

WEEKLY RESPIRATORY PATHOGENS SURVEILLANCE REPORT



NATIONAL INSTITUTE FOR
COMMUNICABLE DISEASES

Division of the National Health Laboratory Service

SOUTH AFRICA WEEK 50 2020

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CUMULATIVE DATA FROM



HIGHLIGHTS: WEEK 50

- The RSV detections breached the low threshold in week 39 (week starting 21 September) as determined by Moving Epidemic Method. RSV activity dropped to below threshold in week 44 and continued at this level to date.

- The 2020 influenza season has not yet started. Only one detection of influenza A(H1N1)pdm09 has been made in week 24 (week starting 8 June 2020), since the localised outbreak of influenza A(H1N1)pdm09 and to a lesser extent influenza B(Victoria) in the Western Cape Province, in the first three months of the year.

- To date, 718 COVID-19 cases have been detected from all surveillance programmes. Of the 506 hospitalised COVID-19 cases with available data on outcome, 62 (12%) died.

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

The 2020 influenza season has not yet started although sustained detections of influenza A(H1N1)pdm09 and to a lesser extent influenza B(Victoria) were made from Western Cape Province, in all surveillance programmes from week 2 to week 15. In week 24 (week ending 14th June), one influenza case was detected in Gauteng province.

ILI programme: In 2020 to date, specimens from 1470 patients were received from 4 ILI sites. Influenza was detected in 52 specimens (all from Western Cape province), 36 (69%) were identified as influenza A(H1N1)pdm09, one (2%) influenza A subtype inconclusive, 12 (23%) as influenza B (Victoria) and three (6%) B lineage inconclusive (Figure 1 and Table 1).

Viral Watch programme: During the same period, specimens were received from 382 patients from Viral Watch sites in 8 provinces. Influenza was detected in 78 patients and five are imported cases detected in the first weeks of the year. Of the 73 local cases, all were influenza A(H1N1)pdm09. (Figure 6 and Table 4).

Pneumonia surveillance: Since the beginning of 2020, specimens from 4134 patients with severe respiratory illness (SRI) were received from the 6 sentinel sites. Influenza was detected in 26 patients (all from Western Cape Province), of which 21 (81%) were influenza A(H1N1)pdm09, one (4%) influenza A subtype inconclusive and four (15%) influenza B(Victoria) (Figure 9 and Table 6).

Respiratory syncytial virus

The RSV detections breached the low threshold in week 39 (week starting 21 September) as determined by Moving Epidemic Method. RSV activity dropped to below threshold in week 44 and continued at this level to date.

ILI programme: In 2020 to date, 1470 specimens were tested and RSV was detected in specimens of 76 (5%) patients.

Viral Watch programme: During the same period, 382 specimens were tested and RSV was detected in three (<1%) patients.

Pneumonia surveillance: Since the beginning of 2020, 4134 specimens were tested and RSV was detected in specimens of 514 (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: In 2020 to date, specimens from 1236 patients were tested and SARS-CoV-2 was detected in 175 (14%) patients.

Viral Watch programme: In 2020 to date, specimens were tested from 277 patients and SARS-CoV-2 was detected in 37 (13%) patients.

Pneumonia surveillance: In 2020 to date, specimens from 3636 patients with severe respiratory illness (SRI) were tested and SARS-CoV-2 was detected in 506 (14%) patients.

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

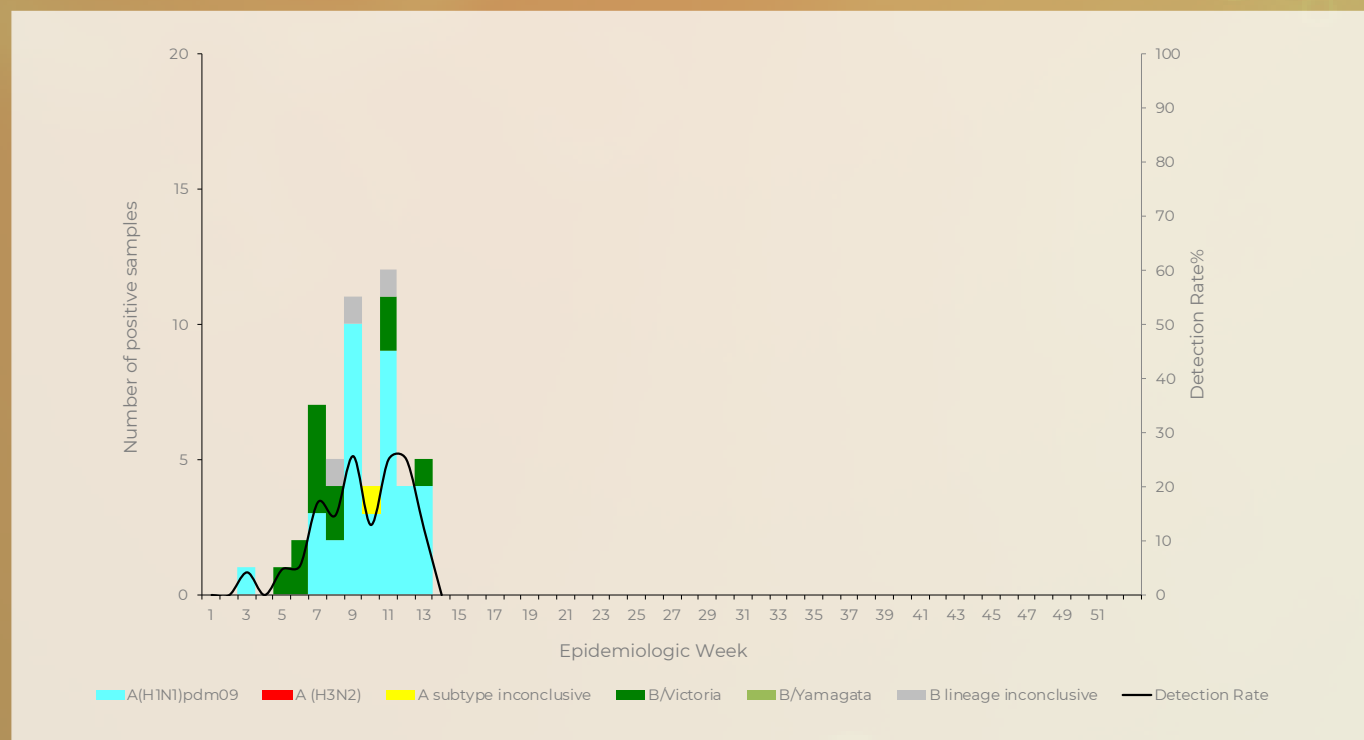


Figure 1. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*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	20
Eastridge (WC)	33	0	1	12	0	3	571
Edendale Gateway (KZ)	0	0	0	0	0	0	176
Jouberton (NW)	0	0	0	0	0	0	361
Mitchell's Plain (WC)	3	0	0	0	0	0	342
Total:	36	0	1	12	0	3	1470

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

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

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

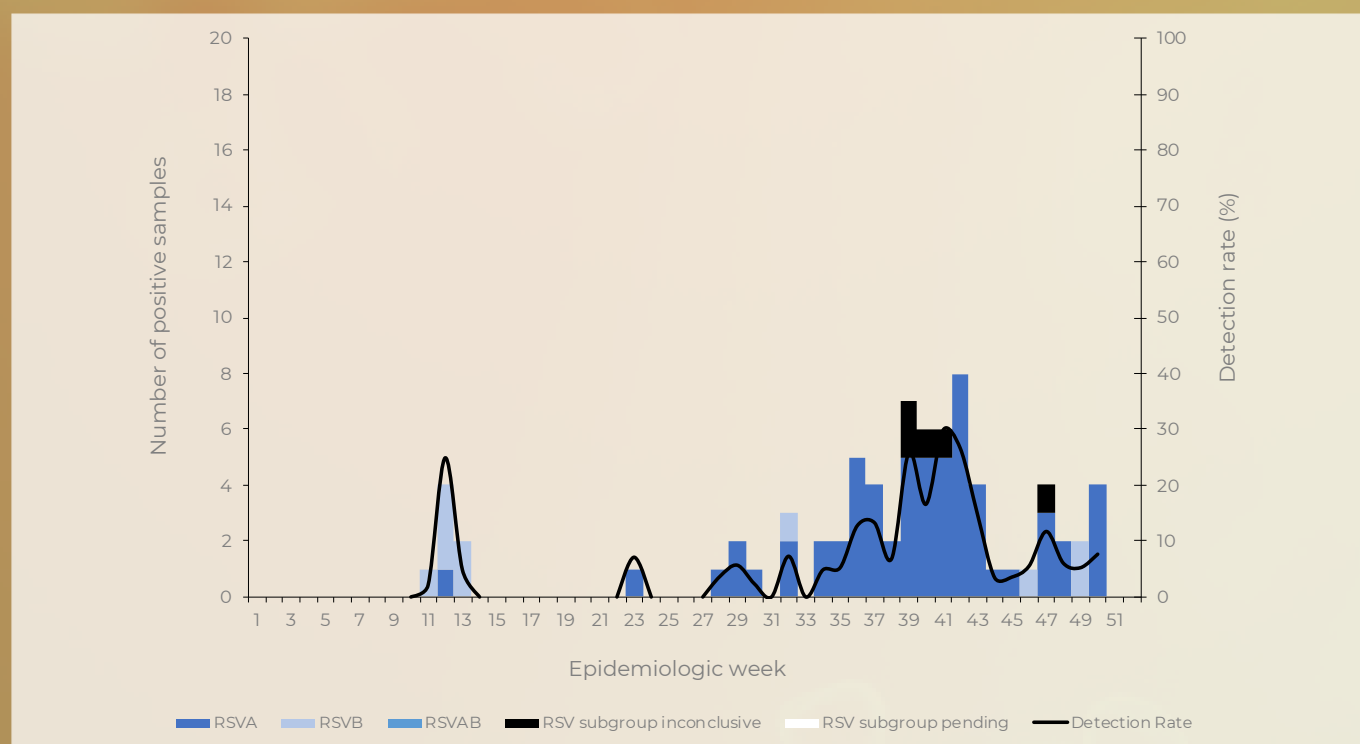


Figure 2. Number of samples testing positive for respiratory syncytial virus by subgroup and detection rate by week

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)	0	0	0	0	0	20
Eastridge (WC)	38	2	0	2	0	571
Edendale Gateway (KZ)	1	8	0	1	0	176
Jouberton (NW)	2	1	0	2	0	361
Mitchell's Plain (WC)	19	0	0	0	0	342
Total	60	11	0	5	0	1470

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

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

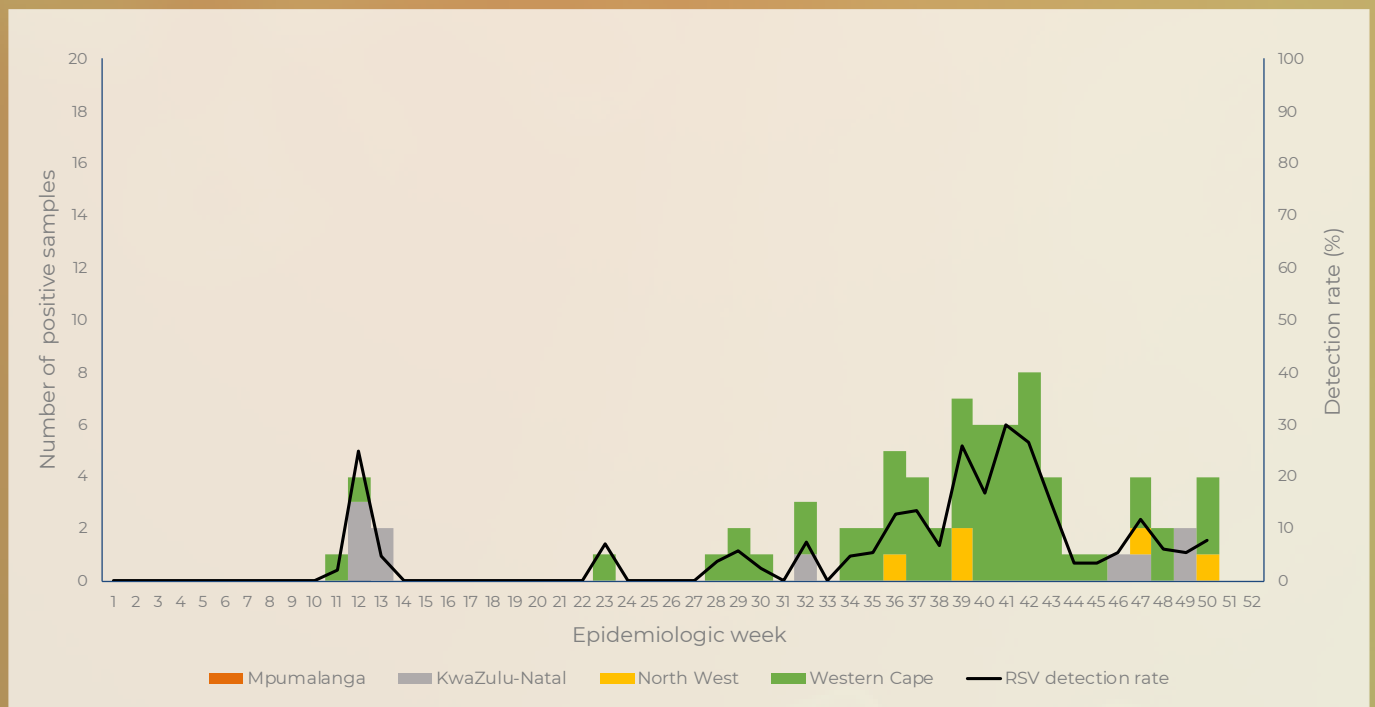


Figure 3. Number of samples testing positive for respiratory syncytial virus by province and detection rate by week

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

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

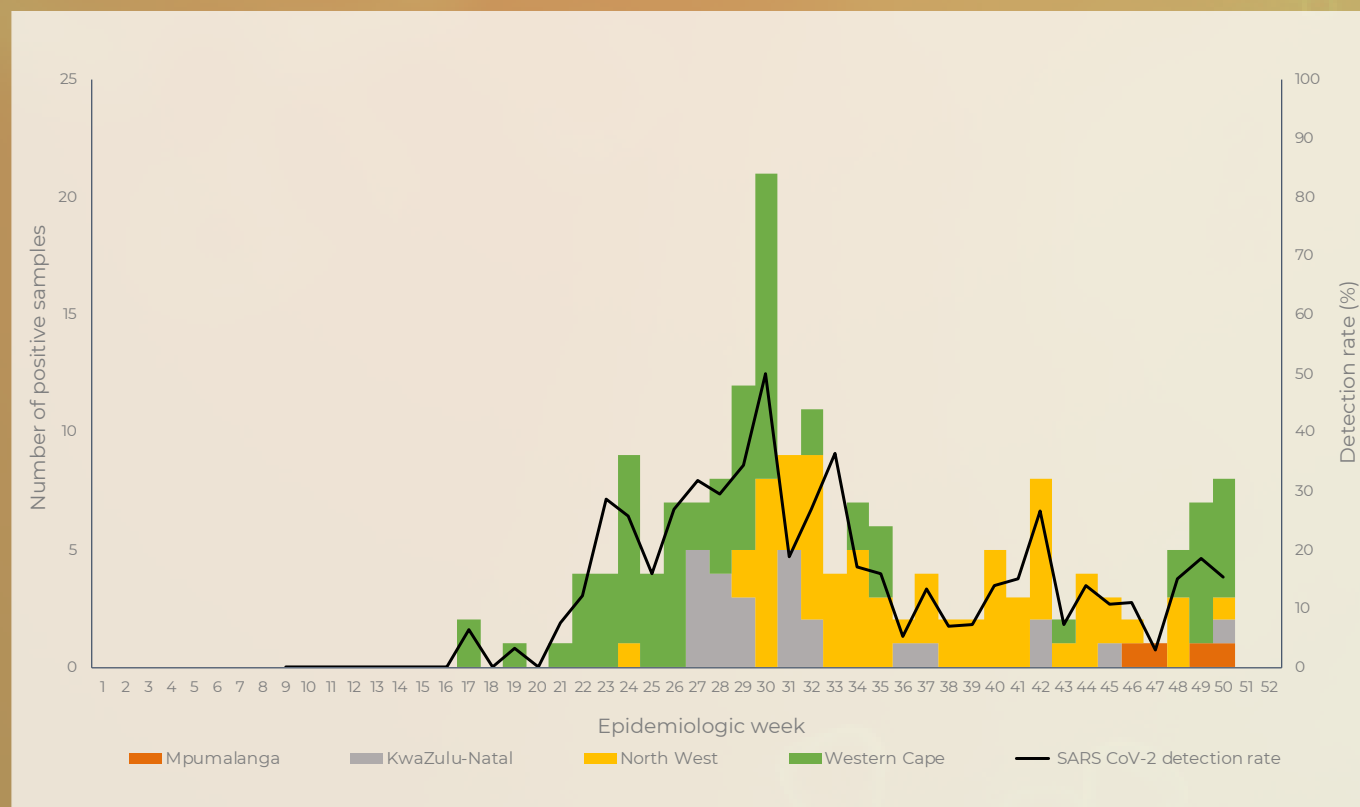


Figure 4. Number of samples testing positive for SARS-CoV-2* by province and detection rate by week

*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)	4	20
Eastridge (WC)	28	468
Edendale Gateway (KZ)	25	126
Jouberton (NW)	68	312
Mitchell's Plain (WC)	50	310
Total:	175	1236

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

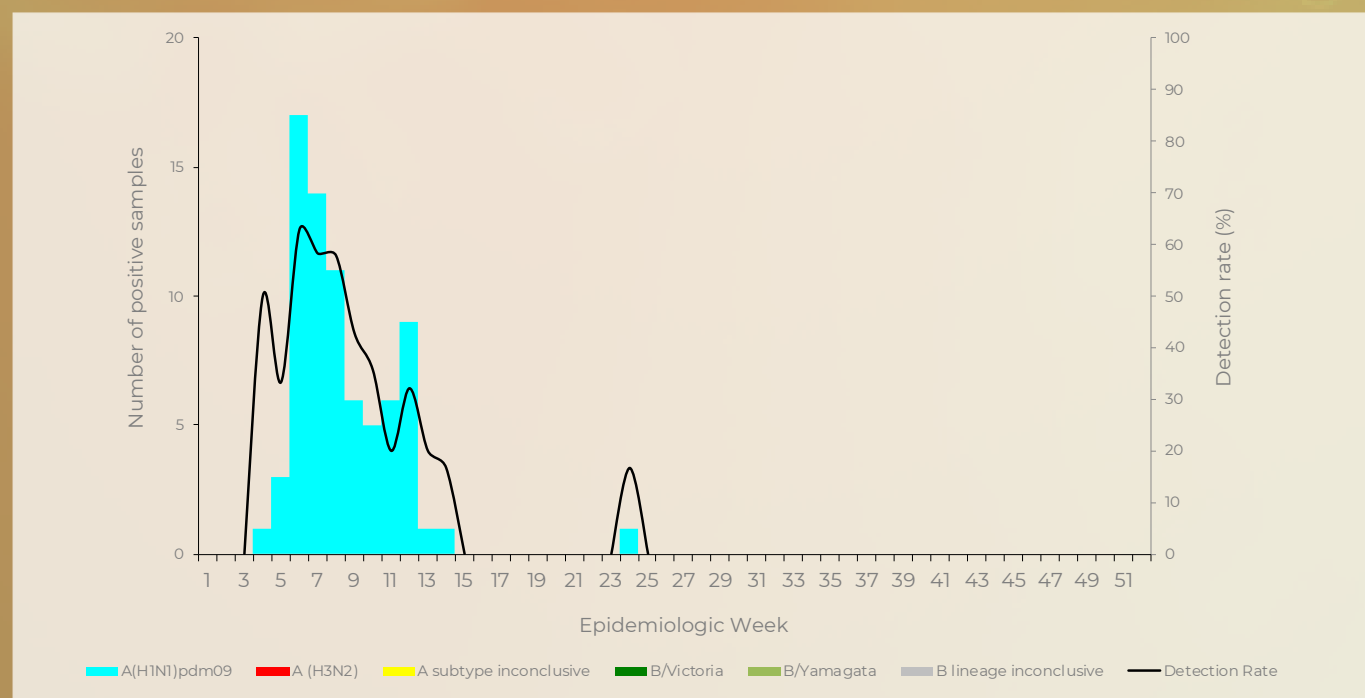


Figure 5. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*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	5
Free State	0	0	0	0	0	0	14
Gauteng	1	0	0	0	0	0	168
Limpopo	0	0	0	0	0	0	3
Mpumalanga	0	0	0	0	0	0	7
North West	0	0	0	0	0	0	0
Northern Cape	0	0	0	0	0	0	4
Western Cape	72	0	0	0	0	0	181
Total:	73	0	0	0	0	0	382

From 01 January 2020 to date, 10 patients were tested for influenza at the time of entry into South Africa following travel abroad and influenza was detected in three patients, of which one influenza A(H1N1)pdm09 and two influenza A(H3N2).

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

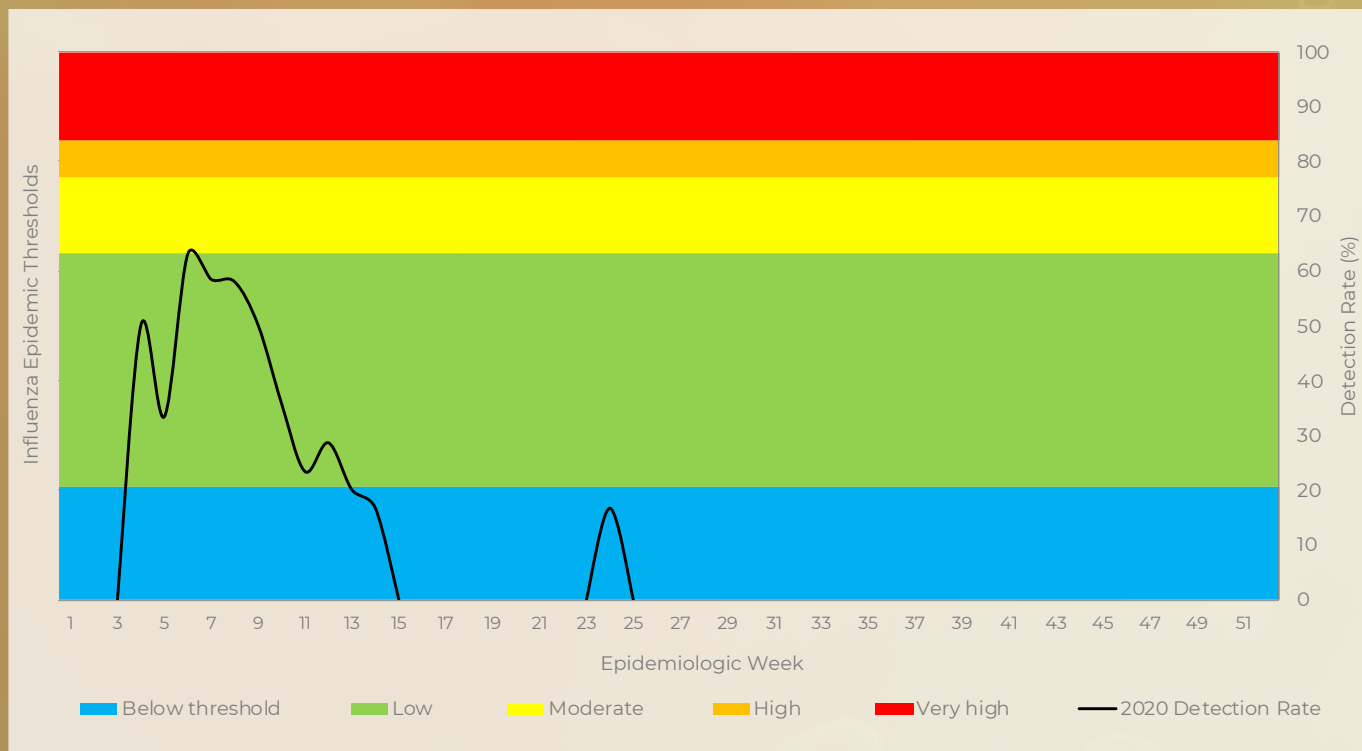


Figure 6. ILI surveillance (Viral Watch) percentage influenza detections and epidemic thresholds*

*Thresholds based on 2010-2019 data

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE VIRAL WATCH

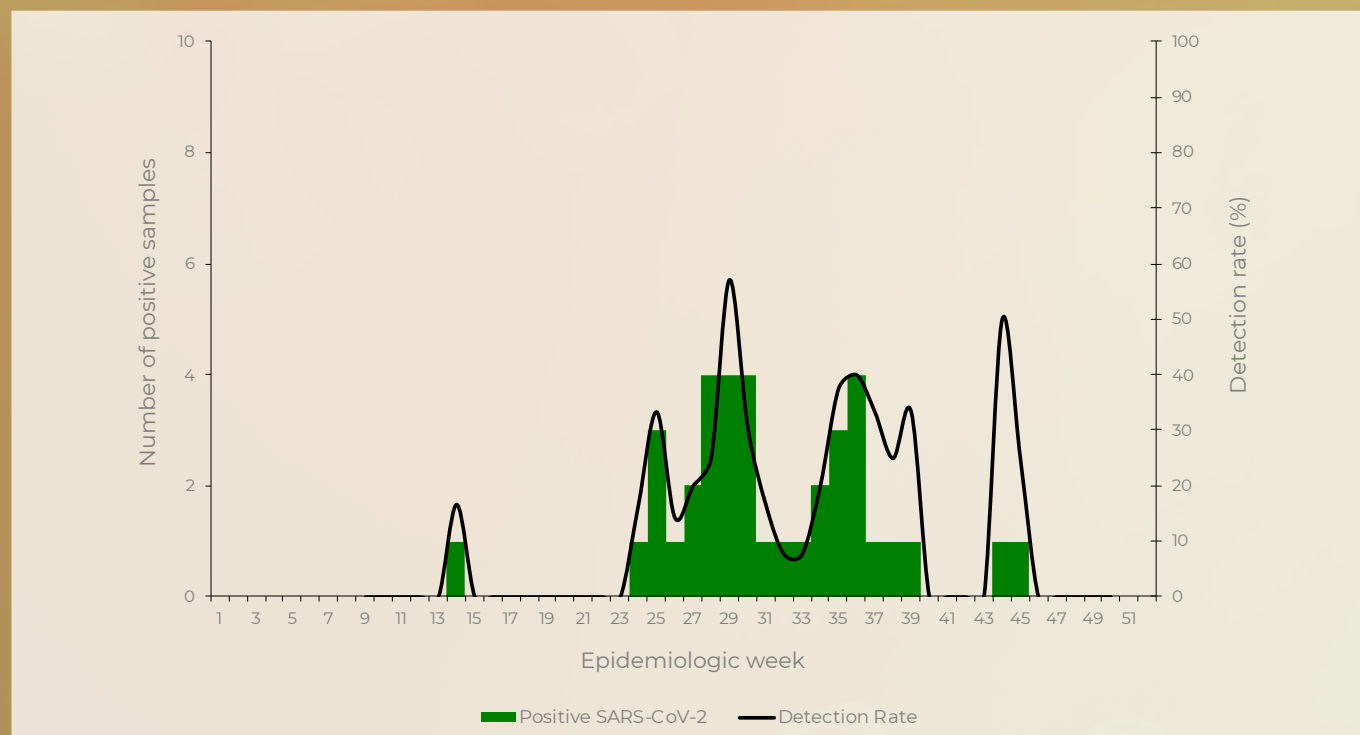


Figure 7. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

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

Table 5. Cumulative number of SARS-CoV-2 identified and total number of samples tested by province

Province	SARS-CoV-2 positive	Total samples tested
Eastern Cape	1	4
Free State	1	14
Gauteng	25	158
Limpopo	0	2
Mpumalanga	1	5
North West	0	0
Northern Cape	0	2
Western Cape	9	92
Total:	37	277

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

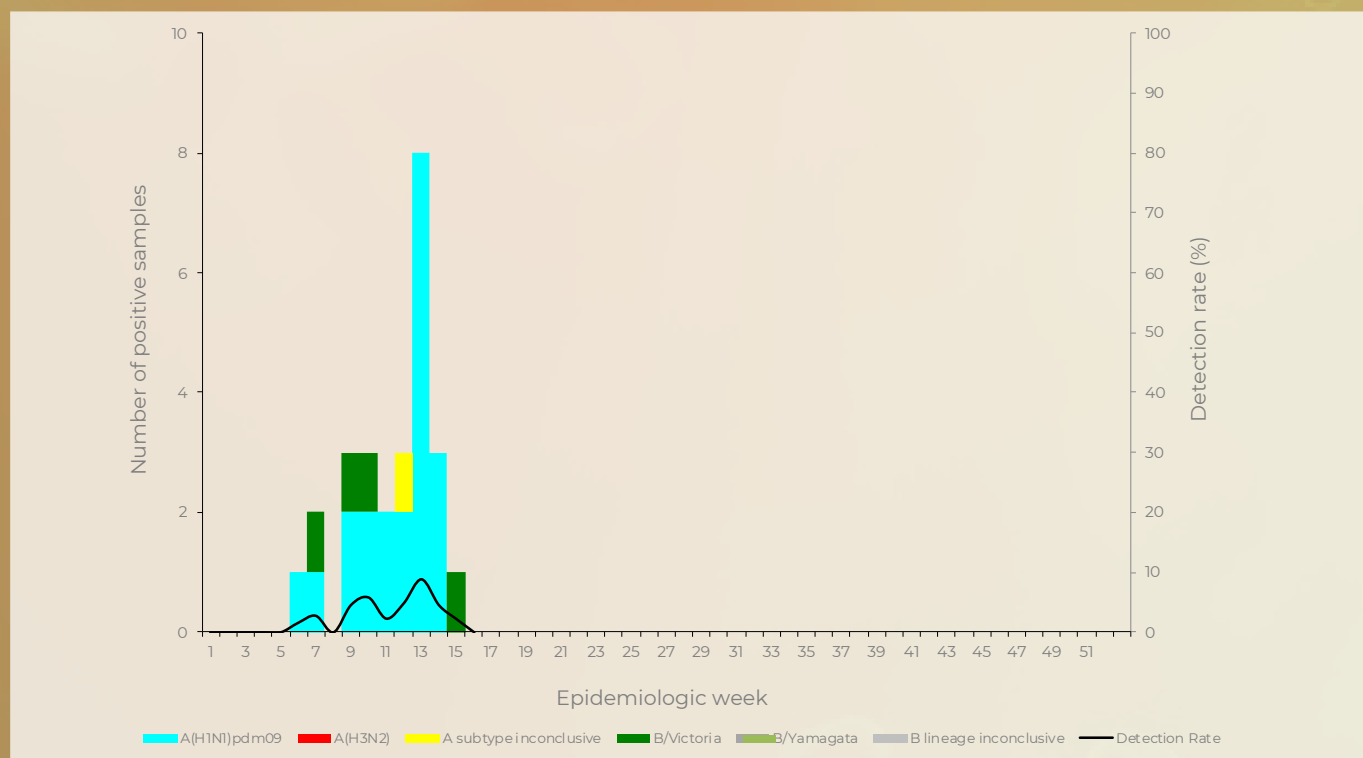


Figure 8. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*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 6. Cumulative number of identified influenza subtype and lineage and total number of samples tested by hospital

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	711
Helen Joseph-Rahima Moosa (GP)	0	0	0	0	0	0	918
Klerksdorp-Tshepong (NW)	0	0	0	0	0	0	649
Mapulaneng-Matikwana (MP)	0	0	0	0	0	0	329
Red Cross (WC)	19	0	0	2	0	0	1058
Mitchell's Plain (WC)	2	0	1	2	0	0	469
Total:	21	0	1	4	0	0	4134

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 9. 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

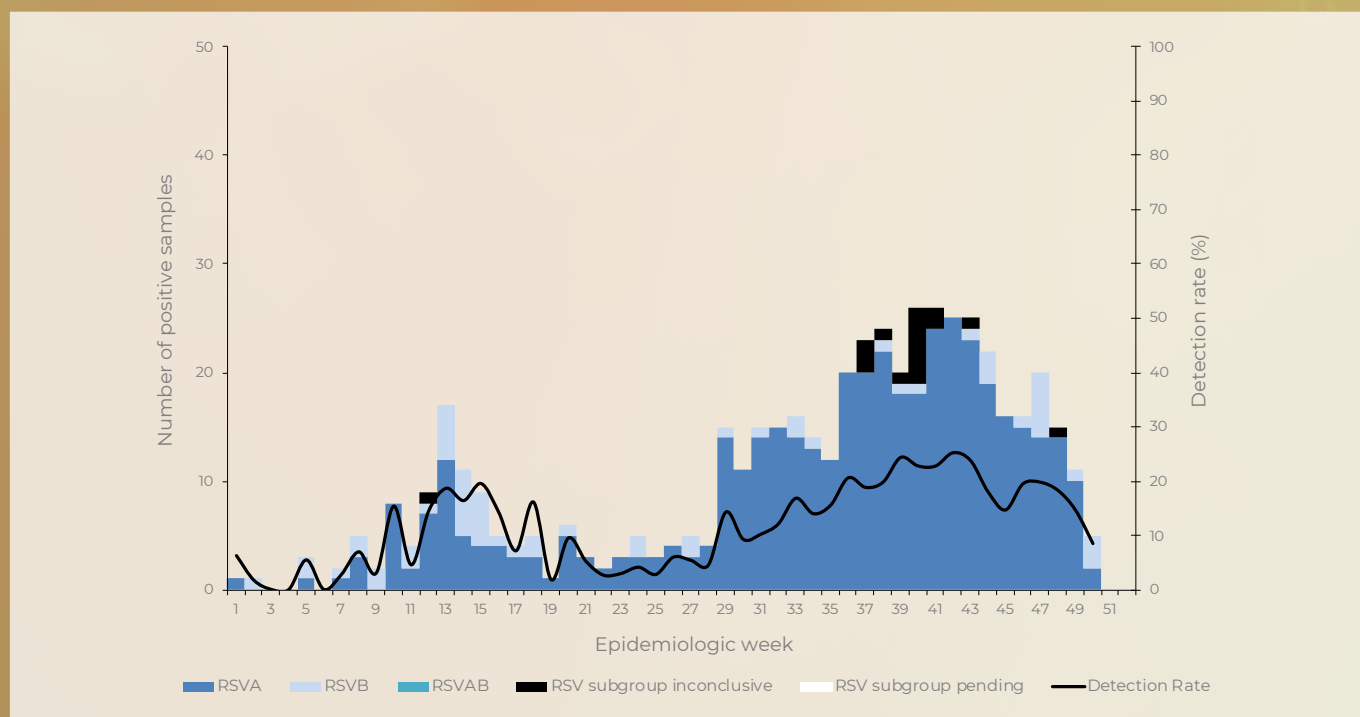


Figure 10. Number of samples testing positive for respiratory syncytial virus by subgroup and detection rate by week

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 7: 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)	3	12	0	1	0	711
Helen Joseph-Rahima Moosa (GP)	58	14	0	0	0	918
Klerksdorp-Tshepong (NW)	3	6	0	1	0	649
Mapulaneng-Matikwana (MP)	0	1	0	0	0	329
Red Cross (WC)	286	26	0	10	0	1058
Mitchell's Plain (WC)	88	0	0	5	0	469
Total:	438	59	0	17	0	4134

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

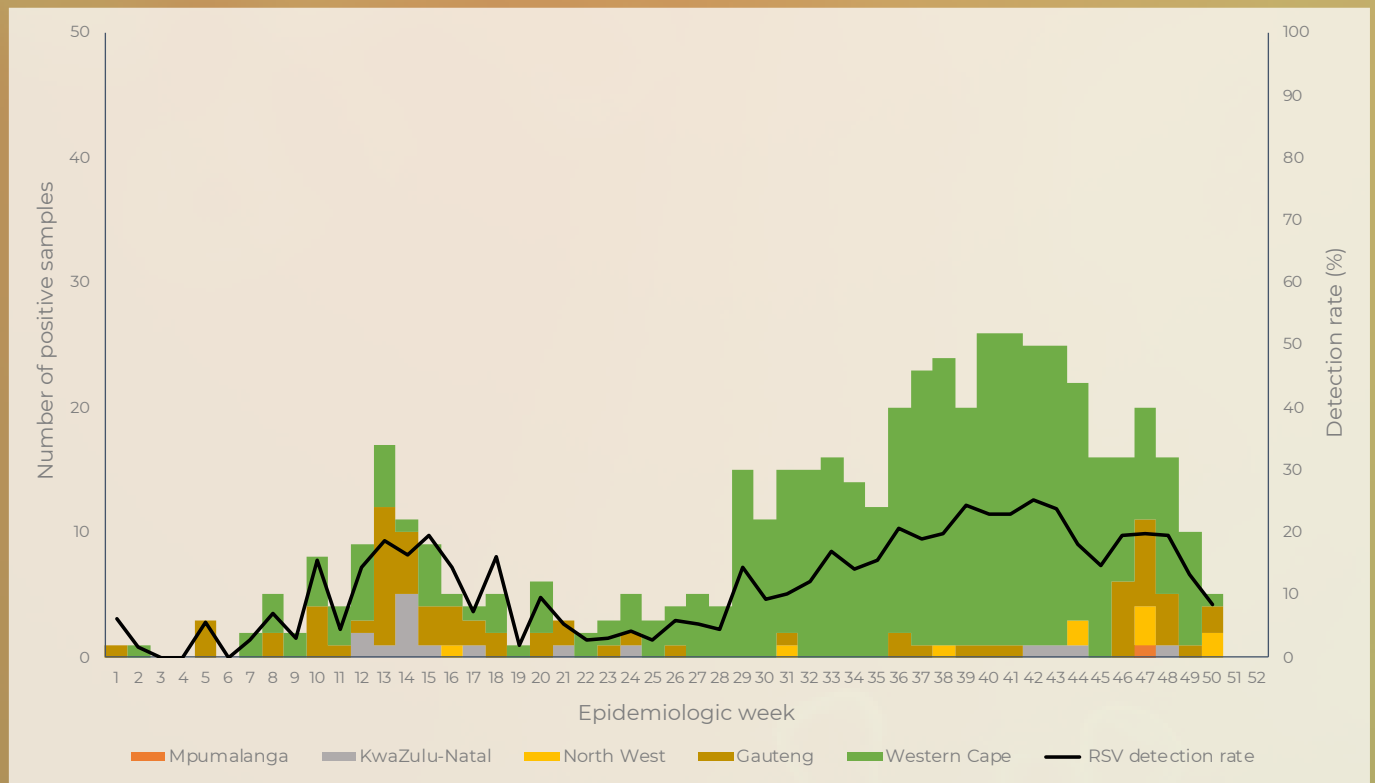


Figure 11. Number of samples testing positive for respiratory syncytial virus by province and detection rate by week

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

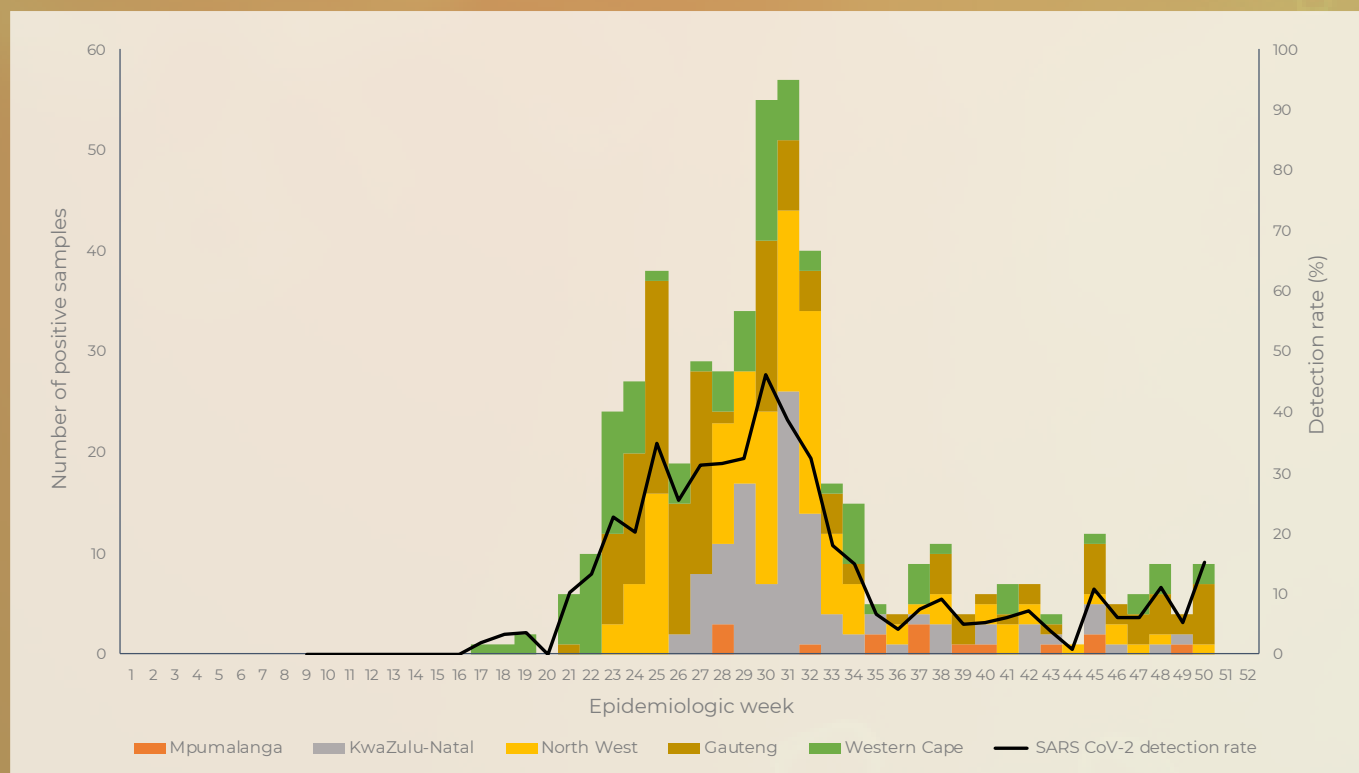


Figure 12. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

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

Table 8. 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)	106	636
Helen Joseph-Rahima Moosa (GP)	147	783
Klerksdorp-Tshepong (NW)	137	575
Mapulaneng-Matikwana (MP)	15	280
Red Cross (WC)	32	916
Mitchell's Plain (WC)	69	446
Total:	506	3636

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 9. Characteristics of laboratory-confirmed cases of COVID-19, enrolled in influenza-like illness (ILI) and pneumonia surveillance programmes, South Africa, 2 March – 13 December 2020

Characteristic	Influenza-like illness (ILI), public-sector, n=175 (%)	Pneumonia, n=506 (%)
Age group		
0-9	23/175 (13)	43/506 (9)
10-19	19/175 (11)	4/506 (1)
20-39	80/175 (46)	103/506 (20)
40-59	38/175 (22)	189/506 (37)
60-79	15/175 (9)	158/506 (31)
≥80	0/175 (0)	9/506 (2)
Sex-female	96/175 (55)	307/506 (61)
Province*		
Gauteng	N/A	147/506 (29)
KwaZulu-Natal	25/175 (14)	106/506 (21)
Mpumalanga**	4/175 (2)	15/506 (3)
North West	68/175 (39)	137/506 (27)
Western Cape	78/175 (45)	101/506 (20)
Race		
Black	108/159 (68)	407/506 (80)
Coloured	49/159 (31)	65/506 (13)
Asian/Indian	0/159 (0)	20/506 (4)
Other	1/159 (<1)	5/506 (1)
Missing	1/159 (<1)	9/506 (2)
Presentation		
Fever	154/159 (97)	294/506 (58)
Cough	158/159 (99)	494/506 (98)
Shortness of breath	44/159 (28)	390/506 (77)
Chest pain	62/159 (39)	231/506 (46)
Diarrhoea	19/159 (12)	33/506 (7)

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

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Characteristic	Influenza-like illness (ILI), public-sector, n=175 (%)	Pneumonia, n=506 (%)
Underlying conditions		
Hypertension	11/159 (7)	60/506 (12)
Cardiac	0/159 (0)	8/506 (2)
Lung disease	0/159 (0)	1/506 (<1)
Diabetes	2/159 (1)	108/506 (21)
Cancer	0/159 (0)	2/506 (<1)
Tuberculosis	0/159 (0)	16/506 (3)
HIV-infection	23/159 (14)	105/506 (21)
Other ***	7/159 (4)	75/506 (15)
Management		
Oxygen therapy	1/159 (1)	334/506 (66)
ICU admission	N/A	19/506 (4)
Ventilation	N/A	18/506 (4)
Outcome***		
Died	0/159 (0)	62/506 (12)

*ILI surveillance not conducted in Gauteng province

**Mpumalanga (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 62 patients who died, six were in the 20-39 year age group, 20 in the 40-59 year age group, and 36 were ≥60 years; 41/62 (66%) were female. All except four were known to have underlying medical conditions.