circulatory collapse), acute renal failure

Diphtheria is a notifiable medical condition. IMMEDIATELY report the case to infection prevention and control practitioners at healthcare facilities, or directly to District and Provincial health department communicable disease control coordinators. Recommendations for the management and public health response to diphtheria can be accessed on the NICD website (www.nicd.ac.za).

Source: Division of Public Health Surveillance and Response, NICD-NHLS; Microbiology Laboratory, NHLS KwaZulu-Natal Academic Complex; Diagnostic Media Production Laboratory, NHLS Green Point Complex; Clinicians at hospitals in eThekweni and Ugu Districts, KwaZulu-Natal Province; KwaZulu-Natal Province Department of Health; eThekweni Municipality; Ugu District Department of Health

Reminder: diphtheria immunisation

Diphtheria is preventable through immunisation. The Expanded Program of Immunisation (EPI) schedule includes six doses of diphtheria toxoid-containing vaccine, given in combination with other antigens in various formulations:

1. Primary vaccination series (three doses)
Vaccine is given at 6, 10 and 14 weeks of age (as Pentaxim[®] OR Infanrix-Hexa[®] OR Hexaxim[®])
2. Booster vaccination series (three doses)
Vaccine is given at 18 months of age (as Pentaxim[®] OR Infanrix-Hexa[®] OR Hexaxim[®]), then 6 years of age (as Diftavax[®] OR Infanrix[®] OR Adacel Quadra[®] OR Boostrix Tetra[®]), then 12 years of age (as Diftavax[®] OR Adacel Quadra[®] OR Boostrix Tetra[®])

Immunity declines following immunisation, and many (20-80%) adults are susceptible to diphtheria. Adults working in high diphtheria exposure risk settings are encouraged to receive a booster dose (e.g. healthcare workers, school teachers, nursery/crèche staff, staff working in child-care settings) with bivalent Td (Diftavax[®]) which is only available in the public health sector, or quadrivalent Tdap-IPV (Adacel Quadra[®], Boostrix Tetra[®]) vaccine which is commercially available.

3 ZOOBOTIC AND VECTOR-BORNE DISEASES

a Rabies

A case of rabies was confirmed in a six-year-old child from Mashamba village, near Elim, in Limpopo Province. Three weeks before falling ill, the child was attacked by a dog and sustained injuries to his head, right hand, right knee and trunk. He presented to a local healthcare facility after the attack; he received a tetanus toxoid booster vaccine, but no consideration was given to the need for rabies post-exposure prophylaxis (PEP). A clinical diagnosis of rabies was made based on the exposure history and typical clinical presentation; signs and symptoms included fever, headache, nausea and vomiting, anxiety and agitation, insomnia, aggressive behaviour, confusion, delirium, and hypersalivation plus hydrophobia. The diagnosis of rabies was confirmed by testing three serial saliva specimens, of which two tested positive by rabies RT-PCR.

This patient represents the third laboratory-confirmed human rabies case from South Africa for 2015 to date. The other cases originated from Polokwane in Limpopo Province and KwaZulu-Natal Province (reported in the April 2015 issue of the Communiqué). In 2014, seven laboratory-confirmed cases were reported in South Africa. The case-patients originated from Eastern

Cape (n=3), North West (n=1) and Limpopo (n=1) provinces, while two confirmed cases were infected in neighbouring countries (Angola and Zimbabwe respectively). A total of five probable cases of human rabies were also recorded in South Africa for 2014, from Mpumalanga (n=2), Limpopo (n=2) and Eastern Cape (n=1) provinces. These cases were classified as probable since they could not be verified by laboratory testing for various reasons, but their clinical presentation and disease course were compatible with rabies and all reported a history of contact with potentially rabid dogs.

Rabies remains a silent killer in Africa, with its true burden greatly underestimated. Rabies, the most fatal disease known to mankind, is preventable by controlling the disease in domestic dogs and by administering rabies PEP in accordance with recognised guidelines. The National Rabies Guidelines and more rabies-related information can be accessed on the NICD website: www.nicd.ac.za.

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

b Odyssean malaria in Gauteng Province

Two odyssean malaria events were reported in Gauteng Province during May 2015.

Coronationville (Johannesburg)

A 69-year-old woman and her 2-year-old grandson, living in the same house, became ill with falciparum malaria on 26 April 2015 and 03 May 2015, respectively. The grandmother died in Pretoria on 04 May 2015, but the child survived. There was no history of travel or blood transfusions or injections in either the patients or their immediate family. The house the patient resides in is approximately 300 m from a long-distance bus depot. The house is also near (within 800 m) to Slovo Park, a community that includes foreign migrant workers.

Mofolo South (Soweto)

An adult male was admitted to Chris Hani Baragwanath Hospital with falciparum malaria, and made an uneventful recovery. Although he did not receive any visitors from any malaria-affected region, the patient's neighbour indicated that it is possible that some Zimbabwean nationals in the

local community may have returned from Zimbabwe during the 10 day period before the onset of illness. An examination of the immediate surrounds of the patients' residences did not reveal presence of mosquitoes or larvae, and no potential breeding sites were found on the properties. Access to the premises to check for mosquitoes was not gained because all the occupants were at work.

It is most likely that these patients acquired malaria from the bite of infective *Anopheles* sp. mosquitoes unintentionally translocated from a malaria endemic area via road vehicles – a phenomenon known as odyssean malaria. See recent reports in NICD Communiqué issues 13(5) (May 2014), 13(10) (Oct 2014), 13(12) (Dec 2014), 14(1) (Jan 2015), and 14(3) (Mar 2015).

Since April 2014, 19 cases of odyssean malaria with 3 deaths have occurred in Gauteng Province, with one case in the Western Cape Province. We believe that road traffic arriving from endemic areas around South Africa is the source of most of the infected

mosquitoes. We emphasise the importance of clinician awareness of this rare but frequently severe form of malaria. Odyssean malaria cases are inevitable in South Africa, given the volume of road, rail and air traffic from malaria risk areas into Gauteng and other non-endemic provinces. It is likely that many cases are missed, owing to the rare and sporadic nature of the condition. Malaria should

always be kept in mind as a cause of unexplained fever and thrombocytopenia, even in the absence of a travel history.

Source: Centre for Opportunistic, Tropical, and Hospital Infections, NICD-NHLS; Gauteng Provincial and District Departments of Health

4 **INTERNATIONAL OUTBREAKS OF IMPORTANCE TO SOUTH AFRICAN TRAVELLERS AND HEALTHCARE WORKERS**

Ebola virus disease (EVD) outbreak: update

Ebola virus disease (EVD) outbreak: situation update

The EVD outbreak in Liberia was declared over on 09 May 2015, after 42 complete days elapsed since the burial of the last confirmed EVD case. Active surveillance is being maintained so that any new case/s of Ebola can be rapidly identified should they occur. As at 09 May 2015, a cumulative total of 10 666 EVD cases (3 151 laboratory-confirmed, 1 879 probable and 5 636 suspected) including 4 806 deaths had been reported in Liberia.

At present the outbreak continues in Guinea and Sierra Leone, but the number of new cases reported has declined to relatively low numbers.

A confirmed imported EVD case was reported in Italy on 12 May 2015. The case-patient is a

volunteer healthcare worker who travelled from Sierra Leone to Italy on 07 May 2015 and developed symptoms three days later. Following confirmation of Ebola on 12 May 2015, the case-patient was transferred to the National Institute for Infectious Diseases in Rome.

Countries with widespread and intense transmission (Guinea and Sierra Leone)

As at 24 May 2015, a cumulative total of 16 347 cases (laboratory-confirmed, probable and suspected) including 6 328 deaths with a case fatality rate of 39% has been reported in Guinea and Sierra Leone. A summary of case numbers and deaths reported is shown in Table 1.

Table 1: Number of Ebola virus disease cases and deaths in Guinea and Sierra Leone as at 24 May 2015

| Country | Total cases (laboratory-confirmed, probable and suspected) | Total deaths | Case fatality rate | Number of cases among healthcare workers (number of deaths) |
|--------------|--|--------------|--------------------|---|
| Guinea | 3 641 | 2 420 | 66% | 187 (94) |
| Sierra Leone | 12 706 | 3 908 | 31% | 304 (221*) |
| Total | 16 347 | 6 328 | 39% | 491 (315) |

Source: World Health Organization Global Alert and Response: Ebola situation report of 27 May 2015 (www.who.int). *Data as at 17 February

Situation in South Africa

As at 26 May 2015 there have been no EVD cases in South Africa associated with the current outbreaks in West Africa. In addition, there are no suspected cases of EVD in South Africa at present.

The risk of Ebola being introduced into South Africa still remains low. However a high index of suspicion is necessary given on-going EVD transmission in West Africa.

Testing for viral haemorrhagic fever viruses (including Ebola virus) in South Africa is only available at the NICD. 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: Division of Public Health Surveillance and Response, NICD-NHLS

6 ANTIMICROBIAL RESISTANCE

Update on carbapenemase-producing Enterobacteriaceae

The Johannesburg Antimicrobial Resistance Laboratory Culture Collection (AMRL-CC) of the Centre for Opportunistic, Tropical and Hospital Infections (COTHI) at the NICD/NHLS offers testing of referred isolates of suspected carbapenemase-producing Enterobacteriaceae (CPE) for the presence of selected carbapenemase genes. For April 2015, a total of 48 Enterobacteriaceae isolates

were received. Forty-seven isolates were screened, 85% (40/47) of which were confirmed to be carbapenemase-producing Enterobacteriaceae (CPE). The commonest referred isolates were *Klebsiella pneumoniae* (64%, 30/47) followed by *Escherichia coli* (11%, 5/47) and equal numbers of *Serratia marcescens* and *Providencia rettgeri* (each 6%, 3/47) (Figure 3).

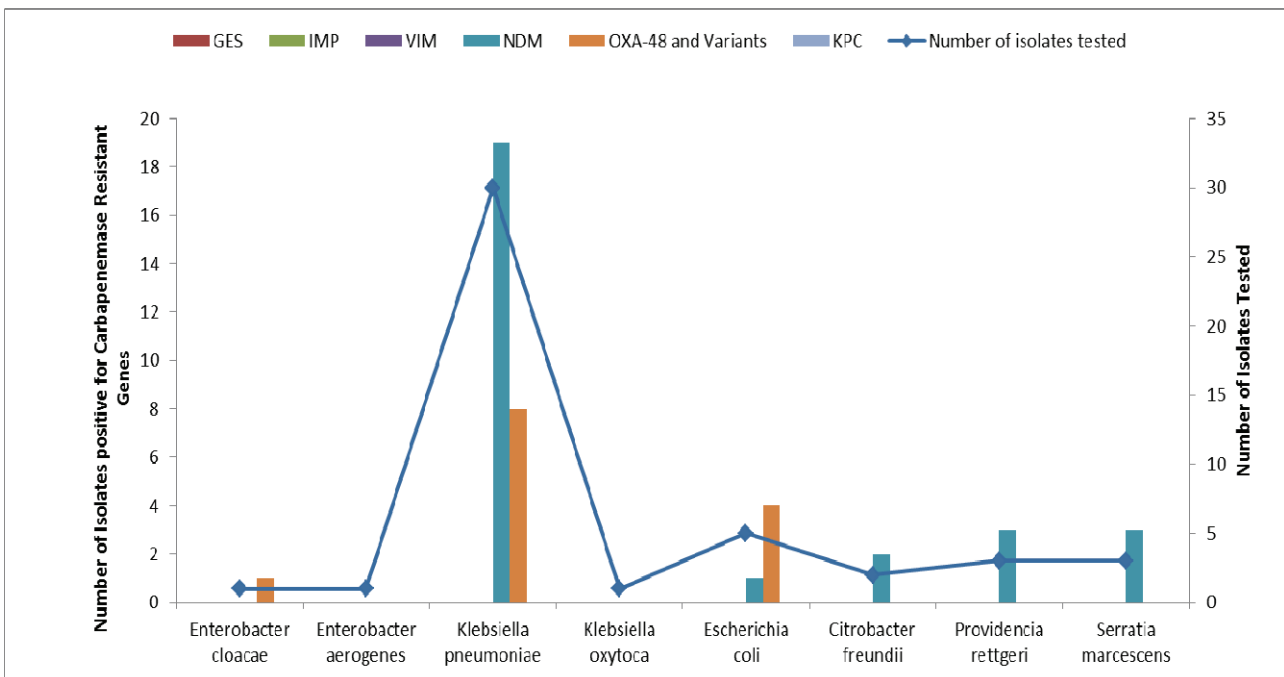


Figure 3. Enterobacteriaceae isolates screened (n=47) and confirmed CPEs (n=40) at the Antimicrobial Resistance Laboratory-Culture Collection, COTHI (NICD-NHLS), April 2015

Twenty-seven *bla*_{NDM}-positive isolates were identified: six from private hospitals (all in KwaZulu-Natal Province (KZN) and 21 from public hospitals (nine from Gauteng Province (GP) and 12 from KZN). Thirteen *bla*_{OXA-48}-positive isolates were identified: four from private hospitals in GP and nine isolates from public hospitals (six in GP and two in Eastern Cape Province (ECP) and one in KZN). No other CPE enzyme types were identified in April (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 AMRL-CC, NICD/NHLS. Please telephone (011) 555 0342/44 or email olgap@nicd.ac.za for queries or further information.

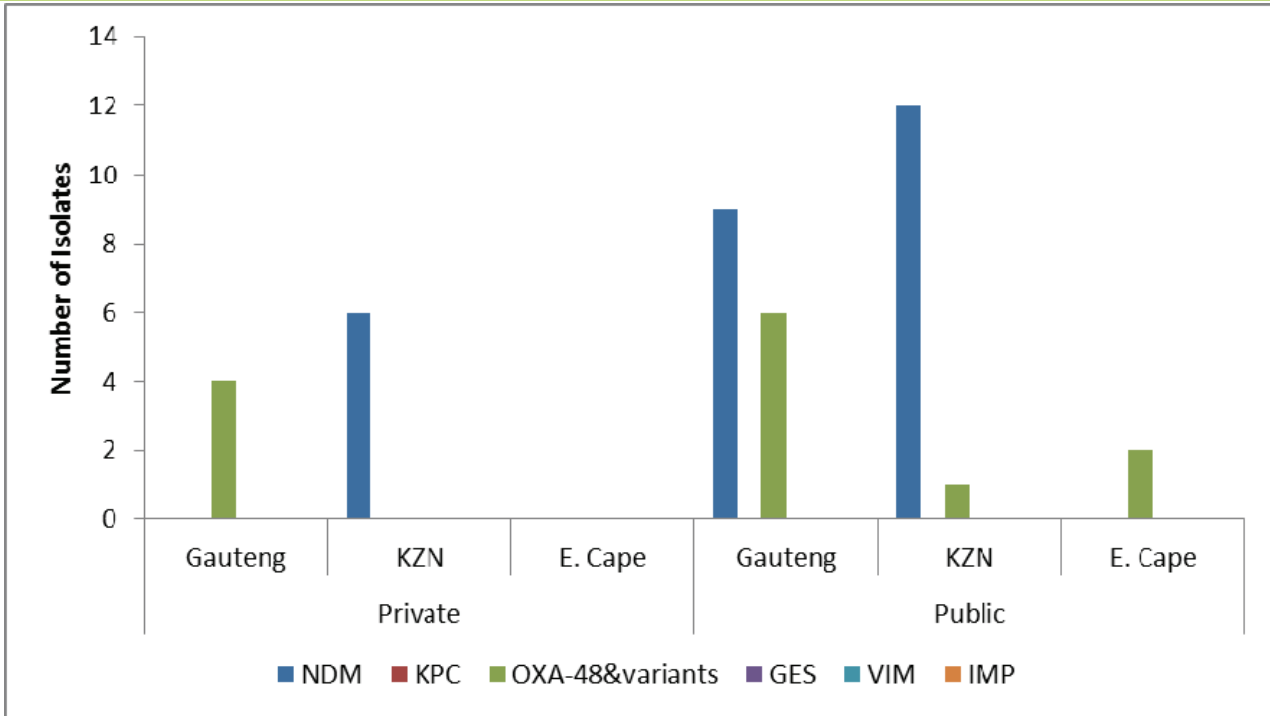


Figure 4. Distribution of confirmed CPEs (n=40) by province and healthcare sector, April 2015

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

7 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. Water and food borne diseases | | |
| Cholera | | |
| <u>Africa</u> | | |
| Tanzania | An outbreak has affected at least 3 000 people in the border region of Kagunga, following an influx of Burundian refugees. | Cholera is an acute diarrhoeal illness that causes severe dehydration. Drink lots of safe water (bottled water with an unbroken seal, boiled water or water treated with chlorine tablets). Strict washing of hands with soap and safe water must be practiced. Food must be well-cooked before eating. Peel fruit and vegetables before eating. |
| Malawi | The outbreak is ongoing, and as of 07 May 2015 the total number of cases reported is 281 with 3 deaths. | |
| Kenya | The outbreak is ongoing. As of 21 May 2015, 3 234 cases with at least 65 deaths have been reported in 11 counties since December 2014. | |
| Nigeria | The outbreak is ongoing. As of 08 May 2015, 256 cases and 20 deaths have been reported. | |
| 2. Respiratory diseases | | |
| MERS-CoV | | |
| Global | Since April 2012 and as of 21 May 2015, 1 154 cases have been reported, including 471 deaths. To date, all cases have either occurred in the Middle East, have direct links to a primary case infected in the Middle East, or have returned from this area. | Good hygiene and basic infection prevention measures should be practiced. Travellers with diabetes, chronic lung disease and immune-compromised states are at risk of infection and should avoid contact with animals if possible. Strict hand washing must be followed after touching animals. Avoid raw camel milk or undercooked camel meat at all times. Travellers should avoid contact with animals and eat food that is fully cooked. Infection control practices such as regular hand washing must be followed to prevent infection. |
| Saudi Arabia | Between 13 and 21 May 2015, Saudi Arabia reported 6 additional cases. | |

| Disease & countries | Comments | Advice to travellers |
|--|---|--|
| 2. Respiratory diseases (continued) | | |
| Avian influenza | | |
| <p>China (H7N9)</p> <p>Egypt (H5N1)</p> | <p>On 09 May 2015 China reported an additional 6 cases (including 2 deaths) identified since 26 March 2015.</p> <p>Since November 2014 to 30 April 2015, Egypt reported a total of 165 cases including 48 deaths. This is double the number that any country has ever reported in a single year, and is of major public health concern.</p> | <p>Good hygiene and basic infection prevention practices can minimise risk of respiratory infections in travellers:</p> <ul style="list-style-type: none"> • 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. <p>Travellers should contact a medical practitioner if they develop acute respiratory symptoms upon return from a known risk area.</p> |
| Measles | | |
| <p>China</p> <p>Democratic Republic of Congo</p> | <p>From January to March 2015, 32 819 cases including 13 deaths were reported by Chinese health authorities. The outbreak is ongoing.</p> <p>An outbreak in Katanga area is ongoing, with >100 deaths recorded since January 2015.</p> | <p>Measles is transmitted from person to person primarily by large respiratory droplets, but can also be transmitted by the airborne route.</p> <p>Travellers to countries reporting outbreaks are encouraged to ensure that they are up to date with measles immunisation.</p> |
| 3. Vector-borne diseases | | |
| Dengue | | |
| <p>Global</p> | <p>As of 15 May 2015, ongoing outbreaks have been reported in the following countries of the Americas and Asia:</p> <p><u>Central America and Mexico</u>: Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama.</p> <p><u>Hispanic Caribbean</u>: Dominican Republic, Puerto Rico</p> <p><u>English, French and Dutch Caribbean</u>: American Virgin Islands</p> <p><u>South America</u>: Brazil, Colombia, Peru, Argentina and Paraguay</p> <p><u>Asia</u>: Taiwan, Malaysia, Indonesia, Pakistan, India (Karnataka State)</p> | <p>Dengue fever is a mosquito-borne viral infection transmitted by <i>Aedes</i> sp. mosquitoes, which bite mostly during the day. To protect against mosquito bites, travellers should use insect repellent and sleep in an air conditioned room. For those sleeping in an area that is exposed to the outdoors, they should use mosquito nets.</p> |

| Disease & countries | Comments | Advice to travellers |
|---|---|--|
| 4. Other diseases | | |
| Meningococcal disease Niger | An outbreak of <i>Neisseria meningitidis</i> serogroup C meningitis is ongoing. From 01 January to 10 May 2015, 5 855 cases including 406 deaths have been reported. This is the first large-scale meningitis outbreak caused by <i>N. meningitidis</i> serogroup C in any country in Africa's meningitis belt. | Person-to-person transmission of <i>N. meningitidis</i> occurs by close contact with respiratory secretions or saliva. Travellers intending to visit hyper-endemic countries or areas where outbreaks are reported, are encouraged to discuss vaccination (with quadrivalent conjugate meningococcal vaccine) with their healthcare provider. |

References and additional reading:

ProMED-Mail (www.promedmail.org)

World Health Organization (www.who.int)

Centers for Disease Control and Prevention (www.cdc.gov)

European Centre for Disease Prevention and Control (www.ecdc.europa.eu)

Last accessed: 26 May 2015

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