

MONTHLY RESPIRATORY PATHOGENS SURVEILLANCE REPORT

 NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES

Division of the National Health Laboratory Service

SOUTH AFRICA WEEK 9 2021

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HIGHLIGHTS: WEEK 9

- 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 7 March 2021, a total of 1172 COVID-19 cases were detected from all surveillance programmes. COVID-19 cases detected continue to decline in all programs 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 850 hospitalised COVID-19 cases reported with available data on outcome, 112 (13%) died.

CUMULATIVE DATA FROM



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

COMMENTS

Influenza

There are no influenza cases detected in 2021 in all programmes.

ILI programme: In 2021 to date, specimens from 328 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 26 patients from Viral Watch sites in three provinces of the 8 provinces participating in surveillance. Influenza was not detected. (Figure 5 and Table 4).

Pneumonia surveillance: Since the beginning of 2021, specimens from 914 patients with severe respiratory illness (SRI) were received from the 6 sentinel sites. Influenza was not detected. (Figure 9 and Table 8).

Respiratory syncytial virus

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

ILI programme: In 2021 to date, 328 specimens were tested and RSV was detected in specimens of 30 (9%) patients.

Viral Watch programme: During the same period, 26 specimens were tested and RSV was detected in specimens of four (15%) patient.

Pneumonia surveillance: Since the beginning of 2021, 914 specimens were tested and RSV was detected in specimens of 114 (12%) patients.

Bordetella pertussis

There are no *B. pertussis* cases detected in 2021 in all programmes.

ILI programme: From 1 January 2021 to date, combined nasopharyngeal and oropharyngeal specimens were tested from 326 patients and *B. pertussis* was not detected.

Pneumonia surveillance: During the same period, combined nasopharyngeal and oropharyngeal specimens were tested from 906 patients and *B. pertussis* was not detected.

In addition, *B. pertussis* was not detected in 163 specimens from patients who met suspected *B. pertussis* case definition but did not meet the pneumonia/ILI surveillance case definition.

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). The number of SARS-CoV-2 positive cases has been decreasing in all programmes since week 3 of 2021.

ILI programme: From March 2020 to date, specimens from 1638 patients were tested and SARS-CoV-2 was detected in 279 (17%) patients.

Viral Watch programme: From March 2020 to date, specimens were tested from 305 patients and SARS-CoV-2 was detected in 42 (14%) patients.

Pneumonia surveillance: From March 2020 to date, specimens from 4768 patients with severe respiratory illness (SRI) were tested and SARS-CoV-2 was detected in 852 (18%) patients.

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

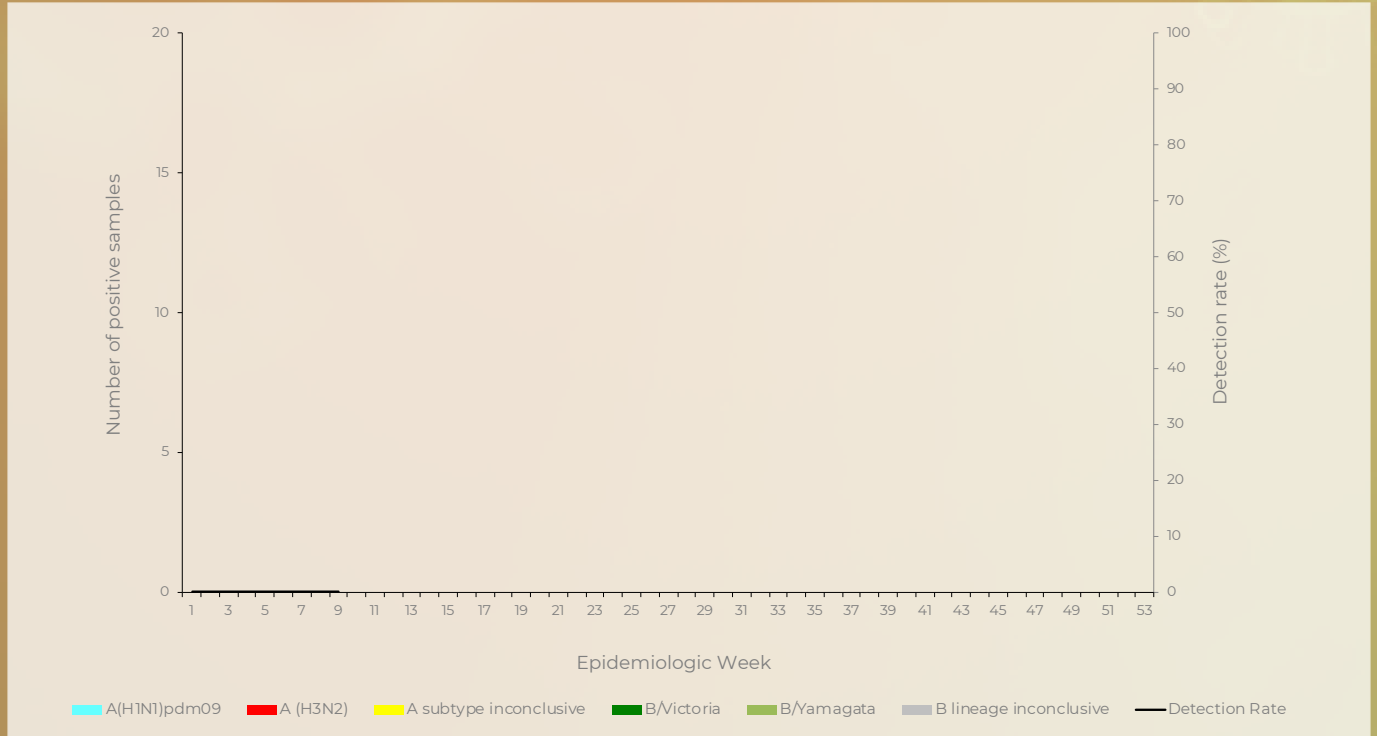


Figure 1. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*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	43
Eastridge (WC)	0	0	0	0	0	0	78
Edendale Gateway (KZ)	0	0	0	0	0	0	37
Jouberton (NW)	0	0	0	0	0	0	115
Mitchell's Plain (WC)	0	0	0	0	0	0	55
Total:	0	0	0	0	0	0	328

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

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

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

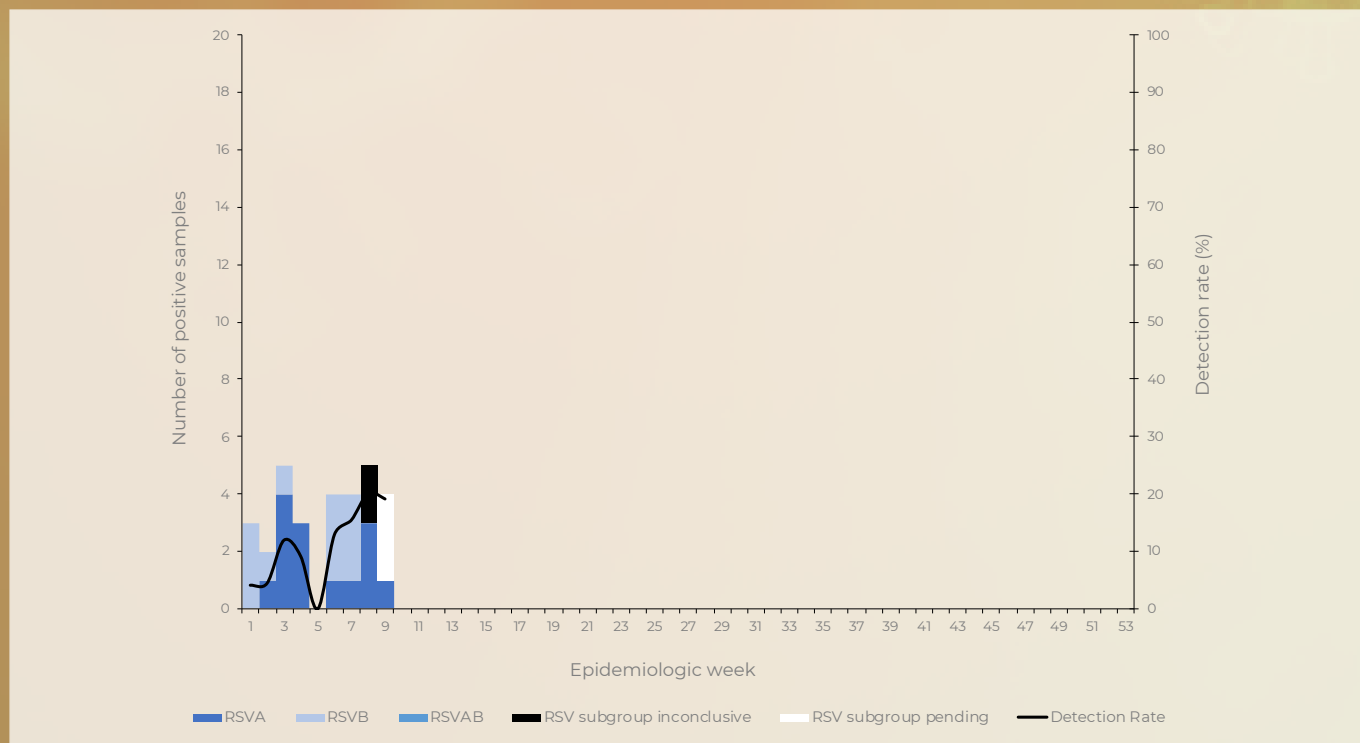


Figure 2. Number of samples testing positive for respiratory syncytial virus by subgroup and detection rate by week

Inconclusive: insufficient viral load in sample and unable to characterise further
 RSV AB: Both RSV A and B subgroup identified

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)	5	1	0	1	1	43
Eastridge (WC)	6	0	0	0	1	78
Edendale Gateway (KZ)	0	3	0	0	1	37
Jouberton (NW)	2	7	0	1	0	115
Mitchell's Plain (WC)	1	0	0	0	0	55
Total	14	11	0	2	3	328

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

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

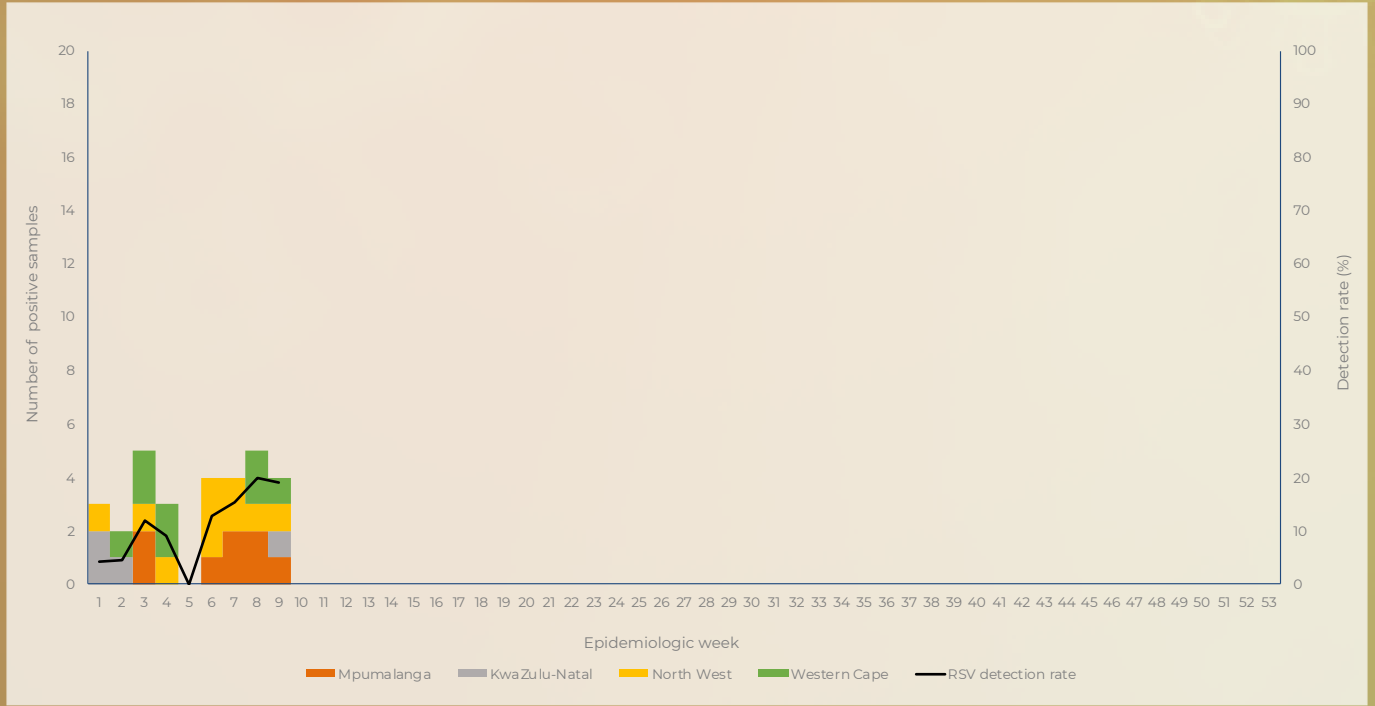


Figure 3. Number of samples testing positive for respiratory syncytial virus by province and detection rate by week

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

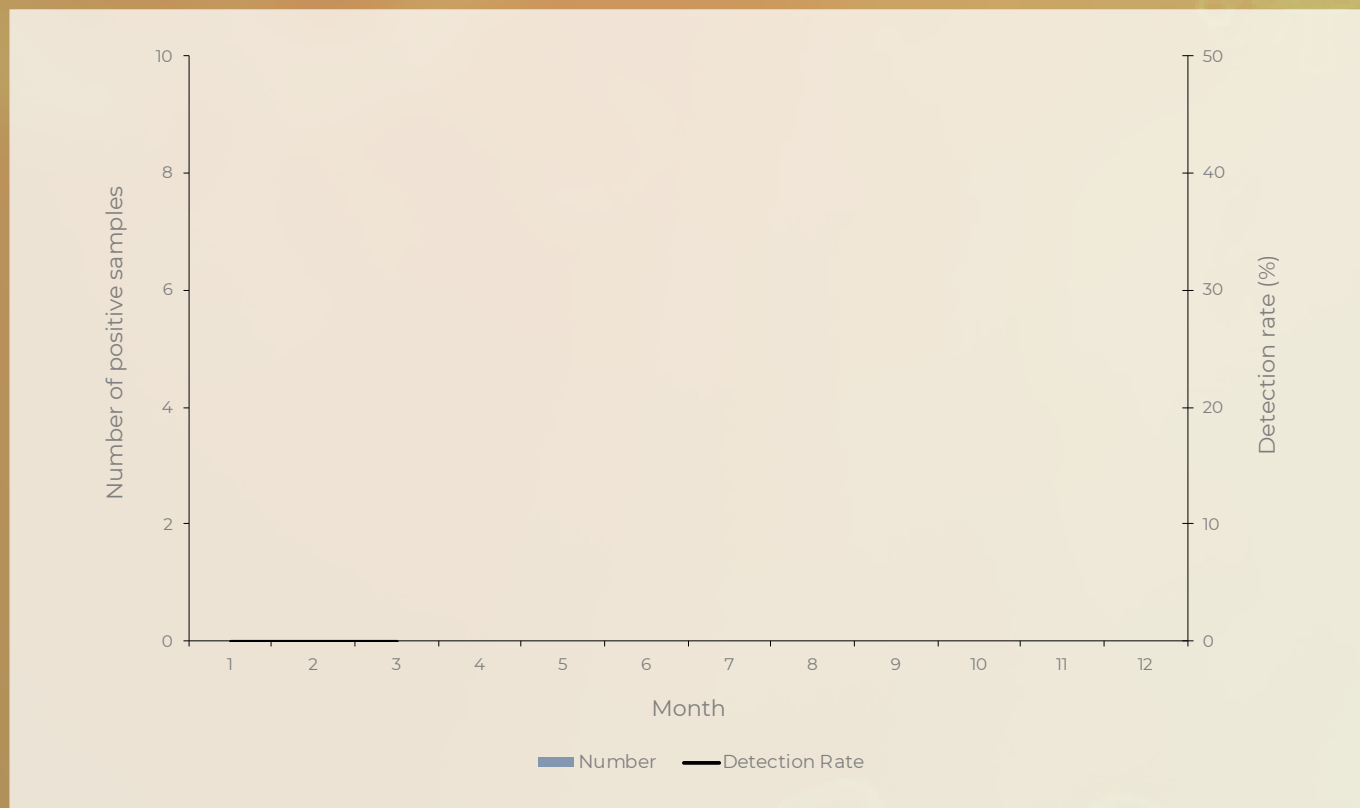


Figure 4. Number of samples testing positive for *B. pertussis* and detection rate by month

Table 3. Cumulative number of *B. pertussis* identified and total number of samples** tested by province

Clinic (Province)	<i>B. pertussis</i> Positive**	Total samples tested
Agincourt (MP)	0	43
Eastridge (WC)	0	77
Edendale Gateway (KZ)	0	37
Jouberton (NW)	0	114
Mitchell's Plain (WC)	0	55
Total:	0	326

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

**119 cases met the suspected pertussis case definition but did not meet Influenza-like illness (ILI) case definition. These are not included in the table or the epidemiological curve

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

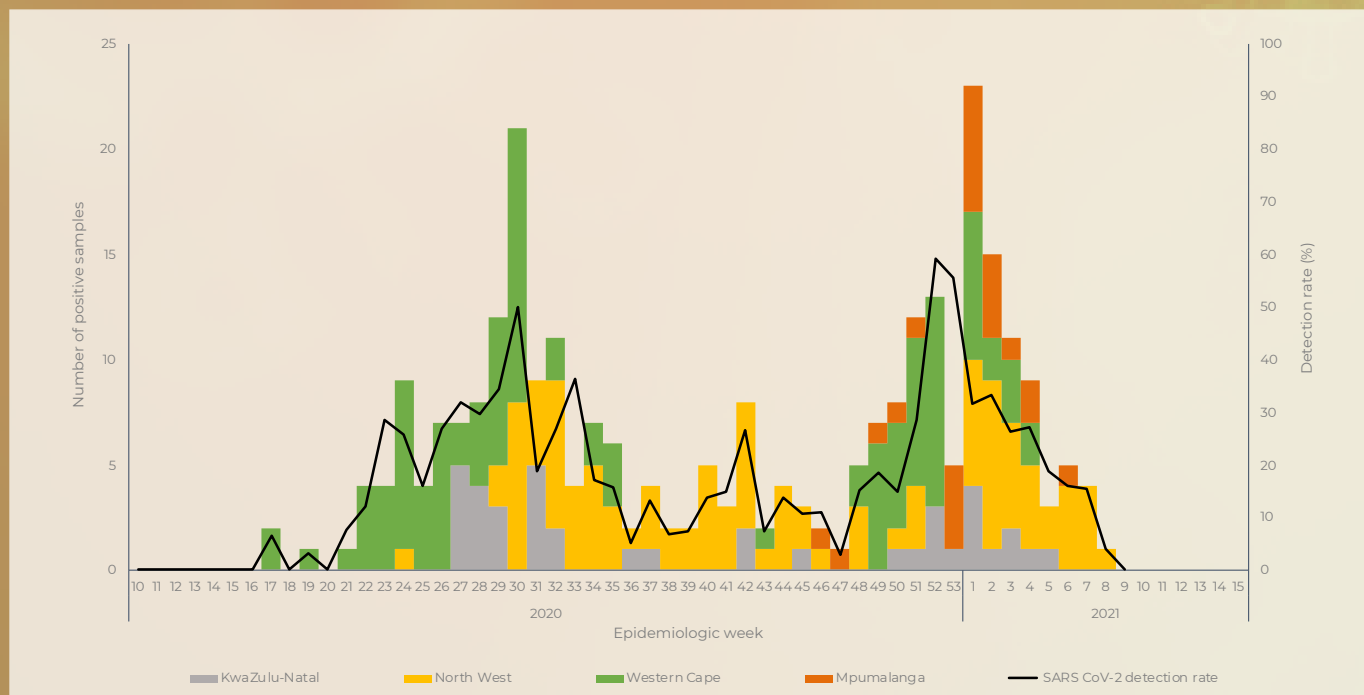


Figure 5. Number of samples testing positive for SARS-CoV-2* by province and detection rate by week

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

Table 4. 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)	23	73
Eastridge (WC)	47	566
Edendale Gateway (KZ)	39	178
Jouberton (NW)	105	437
Mitchell's Plain (WC)	65	384
Total:	279	1638

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

INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE VIRAL WATCH

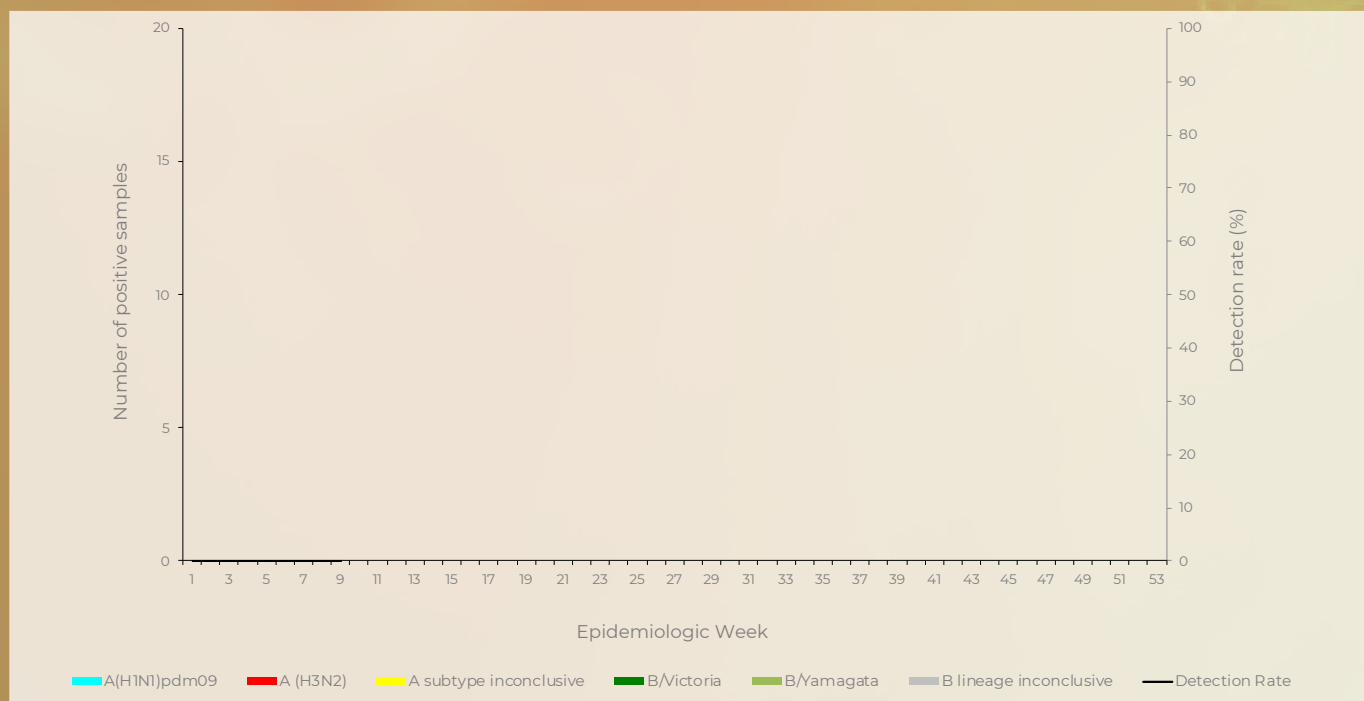


Figure 6. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*Specimens from patients with Influenza-like illnesses at 90 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 5. 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	24
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	1
Total:	0	0	0	0	0	0	26

*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.

INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE VIRAL WATCH

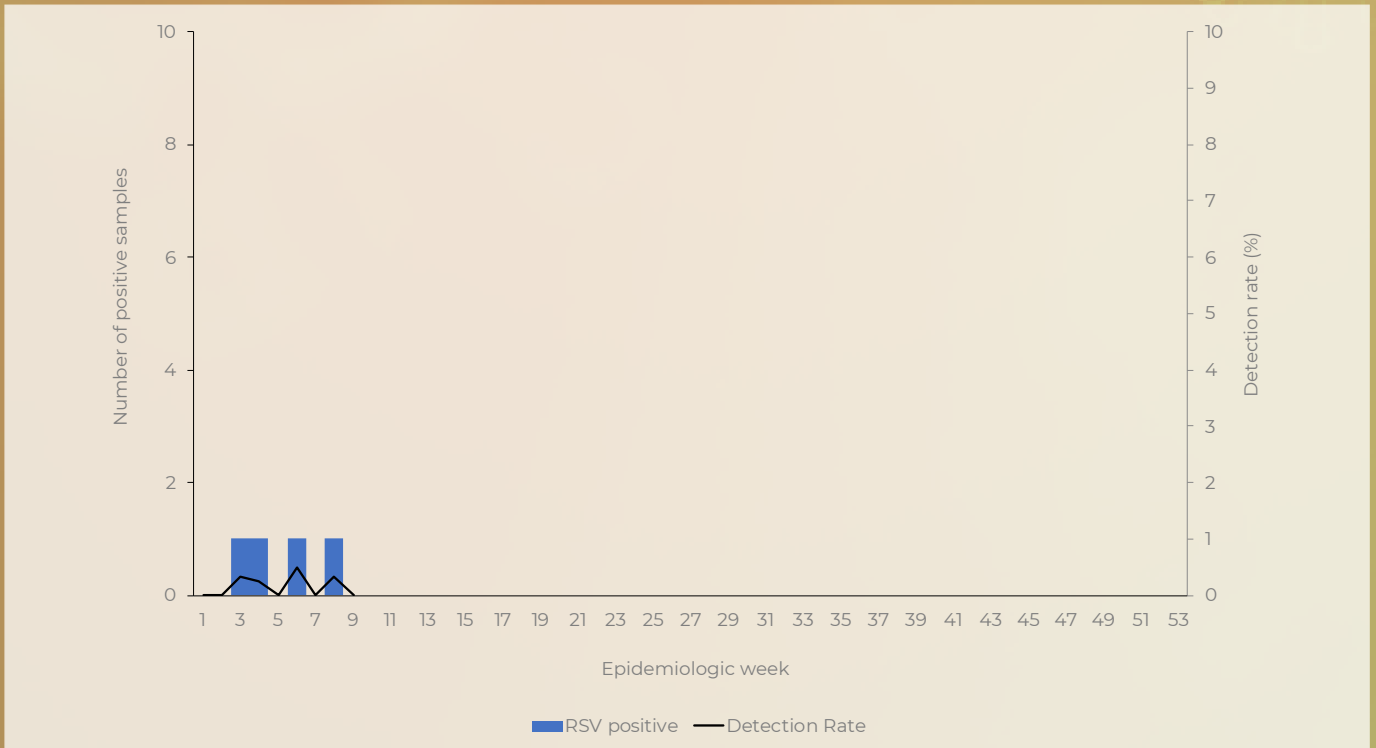


Figure 7. Number of samples testing positive for RSV*, and detection rate by week

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

Table 6. Cumulative number of RSV positive cases identified and total number of samples tested by province

Clinic (Province)	SARS-CoV-2 positive	Total samples tested
Eastern Cape	0	0
Free State	0	0
Gauteng	4	24
Limpopo	0	0
Mpumalanga	0	1
North West	0	0
Northern Cape	0	0
Western Cape	0	1
Total:	4	26

INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE VIRAL WATCH

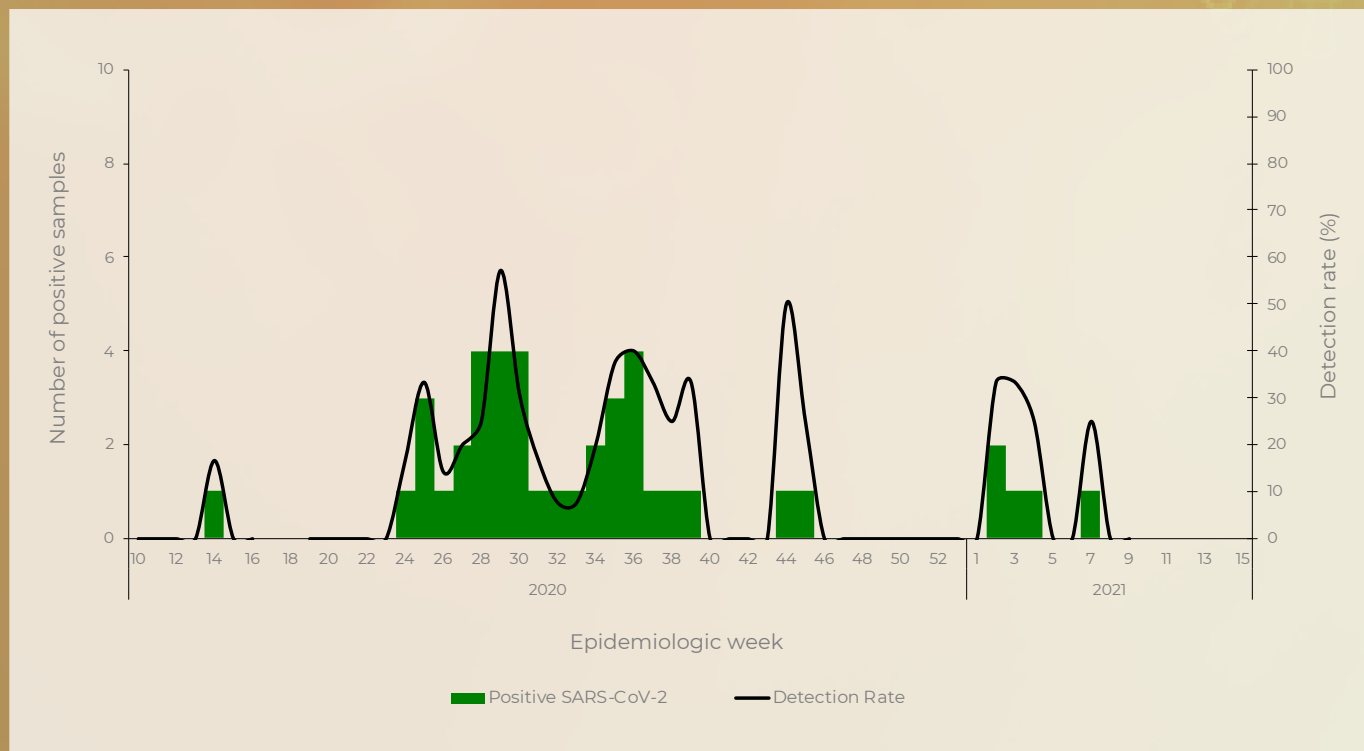


Figure 8. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

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

Table 7. Cumulative number of SARS-CoV-2 identified and total number of samples tested by province

Clinic (Province)	SARS-CoV-2 positive	Total samples tested
Eastern Cape	1	4
Free State	1	14
Gauteng	30	184
Limpopo	0	2
Mpumalanga	1	6
North West	0	0
Northern Cape	0	2
Western Cape	9	93
Total:	42	305

NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

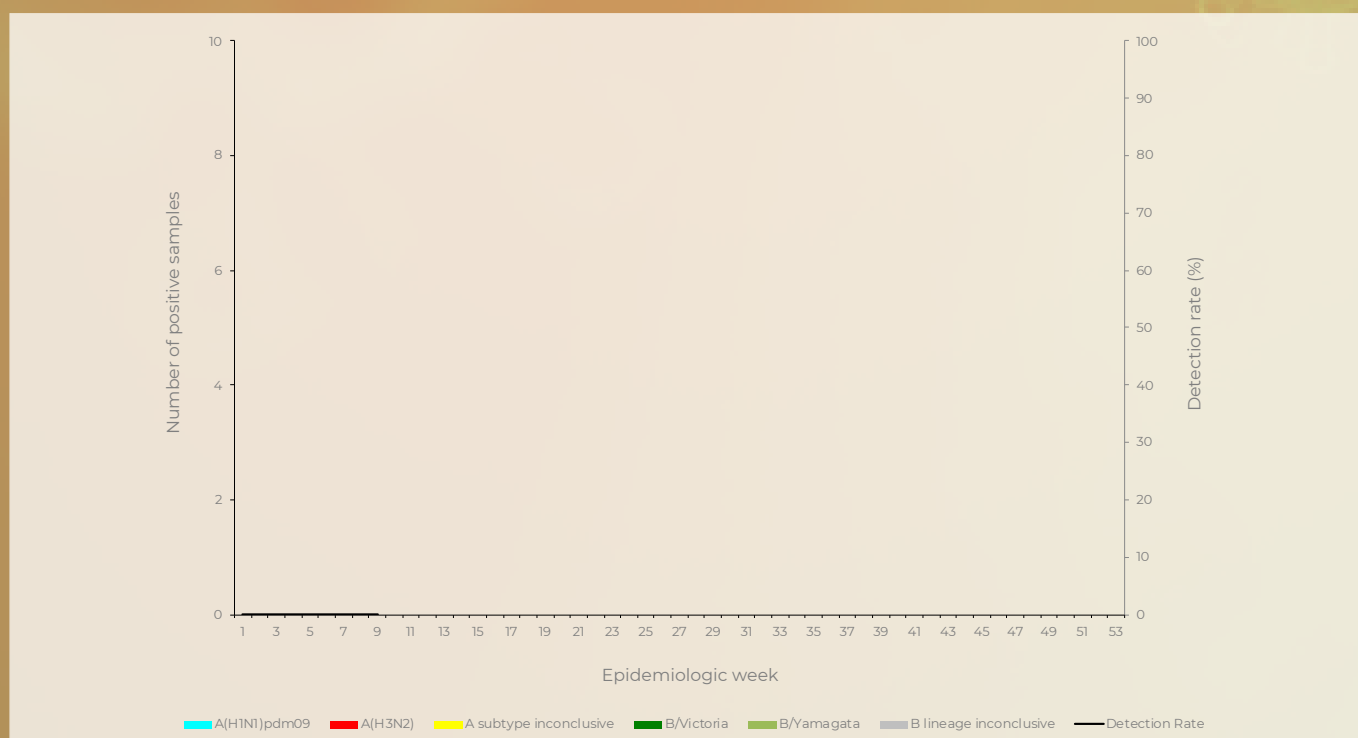


Figure 9. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*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 8. 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	131
Helen Joseph-Rahima Moosa (GP)	0	0	0	0	0	0	259
Klerksdorp-Tshepong (NW)	0	0	0	0	0	0	115
Mapulaneng-Matikwana (MP)	0	0	0	0	0	0	152
Red Cross (WC)	0	0	0	0	0	0	133
Mitchell's Plain (WC)	0	0	0	0	0	0	106
Tintswalo (MP)	0	0	0	0	0	0	18
Total:	0	0	0	0	0	0	914

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

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

NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

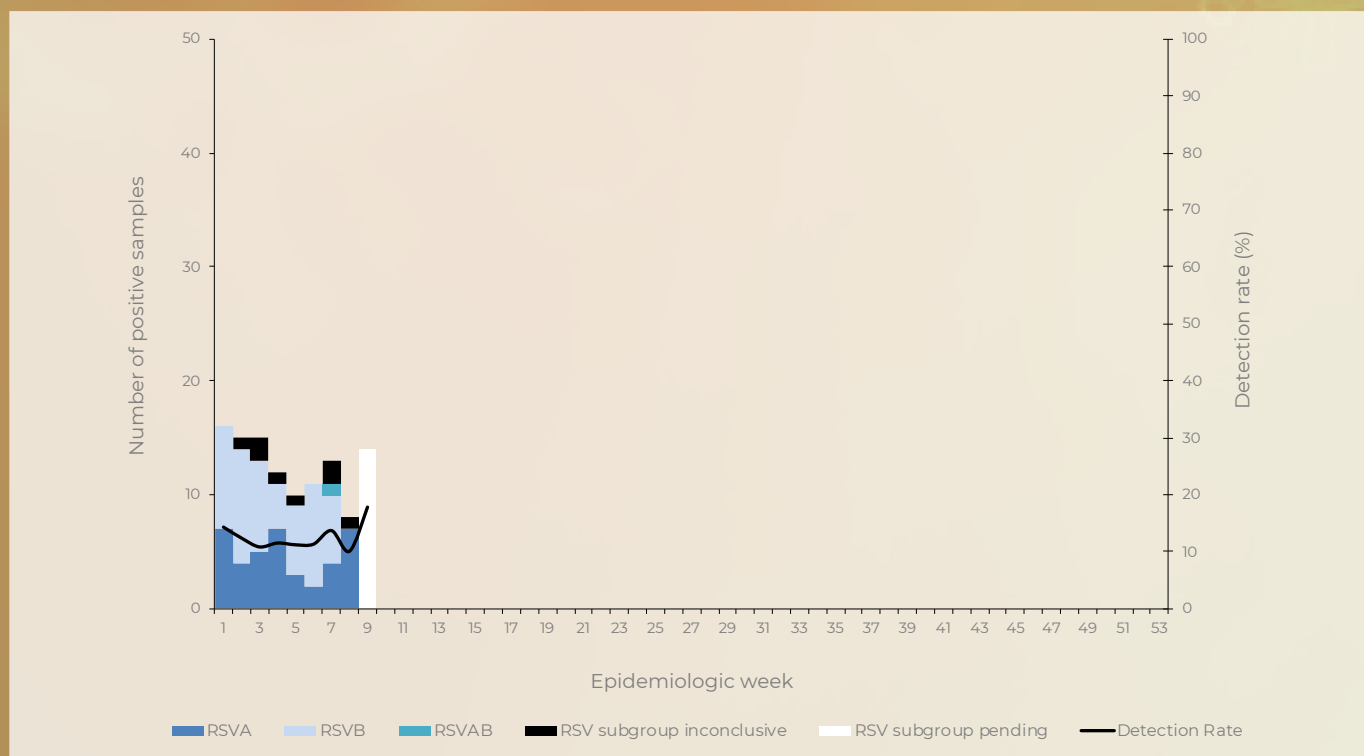


Figure 10. Number of samples testing positive for respiratory syncytial virus by subgroup and detection rate by week

Inconclusive: insufficient viral load in sample and unable to characterise further
 RSV AB: Both RSV A and B subgroup identified

Table 9. 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	13	0	1	1	131
Helen Joseph-Rahima Moosa (GP)	13	17	0	1	6	259
Klerksdorp-Tshepong (NW)	3	18	0	4	2	115
Mapulaneng-Matikwana (MP)	2	3	1	1	2	152
Red Cross (WC)	14	1	0	1	0	133
Mitchell's Plain (WC)	3	0	0	0	0	106
Tintswalo (MP)	1	0	0	0	3	18
Total:	39	52	1	8	14	914

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

NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

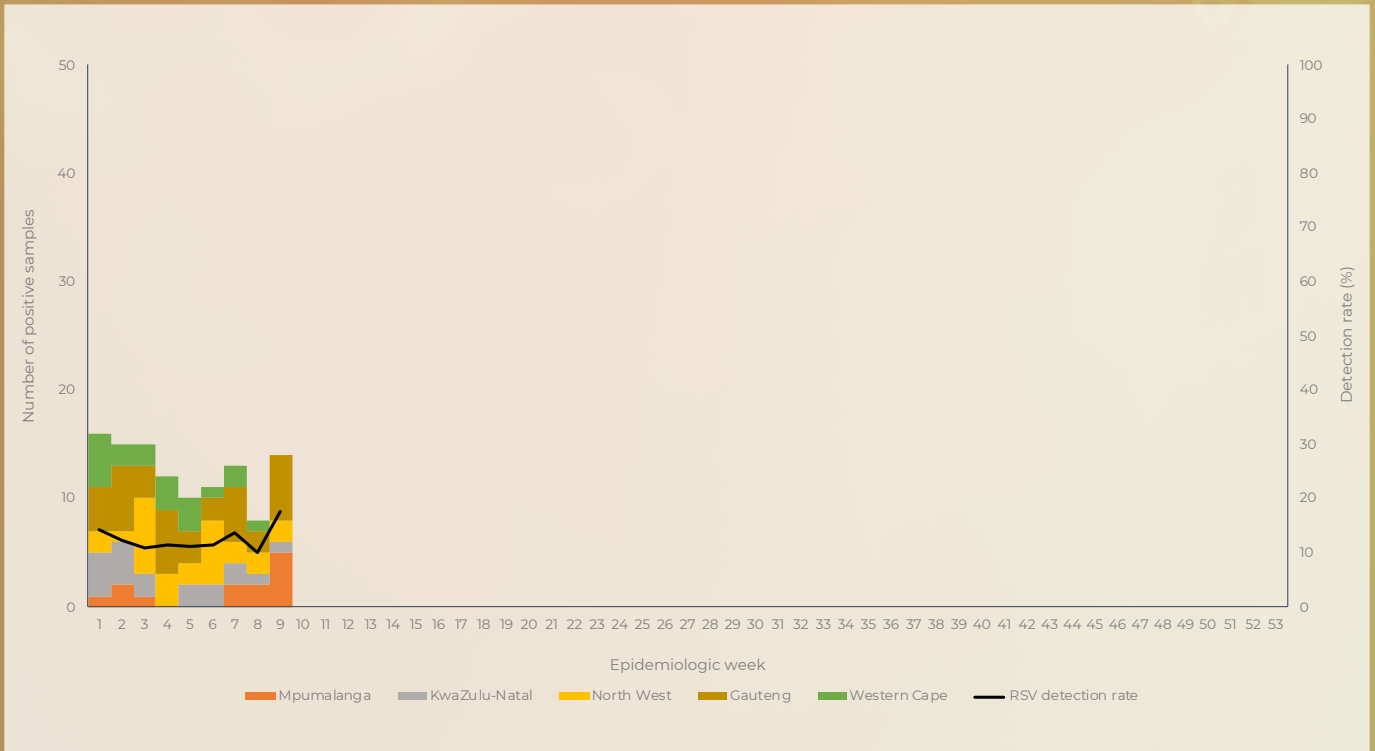


Figure 11. Number of samples testing positive for respiratory syncytial virus by province and detection rate by week

NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

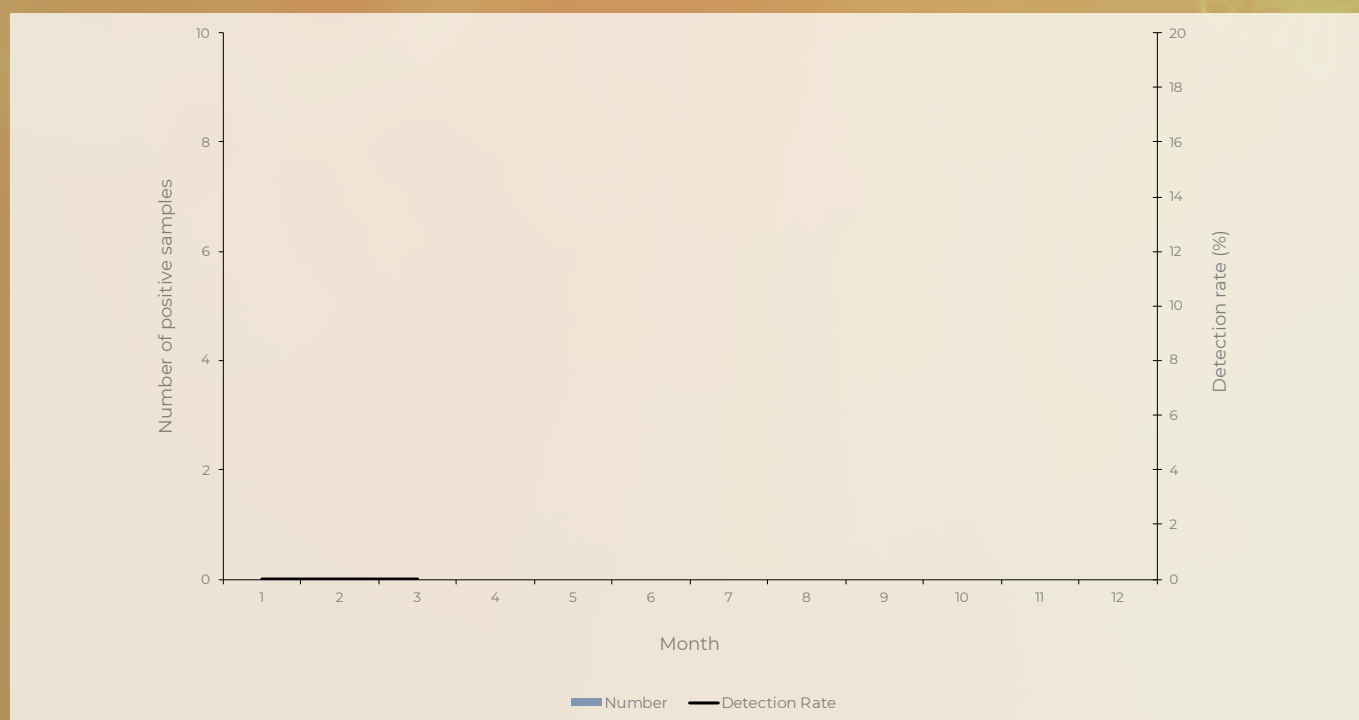


Figure 12. Number of samples testing positive for *B. pertussis* and detection rate by month

Table 10: Cumulative number of *B. pertussis* identified and total number of samples** tested by hospital and province

Hospital (Province)	<i>B. pertussis</i> Positive**	Total samples
Edendale (KZ)	0	130
Helen Joseph-Rahima Moosa (GP)	0	259
Klerksdorp-Tshepong (NW)	0	110
Mapulaneng-Matikwana (MP)	0	152
Red Cross (WC)	0	133
Mitchell's Plain (WC)	0	104
Tintswalo (MP)	0	18
Total:	0	906

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

**44 cases met the suspected pertussis case definition but did not meet Pneumonia Surveillance case definition. These are not included in the table and epidemiologic curve.

NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

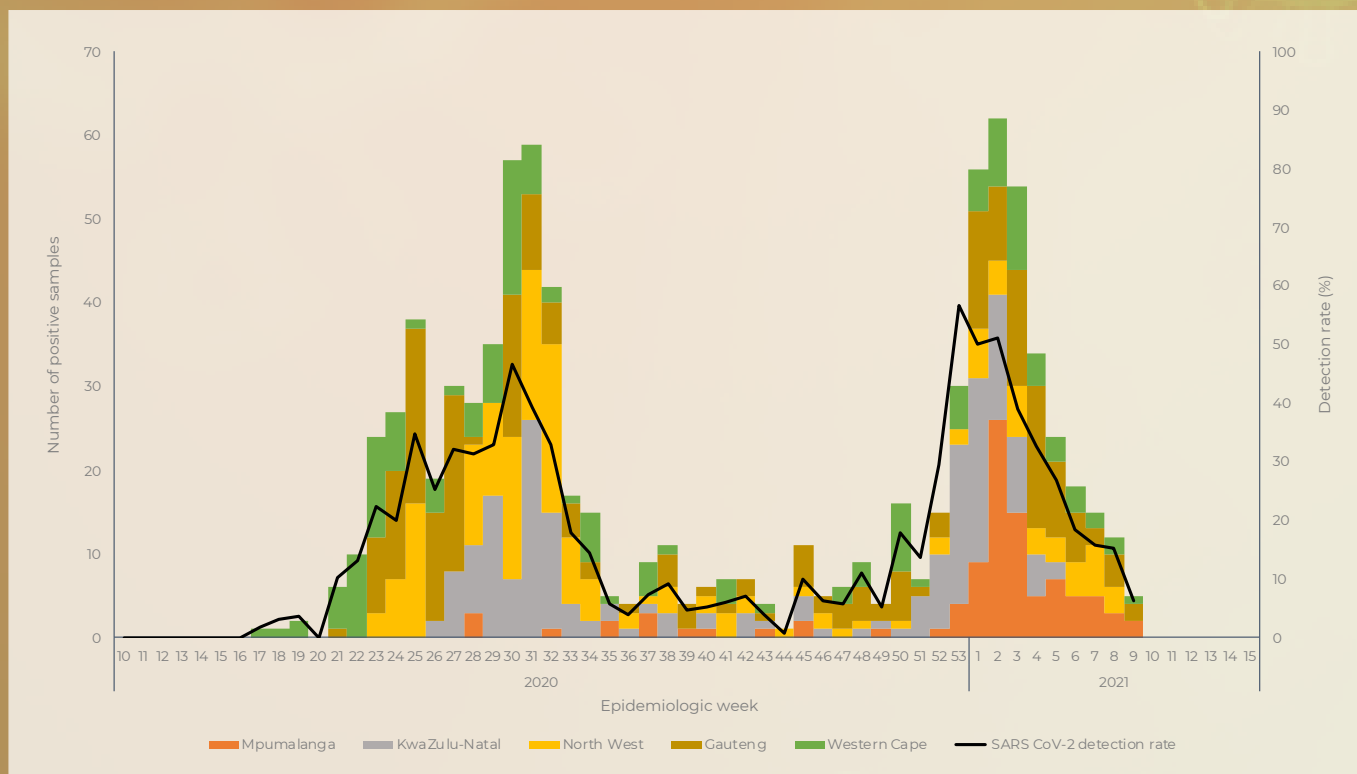


Figure 13. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

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

Table 11. 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)	194	829
Helen Joseph-Rahima Moosa (GP)	232	1097
Klerksdorp-Tshepong (NW)	176	706
Mapulaneng-Matikwana (MP)	91	454
Red Cross (WC)	42	1094
Mitchell’s Plain (WC)	111	570
Tintswalo (MP)	6	18
Total:	852	4768

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

SUMMARY OF LABORATORY CONFIRMED SARS-COV-2 CASES

Table 11. Characteristics of laboratory-confirmed cases of COVID-19, enrolled in influenza-like illness (ILI) and pneumonia surveillance programmes, South Africa, 2 March 2020- 07 March 2021

Characteristic	Influenza-like illness (ILI), public-sector, n=279 (%)	Pneumonia, n=852 (%)
Age group		
0-9	32/279 (11)	62/852 (7)
10-19	19/279 (7)	6/852 (1)
20-39	122/279 (44)	153/852 (18)
40-59	83/279 (29)	317/852 (37)
60-79	22/279 (8)	288/852 (34)
≥80	1/279 (<1)	26/852 (3)
Sex-female	159/279 (57)	519/852 (61)
Province*		
Gauteng	N/A	232/852 (27)
KwaZulu-Natal	39/279 (14)	194/852 (23)
Mpumalanga**	23/279 (8)	97/852 (11)
North West	105/279 (38)	176/852 (21)
Western Cape	112/279 (40)	153/852 (18)
Race		
Black	187/279 (67)	709/850 (83)
Coloured	90/279 (32)	105/850 (12)
Asian/Indian	0/279 (0)	22/850 (3)
Other	2/279 (1)	14/850 (2)
Presentation		
Fever	270/279 (97)	473/850 (56)
Cough	278/279 (99)	821/850 (97)
Shortness of breath	85/279 (30)	688/850 (81)
Chest pain	111/279 (40)	379/850 (45)
Diarrhoea	26/279 (9)	56/850 (7)

INFLUENZA, RSV, BORDETELLA PERTUSSIS AND SARS-COV-2 SURVEILLANCE REPORT

WEEK 9 2021

REPORTING PERIOD 2 MARCH 2020 TO 7 MARCH 2021

Characteristic	Influenza-like illness (ILI), public-sector, n=279 (%)	Pneumonia, n=852 (%)
Underlying conditions		
Hypertension	12/279 (4)	118/850 (14)
Cardiac	0/279 (0)	8/850 (1)
Lung disease	0/279 (0)	1/850 (<1)
Diabetes	6/279 (2)	185/850 (22)
Cancer	0/279 (0)	5/850 (1)
Tuberculosis	1/279 (<1)	24/850 (3)
HIV-infection	38/279 (14)	176/850 (21)
Other ***	8/279 (3)	80/850 (9)
Management		
Oxygen therapy	2/279 (1)	612/850 (72)
ICU admission	N/A	21/850 (2)
Ventilation	N/A	24/850 (3)
Outcome***		
Died	0/279 (0)	112/850 (13)

*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 112 patients who died, 10 were in the 20-39 year age group, 31 in the 40-59 year age group, and 71 were ≥60 years; 71/112 (63%) were female. All except six were known to have underlying medical conditions.