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COMMUNICABLE DISEASES**

Division of the National Health Laboratory Service

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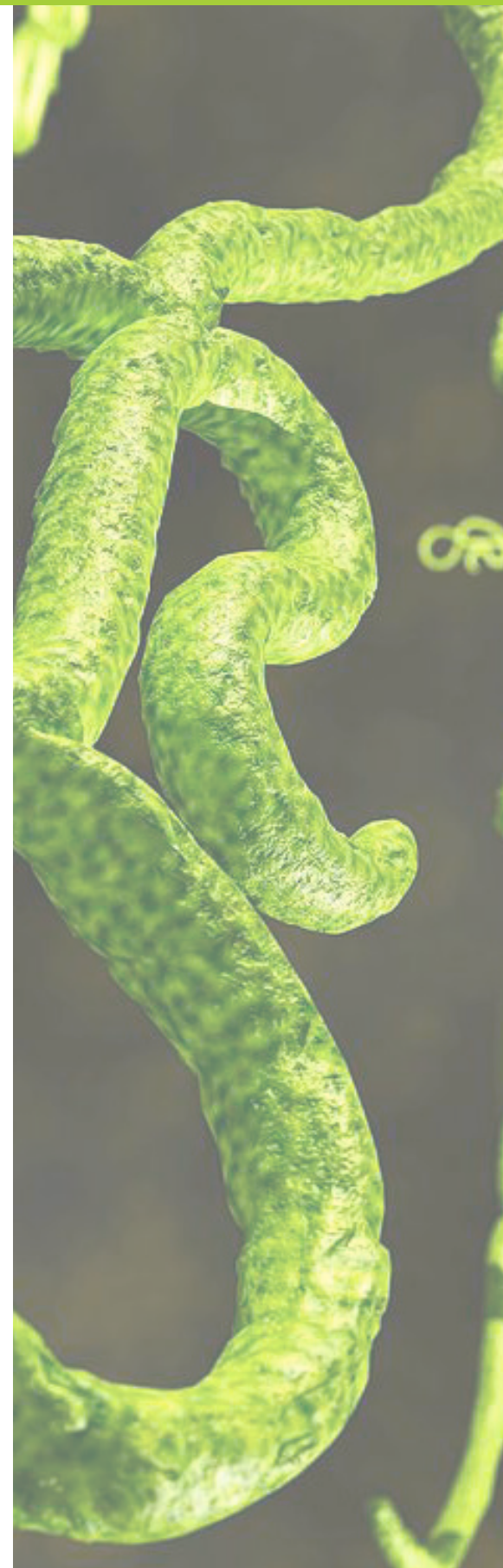
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Editor's Notes

Dr Michelle Groome

Head of Division of Public
Health Surveillance and Response

October in Gauteng is a sea of purple Jacaranda flowers, heralding the approach of the exam season for students and the final months of 2022. In terms of infectious diseases, a lot is happening both in South Africa and beyond our borders.

The global number of reported new monkeypox cases continues to decrease but some countries are still reporting an increase in the number of cases. South Africa has not reported any new monkeypox cases since August. The outbreak of Sudan ebolavirus in Uganda is cause for concern. Cases continue to increase, including in the capital city Kampala, and as of 25th October there were 109 confirmed cases across seven districts in Uganda. The risk of importation to South Africa is considered low but steps are being taken to prepare our response to such an eventuality.

A measles outbreak was declared in Limpopo Province's Greater Sekhukhune District in mid-October and public

health response activities are underway. Wild poliovirus has been detected in the neighbouring countries of Malawi and Mozambique which is concerning for South Africa. Measles and polio are vaccine-preventable disease so clinicians and parents should remember to check children's vaccination cards to make sure that vaccinations are up to date.

In terms of respiratory diseases, COVID-19 continues to circulate but the number of admissions and deaths remain low. The increase in pertussis cases, first reported in July, continues so please remain on the alert for cases, especially in very young children. The case of the month details Crimean-Congo haemorrhagic fever in an abattoir worker. We also provide updates on healthcare-associated infections, rabies and malaria.

Beyond our borders focuses on the increased number of cases of dengue in Pakistan and Nepal, and the cholera outbreak in Haiti.

Healthcare-associated Infections (HAI)

A healthcare-associated-infection (HAI) is defined as a clinically-evident infection 48 hours after admission to a healthcare facility. The World Health Organization estimates that of every 100 patients admitted to an acute-care hospital, seven patients in high-income countries and 15 in low-and middle-income countries will develop at least one HAI during their hospital stay.

Since 2014, the NICD's Centre for Healthcare-Associated Infections, Antimicrobial Resistance and Mycoses (CHARM) has recorded 52 requests for investigations of HAI outbreaks in the following provinces: Eastern Cape (n=4; 8%), Free State (n=3; 6%), Gauteng (n=30; 58%), KwaZulu-Natal (n=10; 19%), Mpumalanga (n=2; 4%), Western Cape (n=3; 6%). The vast majority (n=46; 88%) of these requests for investigations came from public-sector hospitals. These outbreaks of predominantly bloodstream HAIs were caused by various

bacterial and fungal pathogens, some of which were antimicrobial resistant.

Outbreaks of HAIs are much more frequent than identified and/or reported. While laboratory detection of multi-drug resistant bacteria (i.e. carbapenem-resistant Enterobacterales, colistin-resistant *Pseudomonas* and *Acinetobacter*, glycopeptide-resistant *Staphylococcus aureus* and *Enterococcus*) is notifiable, HAIs which are caused by a much wider spectrum of susceptible and resistant pathogens are not notifiable. HAIs can result in prolonged hospital stays, long-term disability, massive additional costs for health systems, high costs for patients and their families and unnecessary deaths. Infection prevention and control (IPC) measures, including hand hygiene and evidence-based care bundles, are simple, low-cost and effective in reducing HAI rates.

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

Malaria

As South Africa enters summer, malaria cases are expected to increase, due to higher temperatures and increased rainfall in the malaria transmission areas. The National Department of Health has reported a total of 4 109 cases and 34 deaths for the period January to October 2022. These figures are slightly lower than those for the same period in 2021 (4 300 cases with 49 deaths) but are likely to increase due to delayed data-capturing in the malaria information system. Many more people will be exposed to malaria during the upcoming holiday season, due to the lifting of all COVID-related travel restrictions and associated travel to higher transmission areas, both internally and beyond the country borders, particularly in Mozambique. Individuals traveling to malaria-endemic areas are urged to take adequate anti-malaria measures. If visiting high-risk areas, people should consider antimalarial prophylaxis – both doxycycline and atovaquone-proguanil are available without prescription from pharmacies.

Travellers can also procure prophylactics from public sector travel clinics. All people in malaria risk areas should reduce contact with mosquitoes by limiting outdoor activity after

dark, covering up bare skin (not forgetting feet and ankles), using mosquito repellents containing at least 10% DEET, ensuring mosquito screens on windows are closed, and using bed nets, fans or air-conditioning, if available.

It is important to note that while these precautions will substantially reduce the chance of acquiring malaria, the risk is never completely removed. All travellers returning from malaria transmission areas, including very low risk ones, should immediately report 'flu-like illness' (headache, fever, chills, fatigue, muscle and joint pain) that occurs up to three weeks after first potential exposure, to a healthcare professional. Children with malaria may have very nonspecific signs (fever, loss of appetite, vomiting). Healthcare workers, particularly those in non-endemic area, seeing febrile patients must remember to ask about travel areas to malaria transmission areas.

Malaria risk map, FAQs and further information on prevention are available on the NICD website: www.nicd.ac.za.

Centre for Emerging Zoonotic and Parasitic Diseases, NICD-NHLS; jaishreer@nicd.ac.za, charlottes@nicd.ac.za

Crimean-Congo Haemorrhagic Fever (CCHF) Case Report

In October 2022, the Western Cape Province recorded a second case of Crimean-Congo haemorrhagic fever (CCHF) for 2022. For 2022 to date, South Africa reports three confirmed cases of CCHF from the Western Cape Province (n=2) and Eastern Cape Province (n=1).

In this most recent case, a 36-year-old man from the Cape Winelands District fell ill on 8 October 2022 and was taken to a local hospital on 12 October 2022. The patient reported symptoms of fever, chills, headache, nausea, vomiting, abdominal pain, muscle pain, coughing and malaise, and was found to be dehydrated on examination. During the examination, an apical pneumothorax was noted, and an intercostal chest drain was inserted to drain blood from the intrathoracic space and relieve the collapsed lung. The patient developed thrombocytopenia and his platelet count dropped from $46 \times 10^9/L$ to $27 \times 10^9/L$ between 12 October 2022 and 17 October 2022. On 15 October 2022, the patient displayed signs of overt bleeding, namely purpura, ecchymosis, petechiae, malaena stool and disseminated intravascular coagulation. The patient also had liver failure due to transaminitis, with AST levels peaking at 4 856 IU/L on 15 October 2022 and ALT levels peaking at 3 792 IU/L on 17 October 2022. On 16 October 2022, the patient required both blood and platelet transfusions.

The patient works in an abattoir in the Cape Winelands district, and given the occupational risk and clinical picture, he was clinically diagnosed with CCHF on 17 October 2022. Laboratory confirmation of CCHF-specific IgM and IgG antibodies at titres of 1:1000 and 1:100, respectively, was reported on 18 October 2022. The sample taken on day 10 post-onset of symptoms produced a negative RT-PCR result for CCHF. The patient is currently recovering. The abattoir worker most likely became infected after coming into contact with infected animal blood and tissues during sheep slaughter. It is possible that additional workers were exposed to a common source of infected sheep in the abattoir. Direct patient exposure in family members and medical staff could have occurred, and as a result the Western Cape Province is tracing contacts and monitoring clinical symptoms and signs, although no secondary cases have been identified thus far.

Between 1981 and 22 October 2022, 221 confirmed cases of CCHF have occurred in South Africa. In half of the CCHF cases in South Africa, *Hyalomma* tick exposure was identified. Fifteen percent of cases involved the slaughter of ostriches or other livestock. The window of transmission from infected animals that experience a brief viraemia in response to a CCHF infection and then remain asymptomatic for the remainder of the time is quite small.

Please visit www.nicd.ac.za for more information on CCHF.

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

Rabies

A case of rabies was confirmed in a child from Buffalo City Municipality near the east coast of the Eastern Cape Province, in October 2022 (Figure 1). Buffalo City Municipality, which includes the large township of Mdantsane near East London, has reported four cases in 2009, 2021 and now in 2022. The nine-year-old boy presented with rabies disease at a hospital in East London, on the 27 September 2022 and died the following day. The child presented with fever, malaise, nausea, headache, vomiting, seizures, confusion, hypersalivation, aggressiveness, hyperactivity, severe brain swelling and generalized congestion prior to death. A post-mortem brain sample confirmed rabies by direct fluorescent antibody detection on 7 October 2022. The child resided with his family on a farm in Mdantsane, and although the child had abrasions on his right upper limbs and lateral chest walls, no specific animal-biting incident was recalled.

Canine rabies was introduced into the Eastern Cape in the late eighties and early nineties, spreading from Mozambique, through the Transkei to the province. With 64 confirmed cases and 16 probable cases (recorded since 2012), the Eastern Cape Province reported the highest number of human rabies cases of any province in South Africa over the last 18 years (2005-2022).

The widespread dog rabies outbreak that began in the Eastern Cape Province in 2021 and has predominantly affected the Nelson Mandela Bay and Buffalo City municipalities, has yet to be fully brought under control despite repeated targeted vaccination operations. Dog vaccinations were implemented in Mdantsane between 26 and 30 September 2022, after this clinical case was recorded and as part of the World Rabies Day campaign. The outbreak has resulted in 21 human rabies cases, compared to 11 cases in KwaZulu-Natal Province and 7 cases in Limpopo Province, the three most impacted provinces in South Africa over the last two decades.

A total of 11 cases of human rabies (including the case reported here) have been confirmed in South Africa for 2022 to date. These cases are reported from the following provinces: Eastern Cape (n=6), Limpopo (n=3) and KwaZulu-Natal (n=2). In addition, five probable cases of rabies were reported from the Eastern Cape Province.

Visit www.nicd.ac.za for further information on rabies post-exposure and pre-exposure prophylaxis.

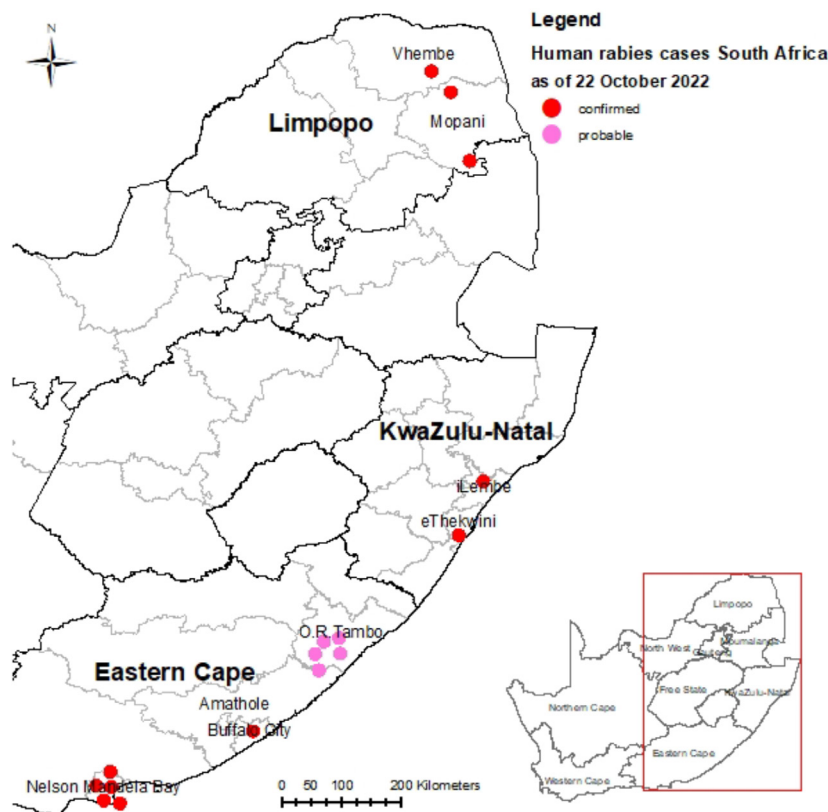


Figure 1. Distribution of rabies cases in humans in South Africa, 1 January – 22 October 2022 (Source: NHLS-NICD data)

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

Ebola

Since its initial declaration on 20 September 2022 an Ebola epidemic in Uganda, caused by the Sudan virus (SUDV), has resulted in 109 laboratory-confirmed cases and 31 fatalities (CFR 28%) as of 25 October 2022. Nine districts have been affected, with confirmed cases in the following seven: Mubende, Kassanda, Kyegegwa, Bunyangabu, Kagadi, Wakiso and Kampala, the country's capital (Figure 2). A total of 1 555 contacts are currently being followed up (follow up rate 87%).

Since its discovery in southern Sudan in 1976, the SUDV has rarely been reported. Historically, seven Sudan virus disease (SVD) outbreaks have been documented, four in Uganda in 2000, 2011, and 2012 (two outbreaks), and three in Sudan. Additionally, Uganda experienced Ebola outbreaks caused by Bundibugyo virus in 2007 and Zaire virus in 2019.

Containment efforts in Uganda are underway. As of 15 October 2022, the Mubende and Kassanda districts were placed under lockdown, curfews were implemented in both districts and restrictions were placed on movement in and out of the areas. The travel restrictions were put in place after at least one infected patient from the aforementioned areas sought treatment in a hospital in Kampala before passing away earlier this month. 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.

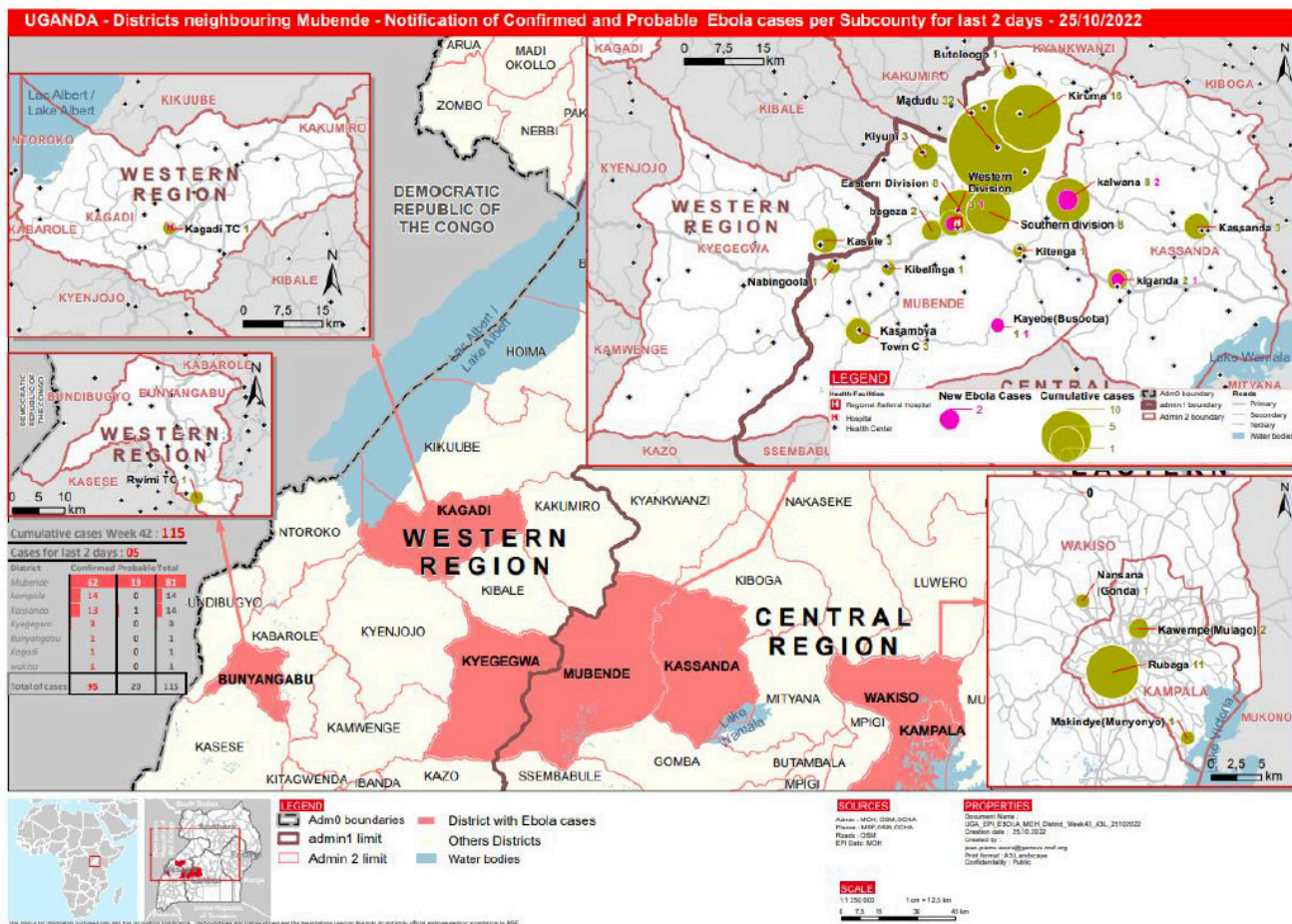


Figure 2. Place analysis of affected persons by district and sub-county (Uganda Ebola Virus Disease Situation Report #35)

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

Monkeypox

As of 27 October 2022, according to WHO, the multi-country monkeypox outbreak has resulted in 76 768 lab confirmed cases, 3 580 probable cases and 36 deaths in over 100 countries worldwide. Recently, the third meeting of the International Health Regulations (IHR) Emergency Committee regarding monkeypox was held on the 20 October 2022, however no specific updates have been released as yet.

Globally, there has been a downward trend in cases noted since August of this year, partially due to the decline in cases noted in the Americas and Europe, but overall, the global risk assessment still remains moderate. The number of monkeypox cases in South Africa remains unchanged at a total of five cases to date.

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

- Young men make up 96,9% of all monkeypox cases reported, with a median age of 34 years old.

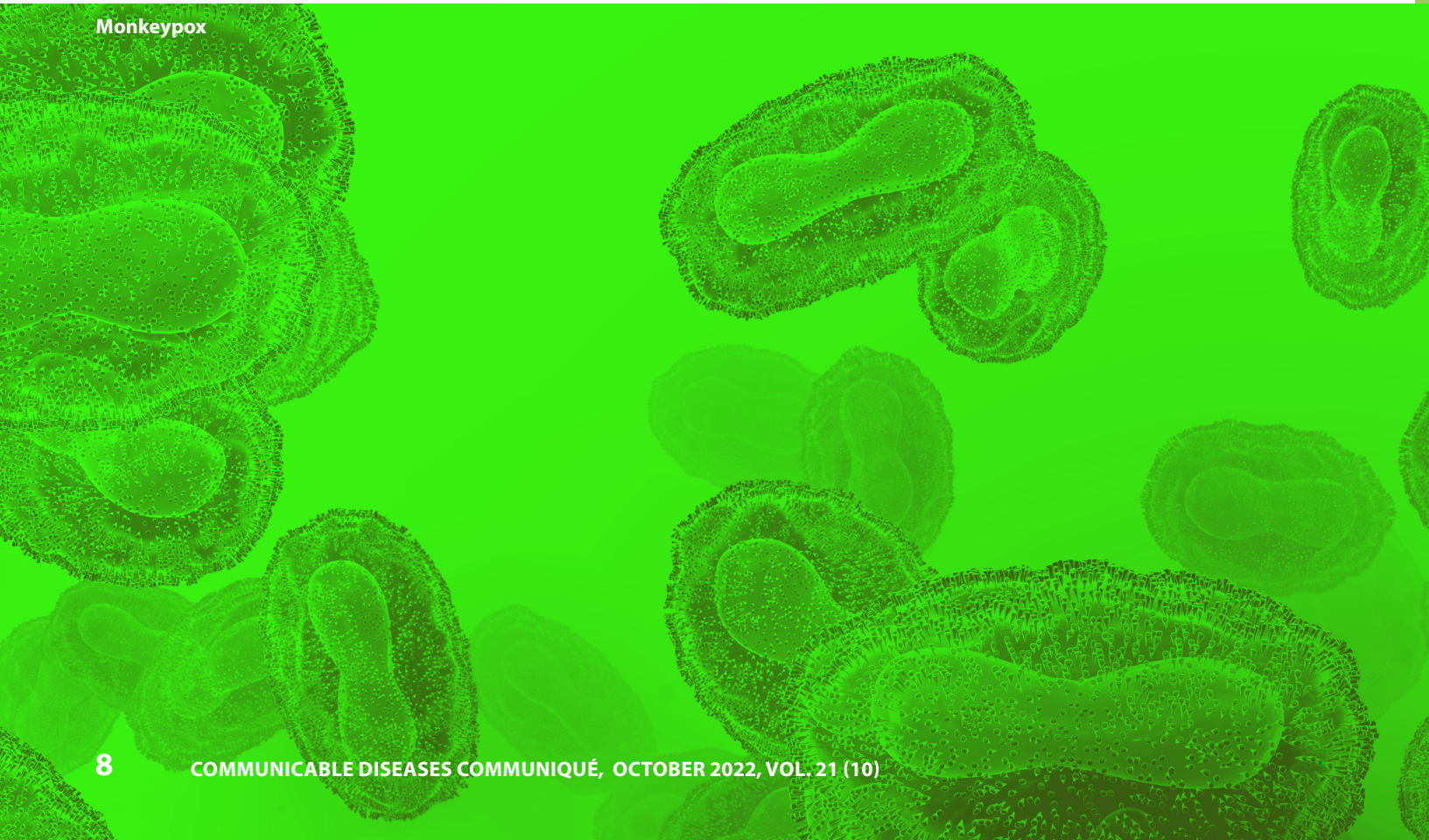
- Males between the ages of 18-44 years old make up 79,6% of all cases reported.
- Among cases which reported their sexual orientation, 86,9% have identified as being men who have sex with men (MSM) and 72,9% of all cases have been transmitted through sexual contact.
- At least 49,5% of all reported 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 81,4% and 58,8% 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 and we should continue to do so.

Source:

1. https://worldhealthorg.shinyapps.io/mpx_global/#1_Overview
2. WHO. Multi-country outbreak of monkeypox [Internet]. World Health Organisation; 2022 Jul p. 13. Report No.: 2. Available from: <https://www.who.int/publications/m/item/multi-country-outbreak-of-monkeypox--external-situation-report--8---19-october-2022>

Monkeypox



Pertussis

From January to October 2022, 59 of the 6 110 (1%) patients tested for *Bordetella pertussis* through the pneumonia surveillance at sentinel hospitals, tested positive. The increase that was first reported in July, continues, with the percentage of cases testing positive at 11,4 % (5/59) in July, 62% (23/59) in August, 44% (26/59) in September and 5% (3/59) in October (testing for October is ongoing) (Figure 3). The increase in laboratory-confirmed pertussis cases was predominantly from sentinel surveillance sites in Western Cape (Figure 4) followed by Gauteng and Mpumalanga Provinces, with detection rates of 2,7% (56/1 903), 2,3% (4/1 568) and 0,4% (3/838), respectively. Of all pertussis cases, 78% (46/59) were children under 5 years of age and of those, 61% (28/46) were children <3 months old. The latter group are too young to have completed the primary vaccination schedule and therefore would not have had full immunity against the disease.

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 pertussis, especially in very young children who may not present with typical symptoms. They are also advised to conduct diagnostic testing where appropriate, to notify cases and to prescribe post-exposure prophylaxis to close 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/>)

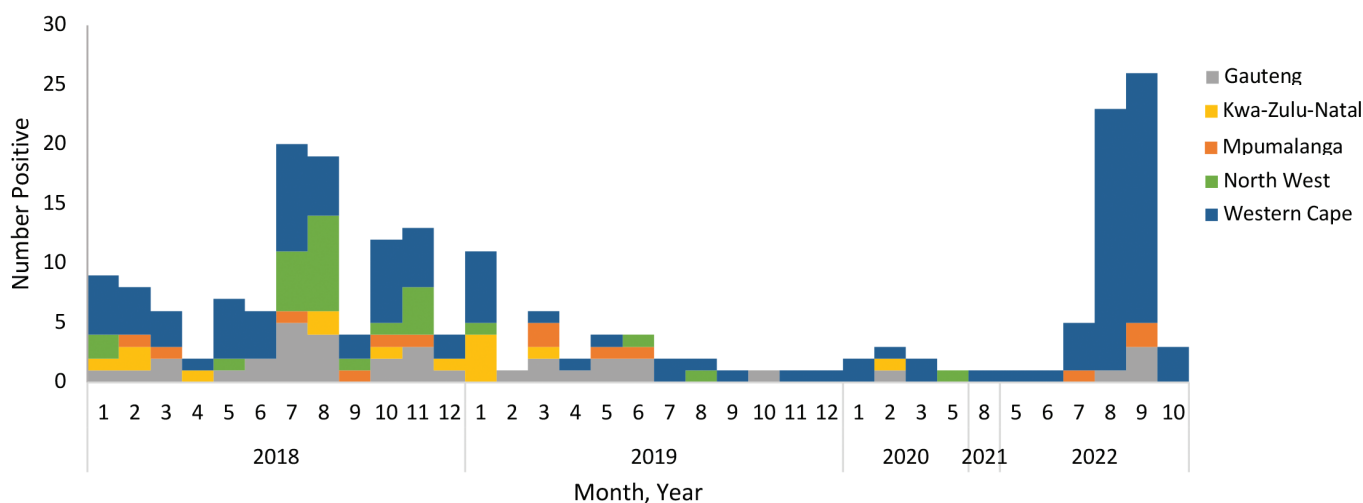


Figure 3. Number of laboratory-confirmed pertussis cases from pneumonia surveillance programme by year, month and province, 2018-2022

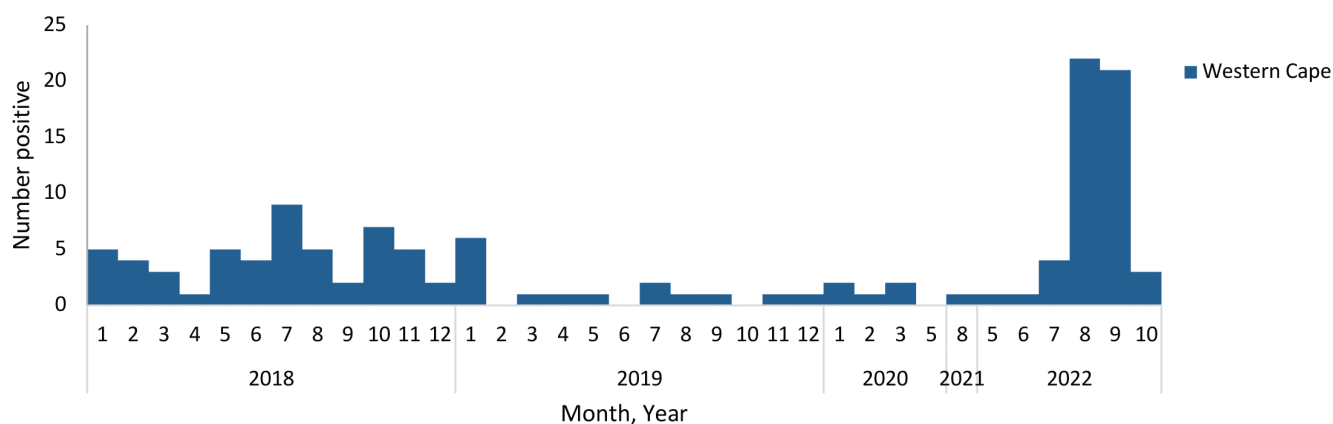


Figure 4. Number of laboratory-confirmed pertussis cases from pneumonia surveillance programme by year, month in Western Cape, 2018-2022.

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

COVID-19

From 3 March 2020 through to 15 October 2022 (epidemiological week 41), a total of 21 232 779 PCR tests for SARS-CoV-2, 4 023 655 laboratory-confirmed COVID-19 cases, 543 678 admissions and 104 435 deaths were reported in South Africa. In epidemiological week 41, the PCR testing rate was highest in Western Cape Province (55 per 100 000 persons) and lowest in Limpopo Province (6 per 100 000 persons). The percentage testing positive (PTP) in week 41 was highest in Gauteng Province (4,0%) and lowest in Mpumalanga (4,2%) and was significantly higher in week 41 (9,4%) compared to week 40 (7,2%), $p < 0.05$.

The PTP has been on an increasing trend since week 36, where it was 4.6%. The highest weekly incidence risk was reported in Gauteng Province (7,8% cases per 100 000 persons), and the lowest in Limpopo Province (0,7% cases per

100 000 persons), with an overall 27,2% increase in new cases in epidemiological week 41 (2 271) as compared to week 40 (1 786).

The highest weekly proportion of admissions was reported in Gauteng Province (40,1%), and the lowest was in Northern Cape Province (0,8%), with an overall 21,0% decrease in new admissions in week 41 (232) compared to epidemiological week 40 (293). In summary, the testing rate has continued to decline, whilst the PTP has been on an increasing trend over the past six weeks, and the weekly incidence has been increasing since week 38. The number of admissions and deaths has remained low and stable over the past few weeks. Individuals eligible for COVID-19 vaccines are encouraged to vaccinate and to get booster shots as indicated in order to reduce their risk of severe disease.

Table 1. Number and cumulative incidence risk of SARS-CoV-2 PCR testing, laboratory-confirmed cases of COVID-19, admissions and deaths per 100 000 persons by province, South Africa, 3 March 2020 – 15 October 2022

Province	Cumulative cases (n) (percentage, n/ total cases in South Africa)	Population in mid-2021 ¹ , n	Cumulative testing rate per 100,000	Cumulative incidence risk of cases / 100,000	Cumulative incidence risk of admissions / 100,000	Cumulative incidence risk of deaths / 100,000
Eastern Cape	365 184 (9.1)	6 676 590	24599.4	5 469.6	731.5	199.3
Free State	216 812 (5.4)	2 932 441	42533.7	7 393.6	1114.7	209.9
Gauteng	1 334 633 (33.2)	15 810 388	50213.5	8 441.5	1016.5	194.1
KwaZulu-Natal	719 808 (17.9)	11 513 575	32050.1	6 251.8	777.7	152.9
Limpopo	160 277 (4.0)	5 926 724	10323.5	2 704.3	357.8	90.0
Mpumalanga	203 049 (5.0)	4 743 584	22523.9	4 280.5	486.1	104.0
North West	202 949 (5.0)	4 122 854	22565.6	4 922.5	831.3	121.7
Northern Cape	115 504 (2.9)	1 303 047	43125.6	8 864.2	915.0	188.8
Western Cape	705 436 (17.5)	7 113 776	49446.4	9 916.5	1707.1	266.1
Unknown	3					
Total	4 023 655	60 142 978	35303.8	6 690.1	904.0	173.6

¹2021 Mid-year population Statistics South Africa

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

SARS-COV-2 virus



Influenza in South Africa

As of 3 January 2022 to 16 October 2022 (week 39), 373 cases of influenza have been detected from pneumonia surveillance (public hospitals) sentinel sites. Of which 146 (49%) were influenza A(H1N1)pdm09, 104 (35%) influenza A(H3N2), 11 (4%) influenza A(subtype inconclusive), 8 (3%) influenza A(pending results), 89 (30%) influenza B(Victoria), 11 (4%) influenza B(lineage inconclusive) and 5 (2%) influenza B(pending results) (Figure 5).

wave so far was of low impact, with a seasonal peak in week 25 (week starting 20 June 2022) and a second peak in week 39 (week starting 26 September 2022). In recent weeks, a decline in detection rate of the second wave (week 32 - week 41) is noted. The majority of cases were children under 5 years old (155/373, 42%). Most cases were enrolled from Gauteng Province (88/373, 24%) followed by Western Cape Province sentinel sites (78/373, 21%).

The 2022 influenza season started in week 17 (week starting 25 April 2022) when the detection rate among patients in pneumonia surveillance breached the epidemic threshold as determined by the Moving Epidemic Method (MEM) and in week 41, the impact was low (Figure 6). The 2022 seasonal

It is better to vaccinate before the start of influenza season. However, flu continues to circulate and as a result the Department of Health extended the vaccination campaign. Clinicians are encouraged to continue to recommend flu vaccination to their patients.

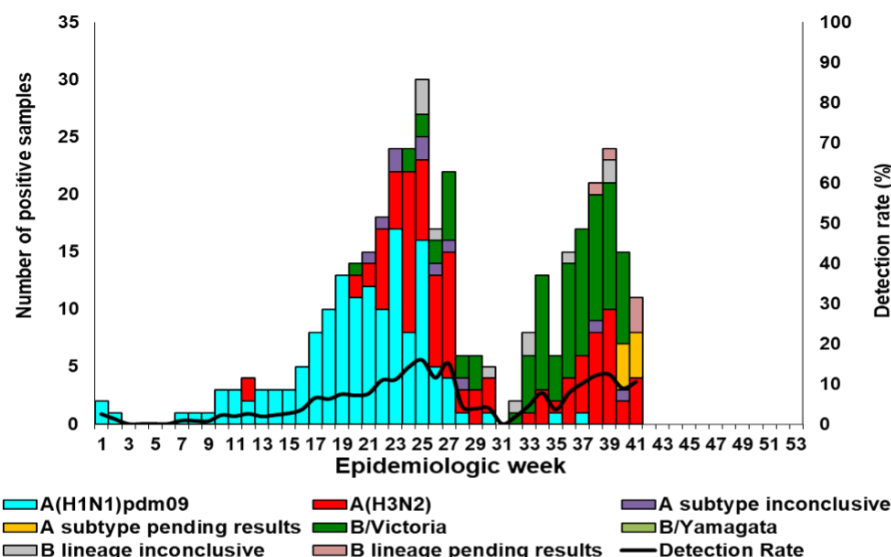


Figure 5. Number of influenza positive cases by influenza subtype and lineage and detection rate by week, pneumonia surveillance public hospitals, 03/01/2022 – 16/10/2022

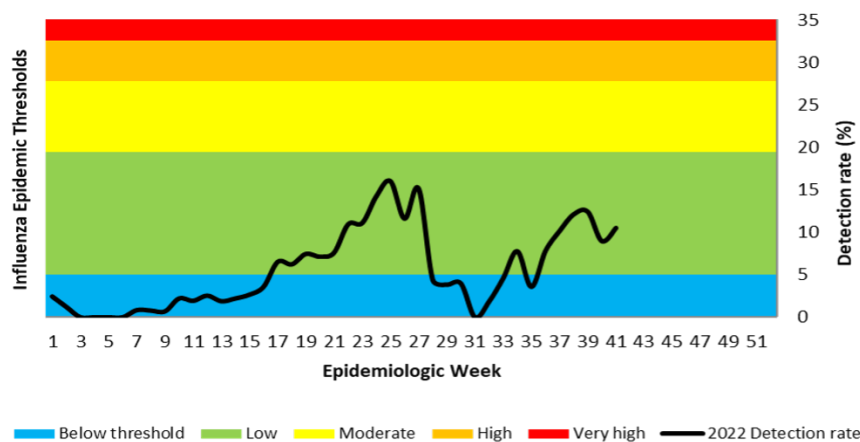


Figure 6. Influenza percentage detections and epidemic thresholds among cases of all ages, pneumonia surveillance public hospitals, 03/01/2022 – 16/10/2022

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

Influenza vaccine effectiveness in South Africa

The effectiveness of the trivalent/quadrivalent seasonal influenza vaccine (TIV/QIV) to prevent influenza-associated medically attended acute respiratory illness was assessed using a test-negative case control study design. Patients meeting the case definition for influenza-like illness presenting to an outpatient influenza sentinel surveillance programme (Viral Watch) in South Africa were enrolled during the 2022 influenza season.

Of the 521 surveillance cases enrolled in the VW programme during the season and included in vaccine effectiveness (VE) analysis (aged >6 months with known vaccination status), 207 (40%) were classified as cases (influenza test positive) and 314 (60%) as controls (influenza test negative).

Vaccine coverage was 12% (61/521) overall in the VW programme (Table 2): 6% (12/207) and 16% (49/314) among cases and controls respectively. Coverage was highest in the ≥65 years age group (53%) and lowest among cases aged <18 years (8.8%).

The overall (any influenza) VE estimate, adjusted for age and seasonality was 65% (95% confidence interval (CI): 30%, 82%) (Table 3). Influenza A(H1N1)pdm09 VE estimate, adjusted for age and seasonality was 46% (95% CI: -20%, 76%). The influenza A(H3N2) estimate, adjusted for age and seasonality was 91% (95% CI: 31%, 99%). VE was not able to be determined for B/Victoria due to small numbers.

Table 2. Vaccine coverage and vaccine effectiveness (VE) by age group and timing within season, 2022

	Vaccine coverage			Unadjusted VE % (95% confidence interval)
	Cases n/N (%)	Controls n/N (%)	Total n/N (%)	
All	12/207 (6)	49/314 (16)	61/521 (12)	66.7 (35.7, 82.8)
<18 years	4/72 (6)	10/86 (12)	14/158 (9)	55.3 (-49.1, 86.6)
18-64 years	7/128 (6)	28/201 (14)	47/329 (10)	62.3 (15.5, 84.8)
≥65 years	1/7 (1)	11/27 (41)	18/34 (53)	75.8 (-130.4, 97.5)
Early-season (week 16-21)	3/47 (6)	9/96 (9)	12/143 (8)	34.1 (-155.8, 83.2)
Mid-season (week 22-27)	7/113 (6)	20/117 (17)	27/230 (12)	68.0 (20.9, 87.0)
Late-season (week 28-31)	2/47 (4)	20/101 (20)	22/148 (15)	82.0 (19.4, 96.0)

Table 3. Vaccine coverage and vaccine effectiveness (VE) by influenza subtype, adjusted by age and seasonality, 2022

	Vaccine coverage			Unadjusted VE % (95% confidence interval)
	Cases n/N (%)	Controls n/N (%)	Total n/N (%)	
Any influenza	12/207 (5.8)	49/314 (15.6)	61/521 (11.7)	64.5 (29.9-82.0)
Influenza A(H1N1)pdm09	9/122 (7.4)	49/314 (15.6)	58/436 (13.3)	45.8 (-20,75.5)
Influenza A (H3N2)	1/58 (1.7)	49/331 (14.8)	50/389 (12.8)	90.8 (31.4,98.8)

Recommended Southern Hemisphere influenza vaccine formulation for 2023

South Africa is a Southern Hemisphere country with a temperate climate and with influenza epidemics usually occurring between April and October, with a peak during the winter months. The following strains are recommended for 2023 trivalent and quadrivalent inactivated influenza vaccine (IIV) Southern Hemisphere influenza season:

Egg-based tri/quadri-valent vaccines including

- an A/Sydney/5/2021 (H1N1)pdm09-like virus;
- an A/Darwin/9/2021 (H3N2)-like virus;
- a B/Austria/1359417/2021 (B/Victoria lineage) like- virus; and

- a B/Phuket/3073/2013-like (B/Yamagata lineage) virus (quadrivalent vaccine only)

The 2023 recommendations include a change to the A(H1N1)pdm09 component of egg-based vaccines strains compared with the 2022 Southern Hemisphere trivalent and quadrivalent IIV. For A(H1N1)pdm09 vaccine virus component, A/Victoria/2570/2019 (H1N1)pdm09-like virus was replaced with A/Sydney/5/2021 (H1N1)pdm09-like virus. In South Africa, the trivalent IIV was only available in the public sector (at designated clinics and hospitals), the quadrivalent IIV was available mostly in the private sector with limited doses in public sector, generally from March or April. Either trivalent or quadrivalent IIV may be used during 2023 flu season depending on availability.

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

Measles

On 11th of October 2022, NICD issued a measles alert after three cases were detected in Limpopo Province's Greater Sekhukhune District. As of 21 October 2022, eight cases of measles have been confirmed in the area (Figure 7).

The age-range of the confirmed cases is between 9 months and 24 years of age. Four of the patients are males and the other four, females. One child was fully vaccinated against measles, with two measles doses given in 2019. The other six measles cases had unknown vaccination histories, and one child had not been vaccinated against measles. One measles patient was hospitalised and another developed pneumonia.

Limpopo Province and Greater Sekhukhune District health officials have started public health response activities with the support of other stakeholders. These activities include evaluating medical records to identify missing measles cases, contact tracing, screening for suspected measles cases using the measles case surveillance case definition, and collecting blood and throat swabs for measles diagnostic tests.

Measles patients present with fever, rash, and one or more of these 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 young infants under 2 years of age. Persons of any age who are not vaccinated can catch measles and develop the disease. Clinicians and caregivers should check children's road-to-health booklets to ensure measles vaccinations are up to date. Measles vaccines 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/>. Please refer to the NICD website for more up-to-date information and latest case numbers.

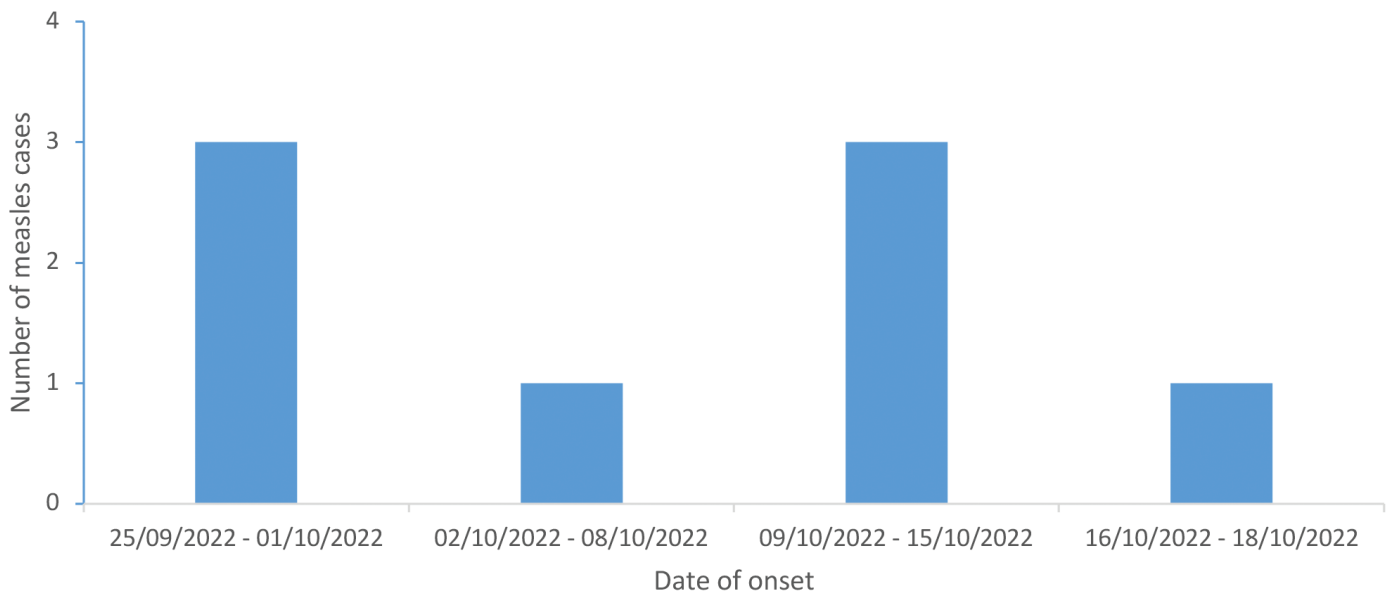
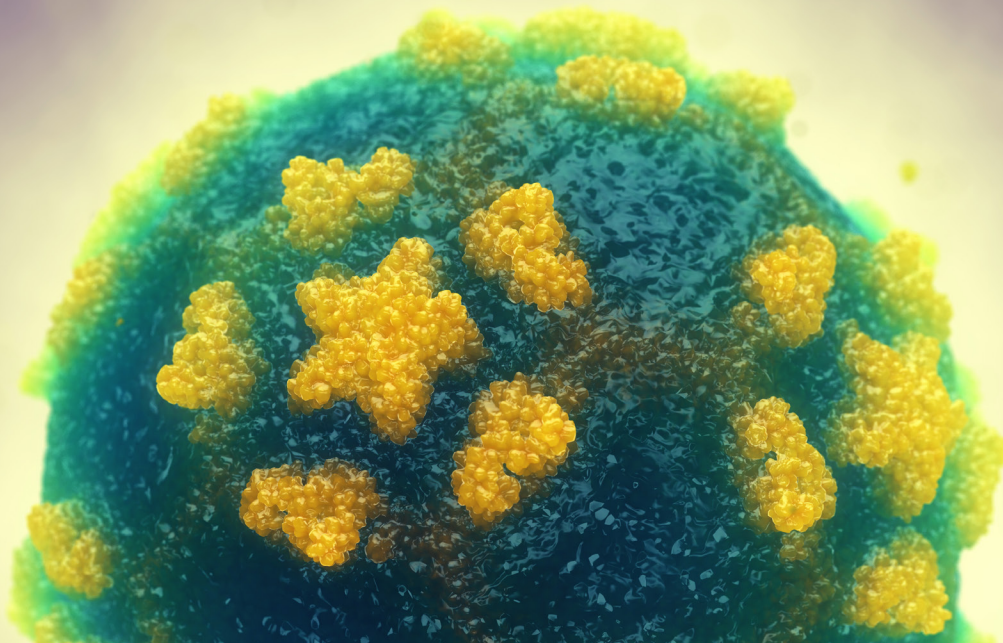


Figure 7. Measles outbreak showing cases detected in Greater Sekhukhune district, Limpopo province, 22 September 24 October 2022.

Source: Centre for Vaccine and Immunology, NICD-NHLS, jackm@nicd.ac.za, Department of Health Limpopo province

Polio virus

Polio

Thanks to the invention of two polio vaccines in the 1950s and '60s, and the establishment of the Global Polio Eradication Initiative in 1988, poliovirus, the cause of polio, which used to strike fear into mothers' hearts when outbreaks were reported at schools all over the world is almost eradicated.

These interventions dropped paralysis cases caused by polio from about 350 000 cases per year, to a record low of six cases from only two countries in 2021.

Unfortunately, elimination efforts are now challenged by a new type of virus that results when there are vaccination gaps in the population. The oral polio vaccine (OPV) – an inexpensive, easily manufactured vaccine is a weakened version of the natural 'wild' virus. When introduced to a population that has vaccination gaps, it can spread from person to person and accumulates genetic mutations that help it revert to a disease-causing virus. This then can cause outbreaks of paralytic polio much like the wild virus.

The Centre for Vaccines and Immunology (CVI) of the NICD hosts a regional polio reference laboratory that supports South Africa and neighbouring countries to test samples from paralysis cases for poliovirus. The laboratory also analyses the genetic sequences of viruses of concern to determine their origin and spread.

In recent weeks, the NICD has detected wild poliovirus from persons with acute flaccid paralysis in Malawi and Mozambique. The strain is related to isolates from Pakistan with the closest genetic relative being a wild-polio virus identified there 18 months ago. To date, over 2 700 samples

have been received from cases of acute flaccid paralysis and their contacts from these two countries. To date, seven cases have been reported to the WHO, with one case found in Malawi at the end of 2021, and six cases in Mozambique in 2022. Both countries also have vaccine-derived viruses that are consistently being carried across their borders. As of the 14 September 2022, there were 13 individuals in Central Mozambique suffering from these vaccine-derived viruses, and more viruses are being detected from cases in both Malawi and Mozambique that require the genetic analysis needed to determine if they are viruses of concern.

Flaccid paralysis cases from outside the Southern African Region have also been analysed at the South African Regional Reference Laboratory. Viruses of concern in 2022 have been analysed from the Democratic Republic of Congo, Madagascar, Sierra Leone, and Liberia.

This situation is extremely concerning for South Africa, given the large numbers of people that regularly commute to and from these countries. Polio vaccination coverage rates in South Africa are sub-optimal, particularly since the COVID pandemic. Surveillance indicators also show that AFP detection rates and case investigation needs strengthening.

Healthcare workers are encouraged to notify on the NMC app and investigate all cases of acute flaccid paralysis. HCW should complete an AFP case investigation form (found at <https://www.nicd.ac.za/diseases-a-z-index/acute-flaccid-paralysis-afp/>) and submit two stool samples collected 24 hours apart and within 14 days of the onset of paralysis. A neurological assessment form should also be completed and submitted.

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

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

Measles – Zimbabwe

As of 12 October 2022, Zimbabwe has recorded a cumulative total of 7 504 cases of measles, including 355 confirmed cases. The outbreak that began on the 10 of April 2022 has resulted in 744 deaths, the majority being unvaccinated children. For

more details on the outbreak, please refer to the August issue of the Communiqué (Communicable Diseases Communiqué Vol.21 (8), August 2022).

Source: <https://apps.who.int/iris/bitstream/handle/10665/363696/OEW42-1016102022.pdf>

Dengue – Pakistan, Nepal

Dengue fever is a mosquito-borne viral infection that usually affects sub-tropical and tropical populations globally. There are four closely related serotypes that have been noted to cause disease and presentation can range from mild illness to severe disease. 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 no vaccines or antiviral treatment for dengue fever, which is why serotyping, surveillance, prevention, and control must be prioritised.

In Pakistan, all four serotypes of dengue are circulating and therefore the population is at a high risk of re-infection and severe disease or death. Between 1 January and 27 September 2022, a total of 25 932 confirmed dengue cases and 62 deaths were reported by all four provinces, with a clear increase noted in August. This increase in case numbers is in part due to the heavy rains and floods as well as other circulating diseases (COVID-19, malaria, polio and acute watery diarrhoea) currently burdening the population and health system. Currently, Pakistan is at high risk for severe health impacts caused by dengue fever according to the WHO risk assessment. This is due, in part, to the nature of the disease but exacerbated by the flood crisis that has displaced approximately 7,9 million people, limiting their access to health services.

In Nepal, between January to 28 September 2022, a total of 28 109 confirmed and suspected dengue cases and 38 confirmed deaths have been reported in all seven provinces and 77 districts. Cases have increased during the rainy season in July, with 83,6% of cases reported in September alone. It is still unknown what the circulating serotypes are. Regardless, the ongoing outbreak of regional and national concern as it is the largest documented dengue fever outbreak Nepal has experienced. The highest number of cases and deaths have been reported from Bagmati province and epidemiologically, based on 23% of the total cases, males between the ages of 15-59 years old are more affected. According to the WHO risk assessment, Nepal has a high national risk for sustained transmission of disease and excessive burden on healthcare resources. This is due to sharp increase in cases and deaths noted, the unknown causative serotype and the simultaneous increasing burden of Japanese encephalitis and Scrub typhus in the country.

According to WHO, travel and trade restrictions with both countries is currently not advised. Instead, it is 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.

Source: <https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON412#:~:text=Outbreak%20at%20a%20glance&text=Between%20January%20to%2028%20September,recorded%2C%20affecting%20all%20seven%20provinces.https://extranet.who.int/ihr/eventinformation/print/event/2022-e000358https://extranet.who.int/ihr/eventinformation/print/event/2022-e000345>

Cholera - Haiti

During epidemiological week 39/ 2022 (25 September to 1 October 2022), healthcare facilities within communes, Cite Soleil and Martissant, located within the capital, Port-au Prince, reported several cases of severe acute diarrhoea in adults and children. In this area, there are two camps for internally displaced persons (IDP) in Shalom and Hugo Chavez with around 24 000 occupants, due to ongoing gang violence and unrest.

As of 22 October 2022, the Haiti Ministry of Public Health and Population (MSPP) reported a total of 2 243 suspected cases, including 219 confirmed cases, 1 415 hospitalised cases and 55 deaths.

Cholera is caused by *Vibrio cholerae* and presents as 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 Haiti, ongoing gang violence is exacerbating the issue by causing security, safety and humanitarian crises across the capital. The creation of IDP camps has also led to a large vulnerable population with limited access to clean water, sanitation and health services. Healthcare facilities, similarly, are facing logistical issues caused by the above leading to a poor public health response.

According to the WHO risk assessment, the national overall risk is VERY HIGH, due to the reasons mentioned above while regional risk is MODERATE. The Dominican Republic is at greatest risk of seeing an increase in cases due to migration patterns but has the capacity to ensure early detection and treatment of cases. Globally, the overall risk is low.

Currently, WHO advises that improved access to clean water, sanitation and health services is of utmost importance and that prevention through the use of the oral cholera vaccine (OCV) and key public health communications must be practiced. Surrounding countries are urged to strengthen and maintain cholera surveillance and ensure early detection and treatment of cases. Travel and trade restrictions to Haiti are also not recommended at this time.

Source: <https://reliefweb.int/report/haiti/epidemiological-update-cholera-25-october-2022>

Vibrio cholerae



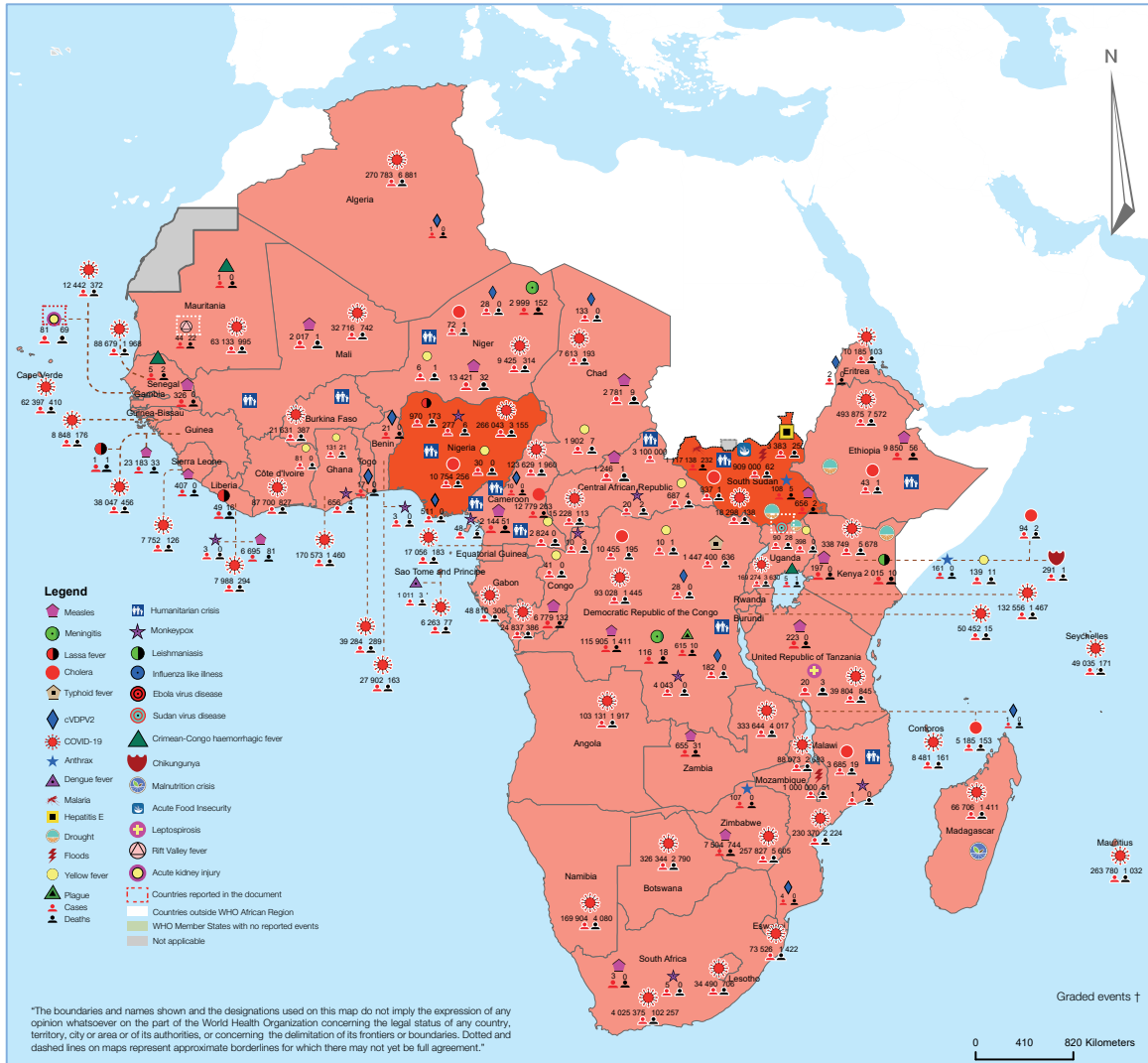
WEEKLY BULLETIN ON OUTBREAKS AND OTHER EMERGENCIES

Week 43: 17 - 23 October 2022
Data as reported by: 17:00, 23 October 2022



African Region
Emergency Preparedness and Response

4 New events | **146** Ongoing events | **129** Outbreaks | **21** Humanitarian crises



5 Grade 3 events	26 Grade 2 events	3 Grade 1 events	46 Ungraded events
2 Protracted 3 events	5 Protracted 2 events	0 Protracted 1 events	

Health Emergency Information and Risk Assessment

Figure 8. The Weekly WHO Outbreak and Emergencies Bulletin focuses on selected public health emergencies occurring in the WHO African Region. The African Region WHO Health Emergencies Programme is currently monitoring 146 events. For more information, see link below: <https://www.afro.who.int/health-topics/disease-outbreaks/outbreaks-and-other-emergencies-updates>