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EDITORIAL

This edition of the NICD Communiqué includes a guide for healthcare workers and laboratorians on Ebola preparedness in light of the ongoing outbreak in the Democratic Republic of Congo. Although South Africa remains at low risk for importation, healthcare workers are urged to be cognisant of the possible clinical presentations so that suspected cases can be quickly identified and contained.

We provide an update on rabies in the country, as well as an update on listeria surveillance in South Africa over the past year. We also issue an alert on dengue fever for travellers to affected countries, including Brazil, Colombia and Mexico. Dengue fever is not endemic to South Africa, and is associated with travellers returning from dengue-transmission regions.

We report on an outbreak of methicillin-resistant *Staphylococcus aureus* infection in a neonatal unit in Gauteng Province, and the consequent colonisation survey conducted by the infection prevention and control (IPC) coordinator. We give a round-up of the seasonal diseases - with the end of the 2019 influenza season, a cluster of meningococcal cases, and malaria gearing up as the warmer months approach.

As usual, we include the WHO-AFRO infographic on public health and humanitarian events in the AFRO region, and a summary of the infectious disease outbreaks of importance to South African travellers in our 'Beyond our Borders' section.

1 EBOLA PREPAREDNESS IN SOUTH AFRICA

a A guide for healthcare workers and laboratorians

The International Health Regulations Emergency Committee declared the current outbreak of Ebola virus disease (EVD) in the Democratic Republic of Congo as a Public Health Emergency of International Concern (PHEIC) on 17 July 2019. A total of 3 129 EVD cases has been reported since 1 August 2018 to date; with 3 018 confirmed cases and 111 probable cases, of which 2 096 cases died (overall case fatality ratio 67%). The outbreak is occurring in North Kivu, South Kivu and Ituri provinces, with three exported cases detected in Uganda. Both adults and children have been affected. There have been 159 cases (5% of all confirmed and probable cases) reported in healthcare workers. As at 23 September 2019 there are no confirmed or suspected cases of EVD in South Africa, and there is a low risk that EVD may be exported to South Africa.

Despite the low risk of importations to South Africa, healthcare workers countrywide should be on alert for suspected EVD cases. All health facilities must be equipped to identify and effectively manage the first case.

How is the Ebola virus transmitted?

Human-to-human transmission of the virus occurs following contact with blood or other infectious bodily fluids (may include stool, urine, saliva and semen) of an infected person through broken skin or mucous membranes, including the nose, eyes and mouth of a contact. Infection can also occur following direct contact with environments that are contaminated with an Ebola patient's blood or body fluids, such as soiled clothing, bed linen, or used needles. Burial ceremonies in which mourners wash the body of the deceased person can spread infection. Ebola virus is not spread in the air or in water, nor through being in the same room as an infected person where the above detailed contact has not taken place. The virus may be aerosolised in the hospital setting through suctioning or inserting and removal of tubes.

Identifying a possible Ebola case:

An accurate travel and occupational history is key to identifying potential cases:

- Travel history: persons may have travelled to affected outbreak areas for family funerals or occupational reasons.
- Occupation as healthcare worker (HCW) may increase the risk of EVD exposure. There must be a high index of suspicion when a HCW develops unexplained fever, fatigue and gastrointestinal (GIT) symptoms, even amongst HCWs who have been vaccinated against EVD.

EVD case definitions:

A **suspected case** of EVD:

Any person presenting with one or more of the following symptoms: an acute onset of **fever ($\geq 38^{\circ}\text{C}$)**, **nausea**, **vomiting**, **diarrhoea**, **severe headache**, **muscle pain**, **abdominal pain**, or **unexplained haemorrhage** **AND** who has **visited or been resident in the outbreak areas** (North Kivu, South Kivu, Ituri) of the Democratic Republic of Congo, in **the 21 days prior to onset** of illness **AND had direct contact** with or **cared for** suspected/confirmed EVD cases in the 21 days prior to onset of illness **OR** has unexplained multi-system illness that is **malaria-negative**.

Prevention of Ebola virus transmission:

Transmission to healthcare workers has been reported when appropriate infection control measures have not been observed. Practice should include basic hand hygiene, the use of personal protective equipment (PPE) including protection of mucous membranes of eyes, nose and mouth, and covering of skin, hair and clothing (to prevent inadvertent contamination of mucous membranes after removal of PPE), safe injection practices and safe burial practices. Healthcare workers caring for patients with suspected or confirmed Ebola virus should apply, in addition to standard precautions, other infection control measures to avoid any exposure to the patient's blood and body fluids, and direct unprotected contact with contaminated environment.

When in close contact (within 1 metre) of patients with Ebola, healthcare workers should wear face protection (a face shield or a medical mask and goggles), a clean non-sterile long-sleeved gown, and gloves.

In a laboratory, samples taken from suspected Ebola cases for diagnosis should be handled by trained laboratory staff and processed in suitably equipped laboratories.

Points to remember:

1. Front-line healthcare workers must have a high index of suspicion for Ebola, despite low risk in SA.
2. Be aware of common symptoms which are fever, fatigue and GIT symptoms in persons with appropriate travel history, and remember bleeding is not common!!
3. It is important to exclude **malaria** in these cases.
4. All HCWs must be aware of referral pathways for suspected cases.
5. Men who have recovered from the disease can still transmit the virus through semen, up to seven weeks after recovery

from illness.

Specimen collection for confirmation of EVD:

1. Detailed specimen collection and submission guidelines are available from the NICD website.
2. Please inform the NICD hotline (082-883-9920) of the intention to test for EVD.
3. Submit both a clotted blood (red or yellow top tube) and EDTA treated tube (purple top tube) per patient.
4. Specimens should be packaged in accordance with the guidelines for the transport of dangerous biological goods (triple packaging using absorbent material) and transported directly and urgently to: **Centre for Emerging Zoonotic and Parasitic Diseases, Special Viral Pathogens Laboratory, National Institute for Communicable Diseases (NICD) National Health Laboratory Service (NHLS), No. 1 Modderfontein Rd, Sandringham, 2192.**
5. Ensure that completed case investigation form (available on NICD website) accompanies the specimens.
6. Samples should be kept cold during transport (cold packs are sufficient).
7. The NICD offers a full repertoire of laboratory testing for EVD. Test requests need only specify for Ebola investigation. The NICD will provide appropriate testing for each case.

Management and infection prevention & control measures for a suspected case:

As soon as the decision is made to test for EVD albeit that the likelihood of a positive result is low, HCW should take measures to minimise exposure of medical staff, other patients and relatives.

1. Establish that the patient meets the case definition for a suspected case of EVD.
2. Immediately implement appropriate infection control procedures for a suspected case (see NICD website).
3. Inform the management and infection con-

trol officers at the medical facility concerned of the existence of the suspected case of EVD.

4. Notify the local and provincial communicable disease control coordinator (CDCC) telephonically.
5. Inform the NICD hotline (082-883-9920).
6. Manage the patient appropriately using supportive therapy including fluid management, provision of oxygen, maintenance of blood pressure and treatment of complicating secondary infections (see NICD website). Administer such life-saving therapy as may be necessary and possible.
7. Assess the status of the patient as either low, moderate or high risk (see NICD website).
8. Safely collect specimens using procedures on the NICD website. Complete a case investigation form (CIF) (on NICD website) and submit specimens and CIF to the NICD.
9. If EVD is suspected and the case definition is met, organise a transfer to an EVD designated hospital.
10. Notify the suspected case telephonically or through the NMC App – complete the CIF. Submit forms to provincial CDCC.

National guidelines for the Recognition and Management of Viral Haemorrhagic Fevers and other resources are available at www.nicd.ac.za under 'Ebola' on the 'Diseases A-Z' tab

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

2 ZOOBOTIC AND VECTOR-BORNE DISEASES

a An update on rabies in South Africa

A seven-year-old male child from Lusikisiki (located 45 km inland of Port St. John's), Eastern Cape Province, was admitted to hospital with hallucinations and hydrophobia. The patient died shortly after admission on 7 August 2019. Although no dog bite history was reported for the case, the patient presented with clinical features and outcome of rabies virus infection. In addition, the patient was from an area where both human and dog-associated rabies have been reported in the recent past. Rabies was confirmed by direct fluorescent antibody testing on post-mortem collected brain samples on 9 September 2019.

Apart from the case reported here, a further eight cases of human rabies have been confirmed for 2019 to date. These cases were reported from the Eastern Cape (n=3), KwaZulu-Natal (n=3) and Limpopo (n=2) provinces. Two more deaths were classified as probable rabies cases, one each from KwaZulu-Natal and Eastern Cape provinces.

World Rabies Day is celebrated on 28 September in order to raise awareness and mobilise action for the prevention and control of rabies. Rabies in domestic dogs is still reported from many developing countries in Africa, Asia and Latin America, despite the disease being controllable in this species. Further-

more, human rabies cases are most often linked to exposures to rabid domestic dogs, and up to 59 000 human cases are reported annually in countries where rabies in dogs is still reported. This year's theme for World Rabies Day is 'Rabies: Vaccinate to Eliminate'. The message reiterates the pivotal intervention for human rabies, namely, the vaccination of domestic dogs. In South Africa, by law, the responsibility lies on pet owners to ensure that their dogs (and cats) are vaccinated against rabies. This intervention will not only protect their pets, but also their loved ones and others who may have contact with their pets. In addition, vaccination drives and clinics are available from many sources, including campaigns by provincial veterinary services, but

also many non-governmental and welfare organisations.

For more information on rabies and how to control and prevent the disease, visit the NICD website (www.nicd.ac.za) and the Global Alliance for Rabies Control website (<https://rabiesalliance.org/>)

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



b Dengue fever alert for travellers

Dengue fever is not endemic in South Africa, and therefore local transmission does not occur. Cases reported in South Africa are associated with travellers returning from dengue-endemic regions such as South-East Asia, the Western Pacific, the Americas (Central and the northern parts of South America), Central, West and East Africa and the Eastern Mediterranean. A number of countries have reported increased dengue cases in 2019 (Figure 1).

In the Region of the Americas, the numbers of cases reported in 2019 as of 13 September have been higher than the annual totals reported in 2016, 2017 and 2018, and the total by the end of the year will likely exceed the total reported in the epidemic year of 2015. The 10 most affected countries in terms of new cases per 100 000 inhabitants are Nicaragua, Brazil, Honduras, Belize, Colombia, El Salvador, Paraguay, Guatemala, Mexico and Venezuela. In Southeast Asia, Bangladesh is experiencing its biggest outbreak in two decades. Other countries reporting high increase in dengue cases include Myanmar, Thailand, Cambodia, Laos, Vietnam, Maldives, Malaysia, Philippines, Singapore, Taiwan, Vietnam, Sri Lanka, Pakistan and Nepal. In Africa, affected areas include Côte d'Ivoire and Tanzania. Réunion Island and New Caledonia are also affected.

The differential diagnosis of fever in a traveller returning from Asia, South- and Central America, West, Central and East Africa, includes malaria, dengue, hepatitis A, typhoid fever, invasive bacterial diarrhoea, rickettsial infections, or causes not related to travel. The typical clinical presentation in

uncomplicated dengue includes fever, severe headache, pain behind the eyes, muscle and joint pains, nausea, vomiting, swollen glands, a maculopapular rash and leukopenia. Although rare, dengue haemorrhagic fever (DHF) is a potentially fatal complication of dengue that can cause an enlarged liver and, in severe cases, can lead to shock. Thrombocytopenia is common in DHF. The NICD provides comprehensive and specialised laboratory diagnostic investigation for dengue fever, which may include a differential workup for other arboviral infections. The timing of sample collection after disease onset is important for the interpretation of laboratory results. The presence of dengue virus is consistent with acute-phase infection, and is typically detectable within one to two days following infection, and up to nine days after disease onset. Antibodies to the dengue virus may be detected from day 3 – 7 after symptom onset. If initial antibody tests are negative, a convalescent blood sample with the second specimen collected two weeks after the acute phase of infection will demonstrate seroconversion.

There is no specific treatment for dengue virus infections apart from symptomatic management. Maintenance of the patient's body fluid volume is critical to severe dengue care. While a dengue fever vaccine has been developed, its use is restricted to residents of countries that are endemic to dengue. As such, for tourists, the only way to prevent infection at present is to avoid mosquito bites. These mosquitoes bite during the day, especially late afternoon. Therefore, this is an important time to ensure personal protection using DEET contain-

ing repellants applied to exposed areas.

While we do have the vectors in some parts of South Africa, the viraemia is short-lived. Therefore, the likelihood of introduction of dengue here is remote, as it is unlikely that a vector will come into contact with one viraemic individual.

Source: Pan American Health Organization / World Health Organization; World Health Organization. Western Pacific region; European Centre for Disease Prevention and Control; Centre for Emerging Zoonotic and Parasitic Diseases, NICD-NHLS; januszp@nicd.ac.za



Figure 1. Geographical distribution of dengue cases reported worldwide – June to August 2019 (from: European Centre for Disease Prevention and Control)

3 ENTERIC DISEASES

a Update on listeriosis surveillance, 3 September 2018—18 September 2019, South Africa

Surveillance of listeriosis

Following the 2017-2018 outbreak caused by ready-to-eat processed meat products manufactured at a food production facility in Limpopo Province, listeriosis is under surveillance.

Surveillance activities include:

- Mandatory reporting of all listeriosis cases through the notifiable medical conditions platform. Since 15 December 2017, listeriosis is a notifiable medical condition, requiring healthcare workers and laboratorians to report all cases directly to the NICD.
- Completion of a standardised case investigation form (CIF) for all cases. Healthcare workers are requested to complete the CIF which includes demographic, clinical and risk factor information, and a detailed food exposure history. The Centre for Enteric Diseases (CED) team at NICD follow up on all CIFs and conduct further interviews if necessary.
- Referral of clinical *Listeria monocytogenes* isolates for confirmatory testing and typing. All laboratories are requested to refer clinical isolates to CED NICD where they routinely undergo confirmatory phenotypic testing and whole genome sequencing (WGS).

- Analysis of epidemiological and laboratory WGS data. CED regularly analyses epidemiological and WGS data to facilitate early recognition of possible clusters requiring further investigation.

Update

Since the Minister of Health announced the end of the 2017-2018 outbreak on 3 September 2018, a total of 87 laboratory-confirmed listeriosis cases has been reported. Most cases were from Gauteng Province (36%, 31/87), followed by Western Cape (26%, 23/87) and KwaZulu-Natal (18%, 16/87) provinces. Cases have been diagnosed in both public (74%, 64/87) and private (26%, 23/87) healthcare sectors. Ages range from birth to 80 years (median 33 years) and 57% (48/84) are female. Thirty-six percent of cases are pregnancy-associated (30/84; neonates aged ≤ 28 days, $n=25$ and pregnant women, $n=5$), followed by adults aged 15-49 years (32%, 27/84), 50-64 years (14%, 12/84) and ≥ 65 years (13%, 11/84). Four cases in children aged 1 month to 14 years were reported. Outcome data is currently available for 77% (67/87) of cases, of which 31% (21/67) died.

To date, 72% (63/87) of isolates were received for WGS, and 46 have been characterised as 14 differ-

ent sequence types (ST1, ST2, ST4, ST5, ST6, ST7, ST14, ST54, ST88, ST155, ST224, ST820, ST876 and ST1430). Four ST6 isolates were identified; one isolate (date of sample collection September 2018) belongs to the outbreak cluster on core genome multi-locus sequence typing (cgMLST). The three most recent ST6 isolates are not related to the 2017-2018 outbreak on cgMLST (Figure 2). Case investigation forms were received for 76% (66/87) of the cases to date.

On analysis of available *L. monocytogenes* isolates by WGS and epidemiological data, there is no suggestion of possible clusters/outbreaks anywhere in the country at present. The reported listeriosis cases are sporadic and remain below the threshold of five cases per week.

Source: Centre for Enteric Diseases, NICD-NHLS; junot@nicd.ac.za

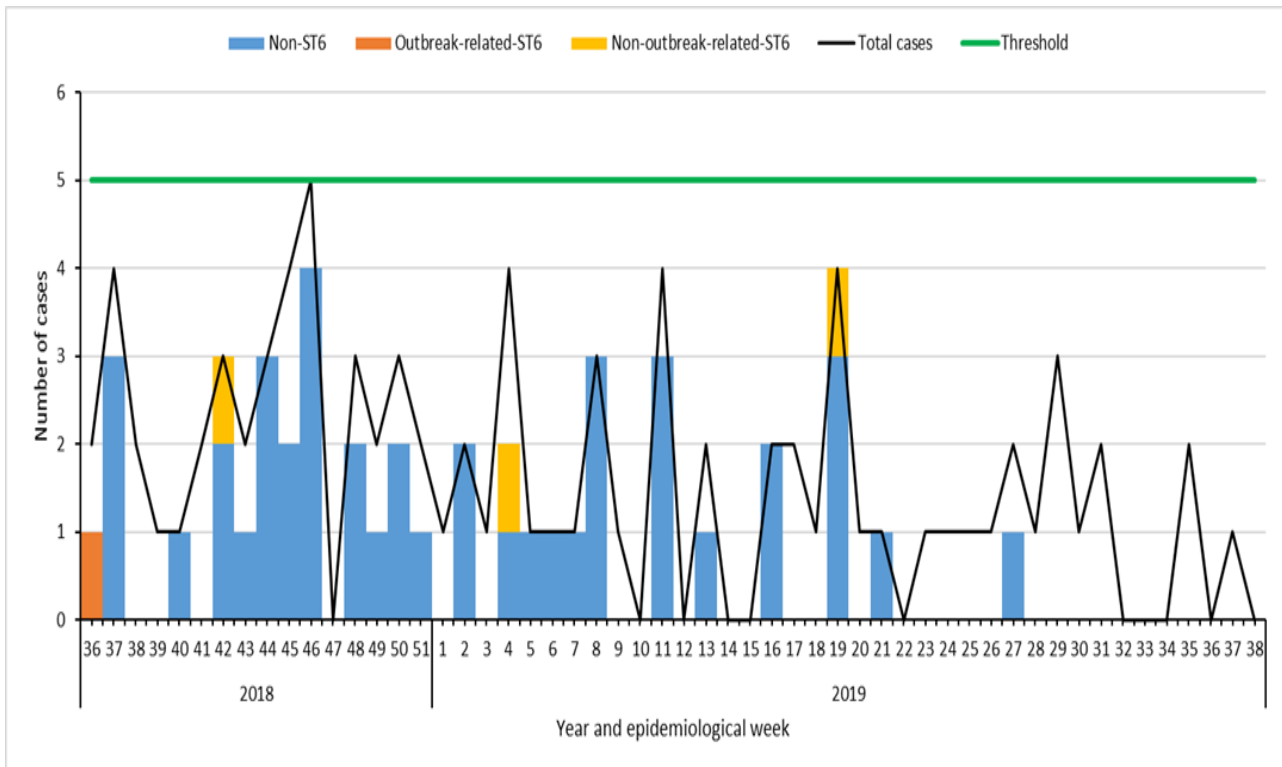


Figure 2. Laboratory-confirmed listeriosis, 3 September 2018 to 18 September 2019, South Africa

4 HOSPITAL-ASSOCIATED INFECTIONS

a An outbreak of methicillin-resistant *Staphylococcus aureus* infection in a neonatal unit in Gauteng Province

On 20 June 2019, the Centre for Healthcare-Associated Infections, Antimicrobial Resistance and Mycoses (CHARM) at the NICD was notified of a cluster of six laboratory-confirmed methicillin-resistant *Staphylococcus aureus* (MRSA) bacteraemia cases from a neonatal unit in Gauteng Province. Two neonates died before the MRSA results could be released.

Prior to June 2019, three of seven *S. aureus* bacteraemia (SAB) cases were confirmed as MRSA (December 2017 to December 2018). Of the nine SAB cases reported from January through to June 2019, six were confirmed as MRSA. Five of the six MRSA cases were reported in June and one case in May (Figure 3). One neonate was transferred to

another facility for medical care and upon admission at the other facility, was diagnosed with MRSA. In total, seven cases of MRSA were reported from the neonatal unit from January to June 2019, of which six MRSA cases occurred in June.

A colonisation survey conducted by the infection prevention and control (IPC) coordinator on 20 June 2019 found that all mothers (n=11) and staff members (n=21) were culture-negative for MRSA; however, seven of the 30 neonates were culture-positive. All MRSA isolates obtained from both blood cultures and/or nasopharyngeal swabs were sent to CHARM for further characterisation: confirmation of organism identification, antimicrobial susceptibility testing, typing of the staphylococcal cassette chro-

mosome *mec* (*SCCmec*) and pulsed-field gel electrophoresis (PFGE).

CHARM received 15 *S. aureus* isolates, eight isolates obtained from blood cultures (two were duplicate isolates) and seven isolates obtained from nasal swabs during the colonisation survey. Collection dates of specimens ranged from 18 May 2019 through to 20 June 2019. Fourteen of the 15 isolates were confirmed MRSA, one isolate obtained from a nasal swab specimen was a methicillin-sensitive *S. aureus* (MSSA). Thirteen of the 14 MRSA isolates were typed as *SCCmec* type III and one MRSA isolate obtained from a nasal swab speci-

men was untypeable. PFGE findings showed that all 13 MRSA *SCCmec* type III isolates clustered together at 100%, indicating that their banding patterns were indistinguishable, which may suggest that the MRSA isolate identified in May 2019 may have been responsible for this outbreak (Figure 4).

Source: Centre for Healthcare-Associated Infections, Antimicrobial Resistance and Mycoses, NICD-NHLS; neleshg@nicd.ac.za

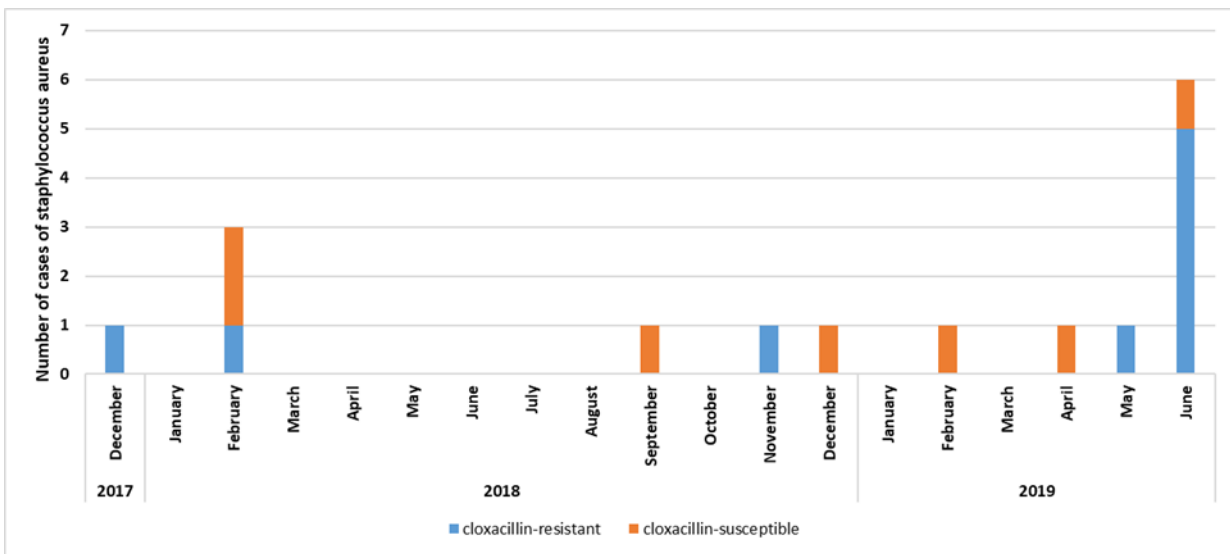


Figure 3. Cloxacillin susceptibility profile of *S. aureus* isolated from blood cultures reported from a neonatal unit in the Gauteng Province, December 2017 through to June 2019.

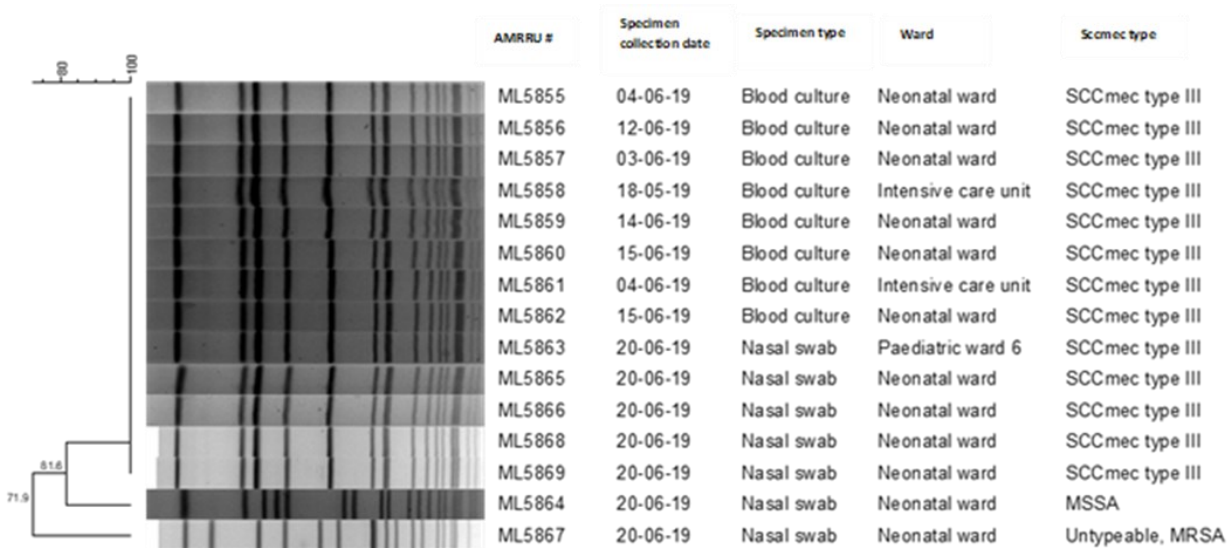


Figure 4. Dendrogram showing PFGE banding patterns of 15 *S. aureus* isolates (n=14 MRSA and n=1 MSSA) obtained from blood culture and nasal swab specimens reported from a neonatal unit in Gauteng Province, 15 May to 20 June 2019.

5 INTERNATIONAL OUTBREAKS OF IMPORTANCE

a An update on Ebola virus disease outbreak in Democratic Republic of Congo

In the past week, from 9 to 15 September, 51 new confirmed Ebola virus disease (EVD) cases, with an additional 26 deaths, have been reported from nine health zones in three affected provinces in the Democratic Republic of the Congo (DRC). Throughout the week, localised, minor security incidents have impacted the response, including burial and vaccination activities in Mambasa and Komanda. In addition, there was a major security incident in Lwemba, within Mandima health zone from 14-16 September 2019. The event was in response to the recent death of a local healthcare worker from EVD. Due to the violence and vandalism that occurred during the incident, all activities have been suspended in the area until further notice. In addition to seriously impacting the response activities on the ground, this could lead to gaps or delays in the reporting of new EVD cases in this hotspot area. Overall, these incidents underscore the need for continued and proactive engagement and sensitising of local communities, especially in the high risk areas that may not currently be affected.

As of 15 September 2019, a total of 3 129 cases was reported. This includes 3 018 confirmed and 111 probable cases, of which 2 096 cases died (overall case fatality ratio of 67%). Of the total confirmed and probable cases with reported sex and age, 56% (1 755) were female, 29% (893) were children aged less than 18 years, and 5% (159) were healthcare workers.

In the 21 days from 26 August to 15 September 2019, new cases were reported from 52 health areas in 15 health zones. During this period, a total of 149 confirmed cases was reported, the majority were from the health zones of Mambasa (19%, n=29), Kalunguta (19%, n=28), Mandima (19%, n=28), and Beni (10%, n=15). Fourteen health zones that have previously reported cases of EVD since the beginning of the outbreak have not re-

ported a case in more than 21 days.

From 1 January 2019 through 15 September 2019, 14% (360/2 521) of EVD infections are thought to represent possible nosocomial infection (NI). Throughout this period, Katwa Health Zone (HZ) reported the highest number of possible NI (31%, 110/360). During this same period, 105 healthcare worker (HCW) infections were reported – 4% of total infections (105/2 521). Overall, Katwa HZ has reported the majority of HCW infections (31%, 33/105).

As of 17 September 2019, over 210 000 contacts have been registered to date, and 12 844 are currently under surveillance. On average, 86% of contacts were followed daily in the last seven days in health zones with continued operations.

WHO advises against any restriction of travel to, and trade with, the DRC based on the currently available information. There is currently no licensed vaccine to protect people from EVD, therefore no movement should be restricted based on requirements of a vaccination certificate. There is no country (currently) that has implemented travel measures that significantly interfere with international traffic to and from DRC.

The implications for South Africa are that the risk of spread of Ebola to South Africa remains low according to risk assessments conducted by the Department of Health, National Institute for Communicable Diseases (NICD) and WHO. Currently, there are no EVD cases in South Africa.

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

6 SEASONAL DISEASES

a Influenza

The 2019 influenza season has ended. The 2019 season started earlier than usual in week 16 (week ending 21 April). The average week of onset for the previous five years was week 19 (second week of May). Transmission was high for six weeks of the season, whereas transmission has been moderate during the previous five years. The season ended in week 33 (week ending 18 August), since when transmission has been below seasonal threshold. The 18-week duration of the season was two weeks shorter than the previous five-year mean duration. Apart from being an unusually high transmission season, the season was unusual in that very few detections of influenza B virus were made com-

pared to the previous five years, when influenza B accounted for an average of 30% (range 16% - 41%) of detections, generally made at the end of the season.

Influenza transmission (measured using Viral Watch programme data) has been below seasonal threshold since week 34, and impact (measured using pneumonia surveillance programme data), was at low levels during weeks 34 and 35, and is currently showing no impact. Thresholds are determined by the Moving Epidemic Method (a sequential analysis using the R Language, available from: <http://CRAN.R-project.org/web/package=mem>) by com-

paring observed levels of influenza to those seen in previous years.

Since April, influenza A has been detected in 762/1 229 (62%) specimens received from Viral Watch sites. The majority (706; 93%) has been further identified as influenza A(H3N2), 37 (5%) have been identified as A(H1N1)pdm09, and in 15 (2%), subtyping was inconclusive due to low viral load, and one was influenza B/Victoria. In addition, two specimens were dual positive for both influenza A(H1N1)pdm09 and A(H3N2), and one for A(H3N2) and influenza B/Yamagata.

Influenza vaccine effectiveness was assessed using a test-negative case control study design. Patients in whom influenza was detected were considered cases and those who tested negative for influenza were unmatched controls. Patients who met the influenza-like-illness (ILI) case definition, had a known influenza vaccine history, and were six months or older were included in the analysis. Adjusted vaccine effectiveness for influenza A(H3N2) was 53% (95% confidence interval 23%-72%) (Table 1).

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

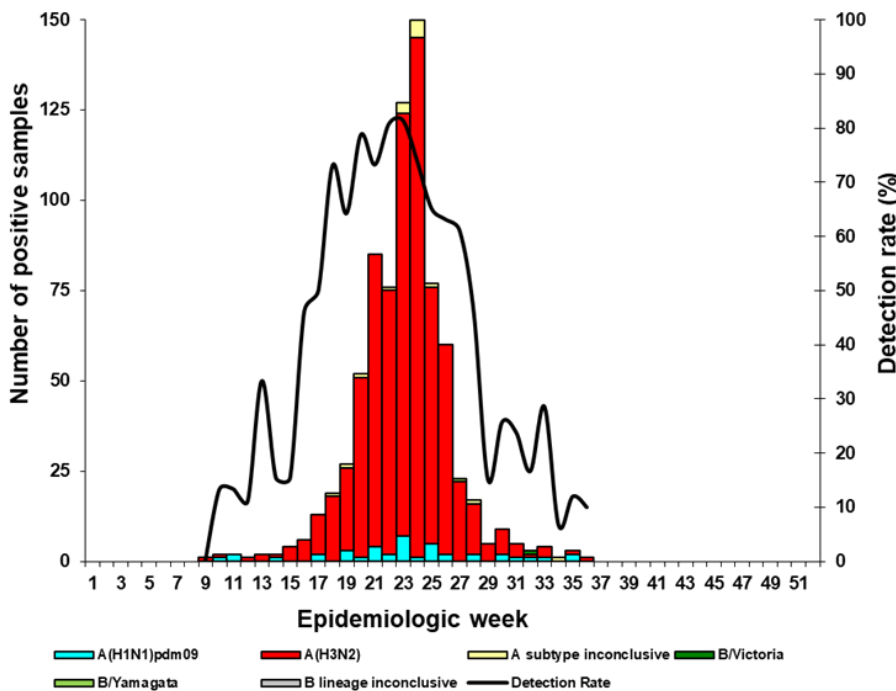


Figure 5. Viral Watch 2019: Number of positive samples by influenza types and subtypes and detection rate*

* 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. Inconclusive: insufficient viral load in sample and unable to characterise further

Table 1. Vaccine receipt and vaccine effectiveness (VE) by influenza type and subtype

Influenza type/ subtype	Vaccine coverage			Percentage adjusted VE *
	Cases	Controls	Total	
	n/N(%)	n/N(%)	n/N(%)	
All specimens				
Any influenza	41/735 (5.6)	38/358 (10.6)	79/1093 (7.2)	52.7 (22.4;71.1)
A(H3N2)	39/704 (5.5)	38/358 (10.6)	77/1062 (7.3)	53.4 (23.1;71.8)
Children aged <18 Years				
Any influenza	8/271 (3.0)	10/119 (8.4)	18/390 (4.6)	64.3 (2.5;86.9)
A(H3N2)	8/266 (3.0)	10/119 (8.4)	18/385 (4.7)	64.3 (2.5;86.9)
Adults aged 18 – 64 Years				
Any influenza	25/421 (5.9)	22/221 (10.0)	47/642 (7.3)	45.2 (-4.1;71.9)
A(H3N2)	24/398 (6.0)	22/221 (10.0)	46/619 (7.4)	46.8 (-1.4;72.1)

* Adjustment factor timing within season ± age

b Household cluster of meningococcal serogroup B disease in Gauteng Province

A cluster of meningococcal disease in four patients from the same family occurred over a two-week period during August 2019 in a rural district in Gauteng Province. Two cases were confirmed and identified at the NICD as *Neisseria meningitidis* serogroup B, and two were probable cases. The index case, a child aged five years who developed fever, headache, diarrhoea and lethargy the previous day, was pronounced dead on arrival at the hospital the next morning. Two siblings aged six and eight years respectively, had been admitted to hospital 10 days earlier with diarrhoea, vomiting and loss of appetite. One of these children (aged 6) was unable to walk and was being investigated for acute flaccid paralysis. Subsequent blood cultures of both the siblings confirmed a diagnosis of meningococcal bacteraemia (*Neisseria meningitidis* serogroup B) and both were treated successfully with ceftriaxone. A day after the index case presentation, a fourth family member was admitted to hospital with fever, a petechial rash, diarrhoea, vomiting and confusion. This person was immediately started on ceftriaxone. The outcome of this case is unknown.

Chemoprophylaxis was distributed to all members of the household, other family members with a history of close contact with the cases and close contacts at the school, within two days of the index case presenting. No further cases linked to this

cluster have been reported to date.

Meningococcal disease is endemic to South Africa with peaks in the winter to spring months. In 2018, serogroup B was the predominant serogroup causing invasive meningococcal disease in Gauteng Province and the rest of South Africa. *Neisseria meningitidis* is spread from person to person through aerosolised respiratory secretions during close contact. Meningococcal disease develops when the organism invades the mucosa of the oropharynx and causes a septicaemia or meningitis. Clinicians should be vigilant in suspecting meningococcal disease/meningitis in patients presenting with fever, headaches or other non-specific symptoms. Appropriate intravenous antibiotics (penicillin or ceftriaxone) should be started promptly. Meningococcal disease is a category 1 notifiable medical condition, and all suspected or confirmed cases should be immediately notified telephonically to the provincial communicable disease control coordinator to ensure appropriate case counting, contact tracing and distribution of chemoprophylaxis (single oral dose of ciprofloxacin), to prevent subsequent cases.

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

c Malaria update

The traditional malaria season in southern Africa is from September to May, but cases occur throughout the year. The seasonal peak in malaria cases is usually from November to end of April. The annual spraying of houses in the malaria areas will start in October, and preparations are in progress. It is not possible to predict the nature of the season but every confirmed case of malaria is reported and investigated, and trends are closely monitored. Compared with 2018, by June 2019 (most recent data available), there was a 39% reduction in SA total cases for the same period, and in Mpumalanga, an 87% reduction.

Visitors to northern KwaZulu-Natal Province, north-eastern Limpopo Province, the lowveld areas of Mpumalanga Province, including the Kruger National Park and areas bordering it, and especially Mozambique, must take precautions against mosquito bites by using effective insect repellent applied to exposed skin areas after sunset, and use mosquito coils, fans and airconditioning, and even mosquito nets, in high-risk areas. Visitors should consider taking prophylactic drugs if visiting high-risk areas. Most important is to be aware of the symptoms of malaria, which are very non-specific and overlap with those of influenza (although the influenza season has ended). Anybody who has a

'flu-like illness fever', with headache, cold shivers, hot sweats, muscle pains, and even vomiting and diarrhoea, who has travelled or lives in a malaria area, must seek very urgent care, must insist on a malaria blood test, and must get the results promptly. If negative, the test should be repeated; if positive, treatment must be started urgently. Malaria is eminently treatable if diagnosed and treated in the first 48 hours after symptoms develop. If treatment is delayed, the infection will progress rapidly, and becomes difficult to treat; complications are common and there is a high risk of death from malaria in this situation.

The South Africa malaria risk map and information about malaria prevention and treatment is available at <http://www.nicd.ac.za/diseases-a-z-index/malaria/>

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

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 11.

1. Dengue fever: Nepal

Since May 2019, a dengue fever outbreak has been reported in Nepal, with six people reported to have died from the disease, and over 5 096 confirmed cases across the country. The outbreak was first reported in the city of Dharan; however, the disease has spread and has affected 55 of Nepal's 77 districts. Kathmandu has reported the largest number of dengue cases, with a total of 1 170 cases. There is no specific treatment for dengue; however, various strategies are in place to control the vector (*Aedes* mosquito) and prevent humans from being bitten by infected mosquitoes (interruption of the human-vector contact).

2. Rubella: Japan

Japan's National Institute of Infectious Disease (NIID) has reported a total of 2 156 cases of rubella in 2019, with 37% of cases reported in the city of Tokyo. Two-hundred and sixty new cases were reported from July to 4 September 2019. A total of three congenital rubella syndrome (CRS) cases has been reported in 2019. The United States Centres for Disease Control (CDC), on 7 August, recommended that all pregnant women who are not vaccinated, or have not had a previous rubella infection, should not travel to Japan during this outbreak period, as the measles, mumps and rubella (MMR) combination vaccine contains a live attenuated virus and is not recommended in pregnancy. All non-pregnant travellers to Japan have been advised to receive a rubella-containing vaccine such as the MMR vaccine, at least one month before travelling.

3. Typhoid fever: Zimbabwe

On 27 July 2019, Zimbabwean officials reported that there have been 858 cases of typhoid fever in Harare in the last six months. Glen View and Budiri-

ro are the two most affected areas. No deaths have been reported. Typhoid fever is caused by the bacteria *Salmonella* Typhi. The disease is readily treated with suitable antimicrobials, with patient's symptoms improving within two or three days of commencing treatment. Some patients continue to be carriers of the bacteria even after treatment. These carriers must be excluded from handling food and from direct patient care. Typhoid vaccines are available and are recommended for use in endemic areas and for controlling outbreaks. It is important that other control measures are put in place, such as health education, including hand washing, good food preparation practices, and water quality and sanitation improvements.

4. Avian influenza A(H5N6): China

The China National Health Commission reported a human case of avian influenza A(H5N6) on 19 August 2019. The case involved a 59-year-old female from Beijing, who was hospitalised on 11 August, and was still in a critical condition on 19 August. Avian influenza is caused by influenza viruses that affect birds and poultry, such as chickens or ducks. People usually contract the virus through contact with infected birds and poultry (live or dead), or their droppings, or contact with contaminated environments. No human-to-human transmission has been demonstrated. Children, the elderly and people with chronic illnesses have a higher risk of developing complications such as pneumonia. Since 2014 to date, 24 human cases of avian influenza A(H5N6) have been reported by the Chinese health authorities.

Source: Promed (www.promed.org), World Health Organization (www.who.int)



Figure 6. Current outbreaks/events 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

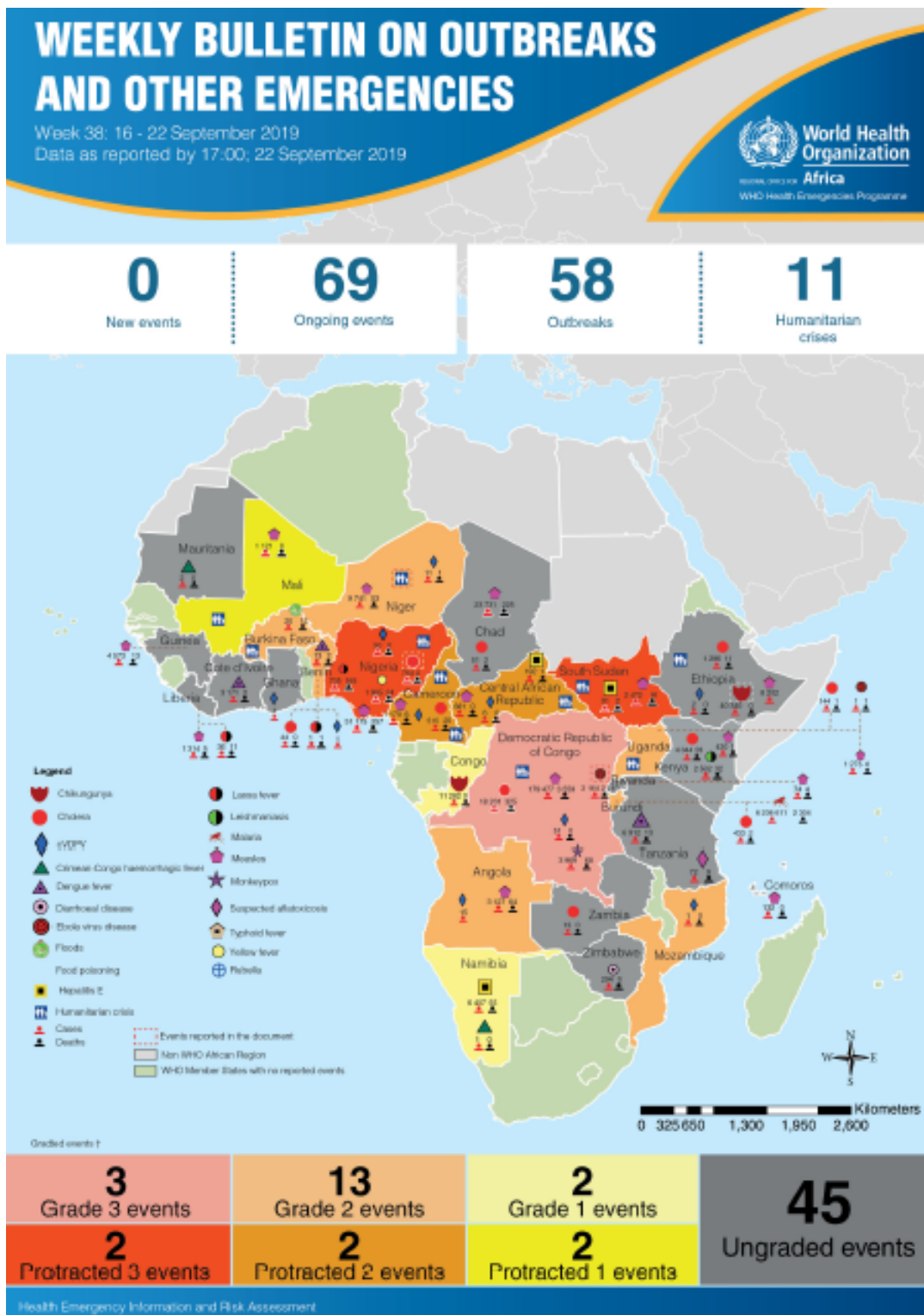


Figure 7. The Weekly WHO Outbreak and Emergencies Bulletin focuses on selected public health emergencies occurring in the WHO African Region. The African Region WHO Health Emergencies Programme is currently monitoring 69 events. For more information see link below: <https://apps.who.int/iris/bitstream/handle/10665/327836/OEW38-1622092019.pdf>