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

Communicable Diseases Communiqué

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CONTENTS

1 VACCINE-PREVENTABLE DISEASES

Measles alert

National

As of 04 December 2014, 49 laboratory-confirmed measles cases have been detected through measles surveillance in South Africa during 2014 (Figure 1); the distribution of cases by age group is shown in Table 1. Of major concern is the increase in laboratory-confirmed (IgM positive) measles cases in five provinces (Gauteng, Mpumalanga, KwaZulu-Natal, Northern Cape and Western Cape) over the past two months. Northern Cape Province reported the highest increase in cases (Figure 2) and an outbreak has been declared in one of this province's districts. A cluster of three cases was reported from Ekurhuleni district in Gauteng Province; all three case-patients were children ≤9 months of age not yet immunised against measles. Few sporadic laboratory-confirmed measles cases have been noted in Eastern Cape and Free State provinces, whilst no laboratory-confirmed measles cases have been reported from Limpopo or Northwest provinces during 2014 to date.

Northern Cape Province

An outbreak of measles has been declared in ZF Mgcawu (formerly Siyanda) District in Northern Cape Province, where ten laboratory-confirmed measles cases were detected within a four-week period during September/October 2014. Adults >14 years of age accounted for the highest proportion of cases, followed by children <9 months of age. This district borders both Namibia and Botswana; of note is that Namibia has recently reported an increase in measles cases from certain districts.

As of 04 December 2014, 15 laboratory-confirmed measles cases have been reported from three Northern Cape districts during 2014: ZF Mgcawu (n=13), Namakwa (n=1) and Pixley Ka Seeme (n=1).

Measles case definition and case management

Clinicians countrywide should be on high alert for suspected measles cases. The clinical case definition is fever >38°C plus maculopapular rash plus one (or more) of the three "C"s (cough, coryza or conjunctivitis). Any suspected measles case should be notified immediately to the Department of Health, and a blood sample collected and sent to the National Institute for Communicable Diseases (NICD) for measles serology testing. For measles testing at the NICD, a clotted blood specimen (red

top or dark yellow top) should be sent accompanied by the case investigation form (CIF), which is available from the Department of Health or the NICD. Healthcare workers who have access to throat swabs should additionally send a throat swab on suspected measles cases.

Notification of a measles case should be based on a clinical suspicion of measles, and must not be delayed pending results of measles diagnostic tests. This enables the Department of Health to timeously follow up all suspected measles cases and offer measles vaccination to eligible contacts.

Healthcare workers are encouraged to check all children's road-to-health cards at every opportunity. Any missed dose/s of measles vaccine should be caught up regardless of the child's age. Attitudes to parents should be supportive of catch-up vaccination and avoid a punitive, disciplinarian tone. HIV-infected children should not be excluded for measles vaccination, unless acutely severely ill.

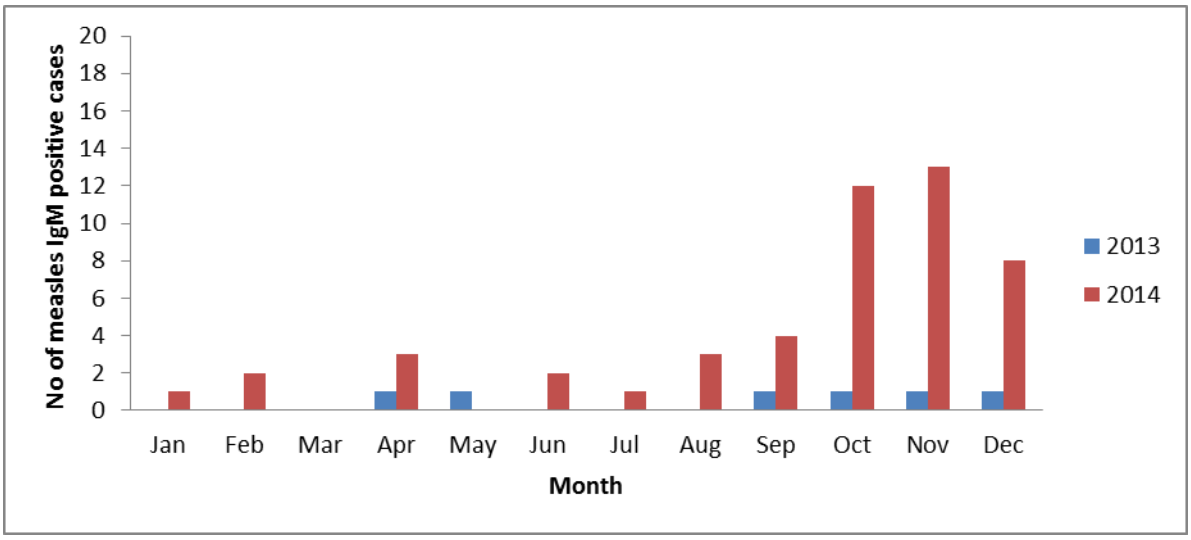

Figure 1. Number of laboratory-confirmed measles cases by month specimens collected in South Africa, 2013 and 2014*
*As of 04 December 2014

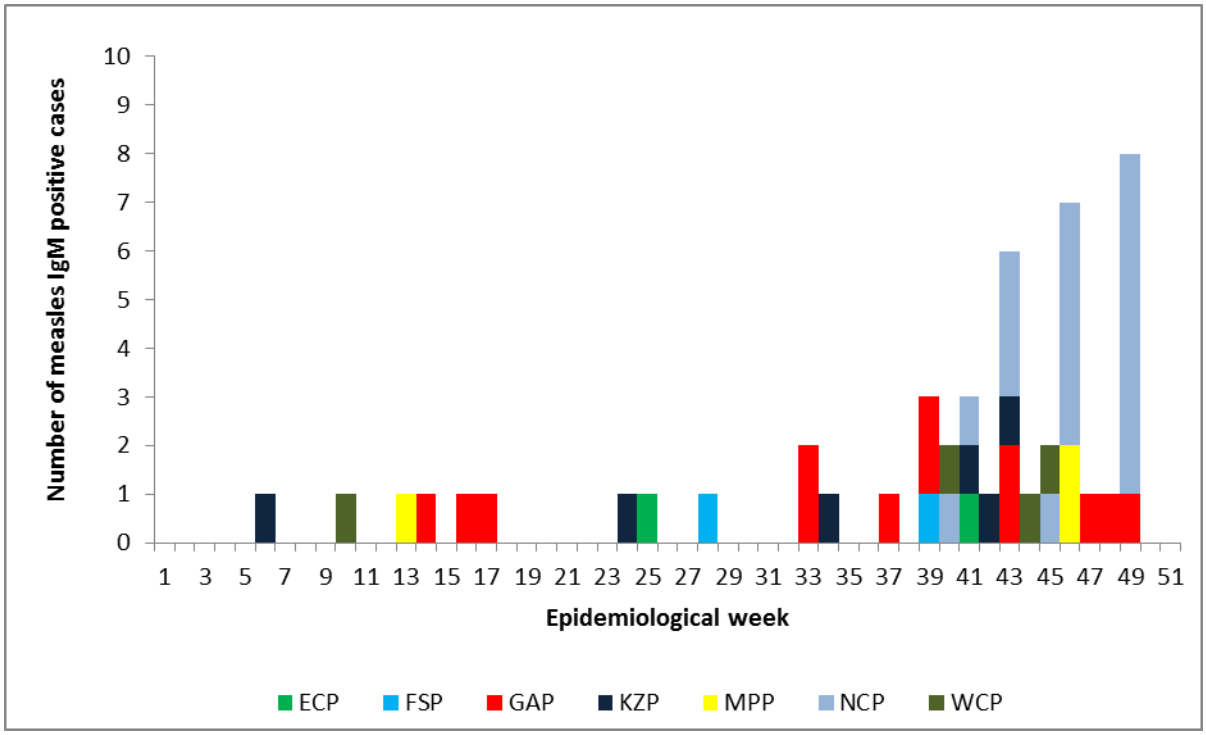

Figure 2. Number of laboratory-confirmed measles cases in South Africa until epidemiological week 49, 2014. An increase in cases is noted from epidemiological week 39 (week starting 21 September) onwards.

Table 1. Laboratory-confirmed measles cases in South Africa by age group and province, 2014* (n=49)

Province	<9 months	9-24 months	2-4 years	5-14 years	>14 years	Total
EASTERN CAPE	0	0	1	1	0	2
FREE STATE	0	0	1	0	1	2
GAUTENG	2	7	0	3	3	15
KWAZULU-NATAL	0	0	4	2	0	6
MPUMALANGA	0	2	0	1	0	3
NORTHERN CAPE	4	1	1	1	10	17
WESTERN CAPE	0	2	1	0	1	4
LIMPOPO	0	0	0	0	0	0
NORTH WEST	0	0	0	0	0	0
South Africa	**6**	**12**	**8**	**8**	**15**	**49**

*As of 04 December 2014

Regarding measles case management, healthcare workers are reminded that vitamin A treatment is beneficial for confirmed measles cases. Vitamin A dosages are as follows: 50 000 IU daily x 2 days for infants <6 months; 100 000 IU daily x 2 days for infants 6-11 months; 200 000 IU daily x 2 days for children 12 months or older.

With regard to infection prevention and control considerations, any suspected measles cases should stay home from school/work/communal gatherings until five days after the appearance of the rash. In healthcare facilities, patients with measles should be isolated from the onset of symptoms until five days after the rash appears.

Source: Centre for Vaccines and Immunology and Division for Public Health, Surveillance and Response, NICD-NHLS; Department of Health - EPI and Communicable Diseases Directorates (National, Northern Cape Province and Z F Mgcawu District)

2 ZOONOTIC AND VECTOR-BORNE DISEASES

a Malaria

Malaria alert

The malaria season in southern Africa is from September to May each year, and an increase in both local (from malaria-endemic areas in South Africa) and imported (from other malaria-endemic countries) cases can be expected over the upcoming holiday season. Malaria is endemic in three South African provinces: Limpopo, Mpumalanga, and north-eastern KwaZulu-Natal (KZN). Travellers to malaria-endemic areas within South Africa or other malaria-endemic countries (notably Mozambique) need to take appropriate preventative measures. Mefloquine (Lariam®, Mefliam®), doxycycline, and atovaquone-proguanil (Malanil®) are recommended chemoprophylactic agents for Southern Africa where chemoprophylaxis is indicated, and the choice of agent needs to be individualised. For advice on preventive measures, access the following link: http://www.doh.gov.za/docs/policy/2011/malaria_prevention.pdf.

Malaria must be considered in the differential diagnosis of acute febrile illness in returning travellers; diagnostic tests for malaria should be done urgently, since prompt and appropriate management is critical to improving patient outcomes. Delays in diagnosis, misdiagnosis (most commonly as influenza), and delayed treatment are the most common factors associated with adverse outcomes. Healthcare workers, especially those in non-endemic areas, must ensure that any case of malaria is notified.

The South African national guidelines recommend the use of artemether–lumefantrine (Coartem®) or quinine plus doxycycline/clindamycin for uncomplicated falciparum malaria. Severe falciparum malaria is treated using quinine plus doxycycline/clindamycin or intravenous artesunate where available. An initial loading dose of 20 mg/kg of quinine is required for all cases of severe malaria to rapidly reach a therapeutic level. Chloroquine and

sulphadoxine-pyrimethamine are not to be used in the treatment of falciparum malaria due to high-level resistance. Non-falciparum malarial infections are less common in sub-Saharan Africa; artemether-lumefantrine or quinine as above can be used for treatment of acute non-falciparum malarial illness. Chloroquine should only be used if there is reliable laboratory confirmation of non-falciparum species. The addition of primaquine to the above initial treatment is indicated for *Plasmodium ovale* or *P. vivax* infections to prevent relapse.

Odyssean malaria case, Benoni, Gauteng Province

The patient, a 10-year-old boy, first complained of a headache on 15 November. He was admitted in the morning on 18 November to a private hospital in Kempton Park with a provisional diagnosis of possible meningitis, and malaria was diagnosed shortly afterwards. On admission, he was fully conscious (Glasgow Coma Scale 15/15) with neck stiffness; the CSF was normal. The Hb was 15.7 g/dL, WCC 3.2 x 10^9/L, platelets 46 x 10^9/L, urea and creatinine moderately raised. The infection was reported as *P. falciparum*, 10% parasitaemia. He was admitted to ICU under the care of a paediatrician and a loading dose of IV quinine was given. By 72 hours the clinical condition had improved and the parasitaemia was reported as <0.1%.

The family had moved to a plot in Benoni, from Glen Marais, Kempton Park (about 10 km away), on 1 November. There was no history of travel to a malaria risk area, nor of any blood transfusions or injections administered to the patient. The new house is about 6 km from local highways, and on a road that carries local traffic only. The previous owner is a manager at OR Tambo Airport, and had last been at the house on 28 October. He had not travelled outside Gauteng in the last 2 months. There had been no other residents or tenants on the plot, but there are house-building operations in progress on one of the adjacent properties. The family had run a printing business at the house in Kempton Park and had had frequent contact with couriers that came and went with deliveries.

The patient and his siblings are keen swimmers and spend much time at a local swimming school, including weekly club-evenings, when the children are present after dark. The swimming pool is indoors in a stable and humid environment. The swimming school owner employs a Malawian labourer, and stated that there were several other Malawians in the area, but there had been no new local arrivals from outside the country that she was aware of. However, her employee stated that a relative had visited from Malawi during the last month, but was unable to give a clear description as to exactly when the visit occurred.

An examination of the patient's residence, including the room he sleeps in, revealed no mosquitoes. Potential breeding sites in the adjacent grounds were examined and no mosquito larvae of interest were found. Similarly, no mosquito adults or larvae were found at the swimming school. It is most likely that this patient acquired malaria from the bite of an infective *Anopheles* mosquito inadvertently translocated from a malaria endemic area via a vehicle such as a car, mini-bus taxi or bus – a phenomenon known as Odyssean malaria. Based on the date of onset of illness, it is highly likely that he was infected during the first week of November. The patient's residence seems an unlikely source of infection as it is not situated near a transport node or major highway and there is no clear indication that any of the family members have been involved in any activities that could have led to the importation of an infective mosquito. However, it is possible that a migrant worker on one of the nearby building sites could have inadvertently imported an infective mosquito. The swimming school is also a possible source of infection owing to the presence of a migrant community from a malaria-endemic region, and because an indoor pool occupied by several people during the early evening is an attractive environment for an escaped *Anopheles* mosquito in search of a blood meal. As no further cases have been reported in the vicinity, no specific mosquito vector control interventions are recommended at this stage. Residents should minimise potential mosquito breeding sites by ensuring that no temporary bodies of water remain in their vicinity.

Source: Division of Public Health Surveillance and Response, Vector Control and Parasitology Reference Laboratories, Centre for Opportunistic, Tropical, and Hospital Infections; NICD-NHLS

b Crimean-Congo haemorrhagic fever

A sixth case of Crimean-Congo haemorrhagic fever (CCHF) was confirmed in South Africa for 2014. The patient, a 70-year-old farmer from Senekal, Free State Province, was reportedly bitten on the leg by a "red" tick whilst handling cattle in the third week of November 2014. He fell ill three days after the tick bite. Clinical presentation (at a local private practice) included general malaise, anorexia,

fatigue, arthralgia and fever. The patient was treated with antibiotics to cover for a presumptive diagnosis of tick bite fever, with no clinical improvement. His clinical condition deteriorated; he developed diarrhoea and haematemesis and was transferred to a Bloemfontein hospital on the 24th of November. On admission, the patient was isolated as CCHF was suspected on the basis of a history of tick bite. Clinical condition further deteriorated; complications included metabolic acidosis and multi-organ failure necessitating treatment in ICU. Laboratory results of the blood drawn on three consecutive days since admission showed markedly raised transaminases (ALT 5058 IU/L, AST 10493 IU/L), profound thrombocytopenia (platelet count 13 x 10^9/L) and raised WCC of 14 x $10x^9$/L. The diagnosis of CCHF was confirmed at NICD on the 25th of November 2014 by positive PCR test. The patient died on the 26th November 2014 despite attempts to treat him with the antiviral, ribavirin, when the CCHF diagnosis was made.

Of the six confirmed cases of CCHF reported in South Africa for 2014 to date, 50% of the cases had a fatal outcome. On average the mortality rate for CCHF is reported as 30%. There are currently no clear correlates for survival although the development of anti-CCHF specific antibody at day 5 to 6 after onset of illness is a good prognostic indicator. The use of ribivirin is recommended early during illness but contra-indicated at advanced stages of the disease. The usefulness of ribivirin treatment for CCHF is however still contested by some. Extensive information and tools on Crimean-Congo haemorrhagic fever and the entire group of viral haemorrhagic fever viruses endemic to Africa, is available for health professionals and general public on www.nicd.ac.za.

Source: Centre for Emerging and Zoonotic Diseases, NICD-NHLS

c Rabies

The NICD has been involved with the laboratory confirmation of human rabies cases since 1981. Human rabies cases are reported annually and for the past ten years an average of five to 15 cases is confirmed per year. For 2014 to date, a total of six rabies deaths in humans was laboratory confirmed, whilst another five deaths are reported as probable rabies cases by the NICD.

The sixth confirmed human rabies case was reported in November 2014. A 10-year-old child from Jixini, in the Umthatha area, Eastern Cape, died on 29th of November 2014, the same day of admission to an Eastern Cape hospital, after presenting with a few days history of fever, headache, confusion and hydrophobia. The child was reported to have been bitten by a dog earlier this year. The details about the incident remain unclear. The clinical picture and the history of dog bite raised suspicion of possibility of rabies as the cause of death. Rabies was confirmed on a post-mortem brain specimen submitted to the NICD for testing.

Rabies is a fully preventable disease if post-exposure prophylaxis is provided timely and appropriately to the afflicted person. Too often, a dog bite attack, especially when only minor wounds such as scratches were inflicted, goes untreated and no suspicion of rabies exposure is raised by the victim, often a child, relatives or health personnel. In areas of South Africa with poor awareness and inadequate health facilities, the burden of human rabies continues, and rabies deaths are probably often unaccounted for. The human rabies cases detected at the NICD for the entire country are only the "tip of the iceberg" of this neglected tropical disease.

Further information and tools on clinical management and testing for rabies can be found on www.nicd.ac.za. A clinical advice line is provided for health professionals by the NICD (0828839920).

Source: Centre for Emerging and Zoonotic Diseases, NICD-NHLS

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

Ebola virus disease (EVD) outbreaks: situation update

Additional cases and deaths continued to be reported in all three affected countries with widespread and intense transmission (Guinea, Liberia and Sierra Leone). As at 13 December 2014, a cumulative total of 18 498 EVD cases (laboratory-confirmed, probable and suspected) including 6 856 deaths, have been reported in five currently affected countries (Guinea, Liberia, Sierra Leone,

United States of America, Mali) and three previously affected countries (Nigeria, Senegal and Spain).

Countries with widespread and intense transmission

As at 13 December 2014, a cumulative total of 18 464 EVD cases (laboratory-confirmed, probable and suspected) including 6 841 deaths with a case fatality rate of 37% have been reported in the current EVD outbreak in Guinea, Liberia and Sierra Leone. A summary of case numbers and deaths reported is shown in Table 2.

Countries with an initial case or cases or with localised transmission

To date five countries have reported localised transmission or an imported case or cases from Guinea/Liberia/Sierra Leone: Nigeria, Senegal, Spain, United States of America (USA) and Mali. In Nigeria, there were 20 cases with eight deaths while Senegal and Spain reported one case each with no deaths. The EVD outbreaks in Senegal, Nigeria and Spain were declared over on 17 October, 19 October and 2 December 2014 respectively. In Mali, the most recent cases in Bamako are not related to the first EVD-positive case-patient who died in Kayes on 24 October 2014. Table 3 summarises the number of EVD cases and deaths in Mali and the USA.

Table 2. Number of Ebola virus disease cases and deaths in Liberia (as at 9 December), Guinea and Sierra Leone as at 13 December 2014

Country	Total cases (laboratory-confirmed, probable and suspected)	Total deaths	Case fatality rate	Number of cases among healthcare workers (number of deaths)*
Guinea	2 394	1 518	63%	121 (62)
Liberia	7 797	3 290	42%	363 (174)
Sierra Leone	8 273	2 033	24%	138 (106)
Totals	**18 464**	**6 841**	**37%**	**622 (342)**

* Data as at 3 December 2014 for Liberia and 7 December 2014 for Guinea and Sierra Leone

Table 3. Number of Ebola virus disease cases and deaths in USA and Mali as at 13 December 2014

Country	Total cases (laboratory-confirmed, probable and suspected)	Total deaths	Number of cases among healthcare workers (number of deaths)*
USA	4	1	3 (0)
Mali	8	6	2 (2)

Ebola outbreak in the Democratic Republic of Congo (DRC)

The EVD outbreak in DRC was declared over on 21 November 2014. This outbreak had no association with the on-going outbreak that originated in West Africa affecting Guinea, Liberia, Sierra Leone and Mali.

Situation in South Africa

As at 16 December 2014 there have been no cases of Ebola virus disease in South Africa associated with the current outbreaks in West Africa. There are no suspected cases of EVD in South Africa at present. Of continual concern is the possibility of imported EVD cases. The suspected EVD case definition and risk assessment of suspected EVD

cases can be accessed on the NICD website (www.nicd.ac.za). Further information on EVD for healthcare professionals and the general public are also available on the website. In addition, EVD situation updates are regularly posted on the website as well.

Testing for viral haemorrhagic fever viruses (including Ebola virus) in South Africa is only available at the NICD. EVD testing is neither warranted nor useful for persons that are not suffering from a clinical illness compatible with EVD, even in the event of compatible travel histories. The tests cannot be used to determine if the patient has been exposed to the virus and may develop the disease later.

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

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

4 CASE REPORT

Imported East African trypanosomiasis

A 52-year-old United States citizen was admitted on 27 November to a Pretoria hospital ICU with severe East African trypanosomiasis. He had travelled to Uganda, Kenya and Ethiopia for work related to church missions. Although an accurate itinerary is not presently available, he possibly acquired the infection at the Murchison Falls in western Uganda between 3 and 13 November, then went to Kisumu in western Kenya (19 November) where a skin lesion on his hand was noted, and a malaria test was apparently positive. He was treated for malaria, and was finally medivaced to South Africa from Lalibela, Ethiopia. On admission he was severely acidotic, with indications of multiorgan failure and disseminated intravascular coagulopathy. The haemoglobin was 10.7 g/dL, leukocyte count 4.72 x 10^9/L with a lymphopenia, platelets 5 x 10^9/L, urea 49.3 mmol/L, creatinine 790 µmol/L, bilirubin 511 µmol/L (predominantly conjugated), and hepatic transaminases were high (around 340 U/L). The C-reactive protein level was raised (246 mg/L). Numerous trypanosomes were present in the peripheral blood. Suramin was given in the recommended regimen and the trypanosomes cleared from the blood. The patient required ventilation, dialysis and plasmapheresis. Low platelet counts delayed lumbar puncture, but it was done six days after admission to check for trypanosomes in the CSF as an indicator of central nervous system involvement. No parasites were seen, and CSF cell counts and protein levels were low, suggesting that the disease had not spread to the brain. At the time of writing, 12 days after admission, he was being weaned from the ventilator and was still in renal failure.

East African trypanosomiasis (EAT) is an un-common but acute, often fulminant and potentially fatal disease in travellers that is frequently missed or misdiagnosed as malaria. The incubation period can vary from a few days to several weeks following the bite of an infected tsetse fly. A trypanosomal chancre is a tender, erythematous and indurated swelling 2-5 centimetres in diameter that may be noted in a proportion of patients 5-15 days after the bite, and regional lymphadenopathy may be present. Typically fever and headache develop hours to days later. The haemolymphatic stage of EAT may be complicated by pancarditis including arrhythmias, acute meningo-encephalitis, profound thrombocytopenia and multi-organ failure. Examination of peripheral smears (as for malaria) may be negative and exami-nation of the buffy coat (wet and stained prepara-tions) is more sensitive. The differentiation of East African trypanosomiasis from West African trypanosomiasis is critical as the treatment and clinical course of the two diseases differ dramatically. This differentiation is made on geographic history and clinical features, but the agents of the two diseases are morphologically indistinguishable.

Suramin is the treatment for the haemolymphatic stage of EAT. All patients, irrespective of clinical status, should undergo examination of cerebrospinal fluid but only after the peripheral circulation has been cleared of trypanosomes by suramin. Melar-soprol is required for managing laboratory-confirmed CNS EAT, but may be associated with significant occurence of drug-associated encephalopathy which may be fatal. Tourists visiting game reserves in central and east African countries should be alerted to the danger of this disease for which there are no effective preventive measures, but which if acquired, needs expert diagnosis and treatment.

Uganda has both types of human African trypanosomiasis, with the West African (gambian) form transmitted in the northwest of the country, and the East African (rhodesian) form in the southeast region, but with recent northern extension. Murchison Falls on the Victoria Nile is outside the usual transmission areas for both East and West African trypanosomiasis. Western Kenya has low numbers of cases, generally close to the border with Uganda and with rare exception, not near Kisumu.[1] Most recent cases of EAT treated in South Africa have acquired the infection in Zambia and Zimbabwe, mainly from the Luangwa Valley, Lower Zambezi and Mana Pools conservation areas. We are aware of two recent cases treated in Harare, Zimbabwe. Previously Malawi and Tanzania were the sources of most cases evacuated to Johannesburg, and additionally, a few West African trypanosomiasis (WAT) cases presenting in Cape Town and Johannesburg have been reported in the NICD Communiqué.[2,3]

References

1. Simarro PP, Cecchi G, Paone M, *et al.* (2010) The atlas of human African trypanosomiasis: a contribution to global mapping of neglected tropical diseases. Int J Health Geogr; 9:57.
2. NICD Communicable Diseases Communiqué (2010); 9(9): 5-6.
3. NICD Communicable Diseases Communiqué (2012); 11(5): 4

Source: Centre for Opportunistic, Tropical, and Hospital Infections, NICD; Ampath Laboratories, Centurion; Netcare Pretoria East Hospital

5 ANTIMICROBIAL RESISTANCE

Update on carbapenemase-producing Enterobacteriaceae

The Johannesburg and Cape Town Antimicrobial Resistance Reference Laboratories (AMRRL) of the Centre for Opportunistic, Tropical and Hospital Infections (COTHI) at NICD/NHLS have been testing referred isolates of suspected carbapenemase-producing Enterobacteriaceae (CPE) for the presence of selected carbapenemase genes. For November 2014, a total of 32 Enterobacteriaceae isolates were received. Twenty-six isolates were screened, 16 of which were carbapenemase-producing Enterobacteriaceae. Six isolates were not analysed genotypically for technical reasons. Most isolates were *Klebsiella pneumoniae* (17) followed by equal numbers of *Enterobacter cloacae* and *Serratia marcescens* (6) (Figure3).

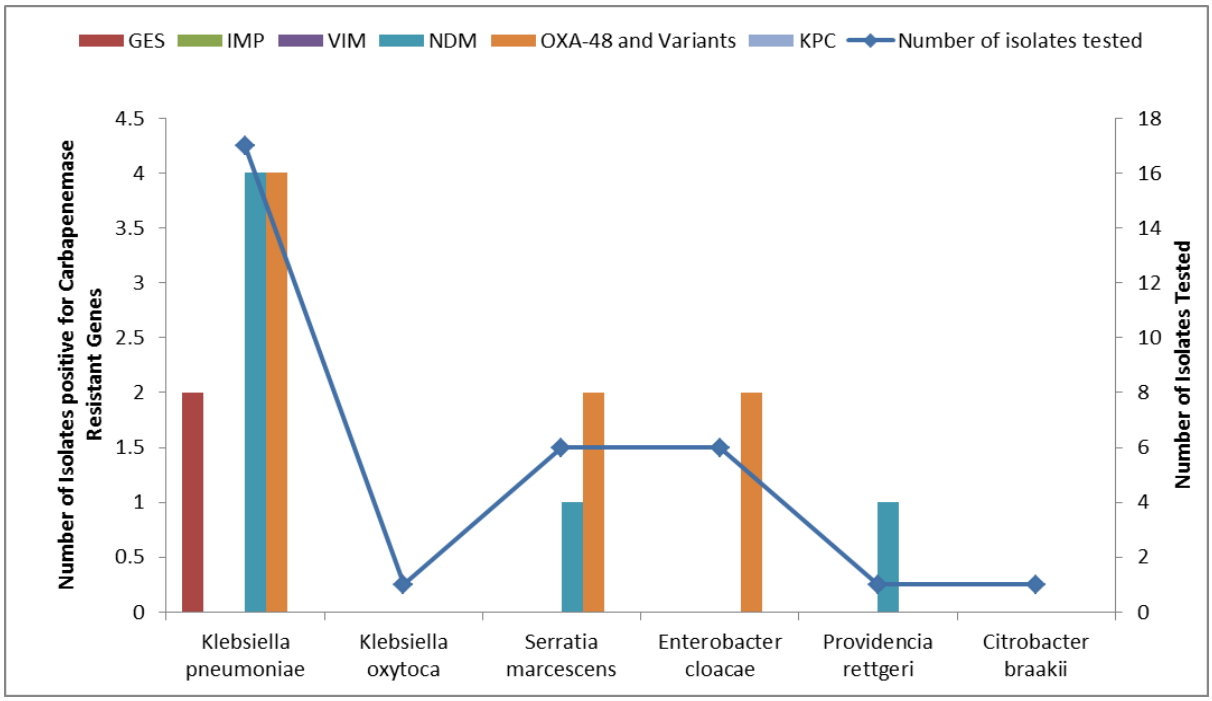

Figure 3. Enterobacteriaceae isolates phenotypically screened (n=32) and confirmed CPE (n=16) during November 2014 at AMRRL (NICD-NHLS)

Six NDM positive isolates were identified (four from private hospitals in KwaZulu-Natal and two from public hospitals in Gauteng). Eight OXA-48 positive isolates were identified (five from private hospitals - three from Gauteng and two from KwaZulu-Natal, and three were from public hospitals - two from the Eastern Cape and one from Gauteng). Two GES positive isolates were identified – one from the private sector in KwaZulu-Natal and one from the public sector in the Western Cape (Figure 4).

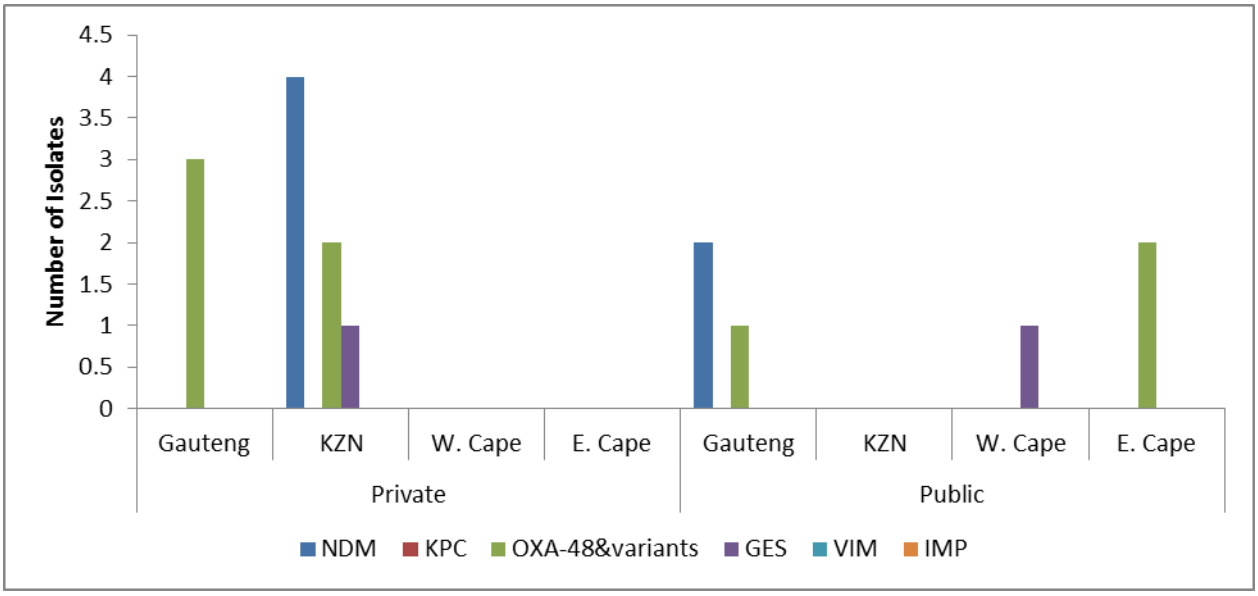

Figure 4. Distribution by province of CPEs (n=16), November 2014

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; and olgap@nicd.ac.za; for queries or further information. In the Western Cape area, please email: colleen.bamford@nhls.ac.za.

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

6 BEYOND OUR BORDERS

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

Disease & countries	Comments	Advice to travellers
1. Vector-borne diseases		
Crimean-Congo haemorrhagic fever Pakistan (National) India (Gujarat)	As of 15 December 2014: 19 confirmed cases, 6 deaths As of 15 December 2014: 2 cases, 1 death	Crimean-Congo haemorrhagic fever is transmitted to people from ticks and livestock animals. Human-to-human transmission can occur from contact with blood and body fluids of infected persons. Avoid tick bites by wearing long-sleeved shirts, long pants, and light-coloured clothing to deter ticks.
Chikungunya French Polynesia (American Samoa Samoa Tokelau, Tahiti, Moorea) North America Mexico USA Central America El Salvador Honduras Nicaragua Panama Costa Rica Guatemala Caribbean On-going local transmission Andean Venezuela Colombia Bolivia Southern Cone Chile	As of 14 December 2014: 35 000 cases reported, 4 deaths As of 14 December 2014: 87 cases , 0 deaths 1911 cases, 0 deaths As of 05 December 2014: 157 cases, 0 deaths 14 cases, 0 deaths 582 cases, 0 deaths 70 cases, 0 deaths 18 cases, 0 deaths 49 cases, 0 deaths As of 05 December 2014: 7 900 cases, 138 deaths across 5 Latin Caribbean countries and 705 cases, 0 deaths across 6 non- Latin Caribbean countries As of 14 December 2014: 1 974 cases, 0 deaths 403 cases, 3 deaths 4 cases, 0 deaths As of 14 December 2014: 14 cases, 0 deaths	Chikungunya is a mosquito-borne viral infection transmitted by *Aedes* spp. mosquitoes, which bite mostly during the day. Travellers should wear long-sleeved shirts and long pants during the day and stay in well-ventilated (fan/air-conditioned) rooms.

Disease & countries	Comments	Advice to travellers
1. Vector-borne diseases (continued)		
Dengue fever Philippines (National)	As of 05 November 2014: >3 815 cases, 288 deaths	Dengue fever (like chikungunya) is a mosquito-borne viral infection transmitted by *Aedes* spp. mosquitoes, which bite mostly during the day. Travellers should wear long-sleeved shirts and long pants during the day and stay in well-ventilated (fan/air-conditioned) rooms.
China (Guangdong Province)	As of 03 November 2014: 41 155 cases	
Taiwan (National)	As of 25 November 2014: 13 030 cases, 16 deaths	
Vietnam (Ho Chi Minh City)	As of 06 November 2014: 3 150 cases, 0 deaths	
Malaysia (National)	As of 04 November 2014: 84 684 cases, 160 deaths	
India (National)	As of 15 December 2014: 8 348 cases, 72 deaths	
Sri Lanka (National)	As of 12 November 2014: 36 600 cases, 0 deaths	
Pakistan (National)	As of 26 November 2014: 2 092 cases, 0 deaths	
Saudi Arabia (National)	As of 26 November 2014: >50 cases	
Sudan (National)	As of 14 November 2014: 15 cases	
Americas (Mexico, Honduras, Columbia, Brazil, Venezuela, Cayman islands)	On-going local transmission	
Lassa fever Benin (Atalcora)	As of 05 December 2014: 2 cases, 2 deaths	The host of Lassa virus is the multimammate rat of the genus *Mastomys.* The virus is transmitted through direct contact with the rodent's urine, droppings, blood or organs. Lassa virus may also spread from person-to-person through contact with the virus in the blood, tissue, secretions, or excretions of an individual infected with the Lassa virus. Travellers should avoid contact with Mastomys rodents and must ensure good hygiene when caring for sick friends or relatives.

Disease & countries	Comments	Advice to travellers
1. Vector-borne diseases (continued)		
Plague Madagascar (National)	As of 21 November 2014: 119 cases, 40 deaths	The plague bacterium (*Yersinia pestis*) is transmitted by fleas that are found in wild rodents. Plague can also infect humans and their pets. You can get plague from being bitten by infected fleas, touching or skinning infected animals (such as prairie dogs, squirrels, rats, and rabbits) or by inhaling droplets from the cough of an infected person or animal (especially sick cats). Travellers should use an insect repellent that contains DEET to prevent flea bites if they are exposed to animals or rodents with fleas.
2. Water– and food-borne diseases		
Cholera Haiti	As of 26 November 2014: 15 000 cases, 132 deaths	Cholera is an acute diarrhoea 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.
Dominican Republic (San Juan Province)	As of 27 November 2014: 13 cases, 0 deaths	
3. Respiratory diseases		
MERS-CoV Saudi Arabia	As of the 16 December 2014: 821 laboratory-confirmed cases and 355 deaths.	Good hygiene and basic infection prevention practices can minimise risk of respiratory infections in travellers: • cough etiquette • avoiding contact with sick people • avoid handling of animals • frequent hand washing with soap and water or the use of an alcohol-based hand rub. Travellers 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.

References and additional reading:

ProMED-Mail (www.promedmail.org)
World Health Organization (www.who.int)
Centers for Disease Control and Prevention (www.cdc.gov)
Last accessed: 17 December 2014

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