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1 ZOO NOTIC AND VECTOR-BORNE DISEASES

a Rabies update

In South Africa, from 1 January 2017 to date, there has been a single confirmed report of human rabies: a 5-year-old child from the Eastern Cape Province died on 6 February and was diagnosed on post-mortem.

A recent case of human rabies was confirmed by the National Institute for Communicable Diseases (NICD) in a Namibian child on 11 May 2017. A 7-year-old boy was admitted to Oshakati Hospital with nausea, vomiting, anxiety, hypersalivation, hydrophobia, difficulty with speaking and confusion and died shortly after admission. The patient had

not reported a dog bite but was living in a home with unvaccinated dogs. Human rabies cases in Namibia, like South Africa and most African countries, are predominantly transmitted through rabid dog bites. In Namibia, rabies is prevalent in the northern parts of the country.

More information about rabies exposure risk and post-exposure prophylaxis is available at www.nicd.ac.za

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

b Ebola virus disease outbreak in the Democratic Republic of Congo

A new outbreak of Ebola virus disease (EVD) has been reported by the Democratic Republic of Congo (DRC) Ministry of Health to the World Health Organization (WHO) on 11 May 2017. As of 27 May 2017, a total of 16 suspected, 4 probably and 2 confirmed cases, and 4 deaths have been reported in the north-east of the country, in Likati Health Zone, Bas Uélé Province, bordering the Central African Republic. The likely index case was a middle-aged man presenting at the local health facility with haemorrhagic symptoms in late April 2017; he died on day of presentation. The risk of international spread is unlikely given the remoteness of the area.

The epidemiologic context of this outbreak is different from the massive West African outbreak 2013-16 where EVD spread in the densely populated urban areas of Guinea, Liberia and Sierra Leone, causing more than 11 000 deaths. The central town in Likati is a three-day drive on a dirt road from the nearest town. Nevertheless measures have been implemented by DRC, supported by WHO and other

international partners aimed at containing the disease. These include rapid diagnostic services, case identification and contact tracing, isolation and treatment of patients, social mobilizations, awareness campaigns and safe burial practices. It appears likely that recombinant Ebola vaccine will be used for ring vaccination to further control the spread of the disease.

This is the eighth outbreak of EVD in the DRC, where the causative agent of EVD was first discovered in 1976. The most recent outbreak occurred in 2014 with 66 confirmed cases, of which 49 were fatal. There are currently no travel or trade restrictions with the DRC.

National Guidelines for Recognition and Management of Viral Haemorrhagic Fevers are available at www.nicd.ac.za

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

2 VACCINE-PREVENTABLE DISEASES

a Measles in Gauteng and Western Cape provinces: an update

As of 23 May 2017, 60 measles cases have been detected in total for South Africa (Figure 1) since 1 January 2017, as follows: Eastern Cape Province 1 case, Limpopo Province 1 case, Mpumalanga 1 case, North West Province 4 cases. There have been 24 measles cases in Gauteng Province since 1 January 2017 (Figure 1). The Gauteng cases follow

an outbreak in Western Cape Province early this year, when 29 cases were identified. This outbreak was contained through excellent work done by the provincial authorities, including contact tracing and vaccination, and a localised immediate vaccination campaign in the affected community, followed by a provincial vaccination campaign.

A mass measles vaccination campaign targeting children from 6 months to 5 years of age, and in City of Johannesburg, children from 6 months to under 15 years of age, is underway in Gauteng Province in response to the measles outbreak that began in late February 2017. The campaign began on 2 May 2017 in Gauteng Province, with a delayed start (15 May) in the City of Johannesburg. The campaign will continue in Gauteng until the end of June. All other South African provinces, including the Western Cape, will commence with a measles vaccination campaign in June, targeting children from 6 months to 5 years of age. The provincial and national vaccination campaigns include both public and private sectors. Private schools, crèches and nursery schools will be visited by provincial health departments. Private vaccinators are encouraged to

access free measles vaccine offered by the Department of Health.

All children, even those who are fully up to date with their vaccination schedule, should receive an additional campaign dose. A full course of measles vaccine is 95% effective, but there may be up to 5 children of every hundred who are not protected. A mass campaign is intended to boost the immunity of those 5%, in addition to reaching those who are unvaccinated. Information for private vaccinators is available from www.nicd.ac.za, together with frequently asked questions about the measles campaigns.

Source: Centre for Vaccines and Immunology, NICD-NHLS; melindas@nicd.ac.za

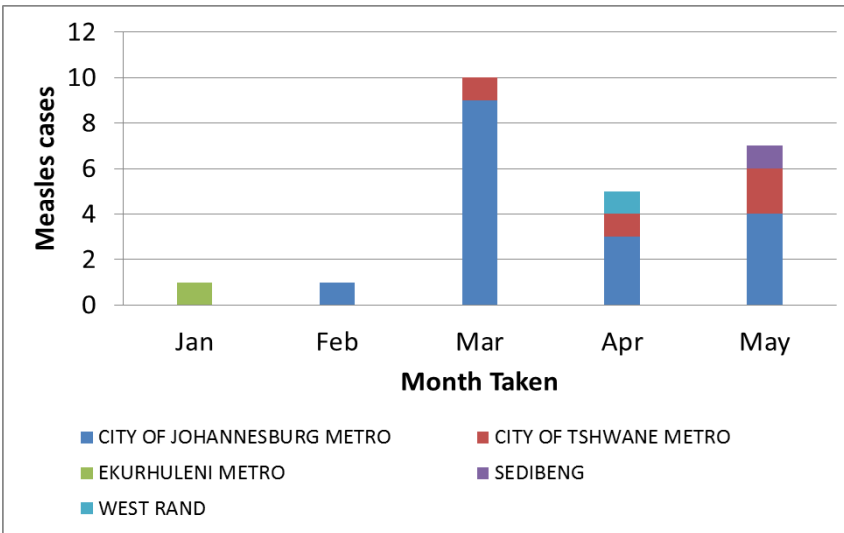


Figure 1. District distribution of laboratory-confirmed measles cases in Gauteng Province, 1 January – 23 May 2017 (n=24).

3 SEASONAL DISEASES

a Influenza

Although the 2017 influenza season has not yet started, sporadic detections of influenza have been made during the first three weeks of May. All were identified as influenza A(H3N2), which is the strain that predominated during the 2016/17 northern hemisphere season. Three detections were from the Western Cape Province and one from Gauteng Province. Influenza-like illness surveillance data over the past 33 years has shown that the South African influenza season usually commences in epidemiological week 22, which is the last week of May/first week of June).

Influenza vaccine has been available since the end of March. As it takes approximately two weeks to develop immunity, the vaccine should be given sufficiently early to provide protection for the

influenza season, though it is never too late to vaccinate. Healthcare workers should recommend influenza vaccination to their patients, especially those at risk for severe influenza illness or complications. Individuals at risk of influenza and severe disease include pregnant women and those who are vulnerable due to pre-existing illnesses or risk factors. Guidelines are available at: [Influenza Guidelines 2017](#)

The 2017 RSV season which started in week 7 (week starting 13 February) continues, although the numbers testing positive and detection rate have started to decrease (Figure 2).

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

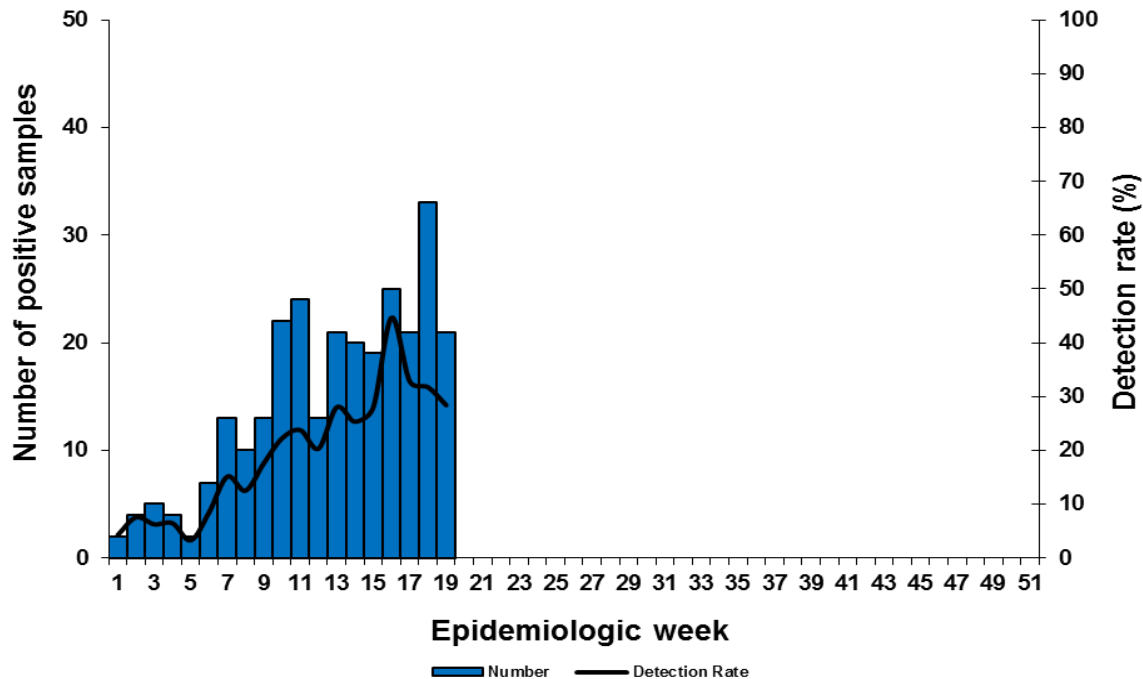


Figure 2. RSV detections and detection rate per week as identified by pneumonia surveillance at sentinel sites in the public sector, 2017

b Meningococcal disease

Only 19 cases of laboratory-confirmed invasive meningococcal disease (IMD) have been reported through the GERMS-SA surveillance network from 1 January 2017 until 7 May 2017 (end of week 18). This is less than the 27 cases reported in 2016 or the 42 cases reported in 2015 for the same period. As winter approaches we expect to see a rise in the number of cases. However, it presently appears that South Africa may benefit from yet another year of low IMD incidence.

The majority of cases have been reported from the Western Cape Province (8), followed by Gauteng Province (5), Eastern Cape Province (4) and Free State Province (2). Infants still bear the greatest burden of disease. Of the 10 clinical isolates available for typing, serogroup B is the most predominant serogroup (5 cases), followed by Y (3). This is indicative of the continuous shift in serogroup distribution seen over the past few years, with serogroup B now dominating, serogroup W decreasing, and C and Y increasing. (Figure 3)

A diagnosis or suspicion of meningococcal disease evokes fear in the patient, the clinician and family members and could lead to widespread panic within the patient's community. *Neisseria meningitidis* (the meningococcus) is an obligate human commensal and is carried asymptomatically in the nasopharynx

of approximately 1 in 10 healthy people. It is readily spread from person to person through aerosolised respiratory droplets or direct contact with sputum or saliva. Meningococcal disease develops when a recently-acquired virulent strain of meningococcus invades the mucosa and enters the blood stream causing an overwhelming infection.

Post-exposure prophylaxis is only necessary for close contacts of the case. These are identified as household contacts (those who eat and sleep at the home of the case) or overnight visitors at the case's home in the preceding week. Intimate kissing partners and close friends who may have been exposed to large respiratory droplets through sharing of eating utensils or coughing exposure are included. Only health care workers who have been exposed to large secretory droplets - for example when inserting an endotracheal tube or administering CPR- require prophylaxis. Fellow school pupils, friends, work colleagues or co-travellers on a bus/aeroplane or taxi are not considered close contacts of the case and do not require prophylaxis. A single dose of oral ciprofloxacin 500 mg (10 mg/kg in children) is sufficient to eliminate carriage of meningococcus. Alternate prophylaxis includes a single dose of ceftriaxone 250 mg IM or rifampicin 10 mg/kg take

twice daily for 2 days.

Although cases present throughout the year, IMD peaks in the winter through to spring months in South Africa. With winter approaching, clinicians should be extra vigilant in suspecting meningococcal disease and meningitis in patients presenting with fever, headaches or other non-specific symptoms, and appropriate intravenous antibiotics (penicillin or ceftriaxone) should be started promptly. All suspected or confirmed cases

of meningococcal disease should be immediately notified telephonically to the provincial Communicable Disease Control Coordinator (National Department of Health CDCC 012 395 8096) to ensure accurate surveillance data and to facilitate contact tracing and post-exposure

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

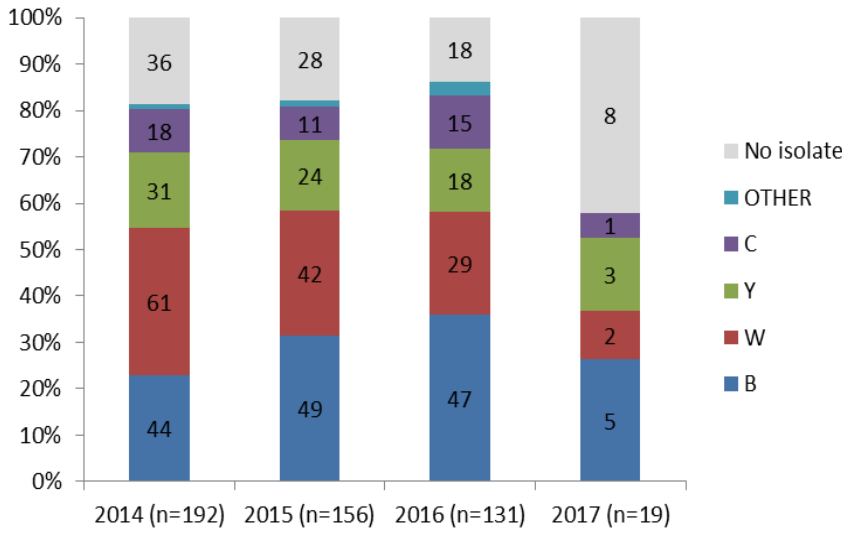


Figure 3. Numbers of laboratory-confirmed invasive meningococcal disease in South Africa from 2014 to 2017, by province.

c Malaria in South Africa 2017: an update

Malaria is seasonal in South Africa (SA) with peaks occurring during the rainy months from September to May. January to April are the months with highest transmission each year. Malaria is endemic in three of South Africa’s nine provinces: Limpopo, Mpumalanga and KwaZulu-Natal. The areas of transmission are the north-eastern parts of Limpopo Province (along the borders with Mozambique and Zimbabwe), the lowveld areas of Mpumalanga Province (including the Kruger National Park but excluding Mbombela/Nelspruit District Municipality and immediate surrounds) and the far northern parts of KwaZulu-Natal Province.

For the current 2016/17 malaria season there has been a significant increase in malaria cases and deaths compared to 2015/16 season when drought conditions prevailed. By March 2017, a total of 9 478 malaria cases and 76 deaths had been reported in SA compared to 6 385 malaria cases and 58 deaths in 2015/16 season. An upsurge in cases occurred during the month of April 2017 (Figure 4), particularly in Mopani and Vhembe districts of Limpopo Province. This coincided with the Easter long weekend and increased travel within South Africa and to adjacent malaria-endemic countries.

The Limpopo Department of Health confirmed an increase in the number of malaria cases and deaths, with 4 092 cases and 33 deaths reported by March 2017 compared to 1 543 cases and 18 deaths in the 2015/16 season. The most cases were reported from Greater Giyani (Mopani) and Thulamela (Vhembe) Municipalities.

Factors contributing to the upsurge included the rise in ambient temperature, rainfall and humidity reported over the season and a reduction in indoor residual spraying (IRS) in areas where malaria cases had declined in recent seasons. Stockouts of rapid diagnostic test (RDT) kits and oral antimalarials for complicated malaria results in patients being referred for treatment and hospitals being overburdened. Currently case numbers are progressively decreasing as temperatures drop. Supply issues with diagnostic tests and treatment have been resolved, and medications are available in all facilities. Although the number of cases is

Source: Limpopo Department of Health; Outbreak Division of Public Health, Surveillance and Response, NICD-NHLS. lucilleb@nicd.ac.za.

declining, the total number of deaths is yet to be confirmed.

The Kruger National Park falls within the malaria risk area, and is considered low to medium risk for malaria transmission during the summer months. According to the national guidelines, personal preventive measures against mosquito bites must always be applied, and chemoprophylaxis is recommended.

Clinicians should be vigilant for malaria amongst travellers returning from malaria risk areas especially given the prolonged season and overlap in clinical presentation of influenza virus.

Source: Malaria Control Programme, Limpopo Province, and Division of Public Health, Surveillance and Response, NICD-NHLS. lucilleb@nicd.ac.za

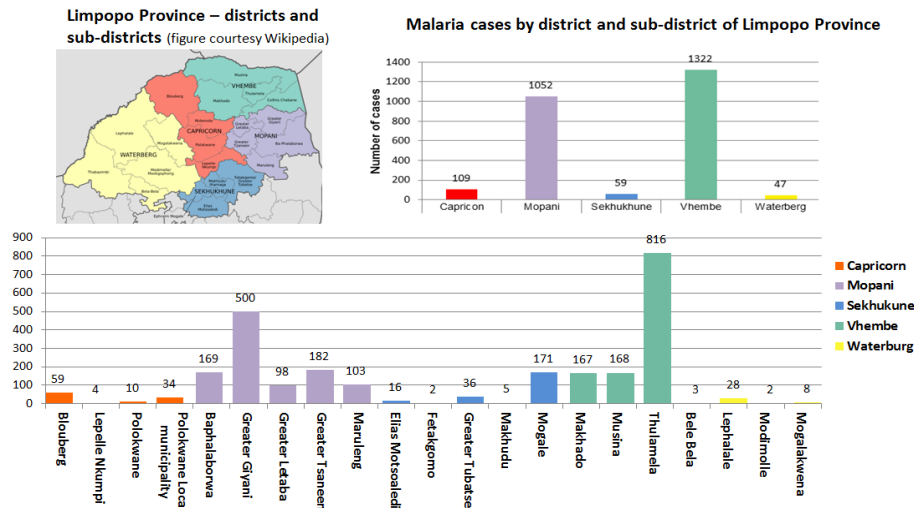


Figure 4. Infographic showing the number of cases of malaria reported from Limpopo Province by municipal district, 23 April to 17 May 2017 (data courtesy Limpopo Provincial Health Department)

4 PARASITIC DISEASES

a Pediculosis of the head and hair

The NICD receives frequent enquiries regarding the management of lice infestation, particularly amongst children aged 2-12 years. Lice infestation is caused by the human head louse, *Pediculus capitis*, which is thought to be genetically the same species as *Pediculus humanus*, the body louse, though they have slightly different physical appearances and different egg-laying habits. The adult head louse, which lives for around 30 days, feeds five times daily on blood meals, and lays around 7-10 eggs daily. It injects an anticoagulant and anaesthetic protein as it feeds, and 2-3 weeks after infestation, reaction to these allergens manifests as mild to moderate itchiness of the scalp and hair. *Pediculus capitis* is not known to transmit infections, unlike *Pediculus humanus*, which transmits trench fever (*Bartonella quintana*), relapsing fever (*Borrelia recurrentis*), and epidemic typhus (*Rickettsia prowazekii*).

The diagnosis of infestation is through visual inspection and identification of the characteristic appearance of adults, which are 1-3 mm long, and

vary in colour from pale to light brown depending on environmental and host factors. Nits are typically deposited on the shafts of hair, usually around the ears and nape of the neck. As hair grows, these may become visible.

Treatment is mechanical with manual removal of adults and nits, or shaving of the head, or by application of topical pediculocides. Presently in South Africa, the only permethrin-containing products that are available include Skabi-Rid®, Para Plus Lice Spray®, Para Special Lice Spray® and Spregal®. No shampoo formulations are presently available in South Africa, and only Skabi-Rid® comes as a lotion. Dimethicone oil may be applied, and acts to mechanically smother adults. It is available in a 4% solution as Controlice®. Gamma benzene hexachloride (Lindane®) is no longer available because of concerns over toxicity. International reports document increasing resistance to permethrin amongst head lice. No surveillance studies or data on resistance is available in South Africa. As no method for

treatment of lice infestation is 100% effective, manual inspection and removal of nits should be repeated every 1-3 days until 10 days after the last nits were removed.

Source: Centre for Emerging Zoonotic and Parasitic Diseases; Division of Public Health, Surveillance and Response, NICD-NHLS; johnf@nicd.ac.za

Figure 5. The characteristic morphology of the human body / head louse (*Pediculus humanus / Pediculus capitis*, Photograph courtesy Mathison B, Pritt B, Laboratory identification of arthropod ectoparasites. Clinical Microbiology Reviews, 2017 (27) 1:48-67



5 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 April 2017, a total of 114 Enterobacteriaceae isolates was received. Seventy-eight isolates were screened, 67 of which expressed the carbapenemases that were screened for. One isolate expressed both NDM and OXA-48 and variants (Table 1). The majority of the screened isolates were *Klebsiella pneumoniae* (54) followed by *Enterobacter cloacae* (14).

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. These 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-March 2017 and April 2017 at the AMRL-CC, CHARM, NICD

Organism	NDM		OXA-48 & Variants	
	Jan-Mar 2017	Apr 2017	Jan-Mar 2017	Apr 2017
<i>Enterobacter cloacae</i>	4	2	24	6
<i>Escherichia coli</i>	6	-	16	2
<i>Klebsiella oxytoca</i>	-	1	2	-
<i>Klebsiella pneumoniae</i>	59	11	179	40
<i>Providencia rettgeri</i>	5	1	2	-
<i>Serratia marcescens</i>	-	-	3	3
<i>Enterobacter aerogenes</i>	-	-	3	1
<i>Morganella morganii</i>	1	1	-	-
Total	75	16	229	52

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

6 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 9.

1. Ebola in the Democratic Republic of Congo

The WHO was notified of Ebola virus disease (EVD) outbreak in Likati Health Zone, Bas Uele Province in the north-east of the Democratic Republic of Congo on 11 May 2017 by the DRC Ministry of Health. Since then, the outbreak continues to evolve. On 20 May 2017, three suspected EVD cases and one death were reported from Muma and Ngay health areas in Likati Health Zone. As of 27 May 2017, 16 suspected EVD cases and four deaths have been reported, giving a case fatality rate (CFR) of 11%. Of the samples tested at the Institut National de Recherche Biomedicale (INRB) mobile lab, 33 have tested negative by PCR, while two of the five blood samples analysed at the Kinshasa national reference lab were confirmed as Zaire Ebola virus. Of the 419 listed contacts, 54 have completed the follow-up period while 365 continue to be monitored.

2. Meningococcal meningitis in Nigeria

As of 14 May 2017, a total of 13 943 cases of meningitis, including 1 112 deaths (CFR of 8.0%), has been reported from 222 LGAs across 23 states since mid-December 2016. The majority of the reported cases, 46.8%, were in the age group 5-14 years. However, the situation continues to improve

since the week ending 14 May 2017, when a total of 523 meningitis cases, including 43 deaths (case fatality rate [CFR] of 8.2%) was reported, down from 2 500 cases recorded in the week ending 9 May 2017. *Neisseria meningitidis* serogroup C remains the predominant pathogen, accounting for 72.7% of the positive samples. A vaccination campaign is ongoing in the affected areas.

3. Meningococcal disease in Liberia

Neisseria meningitidis serotype C has been identified by the NICD, South Africa, as the cause of a cluster of 14 cases with eight deaths in Greenville city, Sinoe County. It was notified to WHO on 25 April 2017 by the Liberia Ministry of Health. As of 19 May 2017, a total of 31 cases, including 13 deaths, (CFR of 42%) has been reported. The last case was reported on 7 May 2017. Active case-finding is still being conducted in the affected counties to identify cases and contacts.

4. Zika virus disease in Brazil

The Zika emergency has been declared over by Brazil's Ministry of Health on 11 May 2017. This is due to the decrease in the number of Zika cases to 7 911 during January - 15 April 2017, compared to

170 535 cases for the same period in 2016, representing a reduction of over 95 percent.

5. Yellow fever outbreak in Brazil

According to Ministry of Health, at least 259 people have died from yellow fever in Brazil in 2017 and mostly in the southeast of the country. Presently there is increase in number of confirmed cases to 756, with Minas Gerais and Espírito Santo provinces reporting 448 and 234 confirmed cases, respectively. A mass vaccination campaign has taken place. In addition, environmental measures to eliminate breeding grounds of the vector *Aedes aegypti* have been conducted by both government and civil society.

6. Avian influenza in China

The number of human infections with avian influenza A (H7N9) in the 5th epidemic wave (i.e. onset since 1 Oct 2016) is greater than the numbers of human cases reported in earlier waves. The National Health and Family Planning Commission of China (NHFPCC) continue to notify around 20 additional laboratory-confirmed cases of human H7N9 virus to the WHO almost every 10 days. To date, a total of 1 439 laboratory-confirmed human infections with avian influenza A(H7N9) virus has been reported through IHR notification since early 2013. Most cases are exposed to the virus through contact with infected poultry or contaminated environments, including live poultry markets. A diagnosis of infection with an avian influenza virus should be considered in individuals who develop severe acute respiratory symptoms

while travelling in or soon after returning from an area where avian influenza is a concern. Travellers are advised to avoid poultry farms and contact with animals in live poultry markets and to practice strict hand hygiene when travelling to countries known to have outbreaks.

7. Zika virus disease in India

On 15 May 2017, three laboratory-confirmed Zika virus cases were detected during routine surveillance activities in Ahmedabad, Gujarat State, India. Case 1 was detected in a 64-year-old male with a 8-day history of acute febrile illness. Case 2 was detected in a post-partum female who developed a pyrexia post-delivery. Case 3 was detected in a 22-year-old pregnant woman at 37 weeks of gestation.

India is preparing for a national outbreak of ZVD. National guidelines and an action plan have been developed and circulated. Over 34 000 persons have been tested for Zika virus disease as part of routine surveillance. In addition, microcephaly surveillance is being conducted in 55 sentinel sites. At present, no increase in cases is being identified. Risk communication materials are being finalised.

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

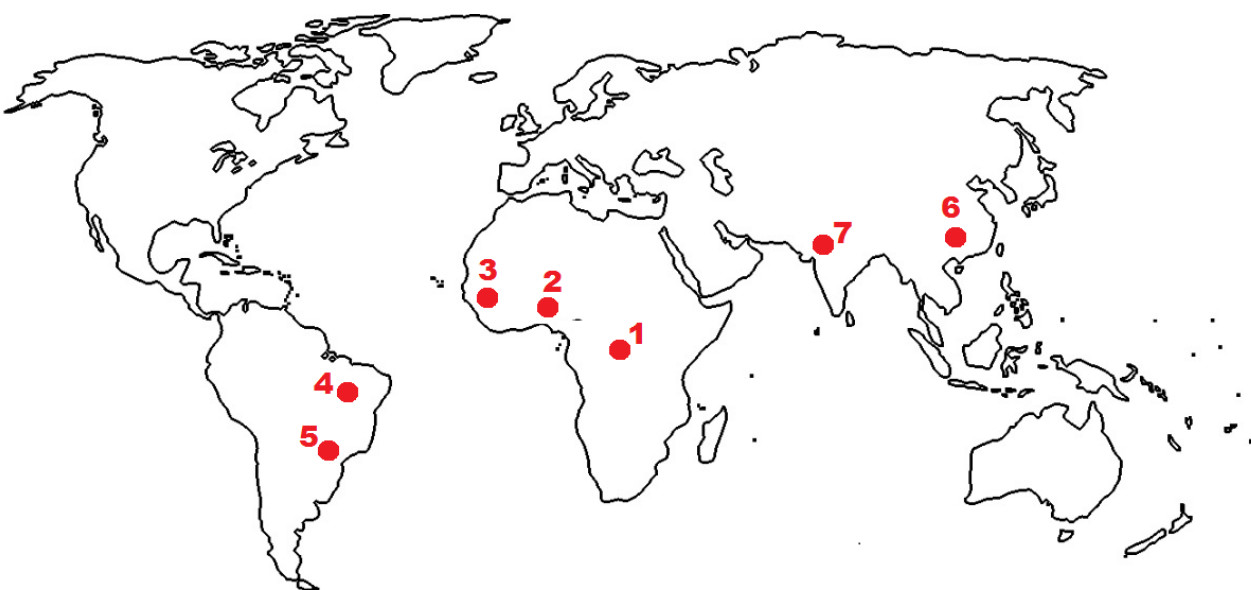


Figure 6. Current outbreaks that may have implications for travellers. Numbers correspond to text above. The red dot is the approximate location of the outbreak or event.

7 WHO-AFRO: OUTBREAKS AND EMERGENCIES

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 49 events, 41 infectious diseases outbreaks and 8 humanitarian crises. The most recent bulletin at the time of going to press is 'Week 20, 13-19th May' and is reproduced below. For more info see link <http://newsletters.afro.who.int/outbreaks-weekly-bulletin/19z67dcq4qctn54o9gp0zf?email=true&a=11&p=51873720>

