

MONTHLY RESPIRATORY PATHOGENS SURVEILLANCE REPORT

SOUTH AFRICA WEEK 49 2020

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CUMULATIVE DATA FROM



HIGHLIGHTS: WEEK 49

- 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 continues 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, 699 COVID-19 cases have been detected from all surveillance programmes. Of the 491 hospitalised COVID-19 cases with available data on outcome, 62 (13%) died.

INFLUENZA, RSV, BORDETELLA PERTUSSIS 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 1418 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 381 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 5).

Pneumonia surveillance: Since the beginning of 2020, specimens from 4069 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 8 and Table 7).

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 continues at this level to date.

ILI programme: In 2020 to date, 1418 specimens were tested and RSV was detected in specimens of 72 (5%) patients.

Viral Watch programme: During the same period, 381 specimens were tested and RSV was detected in three (<1%) patients.

Pneumonia surveillance: Since the beginning of 2020, 4069 specimens were tested and RSV was detected in specimens of 509 (13%) patients.

Bordetella pertussis

ILI programme: From 1 January 2020 to date, combined nasopharyngeal and oropharyngeal specimens were tested from 1412 patients for B. pertussis, two (<1%) tested positive.

Pneumonia surveillance: During the same period, combined nasopharyngeal and oropharyngeal specimens were tested from 4053 patients for B. pertussis, which was detected in eight (<1%) specimens. In addition, B. pertussis was not detected in 161 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).

ILI programme: In 2020 to date, specimens from 1177 patients were tested and SARS-CoV-2 was detected in 167 (14%) patients.

Viral Watch programme: In 2020 to date, specimens were tested from 276 patients and SARS-CoV-2 was detected in 37 (13%) patients.

Pneumonia surveillance: In 2020 to date, specimens from 3559 patients with severe respiratory illness (SRI) were tested and SARS-CoV-2 was detected in 495 (14%) patients.

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

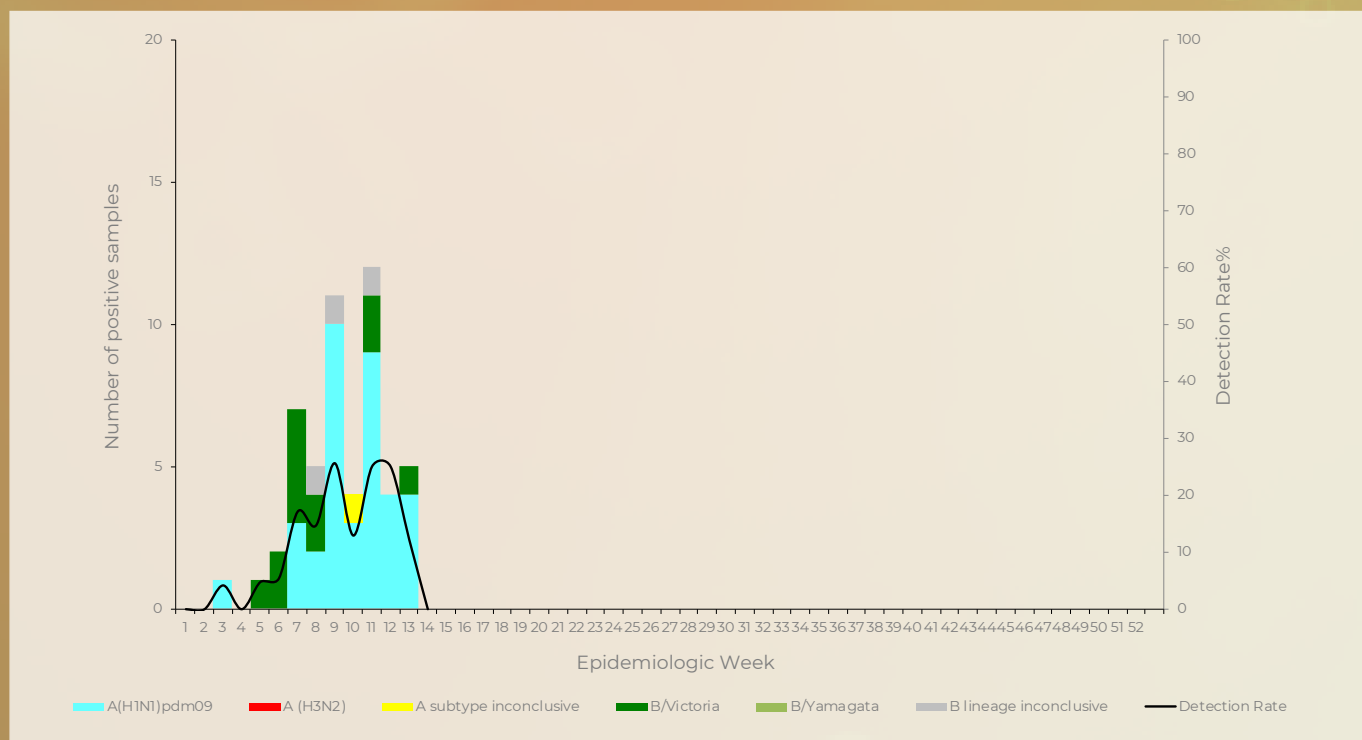


Figure 1. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*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	17
Eastridge (WC)	33	0	1	12	0	3	552
Edendale Gateway (KZ)	0	0	0	0	0	0	173
Jouberton (NW)	0	0	0	0	0	0	346
Mitchell's Plain (WC)	3	0	0	0	0	0	330
Total:	36	0	1	12	0	3	1418

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

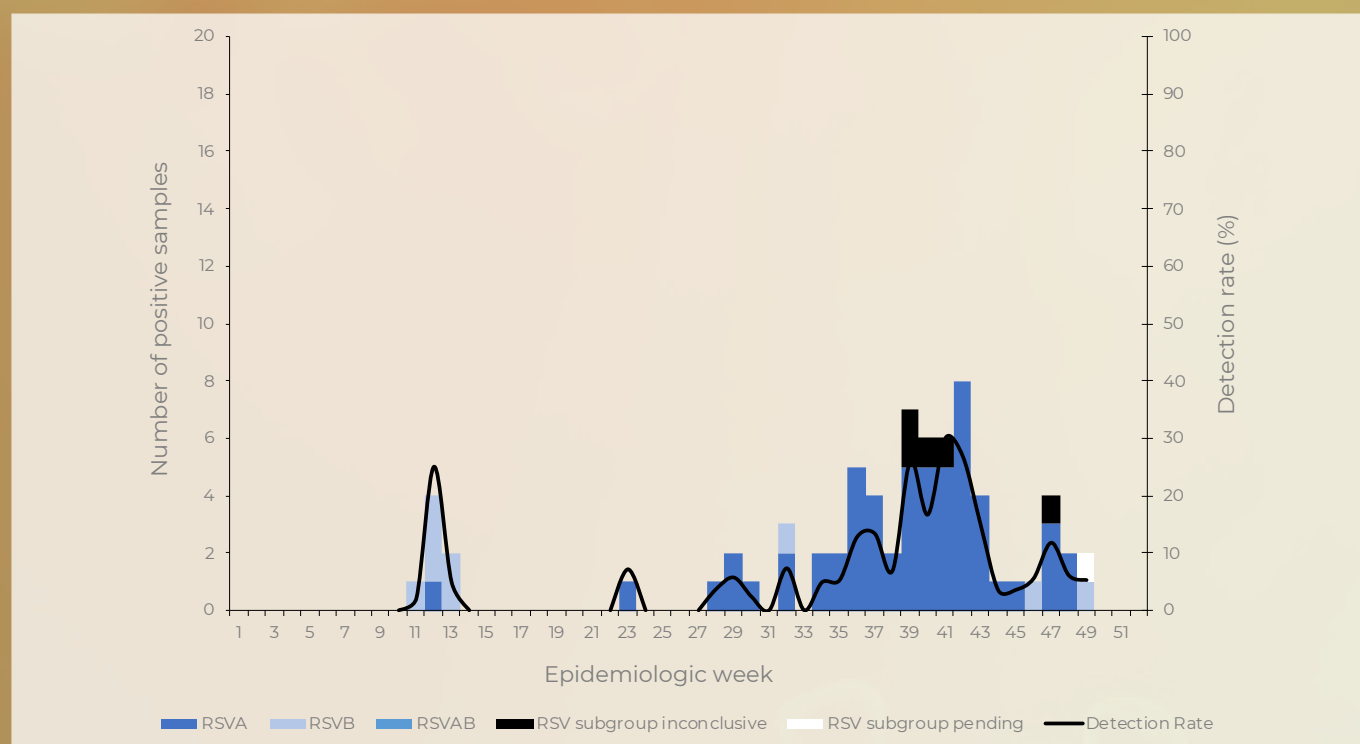


Figure 2. Number of samples testing positive for respiratory syncytial virus by subgroup and detection rate by week

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

RSV AB: Both RSV A and B subgroup identified

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	17
Eastridge (WC)	35	2	0	2	0	552
Edendale Gateway (KZ)	1	7	0	1	1	173
Jouberton (NW)	2	0	0	2	0	346
Mitchell's Plain (WC)	19	0	0	0	0	330
Total	57	9	0	5	1	1418

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

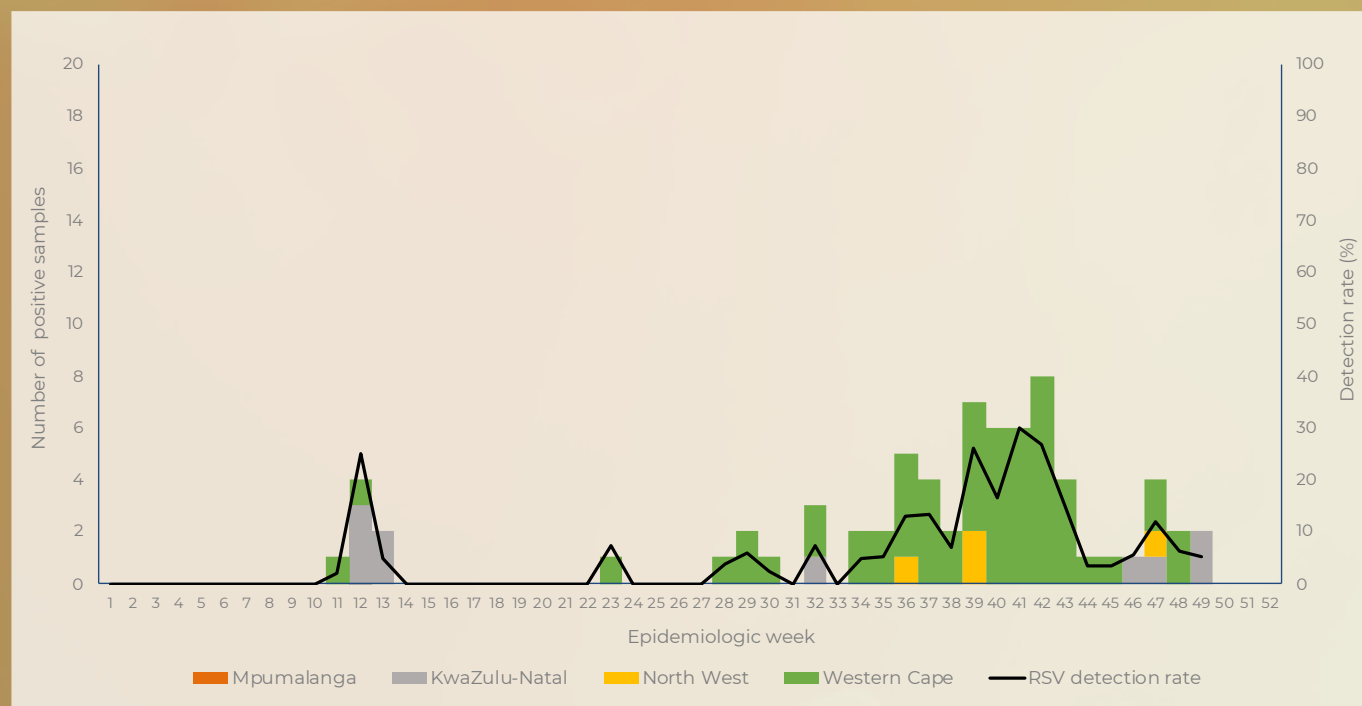


Figure 3. Number of samples testing positive for respiratory syncytial virus by province and detection rate by week

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

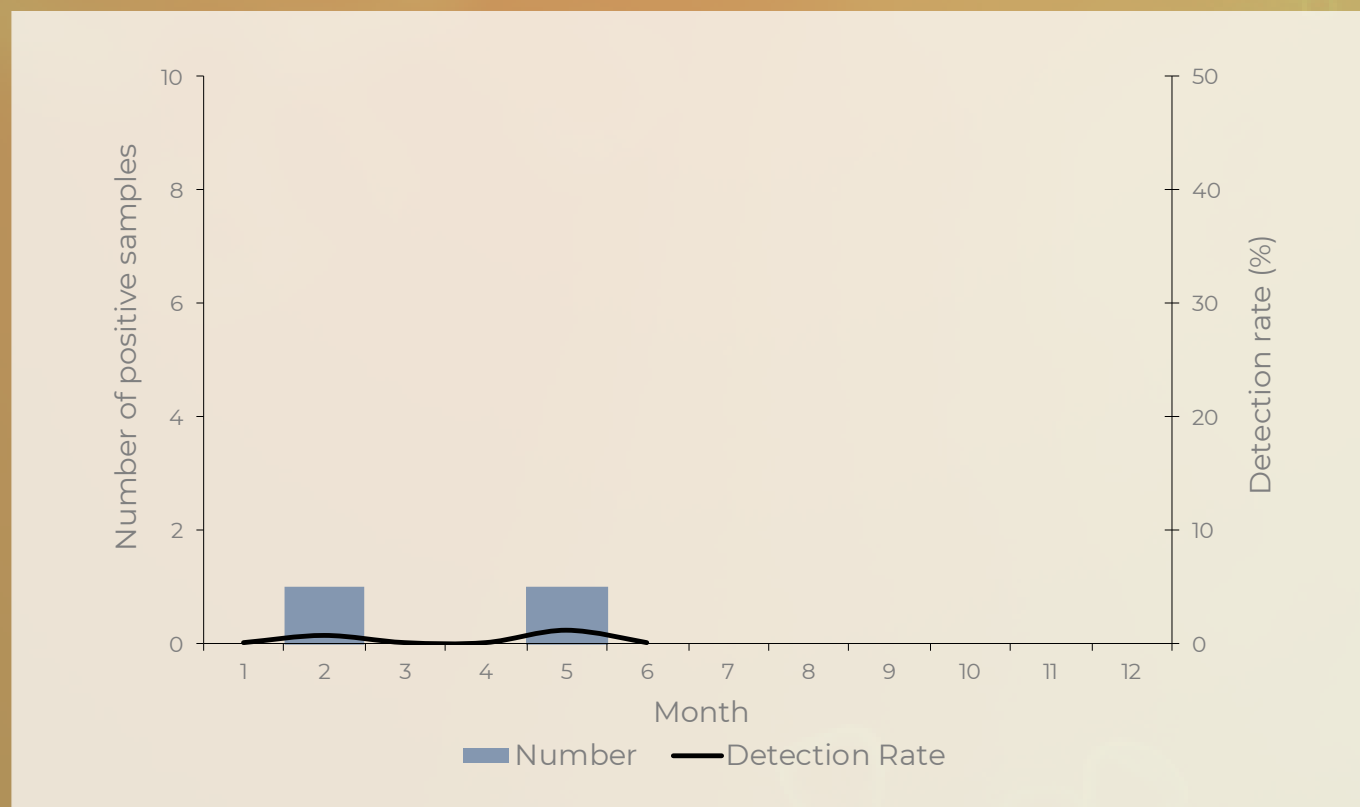


Figure 4. Number of samples testing positive for *B. pertussis* and detection rate by month

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

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	17
Eastridge (WC)	1	552
Edendale Gateway (KZ)	0	170
Jouberton (NW)	1	346
Mitchell's Plain (WC)	0	327
Total:	2	1412

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

**98 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

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

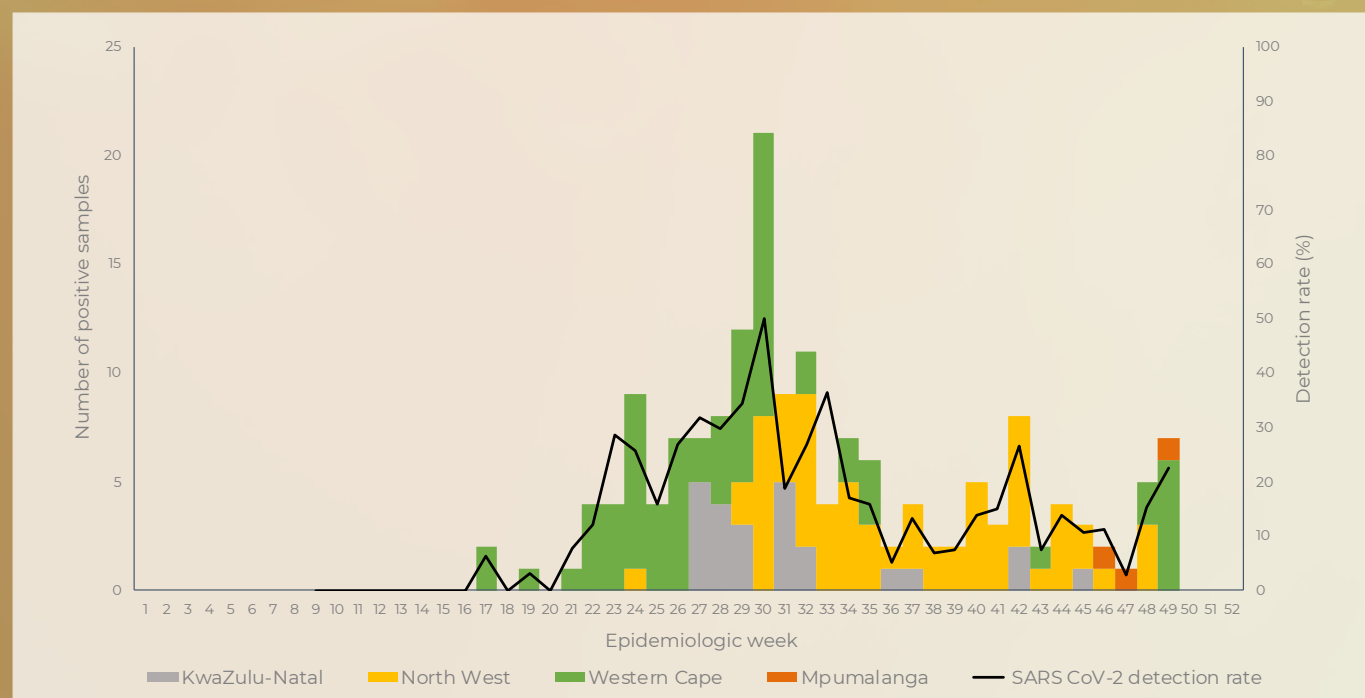


Figure 5. Number of samples testing positive for SARS-CoV-2* by province and detection rate by week

*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)	3	17
Eastridge (WC)	27	449
Edendale Gateway (KZ)	24	120
Jouberton (NW)	67	296
Mitchell's Plain (WC)	46	295
Total:	167	1177

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

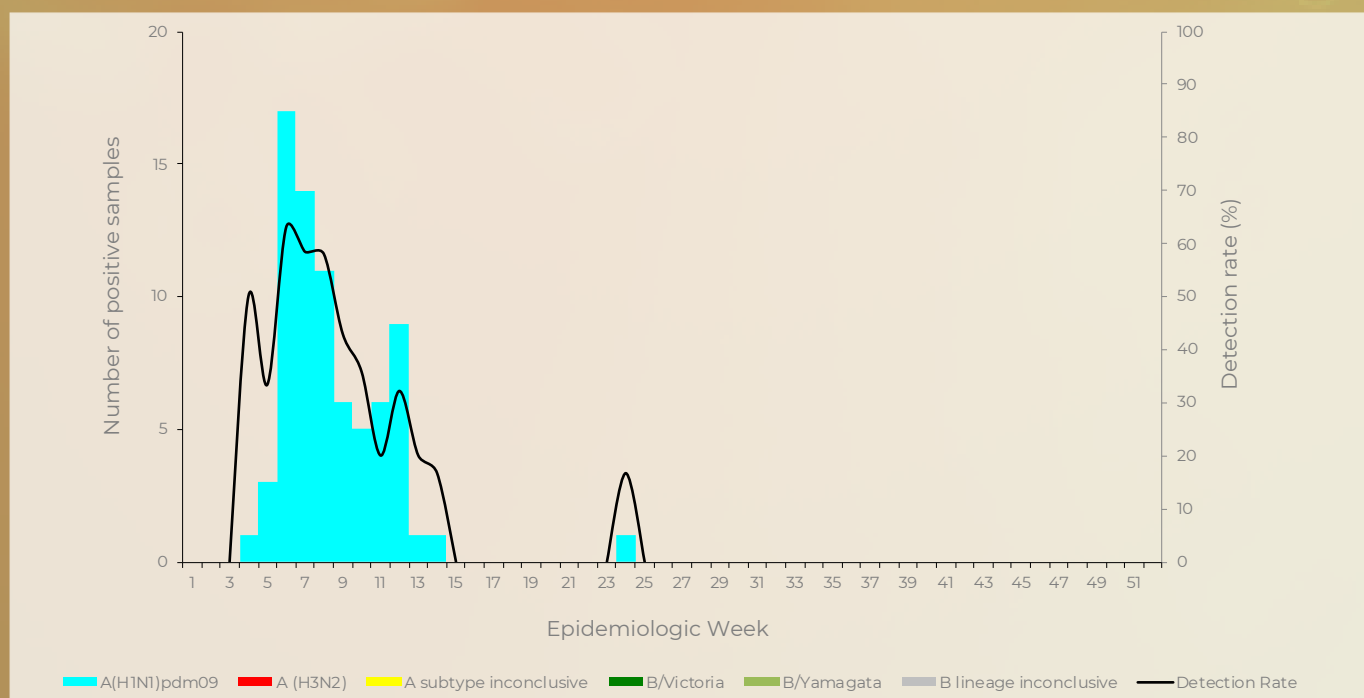


Figure 6. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*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	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	180
Total:	73	0	0	0	0	0	381

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

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

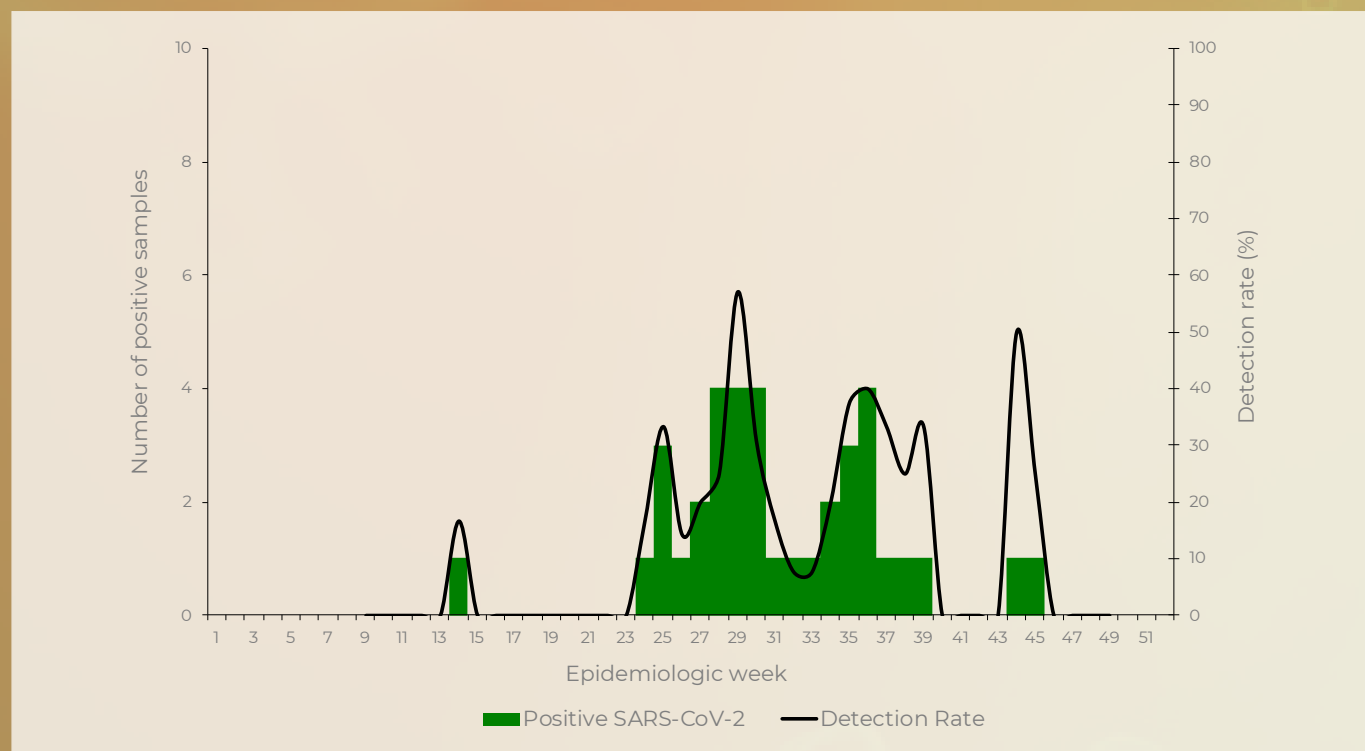


Figure 7. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

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

Table 6. 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	25	158
Limpopo	0	2
Mpumalanga	1	5
North West	0	0
Northern Cape	0	2
Western Cape	9	91
Total:	37	276

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

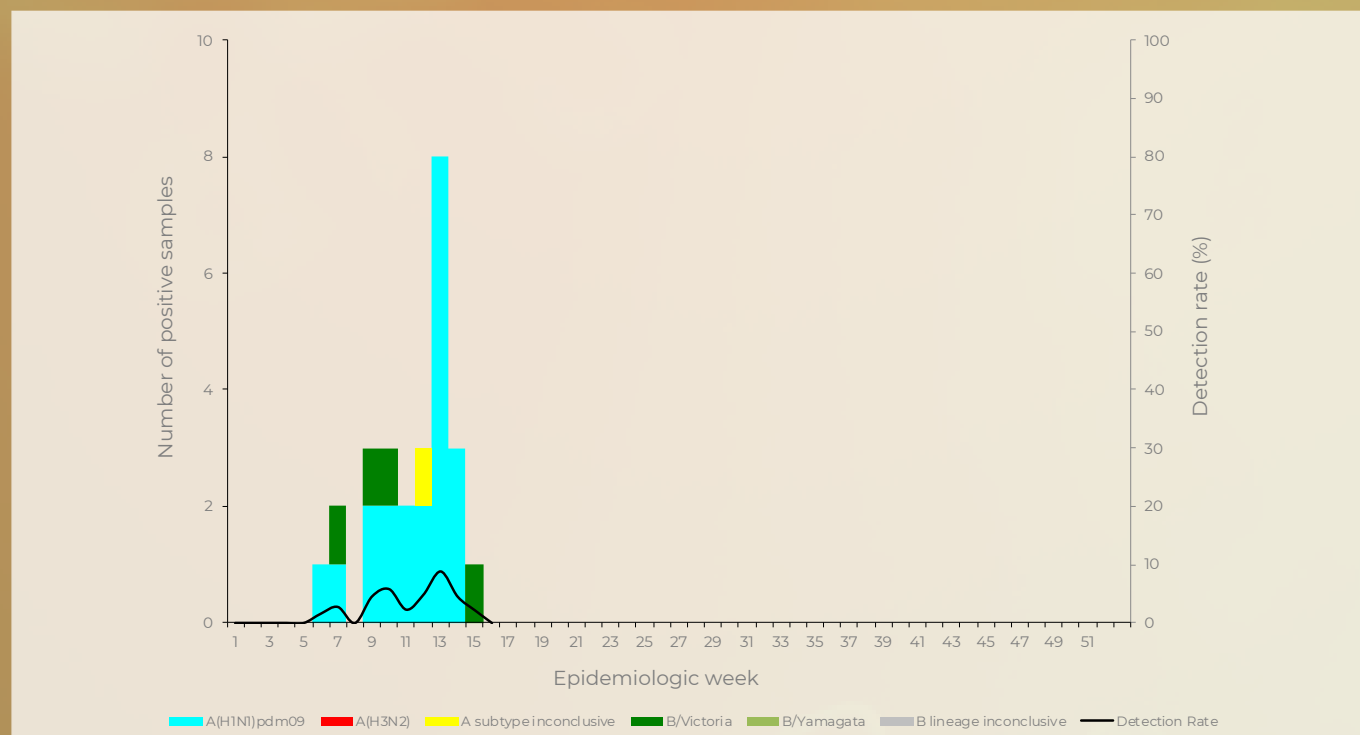


Figure 8. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*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 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	691
Helen Joseph-Rahima Moosa (GP)	0	0	0	0	0	0	895
Klerksdorp-Tshepong (NW)	0	0	0	0	0	0	641
Mapulaneng-Matikwana (MP)	0	0	0	0	0	0	325
Red Cross (WC)	19	0	0	2	0	0	1051
Mitchell's Plain (WC)	2	0	1	2	0	0	466
Total:	21	0	1	4	0	0	4069

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

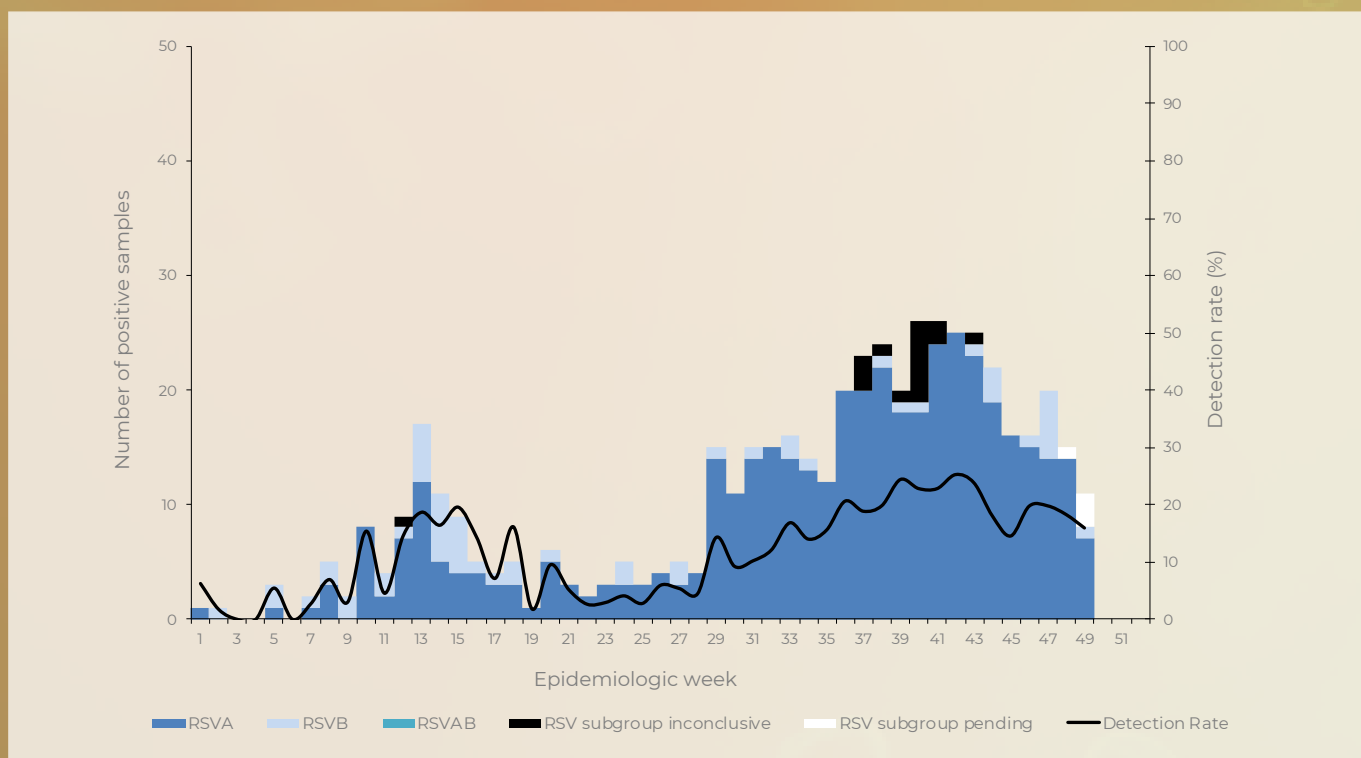


Figure 9. Number of samples testing positive for respiratory syncytial virus by subgroup and detection rate by week

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

Table 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)	3	12	0	1	0	691
Helen Joseph-Rahima Moosa (GP)	57	13	0	0	0	895
Klerksdorp-Tshepong (NW)	2	5	0	1	0	641
Mapulaneng-Matikwana (MP)	0	1	0	0	0	325
Red Cross (WC)	283	25	0	9	4	1051
Mitchell's Plain (WC)	88	0	0	5	0	466
Total:	433	56	0	16	4	4069

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

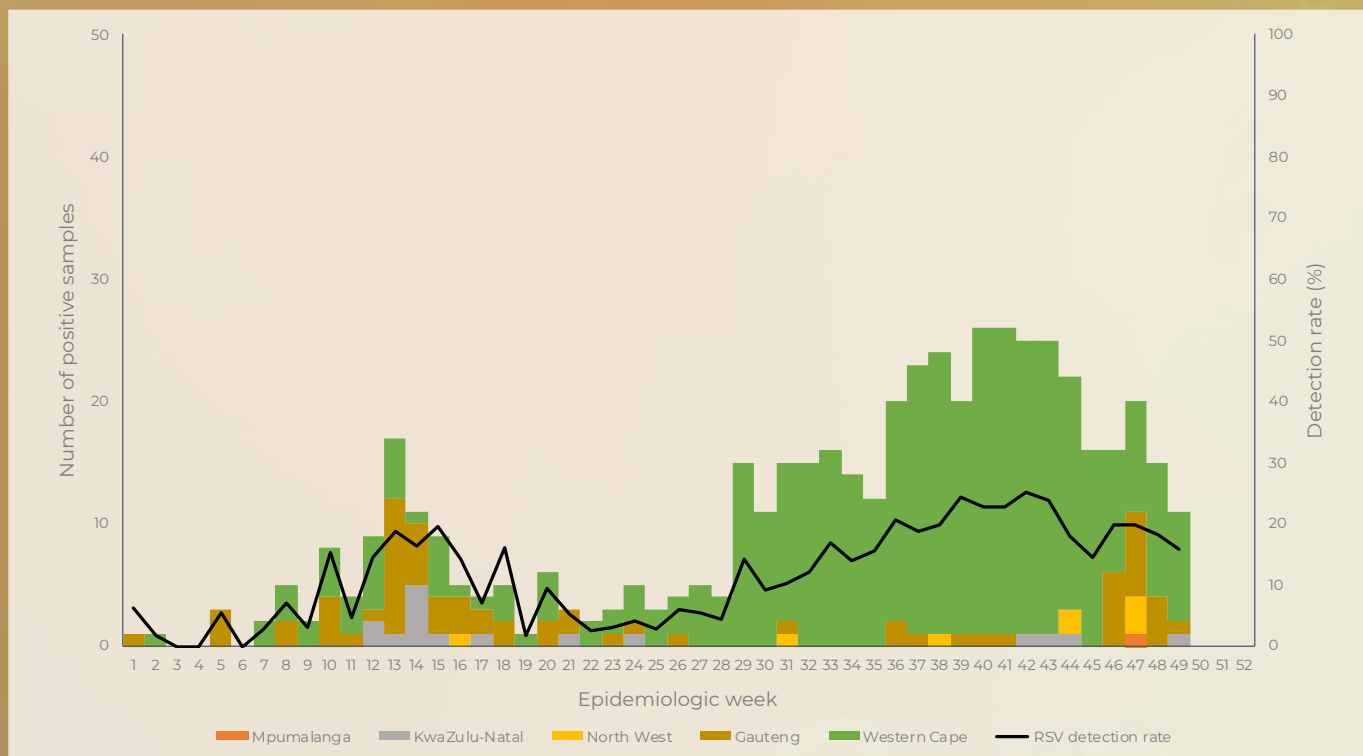


Figure 10. Number of samples testing positive for respiratory syncytial virus by province and detection rate by week

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

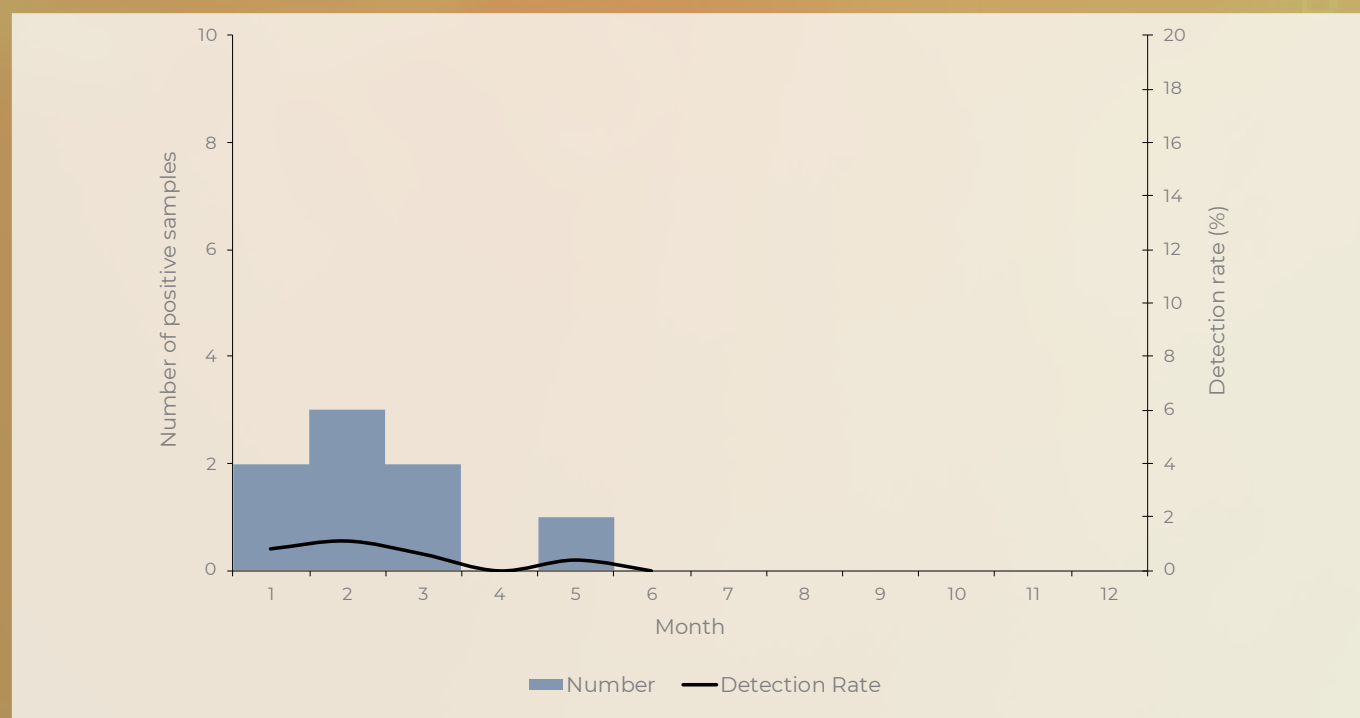


Figure 11. Number of samples testing positive for *B. pertussis* and detection rate by month

Table 9: 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)	1	691
Helen Joseph-Rahima Moosa (GP)	1	895
Klerksdorp-Tshepong (NW)	1	636
Mapulaneng-Matikwana (MP)	0	320
Red Cross (WC)	4	1046
Mitchell's Plain (WC)	1	465
Total:	8	4053

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

**63 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.

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

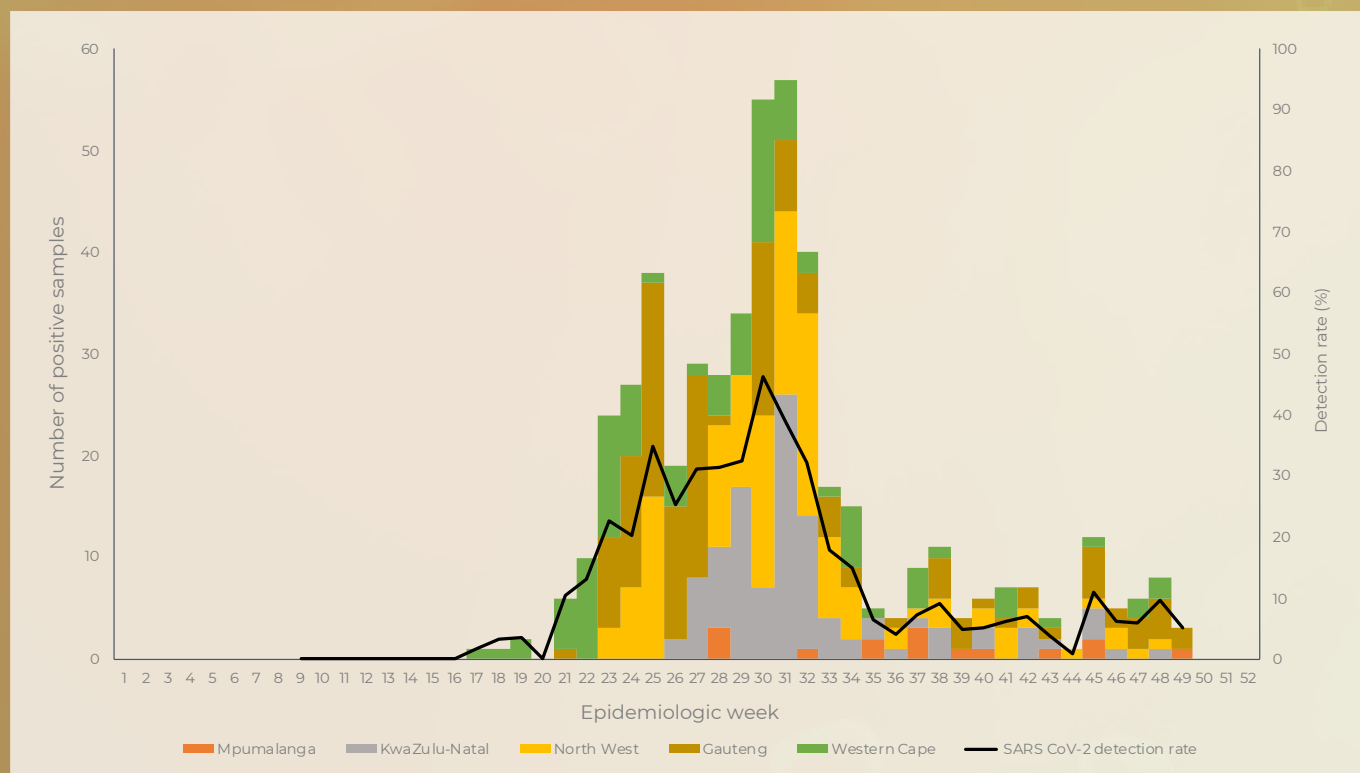


Figure 12. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

*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)	105	616
Helen Joseph-Rahima Moosa (GP)	140	760
Klerksdorp-Tshepong (NW)	136	565
Mapulaneng-Matikwana (MP)	15	272
Red Cross (WC)	32	904
Mitchell's Plain (WC)	67	442
Total:	495	3559

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, 2 March 2020- 06 December 2020

Characteristic	Influenza-like illness (ILI), public-sector, n=167 (%)	Pneumonia, n=495 (%)
Age group		
0-9	23/167 (14)	42/495 (8)
10-19	17/167 (10)	4/495 (1)
20-39	79/167 (47)	100/495 (20)
40-59	36/167 (22)	185/495 (37)
60-79	12/167 (7)	156/495 (32)
≥80	0/167 (0)	8/495 (2)
Sex-female	90/167 (54)	300/495 (61)
Province*		
Gauteng	N/A	141/495 (28)
KwaZulu-Natal	25/167 (15)	105/495 (21)
Mpumalanga**	3/167 (2)	15/495 (3)
North West	67/167 (40)	136/495 (28)
Western Cape	72/167 (43)	98/495 (20)
Race		
Black	106/157 (67)	395/491 (81)
Coloured	49/157 (31)	64/491 (13)
Asian/Indian	0/157 (0)	20/491 (4)
Other	1/157 (1)	5/491 (1)
Missing	1/157 (1)	7/491 (1)
Presentation		
Fever	152/157 (97)	290/491 (59)
Cough	156/157 (99)	482/491 (98)
Shortness of breath	43/157 (27)	381/491 (78)
Chest pain	60/157 (38)	225/491 (46)
Diarrhoea	19/157 (12)	32/491 (7)

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

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Characteristic	Influenza-like illness (ILI), public-sector, n=167 (%)	Pneumonia, n=495 (%)
Underlying conditions		
Hypertension	11/157 (7)	59/491 (12)
Cardiac	0/157 (0)	8/491 (2)
Lung disease	0/157 (0)	1/491 (<1)
Diabetes	2/157 (1)	107/491 (22)
Cancer	0/157 (0)	1/491 (<1)
Tuberculosis	0/157 (0)	15/491 (3)
HIV-infection	22/157 (14)	103/491 (21)
Other ***	6/157 (4)	73/491 (15)
Management		
Oxygen therapy	1/157 (1)	323/491 (64)
ICU admission	N/A	19/491 (4)
Ventilation	N/A	17/491 (3)
Outcome***		
Died	0/157 (0)	62/491 (13)

* ILI surveillance not conducted in Gauteng & Mpumalanga provinces

** 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.