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Editor's Note



Dr Michelle Groome

The COVID-19 pandemic is by no means over with the weekly global case numbers reaching an all-time high this past week, driven in large by the resurgence in India.

In South Africa, we continue to monitor trends in COVID-19 infections through syndromic surveillance for pneumonia and influenza-like illness. There have been sporadic increases in the number of new cases since March 2021. We need to continue to maintain physical distancing, wear our masks and practice

hand hygiene in order to limit transmission and prevent a third wave of infections.

Improvement in hand hygiene and reduced contact between people has led to a decrease in other infectious diseases, for example influenza. During the winter months of 2020 only one detection of influenza was made. This year two cases of influenza have been detected from surveillance programmes so far. For RSV, the detection rate has remained below the 10-year mean since February.

This month we describe a case of severe shigellosis in the context of a household cluster, highlighting the propensity for shigella to spread person-to-person transmission within the home and other congregate settings.

The number of malaria cases reported during the first quarter of this year is much lower than the corresponding periods in 2019 and 2020. Encouragingly, the recent relaxation of the COVID-19 related travel restrictions has not resulted in any significant increase in malaria case numbers. Two cases of chikungunya were reported in April, both being South African citizens fleeing northern Mozambique after armed groups attacked the town of Palma.

Beyond our borders, two confirmed and three probable Ebola virus disease cases have been reported in Guinea in the past 21 days and no new cases have been confirmed in the Democratic Republic of Congo since the last update. There has been a sharp increase in RSV cases in one Australian state and a Brazilian state has confirmed three cases of yellow fever this year. A human case of avian influenza A(H5N6), "bird flu," has been reported in a child in Laos.

ZOONOTIC AND VECTOR-BORNE DISEASES

An update on rabies in South Africa

For year-to-date, two human rabies cases have been laboratory-confirmed in South Africa. These cases were reported from KwaZulu-Natal and Limpopo provinces.

Rabies cases are reported in humans mostly where rabies is found in domestic dogs, which serve as a vector. Many developing countries in Africa and Asia remain affected by rabies-infected domestic dogs, and consequently by human rabies. Rabies can be controlled in domestic dogs (and some other species) and elimination of the disease has been achieved in these animals in Western Europe, Canada, the USA, Japan and a few Latin American countries. The public is urged to ensure that the rabies vaccination records for their dogs (and

other pets) remain updated – vaccination protects animals and consequently prevents spread of the disease from animals to humans. Rabies vaccinations are often also provided by animal welfare and similar groups and the public is urged to seek out such opportunities that may be offered to their communities.

When possible rabies exposures have occurred, the infection may be prevented by and correctly-administered rabies post-exposure prophylaxis. The latter includes wound washing and rabies vaccination and immunoglobulin treatment.

For more information on rabies and disease prevention, please visit the NICD website: <https://www.nicd.ac.za/diseases-a-z-index/rabies/>.

Arbovirus disease, April 2021

Two suspected cases of chikungunya were reported in April 2021, both being South African citizens fleeing northern Mozambique after armed groups attacked the town of Palma. The first case was admitted to a health care facility in South Africa on the seven day after the onset of symptoms, that included conjunctivitis, an erythematous rash, fever, myalgia, extreme fatigue, arthralgia and arthritis of large joints; it was reportedly bitten by mosquitoes while seeking refuge. The second case was travelling with the first one, had the same exposure and develop similar clinical manifestations.

Both cases tested positive by commercial chikungunya IgM ELISA. A repeat blood sample received from the first case, also tested positive by chikungunya IgM ELISA, with higher titres. The presence of IgM antibodies and increasing antibody titres, strongly suggest a recent infection with chikungunya virus.

Chikungunya virus (CHIKV) is a mosquito-borne virus, maintained in nature by *Aedes* mosquitoes and non-human primates (monkeys and apes), and transmitted to humans by bites of infected mosquitoes. The incubation period following

infection is usually less than seven days. The most prominent clinical manifestations of chikungunya include sudden onset of fever with arthralgia. Other signs and symptoms include myalgia, joint swelling, headache, nausea, fatigue and rash. Differential diagnosis includes dengue fever, caused by dengue virus, which is transmitted by the same vector as CHIKV. The incubation period for dengue fever is approximately 1 week and has overlapping symptoms with chikungunya that may include acute high fever, severe headache, ophthalmalgia, myalgia, arthralgia, nausea, vomiting and rash. Some patients may develop severe dengue shock syndrome or dengue haemorrhagic syndrome that can result in death. Malaria should also be considered in all persons with acute febrile illness who have recently returned from malaria-endemic areas.

There are no specific antiviral treatment or vaccines available for chikungunya fever, as with most other arboviral infections. Prevention of infection is dependent on avoiding mosquito bites, including the use DEET-containing insect repellents.

CORONAVIRUS DISEASE (COVID-19) PANDEMIC

Laboratory-confirmed cases of COVID-19 among patients enrolled in syndromic surveillance for respiratory illness in South Africa, March 2020-April 2021

South Africa has been conducting syndromic surveillance for pneumonia and influenza-like illness (ILI) since 2009 and 2012, respectively. Nine sentinel hospitals in five provinces (Gauteng, Mpumalanga, Western Cape, KwaZulu-Natal and North West) and four clinics in four provinces (Mpumalanga, Western Cape, KwaZulu-Natal and North West) contribute to the surveillance programme. In March 2020, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was included as one of the pathogens tested for among patients enrolled at sentinel surveillance sites. Full-genome sequencing of SARS-CoV-2 from samples collected from individuals enrolled in surveillance from

April 2020 – January 2021 was performed. Sequences were classified according to the Nextstrain nomenclature to quantify diversity of the circulating genomes within the outpatient ILI and hospitalised cases of the pneumonia surveillance programmes.

From 10 March 2020 through 11 April 2021, a total of 7 547 surveillance cases was tested for SARS-CoV-2 of which 16% (338/2101) of ILI and 17% (920/5446) of pneumonia surveillance cases were positive for SARS-CoV-2. The median age of COVID-19 cases with ILI was 35.6 years (range 0.3 months-80.4 years) and 54.1 years (range 0.1 month-93.7 years) for cases hospitalised with respiratory illness at sentinel sites.

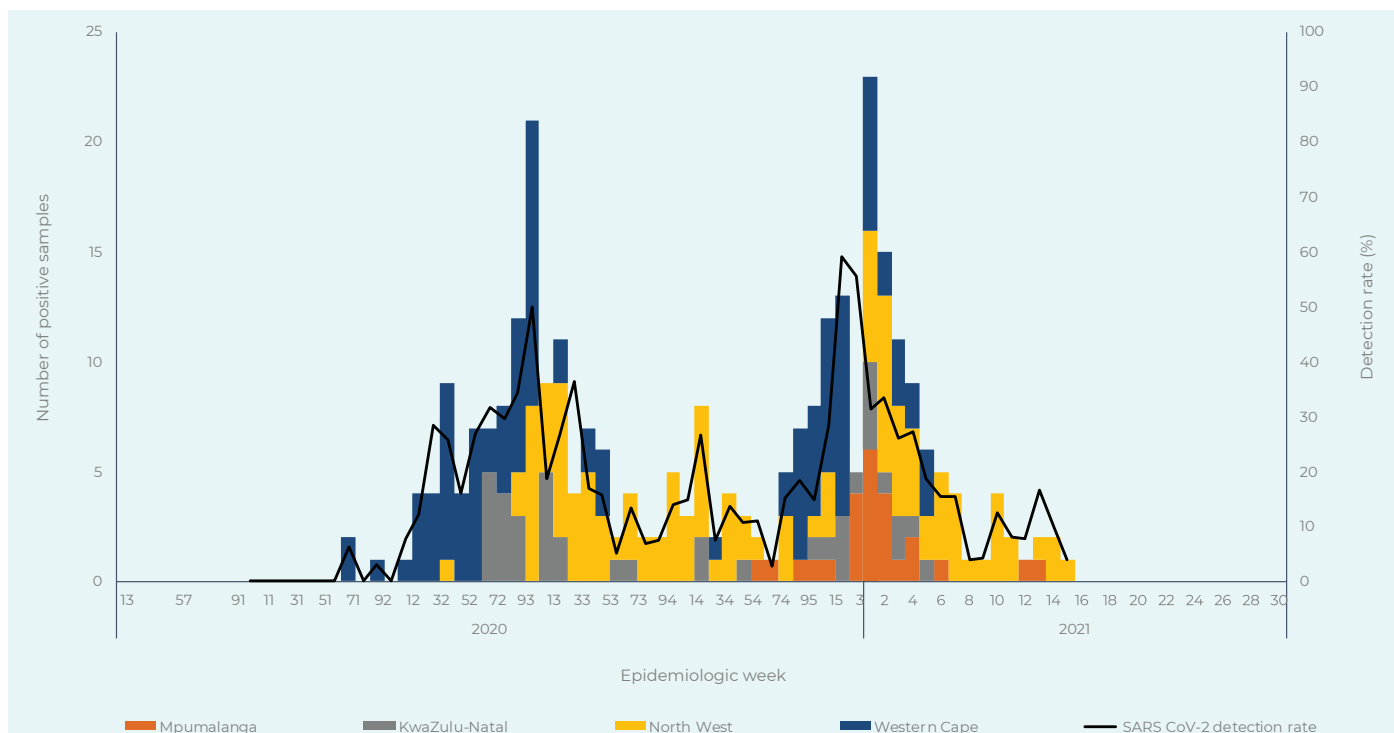


Figure 1. Number and detection rate of laboratory-confirmed cases of COVID-19 by province and week of specimen collection, Influenza-like illness, 10 March 2020-11 April 2021 (n=338)

Among ILI cases, the detection rate peaked at 50.0% (21/42) in week 30 of 2020 during the first wave and at 59.0% (13/22) in week 52 of 2020 during the second wave (Figure 1). Among pneumonia surveillance cases, the detection rate peaked at 46.7% (57/122) in week 30 of 2020 and at 58.5% (31/53) in week 53 of 2020 in the first and second waves, respectively (Figure 2).

Following the second wave peak, the number of positive cases has been decreasing, since week 2 of 2021 in ILI surveillance and week 3 of 2021 in pneumonia surveillance. However, there have been sporadic increases in numbers of new cases since March 2021.

CORONAVIRUS DISEASE (COVID-19) PANDEMIC

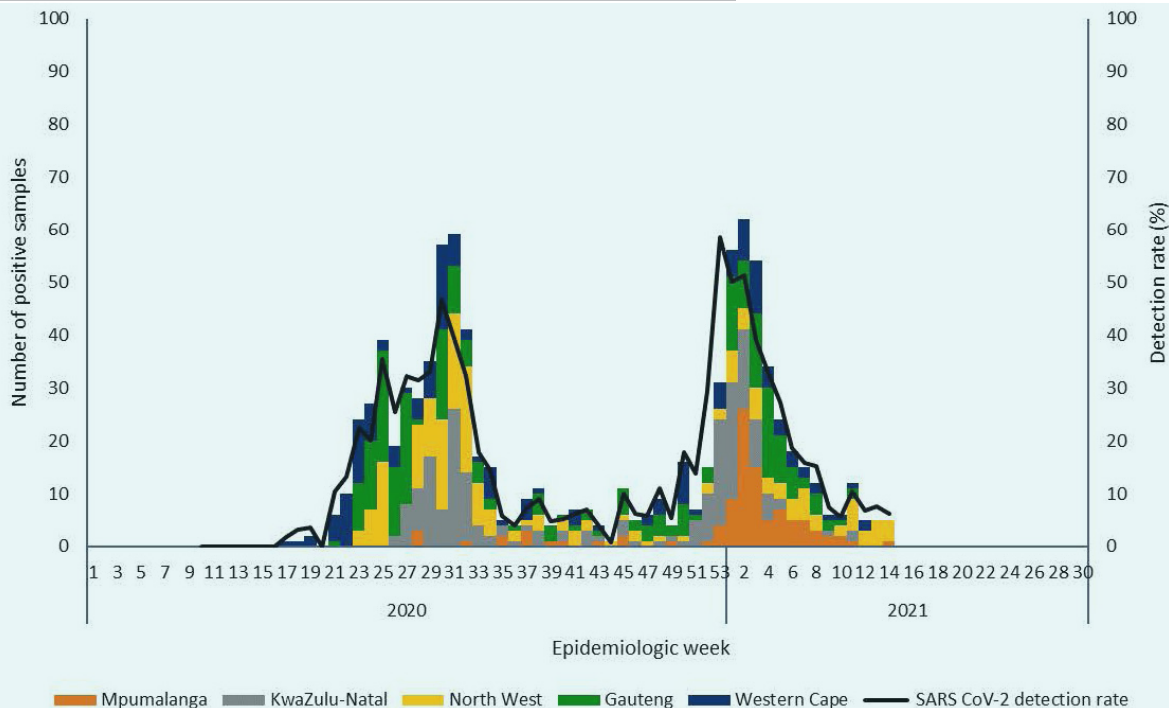


Figure 2. Number and detection rate of laboratory–confirmed cases of COVID-19 by province and week of specimen collection, Pneumonia Surveillance programme, 10 March 2020-11 April 2021 (n=920)

Of the 1 170 surveillance cases positive for SARS-CoV-2 from March 2020 through February 2021, 361 (31%) SARS-CoV-2 positive sentinel surveillance samples were sequenced (Figure 3), 38% (117/306) and 28% (244/864) of ILI and pneumonia surveillance samples, respectively. Of the 361 samples sequenced, the majority of sequences belonged to the 20B clade (209/361, 58%), which predominated until November 2020, when the variant of concern, 20H/501Y.V2, was detected and subsequently predominated. Among the surveillance samples sequenced, the 20H/501Y.V2 clade was first detected in November 2020 in a sample from the Gauteng pneumonia

sentinel site. While the 20H/501Y.V2 clade constituted 19% (70/361) of the total sequences reported in surveillance between April 2020 and January 2021, 100% of surveillance samples collected in January 2021 and sequenced belonged to this clade. The majority of the 20H/501Y.V2 sequences were from females 61% (43/70) and were in the 45-64-year age group (38%, 27/70). On univariate analysis the 20H/501Y.V2 clade was more likely to be detected in samples collected during the second wave 97% (68/70), from patients enrolled from KwaZulu–Natal site 49% (34/70) and to have an underlying medical condition (Table 1).

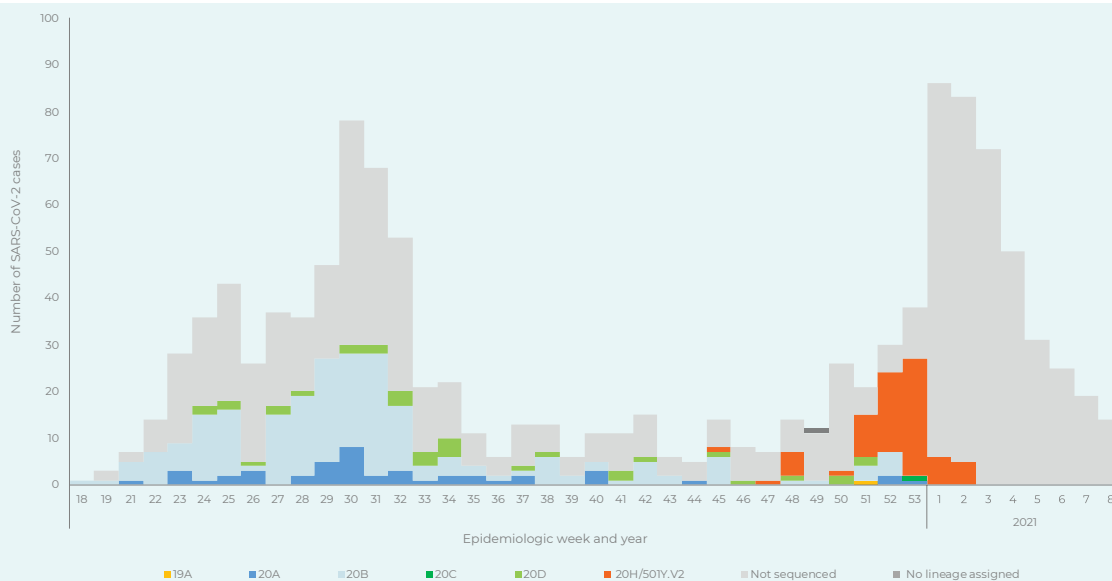


Figure 3. Number of laboratory–confirmed cases of COVID-19 by SARS-CoV-2 sequence and epidemiologic week, Pneumonia and ILI Surveillance programme, 10 March 2020-1 February 2021 (n=864)

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

CORONAVIRUS DISEASE (COVID-19) PANDEMIC

Table 1: Characteristics of COVID-19 cases by SARS-CoV-2 lineage, Influenza-like illness (ILI) and Pneumonia surveillance, April 2020-Jan 2021, N=361

Characteristic	Other variants n/N (%)	20H/501Y.V2 variant n/N (%)	p-value
Sex (Female vs male)	163/291 (56.0)	43/70 (61.4)	0.411
Age group (years)			
0 – 4 years	18/291 (6.2)	3/70 (4.3)	
5 – 14 years	8/291 (2.8)	1/70 (1.4)	
15 – 24 years	13/291 (4.5)	0/70 (0.0)	
25 – 44 years	98/291 (33.7)	23/70 (32.9)	
45 – 64 years	109/291 (37.5)	27/70 (38.6)	
≥65 years	45/291 (15.5)	16/70 (22.9)	
Race (Black vs other)	215/290 (74.1)	57/70 (81.4)	0.203
Programme (SRI vs ILI)	198/291 (68.0)	46/70 (65.7)	0.709
Province			<0.001
Mpumalanga	10/291 (3.4)	7/70 (10.0)	
KwaZulu-Natal	63/291 (21.7)	34/70 (48.6)	
North West	94/291 (32.3)	6/70 (8.6)	
Gauteng	56/291 (19.2)	9/70 (12.9)	
Western Cape	68/291 (23.4)	14/70 (20.0)	<0.001
Wave (2nd vs 1st)			
Underlying conditions			
Any underlying condition	144/291 (49.5)	25/70 (35.7)	0.038
Diabetes	48/284 (16.9)	14/61 (22.9)	0.264
Obesity (BMI ≥30)	19/284 (6.7)	10/61 (16.4)	0.013
HIV infected	67/274 (24.5)	8/55 (14.6)	0.110
Duration of symptoms (0 – 4 vs 5+ days)	155/289 (53.6)	46/70 (65.7)	0.068
Admitted in ICU*	11/198 (5.6)	1/43 (2.3)	0.377
Died*	36/197 (18.3)	8/45 (17.8)	0.938

The sentinel surveillance programme has been able to identify community transmission of SARS-CoV-2 and the trends in number of cases reported followed a similar trajectory to that reported in the national laboratory-based surveillance system (<https://www.nicd.ac.za/wp-content/uploads/2021/04/COVID-19-Weekly-Epidemiology-Brief-week-15-2021.pdf>). In addition, from the number of sentinel surveillance samples sequenced between April 2020 and January 2021, surveillance data reported the trends seen among sequences in South Africa, with 20H/501Y.V2 predominating during the second wave (References 1, 2).

References

1. Tegally, H., Wilkinson, E., Giovanetti, M. et al. Detection of a SARS-CoV-2 variant of concern in South Africa. *Nature* 592, 438–443 (2021). <https://doi.org/10.1038/s41586-021-03402-9>
2. www.gisaid.org

ENTERIC DISEASES

Severe paediatric shigellosis

A 6-year-old boy living on a farm in Clanwilliam, Western Cape Province, was admitted to Vredendal Hospital on 23 February 2021. There was a four-day history of fever and diarrhoea, and a one-day history of confusion. He was transferred to Tygerberg Hospital, where he was admitted to the intensive care unit with a diagnosis of septic shock. On examination, a few petechiae were present behind the ears, but no eschar was noted. There was no history of a tick bite or any exposure to livestock or wild animals.

Empiric antibiotic therapy included ceftriaxone and ciprofloxacin.

During the preceding three weeks, three other family members (the patient's sister, mother and father) had also experienced symptoms suggestive of gastroenteritis, including fever, abdominal cramps and diarrhoea. In all cases, illness was fairly mild and resolved within a few days; none sought healthcare. The family reported that the patient drank untreated water from a nearby dam and that he had recent exposure to sewage following blockage of the septic tank.

Shigella flexneri was isolated from a stool sample collected within a day of admission, and the isolate was susceptible to third generation cephalosporins and ciprofloxacin. A blood culture collected on admission (as well as subsequent blood cultures) yielded no growth. Although their illnesses had resolved, stool samples were collected from the patient's mother and sister on 1 March 2021 and tested using a multiplex RT-PCR. *Shigella* spp. was detected from the sister's stool sample, whilst no enteric pathogens were detected from the mother's stool sample. The *S. flexneri* isolate was referred to the Centre for Enteric Diseases, NICD, for further characterisation. It was confirmed as *S. flexneri* type 2a. The patient developed sepsis-related complications, but ultimately recovered and was discharged home on 23 March 2021.

Discussion

This is a case of severe shigellosis in the context of a household cluster. It highlights two important aspects of this disease. Firstly, that although uncommon, severe intestinal and extraintestinal complications can occur, and secondly, that owing to a very low infectious inoculum, shigella has a propensity for person-to-person transmission within the home and other congregate settings, greatly facilitated by suboptimal sanitation and personal hygiene.

The genus *Shigella* includes four species, *S. sonnei*, *S. flexneri*, *S. boydii* and *S. dysenteriae*, which are further divided into serotypes and subserotypes. The less virulent *S. sonnei* predominates globally and in higher-income settings, while *S. flexneri* is more prominent in low-income settings in Africa and Asia. In South Africa, the predominant serotypes are *S. sonnei* and *S. flexneri* type 2a, which is typical of a transitional economy setting.

Shigellosis occurs predominantly in children aged 1-4 years residing in low- and middle-income countries. Other risk groups for shigellosis include travellers to endemic areas, children in daycare with subsequent household transmission, and men having sex with men. Humans are the only natural host for shigellae. Person-to-person spread is the commonest mode of transmission. Infection and outbreaks can also be caused by contaminated food or water, and flies may transmit disease in settings of inadequate disposal of human faeces.

Following an incubation period of one to four days, infection with *Shigella* can result in a spectrum of disease from asymptomatic infection to severe bloody diarrhoea (the classical 'bacillary dysentery'). Fever, headache, malaise and vomiting are often the initial symptoms, followed by the onset of watery diarrhoea (indicating invasive infection of the small bowel). Most illness is mild, and symptoms resolve in a few days. In some cases, the infection progresses to involve the colon, resulting in frank dysentery which is characterised by the passage of smaller volume, bloody mucoid stools along with abdominal cramps and tenesmus (a repeated, painful urge to defaecate without excreting stool).

Shigellosis is usually self-limiting, but severe disease may be associated with complications including dehydration, severe hyponatraemia, seizures in infants and young children, encephalopathy, and occasional focal infections such as meningitis, osteomyelitis or vaginitis. Bacteraemia is rare in otherwise healthy patients and occurs most commonly in young or malnourished infants and children or people infected with HIV. A post-shigella reactive arthritis may develop, particularly in HLA-B27 -positive patients. Intestinal complications are uncommon but usually severe, including rectal prolapse, intestinal obstruction, toxic megacolon and perforation; these are seen more frequently in *S. dysenteriae* type 1 infections. In high income settings, shigella infections have been linked to irritable bowel syndrome in adults. In young children repeated infections can result in malnutrition and stunting, causing long term adverse effects on physical and

ENTERIC DISEASES

cognitive development. Historically, leukaemoid reactions and haemolytic uraemic syndrome was associated with Shiga toxin-producing *S. dysenteriae* type 1. However, multiple strains of *S. flexneri* and *S. dysenteriae* type 4 that also produce Shiga toxin have recently emerged. The clinical implications of these new strains remains to be determined.

Conventional bacterial culture remains the gold standard for the diagnosis of shigellosis, and allows for antimicrobial susceptibility testing. However, shigella are notoriously fastidious organisms and viability decreases rapidly with delay from stool sample collection to plating out. The use of appropriate transport media may improve viability when delay cannot be avoided, albeit to a limited extent. Testing with PCR based-methods increases the diagnostic yield substantially, but commercial assays are not able to differentiate between *Shigella* spp. and enteroinvasive *E. coli* (because they are so closely genetically related), and do not provide information on serotype or subserotype.

The cornerstone of treatment remains maintenance of hydration and electrolyte balance. Antibiotic therapy is indicated for shigella dysentery, because it reduces the duration of fever and diarrhoea by 1-2 days, reduces the risk of serious complications and death, and decreases the duration of shedding of shigella from stool, resulting in reduced transmission and public health benefit.

Ciprofloxacin, ceftriaxone and azithromycin are recommended as first-line therapy for children and adults with dysentery. Currently, there is no evidence to support any benefit of

antibiotic therapy for non-dysenteric shigella diarrhoea. Of concern is that antimicrobial resistance is increasingly common in shigella and international travel facilitates the introduction of resistant strains into new populations.

Following the introduction of rotavirus vaccines, the global reduction in rotavirus infection has increased the proportional burden of other aetiological pathogens including shigella. The Global Enteric Multicenter Study (GEMS), investigated the aetiology of acute, medically attended moderate to severe diarrhoeal disease in children less than 5 years of age living in south Asia and sub-Saharan Africa. Results showed shigella (identified on culture) to be the commonest cause of diarrhoea in children aged 24-59 months and the second commonest aetiological agent in children aged 12-23 months. Reanalysis of the GEMS samples using quantitative PCR resulted in an almost twofold increase in the attributable incidence of shigella.

Handwashing with soap and water is an important preventive strategy; it reduces transmission from index cases to household members by 70%. The primary public health measures to prevent transmission in the context of a community, include handwashing, optimal personal hygiene, access to safe water, sanitation, and in the context of institutional outbreaks, cohorting of ill persons.

Vaccine development has been driven by the recognition of the high burden and severity of shigellosis, which is compounded by rapidly increasing antimicrobial resistance. Several candidate shigella vaccines are currently being evaluated.

INTERNATIONAL OUTBREAKS OF IMPORTANCE

An update on Ebola virus disease outbreak, DRC and Guinea

In Guinea, two confirmed and three probable cases have been reported in the past 21 days, from the sub-prefecture of Soulouta, Nzerekore prefecture with continued investigations into the sub-prefecture cluster (34 notified alerts, including three suspicious deaths).

As of 10 April 2021, a total of 23 cases has been reported, including 16 confirmed cases and seven probable cases, nine of whom have recovered and 12 have died (case fatality ratio 52.2%). The number of infected health workers remains five. Most of the confirmed and probable cases reported are female (13/23; 60.9%) and persons over 40 years. A total of 84 (40%) out of 209 contacts has been followed up and 140 contacts have been vaccinated. Seventy-seven alerts were notified on 10 April 2021, 64 in Nzerekore and 13 in Conakry, 34 (44%) of which were investigated within 24 hours, with four case validations, three of which were deaths and two of which were sampled.

Community resistance is slowly being overcome, although contact follow-up is still compromised. A cumulative total of 6 100 people has been vaccinated, including 444 high-risk contacts, 5 182 contacts-of-contacts and 474 probable contacts, and 2 368 frontline workers. Infection prevention and control activities have been carried out, with briefings on waste sorting, using gloves, hand hygiene, personal protective equipment, donning and doffing and development of the local improvement plan.

Risk communication and community engagement is ongoing, with particular efforts to combat rumours around Ebola treatment centres via mobile radio; and continued advocacy for support of response activities.

In the Democratic Republic of Congo (DRC), no new cases have been confirmed since the last update. Since the start of the outbreak there have been 11 confirmed cases, with one probable case and six deaths (case fatality ratio 50.0%). Two health workers have been infected, accounting for 16.6% of cases. There are still 11 contacts who have not yet reached 42 days of follow-up who have not been seen; the search for them continues. Thirteen out of 17 (76.4%) of health areas in the northern part of North Kivu have reported 512 alerts, all of which were investigated. Of these, 69 were validated as

suspected cases and 49 (71.0%) samples were sent. Sampling challenges include patient refusal and kit shortages. Twenty-nine suspected patients are being followed in isolation in the health facilities.

A total of 1 898 people has been vaccinated, 542 of which are front line providers. No vaccinations have been carried out in the past week. Ten death alerts were received and all were sampled, five (50.0%) safe and dignified burials were carried out; the bodies of the remaining five are still in the mortuary. Infection prevention and control (IPC) activities continue as well as risk communication and community engagement activities.

The current EVD outbreak in DRC continues to remain inactive, with no new cases reported for 40 days. However, challenges remain around contacts who are lost to follow-up, poor feedback from health zones, inadequate financial resources for all response pillars, lack of capacity for isolation at health facilities and problems with integrating those who have recovered back into their communities. Additionally, security issues have prevented response activities by some partners. All these pillars require strengthening and funding needs urgently to be provided to continue robust response measures to prevent resurgence of the outbreak.

Guinea continues to experience challenges around locating contacts lost to follow-up and also in isolating suspected patients. Investigations continue into the Soulouta sub-prefecture cluster, with 34 alerts, three of which are deaths. A continuing funding gap for response activities will seriously impact continued surveillance and the required strengthening in contact follow-up and alert reporting if not closed. The EVD outbreak in Butembo, North Kivu is still inactive. However, contact tracing remains problematic with poor feedback from health zones. In addition, funding is running out and there are gaps in human resources that need to be addressed.

As of 24 April 2021, there are no EVD cases reported in South Africa associated with the current outbreak in the DRC and Guinea. In addition, there are no suspected cases of EVD in South Africa at present.

SEASONAL DISEASES

Influenza

Influenza virus circulation occurs mainly during the winter months of May to August in South Africa, although the timing varies and the season may start as early as April, or as late as July. During the winter months of 2020 only one detection of influenza was made, most likely due to the various hygiene and physical distancing measures implemented to reduce SARS-CoV-2 virus transmission.

In 2021 two cases of influenza have been detected from surveillance programmes, one influenza A(H3N2) was detected in week 9 (week ending 7 March) from a patient admitted with pneumonia in Western Cape pneumonia surveillance site and one influenza B Victoria was detected in week 15 (week ending 23 April), from a patient presenting with suspected COVID-19

at the influenza-like illness surveillance site in KwaZulu-Natal Province.

Healthcare workers should continue to promote influenza vaccination, especially to patients at high risk for severe influenza-associated complications, keeping in mind that Influenza and SARS-CoV-2 vaccines should be given ≥ 14 days apart. Although there is no particular requirement regarding the order of receiving the influenza vaccine and SARS-CoV-2 vaccine, if both vaccines are available at the same time, those at higher risk of severe COVID-19 disease should receive SARS-CoV-2 vaccine before influenza vaccine. The 2021 update of influenza guideline is available at: https://www.nicd.ac.za/wp-content/uploads/2021/04/Influenza-guidelines_-April-2021-final.pdf

Respiratory syncytial virus (RSV)

On average the RSV season starts between the beginning of February and mid-March, with the mean peak of the season in mid-April. For the first five weeks of 2021 the RSV detection rate in the pneumonia surveillance programme (sites in five provinces), was higher than the 10-year mean. Since February 2021 however, the detection rate has remained below the mean, though it briefly breached the seasonal threshold in

week 10-11 and 13-14 [using the Moving Epidemic Method (MEM), a sequential analysis using the R Language, to calculate the duration, start and end of the annual epidemic]. (Figure 4). Healthcare workers should continue to consider RSV as part of differential diagnosis among patients admitted with severe respiratory illness.

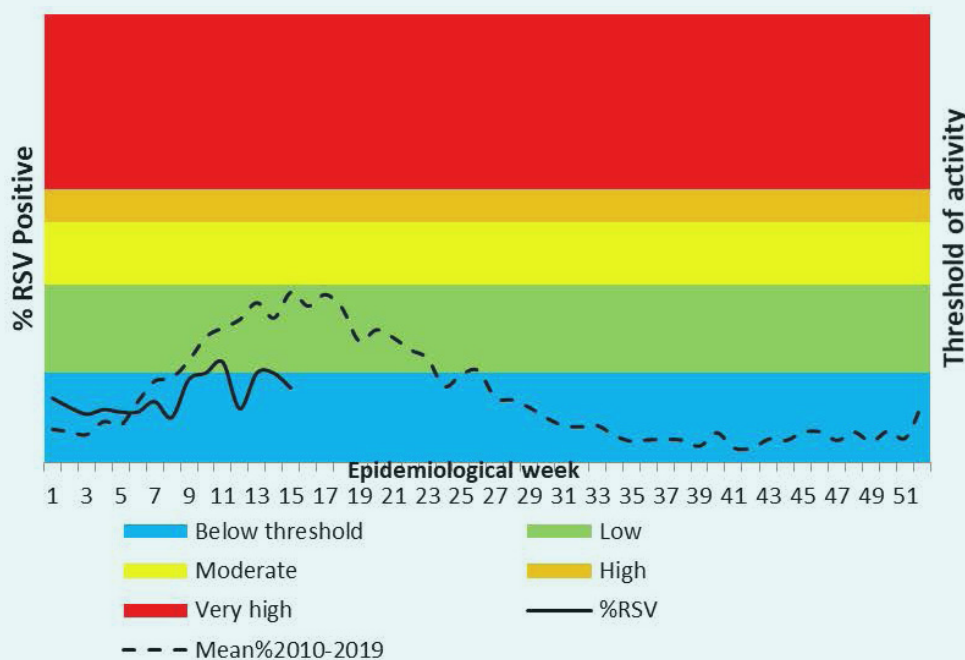


Figure 4. Respiratory syncytial virus detections and mean detection rate, all ages, pneumonia surveillance, South Africa, 01-January-18 April 2021

SEASONAL DISEASES

Malaria

The number of malaria cases reported from the three malaria-endemic provinces, KwaZulu-Natal, Limpopo and Mpumalanga, during the first quarter of 2021, is much lower than the corresponding periods in 2019 and 2020 (Figure 5). Encouragingly, the recent relaxation of the COVID-19 related travel restrictions has not resulted in any significant increase in malaria case numbers, to date. Although the peak malaria season in South Africa is nearing its end and the malaria incidence is expected to decrease further, it is critical that healthcare professionals maintain a high index of suspicion for malaria when a patient presents with fever and flu-like symptoms. During the first quarter of 2021, all three malaria-endemic provinces reported increases in malaria-related deaths, primarily due to the delayed diagnosis of malaria and the late presentation of the patient at a healthcare facility. As low-

level malaria transmission continues during the colder winter months, anyone with a fever, resident in or with recent travel to or from a malaria-endemic area, should be tested concurrently for both malaria and COVID-19. Malaria treatment should be started as soon as a malaria-positive result is obtained, to prevent progression to severe illness. The first-line treatment for uncomplicated malaria, artemether-lumefantrine, remains highly effective in South Africa, although there have been recent reports of artemisinin-resistant parasites emerging in Rwanda. It is therefore essential that compliance is encouraged and every dose of artemether-lumefantrine is taken with 1.2g of fatty food or drink (e.g. full-cream dairy products) for optimal absorption. If travelling to malaria-endemic areas, pharmaceutical and non-pharmaceutical preventative measures are recommended.

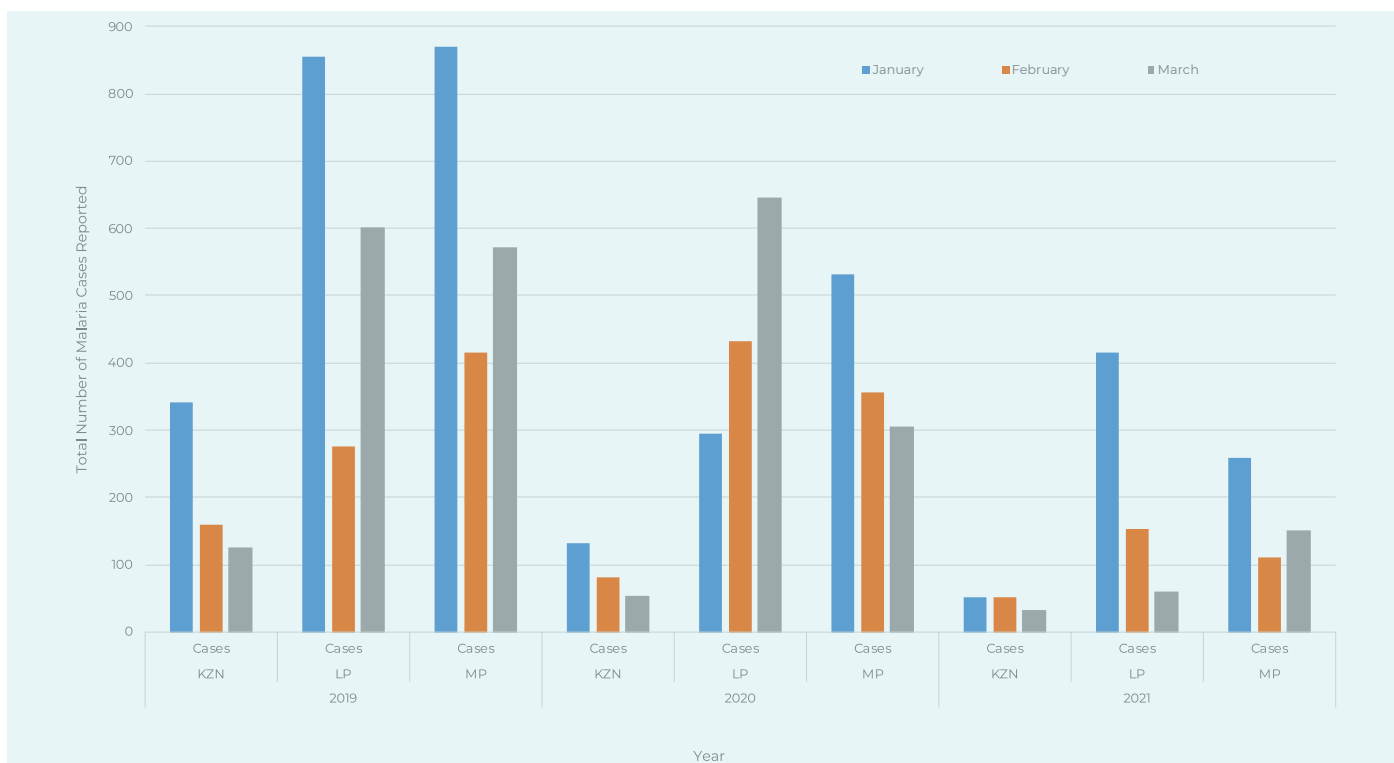


Figure 5. Malaria cases reported by the three malaria-endemic provinces in quarter one of 2019, 2020 and 2021 (source National Department of Health). KZN=KwaZulu-Natal Province, LP=Limpopo Province, MP=Mpumalanga Province.

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 12.

Respiratory Syncytial Virus: Australia

The state of Queensland in Australia has reported 378 confirmed cases of respiratory syncytial virus (RSV) since the beginning of 2021 in its Far North region. This is a sharp increase in case numbers since only 88 cases were reported throughout 2019 and 70 throughout 2020. One hundred and eighty-two cases have required medical attention at hospital level so far, but no deaths have been reported. Early childhood education and care services have been identified as the main places of transmission with 70% of cases being found in children under the age of 10.

RSV is a major cause of mild and severe respiratory illness which accounts for a large portion of the global burden of disease. Estimates in the United States of America show that RSV accounts for 2.1 million outpatient visits and 58 000 hospitalisations among children under 5; and a further 177 000 hospitalisations and 14 000 deaths among adults over 65 annually in the country. In South Africa, over the past 12 months, 11% of outpatients with influenza-like-illness and 14% with syndromic pneumonia tested positive for RSV. RSV seasons are seen annually, usually during the winter and spring months, and are often spread rapidly through childcare centres.

The clinical course of the RSV infection is usually a mild upper respiratory illness with rhinorrhoea, coughing, sneezing and/or fever that is self-limiting and resolves over one to two weeks.

Severe disease of bronchiolitis or pneumonia is seen most often in infants and younger children, but may also be seen in immunocompromised people and the elderly. RSV is spread through droplet transmission from a symptomatic case through direct physical contact, contact with contaminated surfaces, and being in close proximity to an ill case.

Non-pharmaceutical interventions of cough- and hand-hygiene, and separation of cases from other people, are effective methods to limit the spread of RSV. While vaccine development is ongoing, the monoclonal antibody, palivizumab, may be used in certain high-risk children to prevent severe disease during an RSV season.

Strong surveillance of respiratory pathogens is important to guide health systems respond to respiratory illness; and RSV infection patterns and disease trends is important to guide RSV vaccine policy should a vaccine become available. In South Africa, the NICD manages the sentinel surveillance programmes of influenza-like illness (public primary healthcare clinics), viral watch (private general practitioners) and pneumonia (public hospitals). From these programmes, RSV epidemiology and RSV-associated cost burden data are analysed, and data are contributed towards the RSV global online mortality database.

Yellow fever: Brazil

The Brazilian state of Santa Catarina has confirmed three cases of yellow fever this year. One of the cases has demised. The cases were aged 40, 46 and 62 and none of them were registered on the national vaccination information system as having received a vaccine for yellow fever.

Yellow fever is an acute viral haemorrhagic disease. Following infection and a three to six day incubation period, the disease may be asymptomatic or present with mild symptoms of fever, muscle pain and prominent backache, headache, loss of appetite, and nausea or vomiting. These symptoms resolve within four days, however, after symptoms have resolved, a subset of cases go on to develop a more severe disease course. This toxic phase has a 50% mortality rate and affects the kidneys and liver, presenting with fever, jaundice, abdominal pain, vomiting and haemorrhage. Treatment is supportive.

Yellow fever is transmitted to humans through mosquitoes. The primary reservoir for the virus is monkeys. Major transmission cycles include the sylvatic ("jungle") cycle where the virus is transmitted between monkeys and mosquitoes and may pass it on to humans through mosquito bites; and an urban cycle

where an infected human returns to an area densely populated with non-immune people and a vector species of mosquitoes (*Aedes or Haemogogus*) and perpetuates epidemic human-mosquito-human transmission.

Earlier versions of the International Health Regulations (IHR) included yellow fever as one of the six diseases to monitor and prevent the spread across territories. Current strategies to prevent yellow fever include vaccination, vector control, and epidemic preparedness and response.

Routine vaccination of infants and mass catchup vaccination campaigns in endemic areas assists to increase human immunity to yellow fever. The most recent edition of the IHR requires proof of vaccination against yellow fever to be produced by travellers when travelling through or from countries in the northern, central and eastern parts of sub-Saharan Africa and northern South America where the disease is endemic. While not endemic in South Africa, we subscribe to these regulations and therefore require proof of yellow fever vaccination on entry back into South Africa.

BEYOND OUR BORDERS

Vector-surveillance assists to direct vector-control initiatives of community-based methods to prevent mosquito breeding, kill mosquitoes and prevent mosquito bites. Personal protection may be gained through the use of long clothing, mosquito repellent and mosquito bed-nets.

Detection of yellow fever in human cases in endemic areas

must be followed by an active vaccination campaign and vector-control to prevent further cases in the area. Reporting of sick or dead monkey aids in detection of the yellow fever virus in these reservoir animals and helps to prioritise certain areas for intervention – Santa Catarina has reported 111 confirmed cases of yellow fever in monkeys.

Avian influenza: Laos

A human case of avian influenza A(H5N6), colloquially known as “bird flu,” has been reported in a child in Laos. Like the more common human influenzas, the disease course of avian influenza ranges from mild respiratory and gastrointestinal symptoms to severe disease and death. The Laotian was hospitalised for his symptoms but has since recovered.

There are four known influenza virus types, of which A is found in both animals and humans and have the potential for sustained human-to-human transmission that can result in an influenza pandemic; B is found primarily in humans and is the cause of seasonal epidemics; C and D cause mild disease with C found in humans and pigs and D only in animals. Avian influenza is of subtype A and while it is found mostly in birds, it may spread to mammals including humans, and its potential to spread from human to human makes it a subtype of influenza of public health significance. Influenza virus subtypes are found in influenza A and denoted by an H and N number. Avian influenza are commonly of subtype H5, H7 and H9. Major outbreaks in humans have occurred in 1997 due to avian influenza A(H5N1) and in 2013 from A(H7N9) and the most recently implicated subtype detected in humans has been A(H5N8) causing asymptomatic diseases in 2020.

Generally, infected wild aquatic birds may develop asymptomatic disease rendering them contagious but well enough to maintain mobility. Along migration paths, these birds nest among domestic/farm birds causing infections which could spread across the flock through contact between birds, or between healthy birds and contaminated objects. Infection of humans most commonly occurs through direct or indirect contact with infected poultry while alive or dead, including preparation of poultry to eat. Eating well-cooked poultry or eggs are unlikely to transmit the virus.

Eradication of avian influenza seems unlikely due to the wild bird reservoir and its endemicity in poultry in Africa, Asia and Europe. Surveillance and management of animal cases is the mainstay for prevention of avian influenza in humans. It is mandatory to report to the World Organisation for Animal Health all H5 and H7 subtypes in animals due to the risk of them infecting humans and causing severe disease; and avian influenza of all subtypes if the infection causes severe disease in the animal. South Africa has reported the presence of H5 avian influenza in poultry farms in Gauteng in 2021. However, no human cases have been reported.



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.

Source: Promed (www.promed.org), World Health Organization (www.who.int), Centres for Disease Control and Prevention (www.cdc.gov), World Organisation for Animal Health (oie.int), National Institute for Communicable Diseases (www.nicd.ac.za)

WHO AFRO UPDATE

WEEKLY BULLETIN ON OUTBREAKS AND OTHER EMERGENCIES

Week 15: 5-11 April 2021
Data as reported by: 17:00; 11 April 2021

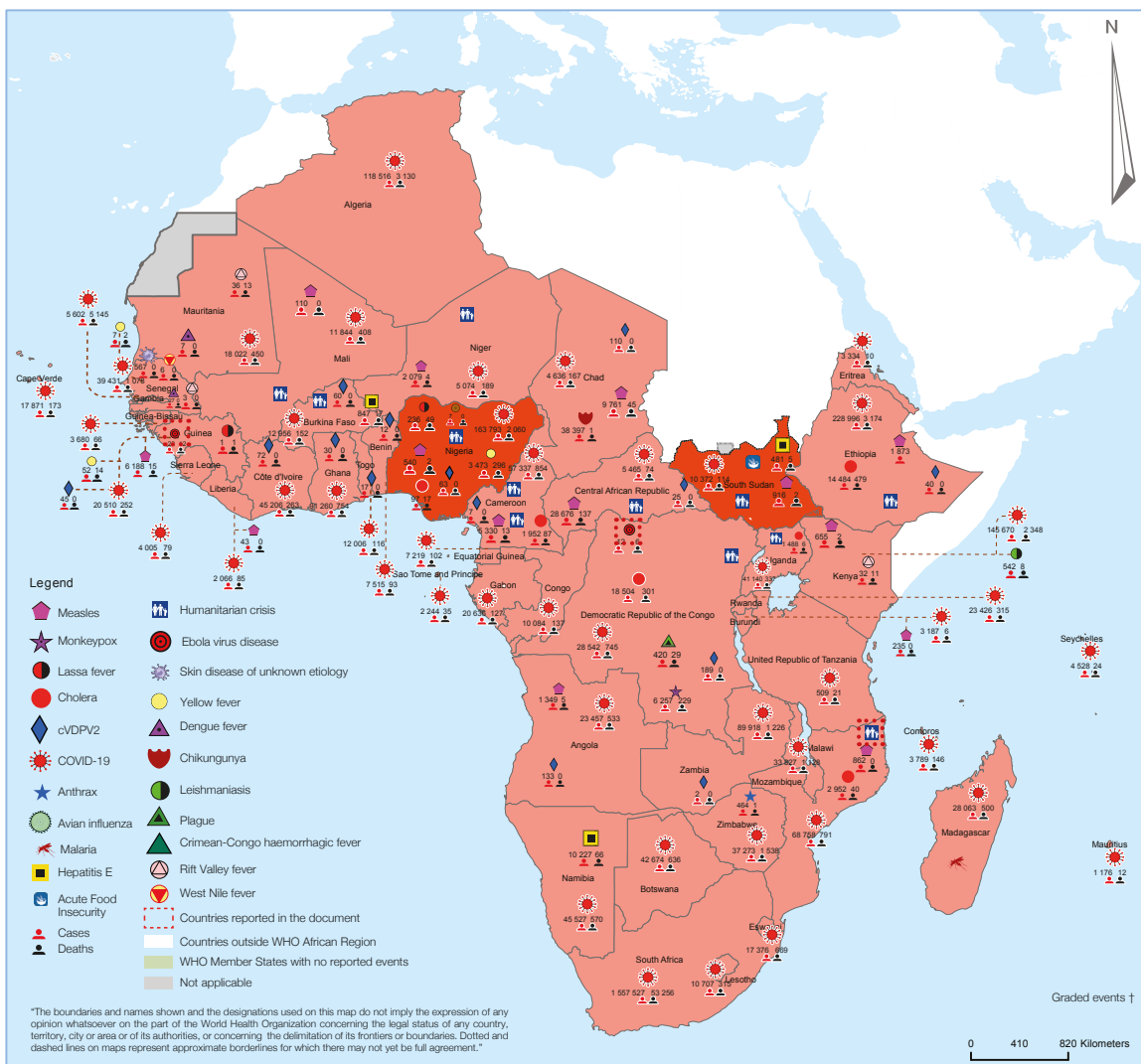


0 New event

115 Ongoing events

102 Outbreaks

13 Humanitarian crises



20 Grade 3 events	2 Grade 2 events	1 Grade 1 events	2 Ungraded events
3 Protracted 3 events	3 Protracted 2 events	50 Protracted 1 events	
Health Emergency Information and Risk Assessment			

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 115 events. For more information see link below: <https://apps.who.int/iris/bitstream/handle/10665/e340773/OEW15-0511042021.pdf>

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