

MONTHLY RESPIRATORY PATHOGENS SURVEILLANCE REPORT

SOUTH AFRICA WEEK 45 2020

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CUMULATIVE DATA FROM



HIGHLIGHTS: WEEK 45

- Due to an error in the database, the number of RSV cases reported in week 44 report was incorrect. The RSV numbers in the current report have been corrected; the report with incorrect numbers has been removed from the NICD website.

- The RSV detections breached the low threshold in week 39 (week starting 21 September) as determined by Moving Epidemic Method, activity remained low until week 43 when it started to decrease and has been below threshold since week 44.

- 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, 657 cases have been detected from all surveillance programmes. Of the 459 hospitalised COVID-19 cases with available data on outcome, 60 (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**	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

***INF: influenza virus; RSV: respiratory syncytial virus; BP: Bordetella pertussis

****SARS-CoV-2: Severe acute respiratory syndrome coronavirus 2

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

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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 1290 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 377 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 7 and Table 5).

Pneumonia surveillance: Since the beginning of 2020, specimens from 3734 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 7).

Respiratory syncytial virus

Due to an error with the database, the number of RSV cases reported in week 44 was incorrect. The RSV numbers in the current report have been corrected; the report with incorrect numbers has been removed from the NICD website.

The RSV detections breached the low threshold in week 39 (week starting 21 September) as determined by Moving Epidemic Method, it remained low until week 43 when it started to decrease and has been below threshold since week 44 to date.

ILI programme: In 2020 to date, 1290 specimens were tested and RSV was detected in specimens of 62 (5%) patients.

Viral Watch programme: During the same period, 377 specimens were tested and RSV was detected in two (<1%) patients.

Pneumonia surveillance: Since the beginning of 2020, 3734 specimens were tested and RSV was detected in specimens of 382 (10%) patients.

Bordetella pertussis

ILI programme: From 1 January 2020 to date, combined nasopharyngeal and oropharyngeal specimens were tested from 1259 patients for *B. pertussis*, two (<1%) tested positive.

Pneumonia surveillance: During the same period, combined nasopharyngeal and oropharyngeal specimens were tested from 3675 patients for *B. pertussis*, which was detected in eight (<1%) specimens. In addition, *B. pertussis* was not detected in 120 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 1051 patients were tested and SARS-CoV-2 was detected in 149 (14%) patients.

Viral Watch programme: In 2020 to date, specimens were tested from 273 patients and SARS-CoV-2 was detected in 36 (13%) patients.

Pneumonia surveillance: In 2020 to date, specimens from 3232 patients with severe respiratory illness (SRI) were tested and SARS-CoV-2 was detected in 472 (15%) patients.

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

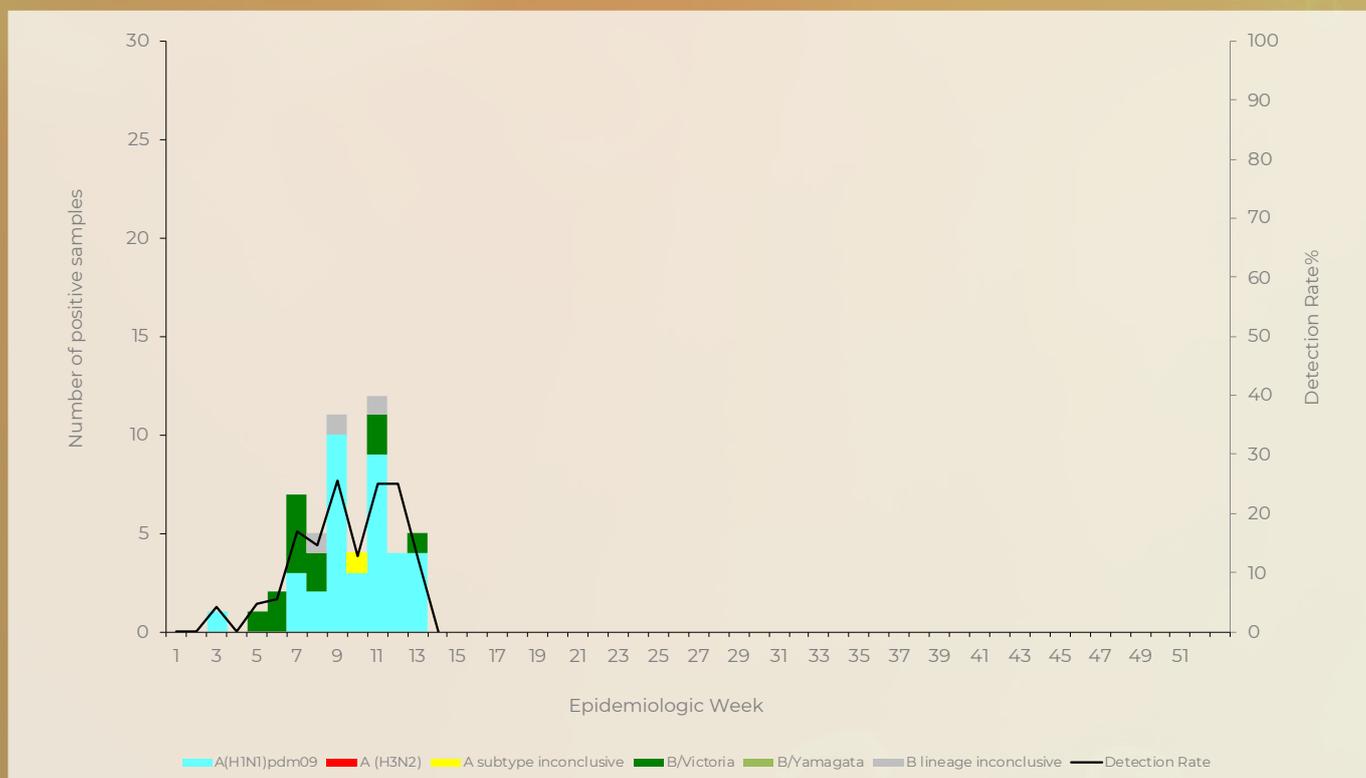


Figure 1. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*Specimens from patients with influenza-like illnesses at 4 sentinel sites in 3 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
Eastridge (WC)	33	0	1	12	0	3	518
Edendale Gateway (KZ)	0	0	0	0	0	0	159
Jouberton (NW)	0	0	0	0	0	0	313
Mitchell's Plain (WC)	3	0	0	0	0	0	300
Total:	36	0	1	12	0	3	1290

KZ: KwaZulu-Natal; NW: North West; WC: Western Cape
Inconclusive: insufficient viral load in sample and unable to characterise further

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

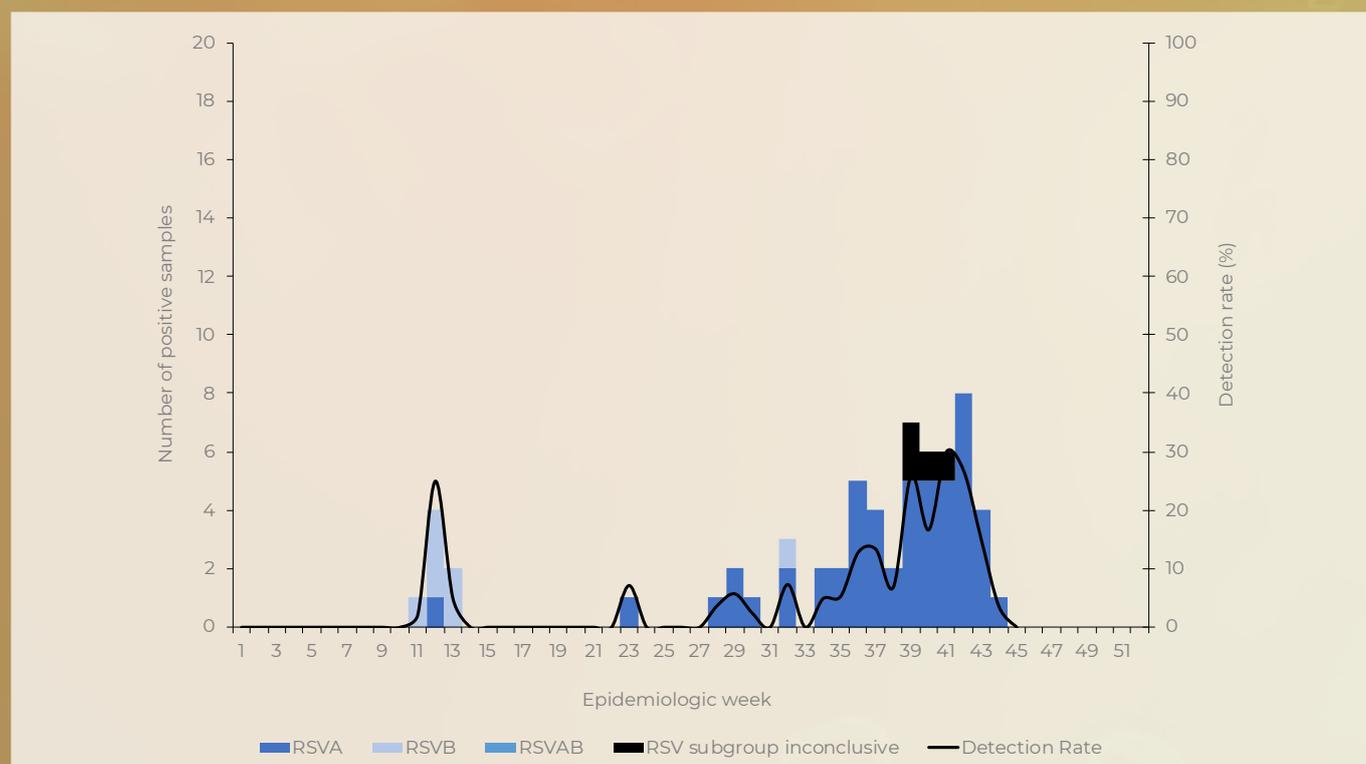


Figure 2. Number of samples testing positive for respiratory syncytial virus by subgroup and detection rate by week

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	Total samples
Eastridge (WC)	33	2	0	2	418
Edendale Gateway (KZ)	1	5	0	0	159
Jouberton (NW)	1	0	0	2	313
Mitchell's Plain (WC)	16	0	0	0	300
Total	51	7	0	4	1290

KZ: KwaZulu-Natal; NW: North West; WC: Western Cape
Inconclusive: insufficient viral load in sample and unable to characterise further
RSV AB: Both RSV A and B subgroup identified

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

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

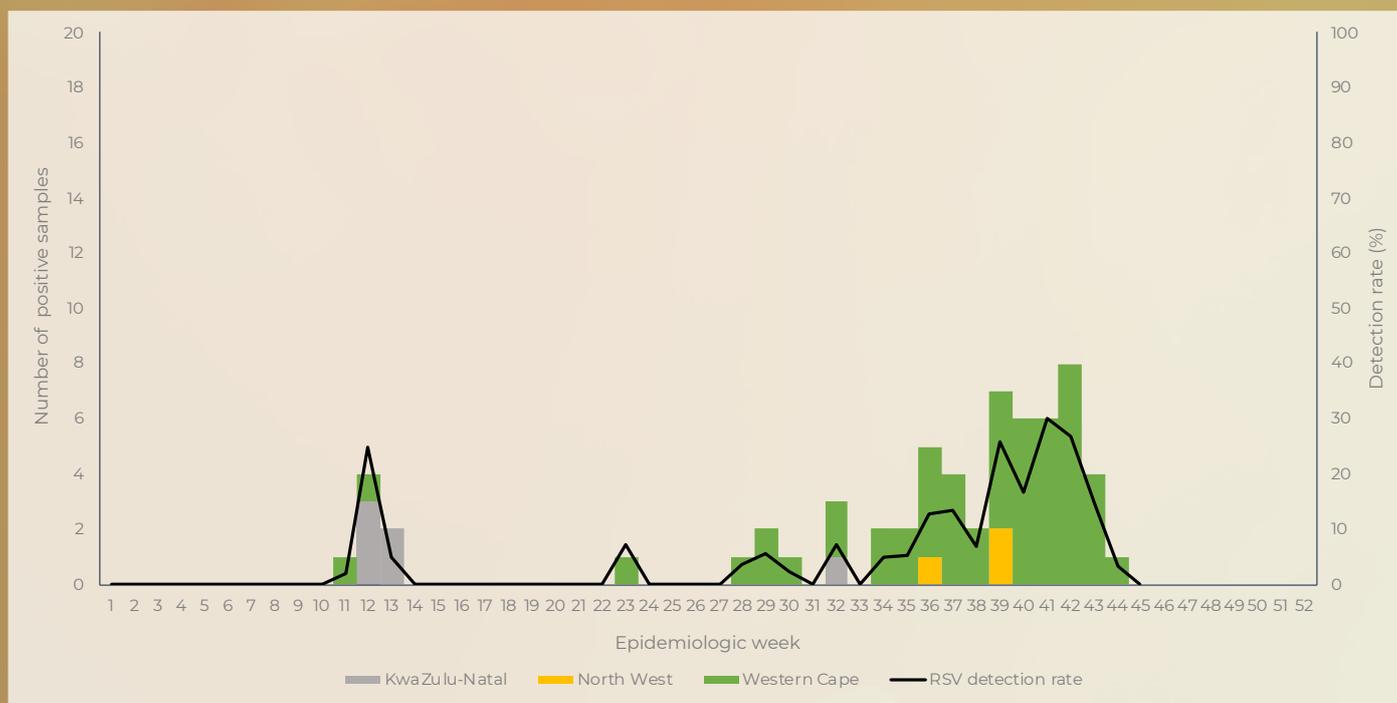


Figure 3. Number of samples testing positive for respiratory syncytial virus by province and detection rate by week

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

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

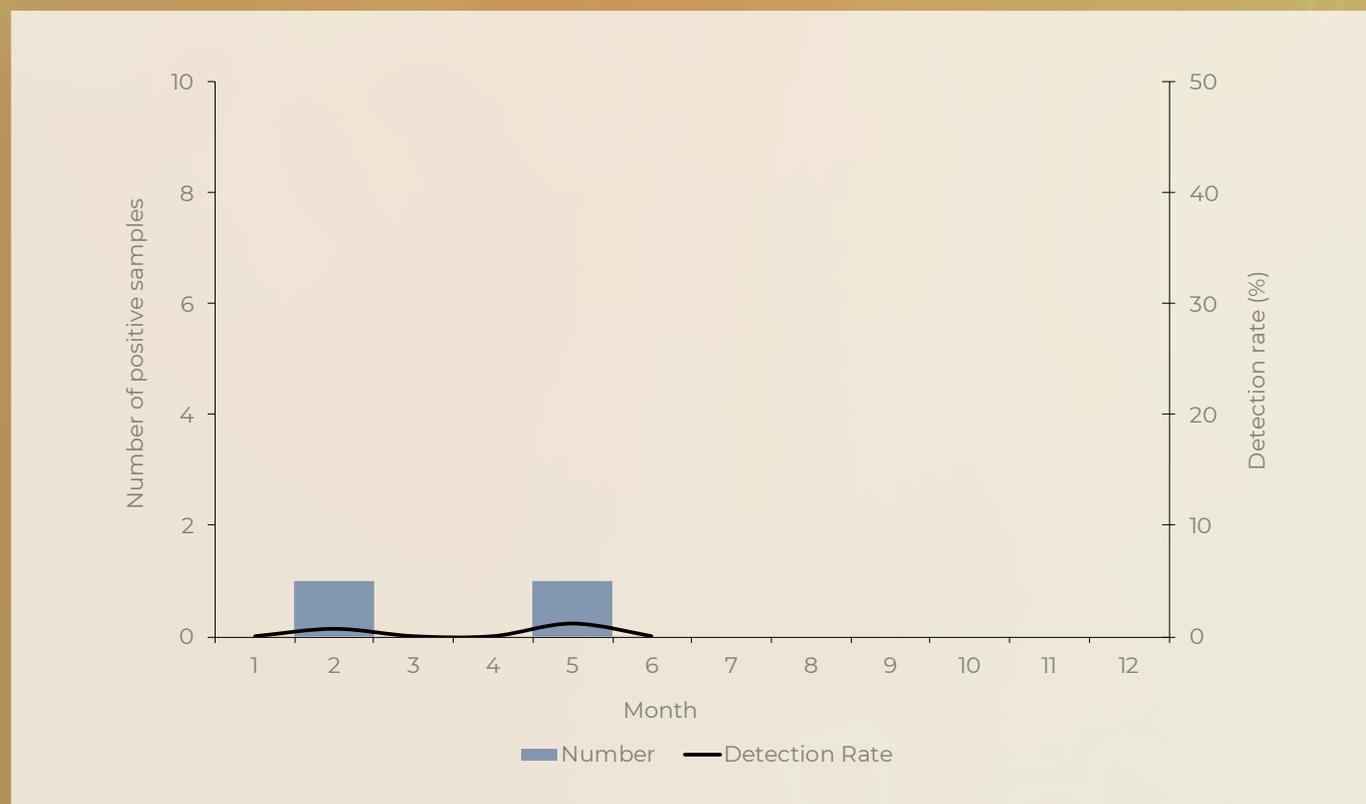


Figure 4. Number of samples testing positive for *B. pertussis* and detection rate by month

*Specimens from patients with influenza-like illnesses at 4 sentinel sites in 3 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
Eastridge (WC)	1	506
Edendale Gateway (KZ)	0	159
Jouberton (NW)	1	299
Mitchell's Plain (WC)	0	295
Total:	2	1259

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

**63 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

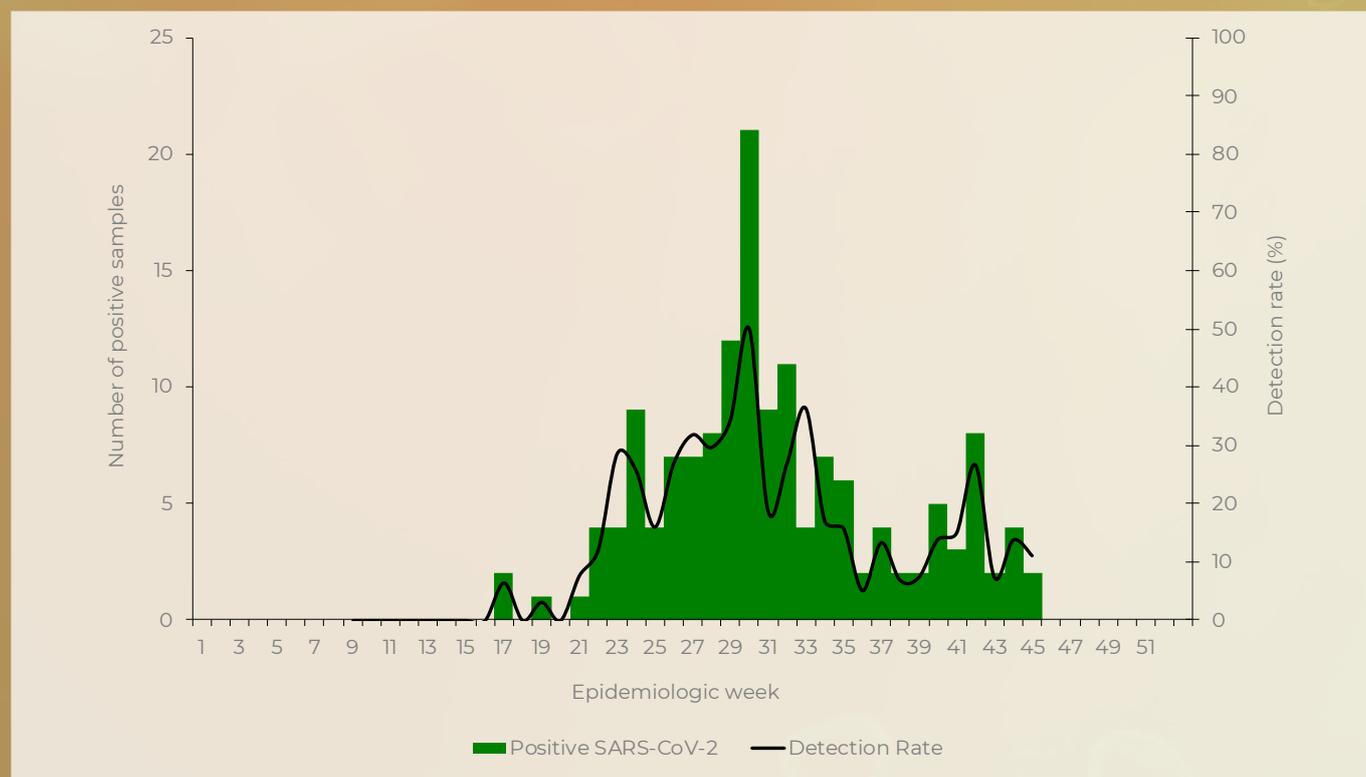


Figure 5. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

*Specimens from patients with influenza-like illnesses at 4 sentinel sites in 3 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
Eastridge (WC)	26	415
Edendale Gateway (KZ)	23	109
Jouberton (NW)	61	259
Mitchell's Plain (WC)	39	268
Total:	149	1051

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

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

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

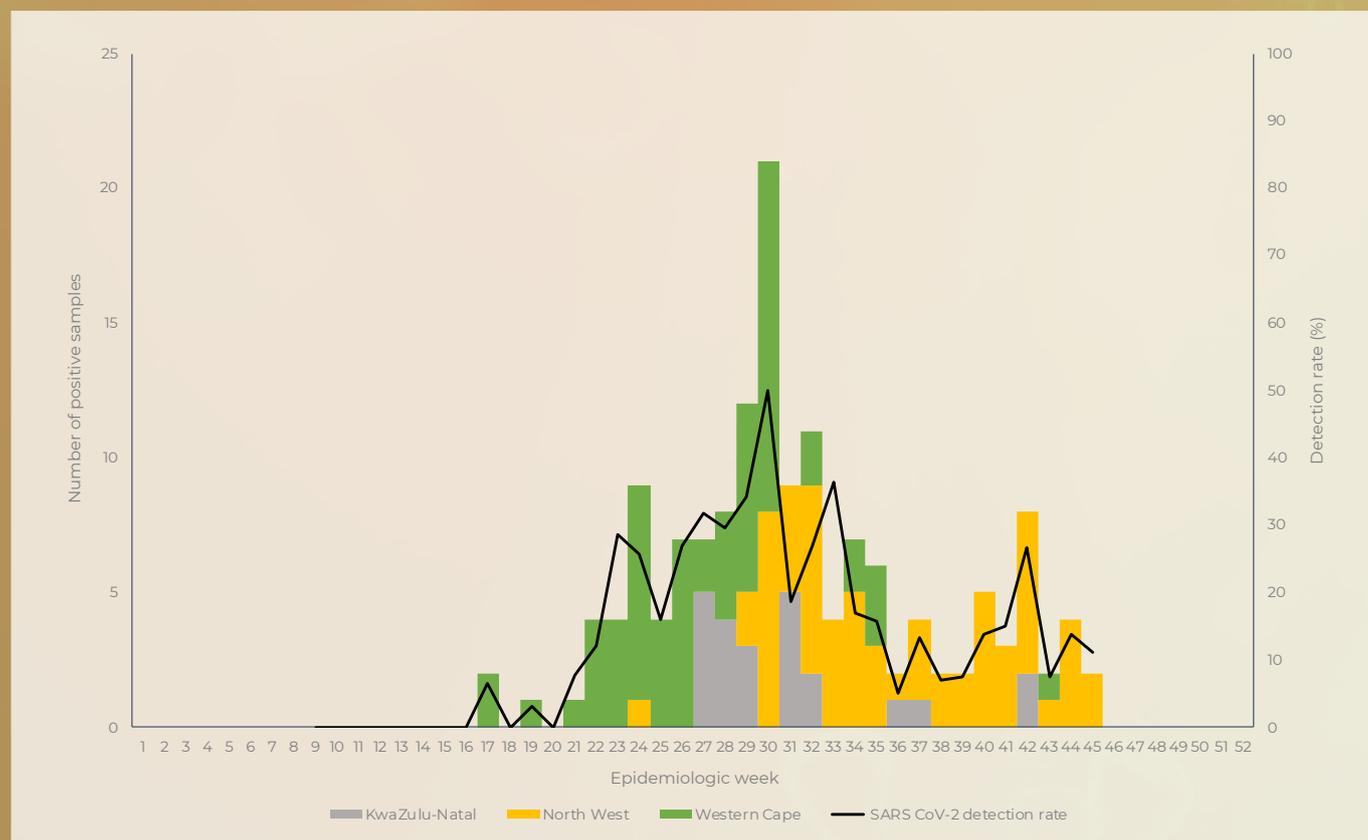


Figure 6. Number of samples testing positive for SARS-CoV-2* by province and detection rate by week

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE VIRAL WATCH

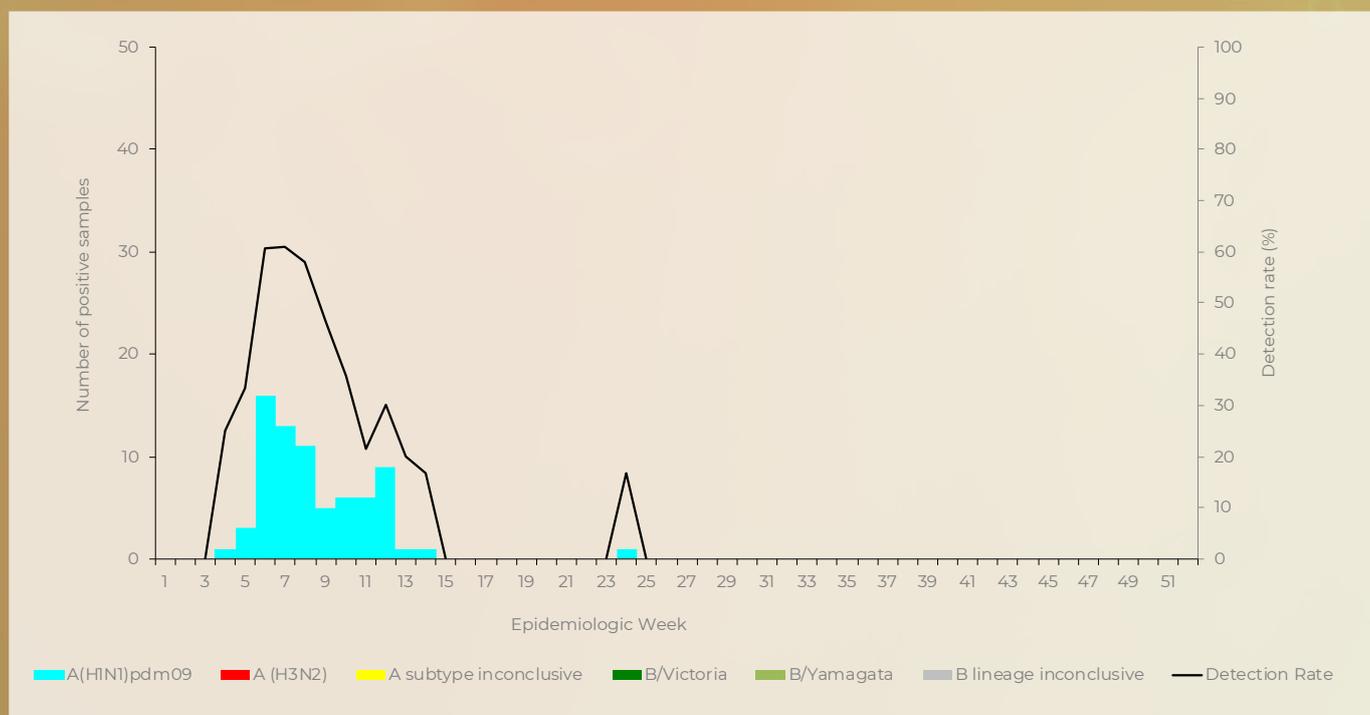


Figure 7. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*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	166
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	178
Total:	73	0	0	0	0	0	377

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

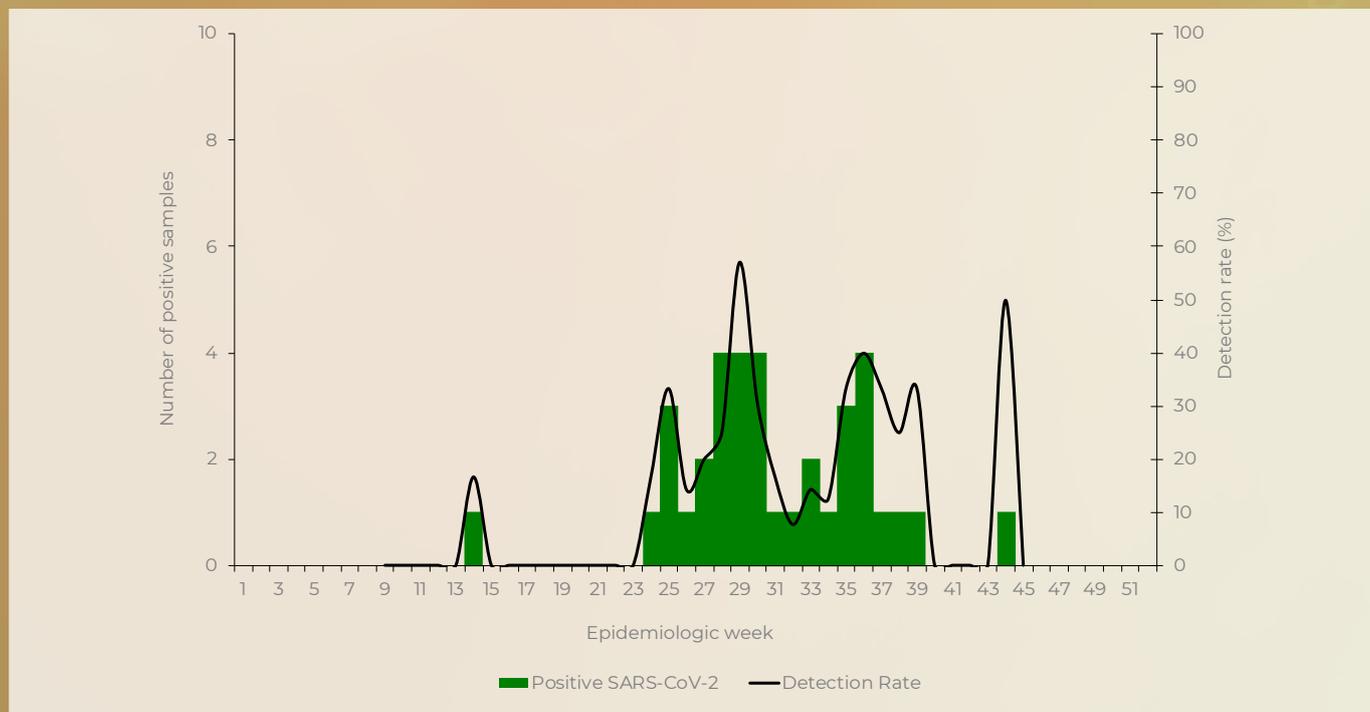


Figure 8. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

*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

Province	SARS-CoV-2 positive	Total samples tested
Eastern Cape	0	4
Free State	1	14
Gauteng	25	155
Limpopo	0	2
Mpumalanga	1	5
North West	0	0
Northern Cape	0	2
Western Cape	9	91
Total:	36	273

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

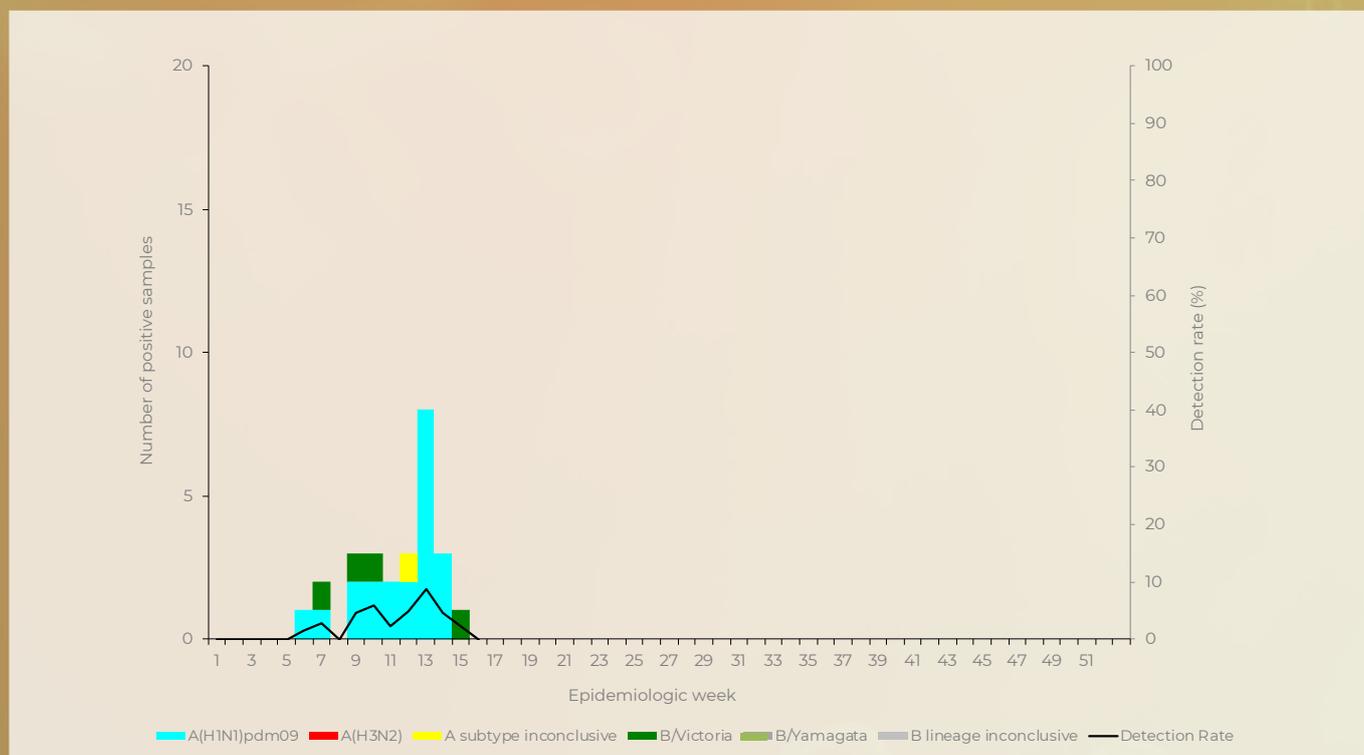


Figure 9. Number positive samples* by influenza subtype and lineage and detection rate** by week

*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

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	645
Helen Joseph-Rahima Moosa (GP)	0	0	0	0	0	0	794
Klerksdorp-Tshepong (NW)	0	0	0	0	0	0	605
Mapulaneng-Matikwana (MP)	0	0	0	0	0	0	294
Red Cross (WC)	19	0	0	2	0	0	960
Mitchell's Plain (WC)	2	0	1	2	0	0	436
Total:	21	0	1	4	0	0	3734

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

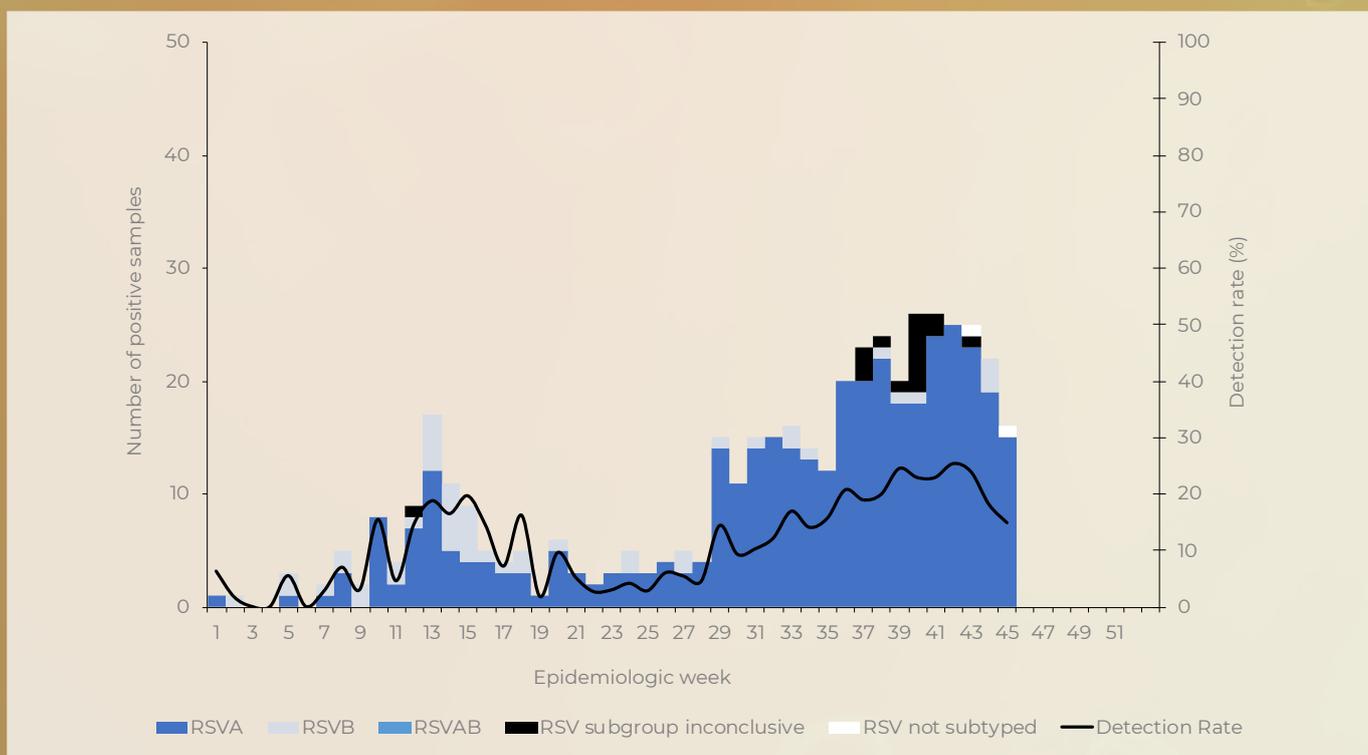


Figure 10. Number of samples testing positive for respiratory syncytial virus by subgroup and detection rate by week

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 untyped	Total samples
Edendale (KZ)	3	10	0	1	1	645
Helen Joseph-Rahima Moosa (GP)	42	10	0	0	0	794
Klerksdorp-Tshepong (NW)	2	2	0	1	0	605
Mapulaneng-Matikwana (MP)	0	0	0	0	0	294
Red Cross (WC)	255	25	0	9	1	960
Mitchell's Plain (WC)	80	0	0	5	0	436
Total:	382	47	0	16	2	3734

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

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

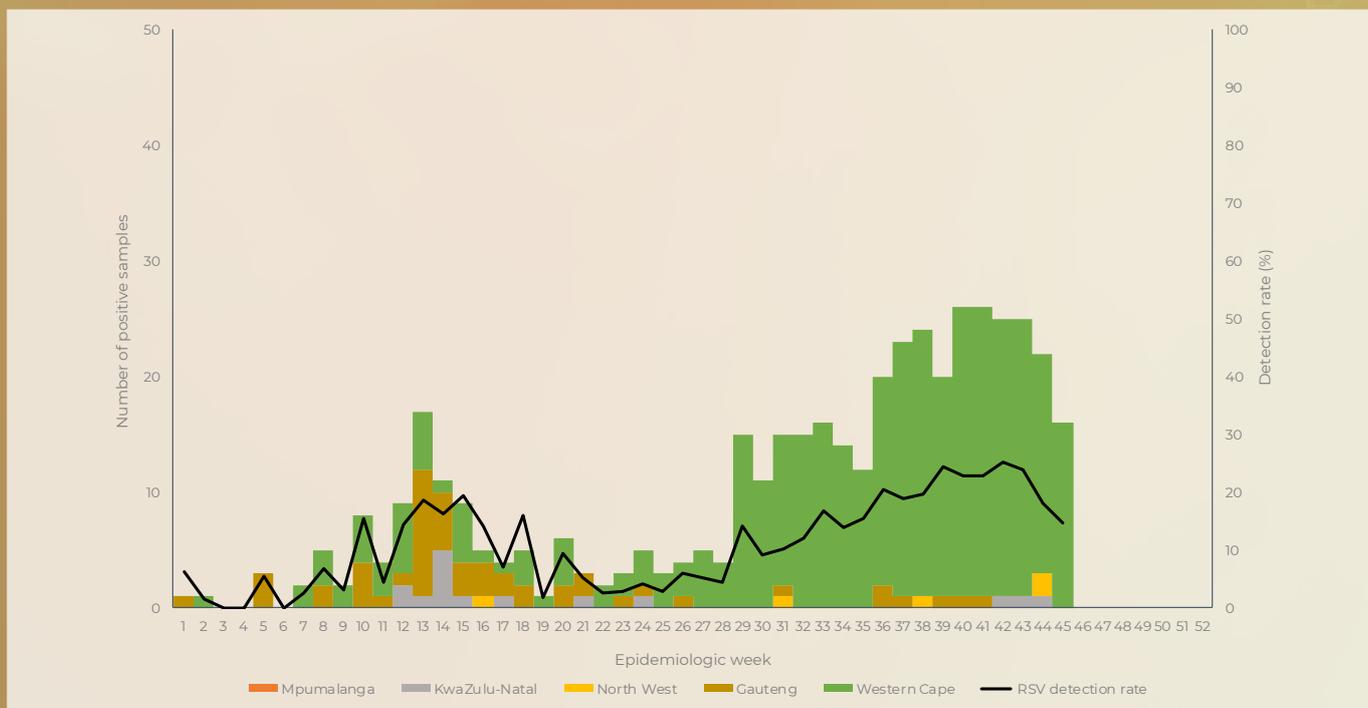


Figure 11. Number of samples testing positive for respiratory syncytial virus by province and detection rate by week

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

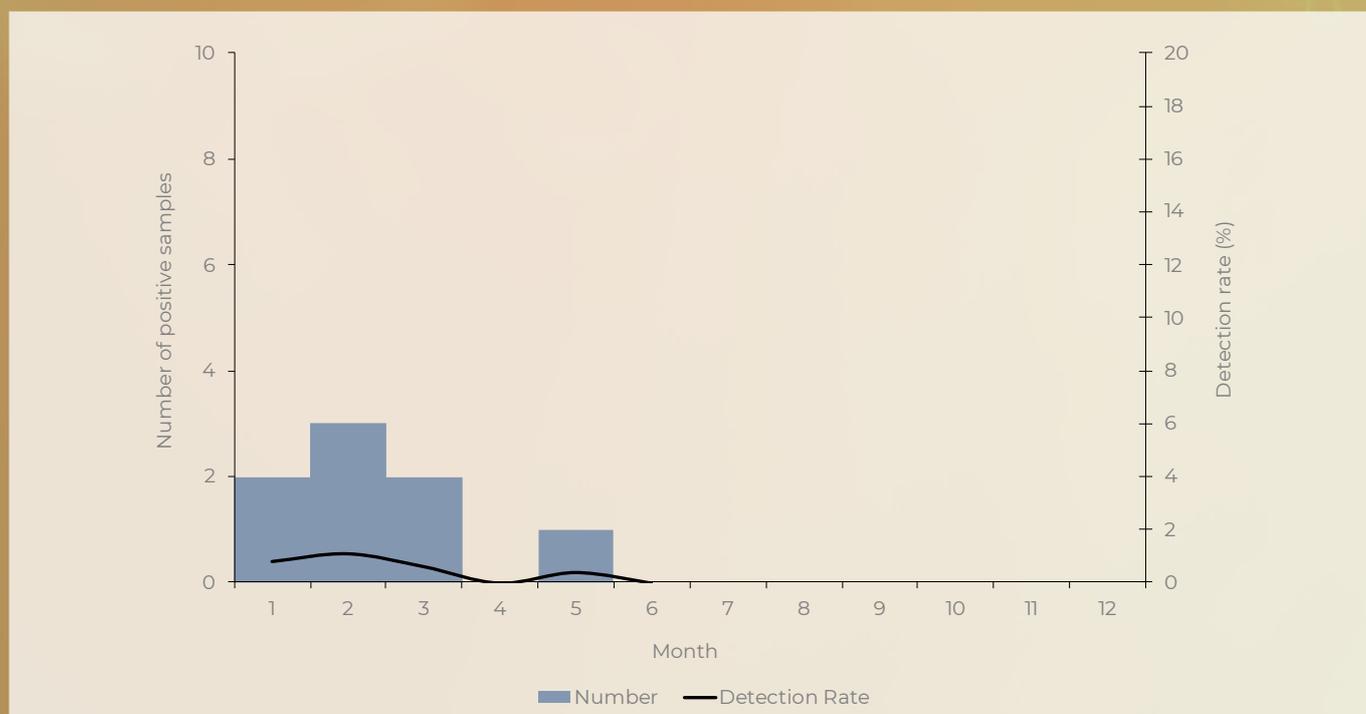


Figure 12. Number of samples testing positive for *B. pertussis* and detection rate by month

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	644
Helen Joseph-Rahima Moosa (GP)	1	785
Klerksdorp-Tshepong (NW)	1	584
Mapulaneng-Matikwana (MP)	0	287
Red Cross (WC)	4	950
Mitchell's Plain (WC)	1	425
Total:	8	3675

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

**57 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

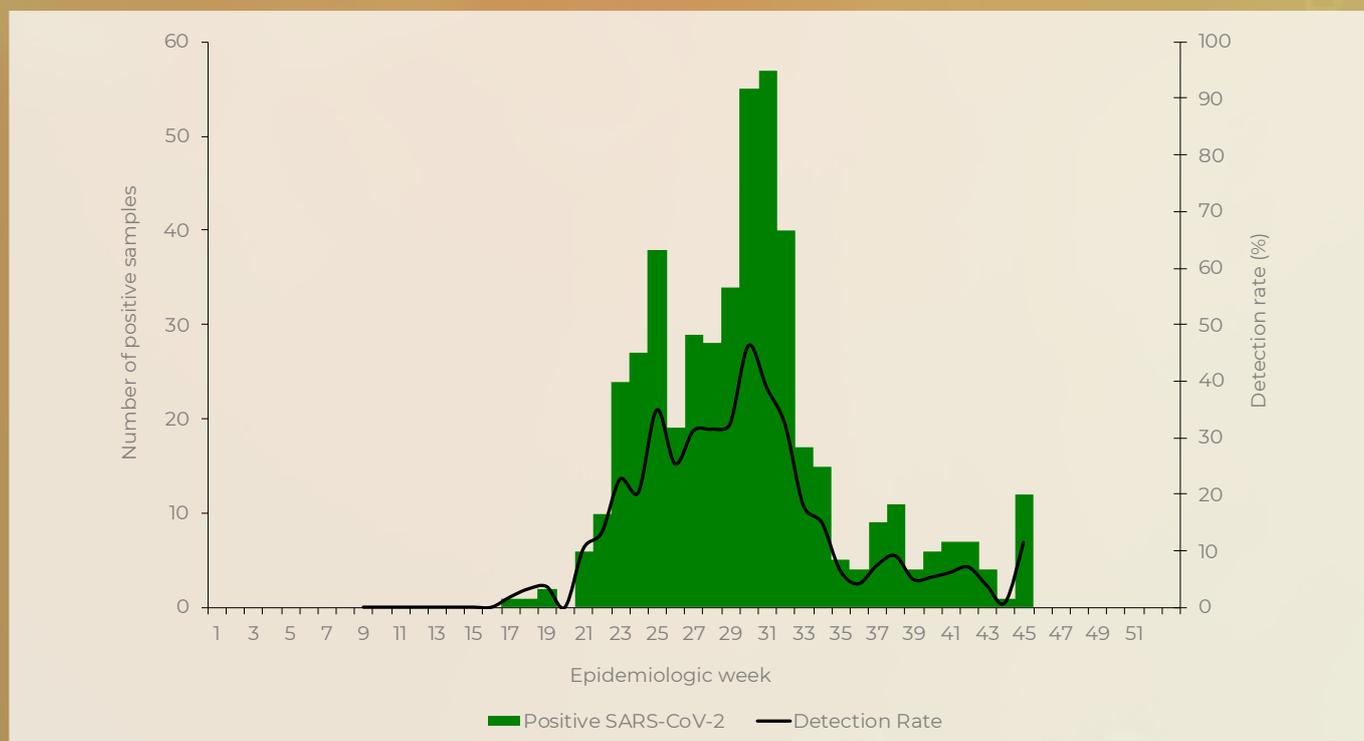


Figure 13. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

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

Table 10. 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)	103	570
Helen Joseph-Rahima Moosa (GP)	130	659
Klerksdorp-Tshepong (NW)	131	527
Mapulaneng-Matikwana (MP)	14	245
Red Cross (WC)	31	818
Mitchell's Plain (WC)	63	413
Total:	472	3232

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

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

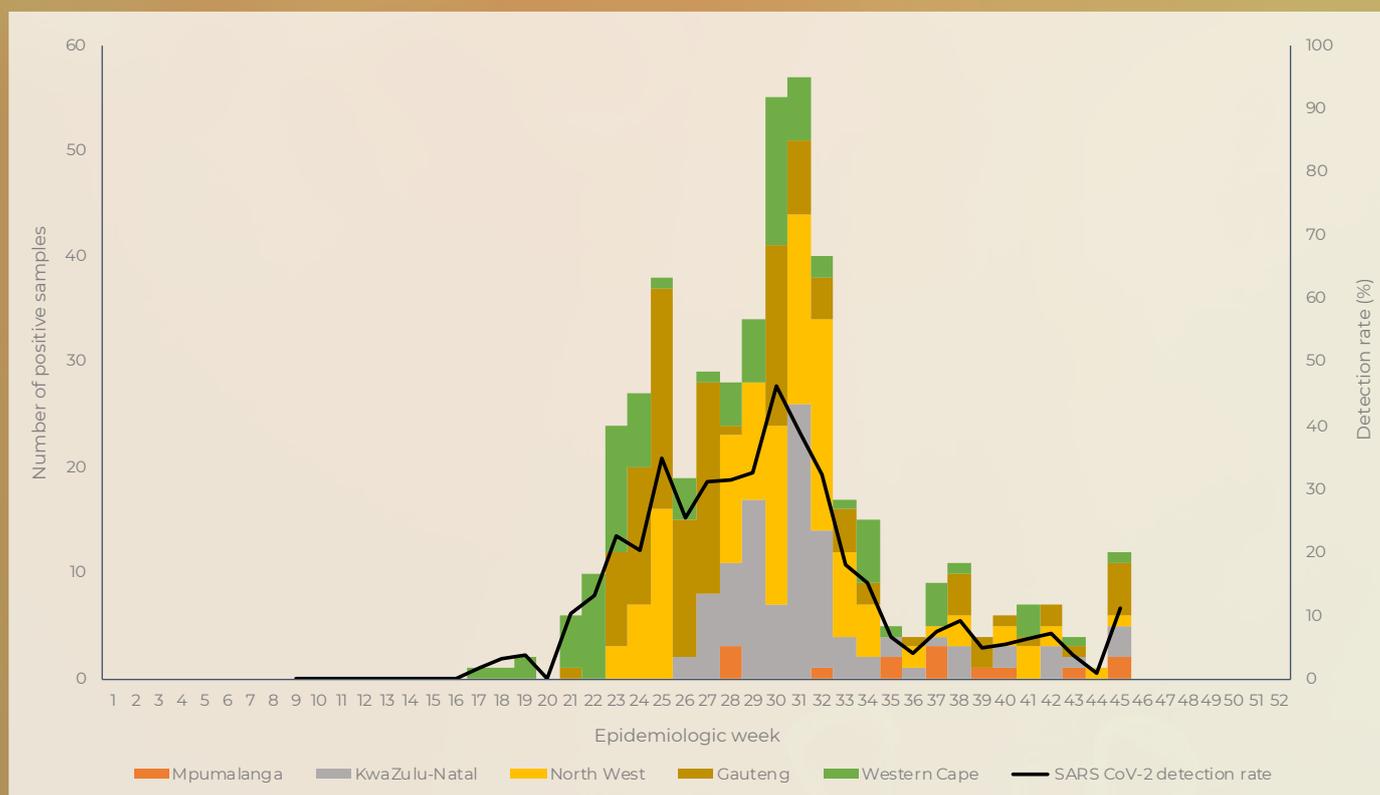


Figure 14. Number of samples testing positive for SARS-CoV-2* by province and detection rate by week

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

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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- 08 November 2020

Characteristic	Influenza-like illness (ILI), public-sector, n=149 (%)	Pneumonia, n=472 (%)
Age group		
0-9	22/149 (15)	41/472 (9)
10-19	12/149 (8)	4/472 (1)
20-39	70/149 (47)	94/472 (20)
40-59	35/149 (23)	176/472 (37)
60-79	10/149 (7)	149/472 (32)
≥80	0/149 (0)	8/472 (2)
Sex-female	79/149 (53)	286/472 (61)
Province*		
Gauteng	N/A	130/472 (27)
KwaZulu-Natal	25/149 (17)	103/472 (22)
Mpumalanga	N/A	14/472 (3)
North West	59/149 (39)	131/472 (28)
Western Cape	65/149 (44)	94/472 (20)
Race		
Black	101/148 (68)	374/459 (81)
Coloured	47/148 (32)	62/459 (14)
Asian/Indian	0/148 (0)	19/459 (4)
Other	0/148 (0)	4/459 (<1)
Presentation		
Fever	143/148 (97)	276/459 (60)
Cough	147/148 (99)	455/459 (99)
Shortness of breath	38/148 (26)	364/459 (79)
Chest pain	56/148 (38)	219/459 (48)
Diarrhoea	18/148 (12)	30/459 (7)

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

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Characteristic	Influenza-like illness (ILI), public-sector, n=149 (%)	Pneumonia, n=472 (%)
Underlying conditions		
Hypertension	10/148 (7)	56/459 (12)
Cardiac	0/148 (0)	8/459 (2)
Lung disease	0/148 (0)	1/459 (<1)
Diabetes	2/148 (1)	100/459 (22)
Cancer	0/148 (0)	1/459 (<1)
Tuberculosis	0/148 (0)	14/459 (3)
HIV-infection	20/148 (14)	95/459 (21)
Other **	6/148 (4)	75/459 (16)
Management		
Oxygen therapy	1/148 (<1)	300/459 (65)
ICU admission	N/A	17/459 (4)
Ventilation	N/A	14/459 (3)
Outcome***		
Died	0/148 (0)	60/459 (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 60 patients who died, six were in the 20-39 year age group, 19 in the 40-59 year age group, and 35 were ≥60 years; 39/60 (65%) were female. All except four were known to have underlying medical conditions.