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

Communicable Diseases Communiqué

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1 ZOONOTIC AND VECTOR-BORNE DISEASES

a Rabies in South Africa

Two cases of human rabies were confirmed during the month of February 2018. The first case was a 13-year-old female from a town in Amatole District Municipality in the Eastern Cape Province. The patient was bitten on the left arm on 23 November 2017. No rabies post-exposure prophylaxis (PEP) or treatment was sought at the local health care facility following the incident. The dog involved in the attack was killed but samples were not submitted for investigation. On 9 February 2018, the patient presented to a local health care facility with fever, localised pain at the original wound site, muscle spasms, confusion, agitation, hydrophobia and hypersalivation. After transfer to the district hospital on the same day and the regional hospital the day after, she died on 10 February 2018. Rabies was confirmed with the fluorescent antibody test using a postmortem-collected brain sample.

A second case involving a six-year-old male from KwaZulu-Natal Province was confirmed after the patient died on 1 February 2018. The exposure history in this case remains uncertain. The patient presented with fever and altered behavior on 19 January 2018. His condition deteriorated and he was admitted to a local health care facility. Rabies was confirmed with the fluorescent antibody test for rabies using a postmortem-collected brain sample.

Rabies is preventable through the correct administration of post-exposure prophylaxis—guidelines are available on the NICD website.

Two cases of human rabies have been laboratory-confirmed for 2018 to date (the cases reported here). Six human rabies cases were confirmed in 2017, reported from Limpopo (n=2); Mpumalanga (n=1), Eastern Cape (n=2) and KwaZulu-Natal (n=1) provinces. A probable case of rabies was reported from the Free State Province. The case was clinically compatible with a likely exposure history but no laboratory confirmation was possible.

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

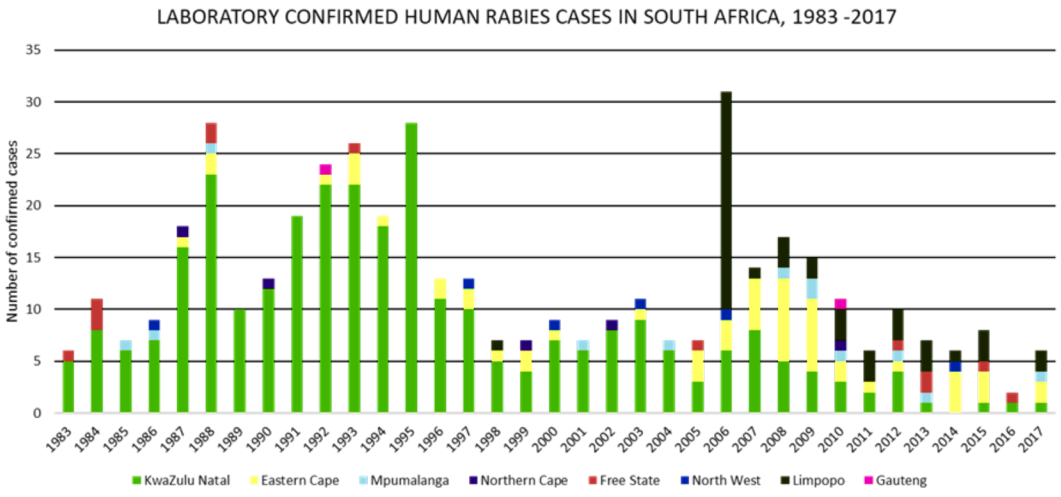


Figure 1. Number of laboratory-confirmed human rabies in South Africa, 1983-2017

b Crimean-Congo haemorrhagic fever update

Congo-Crimean haemorrhagic fever (CCHF) is caused by a tick-borne virus that is endemic in Africa and elsewhere in Eastern Europe, the Middle East and Asia.

Human infections can result in severe disease, often associated with haemorrhagic presentations and a case fatality rate of 5–30%. The virus is transmitted amongst wild and domestic animals, such as cattle, goats, sheep, guinea fowls and hares by *Hyalomma* ticks, which may accidentally transmit the virus to humans. Persons who work with ruminant animals, including herders, farmers, livestock workers, hunters and slaughterers are most at risk of becoming infected through accidental tick-bite or crushing of tick from infestation on the animals. The virus may also rarely be transmitted to this occupational group through contact with infected animal blood or tissues. Further secondary cases and nosocomial outbreaks have been recorded as CCHF can be transmitted from human to human.

In Africa, CCHF events are not frequently reported. Since 1950s, twelve countries have documented three hundred or more human cases, of which the majority were reported from South Africa (n=211). In some regions, however, the disease has increasingly been seen or re-emerged after long periods of apparent absence. In the past and current year,

cases have been reported from South Africa, Namibia, Uganda, Mauritania, Senegal and Sudan.

In South Africa, eight cases were confirmed in 2017 and a single case in 2018 in early January. These cases were from the Northern Cape (n=6), Western Free State (n=2) and North West (n=1) provinces. These semi-arid regions support the habitat of the *Hyalomma* or bont-legged ticks, the major vector of CCHF in South Africa. More than two-thirds of cases diagnosed in South Africa report a tick exposure history in cattle, sheep or game animal workers.

In 2017, four cases in males who all reported a history of tick-bite were confirmed from Namibia. Uganda reported an outbreak of CCHF in central Luwero and Nakaseke Districts located in the cattle corridor, since December 2017. Two cases in children have been confirmed.

Mauritania had five reports of CCHF in 2017. Three of those were locally acquired but detected in travelers after return to Senegal. Mauritania experienced a fairly large CCHF outbreak in 2003, involving 38 cases with a case fatality rate of 29 percent.

Further, two cases in children were reported from Senegal in 2017 and Sudan in 2018.

There is no CCHF vaccine available and therapy is restricted to treatment of symptoms. Therefore, public health awareness and identification of hotspots and tick infestation control in livestock are most important to decrease probability of human infections. 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

c Dengue and chikungunya fever in returning travellers

Since the beginning of 2018, a number of exotic arboviral infections—namely dengue fever and chikungunya virus- have been confirmed by the NICD in returned travellers. Dengue is not endemic to South Africa. Chikungunya virus is endemic, but confined to restricted ecological niches in Limpopo and KwaZulu-Natal provinces, where zoonotic spillover rarely occurs. Rift Valley fever virus and West Nile viruses are endemic in the Highveld regions but tend to occur during or following periods of high rainfall. Hence, most arboviral infections are diagnosed in international travellers returning from areas with active transmission, particularly the endemic regions in Asia, the Americas, other parts of Africa and Pacific Ocean islands.

We report one imported case of chikungunya in a 62-year-old female, living in the East Rand of Gauteng, who travelled to Jerat, India over the Christmas holidays. The patient was hospitalised during her travel in India in mid-January 2018, where a clinical diagnosis of chikungunya was made without confirmatory laboratory tests. On return to South Africa, on 8 February 2018 the patient presented with febrile illness, rigors, joint pains and a rash. The patient had a decreased lymphocyte count, and private laboratory tests for recent dengue infection were negative (PCR and IgM), but indicated possible past dengue exposure (IgG positive). Malaria and rickettsia testing both yielded negative results. A diagnosis of chikungunya fever was confirmed by RT-PCR and virus isolation at the NICD.

Three dengue cases have been confirmed in 2018. A 58-year-old male patient from Pretoria presented with high fever, low platelets and raised liver transaminases after returning from a holiday in Thailand in the first week of January. The patient reported extensive exposure to mosquitoes during his travel. Typhoid and malaria tests were negative. Dengue fever was confirmed by RT-PCR and detection of IgM antibodies. A 60-year-old male patient from Johannesburg returned from a holiday in Thailand on 9 January 2018, presented with fever and a severe headache, and was hospitalized. Dengue fever was confirmed by RT-PCR and virus isolation. The patient's condition initially improved but he was readmitted to hospital three weeks after the initial diagnosis with a persistent headache and vomiting. Dengue serology on blood collected during the second hospitalization confirmed initial dengue diagnosis by demonstration of seroconversion. The cause of the biphasic illness is as yet unknown but might be attributed to the initial dengue virus infection. A third patient, a 20-year-old male from Cape Town, also travelled to Thailand from end of January to mid-February 2018. The patient presented with a fever, headache and vomiting but was not hospitalized. The patient reported mosquito bites but malaria was ruled out. Dengue fever was confirmed by RT-PCR.

There is no specific treatment for arboviral infections apart from symptomatic management. There are no vaccines available to prevent Zika or chikungunya infections. A dengue vaccine is available for use in highly affected areas, but its use is surrounded by controversy after the Philippines recently (late 2017) suspended a vaccination campaign following the death of 14 children, possibly related to their vaccination. Vaccines for other flaviviruses, such as yellow fever and Japanese encephalitis, have been in use for a long time. Mosquito control and prevention of bites are essential in reducing the risk of arbovirus disease.

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

2 VACCINE-PREVENTABLE DISEASES

a A case of immunodefiency-associated vaccine-derived poliovirus sero-type 3 (iVDPV3) infection in the Western Cape Province, South Africa

A three-month-old boy presented with acute flaccid paralysis (AFP) in Cape Town on 29 December 2017. Poliovirus was isolated from the patient's stool; further testing revealed the virus to be like Sabin poliovirus type 3 with 11 nucleotide changes, making it a vaccine-derived poliovirus (VDPV). Further investigations revealed that the patient has agammaglobulinemia, a rare condition characterised by little or no antibodies in the blood, thereby causing immunodeficiency. Thus, the VDPV in this case is classified as immunodeficiency-associated (IVDPV).

There are three types of VDPV: circulating (cVDPV), immunodeficiency-associated (iVDPV) or ambiguous (aVDPV). cVDPV occurs when VDPV becomes transmissible and circulates in the community for years, due to low vaccination coverage and poor herd immunity. iVDPV occurs in an individual patient when there is genetic immunodeficiency, allowing uncontrolled growth and reversion to virulent virus. aVDPV is diagnosed when both iVDPV and cVDPV have been excluded. While both cVDPV and iVDPV can be transmitted and cause disease, transmission is exceedingly rare for iVDPV, especially if vaccine coverage in the community is high.

Stool samples from close contacts of the case, as well as 20 households in the community, were negative for poliovirus. The case was treated with intravenous immunoglobulin and has responded well. Stool samples from the case will be tested monthly until there are two consecutive negative results.

Polio can be successfully eradicated through vaccination, as has been shown by numerous countries, including South Africa. The last case of wild-type poliovirus in South Africa was in 1989. Pakistan and Afghanistan are the only two countries globally with continued circulation of wild type poliovirus, with only 19 cases reported in 2017. Since 2009, the South African Expanded Programme on Immunization includes two doses of oral poliovirus (at birth and 6 weeks of age) and inactivated poliovirus vaccine as part of hexavalent combination vaccine at 6, 10, 14 weeks and 18 months of age. Agammaglobulinemia is estimated to occur in 1 in 370 000 live births. A case of iVDPV3 was previously reported in South Africa in 2011. These cases highlight the need for continued diligence in poliovirus surveillance to achieve global polio eradication.

Source: Western Cape Department of Health; Centre for Vaccines and Immunology, NICD-NHLS; (melindas@nicd.ac.za)

3 SEASONAL DISEASES

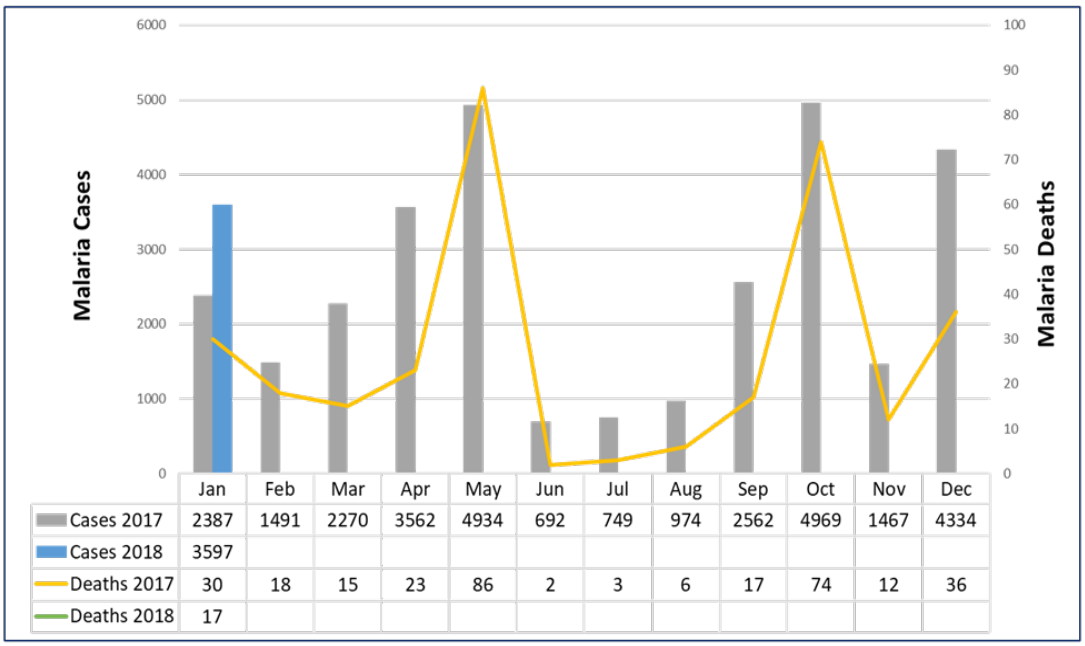
b Malaria in South Africa—a seasonal update

A 17% reduction in malaria notifications to 3579 cases in January 2018, from a country total of 4334 cases in December 2017, has been reported by the National Department of Health, with a corresponding substantial decrease in malaria-related deaths (36 in December; 17 in January). However, compared with January 2017, the total for January 2018 is 51% higher (Figure 2).

January 2018 figures are subject to upward adjustment because of notification capture lag time. In terms of provincial contributions to malaria notifications, to date Limpopo Province reported a 53% reduction between December and January, while Mpumalanga Province showed the opposite trend of an increase of 33%, which is in keeping with the general increase in malaria cases (predominantly imported) noted in the latter province in the current season. In low-reporting provinces (North West, Western Cape, Free State) increased numbers of imported cases in January (79 for these 3 provinces, compared with 23 in December) reflect the expected increased travel-related exposure over the festive period. Odyssean (minibus, taxi-rank) malaria reports in Gauteng province are expected to increase, reflecting the general higher burden of malaria in the region. In 2018 to date there have been four such cases, including one death.

For both these rare malaria infections, and the more frequent imported ones, we again remind healthcare workers to be aware of the similar presentation of influenza and early malaria infection, understand that a negative malaria test does not necessarily rule out the diagnosis, and to re-test if a febrile illness persists or gets worse. The chance finding of abnormally low platelet counts in blood samples tested for unexplained illness, may indicate malaria infection and should be urgently investigated for this possibility (see NICD Communiqué Oct 2017; 16(10): 6).

Source: Directorate Malaria, National Department of Health; Centre for Emerging Zoonotic and Parasitic Diseases, NICD-NHLS; (johnf@nicd.ac.za)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cases 2017	2387	1491	2270	3562	4934	692	749	974	2562	4969	1467	4334
Cases 2018	3597											
Deaths 2017	30	18	15	23	86	2	3	6	17	74	12	36
Deaths 2018	17											

Figure 2. Number of malaria cases and deaths, South Africa, 2017 and 2018

b Influenza—preparing for the 2018 season

In Europe, influenza activity has been high in northern and south-western Europe, although influenza detections appear to have been decreasing in several countries. Influenza activity has started to increase in Eastern Europe. In the United Kingdom, hospital indicators have reached high levels. Influenza A(H3N2) and B/Yamagata detections, remain the predominant strains detected.

Influenza activity in the USA has continued to increase with influenza A(H3N2) viruses most frequently detected. Canada continues to report higher than expected levels of influenza-like-illness for this time of the year.
In South Africa, influenza remains at inter-seasonal levels, with sporadic detections in travellers. The 2018 Southern Hemisphere influenza vaccine will be available in March. Influenza vaccine is recommended for individuals at risk of severe complications of influenza and include pregnant women (including the post-partum period), persons aged <5years or ≥65 years, and those with underlying chronic medical conditions.

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

4 CURRENT OUTBREAKS

a An update on the listeriosis outbreak, South Africa

As of 20 February 2018, a total of 915 laboratory-confirmed listeriosis cases has been reported to NICD since 01 January 2017 (Figure 3). Most cases have been reported from Gauteng Province (59%, 541/915) followed by Western Cape (12%, 112/915) and KwaZulu-Natal (7%, 66/915) provinces. Cases have been diagnosed in both public (64%, 587/915) and private (36%, 328/915) healthcare sectors. Diagnosis was based most commonly on the isolation of *Listeria monocytogenes* in blood culture (73%, 669/915), followed by CSF (22%, 198/915).

Females account for 56% (496/886) of cases where gender is reported. Where age was reported (n=884), ages range from birth to 93 years (median 20 years). Neonates aged ≤28 days account for 41% (363/884) of cases. Of neonatal cases, 96% (350/363) had early-onset disease (birth to ≤6 days). The age group with the highest number of cases, following neonates, is persons aged 15 – 49 years (33%, 294/884), likely owing to the burden of pregnancy and HIV-infection in this age group. For cases where gender and age are known (n=862), females account for 67% (197/293) of cases in the 15-49 years age group (Figure 4).

Final outcome data is available for 68% (624/915) of cases, of which 27% (172/624) died (Figure 4).

A team of interviewers from the NICD has conducted over 90 semi-structured interviews with listeriosis case-patients to obtain detailed food consumption history. Analysis of this data shows that ready-to-eat processed meat products were consumed by >80% of these patients.

Ready-to-eat (RTE) processed meat products have been linked to numerous outbreaks of listeriosis worldwide. Such products include viennas, polonies, russians, ham, other 'cold' meats, sausages, various corned meats, salami, pepperoni, refrigerated meat spreads/patés and similar products typically found in the processed meat sections of food retailers and butcheries. These products can be contaminated when contaminated raw product is inadequately cooked, or more commonly, contamination can occur post-processing (i.e. at any stage after the cooking/curing process – for example, during packaging or slicing). *L. monocytogenes* survives and grows at refrigeration temperatures, and since many RTE processed meat products have a long shelf-life, this provides an ideal opportunity for proliferation of the bacteria. Such products are usually not cooked/heated before eating, so the bacteria escape a final opportunity to be killed before consumption.

We encourage persons at high risk for developing listeriosis (pregnant women, infants <1 month of age, persons >65 years of age, and persons with immunosuppression (due to HIV infection, cancer, diabetes, chronic renal disease, chronic liver disease, transplantation and immunosuppressive therapy)) to avoid OR cook all RTE processed meat products whilst further investigations are underway. Such products can be rendered safe if thoroughly cooked in boiling water or heated to high temperatures (≥70°C) before eating.

Further resources on listeriosis, including clinical management guidelines and FAQs can be found on the NICD website at www.nicd.ac.za, Diseases A-Z, under 'Listeriosis'.

Source: Centre for Enteric Diseases, and Division of Public Health Surveillance and Response, NICD Provincial Epidemiology Teams; NICD-NHLS; Provincial CDCs; (junot@nicd.ac.za; outbreak@nicd.ac.za)

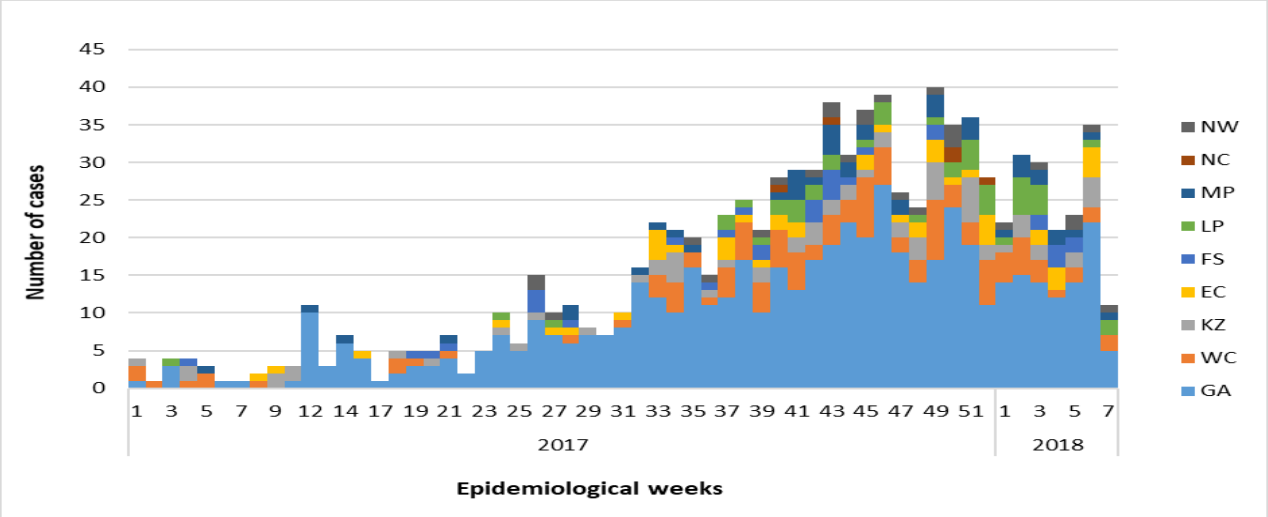


Figure 3. Epidemic curve of laboratory-confirmed listeriosis cases by epidemiological week and date of sample collection and province, South Africa, 01 January to 20 February 2018 (n=915)

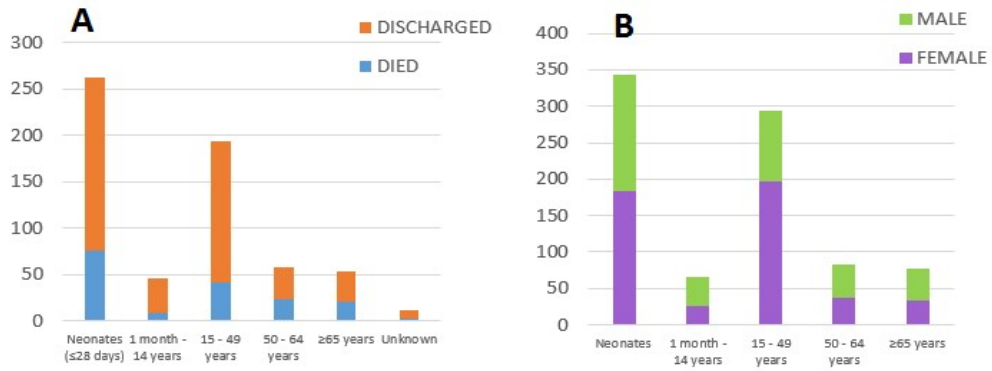


Figure 4. Outcome at the end of hospitalisation (A) and gender distribution (B) by age category of laboratory-confirmed listeriosis cases by gender, South Africa, 01 January to 20 February 2018 (n= 862, where age, gender and outcome is known

b A single cholera case reported from Umkhanyakude District, KwaZulu-Natal Province

Cholera was confirmed in an adult female patient in Umkhanyakude District, KwaZulu-Natal Province. The patient developed symptoms on 7 February 2018 and was admitted to hospital the following day. She presented with severe abdominal pain, profuse sweating, severe dehydration, lethargy, diarrhoea and vomiting. Cholera was initially not suspected, but a stool specimen was collected and submitted to the laboratory for routine MCS. Suspicious colonies were observed on TCBS agar and further testing was conducted. *V. cholerae* was identified by the local laboratory on 15 February 2018 and confirmed by the NICD as *V. cholerae* O1 serotype Ogawa on 16 February. Presence of cholera enterotoxin was confirmed by PCR. The patient responded well to treatment and has since recovered. No travel history to cholera-affected areas was reported, nor did she have visitors from those areas. However, she reported drinking water from the Pongola River, as there was no potable water supply available for about two weeks.

Outbreak response teams at local/sub-district and district level have been activated. Further investigations to determine the source and magnitude of the outbreak are ongoing. As of 22 February 2018, two suspected cases have been identified and are being investigated. Healthcare workers should be on high alert for suspected cholera cases to ensure early detection and prevention of transmission. According to the 2014 South African cholera guidelines, a suspected case of cholera is defined as follows:

- In an area where cholera is not known to be present — a patient, irrespective of age, who develops severe dehydration or dies from acute watery diarrhoea, or
- In an area where there is a cholera outbreak - a patient who develops acute watery diarrhoea with or without vomiting.

Any suspected case should be immediately notified to the relevant stakeholders and be investigated. Healthcare workers should ensure that stools or rectal swab specimens are collected from suspected cholera cases. Specimens should be sent in Cary-Blair transport medium to the laboratory with a specific request for cholera testing. Healthcare facilities and laboratories, especially those in the affected area, should have adequate resources for specimen collection, MC&S tests, assessment and management of cases. Additional information on cholera can be accessed on the NICD website: http://www.nicd.ac.za under the Diseases A-Z Tab.

Source: Umkhanyakude District Department of Health; National Department of Health; Centre for Enteric Diseases and Division of Public Health Surveillance and Response, NICD-NHLS; (outbreak@nicd.ac.za)

5 ENTERIC DISEASES

a Typhoid fever outbreak in Sekhukhune District, Limpopo Province

On 15 November 2017, Sekhukhune District Department of Health (DoH) in Limpopo Province was alerted to a laboratory-confirmed typhoid fever case by NHLS Polokwane Microbiology Laboratory. This led to activation of outbreak investigation on 21 November 2017, to determine the source of infection, conduct contact tracing and implement control measures. Following contact tracing in the index case village and typhoid fever awareness activities, more cases meeting the suspected typhoid fever case definition presented at three hospitals in the district. During case interviews, consumption of open-source water was believed to be the cause of the increase in cases seen.

From 15 November to 31 December 2017, 122 suspected typhoid fever cases and no deaths were reported from three public hospitals (Figure 5). Ages ranged from 2 to 83 years, with most cases (n=79; 65%) occurring in persons 5-14 years old; and 54% (n= 67) were females. *Salmonella* Typhi was isolated in seven samples (blood, stool culture and rectal swabs); however, it was not isolated by PCR from open water sources.

On 31 January 2018, a team from the NICD in collaboration with Sekhukhune District DoH conducted typhoid fever clinical management training at one of the hospitals and GIS mapping activities at cases' homes and reported water sources. Majority of laboratory confirmed cases was from Tswaing (n=4), Strydkraal B (1-index case), Ga-Phaahla (n=1) and Apel Cross (n=1); with the majority of the cases reporting their water source being irrigation furrow, borehole, well and jojo tanks (Figure 6). Continuous supply of clean water by the municipality led to decline in the number of cases.

Source: Limpopo Provincial Department of Health; NICD Provincial Epidemiology Team; NICD-NHLS; Centre for Enteric Diseases and Division of Public Health Surveillance and Response, NICD-NHLS; (outbreak@nicd.ac.za)

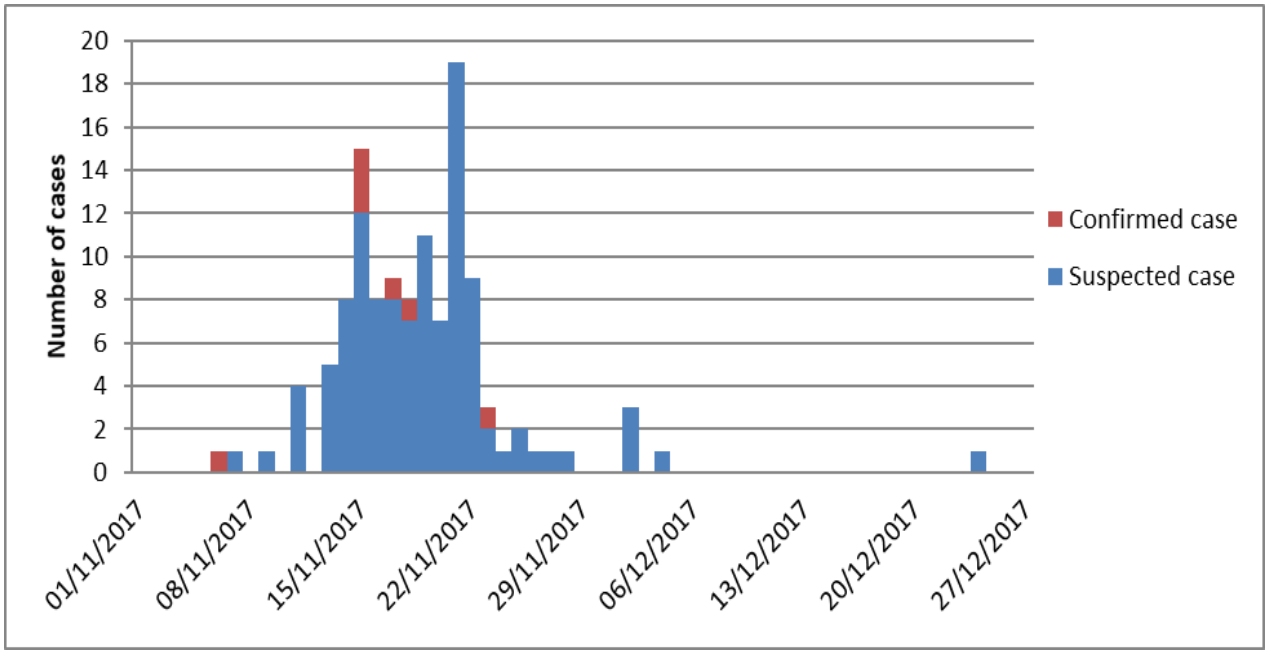


Figure 5. Epidemic curve illustrating number of laboratory-confirmed typhoid fever cases by date of onset of symptoms, Sekhukhune District, Limpopo Province, November—December 2017 (n=122)

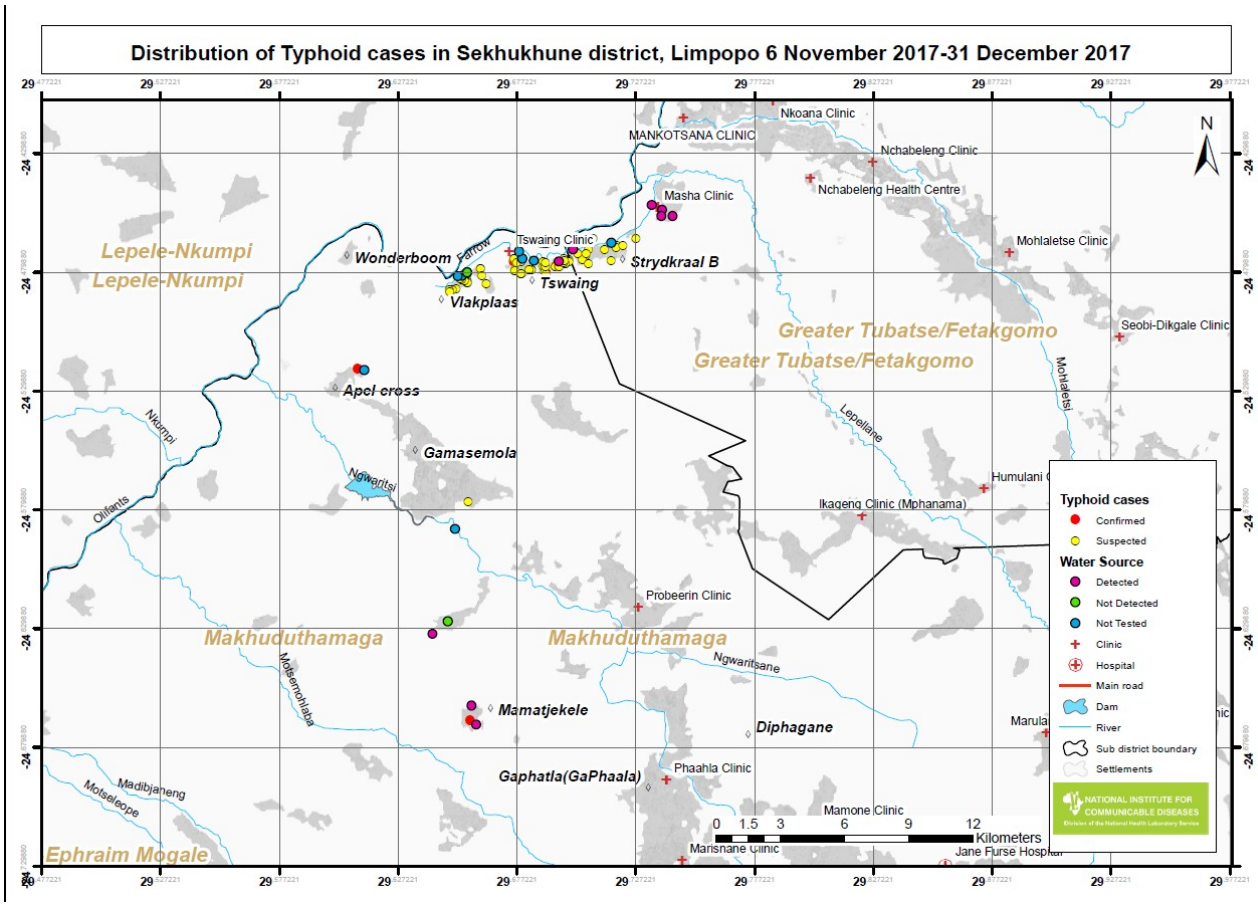


Figure 6. Geographical distribution of typhoid fever cases (suspected and laboratory-confirmed) in Sekhukhune District, Limpopo Province, November—December 2017

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 7 on page 9.

1. Hepatitis E: Namibia
Since early September 2017, Namibia has reported 643 hepatitis E cases, including 50 that are laboratory confirmed. Three women died post-partum. Most cases have been reported from informal settlements within the capital, Windhoek, with 332 (52%) cases reported from Havana and 168 (26%) from Goreagab informal settlements. An estimated 89% of the population of these two areas use communal water points, and 62% practice open defecation.

2. Lassa fever: Nigeria
The World Health Organization is scaling up its response to an outbreak of Lassa fever in Nigeria, which has spread to 17 states and may have infected up to 450 people in less than five weeks. From the onset of the outbreak, WHO Nigeria deployed staff from the national and state levels to support the Government of Nigeria's national Lassa fever Emergency Operations Centre and state surveillance activities. Between 1 January and 4 February 2018, nearly 450 suspected cases were reported, of which 132 are laboratory-confirmed Lassa fever. Of these, 43 deaths were reported, 37 of which were lab confirmed. The acute viral haemorrhagic fever is endemic in Nigeria but for the current outbreak the hot spots are the southern states of Edo, Ondo, and Ebonyi.

3. Yellow fever: Brazil
Between January 2016 and January 2018, 7 countries and territories of the Region of the Americas reported confirmed cases of yellow fever: The Plurinational State of Bolivia, Brazil, Colombia, Ecuador, French Guiana, Peru, and Suriname. The number of human cases and epizootics collectively reported in this period in the Region of the Americas is the highest observed in decades. Since the 12 January 2018 Epidemiological Update on Yellow fever published by the Pan American Health Organization / World Health Organization (PAHO/WHO), Brazil and Peru had reported new yellow fever cases. In Brazil, between 1 July 2017 and 15 February 2018, there were 409 confirmed human cases of yellow fever, including 118 deaths.

4. Cholera: Democratic Republic of Congo
The recent floods (4-5 and 7 January) that have severely affected Kinshasa, capital of the Democratic Republic of Congo (DRC), have left 48 dead and several injured as well as totally or partially destroying thousands of homes. These floods from torrential rains aggravate the situation of the cholera epidemic in the DRC capital which saw the number of health zones affected by the epidemic in Kinshasa go from two zones at the end of December to 20 zones during the second epidemiological week of the year 2018 (from 8 to 14 January 2018). In Kinshasa, since the beginning of the epidemic in November 2017, 554 cases with 32 deaths (case-fatality rate: 5.77%) have been reported.

Source: (www.promed.org) and the World Health Organization (www.who.int)

Figure 7. 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

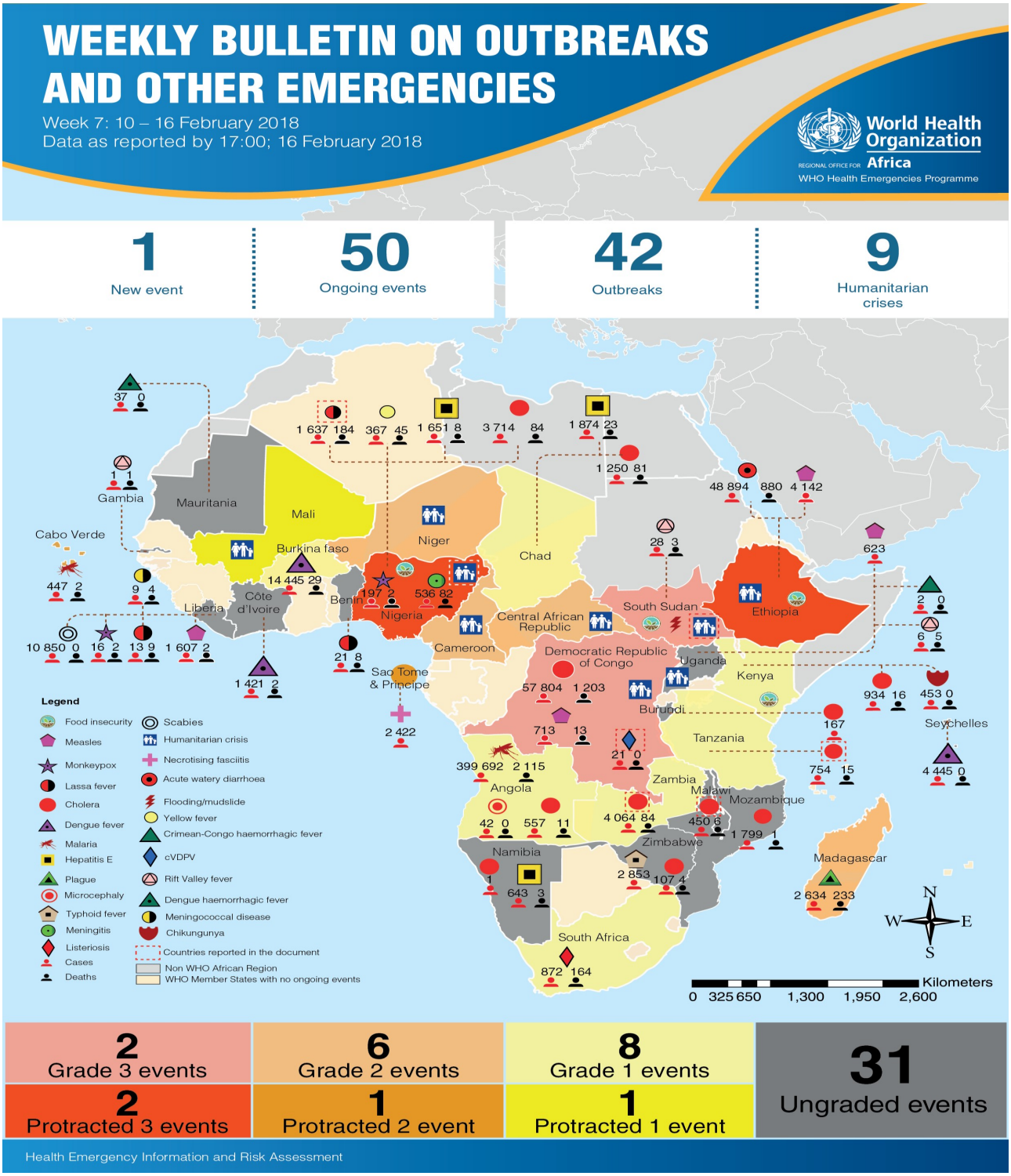


Figure 8. The Weekly WHO Outbreak and Emergencies Bulletin focuses on selected public health emergencies occurring in the WHO African region. The African Region WHO Health Emergencies Programme is currently monitoring 51 events, of which 42 are outbreaks and 9 humanitarian crises. For more information see link: http://apps.who.int/iris/bitstream/10665/260242/1/OEW7-101622018.pdf