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

Communicable Diseases Communiqué

MAY 2018, Vol. 17(5)

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1 ZOONOTIC AND VECTOR-BORNE DISEASES

a An update on rabies in South Africa

Two additional cases of human rabies were confirmed from the Eastern Cape Province since the last report. The first case involved an 8-year-old boy who was admitted to hospital on 23 March 2018. He presented as confused and agitated. Other clinical findings were fever, vomiting, localised weakness, dysphasia, delirium, aggressiveness and hyper-salivation. Saliva and cerebrospinal fluid samples were submitted for rabies testing, of which one saliva sample tested positive. The patient died on 29 March and no postmortem was performed to allow further laboratory investigations. The boy had apparently been bitten by a neighbour's dog, but the exact dates and details of the event remain to be verified. The second case involved a 19-year-old male from the Butterworth surrounds (also known as Gcuwa). The patient was admitted to hospital on 20 April with a history of strange behaviour for the past week. He had become restless, had shortness of breath and developed swallowing problems with excessive salivation, suggestive of rabies. The patient was reported to have been bitten by a dog a month prior, in March 2018. He received three doses of rabies vaccine schedule before he fell ill. The patient reportedly did not receive rabies immunoglobulin. The clinical diagnosis of rabies was confirmed by rabies RT-PCR on a saliva sample.

A total of eight human rabies cases has been reported in South Africa for 2018 to date. The cases were reported from the Eastern Cape and KwaZulu-Natal provinces, each reporting four cases. One additional case of human rabies was reported from the Eastern Cape Province in 2018, but is classified as a probable case. This indicates that the patient died of suspected rabies disease and an epidemiological link to a potentially rabid animal was verified. Laboratory verification of this case was however not possible.

The outbreak of rabies in dogs is ongoing in KwaZulu-Natal and Eastern Cape provinces. Spill-over cases in cats have also been reported. The public is urged to ensure that pets (dogs and cats) are vaccinated against rabies, and to avoid contact with dogs and cats that they are not familiar with. Rabies in humans can be prevented through prompt post-exposure prophylaxis, which involves rabies vaccination and rabies antibody therapy. Rabies post-exposure prophylaxis is only indicated if a person comes into direct contact with infected saliva of a sick animal. The infected saliva has to enter the body through a breach in the skin (for example with bites, scratches and nicks inflicted by animals, or existing wounds or breaks in the skin) or mucosal membranes. The majority of human rabies cases are associated with rabid dogs, but cases of exposures to rabid cats have also been reported in past months. More information regarding rabies post-exposure prophylaxis can be accessed on the NICD website: www.nicd.ac.za

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

b A fatal case of tick bite fever, Free State Province

A 20-year-old male from Bloemfontein, Free State Province, was admitted on 21 April 2018 to a public hospital with fever and joint pain. His clinical condition deteriorated and was found to be hypotensive requiring inotrope support and had a decreased level of consciousness with convulsions. He also had a petechial skin rash and was bleeding from the nose. His occupation and travel history were unknown. Malaria smears were negative. His platelet count was $58x10^9$/L. Both haemoglobin level and leucocyte counts were low. There was also laboratory evidence of liver and renal impairment. Broad-spectrum antibiotics were given, and doxycycline was added on the fourth day of illness. Crimean-Congo haemorrhagic fever (CCHF) was suspected but tests done at NICD were negative for CCHF. Subsequent rickettsial IgM and IgG serological tests were positive. Rickettsial PCR on the serum was also positive, indicating active infection. The patient demised on the fifth day of admission.

While tick bite fever is generally a mild disease if treated promptly, in patients with delayed or missed diagnosis and suboptimal treatment, it can lead to severe multiorgan involvement that is clinically indistinguishable from viral haemorrhagic fever, severe malaria, leptospirosis or bacterial sepsis. All the classic clinical elements of fever, eschar and rash following a tick bite may not be present, or elicited in an ill patient. The NICD reports several fatal cases of tick bite fever annually, most recently in the January 2018 Communicable Disease Communiqué (Vol. 17(1): 2-3).

Source: Centre for Emerging Zoonotic and Parasitic Diseases, NICD-NHLS; Infectious Diseases Service, Universitas Hospital and University of the Free State; (johnf@nicd.ac.za)

c Rift Valley fever confirmed in sheep in Jacobsdal, Free State Province

Rift Valley fever (RVF) has been confirmed in sheep at one farm in the Jacobsdal area in the Free State Province. So far, it is the only farm reported to be affected and further investigations are being carried out by the local veterinary services. No human cases have been detected thus far.

RVF is caused by a virus carried by mosquitoes. It affects cattle, sheep and goats; and causes abortions and deaths, especially in young animals. Humans can be infected with RVF if they come into contact with the blood and other body fluids of an infected animal or an aborted foetus. Care should be taken when handling possibly infected animals or carcasses of animals that have died of the disease. Symptoms in humans are flu-like and some individuals can develop more serious complications. If a person suspects that they might have been infected with RVF, they must consult a doctor.

The emergence of RVF is due to increased rainfall, which in turn causes an increase in mosquitoes. As this outbreak occurred in the beginning of the winter season, it will probably be an isolated incident as the cold weather will result in a decrease in the number of mosquitoes and therefore reduce the risk of the disease spreading. It must be noted that the risk will increase at the start of the summer season. This outbreak provides us with a useful warning that all cattle, sheep and goats have to be vaccinated to ensure that the level of immunity in the herds is high when the next summer season starts and the risk increases.

Farmers are therefore advised to vaccinate their animals against RVF. Live vaccines can only be used in non-pregnant animals as the live vaccine can cause abortions. Only dead (inactivated) vaccines must be used in pregnant animals. Please take care when vaccines are administered after outbreaks have been detected. Use a clean needle for each animal as the virus can spread between animals if the animals are in the incubation period. Animals in the incubation period will have a virus infection but will not show symptoms of the disease at the time.

RVF is a notifiable animal disease, but not a controlled animal disease, meaning that there are no prescribed control measures. The state veterinary services will give support and information to farmers in affected areas, but it is the responsibility of the animal owners to vaccinate their animals and prevent losses. Suspicion of disease must be immediately reported to the nearest State Veterinarian.

All livestock farmers in South Africa are advised to vaccinate all their cattle, sheep and goats yearly or at least once during weaning.

For more information, please contact your local State Veterinarian.

Source: Department of Agriculture, Forestry and Fisheries

2 VACCINE-PREVENTABLE DISEASES

a An update on the diphtheria outbreak in KwaZulu-Natal Province

In March 2018, a 20-year-old male from Malukazi (Ethekwini district) in KwaZulu-Natal Province (KZN) was diagnosed with diphtheria [NICD Communiqué April 2018, Vol 17(4)]. Swabs collected from three asymptomatic contacts were negative for *Corynebacterium diphtheriae*. Subsequently, two additional cases – one laboratory-confirmed and one probable – were reported in April 2018 from the same district but with no identifiable links to the index case. Case-patients were 10- and 11-year-old cousins residing in the same house and attending the same school. Both children demised and no samples were available for laboratory confirmation from one of the children. Among 18 contacts of the children from whom swabs were collected, one asymptomatic *C. diphtheriae* carrier was identified in the family. Home contacts received diphtheria-tetanus (DT) booster doses and prophylactic treatment was administered to all close contacts.

Health promotion activities included vaccination and administration of chemoprophylaxis in school contacts and the teachers of the two deceased cousins, on 3 May 2018. The remaining pupils in the school were vaccinated on 7 May 2018. A mass vaccination campaign was scheduled from 8-24 May 2018 for scholars aged 6-18 years at additional schools in the area.

Diphtheria is a Category 1 notifiable medical condition (NMC) and clinicians and healthcare workers throughout the country are urged to have a high awareness of the suspected diphtheria case definition: any person who presents with an upper respiratory tract illness characterised by sore throat, low-grade fever and an adherent membrane ('pseudomembrane') of the nose, pharynx, tonsils or larynx. For notification of cases, a telephonic notification is to be done immediately to the relevant focal person at the health establishment or sub-district level first, and then completion of the NMC case notification form (electronically or paper-based) within 24 hours. Please e-mail a copy to NMCSurveillanceReport@nicd.ac.za and to your local or district Communicable Diseases Control focal person.

Additionally, we emphasize the need for contact tracing and nasopharyngeal/oropharyngeal swab

collection from close contacts and at-risk contacts prior to the administration of chemoprophylaxis as asymptomatic contacts may be reservoirs of toxigenic *C. diphtheriae*.
Please contact the NICD for additional information:
Clinical queries: Dr Anne von Gottberg (011 555 0316, annev@nicd.ac.za) or NICD Hotline (082 883 9920).
Laboratory queries: Linda de Gouveia (011 555 0327, lindad@nicd.ac.za), Mignon du Plessis (011 555 0387, mignond@nicd.ac.za), or Nicole Wolter (011 555 0352, nicolew@nicd.ac.za).

Guidelines for diphtheria management and laboratory detection may be accessed at http://www.nicd.ac.za/index.php/diphtheria/.

Source: Centre for Respiratory Diseases and Meningitis, Division of Public Health Surveillance and Response, NICD-NHLS; KZN Department of Health; annev@nicd.ac.za

3 FOOD– AND WATER-BORNE DISEASES

a An update on the outbreak of *Listeria monocytogenes*, South Africa

On 04 March 2018, Health Minister Dr Aaron Motsoaledi announced that the source of the listeriosis outbreak was identified as ready-to-eat processed meat products produced at the Enterprise Foods' production facility in Polokwane, Limpopo Province. Following the recall of implicated products, there has been a marked downward trend in the number of laboratory-confirmed listeriosis cases reported per week. Since the recall ten weeks ago, a total of 66 cases has been reported. All cases that have been identified after the recall are being investigated. Whole genome sequencing (WGS) is underway to determine how many of the post-recall cases are due to the ST6 outbreak strain, and how many are the inevitable sporadic cases (not related to the outbreak) which would typically be expected to occur.

As of 17 May 2018, a cumulative total of 1 034 laboratory-confirmed listeriosis cases has been reported to NICD since 01 January 2017. Most cases reported were from Gauteng Province (59%, 606/1 034) followed by Western Cape (13%, 130/1 034) and KwaZulu-Natal (7%, 75/1 034) provinces. Cases have been diagnosed in both public (65%, 668/1 034) and private (35%, 366/1 034) healthcare sectors (Figure 1). Outcome is known for 735/1 034 (71%) patients of whom 204 (28%) have died (Figure 2).
Females account for 56% (559/1 007) of cases where gender is reported. Where age was reported (n=1 009), ages range from birth to 93 years (median 18 years). Neonates aged ≤28 days account for 43% (434/1 009) of cases. Of neonatal cases, 96% (415/434) had early-onset disease (birth to ≤6 days) (Figure 3).

All clinical isolates received at NICD are undergoing whole genome sequencing (WGS). A total of 541 clinical isolates have undergone WGS to date; 92% (497/541) are the sequence type 6 (ST6) outbreak strain, and the remainder (non-ST6) belong to thirteen different sequence types (Figure 1).

The Listeria Incident Management team continues to work from the NICD to implement a 3-phase Emergency Response Plan (ERP). The aim of the plan is to control and end the current listeriosis outbreak, and to strengthen systems to facilitate prevention and early detection of outbreaks. To inform and support these aims, surveillance and investigation of cases of listeriosis and risk communication activities are ongoing. Additional activities to complement these are being conducted as follows:

- Phase 1 has been completed, and includes development of the ERP, communication of the plan with provincial and district stakeholders, development of material and training of staff to support inspections of facilities identified as at-risk food processing plants;
- Phase 2 is ongoing. To date environmental health practitioners have been trained in Gauteng, Mpumalanga, Limpopo, Western Cape and Eastern Cape provinces. Eight food processing factories have been inspected including the RCL and Tiger Brands facilities. The food legislation review process is underway.
- Phase 3 will include reporting and consolidation of health system strengthening activities, and after action review.

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)

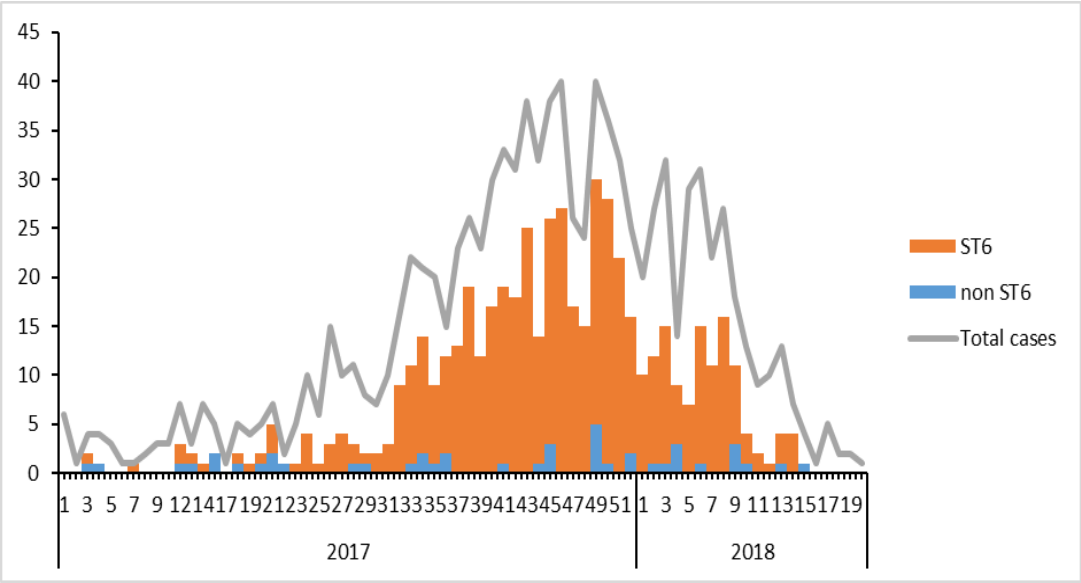

Figure 1. Epidemic curve of laboratory-confirmed listeriosis cases by date of clinical specimen collection (n=1 034) and sequence type (ST) (n=541), South Africa, 01 January 2017 to 17 May 2018

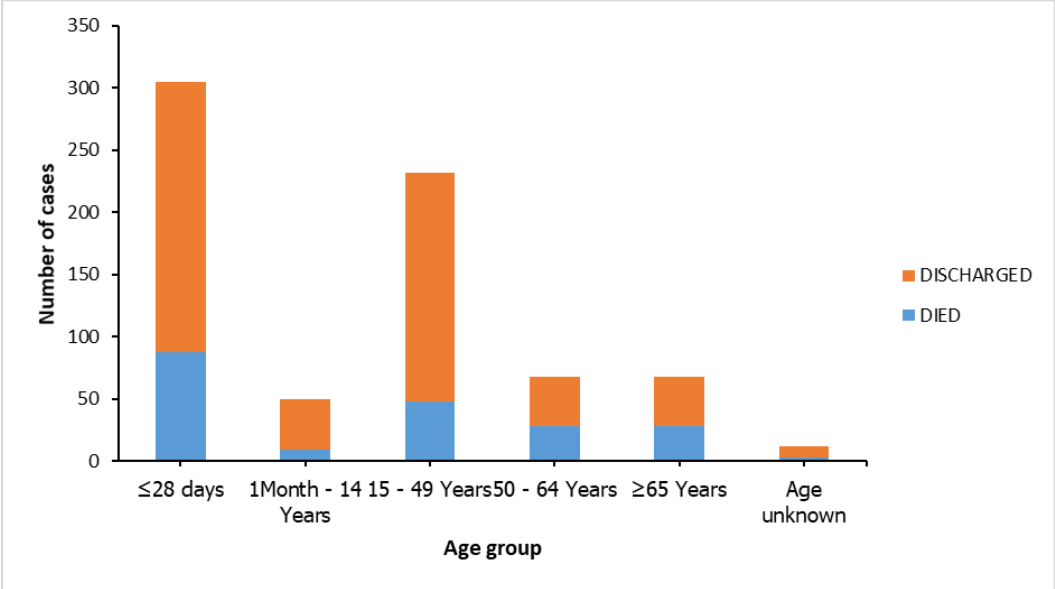

Figure 2. Outcome of laboratory-confirmed listeriosis cases by age group, South Africa, 01 January to 17 May 2018 (n= 735, where outcome is known)

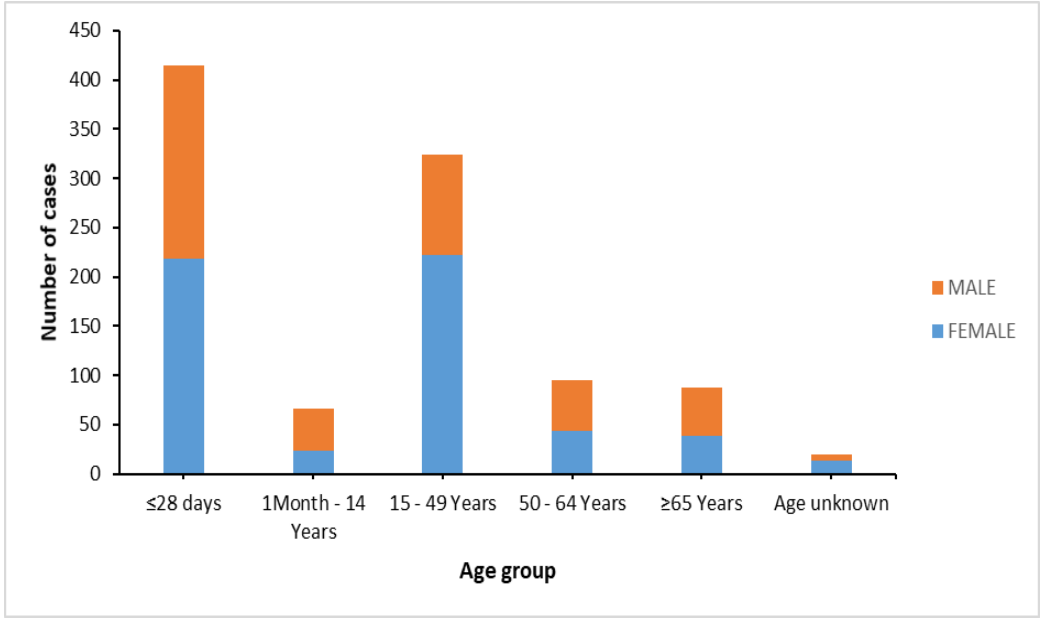

Figure 3. Age distribution of laboratory-confirmed listeriosis cases by gender, South Africa, 01 January to 17 May 2018 (n= 1 007, where age and gender is known)

4 INTERNATIONAL OUTBREAKS OF INTERNATIONAL CONCERN

a Ebola virus disease outbreak, Democratic Republic of Congo

The Government of the Democratic Republic of the Congo (DRC) declared a new outbreak of Ebola virus disease (EVD) in Bikoro in Equateur Province on 8 May 2018. This is DRC's ninth outbreak since the discovery of the virus in the country in 1976, with the most recent occurring in May 2017. The current outbreak is due to the Ebola Zaire subtype. As of 23 May 2018, there have been 52 cases of haemorrhagic fever, including 31 laboratory confirmed, 13 probable and eight suspected (Table 1); 628 contacts have been identified and are being followed-up and monitored. WHO has deployed a total of 123 technical experts in various disciplines to support response efforts in the three hotspots of Bikoro, Iboko and Wangata (Mbandaka). An experimental Ebola vaccine has shown to be highly protective against the Ebola virus. This product, called rVSV-ZEBOV, is currently being used for ring vaccination in the DRC. The vaccination effort, which began on 21 May 2018, will target three rings, particularly around the two cases confirmed by PCR in Bikoro and the confirmed case in Wangata. Initial vaccination is targeting health workers and community contacts and it is expected that up to 1 000 people will be vaccinated during the week of 21-26 May 2018, first in Mbandaka and then Bikoro and other affected areas.

Current risk assessment

Information about the extent of the outbreak remains limited and investigations are ongoing. Currently, WHO considers the public health risk to be very high at the national level due to the serious nature of the disease, insufficient epidemiological information and the delay in the detection of initial cases, which makes it difficult to assess the magnitude and geographical extent of the outbreak. The confirmed case in Mbandaka, a large urban centre located on a major national and international river, with road and air transport axes, increases the risk both of local propagation and further spread within DRC and to neighbouring countries. The risk at the regional level is therefore considered high. WHO is supporting EVD preparedness and readiness activities in nine neighbouring countries namely Angola, Burundi, Central African Republic, Congo, Rwanda, South Sudan, Tanzania, Uganda and Zambia. At the global level, the risk is currently considered low. The International Health Regulations (IHR) Emergency Committee met on Friday 18 May 2018, which concluded that the conditions for a Public Health Emergency of International Concern (PHEIC) had not been met.

Situation in South Africa

As at 23 May 2018 there have been no EVD cases in South Africa associated with the current outbreak in the DRC. In addition, there are no suspected cases of EVD in South Africa at present. South Africa, as a major economic hub in the Southern African Development Community (SADC) region, has high numbers of individuals travelling to and from DRC via airline and road, and we need to be on high alert.

It is extremely important to maintain a very high index of suspicion for the common causes of febrile illness in persons who have travelled to DRC and surrounding countries, including: malaria, dengue fever, yellow fever and other endemic diseases (e.g. typhoid fever and cholera). These may be severe and life-threatening, and healthcare workers are urged to do appropriate tests and institute appropriate therapy as a matter of urgency.

Case definition for a suspected case of imported Ebola haemorrhagic fever

Person presenting with an acute onset of fever who has either:

- Visited or been resident in DRC in the 21 days prior to onset of illness

AND

- Had direct contact with or cared for suspected/confirmed Ebola haemorrhagic fever cases in the 21 days prior to onset of illness, or been hospitalized in DRC

OR

Has an unexplained multisystem illness that is malaria negative

Should a suspected case be identified, the healthcare worker must urgently contact the NICD hotline at 0828839920 (a 24-hour service, for healthcare professionals only) regarding further case evaluation and management. For more information on Ebola virus disease visit the WHO website: www.who.int

Source: Division of Public Health Surveillance and Response (outbreak@nicd.ac.za); WHO: www.who.int

Table 1. Number of Ebola virus disease cases and deaths in DRC from 4 April to 23 May 2018

Total cases (laboratory confirmed, probable & suspected)	Total deaths	CFR	Laboratory-confirmed cases	Probable cases	Date of illness onset in most recent case	Number of cases in healthcare workers
52	22	42.3%	31	13	15 May 2018	5

5 SEASONAL DISEASES

a Influenza

Influenza activity has returned to inter-seasonal levels in most of the countries in the temperate zone of the northern hemisphere except for Eastern Europe. In the temperate zone of the southern hemisphere, influenza activity remains below the seasonal thresholds in most countries.

In South Africa the influenza season started in week 18 (first week of May) when influenza detections in the Viral Watch programme rose above the seasonal threshold, as determined by the Moving Epidemic Method. The number of specimens received from influenza-like illness surveillance programmes (Viral Watch sites and public health clinics) has been increasing since mid-April. Since then, 22 detections of influenza A(H1N1)pdm09 have been made from specimens received from Viral Watch sites (15 from Gauteng Province and 7 from the Western Cape Province), as well as 32 from public health clinics, the majority (31) of which were from KwaZulu-Natal Province.

The average onset of the influenza season over the past 13 years has been week 20 (mid-May), ranging from end April to mid-June.

Influenza is a preventable infectious disease. Influenza vaccine is available at public health facilities and private pharmacies. Public health facilities prioritise individuals at risk for developing influenza and severe influenza illness or complications. Individuals at risk of influenza and severe influenza disease include, among others, pregnant women, and those vulnerable due to pre-existing illnesses or risk factors (diabetes, chronic lung conditions, immunosuppression). Detailed recommendations on target groups, dosages and contraindications for influenza vaccine can be accessed at http://www.nicd.ac.za/wp-content/uploads/2017/03/Influenza-guidelines-rev -23-April-2018.pdf

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

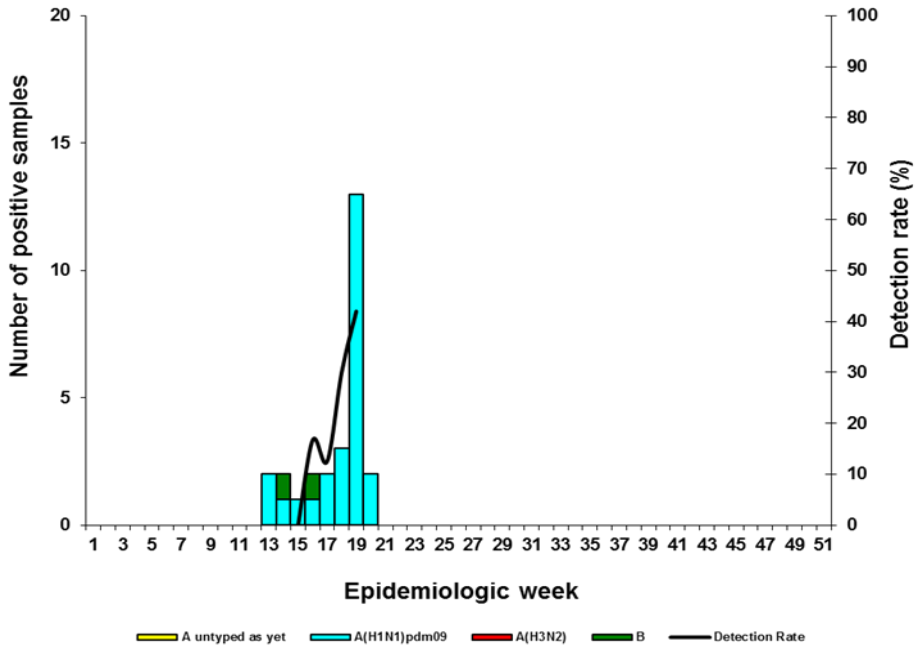

Figure 4.
Viral Watch 2018: Number of positive samples by influenza types and subtypes and detection rate*

*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.

6 A CLUSTER OF NECROTISING ENTEROCOLITIS CASES AT A HOSPITAL IN GAUTENG PROVINCE

a A cluster of cases of necrotising enterocolitis of unknown aetiology in babies admitted to a neonatal unit in Gauteng Province, March—May 2018

Necrotising enterocolitis (NEC) is a common and serious gastrointestinal disease occurring among newborn babies, requiring emergency treatment. NEC is an acute inflammatory disease with a multifactorial and controversial aetiology, attributable to both infective and non-infective factors.

On 4 April 2018, a paediatrician at a Gauteng hospi-

tal reported a cluster of NEC cases among premature newborn babies admitted to the neonatal ward to NICD. NEC was diagnosed in these babies based on clinical signs and radiological imaging according to the modified Bell's NEC stage criteria. Here, we summarise this cluster of cases among the neonates. All the babies were born between March and May 2018. The cases started on 17 March 2018, with subsequent increase from 20 March 2018 onwards (Figure 5).

A total of 30 NEC cases, including 28 (93%) premature and two (7%) full-term babies were reported. Of the 30 cases, six died (20%), 11 discharged (37%), three transferred to other hospitals (10%), and ten (33%) were still admitted. Of these NEC cases, 18 had stage IIA disease (60%), seven stage IIB (23%), two stage IIIA (7%) and three stage IIIB (10%). Six deaths occurred among cases with stage II (n=3, 50%; (stage IIA = 1, stage IIB = 2)) and stage III (n=3, 50%; (stage IIIA = 1, stage IIIB = 2)), aged between 3 to 19 days and were in hospital for 9 to 28 days. The gestational age (GA) at birth ranged from 27 to 38 weeks (median: 31; IQR: 29 - 34). Of the cases, 12 were females (40%). Age of the cases at the date of disease onset ranged from 2 to 59 days (median: 12; IQR: 7 - 20). 11 cases were fed breast milk (mother's expressed breast milk (EBM) or donated EBM (DEBM)) (37%), ten were on mixed feeding (formula milk and EBM/DEBM (33%)), seven were formula fed (23%), and feeding method was unknown in two cases (7%).

Blood cultures were performed for 27 cases (90%). There was no bacterial or fungal growth after 5 days in 13 cases (44%), *Candida parapsilosis* was isolated in three cases (11%), *Candida albicans* was isolated in one case (4%), *Acinetobacter baumannii* isolated in one case (4%), *Escherichia coli* isolated in one (4%), *Klebsiella pnuemoniae* isolated in one (5%), *Staphylococcus aureus* isolated in one (4%), *Klebsiella pneumoniae* and *Staphylococcus aureus* was isolated in one (4%) and coagulase-negative *Staphylococcus* (CNS) was isolated in four cases (15%) and one blood sample was rejected (4%).

Enteric pathogen testing was performed for 10 cases (33%). Enteric viruses were tested for five cases (50%), two cases (20%) had both bacterial and viral tests performed. Four stool samples (40%) were rejected at NHLS, three (30%) were negative for *Salmonella, Shigella and Campylobacter* species and five (50%) were negative for rotavirus, astrovirus, sapovirus, norovirus and adenovirus.

The epidemic curve shows that this is likely to be a propagated outbreak, suggesting person-to-person spread (Figure 5). A propagated outbreak may lead to multiple waves of infection. A cluster of NEC cases in a hospital setting suggests an infectious aetiology. While several pathogens were isolated from blood culture, bacterial or fungal sepsis may be both a trigger or a consequence of NEC. Nevertheless, strict hand hygiene and contact isolation precautions are essential to prevent horizontal spread of potential pathogens. A multi-sectoral provincial outbreak investigation team has been established and investigations are underway to identify the source and the aetiology of this outbreak.

Source: Division of Public Health Surveillance and Response and Centre for Healthcare-associated infections, Antimicrobial Resistance and Mycoses, NICD-NHLS; Clinicians at a hospital in Gauteng Province; outbreak@nicd.ac.za

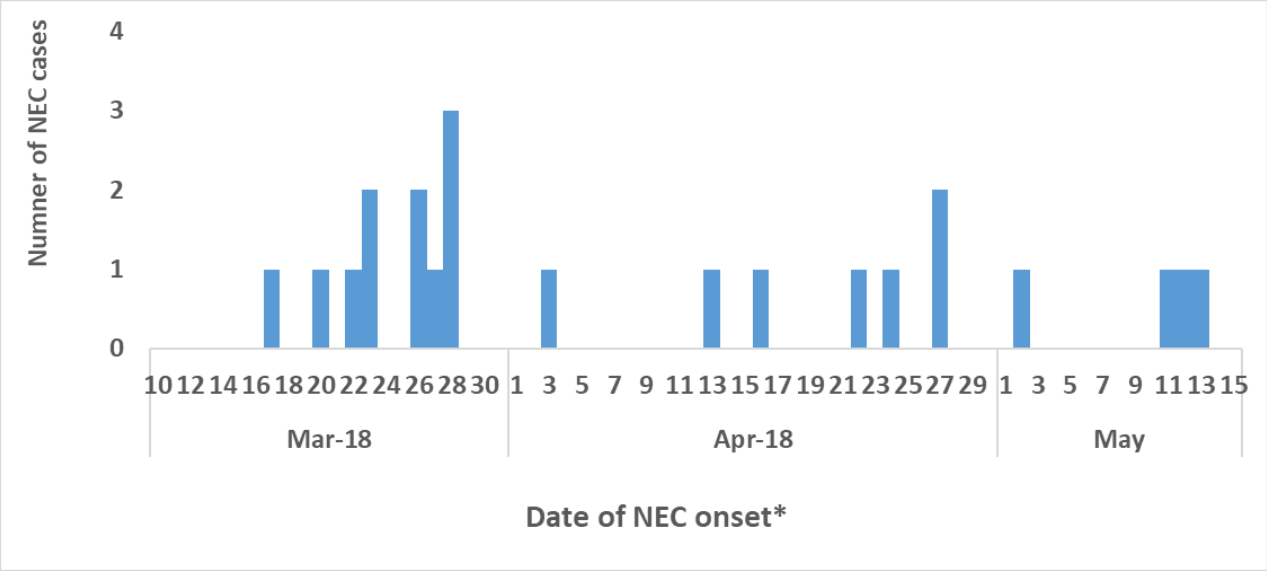

Figure 5. Epidemiological curve showing the number of NEC cases by date of disease onset, March – May 2018. (*Where date of onset was not known, date of diagnosis was used as a proxy (n=1)).

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 9.

1. Ebola virus disease – Democratic Republic of the Congo
See article on page 6.

2. Dengue fever – Réunion, France
As of 23 April, 1 816 autochthonous dengue cases have been confirmed in Réunion in 2018, including 428 probable and confirmed cases reported from 16 -23 April 2018; in comparison, less than 100 cases were reported in all of 2017. The western and southern parts of the island are the most affected. Since the beginning of 2017, the main circulating strain is DENV-2 (537 serotypings); other serotypes have also been detected mainly among imported cases in 2017 (four DENV-1 and one DENV-4 serotypings).

3. Diphtheria: Yemen
As of 12 May 2018, the World Health Organization reports 1 725 suspected cases of diphtheria, with 91 deaths, in 20 of Yemen's 23 provinces. Ibb and al-Hodeidah provinces in central and western Yemen, respectively, were the most affected.

4. Lassa Fever: Nigeria
From 1 January - 6 May 2018, 1 894 suspected cases reported from 21 states. Of these, 423 were confirmed positive, 10 are probable, 1 460 are negative (not a case) and one is awaiting laboratory result (pending). Since the onset of the 2018 outbreak, there have been 106 deaths in confirmed cases, 10 in probable cases. Case fatality rate in confirmed cases is 25.1%.

5. Nipah Virus — India
An outbreak of Nipah virus has struck the south Indian state of Kerala as of 22 May 2018. The virus seems to have spread to the neighbouring Karnataka state with two suspected cases being reported. 12 deaths have been confirmed so far while nine other individuals have tested positive and are being quarantined. Evidence so far points to fruit bats contaminating well water. Nipah virus causes high fever, headache and coma in extreme cases and is spread by fruit bats. Body fluids can cause human-to-human transmission of Nipah, which has a mortality rate of 70% and has no vaccine. Treatment is supportive. All practices to control the spread of the infection have been put in place. Countries such as the United Arab Emirates (UAE) have advised travellers to the southern states of India, to exercise caution. The best method of prevention, according to the United States Centers for Disease Control and Prevention (CDC), is to avoid exposure to bats in endemic areas.

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

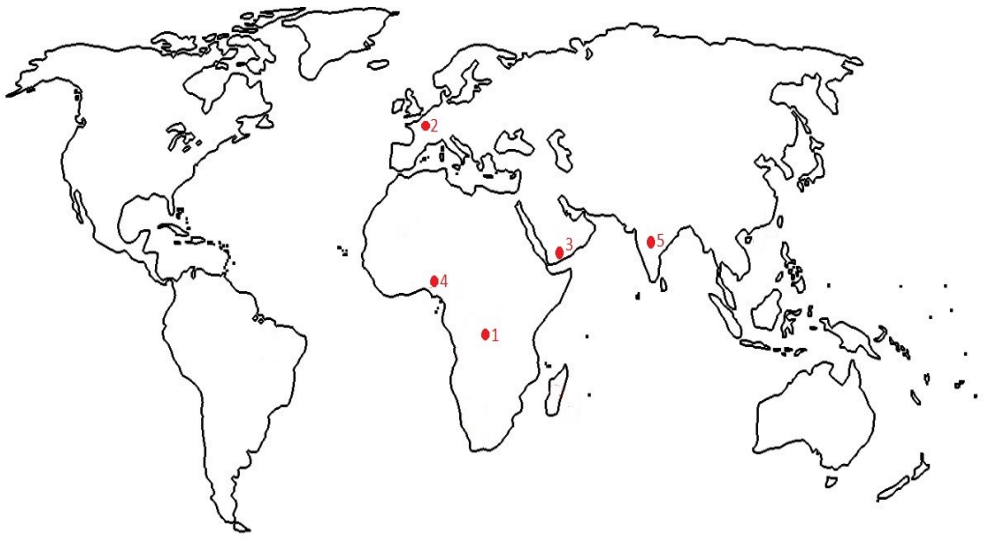

Figure 6.
Current outbreaks that may have implications for travellers. Numbers correspond to text above. The red dot is the approximate location of the outbreak or event.

8 WHO-AFRO: OUTBREAKS AND EMERGENCIES

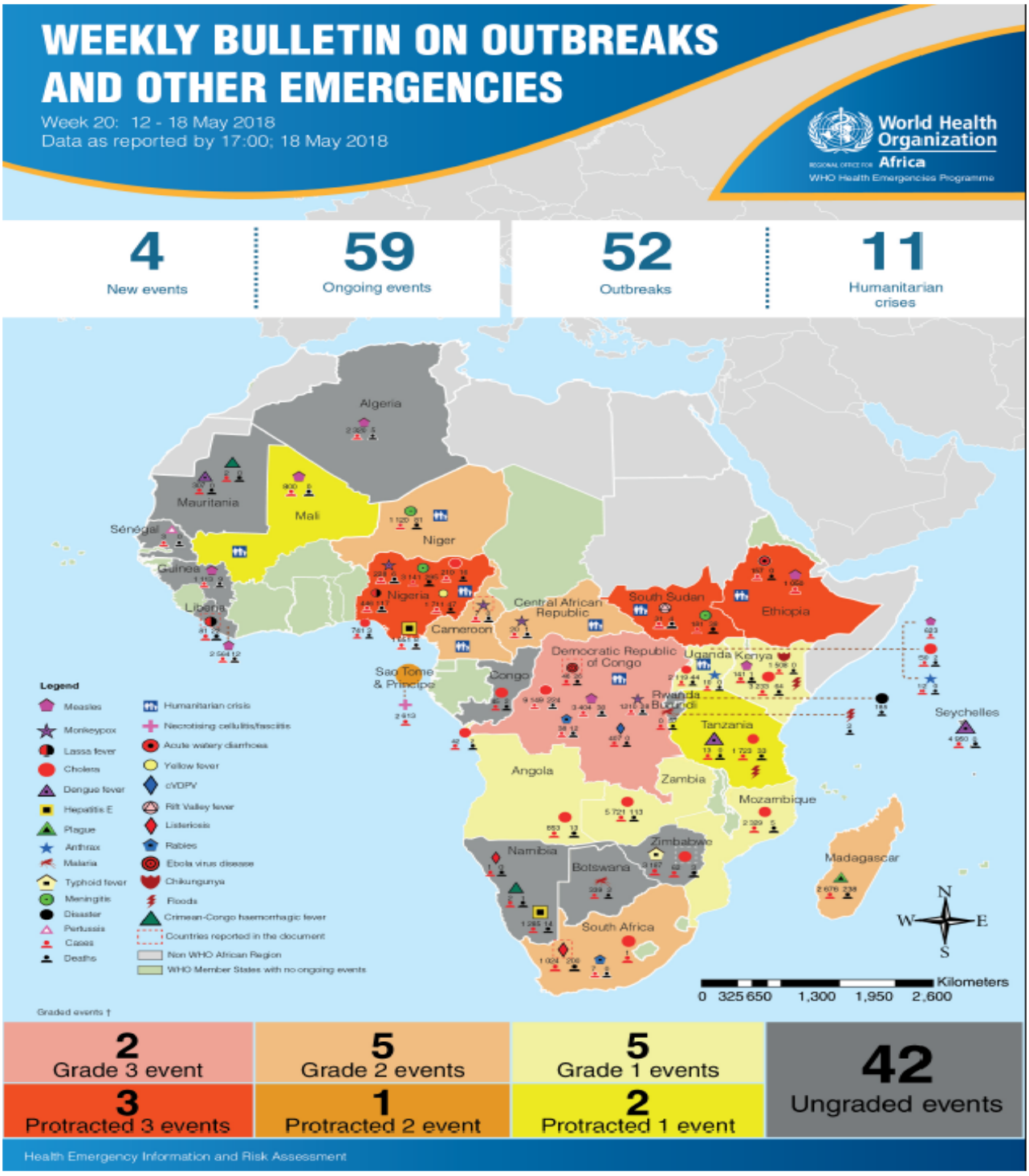

Figure 6. The Weekly WHO Outbreak and Emergencies Bulletin focuses on selected public health emergencies occurring in the WHO African Region. The African Region WHO Health Emergencies Programme is currently monitoring 63 events, of which 52 are outbreaks and 11 humanitarian crises. For more information see link: http://apps.who.int/iris/bitstream/handle/10665/272613/OEW20-1218052018.pdf