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

2022

COMMUNICABLE DISEASES COMMUNIQUÉ

NOVEMBER 2022, VOL. 21 (11)

NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
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EDITORIAL

Editor's Note – Dr Michelle Groome

The end of 2022 is almost upon us and we are in a very different place to this time last year. Rather than the threat of Omicron and the resultant travel bans, we can look forward to a more "normal" holiday season. Although we have recently seen small increases in COVID-19 case numbers and percent testing positive, the number of hospitalisations remains low. There has been a continued decrease in influenza cases detected through sentinel surveillance in the past few weeks.

A major concern heading into the holiday season is the current measles outbreak in Limpopo and Mpumalanga provinces. Please ensure that children's measles vaccinations are up to date. Measles can cause severe complications in malnourished children and those under two years.

The hotter months, especially following periods of high rainfall, lead to increased risk for exposure to vectors like mosquitoes and ticks. Clinicians should be alert for the possibility of arboviral infections. Our case of the month highlights the risk of delayed diagnosis of tick bite fever. A case of odyssean malaria was reported in Ekurhuleni District so healthcare practitioners should consider malaria as a differential diagnosis in all patients presenting with a progressive febrile condition, even in the absence of history of travel to a malaria-endemic region, especially if there is unexplained thrombocytopenia.

In this month's edition we describe a foodborne outbreak at a healthcare facility in Mangaung Metro, and provide an update on enteric fever and pertussis. Rabies remains a concern with another laboratory-confirmed case, this time in a 7-year old girl from Buffalo City. Gauteng Veterinary Services initiated mass vaccination campaigns in Chloorkop, Tembisa, and Saxonworld following confirmation of rabies in a dog in Saxonworld.

For those travelling beyond our borders, please take note of the ongoing outbreaks of Ebola disease caused by Sudan virus in Uganda, monkeypox, cholera and dengue.

CASE OF THE MONTH

Tick bite fever

On the 25th of October 2022, the National Institute Communicable Disease (NICD) was alerted to the possibility of a case of Crimean Congo haemorrhagic fever (CCHF) in Klerksdorp, North-West, South Africa.

Around the 19th of October 2022, a 43-year-old male, with no known comorbidities, visited his local general practitioner (GP) with flu-like symptoms including fever and sweating. He was a farmer, who helped to extinguish a veld fire 2 weeks prior, where ticks were noted. He also reported no significant travel history in the weeks before his initial presentation.

Of note, the patient raised his concerns surrounding tick bite fever and so antibody testing for rickettsial disease as well as baseline bloods were performed, even though no eschars were noted at the time. The patient was then prescribed antibiotics and discharged home while awaiting results. On initial visit, his full blood count depicted a normal Hb and WCC, with a slightly low platelet count (Hb=18 g/dL, WCC=8.1x10^9/L, Plt=135x10^9/L).

A few days later on the 21st, the patient's symptoms worsened drastically. He was admitted to a private hospital and another class of antibiotics was prescribed as well as additional tests performed. At this time, the preliminary antibody results for both brucellosis and rickettsiosis was negative, while the new results showed severe liver dysfunction (ALP=269 IU/L, GGT=338 IU/L, ALT=299 IU/L, AST=207 IU/L), a negative respiratory viral panel and negative hepatitis screening. This worsening picture, along with an episode of syncope and the abnormal blood results prompted the referral of the patient to Klerksdorp.

By this time, the patient's condition was serious due to his deteriorating condition complicated by septicaemia and multi-organ failure with refractory shock. On examination the physician noted 2 eschar-type lesions in the groin area. Rickettsia testing was repeated, however specimens were misplaced, so these additional tests were never performed. The patient developed status epilepticus, but due to his severe condition, a scan was not performed. In the meantime, he was started on high dose doxycycline and steroids, but unfortunately passed away on the 26th of October.

Due to the nature of the case and the possibility of CCHF, a blood sample was sent to the NICD to exclude CCHF. However, based on the clinical picture, ricketssial disease was more likely and so a PCR test for rickettsial disease was performed. Results indicated that the blood specimen was positive, confirming that the patient in fact, died of tick bite fever and therefore no further testing was required.

This case highlights the importance of a full history and examination on initial presentation of patients and emphasises that appropriate testing for tick bite fever must be performed in the acute stages of disease. In the acute stage, a PCR of the serum, plasma or dry swab of the eschar can be done to obtain a fast result. Antibody tests usually take 1-2 weeks in order to give a positive result which may delay life-saving treatment. Tick bite fever should always be considered as a differential in patients with a relevant history and on examination eschars should never be missed. Lastly, if suspected, doxycycline should never be withheld as it is a lifesaving, effective treatment in these cases.

Tick bite fever, otherwise known as rickettsial disease is a bacterial infection that is transmitted by ticks. In South Africa, there are 2 types of tick bite fever, namely the Mediterranean spotted fever-like (MSF) transmitted by dog ticks (Rickettsia conorii) and the African tick bite fever (ATBF) transmitted by *Amblyomma* or 'bont' ticks (Rickettsia africae), with the latter being associated with rural farming and outdoor activities in the bush.

Symptoms that infected persons experience usually arise 5-7 days after the initial tick bite and includes a severe headache, fever, myalgia, and nightmares. The classic sign is the eschar that forms after being bitten by a tick, which is a small dark brown or black "scab", surrounded by inflammation. Severe tick bite fever can also result in multi-organ damage which may include bleeding or haemorrhaging.

Differential diagnoses to always be considered and excluded based off the case context and patient history includes malaria, mosquito-borne virus infections, typhoid fever and CCHF.
Antibody tests should not be used in the acute stage of the illness to make treatment decisions and doxycycline is the treatment of choice for all patients. IV quinolone can be used in patients who are unable to reliably take orally treatment especially those with severe illness.

References:

https://www.nicd.ac.za/wp-content/uploads/2017/10/Tick-bite-fever-FAQ_May2017.1.pdf

ZOONOTIC AND VECTOR-BORNE DISEASES

Rabies

A laboratory-confirmed human rabies case was reported from Eastern Cape Province on 22 November 2022. A seven-year-old girl from Ncera village, East London, in the Buffalo City Municipality, was pronounced dead on arrival at an East London hospital. Prior to her death, she suffered from nausea, vomiting, malaise, and headache for a few days. Post-mortem investigations found cerebral and pulmonary oedema. A brain sample tested positive for rabies. There was no recorded history of a dog bite in this patient. As of 23 November 2022, South Africa's cumulative total of laboratory-confirmed human rabies cases for the year is 12. The affected provinces are Eastern Cape (n=7), Limpopo (n=3), and KwaZulu-Natal (n=2). In addition, there have been five probable cases identified in Eastern Cape Province (Figure 1). A probable case is a person who has been clinically suspected of having rabies and has a verifiable history of contact with a suspected/probable/confirmed rabid animal.

In the first week of November 2022, the Gauteng Provincial Department of Agriculture and Rural Development (GDARD) reported a rabies-infected dog in Ekurhuleni municipality. On 31 September 2022, a compassionate person living in Saxonworld, City of Johannesburg Municipality, took in a stray dog found in the Chloorkop neighborhood. The dog was not in a healthy condition, even after receiving veterinary care. As the dog's condition deteriorated, it became paralyzed in the hind legs, and due to the suspicion of rabies, was euthanized by a private veterinarian. Following confirmation of rabies, Gauteng Veterinary Services initiated ring block vaccinations around the affected property in Saxonworld, as well as vaccinating guard dogs in Chloorkop facilities, and mass vaccination campaigns in Chloorkop, Tembisa, and Saxonworld. Veterinarians and impacted communities are being made aware by GDARD of the major public health issue and are being supplied with guidance and information to prevent further animal cases and human exposure. Prior outbreaks in the Gauteng Province were reported by GDARD in 2010 and 2021, the former of which resulted in one human case (more information available on www.gdard.gov.za).

For more information on rabies and how the disease can be controlled and prevented, visit www.nicd.ac.za

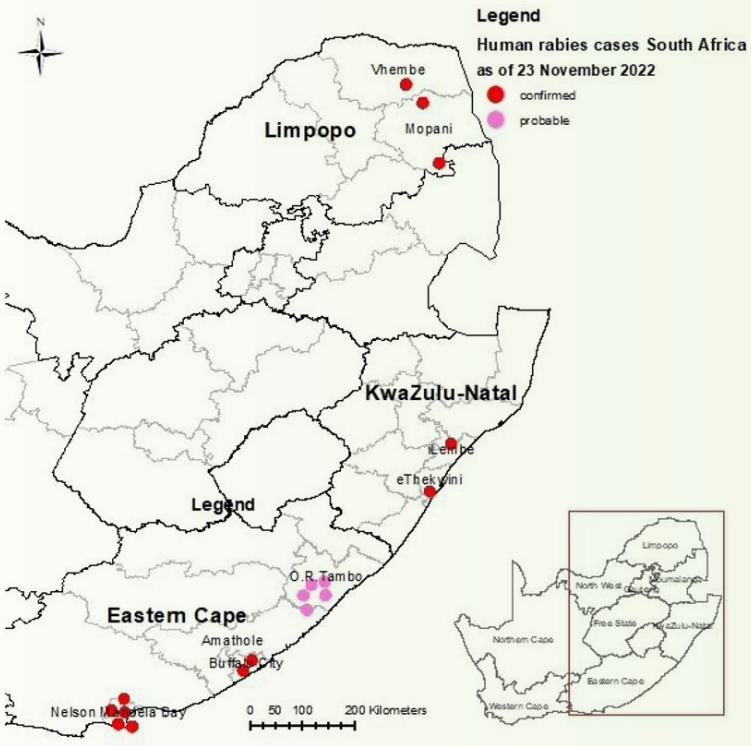

Figure 1. Map showing distribution of human rabies cases in South Africa for 2022 to date.

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

ZOONOTIC AND VECTOR-BORNE DISEASES

Odyssean Malaria in Ekurhuleni Municipality, Gauteng Province, October 2022

During October 2022, the NICD was alerted to a single case of odyssean malaria in Ramaphosa by the Ekurhuleni District Health office. Outbreak response teams from the NICD and Ekurhuleni District Health office initiated an investigation on 31 October 2022.

The patient, a middle-aged male was diagnosed with malaria on 12 October 2022. He had no history of travel to a malaria-endemic area. He started feeling unwell approximately six months prior, with his symptoms worsening in early October 2022. He presented to the regional hospital with nausea and vomiting, headache, malaise and myalgia, as well as epistaxis. He was worked up for anaemia and thrombocytopenia, and *Plasmodium malariae* infection was confirmed. Treatment was initiated, the patient recovered and was discharged on the appropriate medications.

Environmental and entomological site investigations

Ramaphosa is a township located in Ward 42, Germiston South, within the Ekurhuleni Municipality. It is home to the Ramaphosa taxi rank, which can house approximately 40 taxis. This not only provides ample opportunities for mosquitoes to travel to and from the area but is also a social gathering point.

The patient lives in an informal household with family. He is unemployed but does piece-jobs in the area. The dwelling is located on a shared property with a brick main house and a few other informal households, with multiple people living on the property. It was also noted that some of the neighbours are from malaria-endemic countries although according to the patient, they had neither visited their home countries in over three months nor received visitors from these areas.

There were no *Anopheles* adult mosquitoes or larvae detected within the patient's household or the surrounding area, which included a flowing open street drain approximately five metres behind the informal households.

Discussion and Conclusion

Gauteng Province is a non-malaria-endemic area. It is likely that this was a single case of odyssean non-falciparum malaria. Possibly related to the proximity of the patient's household to the Ramaphosa taxi rank, the patient may have acquired malaria from the bite of an infective *Anopheles* mosquito inadvertently transported from a malaria-endemic area via a vehicle such as a minibus, car, bus or truck, a phenomenon known as odyssean malaria. Since this was the only known non-falciparum malaria case in this area, it is also possible that the infection was acquired elsewhere (e.g. whilst doing piece-jobs), any time within the previous few months. Although the incubation period of *P. malariae* is typically 13 to 28 days, it can be longer, and clinically, can be mild and protracted.

Recommendations

No specific vector control interventions are recommended at this stage. The local community in general should not be alarmed, as this case does not represent an expansion of the malaria transmission zone in South Africa. All healthcare practitioners in Gauteng Province are encouraged to consider malaria as a differential diagnosis in all patients presenting with a progressive febrile condition (>38°C), even in the absence of history of travel to a malaria endemic region, especially if there is unexplained thrombocytopenia.

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

ZOONOTIC AND VECTOR-BORNE DISEASES

Arboviral disease in South Africa

Endemic arboviral infections are most common in warmer months following periods of high rainfall, leading to increased risk for exposure to vectors (mainly mosquitoes and ticks). This is in keeping with recent weather patterns seen across South Africa, and therefore clinicians should be mindful of the possibility of arboviral infections.

Rift Valley fever, West Nile fever, Sindbis fever, chikungunya and Crimean-Congo haemorrhagic fever viruses are important arboviruses in South Africa, whereas dengue, Zika, yellow fever and Japanese encephalitis viruses are important travel-related arboviruses.

The majority of arboviral diseases are subclinical and self-limited, and as a result arboviral infections may be underdiagnosed and underreported in South Africa. Although the arboviral disease spectrum is wide (Figure 2), the disease may be debilitating and even fatal. Symptom onset can range from 3 to 14 days after exposure.

Clotted blood or serum samples are the preferred sample type, but in case of an encephalitis query, cerebral spinal fluid (CSF) may also be submitted for molecular or serological detection. The viraemic phase is short and a negative real-time polymerase chain reaction result cannot exclude the diagnosis of a recent infection. Antibodies may be detected from three to seven days after symptom onset. However, if initial antibody tests are negative, it is recommended to submit a convalescent serum sample (collected two weeks after the acute phase of infection) to demonstrate seroconversion or the lack thereof.

For more information about arboviral disease in South Africa, www.nicd.ac.za; see A-Z disease webpages.

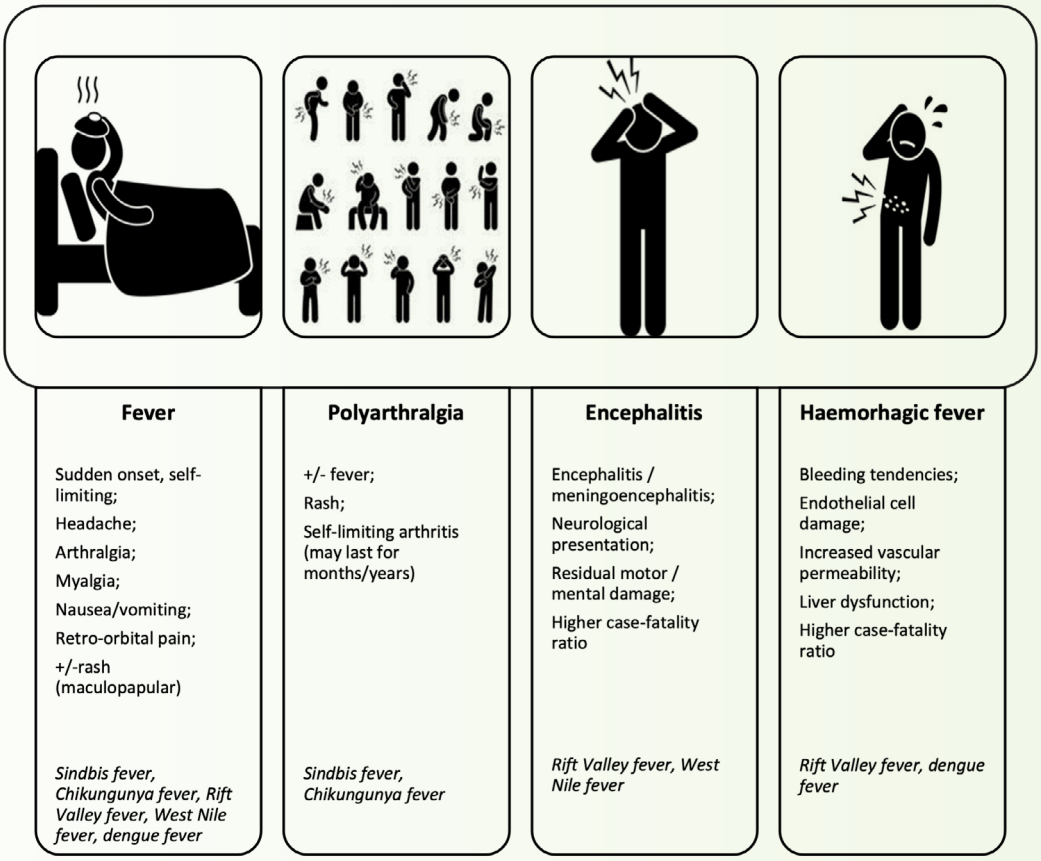

Figure 2: Summary of the four clinical syndromes associated with arboviral disease and examples of each (figures from Adobe Stock (https://stock.adobce.com)).

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

ENTERIC DISEASES

Foodborne outbreak update (Free State Mediclinic)

On 8 September 2022, an IPC manager at a private healthcare facility in Mangaung Metro alerted the provincial outbreak response team to a suspected outbreak of foodborne disease, on the grounds that more than two epidemiologically-linked cases of foodborne disease had been identified.

On 7 September 2022 the index case, a doctor who works at the facility, reported acute onset of abdominal cramps, diarrhoea, fever and rigors about five to seven hours after eating chicken pasta which had been prepared by the hospital kitchen and served for lunch. The case-patient was admitted for treatment, and nontyphoidal *Salmonella* was isolated from a stool specimen submitted to a private laboratory.

Case finding and investigation was promptly initiated by the outbreak response team and facility IPC manager. A total of 49 cases were identified; nontyphoidal *Salmonella* was isolated from stool samples in 18 cases (37%). The isolates were referred to the Centre for Enteric Diseases, NICD, for further characterisation by serotyping and whole-genome sequencing (WGS). All isolates were confirmed as *Salmonella* Enteritidis. Core-genome multilocus sequencing typing (cgMLST) analysis of WGS data is available for 17 isolates; these isolates differ from each other by a maximum of 2 alleles across the 3 002 genes analysed – which means that they are almost genetically identical. Additionally, this cluster of isolates did not match any other isolates of *Salmonella* Enteritidis from the national database.

Drinking water was compliant with SANS 241:2015 standards. Retained food samples were collected and submitted for testing, but long delays in transport rendered the negative test results of limited value. Five environmental swabs collected from kitchen surfaces revealed no nontyphoidal *Salmonella*. Other environmental assessments were unremarkable.

A case control study was conducted among the medical staff at the facility to test the association between eating chicken pasta and developing gastroenteritis. Eating chicken pasta was strongly associated with developing gastroenteritis (odds ratio, 39; 95% confidence interval 1.57 - 969.24). The epidemiological evidence suggests that the chicken pasta was the likely vehicle of transmission in this outbreak. The source of *Salmonella* Enteritidis in the implicated meal remains unknown.

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

Enteric fever

Update on enteric fever, South Africa

From 2006 through 2021, the national number of laboratory-confirmed cases of enteric fever averaged 99 cases per year (range 66 – 140 cases). As at 22 November 2022, 176 cases have been reported since 1 January 2022, the highest annual number of cases since the outbreak in Delmas in 2005 (Figure 3).

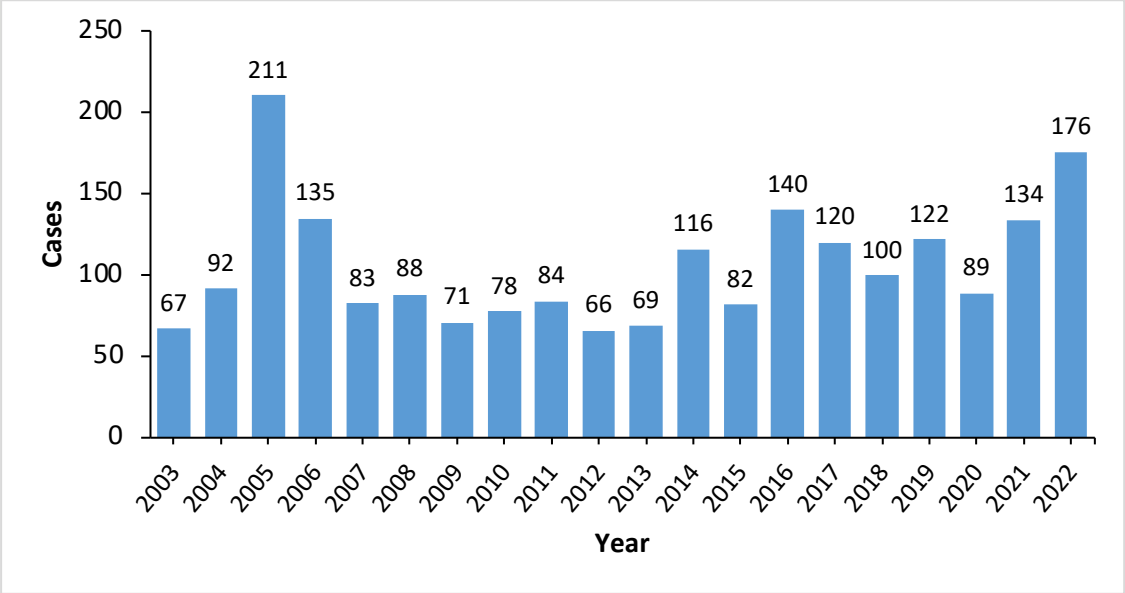

Figure 3. Cases of laboratory-confirmed enteric fever, South Africa, 1 January 2003 – 22 November 2022* *In 2005, there was an outbreak in Delmas with >2900 cases, but most cases were probable and not laboratory confirmed.

Gauteng Province is reporting its highest number of annual cases since 2003, and accounts for 50% (88/176) of the total cases reported for the year as at 22 November 2022. North West Province has reported the highest number of annual cases on record in 2022 (N = 22). Western Cape Province reported fewer cases in 2022 (N = 37) compared to 2021 (N = 52) (Figure 4).

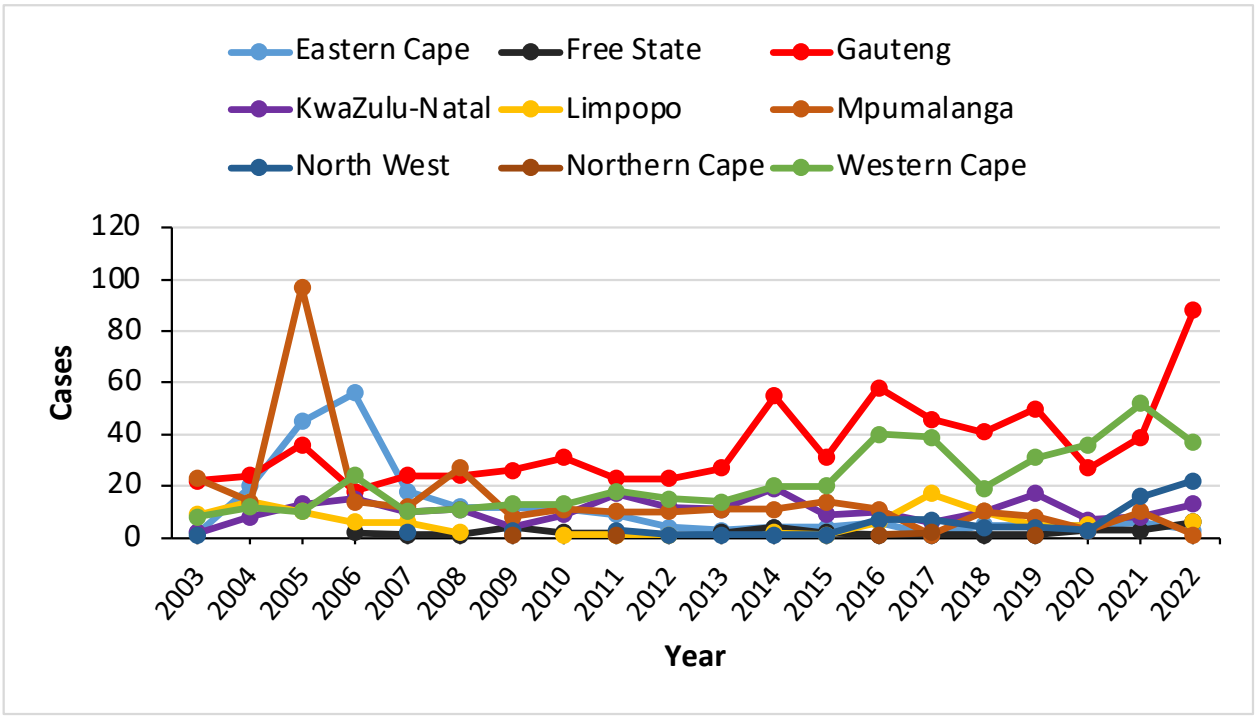

Figure 4. Cases of enteric fever by province, South Africa, 1 January 2003 – 22 November 2022

Update on enteric fever clusters

Clusters are defined by the genetic relatedness of isolates on core-genome multilocus sequence typing (cgMLST) analysis of whole genome sequence data.

Western Cape Province reported its highest number of annual cases in 2021, most of which were attributed to three separate clusters, designated the Worcester (N = 11), Garden Route (N = 15) and City of Cape Town (N = 19) clusters. No new cases belonging to the first two clusters have been identified since February 2022. Four cases were assigned to the City of Cape Town cluster in August and September 2022, increasing the total to 23.

The increase in the number of cases in Gauteng and North West provinces over the past two years has also been driven by specific clusters. Whole-genome sequencing is pending for cases identified in October and November 2022.

As at 22 November 2022, 58 cases assigned to the Klerksdorp cluster have been identified. Since the last update in July 2022, nine cases (North West = 5, Gauteng = 3, Mpumalanga = 1) were added to the cluster. While most of the cases hail from North West Province (60%, 35/58), cases belonging to this cluster were also identified in four other provinces: Gauteng (n = 14), Mpumalanga (n = 5), KwaZulu Natal (n=2) and Free State (n=2). The Klerksdorp cluster is associated with illegal mining activities in the City of Matlosana (Klerksdorp area). Several Klerksdorp cluster cases identified in Gauteng Province and Free State Province are also illegal miners who initially became ill working in mines in the Klerksdorp area.

The 'Gauteng Province cluster' now comprises 31 cases (six new cases since the last update in July 2022) identified between January 2020 and September 2022. Since February 2022, additional cases continue to be identified every month; from May through August 2022, 16 cases were assigned to this cluster (Figure 5). Most of the cases are under 15 years of age (52%; 16/31). The majority of cases were reported from the City of Tshwane Metro (77%; 24/31); of cases with known residential address (16/24) more than half resided in Hammanskraal. To date, no likely or definite source(s) of infection have been identified for this cluster.

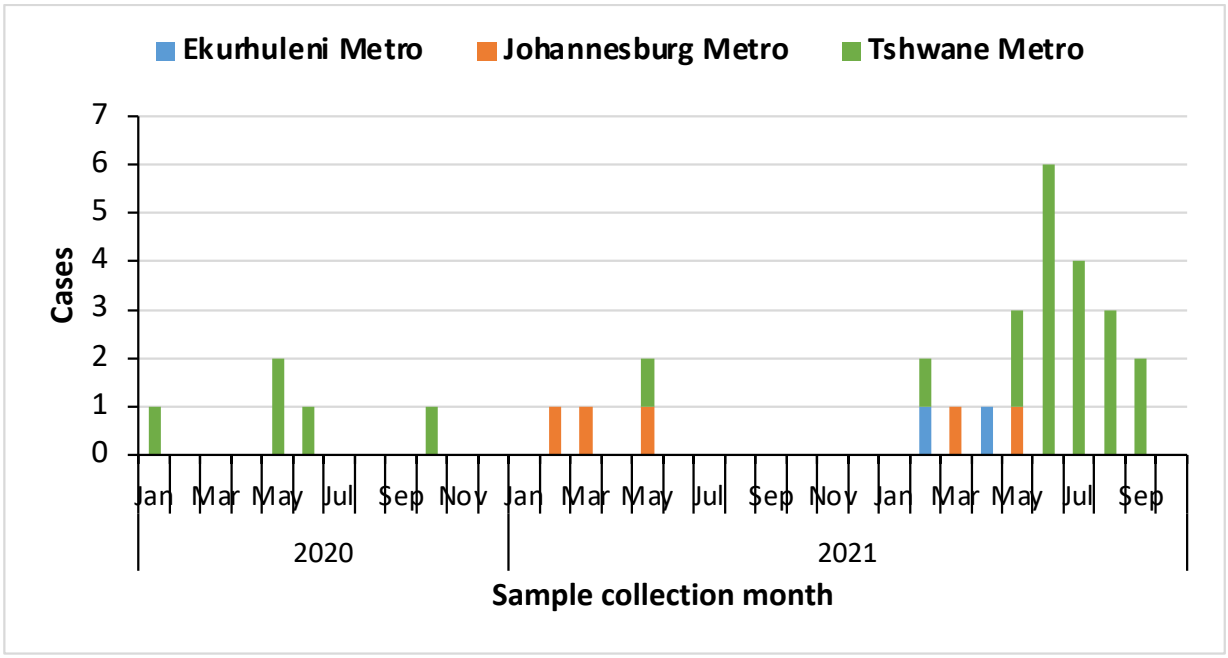

Figure 5. Gauteng Province cluster enteric fever cases, January 2020 – 22 November 2022 (N = 31)

The relevant provincial and district departments of health are aware of the above-mentioned clusters, and outbreak investigations are ongoing. There is no evidence to suggest contamination of municipal water as the source of infection in any of the clusters

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

RESPIRATORY DISEASES

Influenza

There has been a continued decrease in influenza cases from the influenza-like illness (ILI) (public health clinics) and pneumonia syndromic (public hospital) sentinel surveillance programmes conducted by the NICD in the past three weeks. The total number of influenza cases detected by the syndromic sentinel surveillance programmes in public sector as of epidemiological week 45 of 2022 (week ending 12 November 2022) is 697.

Of the 697 cases, 298 cases have been detected from ILI surveillance, with 39.6% (118/298) typed as B Victoria, followed by 31.2% (93/298) A(H1N1) pdm09, and 23.8% (71/298) (AH3N2). The remaining samples are not yet subtyped or unsubtypable due to low viral load (Figure 6). Among the 399 cases detected from pneumonia surveillance, the predominant subtype and lineage was A(H1N1)pdm09 36.8%, (147/399) followed by A(H3N2) 31.1% (124/399), and B Victoria 25.3% (101/399) (Figure 7).

The influenza season for 2022 began in week 17 (25 April 2022) ended in week 42 (16 October 2022) when the influenza detection rate in pneumonia surveillance dropped and remain below the seasonal threshold for two weeks as shown by the moving epidemic method (MEM) (Figures 8 and 9).

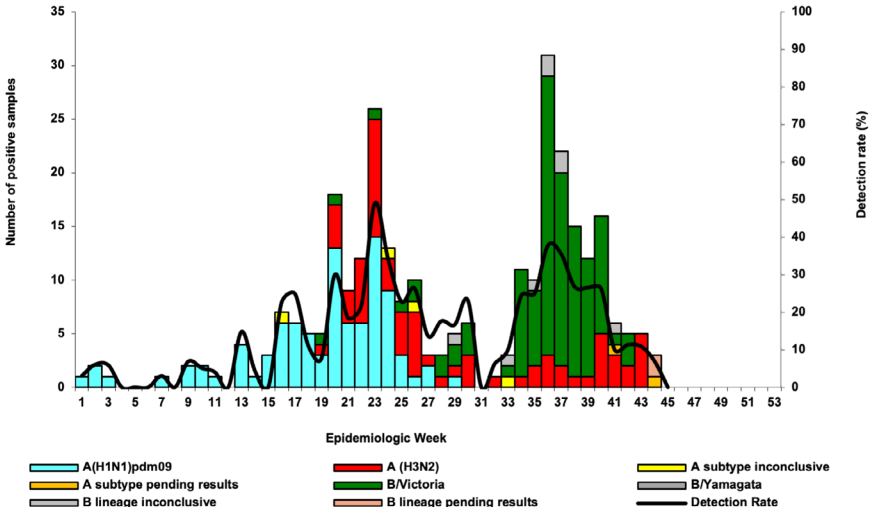

Figure 6. Number of influenza positive cases by influenza subtype and lineage and detection rate by week, pneumonia surveillance public hospitals, 03/01/2022 – 16/10/2022

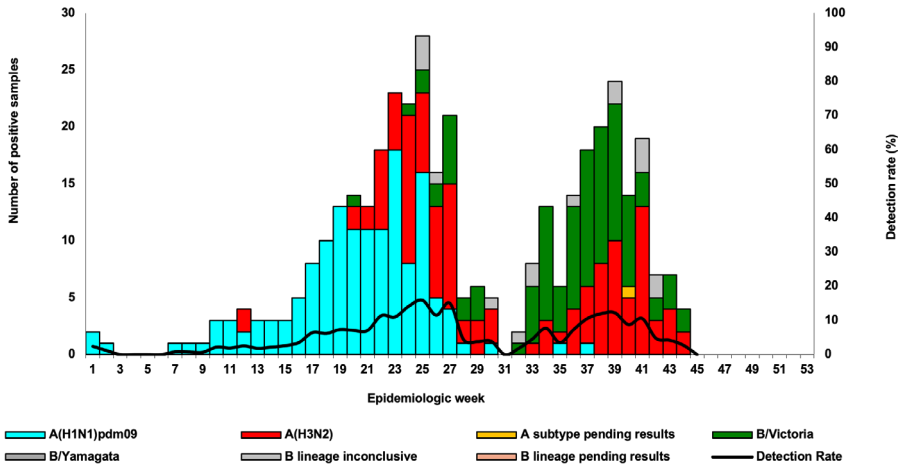

Figure 7. Number of positive cases by influenza subtype, lineage and detection rate, pneumonia surveillance, South Africa, 1 Jan 2022 – 12 November 2022.

RESPIRATORY DISEASES

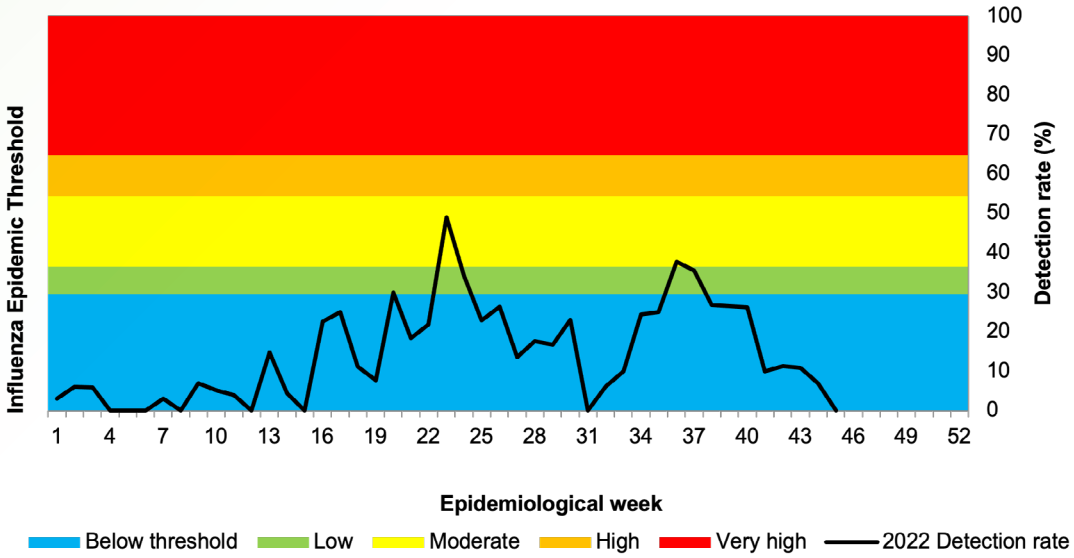

Figure 8. Influenza percentage detections, epidemic thresholds among cases of all ages, influenza-like illness (ILI) surveillance in public health clinic, South Africa 2022

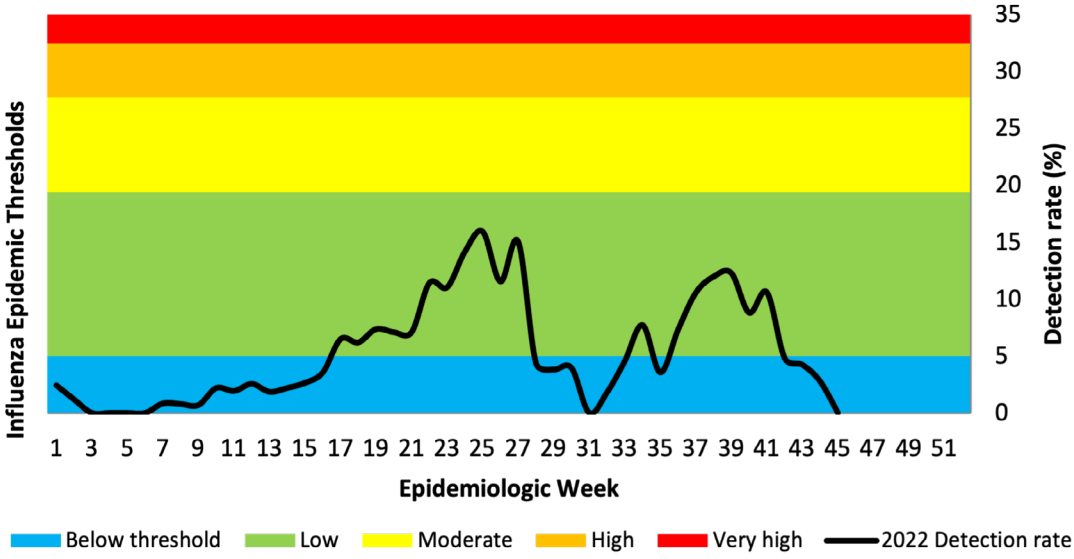

Figure 9. Influenza percentage detections, epidemic thresholds among cases of all ages, pneumonia surveillance public hospitals, South Africa 2022

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

RESPIRATORY DISEASES

Pertussis

For the year 2022 there has been an increase in pertussis cases detected by the pneumonia surveillance programme as compared to the first two years of the COVID-19 pandemic. From January to November 2022, 83 of 6 181 (1.3%) patients tested positive for pertussis. The increase in detection of pertussis cases started in July 2022, with 6.0% (5/83) testing positive in July, followed by 27.7% (23/83) in August, 31.3% (26/83) in September, and 20.5% (17/83) in October. Up until 14 November 2022, 12.0% (10/83) have tested positive (Figure 10). The increase in laboratory-confirmed pertussis cases was predominantly from sentinel surveillance sites in one province (Western Cape Province) (Figure 11). From 1 January 2022 to 15 November 2022, the pertussis detection rate was 3.3% (69/2 082) in Western Cape Province, 0.9% (8/908) in Mpumalanga Province, 0.3% (5/1 714) in Gauteng Province and 0.1% (1/915) in Kwa-Zulu-Natal Province. Of all pertussis cases, 80.7% (67/83) were in children <5 years of age and of those, 68.7% (46/67) were children <3 months old. Among the 81 pertussis-positive cases with data available on outcome, there was one mortality reported, a child <3 months of age from Mpumalanga Province.

In addition to the increase in pertussis cases identified at surveillance sites, there has been an increase in cases identified from the Notifiable Medical Conditions (NMC) surveillance system. From January to November 2022, 408 cases of pertussis were reported to the NMC of which 374/408 (91,7%) have been reported since July 2022. More than half the cases, 56.4% (230/408), were reported from Western Cape Province. The majority 67.2% (274/408) of cases reported were reported in children <5 years of age, of which 69.7% (191/274) were children aged <3 months.

Pertussis, commonly known as 'whooping cough' is a vaccine-preventable disease caused by *Bordetella pertussis* and is a category 1 notifiable medical condition. Clinicians are advised to have a high index of suspicion for cases, especially in very young children who may not present with typical symptoms of pertussis (cough and whoop). Where possible, diagnostic testing should be done. Cases or suspected cases, should be notified to the NMC. Post-exposure prophylaxis can be prescribed to close and high-risk contacts of suspected or confirmed cases. NICD recommendations for pertussis diagnosis, management and public health response may be found on the NICD web page (http://www.nicd.ac.za/index.php/pertussis/). Notification forms can be accessed at http://www.nicd.ac.za/index.php/nmc/. An alert for increased pertussis cases was released on 21 September 2022 (https://www.nicd.ac.za/increase-in-pertussis-cases-in-south-africa-21-sept-2022/)

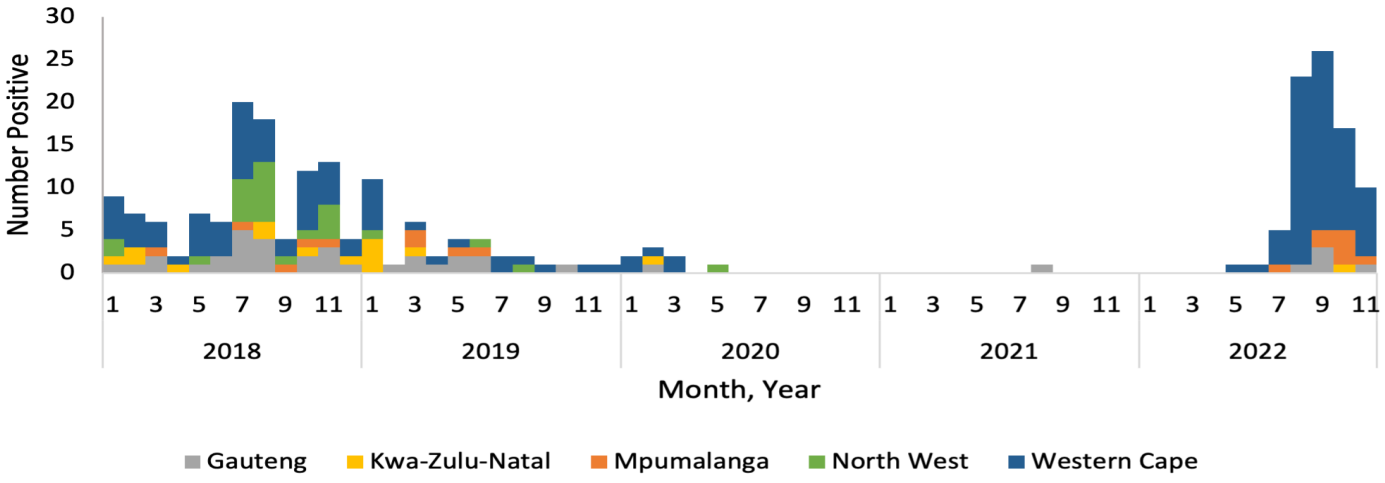

Figure 10. Number of laboratory-confirmed pertussis cases from pneumonia surveillance programme by year, month and province, South Africa 2018-2022

RESPIRATORY DISEASES

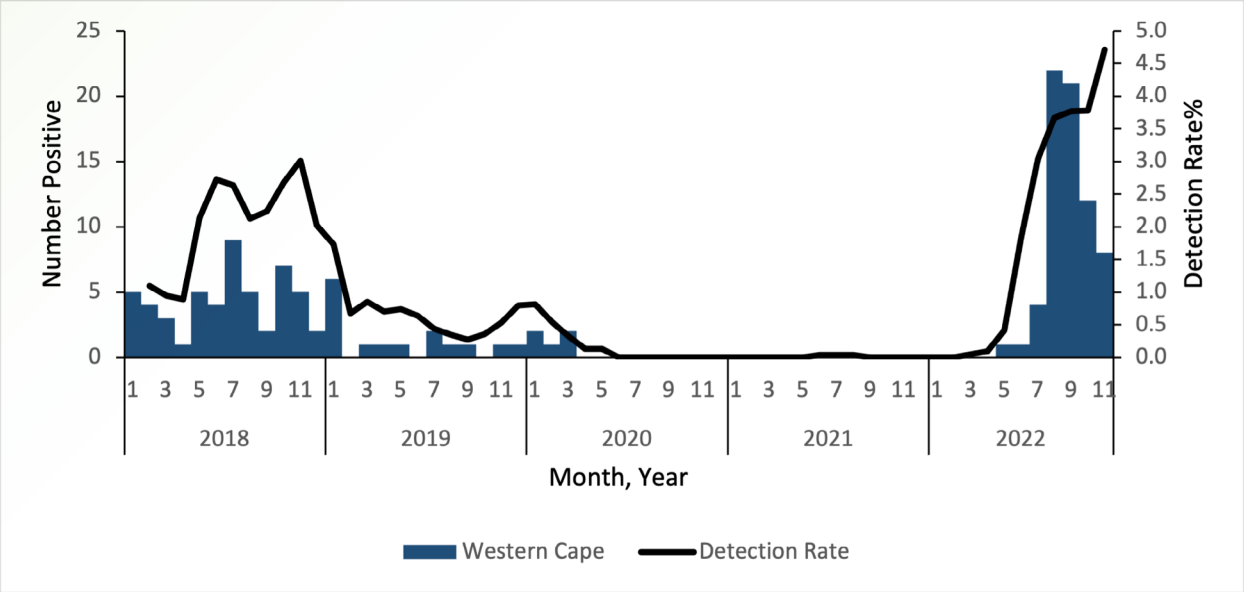

Figure 11. Number of laboratory-confirmed pertussis cases from pneumonia surveillance programme and 3-weeks rolling average detection rate by year, month in Western Cape, South Africa 2018-2022

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

VACCINES AND IMMUNOLOGY

Measles outbreak in Limpopo and Mpumalanga provinces

From 1 September 2022 to 22 November 2022, 71 laboratory-confirmed measles cases were reported in South Africa from the outbreaks in the Limpopo and Mpumalanga provinces (Table 1). The number of laboratory-confirmed measles cases in Limpopo Province has increased to 60. The affected districts in Limpopo Province include Capricorn, Greater Sekhukhune, Mopani, and Waterberg. All four districts have been declared measles outbreak areas. Vhembe district, with only two laboratory–confirmed measles cases, did not meet the measles outbreak criteria. On 28 October 2022, the Ehlanzeni district in Mpumalanga Province, which shares a border with Greater Sekhukhune and Mopani districts in Limpopo Province, was declared a measles outbreak area. In Mpumalanga Province, nine laboratory-confirmed measles cases were reported in the Ehlanzeni district, one in the Gert Sibande district and one in Nkangala district. The nine laboratory-confirmed measles cases in the Ehlanzeni district were reported from the Bushbuckridge and Thaba Chweu local municipalities.

The age-range of measles cases in the Limpopo Province was 4 months to 42 years, while in the Ehlanzeni district in Mpumalanga Province, ages ranged from 18 months to 10 years. The most affected age group in Mpumalanga Province is school-aged children, aged 1 to 4 years old (n=23, 32%), and in Limpopo Province, children aged 5 to 9 years old (n=24; 34%). Three laboratory-confirmed measles cases were admitted to healthcare facilities and no measles deaths have been reported in either province. In Limpopo Province, 38 laboratory-confirmed measles cases had unknown vaccination histories, 11 did not receive any measles vaccine doses, nine were fully immunised with two doses, and two were partially immunised with one dose. In Mpumalanga Province, the vaccination histories were unknown for three of the laboratory-confirmed cases, five did not receive any measles vaccine dose, and three were fully immunised.

In response to the measles outbreak, contacts of laboratory-confirmed cases have been followed up and vaccinated. The public health response to the measles outbreak in Limpopo Province should target improving measles immunity in all five districts. Vaccination of contacts is recommended in Ehlanzeni district to prevent the spread of the virus. The presenting symptoms of measles are fever, rash, and one or more of the following symptoms: cough, red eyes, and runny nose. Complications of measles include pneumonia, diarrhoea, dehydration, encephalitis, blindness, and death. Measles complications are severe in malnourished children and those under two years of age. Persons of any age who are not vaccinated can become infected with measles and develop the disease. Clinicians and caregivers should be on alert for anyone presenting with the above symptoms and signs and should check children's road-to-health booklets to ensure measles vaccinations are up to date. Measles vaccine doses are given routinely at 6 and 12 months of age. It is never too late to vaccinate against measles.

Suspected measles cases should be notified on the NMC system; https://www.nicd.ac.za/nmc-overview/overview/.

For the latest updates and case numbers please visit the NICD website; https://www.nicd.ac.za/media/alerts/.

VACCINES AND IMMUNOLOGY

Table 1. Laboratory –confirmed measles cases in Limpopo Province and Mpumalanga Province, South Africa, 1 September to 22 November 2022

		Measles cases per age group					
Province	District	≤1 year	1-4 years	5-9 years	10-14 years	≥ 15 years	Total number of measles cases
Limpopo	Capricorn	0	4	0	0	0	4
	Greater Sekhukhune	3	10	5	6	2	26
	Mopani	1	3	13	3	4	24
	Vhembe	1	1	0	0	0	2
	Waterberg	0	3	1	0	0	4
Limpopo Total		**5**	**21**	**19**	**6**	**9**	**60**
Mpumalanga	Ehlanzeni	1	2	4	2	0	9
	Gert Sibande	0	0	0	1	0	1
	Nkangala	0	0	1	0	0	1
Mpumalanga Total		**1**	**2**	**5**	**3**	**0**	**11**

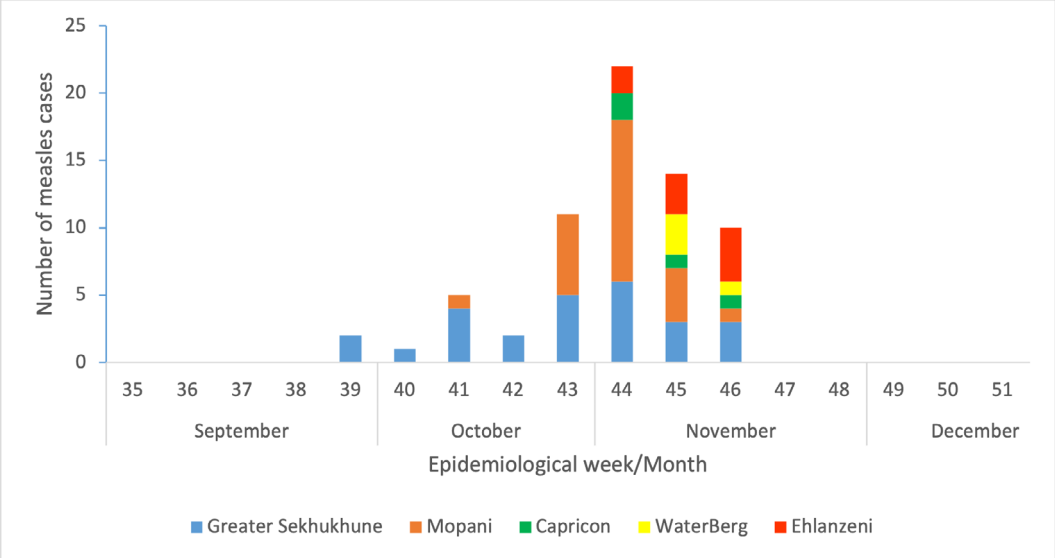

Figure 12. The epidemiological curve of measles outbreak cases, Limpopo Province and Mpumalanga Province, 01 September to 22 November 2022 (n=67)

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

BEYOND OUR BORDERS

The 'Beyond our Borders' column focuses on selected and current regional and international diseases that may affect South Africans travelling outside the country.

Ebola – Uganda

On 20 September 2022, an outbreak of Sudan ebolavirus (SUDV) was declared in Uganda by the Ministry of Health. As of 25 November 2022, there have been 141 confirmed cases, 55 deaths (CFR = 39%) and 80 recoveries. Nine districts have been affected, with confirmed cases in the following: Mubende, Kassanda, Kyegegwa, Bunyangabu, Kagadi, Wakiso, Masaka, Jinja and Kampala, the country's capital. A total of 565 contacts are actively being followed up in seven districts, with a follow-up rate of 73% in the last 24 hours.

This is the first outbreak caused by SUDV in Uganda in over a decade, with the last outbreak having been reported in 2012. Apart from outbreaks caused by SUDV, Uganda has experienced Ebola outbreaks due to the Bundibugyo virus in 2007 and Zaire virus in 2019.

Uganda is currently implementing multiple outbreak control interventions to contain the spread of disease, with a focus on Mubende and the surrounding districts. This includes daily coordination meetings and ongoing surveillance, laboratory testing and contact tracing. Infection prevention control, risk communication and community engagement as well as social mobilisation, are being practised throughout all nine districts and remain of utmost importance.

WHO has not yet recommended any limitations on travel, however noted that the risk of international spread needs to be considered. The risk of importation to South Africa is considered low, however, steps are being taken to prepare for the possibility of imported cases. Currently available Ebola vaccines and therapeutics have not yet been evaluated for efficacy against SUDV infection.

Source: WHO, Republic of Uganda M of H. Ebola Virus Disease. Uganda; 2022 Nov. Report No.: 60.

Monkeypox

As of 28 November 2022, according to WHO, the multi-country monkeypox outbreak has resulted in 81 107 lab confirmed cases, 1 526 probable cases and 55 deaths in 110 countries worldwide. Recently, the third meeting of the International Health Regulations (IHR) Emergency Committee regarding monkeypox was held on 20 October 2022, where it was declared that the current monkeypox outbreak was still a public health emergency of international concern (PHEIC).

Overall, the global risk assessment remains moderate, while the Region of the Americas is the only WHO Region to still have a high-risk status. This is because 92.3% of cases notified in the past four weeks are from this Region. In South Africa, the number of monkeypox cases remains unchanged, at a total of five cases to date.

In terms of overall epidemiological findings, the following have been noted:

- Young men make up 96.9% of all monkeypox cases reported, with a median age of 34 years.
- Males between the ages of 18 to 44 years make up 79.9% of all cases reported.
- Amongst cases where sexual orientation was reported, 84.8% have identified as being men who have sex with men (MSM) and 70.9% of all cases have been transmitted through sexual contact.
- At least 52% of all reported cases with a known HIV-status are HIV-positive.
- The most commonly reported symptoms have been any rash (mainly systemic and genital), followed by a fever, at 85.7% and 57.6% respectively.

WHO still advises that all cases be monitored closely and that case-finding, laboratory investigation, contact-tracing and clinical management still be performed with care. Practising infection prevention and control (IPC) and risk communication and community engagement (RCCE) remain of utmost importance in reducing the transmission of disease amongst our communities.

Following consultations with global experts, WHO has recommended that monkeypox now be referred to as "mpox." This change was announced on 28 November 2022, with a plan to phase out the term "monkeypox" over the next year.

Source: https://worldhealthorg.shinyapps.io/mpx_global/#1_Overview

BEYOND OUR BORDERS

Cholera

Cholera is caused by *Vibrio cholerae* and presents as an acute diarrheal infection, that if left untreated, can lead to severe dehydration and death in a matter of hours to days. The disease has a short incubation period of two hours to five days and immunocompromised persons are at a higher risk of contracting severe disease. Two strains, namely O1 and O139 have been associated with causing outbreaks and transmission is closely linked to poor access to clean water and sanitation services.

In the past month, there have been outbreaks of cholera reported from Haiti, Malawi and Lebanon by WHO. In Haiti, as of 21 November 2022, there are 963 confirmed, 12 016 suspected and 9 886 hospitalised cases, with 188 deaths. 59.6% of the affected patients are males, and the most-affected age groups are 1 to 4 year olds and 30 to 39 year olds. Of note, the second case of imported cholera was reported in the Dominican Republic on 21 November 2022.

In Lebanon, as of 15 November 2022, the number of confirmed and suspected cases have reached 3 253 with 18 deaths. Approximately 26% of the reported cases are of children less than five years of age. In Malawi, a cholera-endemic country, the current cholera outbreak has resulted in 8 111 cases and 241 deaths (CFR = 3%), across all 29 districts, between March 2022 and 13 November 2022. This is the largest cholera outbreak to be reported by the country in the last decade and is partly due the flooding and lack of access to clean water and sanitation caused by the tropical storms and cyclones in the region. Males aged between 21 and 30 years old, have been the most affected throughout this outbreak.

Currently, WHO advises that improved access to clean water, sanitation and health services is of vital importance and that prevention through the use of the oral cholera vaccine (OCV) and key public health communications must be practiced. However, this may prove to be difficult due to the global shortages of OCV, and the use of a 1 dose strategy instead of the normal 2 dose regimen. Due to this phenomenon, surrounding countries are urged to strengthen and maintain cholera surveillance and ensure early detection and treatment of cases. Travel and trade restrictions to these countries are also not recommended at this time.

Sources:

1. PAHO, WHO. Cholera Outbreak in Hispaniola. Haiti: PAHO/ WHO; 2022 Nov. Report No.: 6.
2. WHO. Cholera - Malawi [Internet]. World Health Organisation. 2022. Available from: ***https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON419***
3. WHO. Weekly Bulletin on Outbreaks and Other Emergencies. World Health Organisation; 2022 Nov. Report No.: 46.
4. Action Against Hunger USA. Lebanon Cholera Emergency Sitrep #5, 15th November 2022 [Internet]. Reliefweb. 2022. Available from: ***https://reliefweb.int/report/lebanon/lebanon-cholera-emergency-sitrep-5-15th-november-2022***

Dengue

Dengue fever is a mosquito-borne viral infection that usually affects populations in sub-tropical and tropical climates, globally. There are four closely related serotypes (DENV-1, DENV-2, DENV-3 and DENV-4) that have been noted to cause disease and presentation can range from mild illness to severe disease. Symptoms include a fever, severe headache, myalgia, arthralgia and rashes which can lead to severe disease with bleeding and multiple organ damage and complications.

Interestingly, once infected with a particular strain of dengue, a successive infection with another strain, can lead to a greater risk of death and severe complications. There are also limited vaccines available for use against dengue fever, which is why serotyping, surveillance, prevention, and control must be prioritised. In the WHO Region of the Americas, there has been a total of 2 545 021 reported cases across 46 countries during 2022, just over double the number of cases reported throughout 2021. Approximately 1 275 063 of these are confirmed cases, with 3 963 reported as severe, and 1 166 deaths. This trend of a higher number of cases than the previous year has also been seen throughout the WHO Western Pacific Region and in countries such as Bangladesh, Pakistan and Nepal.

WHO has recommended that the affected populations strengthen their prevention and control strategies. This includes use of the Integrated Vector Management (IVM) approach to enhance vector surveillance and control. Encouraging the use of personal protective equipment (PPE) by the public and promoting health seeking behaviour when sick, are also key interventions to be considered. As of now, no travel restrictions have been put in place or recommended by WHO.

Source: PAHO, WHO. Epidemiological Update for Dengue, Chikungunya and Zika in 2021. [Internet]. PAHO/ WHO; 2021. Available from: ***https://ais.paho.org/ha_viz/arbo/pdf/PAHO%20Arbo%20Bulletin%202021.pdf*** *Dengue [Internet]. PAHO - PLISA Health Information Platform for the Americas. 2022. Available from: https://www3.paho.org/data/index.php/en/mnu-topics/indicadores-dengue-en.html PAHO, WHO. Dengue [Internet]. PAHO. 2022. Available from: https://www.paho.org/en/topics/dengue"*

BEYOND OUR BORDERS

WHO AFRO UPDATE

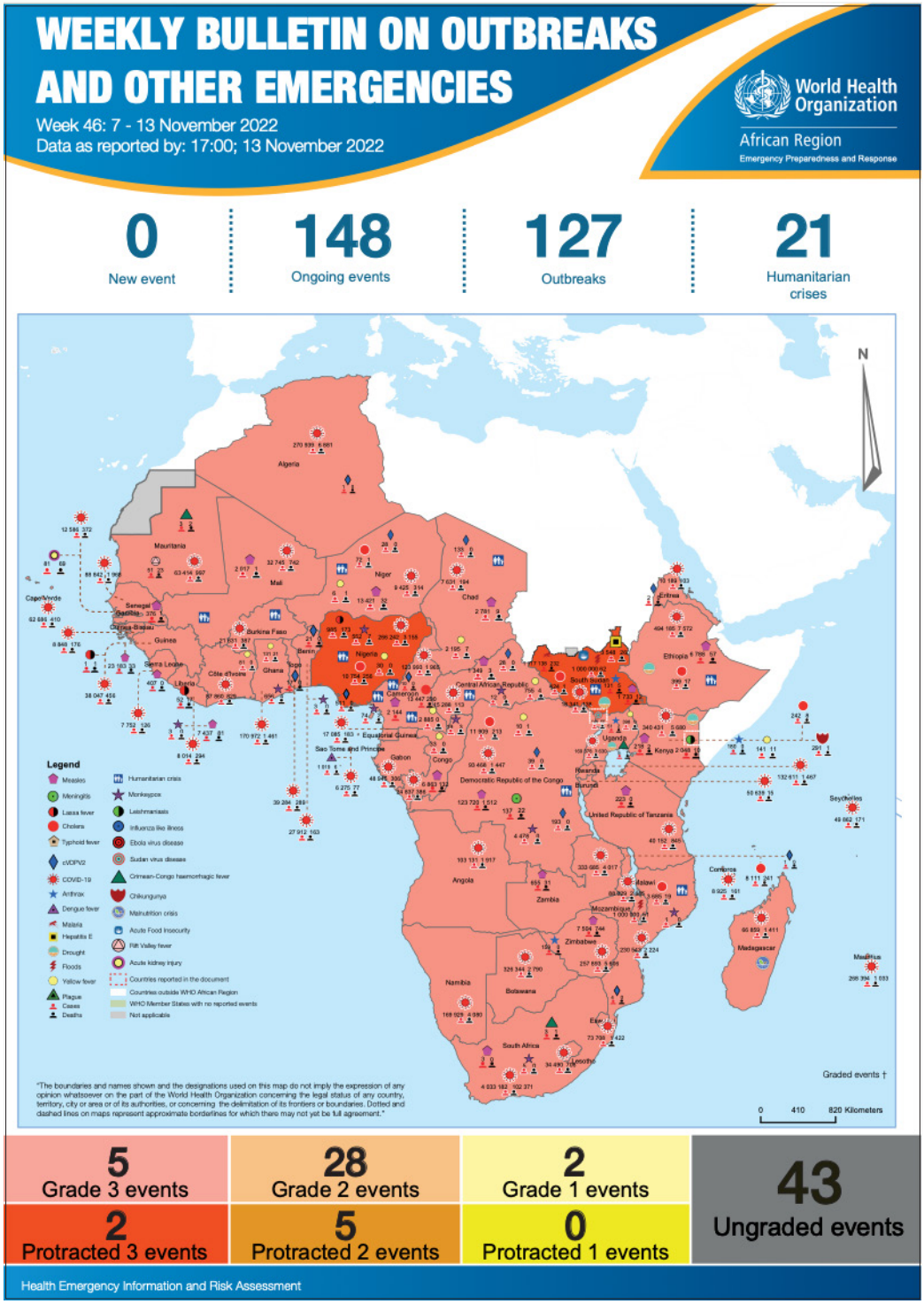

Figure 13. The Weekly WHO Outbreak and Emergencies Bulletin focuses on selected public health emergencies occurring in the WHO African Region. The African Region WHO Health Emergencies Programme is currently monitoring 148 events. For more information, see link below: https://www.afro.who.int/health-topics/disease-outbreaks/outbreaks-and-other-emergencies-updates