

WEEKLY RESPIRATORY PATHOGENS SURVEILLANCE REPORT

SOUTH AFRICA WEEK 4 2020

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HIGHLIGHTS: WEEK 4

- RSV activity continues to be seen in all surveillance sites and 2021 RSV season has not started yet.

- No influenza cases have been detected in 2021.

- From 2 March 2020 to 31 January 2021, a total of 1078 COVID-19 cases were detected from all surveillance programmes. A considerable decline in number of COVID-19 cases detected has been noted from week 3 (week starting 18 January 2021) in pneumonia surveillance and from week 2 (week starting 11 Jan 2021) in ILI surveillance programme. Of the 769 hospitalised COVID-19 cases reported with available data on outcome, 79 (10%) died.

CUMULATIVE DATA FROM



INFLUENZA, RESPIRATORY SYNCYTIAL VIRUS AND SARS-CoV-2 SURVEILLANCE REPORT

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PROGRAMME DESCRIPTIONS

Programme	Influenza-like illness (ILI)	Viral Watch	National syndromic surveillance for pneumonia
Start year	2012	1984	2009
Provinces*	KZ NW WC** MP***	EC FS GP LP MP NC NW WC	GP KZ MP NW WC
Type of site	Primary health care clinics	General practitioners	Public hospitals
Case definition	An acute respiratory illness with a temperature ($\geq 38^{\circ}\text{C}$) and cough, & onset ≤ 10 days	An acute respiratory illness with a temperature ($\geq 38^{\circ}\text{C}$) and cough, & onset ≤ 10 days	Acute (symptom onset ≤ 10 days) or chronic (symptom onset > 10) lower respiratory tract infection
Specimens collected	Oropharyngeal & nasopharyngeal swabs	Throat and/or nasal swabs or Nasopharyngeal swabs	Oropharyngeal & nasopharyngeal swabs
Main pathogens tested****	INF RSV BP SARS-CoV-2	INF RSV BP SARS-CoV-2	INF RSV BP SARS-CoV-2

Epidemic Threshold

Thresholds are calculated using the Moving Epidemic Method (MEM), a sequential analysis using the R Language, available from: <http://CRAN.R-project.org/web/package=mem> designed to calculate the duration, start and end of the annual influenza epidemic. MEM uses the 40th, 90th and 97.5th percentiles established from available years of historical data to calculate thresholds of activity. Thresholds of activity for influenza and RSV are defined as follows: Below seasonal threshold, Low activity, Moderate activity, High activity, Very high activity. For influenza, thresholds from outpatient influenza like illness (Viral Watch Programme) are used as an indicator of disease transmission in the community and thresholds from pneumonia surveillance are used as an indicator of impact of disease.

* EC: Eastern Cape; FS: Free State; GP: Gauteng; KZ: KwaZulu-Natal; LP: Limpopo; MP: Mpumalanga; NC: Northern Cape; NW: North West; WC: Western Cape

**Started in 2019

***Started in November 2020

****INF: influenza virus; RSV: respiratory syncytial virus; BP: Bordetella pertussis; SARS-CoV-2: severe acute respiratory syndrome coronavirus 2

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COMMENTS

Influenza

There are no influenza cases detected in 2021.

ILI programme: In 2021 to date, specimens from 191 patients were received from 4 ILI sites. Influenza was not detected. (Figure 1 and Table 1).

Viral Watch programme: During the same period, specimens were received from 13 patients from Viral Watch sites in 8 provinces. Influenza was not detected. (Figure 5 and Table 4).

Pneumonia surveillance: Since beginning of 2021, specimens from 466 patients with severe respiratory illness (SRI) were received from the 6 sentinel sites. Influenza was not detected. (Figure 9 and Table 7).

Respiratory syncytial virus

In 2021 to date, RSV transmission has been reported from all surveillance programmes, activity remains below threshold.

ILI programme: In to date, 191 specimens were tested and RSV was detected in specimens of 13 (7%) patients.

Viral Watch programme: During the same period, 13 specimens were tested and RSV was detected in specimens of two (15%) patient.

Pneumonia surveillance: Since the beginning of 2021, 466 specimens were tested and RSV was detected in specimens of 58 (12%) patients.

SARS-CoV-2 (Severe acute respiratory syndrome coronavirus 2)

Testing for SARS-CoV-2 was initiated in all three surveillance programmes in week 10 (week starting 2 March 2020)

ILI programme: From March 2020 to date, specimens from 1499 patients were tested and SARS-CoV-2 was detected in 262 (17%) patients.

Viral Watch programme: From March 2020 to date, specimens were tested from 292 patients and SARS-CoV-2 was detected in 41 (14%) patients.

Pneumonia surveillance: From March 2020 to date, specimens from 4319 patients with severe respiratory illness (SRI) were tested and SARS-CoV-2 was detected in 775 (18%) patients.

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE PRIMARY HEALTH CARE CLINICS

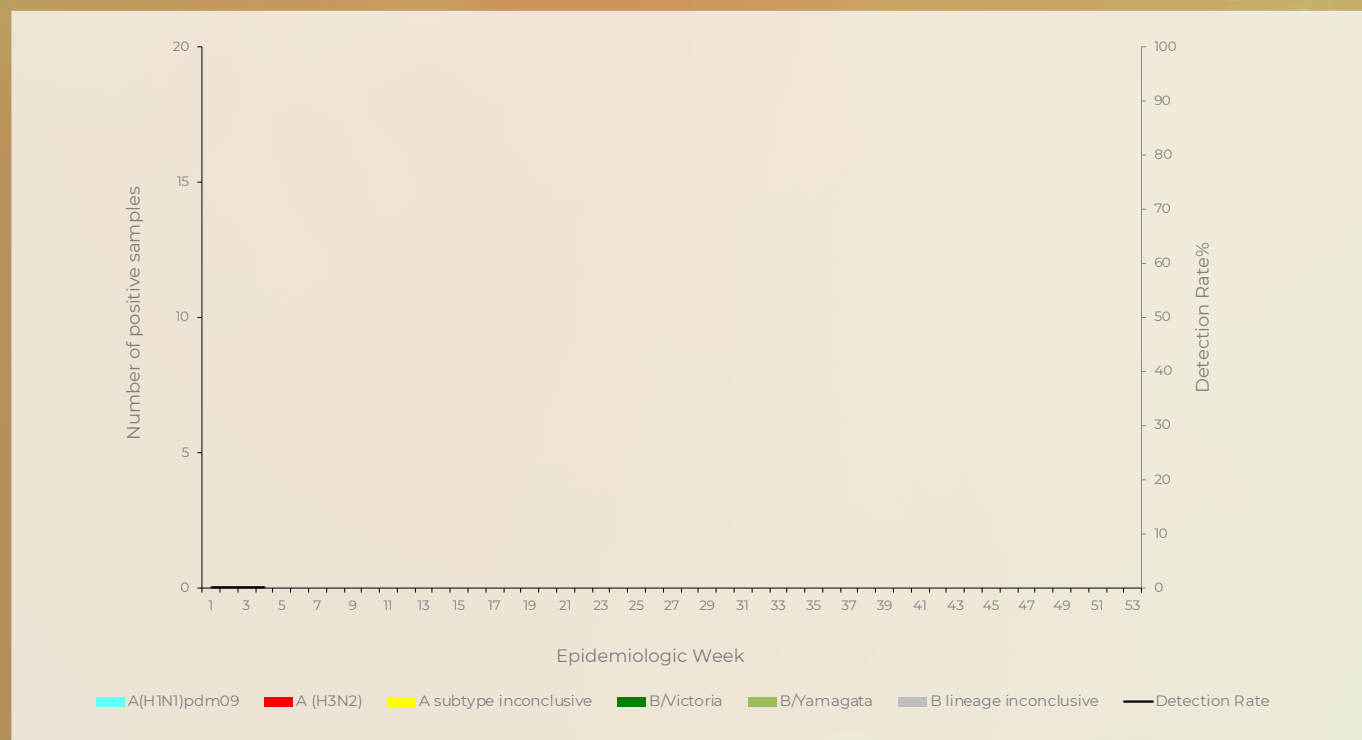


Figure 1. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*Specimens from patients with influenza-like illnesses at 5 sentinel sites in 4 provinces

**Only reported for weeks with >10 specimens submitted

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

Table 1. Cumulative number of influenza subtype and lineage and total number of samples tested by clinic and province

Clinic (Province)	A(H1N1) pdm09	A(H3N2)	A subtype inconclusive	B/Victoria	B/ Yamagata	B lineage inconclusive	Total samples
Agincourt (MP)	0	0	0	0	0	0	24
Eastridge (WC)	0	0	0	0	0	0	40
Edendale Gateway (KZ)	0	0	0	0	0	0	22
Jouberton (NW)	0	0	0	0	0	0	63
Mitchell's Plain (WC)	0	0	0	0	0	0	42
Total:	0	0	0	0	0	0	191

KZ: KwaZulu-Natal; NW: North West; WC: Western Cape; MP: Mpumalanga

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

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE PRIMARY HEALTH CARE CLINICS

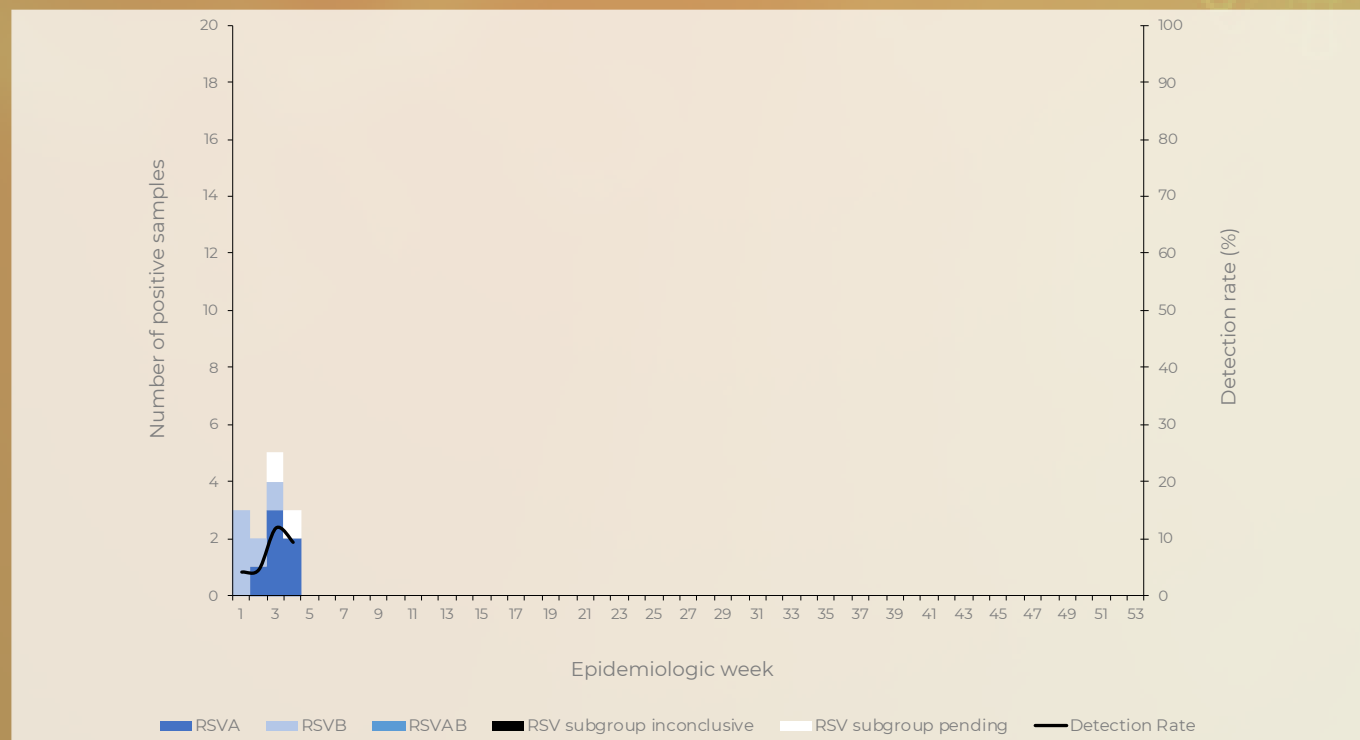


Figure 2. Number of samples testing positive for respiratory syncytial virus by subgroup and detection rate by week

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

RSV AB: Both RSV A and B subgroup identified

RSV subgroup pending: means RSV results for subgroups are pending

Table 2. Cumulative number of respiratory syncytial virus subgroups identified and total number of samples tested by clinic and province

Clinic (Province)	RSVA	RSVB	RSVAB	RSV subgroup inconclusive	RSV subgroup pending*	Total samples
Agincourt (MP)	1	0	0	0	1	24
Eastridge (WC)	4	0	0	0	0	40
Edendale Gateway (KZ)	0	3	0	0	0	22
Jouberton (NW)	1	2	0	0	1	63
Mitchell's Plain (WC)	0	0	0	0	0	42
Total	6	5	0	0	2	191

KZ: KwaZulu-Natal; NW: North West; WC: Western Cape; MP: Mpumalanga

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

RSV AB: Both RSV A and B subgroup identified

*RSV results for subgroups are pending

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE PRIMARY HEALTH CARE CLINICS

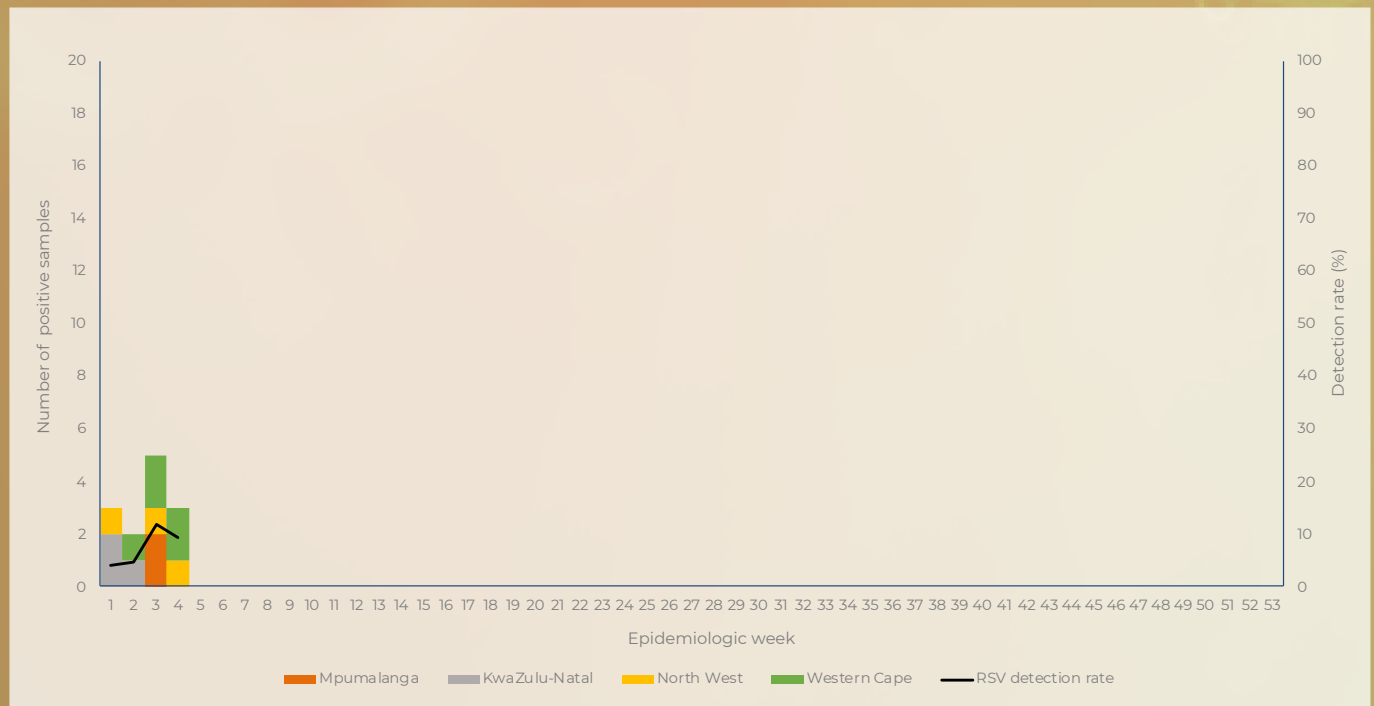


Figure 3. Number of samples testing positive for respiratory syncytial virus by province and detection rate by week

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE PRIMARY HEALTH CARE CLINICS

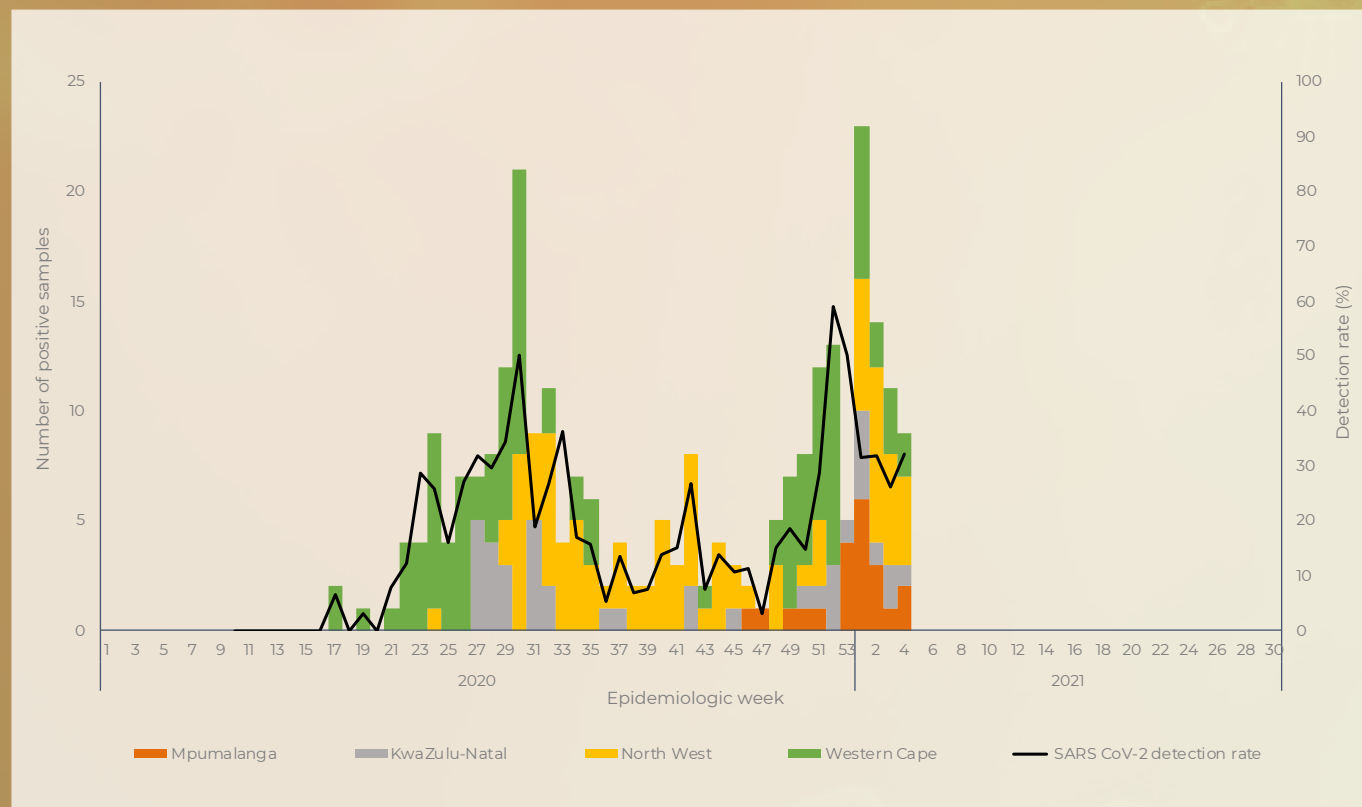


Figure 4. Number of samples testing positive for SARS-CoV-2* by province and detection rate by week

*Specimens from patients with influenza-like illnesses at 5 sentinel sites in 4 provinces

Table 3. Cumulative number of SARS-CoV-2 identified and total number of samples tested by clinic and province

Clinic (Province)	SARS-CoV-2 positive	Total samples tested
Agincourt (MP)	21	54
Eastridge (WC)	45	529
Edendale Gateway (KZ)	38	163
Jouberton (NW)	94	386
Mitchell's Plain (WC)	64	367
Total:	262	1499

KZ: KwaZulu-Natal; NW: North West; WCP: Western Cape; MP: Mpumalanga (started enrolling on the 10th November 2020)

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE VIRAL WATCH

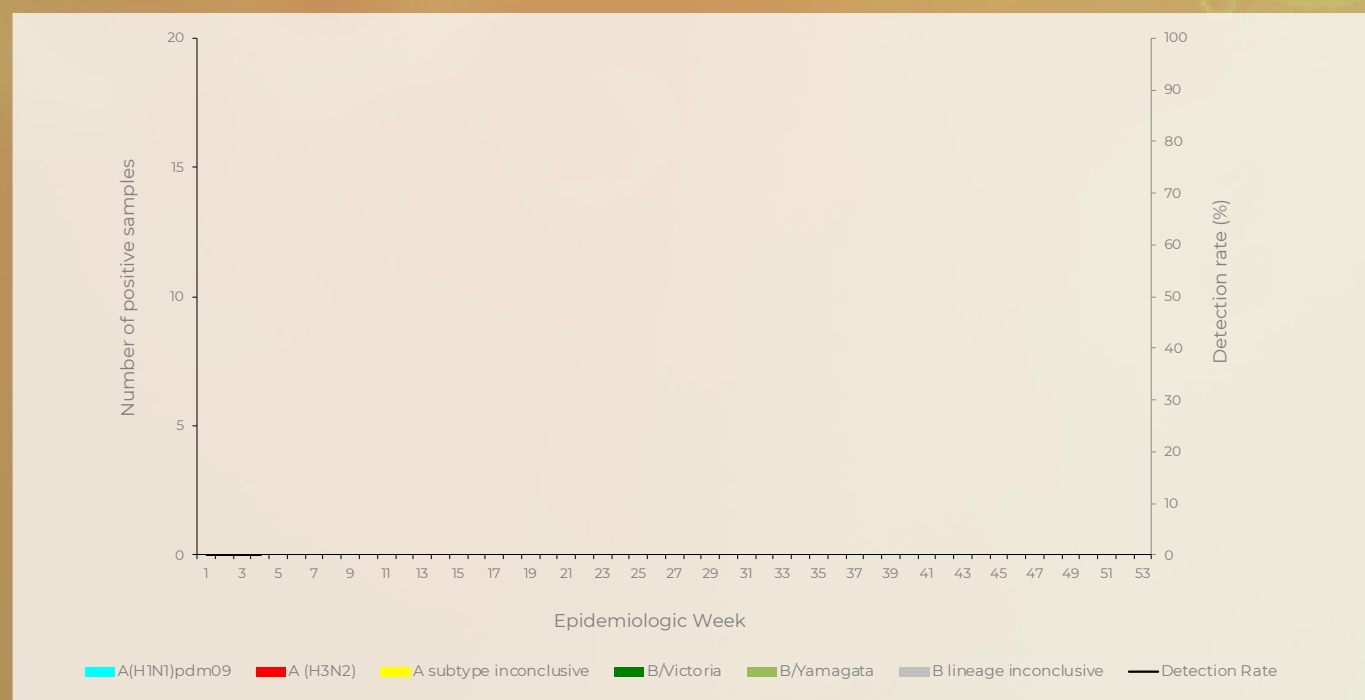


Figure 5. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*Specimens from patients with Influenza-like illnesses at 92 sentinel sites in 8 provinces

** Only reported for weeks with >10 specimens submitted.

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

Table 4. Cumulative number of influenza subtype and lineage and total number of samples tested by province

Province	A(H1N1) pdm09	A(H3N2)	A subtype inconclusive	B/Victoria	B/Yamagata	B lineage inconclusive	Total samples
Eastern Cape	0	0	0	0	0	0	0
Free State	0	0	0	0	0	0	0
Gauteng	0	0	0	0	0	0	12
Limpopo	0	0	0	0	0	0	0
Mpumalanga	0	0	0	0	0	0	1
North West	0	0	0	0	0	0	0
Northern Cape	0	0	0	0	0	0	0
Western Cape	0	0	0	0	0	0	0
Total:	0	0	0	0	0	0	13

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

From 04 January 2021 to date, no patients were tested for influenza at the time of entry into South Africa following travel abroad.

Patients known to have acquired influenza abroad are not included in the table or epidemiological curve.

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE VIRAL WATCH

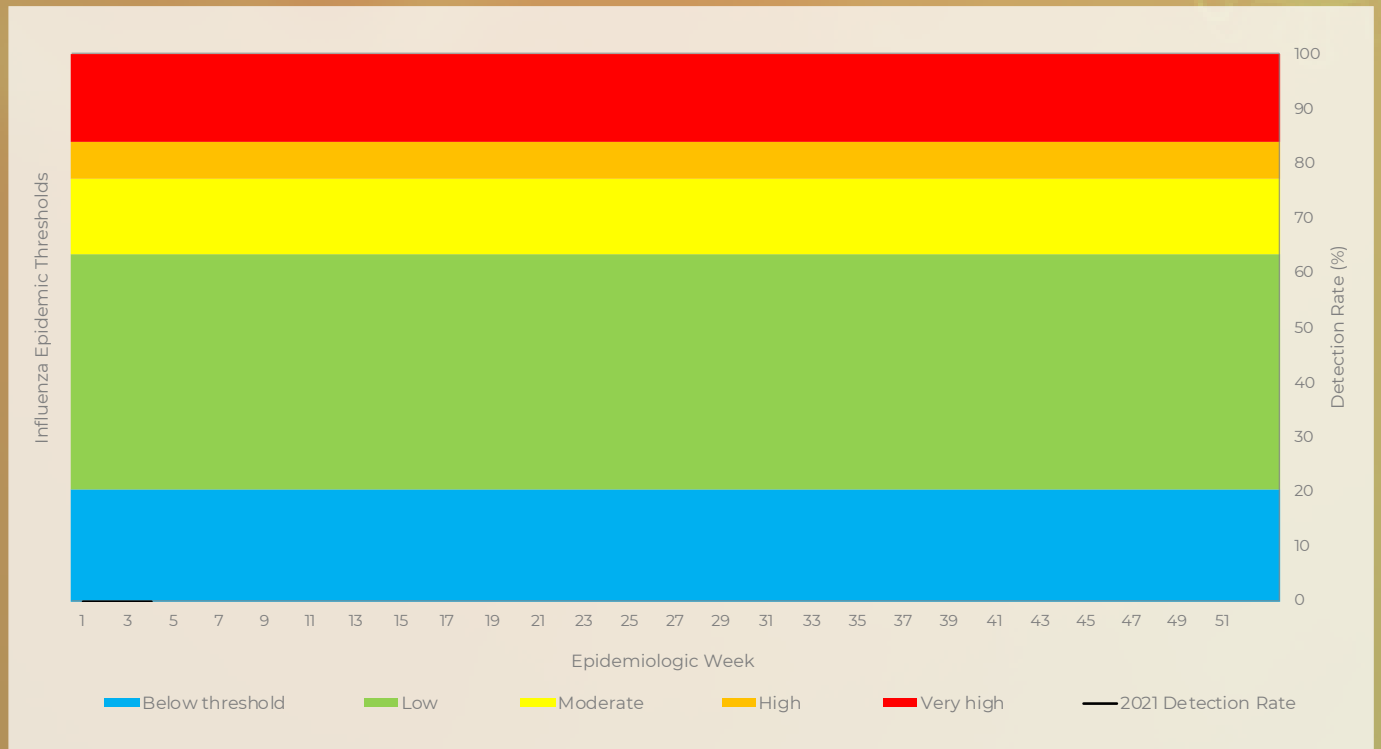


Figure 6. ILI surveillance (Viral Watch) percentage influenza detections and epidemic thresholds*

*Thresholds based on 2010-2019 data

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE VIRAL WATCH



Figure 7. Number of samples testing positive for RSV*, and detection rate by week

*Specimens from patients with Influenza-like illnesses at 92 sentinel sites in 8 provinces

Table 5. Cumulative number of RSV positive cases identified and total number of samples tested by province

Province	RSV positive	Total samples tested
Eastern Cape	0	0
Free State	0	0
Gauteng	2	12
Limpopo	0	0
Mpumalanga	0	1
North West	0	0
Northern Cape	0	0
Western Cape	0	0
Total:	2	13

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE VIRAL WATCH

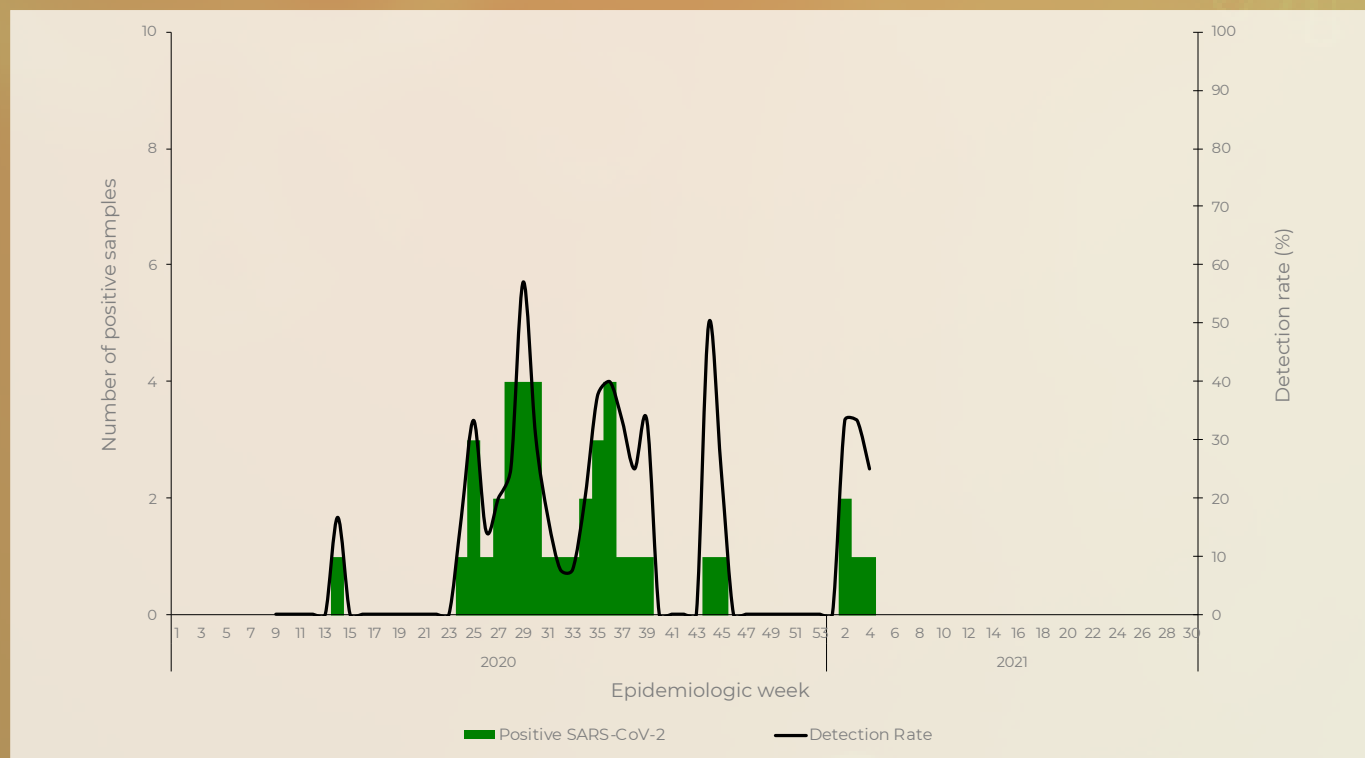


Figure 8. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

*Specimens from patients with Influenza-like illnesses at 92 sentinel sites in 8 provinces

Table 6. Cumulative number of SARS-CoV-2 identified and total number of samples tested by province

Hospital (Province)	SARS-CoV-2 positive	Total samples
Eastern Cape	1	4
Free State	1	14
Gauteng	29	172
Limpopo	0	2
Mpumalanga	1	6
North West	0	0
Northern Cape	0	2
Western Cape	9	92
Total:	41	292

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

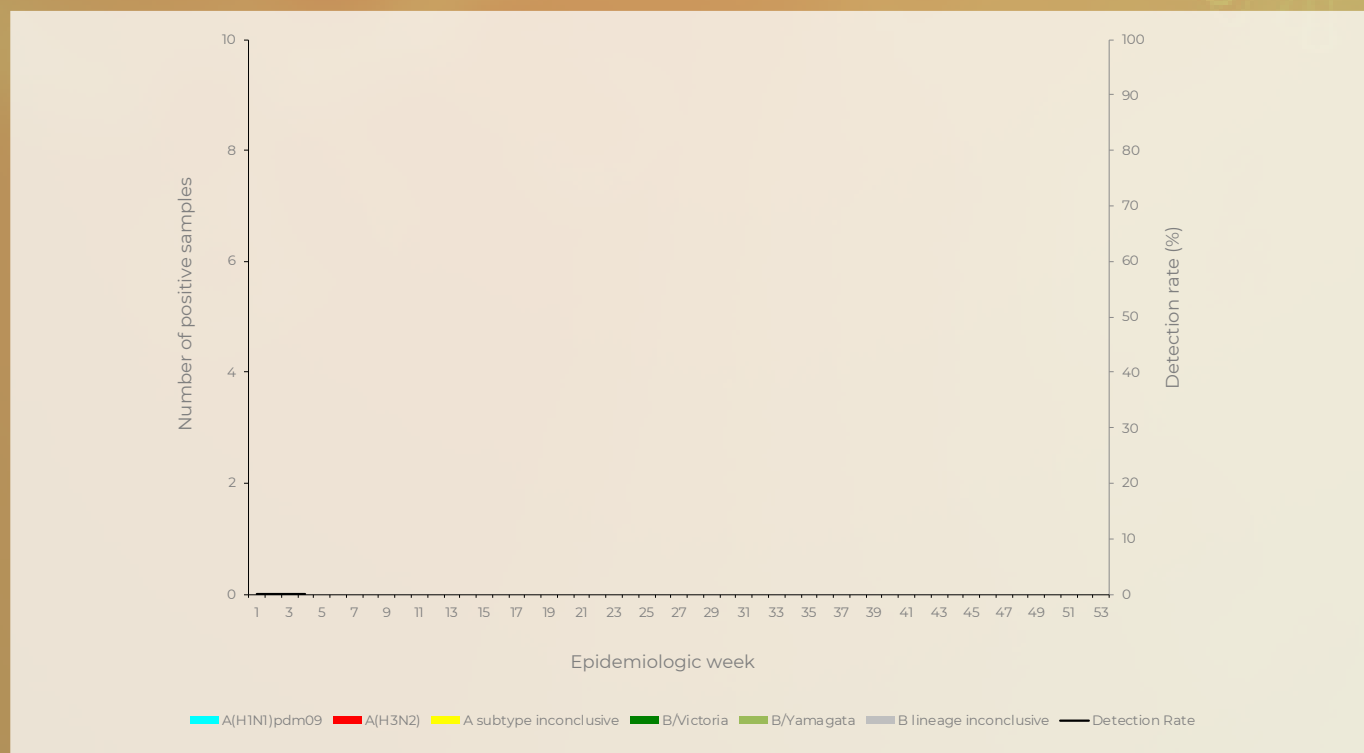


Figure 9. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*Specimens from patients hospitalised with pneumonia at 6 sentinel sites in 5 provinces

**Only reported for weeks with >10 specimens submitted

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

Table 7. Cumulative number of identified influenza subtype and lineage and total number of samples tested by hospital

Province	A(H1N1) pdm09	A(H3N2)	A subtype inconclusive	B/Victoria	B/ Yamagata	B lineage inconclusive	Total samples
Edendale (KZ)	0	0	0	0	0	0	93
Helen Joseph-Rahima Moosa (GP)	0	0	0	0	0	0	114
Klerksdorp-Tshepong (NW)	0	0	0	0	0	0	52
Mapulaneng-Matikwana (MP)	0	0	0	0	0	0	90
Red Cross (WC)	0	0	0	0	0	0	65
Mitchell's Plain (WC)	0	0	0	0	0	0	52
Total:	0	0	0	0	0	0	466

GP: Gauteng; KZ: KwaZulu-Natal; NW: North West; MP: Mpumalanga; WC: Western Cape

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

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

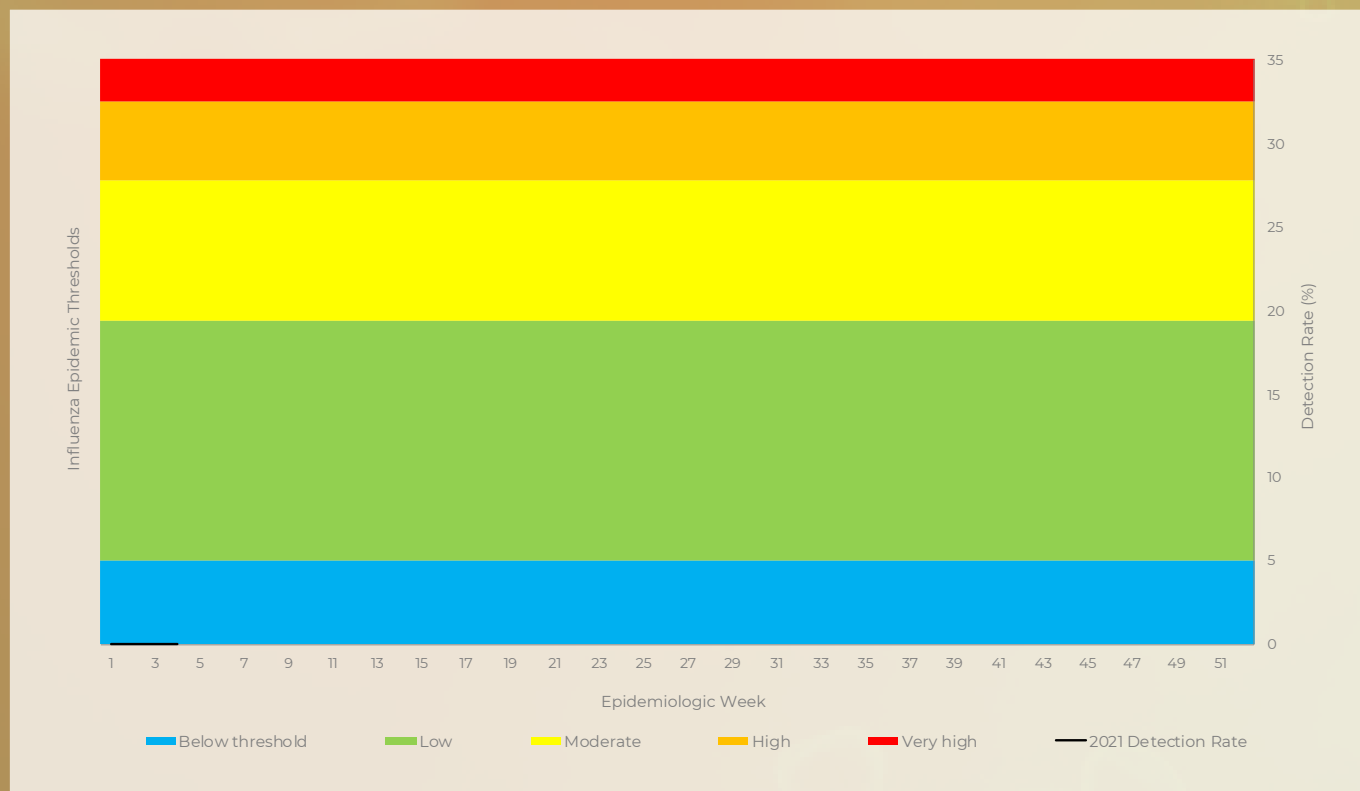


Figure 10. National syndromic surveillance for pneumonia percentage influenza detections and epidemic thresholds*

*Thresholds based on 2010-2019 data

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

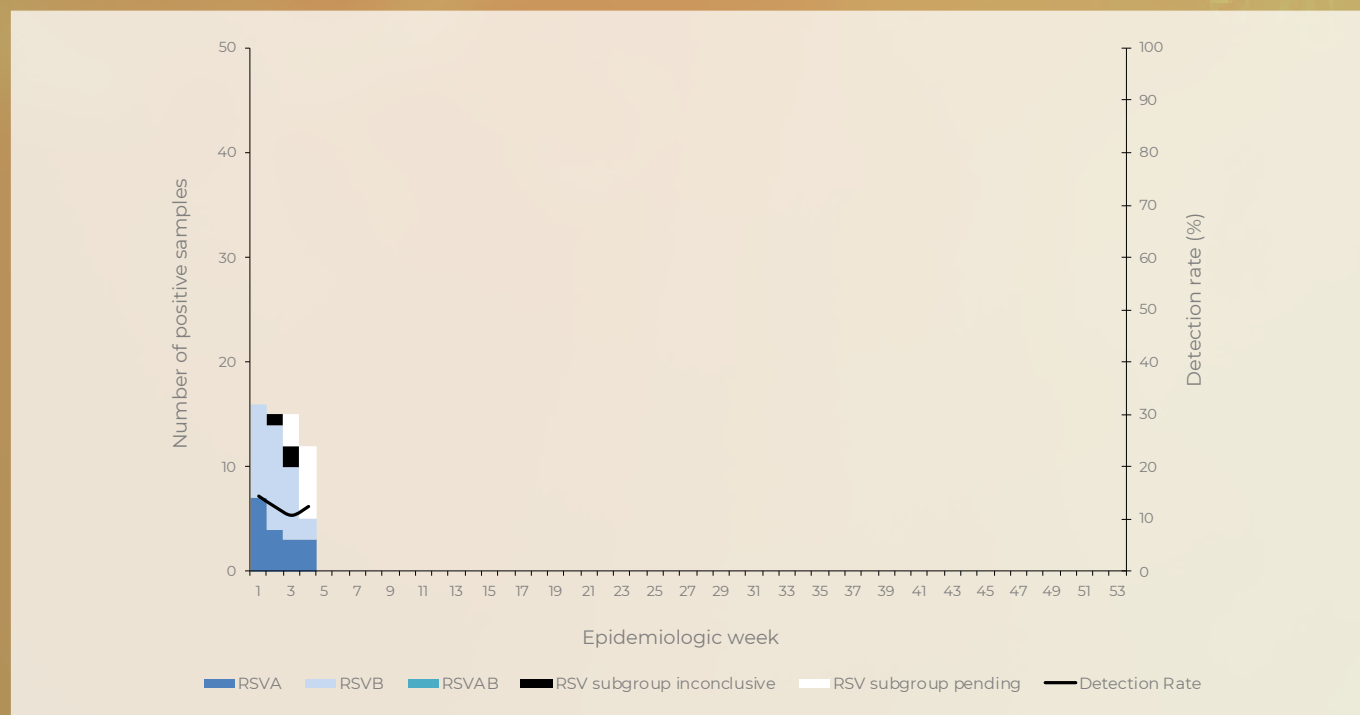


Figure 11. Number of samples testing positive for respiratory syncytial virus by subgroup and detection rate by week

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

RSV AB: Both RSV A and B subgroup identified

RSV subgroup pending: means RSV results for subgroups are pending

Table 8: Cumulative number of respiratory syncytial virus subgroups identified and total number of samples tested by hospital

Hospital (Province)	RSVA	RSVB	RSVAB	RSV subgroup inconclusive	RSV subgroup pending*	Total samples
Edendale (KZ)	1	8	0	1	0	93
Helen Joseph-Rahima Moosa (GP)	8	7	0	1	3	114
Klerksdorp-Tshepong (NW)	0	9	0	0	3	52
Mapulaneng-Matikwana (MP)	1	3	0	0	0	90
Red Cross (WC)	7	1	0	1	3	65
Mitchell's Plain (WC)	0	0	0	0	1	52
Total:	17	28	0	3	10	466

GP: Gauteng; KZ: KwaZulu-Natal; NW: North West; MP: Mpumalanga; WC: Western Cape

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

RSV AB: Both RSV A and B subgroup identified

*RSV results for subgroups are pending

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA



Figure 12. Number of samples testing positive for respiratory syncytial virus by province and detection rate by week

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

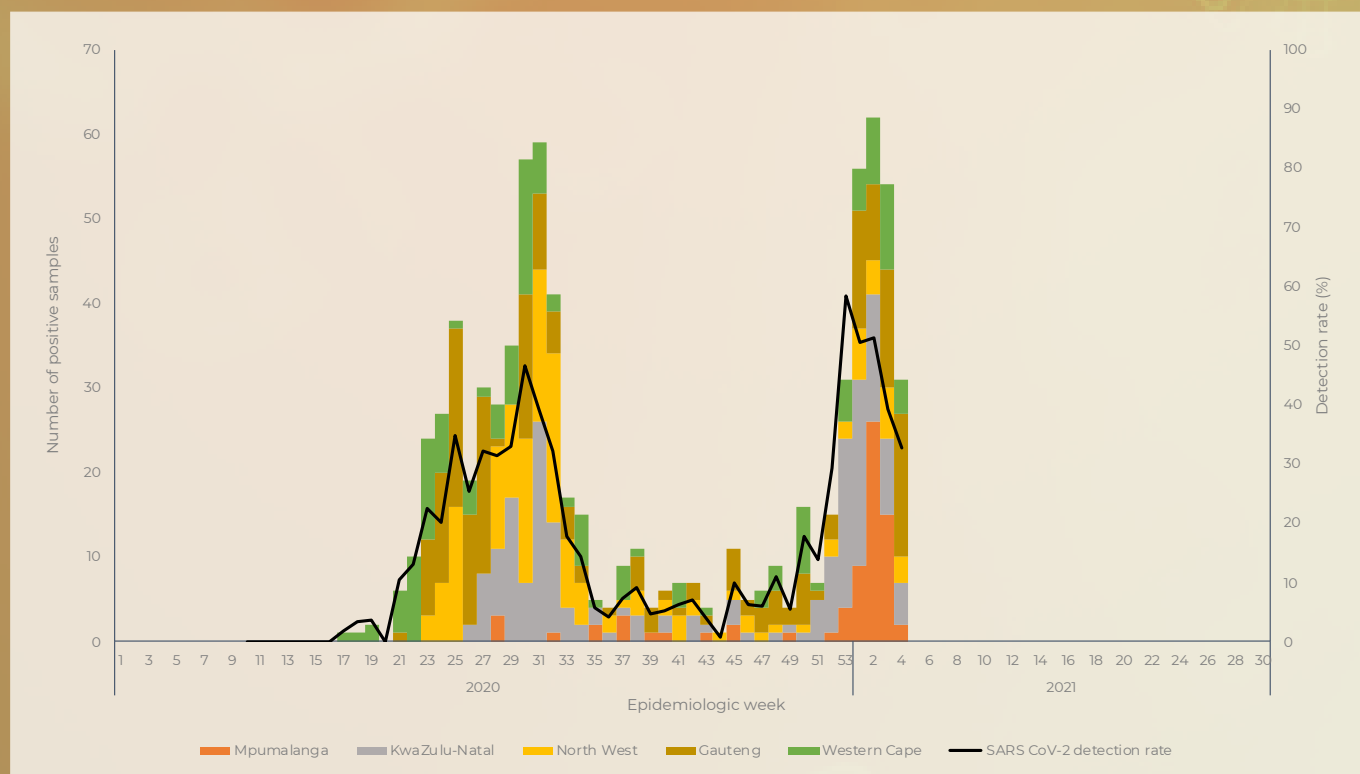


Figure 13. Number of samples testing positive for SARS-CoV-2* by province and detection rate by week

*Specimens from patients hospitalised with pneumonia at 6 sentinel sites in 5 provinces

Table 9. Cumulative number of identified SARS-CoV-2 and total number of samples tested by hospital

Hospital (Province)	SARS-CoV-2 positive	Total samples tested
Edendale (KZ)	192	794
Helen Joseph-Rahima Moosa (GP)	209	951
Klerksdorp-Tshepong (NW)	160	643
Mapulaneng-Matikwana (MP)	72	392
Red Cross (WC)	42	1022
Mitchell's Plain (WC)	100	517
Total:	775	4319

GP: Gauteng; KZ: KwaZulu-Natal; NW: North West; MP: Mpumalanga; WC: Western Cape

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SUMMARY OF LABORATORY CONFIRMED SARS-COV-2 CASES

Table 10. Characteristics of laboratory-confirmed cases of COVID-19, enrolled in influenza-like illness (ILI) and pneumonia surveillance programmes, South Africa, 02 March 2020 – 31 Jan 2021

Characteristic	Influenza-like illness (ILI), public-sector, n=262 (%)	Pneumonia, n=775 (%)
Age group		
0-9	30/262 (11)	60/775 (8)
10-19	19/262 (7)	5/775 (1)
20-39	117/262 (45)	143/775 (18)
40-59	74/262 (28)	282/775 (36)
60-79	21/262 (8)	267/775 (35)
≥80	1/262 (<1)	18/775 (2)
Sex-female	153/262 (58)	472/775 (61)
Province*		
Gauteng	N/A	209/775 (27)
KwaZulu-Natal	38/262 (14)	192/775 (25)
Mpumalanga**	21/262 (8)	72/775 (9)
North West	94/262 (36)	160/775 (21)
Western Cape	109/262 (42)	142/775 (18)
Race		
Black	167/260 (64)	642/769 (83)
Coloured	86/260 (33)	91/769 (12)
Asian/Indian	0/260 (0)	21/769 (3)
Other	7/260 (3)	15/769 (2)
Presentation		
Fever	252/260 (97)	433/769 (56)
Cough	259/260 (99)	749/769 (97)
Shortness of breath	76/260 (29)	609/769 (79)
Chest pain	101/260 (39)	342/769 (44)
Diarrhoea	23/260 (9)	50/769 (7)

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Characteristic	Influenza-like illness (ILI), public-sector, n=262 (%)	Pneumonia, n=775 (%)
Underlying conditions		
Hypertension	12/260 (5)	102/769 (13)
Cardiac	0/260 (0)	8/769 (1)
Lung disease	0/260 (0)	1/769 (<1)
Diabetes	5/260 (2)	167/769 (22)
Cancer	0/260 (0)	5/769 (1)
Tuberculosis	1/260 (<1)	21/769 (3)
HIV-infection	34/260 (13)	152/769 (20)
Other ***	8/260 (3)	79/769 (10)
Management		
Oxygen therapy	1/260 (<1)	491/769 (64)
ICU admission	N/A	20/769 (3)
Ventilation	N/A	27/769 (4)
Outcome***		
Died	0/260 (0)	79/769 (10)

*ILI surveillance not conducted in Gauteng province

**Mpumalanga (ILI site started enrolling on the 10th November 2020)

***Chronic lung, liver and kidney disease, organ transplant, pregnancy, malnutrition, obesity, tracheostomy, prematurity, seizure, stroke, anaemia, asplenia, burns, Systemic lupus erythematosus, seizures

****Outcome includes patients who are still hospitalised, have been discharged or referred, and those who died

Note: Children may be over-represented amongst hospitalised patients due to the inclusion of a large paediatric hospital in Cape Town.

Of the 79 patients who died, eight were in the 20-39 year age group, 24 in the 40-59 year age group, and 47 were ≥60 years; 49/79 (62%) were female.