

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.

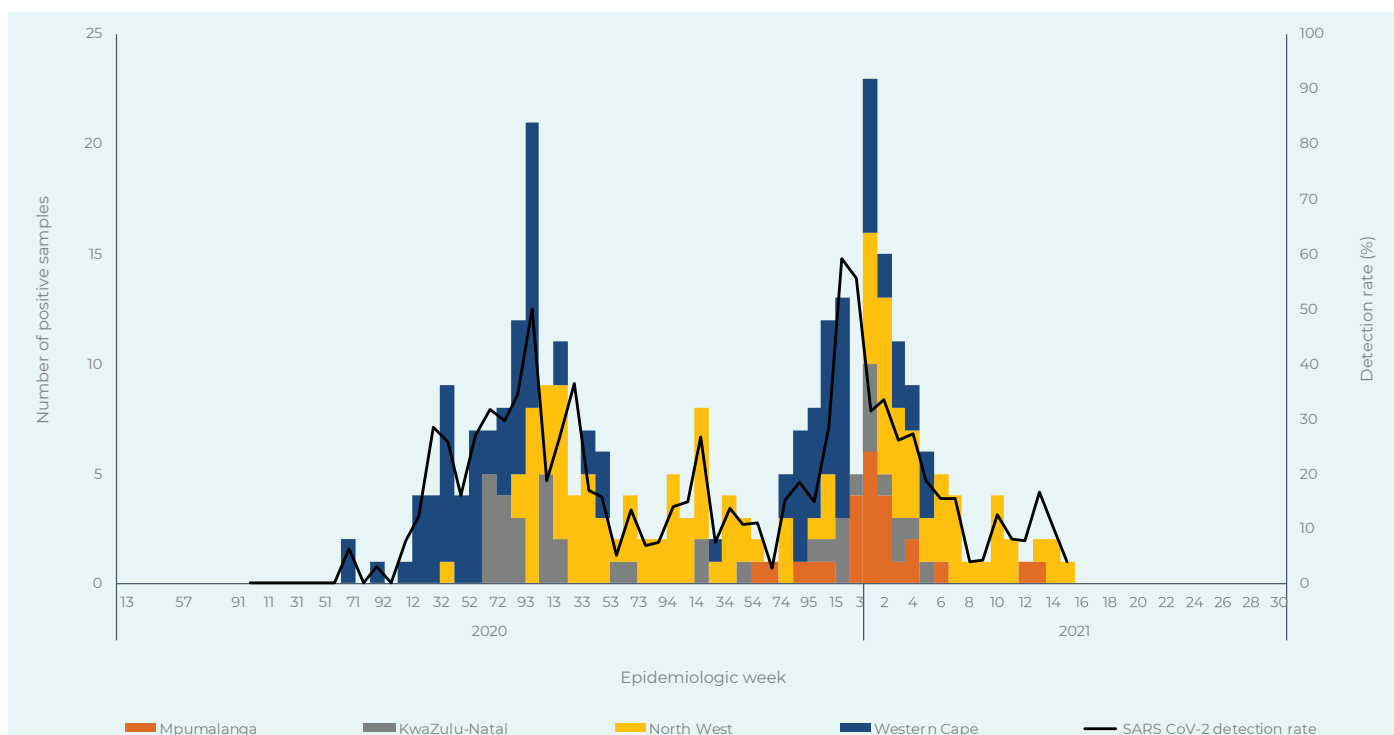


Figure 1. Number and detection rate of laboratory-confirmed cases of COVID-19 by province and week of specimen collection, Influenza-like illness, 10 March 2020-11 April 2021 (n=338)

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.

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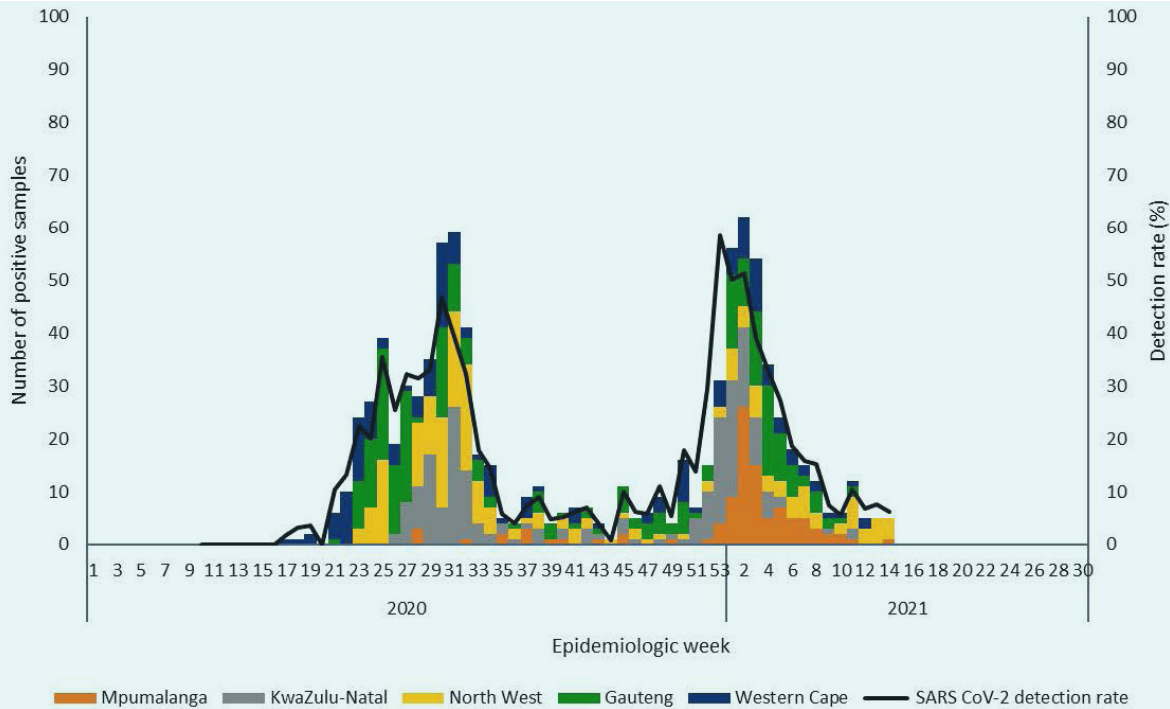


Figure 2. Number and detection rate of laboratory–confirmed cases of COVID-19 by province and week of specimen collection, Pneumonia Surveillance programme, 10 March 2020-11 April 2021 (n=920)

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).

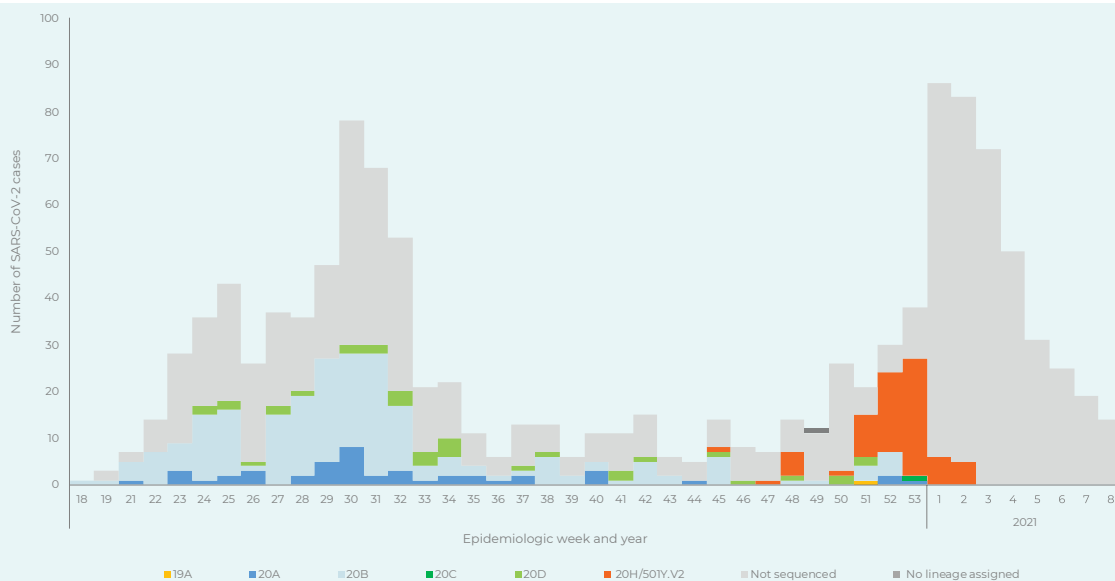


Figure 3. Number of laboratory–confirmed cases of COVID-19 by SARS-CoV-2 sequence and epidemiologic week, Pneumonia and ILI Surveillance programme, 10 March 2020-1 February 2021 (n=864)

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

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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