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

Communicable Diseases Communiqué

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CONTENTS

1 ZOONOTIC AND VECTOR-BORNE DISEASES

a An update on rabies in the Eastern Cape Province, and in South Africa

A case of rabies was confirmed in a seven-year-old girl from Maclear, Eastern Cape Province. The child was bitten by a stray dog in May 2017. Rabies post-exposure prophylaxis was administered but the patient did not complete the vaccination schedule. The child died in July 2017, and the clinical diagnosis of rabies was confirmed after testing of a postmortem brain sample at the NICD. This is the second confirmed human rabies case in South Africa for 2017 to date. The first case also involved a child from the Eastern Cape Province.

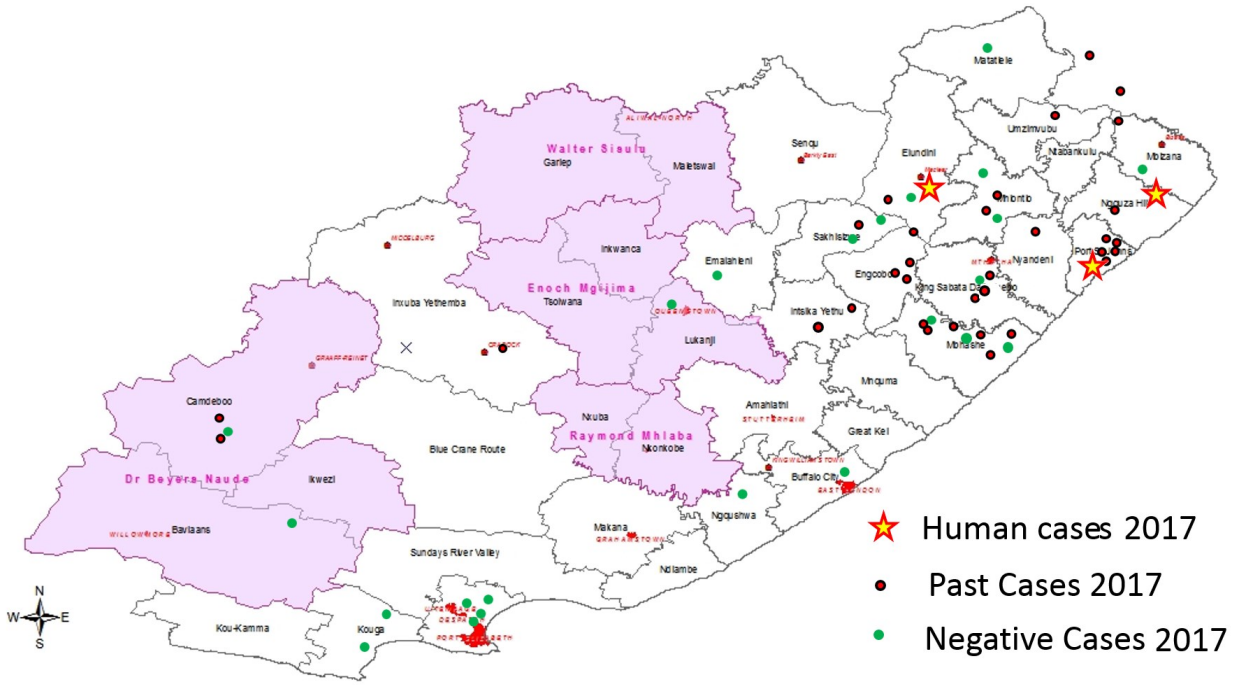
In addition a suspected case of rabies was reported in a child from Lusikisiki in the Eastern Cape Province. The child was apparently bitten by a donkey before falling ill with rabies-like symptoms. The donkey was ill and subsequently died, but was not tested for rabies. The child died in July 2017. Ante-mortem testing on the child yielded negative results for rabies. No postmortem samples were available for testing. Given the animal exposure and clinical history of the child, but the absence of laboratory confirmation, the case is recorded as a probable case of rabies.

This brings to three the number of confirmed or probable cases of rabies reported in South Africa to date in 2017, all of which occurred in the Eastern Cape Province. Cases of animal rabies predominate in the northern districts of the Eastern Cape Province (Figure 1) and in certain districts in KwaZulu-Natal Province (Figure 2). Health care practitioners in the affected areas are advised to administer post-exposure prophylaxis according to guidelines when consulted for dog bite, and to ensure that the patient understands the importance of adherence to the vaccination schedule.

Human rabies in South Africa is likely underreported. Surveillance for human rabies cases is passive, and relies on the astute clinical recognition of rabies disease, along with laboratory confirmation of cases. Clinicians are requested to be on the look out for human cases especially in areas where canine rabies cases are increasing (Figures 1 & 2).

Antemortem testing for rabies is complicated and follow-up with testing of several specimens is typically required to confirm or exclude the

Figure 1. Negative (green dots) and positive (red dots) specimens submitted from animals suspected of rabies in the Eastern Cape Province, January to 12 June 2017, indicating the location of human cases (yellow stars). Map courtesy of KZN Veterinary Services



a Update on rabies in Eastern Cape Province, and in South Africa (contd.)

diagnosis. Postmortem testing requires the submission of brain tissue, which for various reasons is difficult to obtain. Testing of brain samples in fatal cases of encephalitis, with or without animal exposure history, and where a diagnosis has not been confirmed, is encouraged. Methods for minimally invasive tissue sampling of the brain are possible. Alternatively, if brain tissue cannot be collected, nuchal skin biopsies may be submitted for laboratory testing. For more information on the prevention of human rabies and the laboratory testing of suspected rabies cases at the NICD, visit www.nicd.ac.za.

Source: Centre for Emerging, Zoonotic and Parasitic Diseases, NICD/NHLS; (januszp@nicd.ac.za); KwaZulu-Natal Department of Health

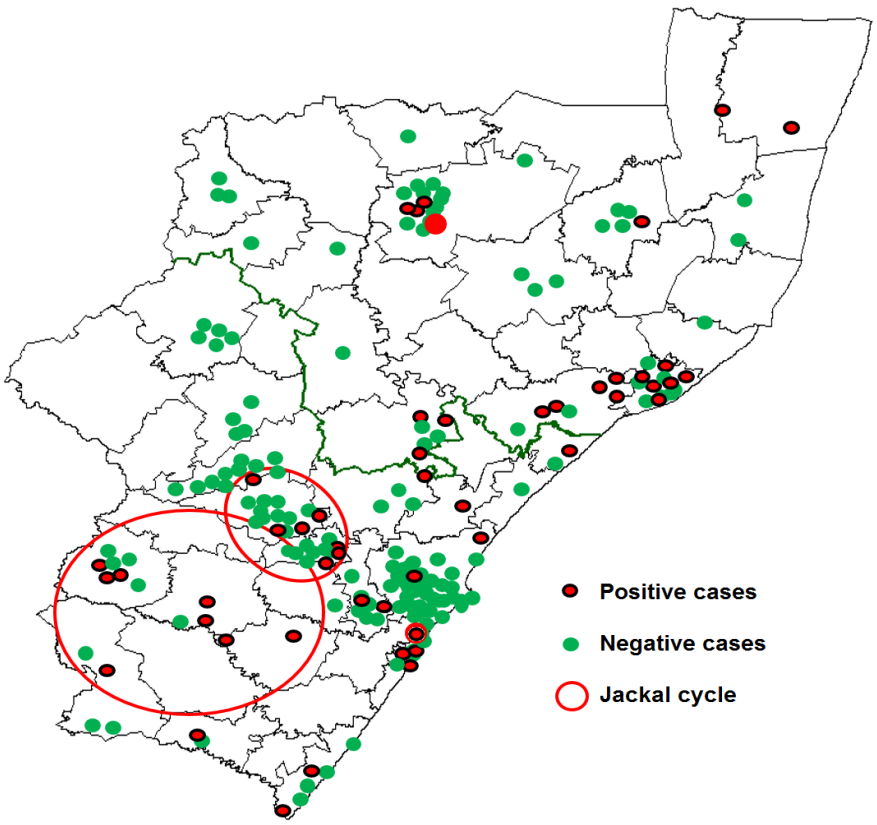


Figure 2. Positive (red dots) and negative (green dots) rabies results from specimens submitted from animals suspected of rabies in KwaZulu-Natal Province, January to 12 June 2017. Two foci of jackal rabies exist in the southern regions of the province. Map courtesy of KZN Veterinary Services

b A case of West Nile virus in Mpumalanga Province, South Africa

A 60-year-old female veterinarian resident in Mpumalanga, who frequently conducts bird-tagging and animal autopsies, was admitted to Middelburg Hospital on 12 May 2017, after she was confirmed to have malaria on 9 May. Despite anti-malaria treatment, the patient developed joint pains, skin hyperaesthesia and severe headache. On 12 May blood tests revealed platelets of 78 x 10^9 /L, C-reactive protein of 98 mg/L and a low white cell count but negative results for malaria. The patient was transferred to Milpark Hospital on 15 May, still complaining of severe headache and having raised liver enzymes (ALP 259 IU/L, ALT 214 IU/L). A fine rash on her arms and shoulders was noted while in Milpark Hospital. On 17 May blood results were normal and viral hepatitis, *Rickettsia*, malaria and *Coxiella* tests were negative, but headache persisted. West Nile virus (WNV) infection was considered as a differential diagnosis. Blood collected on 18 May 2017 tested negative by WNV PCR but was positive for specific IgM and IgG antibodies by ELISA. A second blood sample collected on 1 June 2017 also tested positive for IgM and IgG antibodies to WNV by ELISA. Testing of the first and second blood samples by WNV serum neutralization assay showed seroconversion, thus confirming a recent WNV infection.

Source: The attending clinician, Donald Gordon Hospital, University of the Witwatersrand; Centre for Emerging, Zoonotic and Parasitic Diseases, NICD-NHLS; (januszp@nicd.ac.za)

c Update on Crimean-Congo haemorrhagic fever in South Africa

A case of Crimean-Congo haemorrhagic fever (CCHF) was confirmed in a 55-year-old farmer from Kuruman, Northern Cape. The patient was admitted to hospital after a five to six-day history of flu-like illness, with headache, malaise and myalgia but no reported fever. The patient was diabetic and obese. The patient did not report a tick bite, but was confused at admission. Baseline blood testing indicated severe thrombocytopenia (7 X 10^9/L), raised liver transaminases and severe metabolic dysfunction (marked increase lactate level, low pH). The patient died on the day of admission. A blood sample collected post-mortem tested positive for CCHF reverse-transcriptase PCR at the NICD.

A contact of the case who is also an insulin-dependent diabetic and a family member, had shared a lancet with the index case on the day before his death, to check her glucose levels. After the diagnosis was made in the index patient, the contact was admitted for observation, and ribavirin was administered prophylactically. She was discharged after four days, and remains well.

A total of five CCHF cases has been confirmed in South Africa in 2017 to date. These cases were reported from the Northern Cape (n=2), Free State (n=2) and the Western Cape (n=1) provinces. All are epidemiologically unlinked. For more information on CCHF in South Africa visit www.nicd.ac.za.

Source: Centre for Emerging, Zoonotic and Parasitic Diseases, NICD-NHLS; (januszp@nicd.ac.za)

2 VACCINE-PREVENTABLE DISEASES

a Measles update 2017

As of 14 July 2017, 102 measles cases have been detected in South Africa from January to 14 July 2017 (Figure 3). Measles cases have been detected in seven provinces, namely: Eastern Cape (n=2), Gauteng (n=54), KwaZulu-Natal (n=5), Limpopo (n=3), Mpumalanga (n=2), North West (n=6) and Western Cape (n=30). Measles cases in Gauteng Province are continuing to increase. New measles cases have been detected in KwaZulu-Natal and Mpumalanga provinces. Many of the cases are above five years of age (Figure 4), which is outside the age groups targeted by the national measles vaccination campaign. Gauteng Province continued to vaccinate for measles until the end of June 2017 as part of the national measles vaccination campaign.

Contacts of measles cases are being followed and vaccinated with measles vaccine irrespective of their age. The measles vaccination coverage information will be released once provinces have finished capturing the data.

Source: Centre for Vaccines and Immunology, NICD-NHLS; Division of Public Health Surveillance and Response, NICD-NHLS; (melindas@nicd.ac.za)

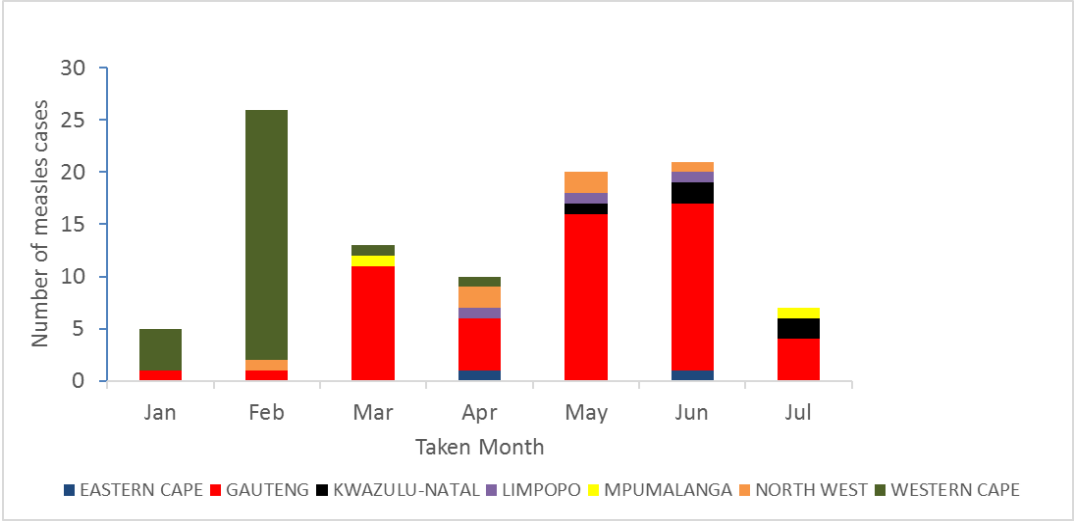


Figure 3. Laboratory-confirmed measles cases in South Africa, 1 January to 14 July 2017

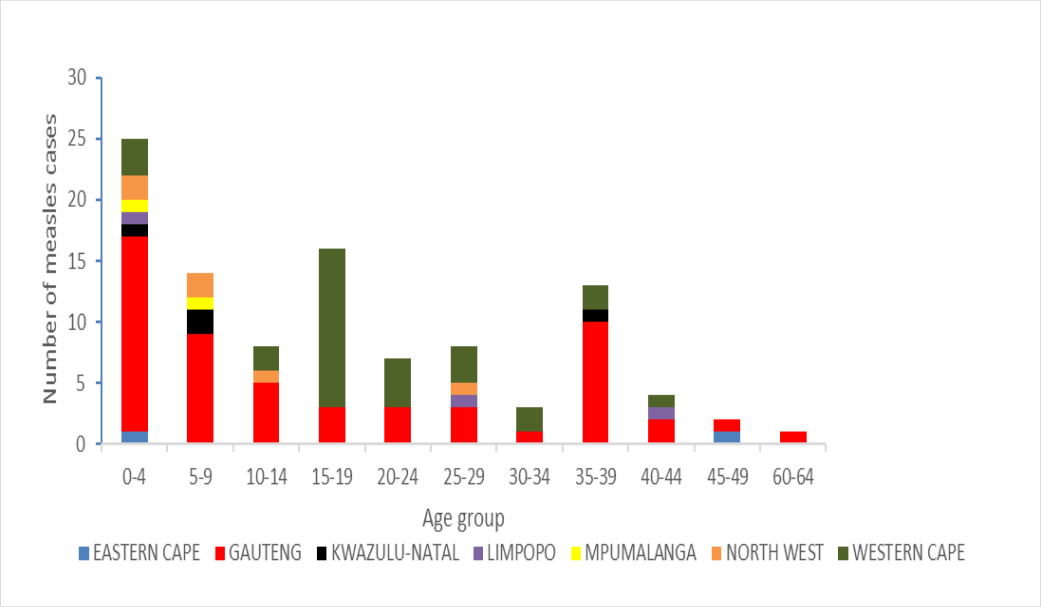


Figure 4. Laboratory- confirmed measles cases in South Africa by age group, 1 January – 14 July 2017

3 SEASONAL DISEASES

a The influenza season, 2017

The 2017 influenza season, which started in week 21 (week ending 4 June) continues. A total of 302 influenza detections has been made, the majority of which have been influenza A(H3N2), which was detected in 268 patients. Influenza A(H1N1)pdm09 has been detected in 20 specimens and influenza B in 13 specimens. In addition, dual infection of influenza A(H1N1)pdm09 and A(H3N2) was detected in one specimen. Influenza has been detected in all eight provinces with Viral Watch sites.

In the first three months of the year influenza A (H3N2) was detected in five patients who had either travelled abroad, or had contact with travellers from the northern hemisphere. Additionally, 52 specimens have been received from patients at a point of entry into South Africa, and influenza was detected in 26 of these patients.

Source: Centre for Respiratory Diseases and Meningitis, NICD-NHLS; (cherylc@nicd.ac.za)

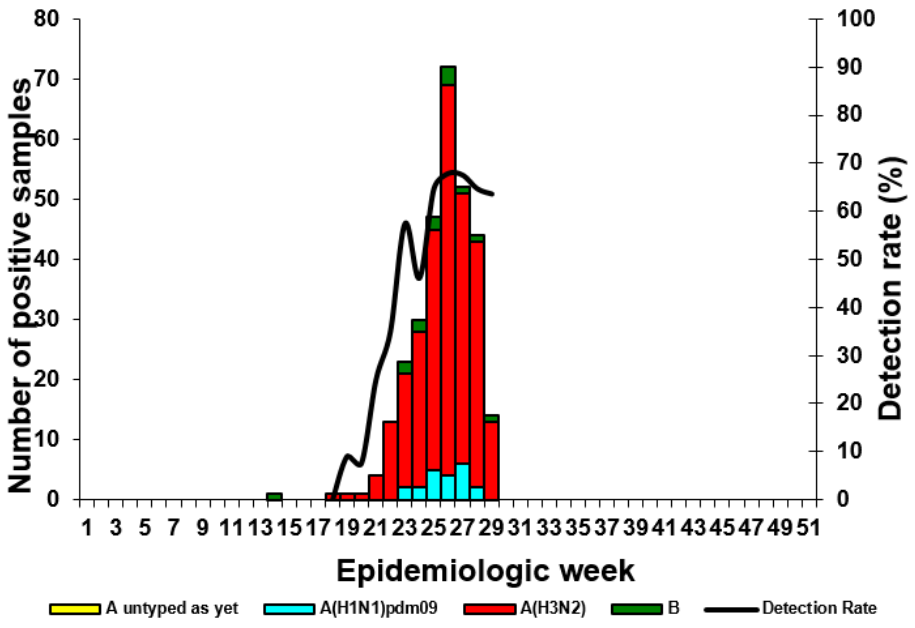


Figure 5. Viral Watch 2017: number of positive samples by influenza types and subtypes and detection rate*
*Only reported for weeks with >10 specimens submitted.

Patients known to have acquired influenza abroad or from contact with travellers are not included in the epidemiological curve.

b Avian influenza in South Africa: an update

South Africa is experiencing its first outbreak of highly pathogenic avian influenza A(H5N8) in poultry. To date, four poultry farms have been affected—three in Mpumalanga Province and one in Gauteng Province. A(H5N8) is transmitted from wild birds (usually water fowl) by aerosol transmission. The Department of Agriculture, Forestry and Fisheries (DAFF) and the poultry industry have implemented control measures, including the humane culling of infected and potentially infected birds.

Globally, influenza A(H5N8) has not been documented to cause illness in humans despite widespread exposure to infected birds amongst European and Asian workers, though asymptomatic infection has been documented. There is no danger of transmission of avian influenza from chicken or egg products. All poultry on the market is safe to consume.

Following the first report of the A(H5N8) outbreak, exposed workers from affected poultry farms are being screened for infection by the NICD according to the following case definition:

> The presence of: cough, fever, sore throat, runny nose, difficulty breathing or conjunctivitis;
>
> AND
>
> Documented exposure (direct contact or proximity of <15 meters) to infected birds (alive or dead)
>
> OR
>
> Having had worked in a poultry house with infected birds, in the 10 days preceding the onset of symptoms.

To date, a total of 35 "persons under investigation", associated with the first two affected farms, has tested negative for influenza A (includes avian influenza). Two additional samples were received by the NICD from persons meeting the case definition. Both tested positive for seasonal influenza and negative for avian influenza.

Persons working with infected poultry, their excrement or poultry products, should use appropriate personal protective clothing. Exposed workers meeting the case definition provided above should have samples collected to test for avian influenza. If testing is required, please contact the NICD doctor on call to discuss the case (082 883 9920).

Source: Centre for Respiratory Diseases and Meningitis, NICD-NHLS; (cherylc@nicd.ac.za)

c Meningococcal disease

In South Africa, by the end of week 26 (2 July 2017), 46 cases of laboratory-confirmed invasive meningococcal disease (IMD) had been reported through the GERMS-SA surveillance network, compared to 55 cases for the same period in 2016. The majority of cases were reported from the Western Cape (16/46, 35%) and Gauteng (15/46, 33%) provinces. Of 18 isolates typed, seven (39%) were serogroup B, four (22%) serogroup W, four (22%) serogroup Y and three (17%) serogroup C. Of the 42 cases with known age, IMD was most prevalent in infants aged <1 year (10/42, 24%) and the 15-24 year age-category (10/42, 24%). Clinicians are urged to consider IMD in patients presenting with acute onset of severe illness and look for the characteristic non-blanching petechial rash associated with meningococcaemia. All suspected cases of meningococcal disease should be notified immediately to the provincial Communicable Disease Control Coordinators to ensure appropriate contact tracing and case counting. As part of ongoing surveillance, Centre for Respiratory Diseases and Meningitis (CRDM) at the NICD offers meningococcal isolate confirmation/serogrouping and detection by PCR of culture-negative/autopsy cases, free of charge. National and international laboratory assistance during outbreaks is afforded, such as recent assistance provided to the Liberian government during an outbreak of meningococcal septicaemia associated with attending a funeral in April 2017. (http://www.who.int/csr/don/06-july-2017-meningococcal-septicaemia-liberia/en/)

Source: Centre for Respiratory Diseases and Meningitis, NICD-NHLS; (annev@nicd.ac.za)

4 ENTERIC DISEASES

a A cluster of typhoid fever cases in Drakenstein, Cape Winelands District

Thirteen typhoid fever cases were identified in the Drakenstein sub-district in the Cape Winelands District from 1 November 2016 till 23 June 2017.

On 30 March 2017, the sub-district was alerted to a cluster of five typhoid fever cases with no apparent link, and was requested to ensure further investigations and the appropriate follow-up of cases and contacts.

Home visits and environmental assessments identified extended families on two properties, with 26 people accommodated on the one property and 19 on the other. In both clusters, the main house water-borne sanitation facilities were used by all persons resident on the property.

Investigations identified a further six culture positive typhoid fever cases (two blood, three stool, and one urine culture) amongst the contacts. Due to ongoing transmission and challenges with sample collection from contacts, 26 people were provided with the appropriate treatment (ciprofloxacin) on the one property that had two confirmed cases. Six confirmed cases were treated on the other property after samples were collected from all household members and property residents.

Environmental health practitioners conducted health promotion activities on diarrhoea, typhoid fever and hygiene in the community and took water samples in the affected area. All health facilities in the area were on high alert and requested to report and investigate any suspected typhoid fever cases. No further cluster-related or sporadic cases have been detected in the sub-district to date.

Source: Western Cape Department of Health (charlene.jacobs@westerncape.gov.za)

5 FUNGAL DISEASES

a Results from the ACTA (Advancing Cryptococcal meningitis Treatment for Africa) trial

The results of the ACTA trial (Advancing Cryptococcal meningitis treatment for Africa)—to define cryptococcal treatment regimens that can be more feasibly implemented than the accepted gold standard of two weeks of amphotericin B, but also more effective than fluconazole monotherapy—were released this week (available at https://www.ias2017.org/ abstract number MOAX0201LB).

The trial was an open-label, phase III randomised non-inferiority trial conducted at nine sites in four African countries to compare 1) oral fluconazole 1200 mg plus flucytosine for two weeks; 2) short-course (1 week) amphotericin B with either oral fluconazole 1200 mg or oral flucytosine for two weeks; and 3) amphotericin B with either oral fluconazole 1200 mg or oral 5FC for two weeks. After two weeks, all participants then received 800 mg fluconazole until ART was started or re-started at four weeks. Patients were followed up to 10 weeks. The primary outcome was all-cause mortality at two weeks. Amongst 1 243 patients, the proportion of deaths at two weeks was very similar across the groups with 18% in the oral, 22% in the one-week and 21% in the two-week regimens. Both oral and 1-week regimens were non-inferior to the control regimen based on the primary endpoint. When comparing fluconazole *vs.* flucytosine as adjunctive treatment with amphotericin B, overall 10-week mortality was 45% in the fluconazole arm compared to 31% in the flucytosine arm and this difference was highly statistically significant. The best performing arm was 1 week of amphotericin B plus 2 weeks of flucytosine in terms of cumulative all-cause mortality at 10 weeks. All the best performing arms contained flucytosine which was associated with better CSF fungal clearance.

Urgent efforts are required to ensure that flucytosine is made widely available for the treatment of cryptococcal meningitis in South Africa. Once flucytosine is available, the 1-week amphotericin B regimen with 2 weeks of flucytosine should be used preferentially.

In the absence of flucytosine, clinicians should not reduce the duration of induction-phase amphotericin B from 2 weeks to 1 week. However, based on the regimen used in the ACTA trial, they may consider prescribing 1200 mg adjunctive fluconazole for the first 2 weeks and then reducing to 800 mg after 2 weeks.

Source: Centre for Healthcare-associated infections, Antimicrobial Resistance and Mycoses, NICD-NHLS; (neleshg@nicd.ac.za)

6 SURVEILLANCE FOR ANTIMICROBIAL RESISTANCE

a Carbapenemase-resistant Enterobacteriaceae—a monthly update

The Antimicrobial Resistance Laboratory and Culture Collection (AMRL-CC) of the Centre for Healthcare-associated infections, Antimicrobial Resistance and Mycoses (CHARM) at the NICD has been testing referred isolates of suspected carbapenemase-producing Enterobacteriaceae (CPE) for the presence of selected carbapenemases. CPE have become a threat to healthcare and patient safety worldwide by compromising empiric antibiotic therapeutic choices and increasing morbidity, hospital costs and the risk of death. We are receiving clinically significant isolates from all specimen types based on antimicrobial susceptibility testing criteria for molecular confirmation. For June 2017, a total of 98 Enterobacteriaceae isolates was received. Seventy-six isolates were screened, 61 of which expressed the carbapenemases that were screened for. Two isolates expressed both NDM and OXA-48 and variants (Table 1). The majority of the screened isolates were *Klebsiella pneumoniae* (53) followed by *Enterobacter cloacae* (11).

It is important to note that these figures do not represent the current burden of CPEs in South Africa. However, our data reveal the presence of carbapenemases in Enterobacteriaceae isolates from various specimen types, nationally. As a first step, CPE surveillance is required to determine the extent of the problem in order to restrain the emergence and spread of resistance. The AMRL-CC is currently running a surveillance programme at national sentinel sites for CPE infections in patients with bacteraemia, which provides representative data. This significant data will inform public health policy and highlight priorities for action. Controlling the spread and limiting the impact of CPEs in South Africa requires 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 AMRL-CC, NICD/NHLS. Please telephone (011) 555 0342/44 or email: olgap@nicd.ac.za; for queries or further information.

Source: Centre for Healthcare-associated infections, Antimicrobial Resistance and Mycoses, NICD-NHLS; (olgap@nicd.ac.za)

Table 1: Enterobacteriaceae by CPE enzyme type for January-May 2017 and June 2017 at the AMRL-CC, CHARM, NICD.

Organism	OXA-48 & Variants		NDM	
	Jan-May 2017	June 2017	Jan-May 2017	June 2017
Enterobacter cloacae	43	7	8	1
Escherichia coli	22	1	7	-
Klebsiella oxytoca	2	1	2	1
Klebsiella pneumoniae	308	39	91	7
Klebsiella species	5	1	1	-
Proteus mirabilis	2	-	-	-
Providencia rettgeri	1	-	-	1
Pseudocitrobacter faecalis	2	1	-	-
Serratia marcescens	6	1	-	-
Morganella morganii		1	2	1
Total	**391**	**52**	**111**	**11**

NDM: New Delhi metallo-beta-lactamase; **OXA**: oxacillinase

7 BEYOND OUR BORDERS

The 'Beyond our Borders' column focuses on selected and current international diseases that may affect South Africans travelling abroad. Numbers correspond to Figure 6 on page 10.

1. Lassa Fever: Nigeria
Six suspected cases of Lassa fever with three laboratory-confirmed and one death were reported in week 24, 2017. Between weeks 1 and 24, 2017, 308 suspected Lassa fever cases, 69 laboratory-confirmed cases and 50 deaths (CFR, 16.23 %) were reported compared with 717 suspected cases with 71 laboratory-confirmed cases and 87 deaths (CFR, 12.15 %) during the same period in 2016. Active case finding is ongoing in affected states with coordination of response activities by the NCDC, supported by partners.

2. Cholera: Yemen
In a statement by WHO on 11 July 2017, at least 1 732 people have died during a cholera outbreak in war-torn Yemen since late April 2017. At least 313 538 suspected cases of cholera have been registered with a case fatality rate (CFR) of 0.6%. Campaigns are underway to improve general hygiene measures and disseminate messages of how to prevent cholera.

3. Ebola: Democratic Republic of Congo
On 2 July 2017, the World Health Organization (WHO) officially declared the recent Ebola outbreak that has plagued the Democratic Republic of Congo (DRC) over. The last confirmed case of Ebola tested negative for the disease for the second time on 21 May 2017. WHO advised on enhanced surveillance and strengthening of preparedness and readiness for Ebola outbreaks. This was the 8th Ebola outbreak in the DRC since 1976.

4. MERS-CoV: Saudi Arabia
According to the Saudi Arabia MOH, as of 11 Jul 2017, there has been a total of 1 674 laboratory-confirmed cases of MERS-CoV infection, including 680 deaths [CFR 40.6%], 981 recoveries, and 13 currently active cases since 2012. Interruption of nosocomial transmission has led to stabilised incidence with the last case reported on 4 July 2017. Primary cases usually have an identifiable direct or indirect contact with camels or camel products.

5. Avian influenza A(H7N9) viruses
By 11 July 2017, eight new laboratory-confirmed cases of human avian influenza A(H7N9) were reported in China. WHO reported on 15 June 2017 that a total of 1 533 laboratory-confirmed cases and 592 deaths have been reported since 2013. Confirmed cases continue to decline.

6. Yellow fever: Nigeria
On 23 June 2017 two persons with jaundice from Ngala internally displaced persons (IDP) camp in northern Nigeria, who were being screened for hepatitis E, tested positive for yellow fever by PCR. Testing was performed at the National Institute of Public Health in Lagos. Samples have been sent to Institut Pasteur (IP) Dakar for secondary confirmation and differential diagnosis. The last yellow fever outbreak in Nigeria occurred in 2002 with at least 20 cases and 11 deaths reported. Yellow fever vaccine was introduced in routine EPI in Nigeria in 2004.

7. Legionella: Dubai/United Arab Emirates
Since October 2016, the European Centre for Disease Prevention and Control has been notified of 65 cases of Legionnaire's disease (LD) originating in Dubai, with one reported fatality. Most of those who contracted the disease stayed in hotels or apartments in Dubai. UAE authorities reported acceptable *Legionella* counts on environmental investigations of the notified hotels and observed no increase in notifiable pneumonia cases in Dubai during the corresponding period. No source has yet been identified. Although the risk of contracting the disease is generally low, it may be increased in persons over 50 years of age, those with underlying respiratory problems or weakened immune systems, and smokers. Travellers with clinical or radiological evidence of pneumonia and a travel history to Dubai in the 2-10 days preceding the onset of their symptoms, should be tested for LD.

Source: Division of Public Health Surveillance and Response, NICD-NHLS, from Promed (www.promed.org) and the World Health Organization (www.who.int)

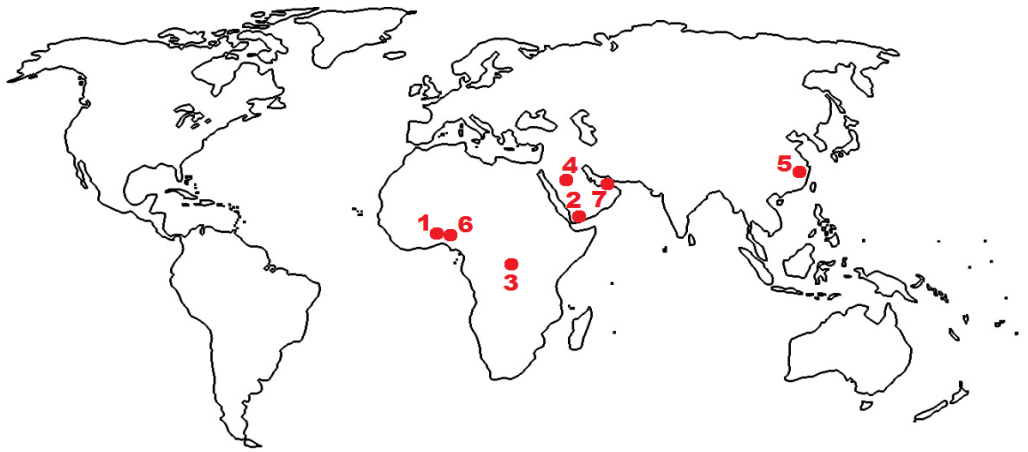


Figure 6. Current outbreaks that may have implications for travellers. Numbers correspond to text above. The red dot is the approximate location of the outbreak or event

8 WHO-AFRO: OUTBREAKS AND EMERGENCIES

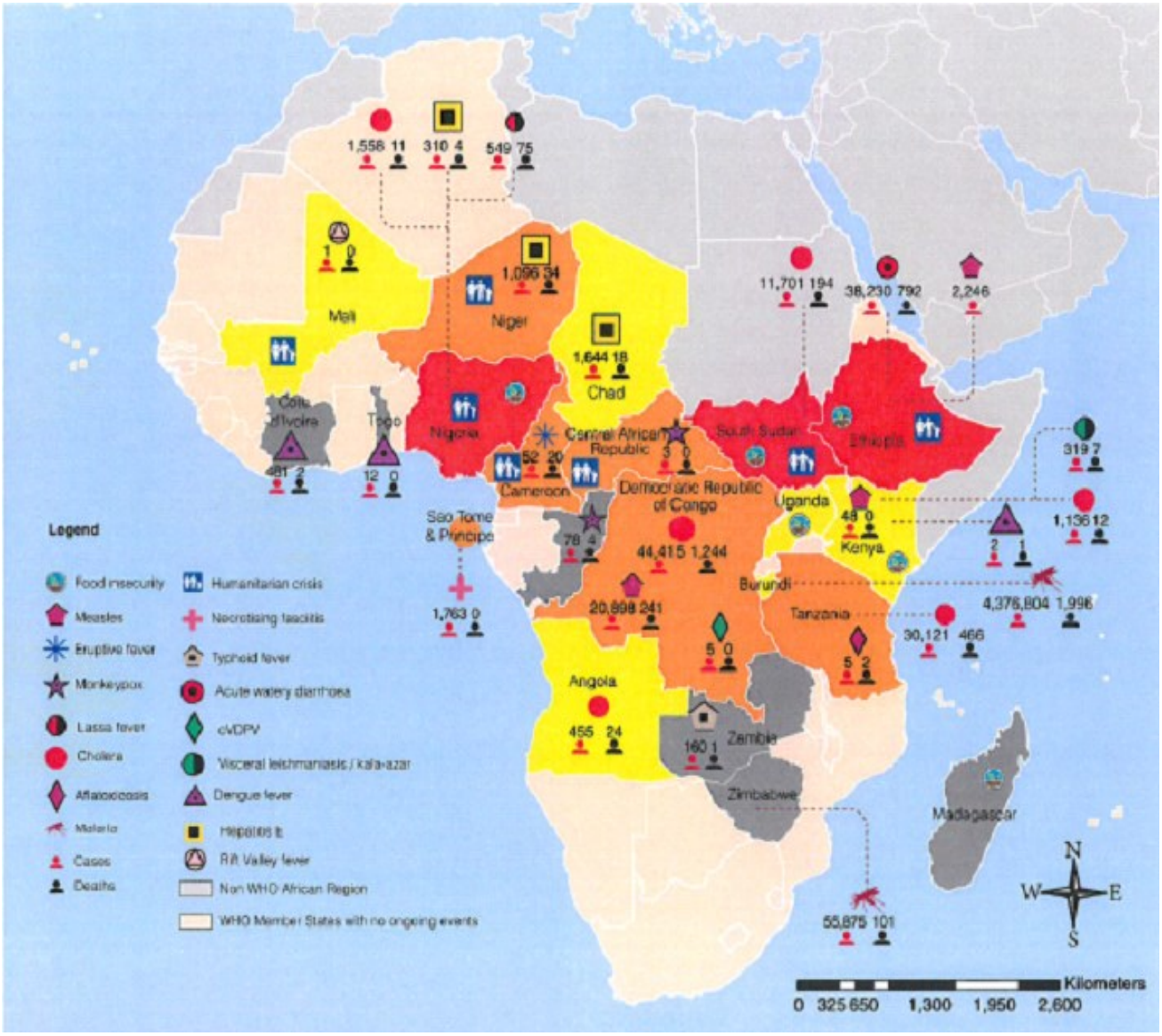


Figure 7. The Weekly WHO Outbreak and Emergencies Bulletin focuses on selected public health emergencies occurring in the WHO African region. The African Region WHO Health Emergencies Programme is currently monitoring 37 events of which 27 are outbreaks and 10 humanitarian crises. For more info see link http://apps.who.int/iris/bitstream/10665/255895/1/OEW28-81472017.pdf