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1 ZONOTIC AND VECTOR-BORNE DISEASES

a An update on rabies in South Africa

Two additional cases of human rabies have been reported. The first case involved a 25-year-old man from Gcilima, Ugu District, KwaZulu-Natal Province. The man presented to a local clinic on 20 May 2018 with agitation, hydrophobia, restlessness and hypersalivation. He was bitten on his little finger by a dog in February 2018, but did not seek medical treatment as it was only a minor wound. The dog was killed and buried in the yard without further follow up. The patient died on 23 May. A post-mortem-collected brain sample tested positive for rabies.

The second case involved a five-year-old male child from Flagstaff, Eastern Cape Province. He had an encounter with a stray dog mid-May 2018 (of which the details are unclear), and reportedly, no medical follow up was sought thereafter. The child was admitted to an Eastern Cape hospital, presenting with 'rabies-like' clinical features and died the following day. Saliva swabs were collected post-mortem but tested negative for rabies – not excluding the diagnosis. No brain sample was collected for testing. In the absence of laboratory verification, but in the light of the clinical presentation and outcome and exposure history, this case is defined as a probable rabies case.

In total, nine human cases of rabies have been laboratory confirmed in South Africa for 2018 to date. These cases were reported from the Eastern Cape (n=4) and KwaZulu-Natal (n=5, including the case reported here) provinces. Two probable cases (including the case reported here) were reported from the Eastern Cape Province.

Rabies in humans is preventable through rabies post-exposure prophylaxis (PEP). Timely treatment is required after possible exposure events and includes a series of rabies vaccinations and in most cases the administration of anti-rabies immunoglobulin. For more information about rabies PEP, visit the NICD website at www.nicd.ac.za. Most human rabies cases relate to exposures involving rabid dogs (and cats). Rabies can be prevented in dogs and cats through rabies vaccination – all pet owners are urged to ensure that the immunisation of their pets is kept up to date.

Clinical rabies disease in humans can be investigated through ante-mortem or post-mortem laboratory testing. The former includes the testing of a series of saliva samples, but also cerebrospinal fluid and nuchal biopsies. The gold standard for rabies laboratory confirmation remains the testing of post-mortem-collected brain samples. Laboratory investigation for rabies is recommended as part of differential diagnosis investigation in cases of fatal viral encephalitis without alternative diagnosis, particularly when history of possible exposure to a dog or cat is reported, but also in the absence thereof. For more information about laboratory investigation of suspected rabies cases, visit the NICD website at www.nicd.ac.za.

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

b Human cases of Rift Valley fever on a farm in the Jacobsdal area, Free State Province

The Department of Agriculture, Forestry and Fisheries notified the National Department of Health (NDOH) and National Institute for Communicable Diseases (NICD) of cases of Rift Valley fever (RVF) in 250 sheep on a farm in the Jacobsdal area of Free State Province, on 16 May 2018 (Figure 1). Mosquito samples collected from the affected farm following the confirmation of animal cases, have all tested negative for RVF virus nucleic acid, suggesting that active transmission has diminished below detectable levels, likely due to onset of winter conditions and consequent decreased mosquito populations. From a total of 22 farm workers or residents, 10 were identified to have been exposed to potentially contaminated animal tissues during the sheep outbreak. Eight individuals tested positive by RVF serological assays at NICD, with four of these regarded as confirmed cases and the other four as probable cases, pending testing of further blood samples. Six of eight individuals reported a history of a mild flu-like illness during the preceding month, while two individuals did not experience

any symptoms. No evidence of RVF virus exposure could be found in the remaining two individuals despite them also reporting flu-like illness.

Although RVF outbreaks in SA usually occur at long intervals, the major 2010-2011 outbreak of RVF in SA was preceded by small isolated outbreaks in 2008 and 2009. Therefore, the detection of this isolated outbreak after a period of apparent quiescence, should serve as a warning of potentially more widespread outbreaks in the following couple of years if increased rainfall persists and if farmers do not vaccinate their livestock. Patients presenting with flu-like illness following contact or handling of tissues from diseased livestock should be referred for arbovirus testing at NICD. Healthcare worker guidelines and RVF case investigation forms are available from the NICD website, www.nicd.ac.za.

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

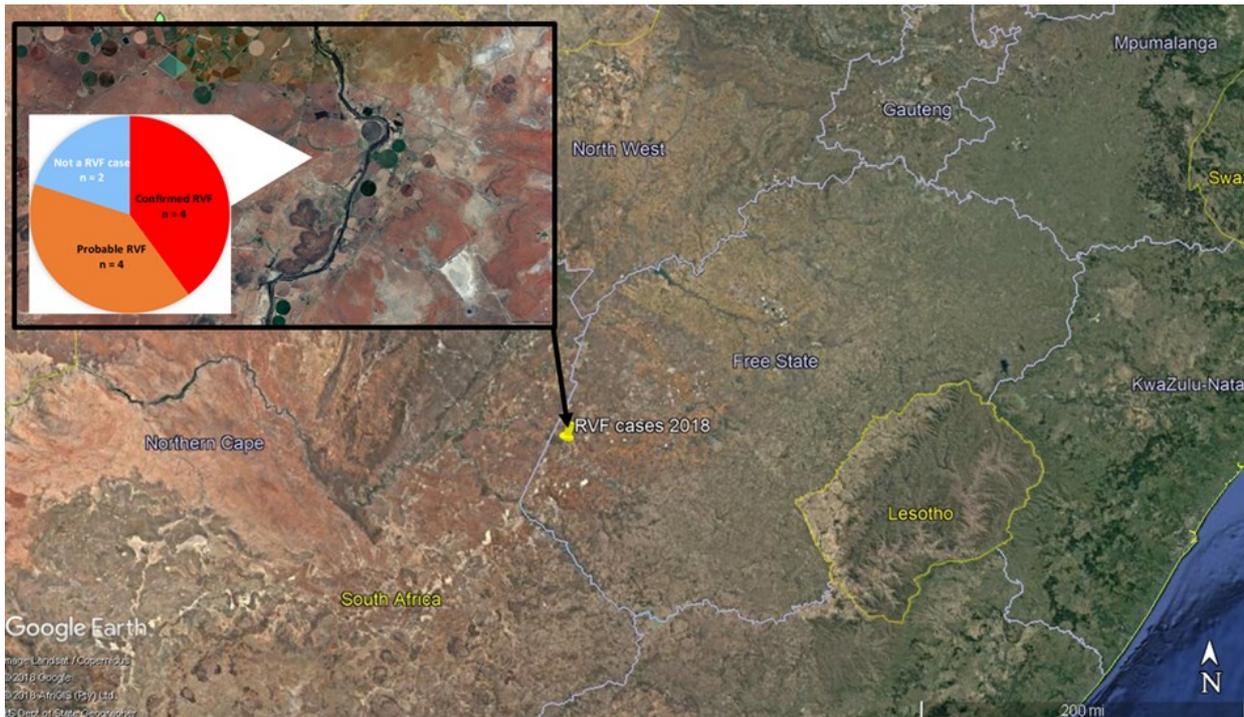


Figure 1. Map showing the location of the isolated 2018 RVF outbreak in Free State Province, and the number of human cases.

2 VACCINE-PREVENTABLE DISEASES

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

The outbreak of diphtheria in eThekweni, KwaZulu-Natal Province is currently under control. No further cases of diphtheria have been identified since 17 May 2018. A cumulative total of three diphtheria cases (2 laboratory-confirmed and 1 probable case) including two deaths was reported from eThekweni south sub-district. In addition, one asymptomatic carrier of laboratory-confirmed toxigenic *Corynebacterium diphtheriae* was identified in a contact epidemiologically linked to two cases (1 confirmed and 1 probable), all from the same household. There was no identifiable link between the household cluster and the index case [NICD Communiqué May 2018, Vol 17(5)].

Outbreak response has included a number of public health interventions, notably case management, contact tracing, provision of chemoprophylaxis to contacts, health promotion activities and vaccination campaigns. Enhanced surveillance is ongoing for any new cases. In addition, molecular characterisation of isolates is being undertaken at the Centre for Respiratory Diseases and Meningitis, NICD.

Although the outbreak is under control, it is crucial that healthcare workers remain vigilant. Accumula-

tion of diphtheria-susceptible individuals results from suboptimal vaccination coverage and waning vaccine-induced immunity. As such, communities (both children and adults) are potentially vulnerable to diphtheria outbreaks. In light of this, clinicians are urged to be on high alert for suspected diphtheria cases and to submit specimens for laboratory testing.

Diphtheria is a vaccine-preventable disease. In South Africa, the Expanded Programme on Immunisation (EPI) childhood immunisation schedule includes six doses of diphtheria toxoid-containing vaccine, given in combination with other antigens in various formulations. The primary vaccination series is given in three doses at 6, 10 and 14 weeks while the booster vaccination series is also given in three doses but at 18 months, 6 and 12 years of age.

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

3 FOOD– AND WATER-BORNE DISEASES

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

Following the recall of implicated products in March 2018, 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 78 cases has been reported. All cases that have been identified after the recall are being investigated.

As of 20 June 2018, a cumulative total of 1 053 laboratory-confirmed listeriosis cases has been reported to NICD since 01 January 2017 (Figure 2). Most cases reported were from Gauteng Province (58%, 613/1 053) followed by Western Cape (13%, 132/1 053) and KwaZulu-Natal (8%, 81/1 053) provinces. Cases have been diagnosed in both public (64%, 677/1 053) and private (36%, 376/1 053) healthcare sectors. Outcome is known for 785/1 053 (75%) patients of whom 212 (27%) have died (Figure 3). Females account for 56% (573/1 027) of cases where gender is reported. Where age was reported (n=1 030), ages range from birth to 93 years (median 18 years). Neonates aged ≤28 days account for 43% (442/1 030) of cases. Of neonatal cases, 95% (421/442) had early-onset disease (birth to ≤6 days) (Figure 4).

All clinical isolates received at NICD are undergoing whole genome sequencing (WGS). A total of 628 clinical isolates has undergone WGS to date; 91% (571/628) are the sequence type 6 (ST6) outbreak strain, and the remainder (non-ST6) belong to seventeen different sequence types (Figure 2). Of the 78 cases that have occurred post-recall, 52 isolates have been received at the NICD and whole genome sequencing completed on 43. Of 43, 31 are outbreak strain ST6 and the remainder (n=12) belong to eight other sequence types (ST1, ST2, ST5, ST7, ST1039, ST554, ST808 and a novel ST).

Activities of the *Listeria* Incident Management team to support the control and ending of the listeria outbreak include:

1. Provision of training in food safety legislation, environmental sampling techniques to 895 environmental health practitioners (EHPs) across the country from 22 May to 12 June 2018.
2. Identification of meat processing facilities through collation of data from district municipalities and other sources. Inspections of these facilities by a dedicated team of EHPs is currently underway.
3. Development of a listeria testing strategy for district municipalities as well as laboratory techniques to support identification and enumeration of *Listeria monocytogenes* from environmental and food samples.
4. An amendment to the Regulations pertaining to the application of the hazard analysis and critical control system (HACCP), (R908 of 2003) was published on 14 June 2018. (Available at www.gpwonline.co.za/Gazettes/Gazettes/41707_14-6_Health.pdf). This legislation requires processed meat manufacturers to implement food safety procedures, and will facilitate enforcement of food safety in the processed meat industry. Revisions to other regulations are also underway.
5. Risk communication and community engagement activities pertaining to food safety have been conducted in Gauteng, Free State, Mpumalanga, Northern Cape, North West and Limpopo provinces.

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)

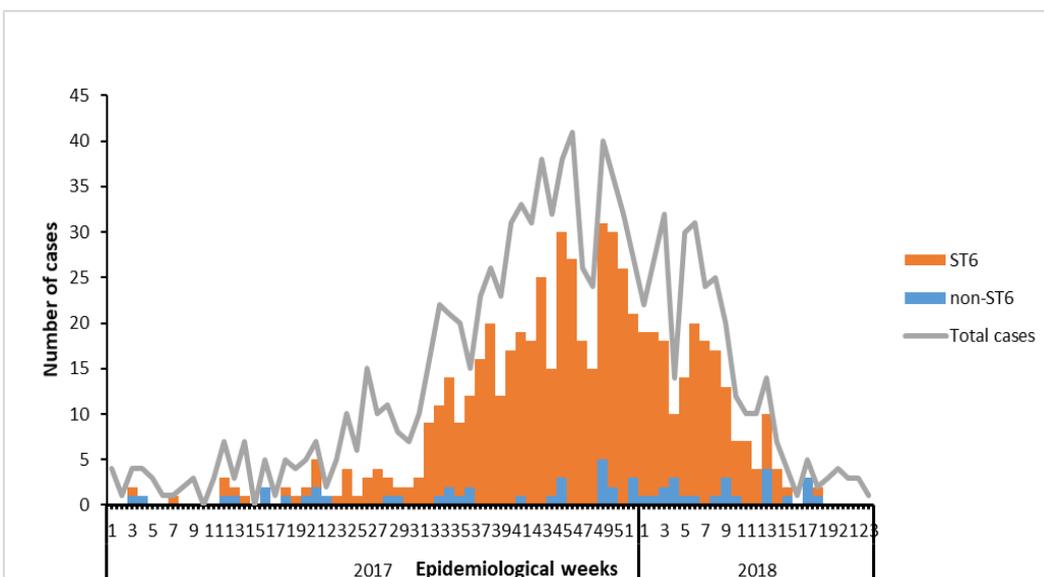


Figure 2. Epidemic curve of laboratory-confirmed listeriosis cases by date of clinical specimen collection (n = 1053) and sequence type (ST) (n = 628) South Africa, 01 January 2017 to 20 June 2018.

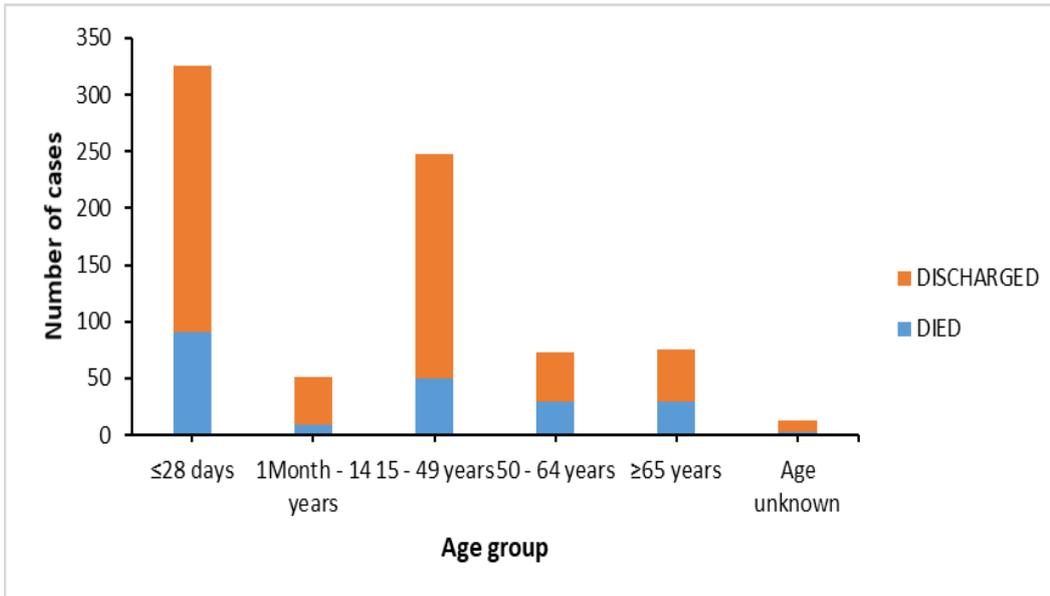


Figure 3. Outcome of laboratory-confirmed listeriosis cases by age group South Africa, 01 January 2017 to 20 June 2018 (n = 785, where outcome is known).

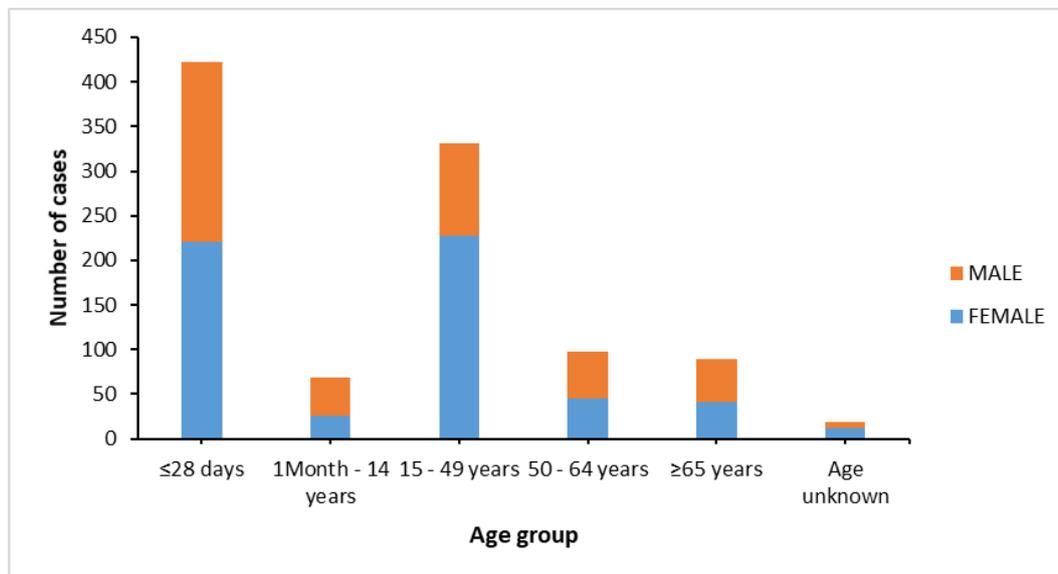


Figure 4. Age distribution of laboratory-confirmed listeriosis cases by gender, South Africa, 01 January 2017 to 20 June 2018 (n = 1027, where gender is known).

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. The index case in this outbreak has not yet been identified and epidemiologic investigations are ongoing, including laboratory testing. The outbreak of EVD in the DRC remains active. One month into the response, there is cautious optimism about the situation in Bikoro and Wangata (especially Mbandaka) health zones where the last confirmed EVD case was reported on 6 June 2018 and died on 9 June 2018. The primary focus of the response has moved from the urban areas of Equateur

Province to the most remote and hard-to-reach places in Itipo and the greater Iboko Health Zone.

Since the beginning of the outbreak, a total of 62 EVD cases and 28 deaths has been reported, as of 17 June 2018. Of the 62 cases, 38 have been laboratory-confirmed, 14 are probable (deaths for which it was not possible to collect laboratory specimens for testing) and 10 are suspected. Of the 52 confirmed and probable cases, 28 have died, giving a case fatality rate of 54%. Fifty-two percent (27) of the confirmed and probable cases are from Iboko, followed by 21 (40%) from Bikoro and four (8%)

from Wangata health zones. A total of five healthcare workers has been affected, with four confirmed cases and two deaths.

The number of contacts requiring follow-up is progressively decreasing, with a total 1 417 completing the mandatory 21-day follow-up period. As of 17 June 2018, a total of 289 contacts were under follow up, of which 276 (96%) were reached on the reporting date. Since the launch of the vaccination exercise on 21 May 2018, a total of 3 017 people has been vaccinated in Iboko (1 374), Wangata (829), Bikoro (726), Ingende (77), and Kinshasa (11), as of 17 June 2018. The targets for vaccination are front-line health professionals, people who have been exposed to confirmed EVD cases and contacts of these contacts. As of 12 June 2018, WHO has deployed a total of 271 technical experts in various critical functions of the Incident Management System (IMS) to support response to the EVD outbreak.

Current risk assessment

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 access, increases the risk both of local propagation and further spread within Democratic Republic of the Congo and to neighbouring countries. The risk at the regional level is therefore considered high.

At a global level, the risk of international spread, including to South Africa, is currently considered to be low. The International Health Regulations (IHR) Emergency Committee met on Friday 18 May 2018 and concluded that the conditions for a Public Health Emergency of International Concern (PHEIC) had not been met. However, if the outbreak expands significantly, or if there is international spread, the Emergency Committee will be recon-

vened to re-evaluate the situation.

Situation in South Africa

As of 17 June 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.

In response to the current outbreak, several measures have been put in place in South Africa. Provincial and Port health officials, as well as healthcare facilities have been alerted. EVD is a standing item in the outbreak response team meetings at national and provincial levels. An Incident Management System (IMS) for EVD has been developed. An action plan, in line with WHO key strategies for prevention and control of EVD is being implemented. As part of the WHO Global Outbreak Alert and Response Network (GOARN), an epidemiologist from NICD is supporting response to EVD in DRC.

Due to high numbers of individuals travelling to and from DRC via airline and road, the country needs to be on high alert. Healthcare workers are urged to have a high index of suspicion and to contact the NICD hotline at 0828839920 (a 24-hour service, for healthcare professionals only) regarding further case evaluation and management should any suspected case be identified. Travellers to DRC must take precautions against malaria as per routine practice. Malaria must be considered a high priority in the investigation and management of any febrile traveller.

For more information on Ebola virus disease, including case definition for a suspected case of imported Ebola haemorrhagic fever, visit the NICD website at www.nicd.ac.za. Up to date situational reports may also be accessed from the WHO website: www.who.int.

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

5 SEASONAL DISEASES

a Influenza

The 2018 influenza season, which started in week 18 (first week of May) continues. The number of specimens submitted by Viral Watch sites increased from an average of 10 specimens per week during March and April, 40 per week during May, to 103 for the first week of June.

Since the beginning of May, a total of 235 influenza detections has been made, the majority of which has been influenza A(H1N1)pdm09 which was detected in 232 patients. This was the strain that emerged globally in 2009, and which for the past several years has behaved like any strain of seasonal influenza. Patients infected with this strain

should be treated like any other seasonal influenza case. There is **NO** requirement to report or notify individual cases of this strain of influenza. In addition, influenza A(H3N2) and influenza B have been detected in one patient each, and one influenza A is to be subtyped. Influenza has been detected in all eight provinces with Viral Watch sites.

Individuals who have not received influenza vaccine for 2018, are encouraged to get vaccinated, especially those who are at risk of developing severe influenza illness or complications. Individuals at risk of influenza and severe disease include among others the pregnant women, and those vulnerable due

to pre-existing illnesses or risk factors e.g. HIV, diabetes, chronic medical conditions. Clinicians are encouraged to vaccinate individuals in the groups that are targeted for influenza vaccination. Recommendations on target groups, dosages and contraindications for the 2018 influenza vaccine, and influenza antiviral treatment are available in the 2018 influenza guidelines, available at [http://](http://www.nicd.ac.za/wp-content/uploads/2017/03/Influenza-guidelines-rev-23-April-2018.pdf)

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)

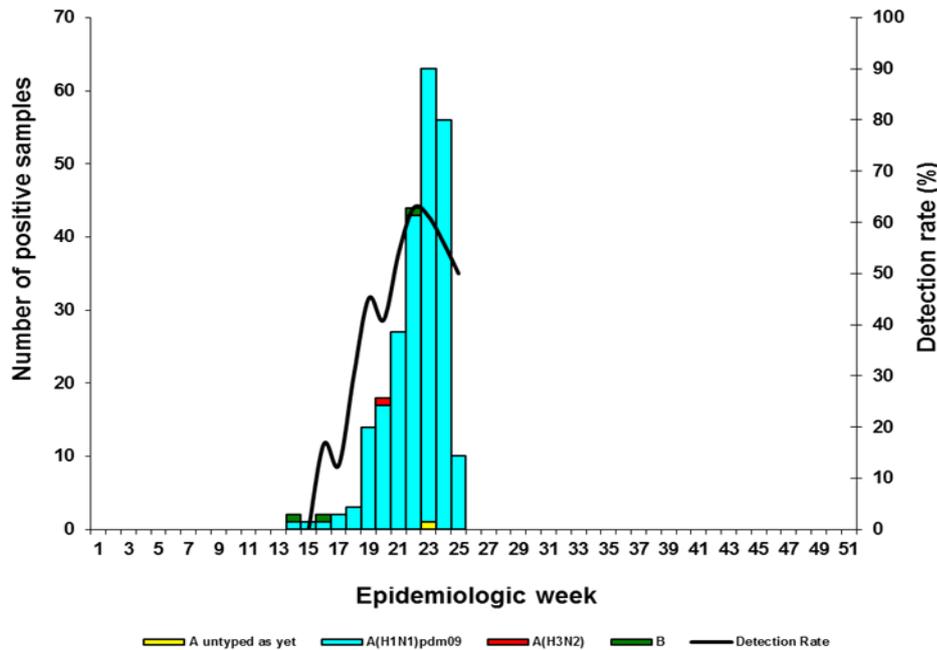


Figure 5. Viral Watch 2018: Number of positive samples by influenza types and subtypes and detection rate*

*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.

b Invasive meningococcal disease surveillance update: January to June 2018

Although meningococcal disease occurs year round, winter indicates the beginning of the meningococcal season. Clinicians should be vigilant when patients present with symptoms suggestive of meningitis or bacteraemia and not delay in providing appropriate antibiotic treatment targeting meningococcal disease. Meningococcal disease is a Category 1 notifiable medical condition (NMC). All clinically suspected cases of meningococcal disease should be notified immediately to the provincial Communicable Disease Control Coordinators to ensure appropriate contact tracing, responsible prescribing of chemoprophylaxis and case counting.

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 email a copy to NMCSurveillanceReport@nicd.ac.za and to your local or district Communicable Diseases Control focal person. To download the electronic App, go to www.nicd.ac.za, follow the link to Notifiable Medical Conditions and click on NMC Electronic App.

Up until week 23 (ending 9 June 2018), 35 cases of laboratory-confirmed invasive meningococcal disease (IMD) had been reported through the GERMS-

SA surveillance network. This is slightly less than the 40 IMD cases reported in 2017 for the same time period. Most 2018 cases were from Gauteng Province (n=15), followed by Eastern Cape (8), Western Cape (7) and KwaZulu-Natal (3) provinces. Mpumalanga and Free State provinces each reported one case. Forty-two percent (14/33) of IMD cases with known age were <5 years old. Sixty percent (21/35) of patients had *Neisseria meningitidis* (NM) cultured from cerebrospinal fluid, whilst the remainder were from blood cultures. Of the 26 NM isolates serogrouped, serogroup B was the most predominant (n=10), followed by W (7), Y (6) and C (3). Whilst the other serogroups occurred across all age categories, all serogroup Y cases were in persons ≥5 years of age (Figure 6).

As part of ongoing surveillance, Centre for Respiratory Diseases and Meningitis (CRDM) at the NICD offers meningococcal isolate confirmation/serogrouping and NM detection by PCR of culture-negative/autopsy cases, free of charge. For more information, please contact the CRDM laboratory at the NICD, 011 555 0327.

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

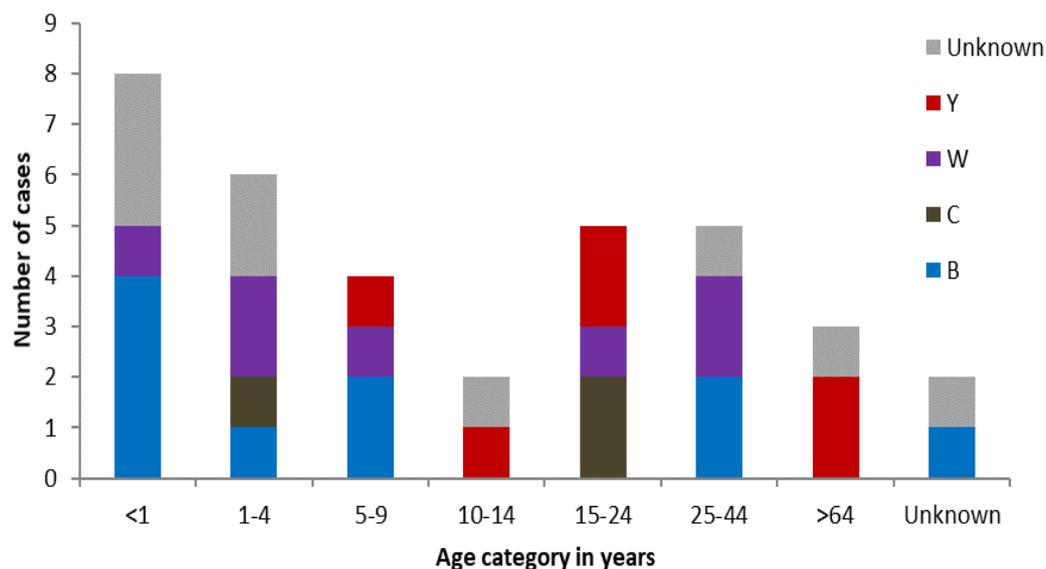


Figure 6. Invasive meningococcal disease in South Africa by age category and serogroup reported to GERMS-SA surveillance programme, 1 January 2018 – 9 June 2018, n=35.

6 AN OUTBREAK OF NECROTISING ENTEROCOLITIS AT A HOSPITAL IN GAUTENG PROVINCE

a An update on the outbreak of necrotising enterocolitis of unknown aetiology in babies admitted to a neonatal unit in Gauteng Province, March–June 2018

An unusual number of necrotising enterocolitis (NEC) cases was reported from a neonatal unit in a Gauteng hospital, with cases starting from March 2018 [NICD Communiqué May 2018, Vol 17(5)]. Additional cases continued to be reported (Figure 7). The number of NEC cases is higher in 2018 compared to 2017 during the same period (January - June) (Figure 8).

Since the last Communiqué, seven new cases have been identified, bringing the cumulative total to 37 NEC cases, including 35 (95%) premature and two (5%) full-term babies for the period March to 20 June 2018. Eight (22%) of the 37 cases died. Of these NEC cases, 21 had stage IIA disease (57%), nine stage IIB (24%), three stage IIIA (8%) and four stage IIIB (11%). The gestational age (GA) at birth ranged from 27 to 38 weeks (median: 32; IQR: 29 - 34). The majority (59%, n= 22/37) of the cases were males. The age of the cases at the date of disease onset ranged from 2 to 59 days (median: 12; IQR: 7 - 21). Children aged <1 month accounted for 89% of the cases, and 11% were aged between 1 – 2 months. Eleven cases were fed breast milk (mother's expressed breast milk (EBM) or donated EBM (DEBM)) (30%), 12 were on mixed feeding (formula milk and EBM/DEBM (32%)), 10 were formula fed (27%), and feeding method was unknown in four cases (11%).

Blood cultures were performed for 33 cases (89%).

There was no bacterial or fungal growth after 5 days in 16 cases (49%), *Candida parapsilosis* was isolated in three cases (9%), *Candida albicans* was isolated in one case (3%), *Acinetobacter baumannii* isolated in one case (3%), *Escherichia coli* isolated in one (3%), *Klebsiella pneumoniae* isolated in one (3%), *Staphylococcus aureus* isolated in one (3%), *Klebsiella pneumoniae* and *S. aureus* was isolated in one (3%), coagulase-negative *Staphylococcus* was isolated in seven cases (21%) and one blood sample was rejected (3%).

Stool and rectal swab samples were tested for enteric pathogens in 17 cases (46%). Of the 17 cases, viruses were tested for in eight cases (47%), bacteria tested in 11 (65%), two (12%) cases had both bacterial and viral tests performed. Of the 11 samples tested for bacteria, three (27%) stool samples were rejected, eight were negative for *Salmonella*, *Shigella* and *Campylobacter* or enterohaemorrhagic *Escherichia coli* (73%). All eight samples tested for viruses were negative for rotavirus, astrovirus, sapovirus, norovirus and adenovirus. Routine milk formula testing from February to June 2018 indicated presence of *Bacillus cereus* and *Streptococcus* species in mixed and dry powder milk. There was no bacterial growth in all the surface swabs collected from the ward and nurses'/mothers' hands. The infection prevention and control (IPC) audit, environmental health inspection and healthcare worker in-

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 9 on page 10.

1. Rift Valley fever: Kenya

On 8 June 2018, the Ministry of Health for Kenya confirmed an outbreak of Rift Valley fever. As of 16 June, a total of 26 human cases has been reported from Wajir (24 cases) and Marsabit (2 cases) counties, including seven confirmed cases and six deaths (case fatality ratio (CFR) = 23%). A high number of deaths and abortions among livestock, including camels and goats, has been reported in Garissa, Kadjiado, Kitui, Marsabit, Tana River, and Wajir counties. People living in these counties were reportedly consuming meat from dead and sick animals.

2. Nipah virus: India

The deadly Nipah virus that struck Kozhikode district in Kerala in May 2018 and claimed 16 lives in the state has been finally contained [NICD Communiqué May 2018, Vol 17(5)], and the last of the 2 positive cases have fully recovered, said Kerala Health Minister KK Shailaja on Sunday 10 June 2018. The virus struck at Kozhikode, which saw 13 people dying, while 3 deaths were reported from nearby Malappuram district, and more than 2000 patients with fever were kept under close observation. After presiding over a review meeting, the Health Minister told media persons that the virus scare is finally over. The state department had confirmed that nobody has been affected with Nipah virus since 17 May 2018. In a press meeting, KK Shylaja said that the anxieties about the second phase of Nipah virus infection have been allayed but added that vigilance will continue till 30 June 2018.

3. Monkeypox: Cameroon

From 30 April through 30 May 2018, a total of 16 cases (one confirmed and 15 suspected cases) was reported to the Directorate of Control of Epidemic and Pandemic diseases (DLMEP). These cases were located in five districts of Cameroon: Njikwa Health district (n=6 suspected, n=1 confirmed) Akwaya Health District (n=6 suspected), Biyem-Assi Health

District (n=1 suspected), Bertoua Health District (n=1 suspected), and Fotokol Health district (n=1 suspected). The age of the 16 cases range from one month to 58 years, with a median age of 13 years. More than half of the 16 cases are male (n=9). Additionally, all cases had a fever and a body rash. No deaths were reported. Monkeypox has not been reported in the nation since 1989.

4. Measles: Brazil

There is an ongoing measles outbreak in Brazil. From 1 January through 23 May 2018, there were 995 reported cases (Amazonas State, n=611, and Roraima State n=384). Of these cases, 114 have been laboratory confirmed (30 in Amazonas and 84 in Roraima), including two deaths. Eighty-three cases were discarded and 798 remain under investigation. It is important to consider that there are pending laboratory results for 798 suspected cases under investigation. An exponential increase of confirmed cases could be observed in the coming weeks.

5. Middle East respiratory syndrome coronavirus (MERS-CoV) – Saudi Arabia

Between 12 January through 31 May 2018, the Kingdom of Saudi Arabia reported 75 laboratory-confirmed cases of Middle East respiratory syndrome coronavirus (MERS-CoV), including 23 deaths. Among these 75 cases, 21 cases were part of four distinct clusters (2 healthcare and 2 household clusters). As of 31 May, the total global number of laboratory-confirmed cases of MERS-CoV reported since 2012 is 2,220, including 1,844 cases that have been reported from the Kingdom of Saudi Arabia. Among these cases, 790 MERS-CoV associated deaths have occurred since September 2012.

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



Figure 9. 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

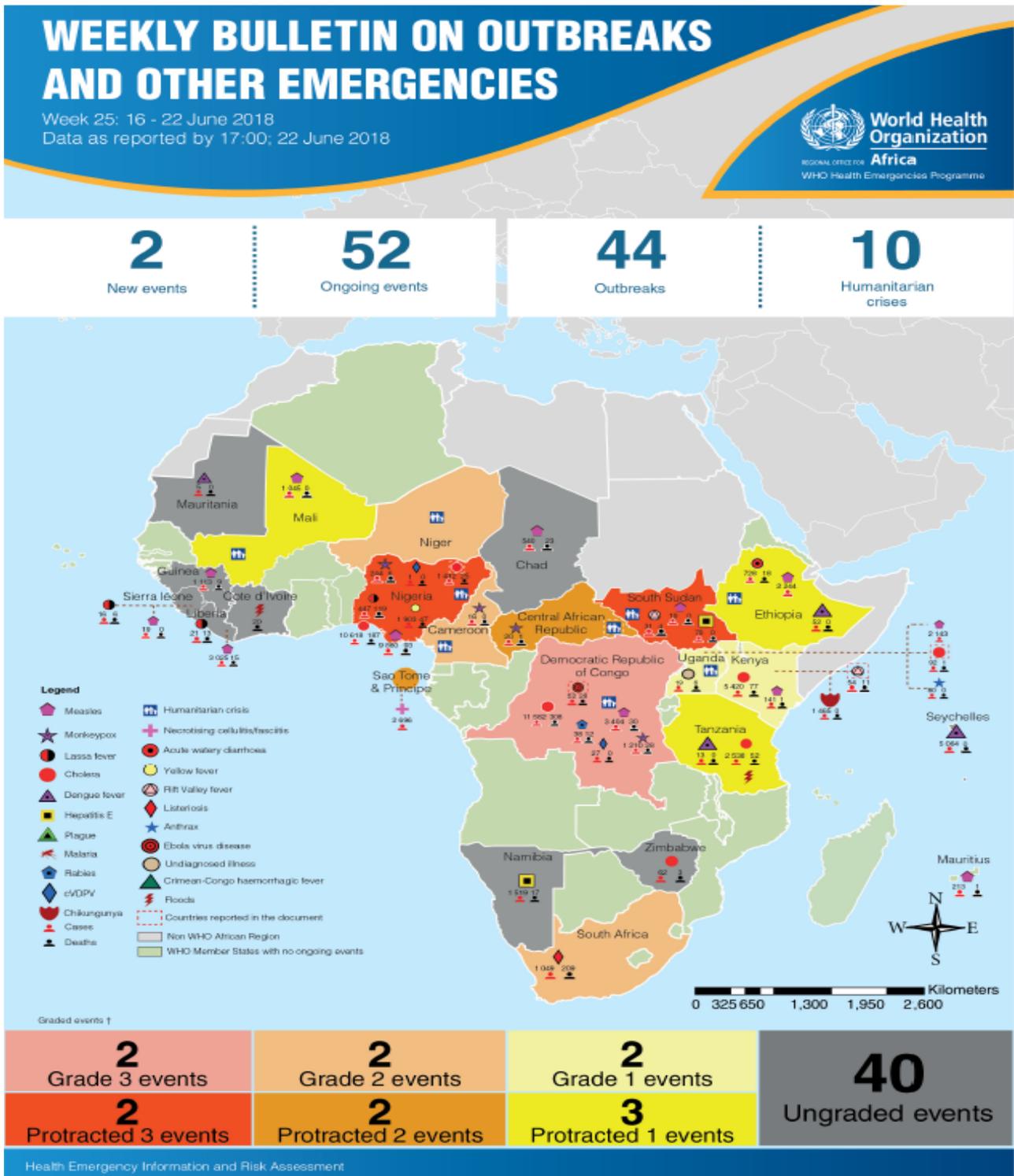


Figure 10. The Weekly WHO Outbreak and Emergencies Bulletin focuses on selected public health emergencies occurring in the WHO African Region. The African Region WHO Health Emergencies Programme is currently monitoring 54 events, of which 44 are outbreaks and 10 humanitarian crises. For more information see link: http://apps.who.int/iris/bitstream/handle/10665/272939/OEW25_1622062018.pdf