

MONTHLY RESPIRATORY PATHOGENS SURVEILLANCE REPORT

 NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES

Division of the National Health Laboratory Service

SOUTH AFRICA WEEK 40 2020

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CUMULATIVE DATA FROM



HIGHLIGHTS: WEEK 40

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.

Although the 2020 RSV season has not started, with only sporadic detections since mid April, there has been a moderate increase in detection since week 29 (week ending 19 July) in the pneumonia surveillance programme and to a lesser extent in the ILI programme.

Since the last report 19 additional patients tested positive for SARS-CoV-2 of which 9 were detected in the current reporting week (week40), 4 in SARI and 5 in ILI. To date, 600 cases have been detected from all surveillance programmes.

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 or chronic 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

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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 has been detected in Gauteng province.

ILI programme: In 2020 to date, specimens from 1164 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 (Figure1 and Table1).

Viral Watch programme: During the same period, specimens were received from 356 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. (Figure4 and Table4).

Pneumonia surveillance: Since the beginning of 2020, specimens from 3155 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) (Figure7 and Table 6).

Respiratory syncytial virus

Although the 2020 RSV season has not started, with only sporadic detections since mid April, there has been a moderate increase in detection since week 29 (week ending 19 July) in the pneumonia surveillance programme and to a lesser extent in the ILI programme.

ILI programme: In 2020 to date, 1 164 specimens were tested and RSV was detected in specimens of 42 (4%) patients.

Viral Watch programme: During the same period, 356 specimens were tested and RSV has not been detected.

Pneumonia surveillance: Since the beginning of 2020, 3 155 specimens were tested and RSV was detected in specimens of 322 (10%) patients.

Bordetella pertussis

ILI programme: From 1 January 2020 to date, combined nasopharyngeal and oropharyngeal specimens were tested from 1160 patients for *B. pertussis*, two (<1%) tested positive.

Pneumonia surveillance: During the same period, combined nasopharyngeal and oropharyngeal specimens were tested from 3153 patients for *B. pertussis*, which was detected in eight (<1%) specimens. In addition, *B. pertussis* was not detected in 52 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 930 patients were tested and SARS-CoV-2 was detected in 132 (14%) patients.

Viral Watch programme: In 2020 to date, specimens were tested from 252 patients and SARS-CoV-2 was detected in 35 (14%) patients.

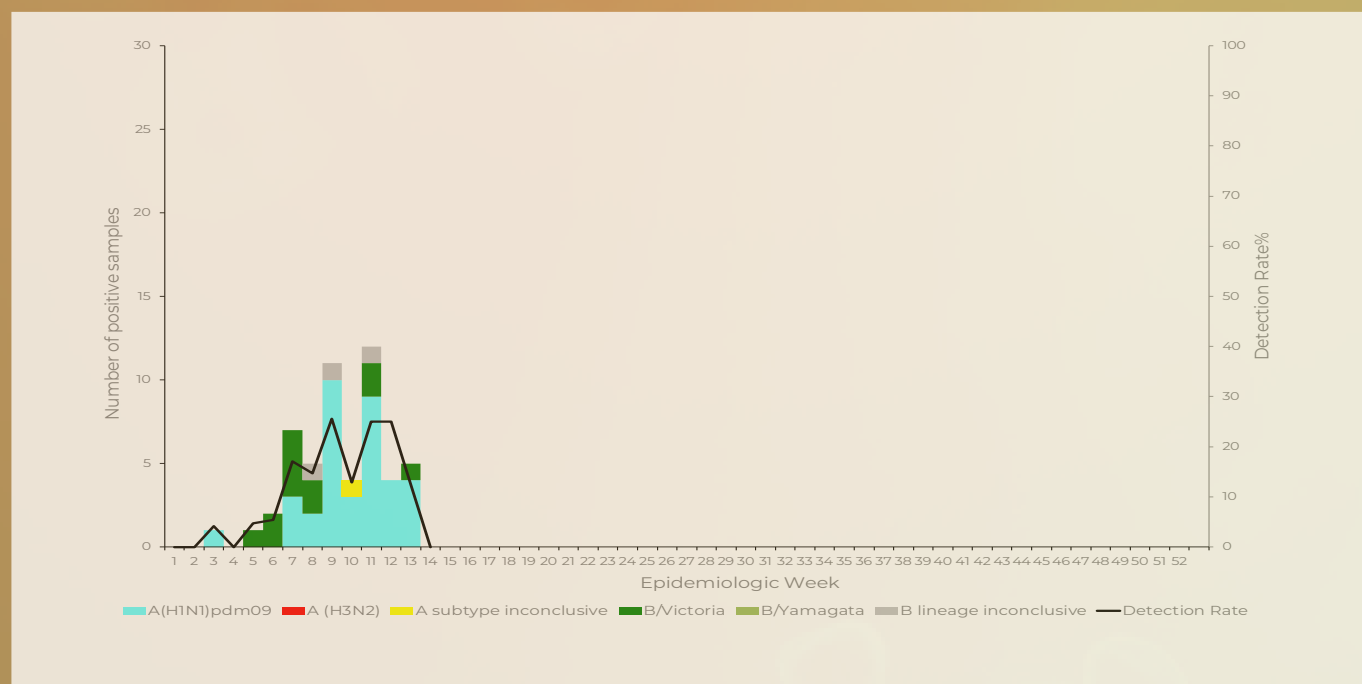
Pneumonia surveillance: In 2020 to date, specimens from 2 640 patients with severe respiratory illness (SRI) were tested and SARS-CoV-2 was detected in 433 (16%) patients.

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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 3 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	475
Edendale Gateway (KZ)	0	0	0	0	0	0	140
Jouberton (NW)	0	0	0	0	0	0	263
Mitchell's Plain (WC)	3	0	0	0	0	0	286
Total:	36	0	1	12	0	3	1164

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

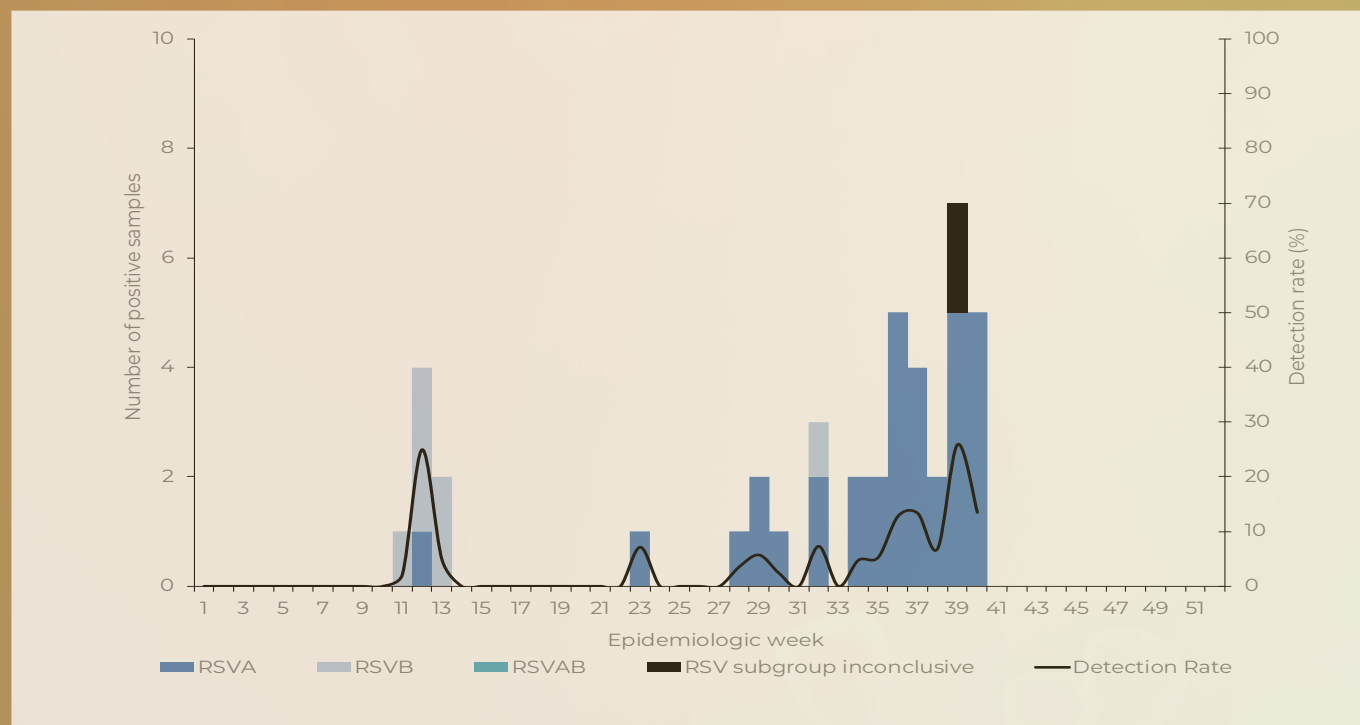
Inconclusive: insufficient viral load in sample and unable to characterise further

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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)	22	2	0	0	475
Edendale Gateway (KZ)	1	5	0	0	140
Jouberton (NW)	1	0	0	2	263
Mitchell's Plain (WC)	9	0	0	0	286
Total	33	7	0	2	1 164

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

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

Figure 3. Number of samples testing positive for *B. pertussis* and detection rate by month

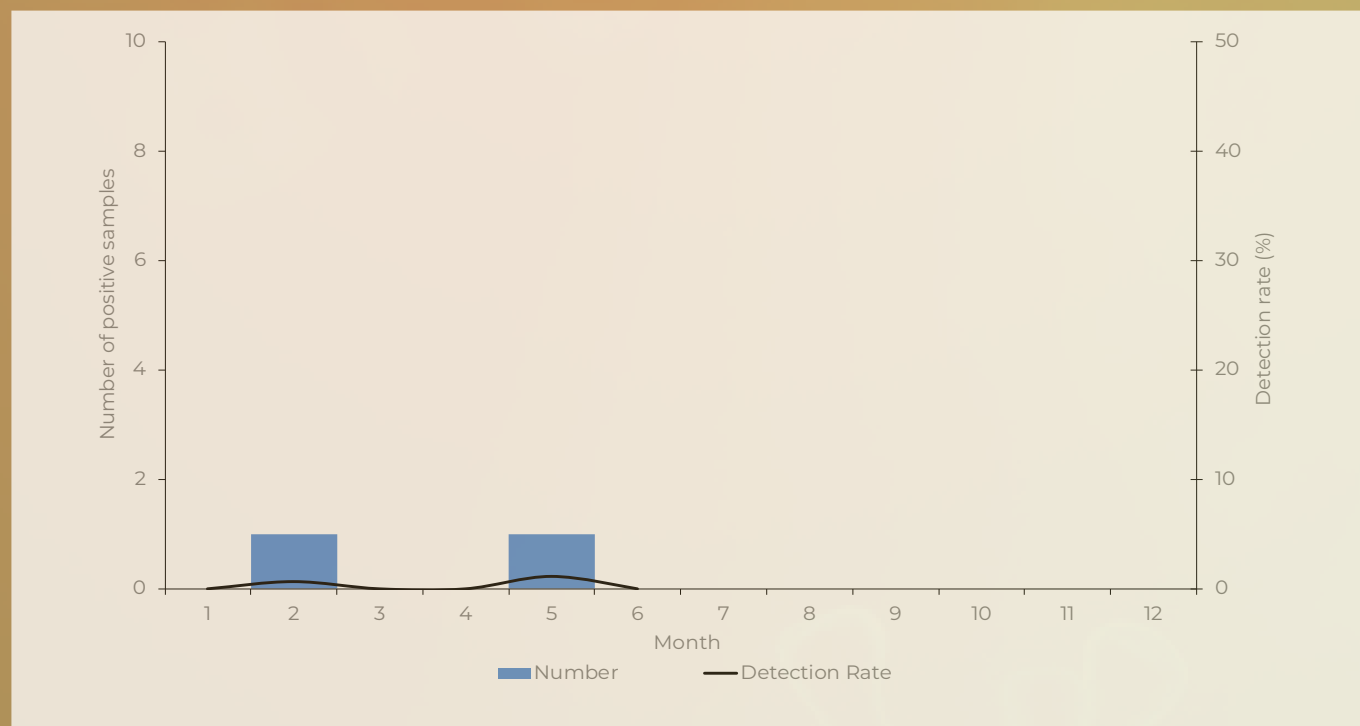


Table 3. Cumulative number of *B. pertussis* identified and total number of samples** tested by province

Clinic (Province)	<i>B. pertussis</i> Positive**	Total samples
Eastridge (WC)	1	475
Edendale Gateway (KZ)	0	138
Jouberton (NW)	1	263
Mitchell's Plain (WC)	0	284
Total:	2	1 160

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

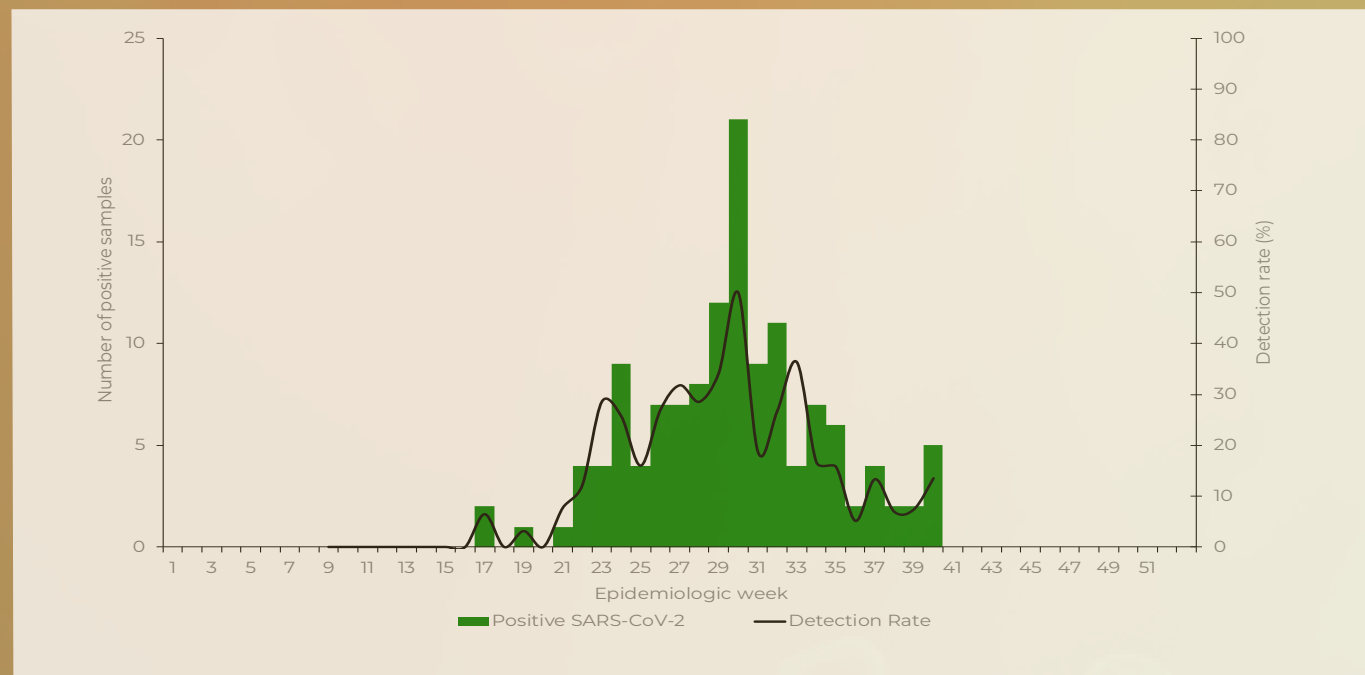
**21 cases met the suspected pertussis case definition but did not meet Influenza-like illness (ILI) case definition. These are not included in the table or the epidemiological curve

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE HEALTH CARE CLINICS

Figure 4. 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	372
Edendale Gateway (KZ)	21	90
Jouberton (NW)	47	214
Mitchell's Plain (WC)	38	254
Total:	132	930

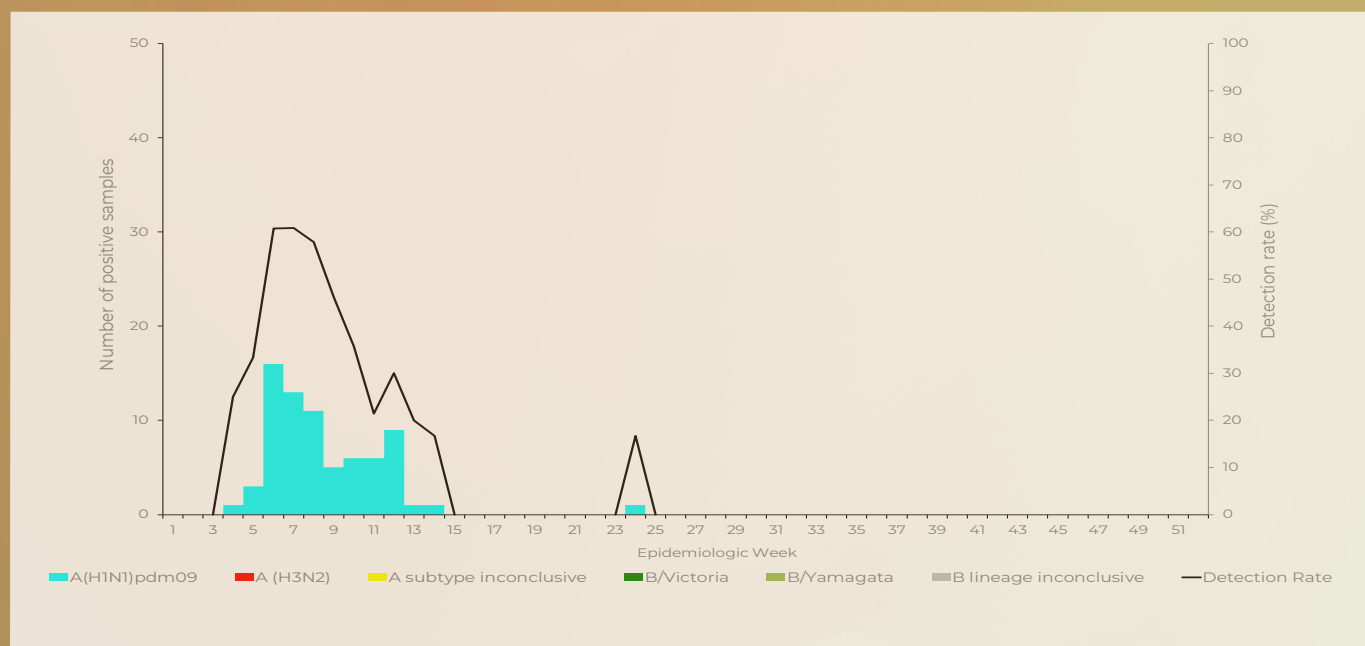
KZ: KwaZulu-Natal; NW: North West; WC: Western Cape

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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 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	4
Free State	0	0	0	0	0	0	13
Gauteng	1	0	0	0	0	0	156
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	169
Total:	73	0	0	0	0	0	356

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).

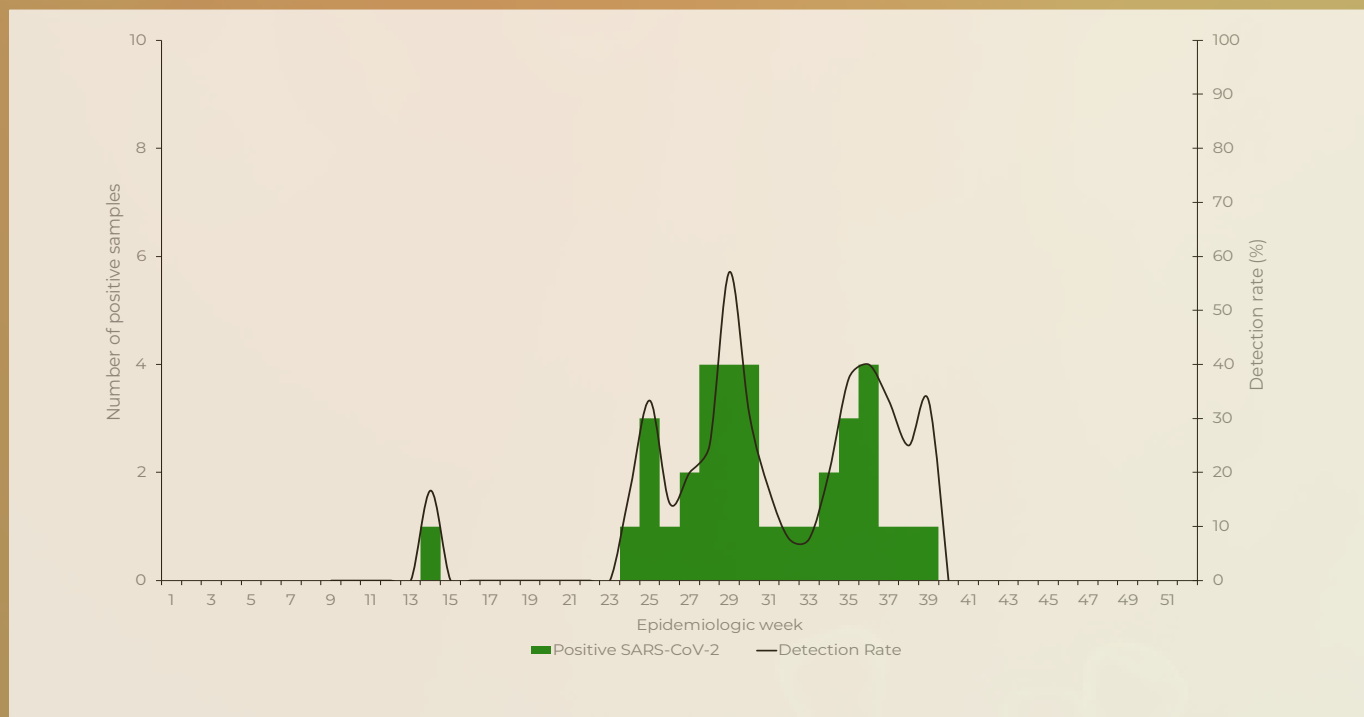
Patients known to have acquired influenza abroad are not included in the table or epidemiological curve.

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE: VIRAL WATCH

Figure 6. 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

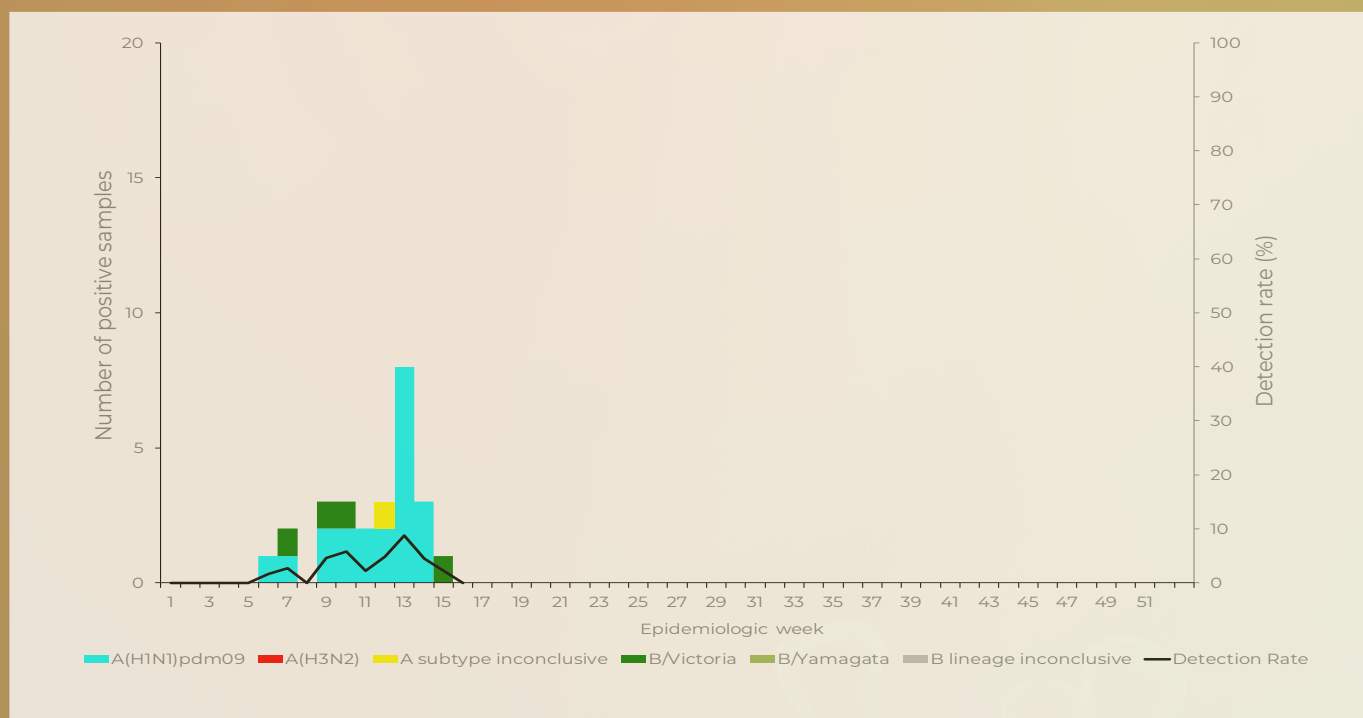
Province	SARS-CoV-2 positive	Total samples tested
Eastern Cape	0	3
Free State	1	13
Gauteng	25	145
Limpopo	0	2
Mpumalanga	1	5
North West	0	0
Northern Cape	0	2
Western Cape	8	82
Total:	35	252

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

Figure 7. 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

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	428
Helen Joseph-Rahima Moosa (GP)	0	0	0	0	0	0	710
Klerksdorp-Tshepong (NW)	0	0	0	0	0	0	543
Mapulaneng - Matikwana (MP)	0	0	0	0	0	0	246
Mitchell's Plain (WC)	19	0	0	2	0	0	779
Red Cross (WC)	2	0	1	2	0	0	349
Total:	21	0	1	4	0	0	3 155

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

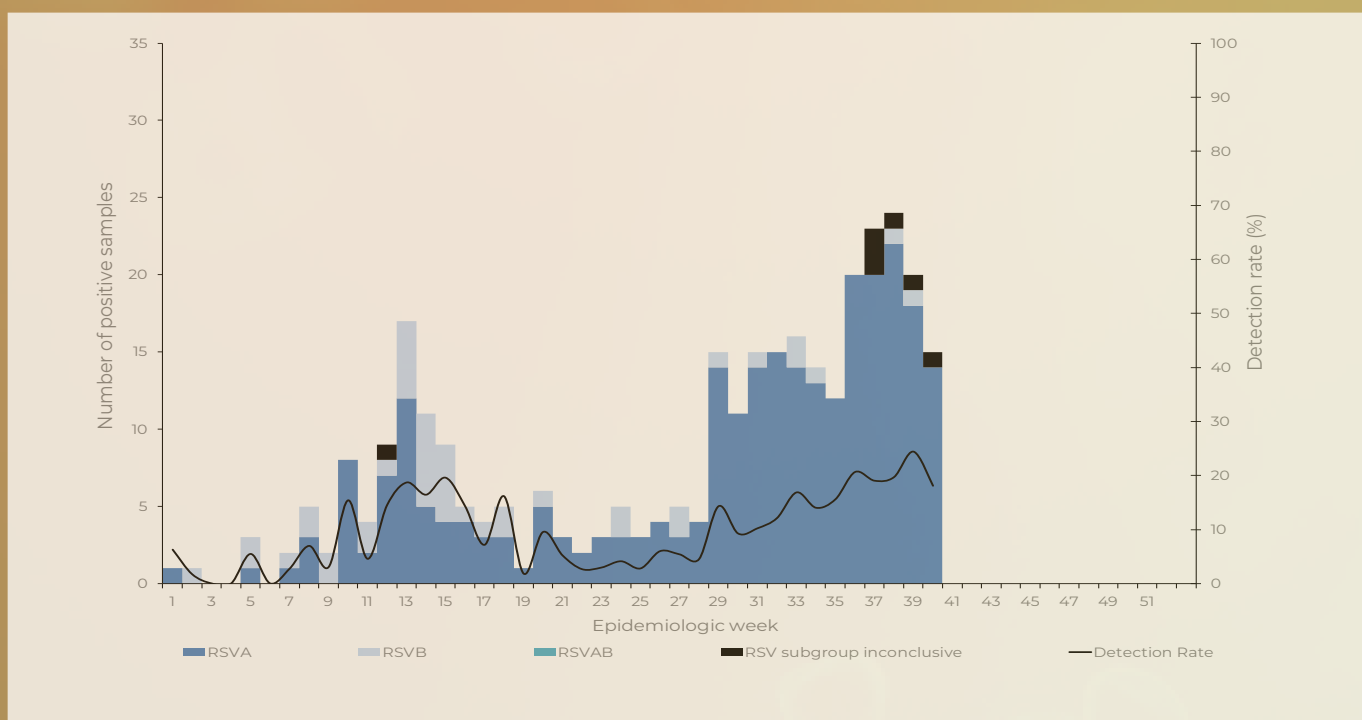
Inconclusive: insufficient viral load in sample and unable to characterise further

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

Figure 8. 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	Total samples
Edendale (KZ)	2	9	0	1	528
Helen Joseph-Rahima Moosa (GP)	41	10	0	0	710
Klerksdorp-Tshepong (NW)	2	0	0	1	543
Mapulaneng-Matikwana (MP)	0	0	0	0	246
Red Cross (WC)	175	24	0	3	779
Mitchell's Plain (WC)	52	0	0	2	349
Total:	272	43	0	7	3 155

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

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

Figure 9. Number of samples testing positive for *B. pertussis* and detection rate by month

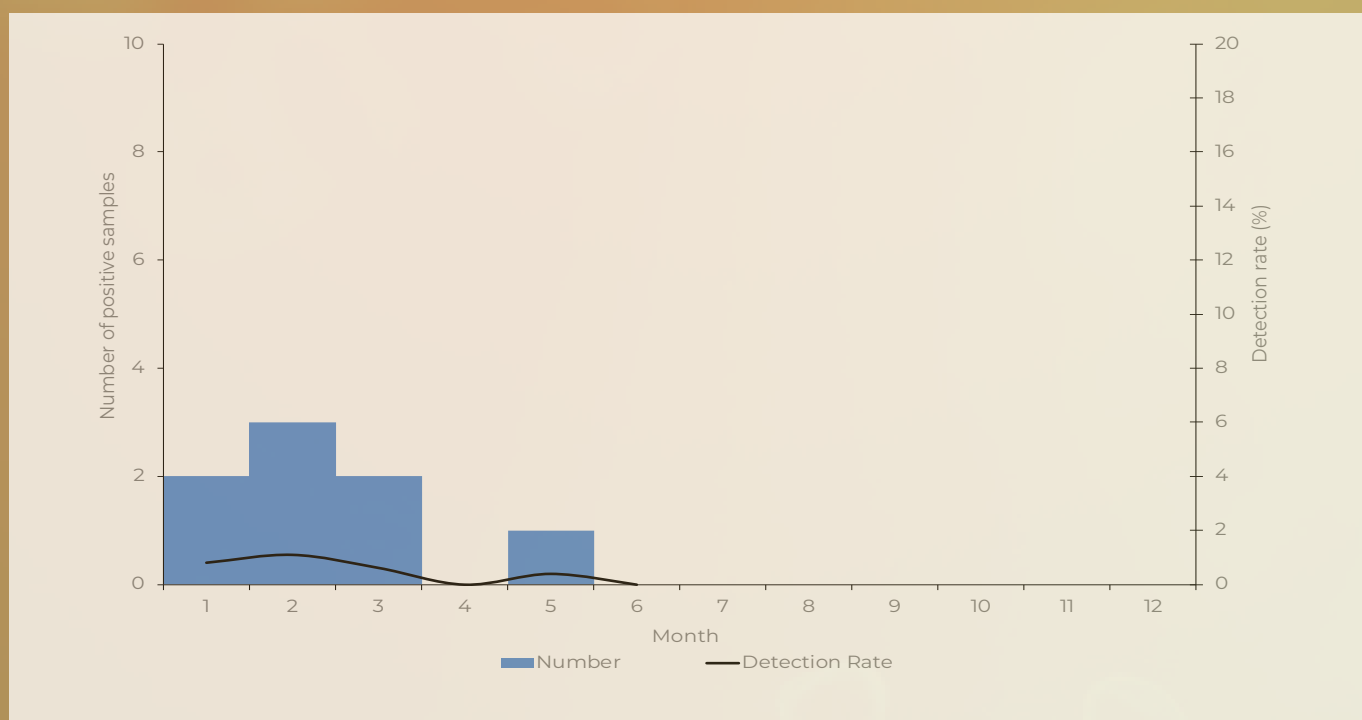


Table 9. Cumulative number of *B. pertussis* identified and total number of samples** tested by hospital and province

Hospital (Province)	<i>B. pertussis</i> Positive**	Total samples
Edendale (KZ)	1	528
Helen Joseph-Rahima Moosa (GP)	1	710
Klerksdorp-Tshepong (NW)	1	542
Mapulaneng-Matikwana (MP)	0	245
Red Cross (WC)	4	779
Mitchell's Plain (WC)	1	349
Total:	8	3 153

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

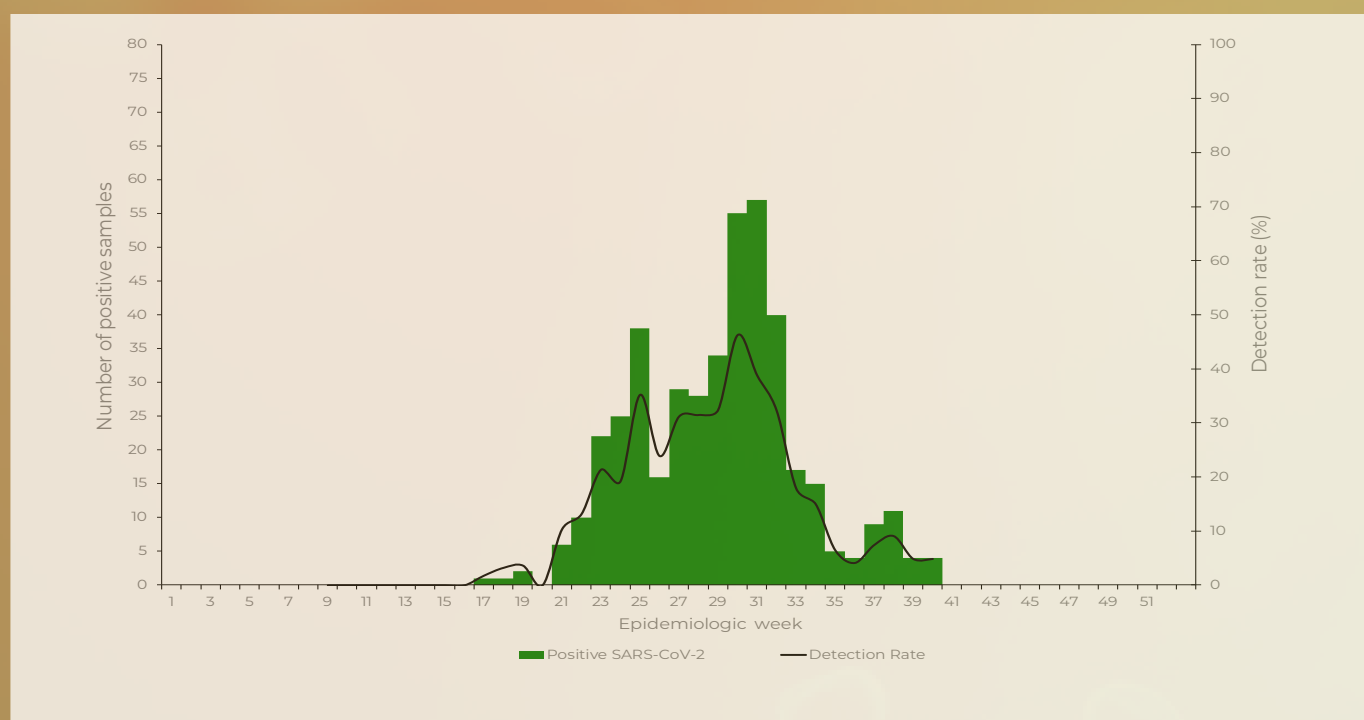
** 52 cases met the suspected pertussis case definition but did not meet Pneumonia Surveillance case definition. These are not included in the table and epidemiologic curve.

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

Figure 10. Number of samples testing positive for SARS-CoV-2*, and detection rate by week



*Specimens from patients 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)	95	453
Helen Joseph-Rahima Moosa (GP)	121	575
Klerksdorp-Tshepong (NW)	124	467
Mapulaneng-Matikwana (MP)	11	197
Red Cross (WC)	27	637
Mitchell's Plain (WC)	55	311
Total:	433	2 640

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

Table11: Characteristics of laboratory-confirmed cases of COVID-19, enrolled in influenza-like illness (ILI) and pneumonia surveillance programmes, South Africa, 2 March 2020- 04 October 2020

Characteristic	Influenza -like illness (ILI), public sector, n =132 (%)	Pneumonia surveillance, n=433 (%)
Age group		
0-9	21/132 (16)	36/433 (8)
10-19	12/132 (9)	4/433 (1)
20-39	62/132 (47)	85/433 (20)
40-59	27/132 (20)	165/433 (38)
60-79	10/132 (8)	135/433 (31)
≥80	0/132 (0)	8/433 (2)
Sex-female	68/132 (52)	264/433 (59)
Province*		
Gauteng	N/A	121/433 (28)
KZN	21/132 (16)	95/433 (22)
Mpumalanga	N/A	11/433 (2)
North West	47/132 (36)	124/433 (29)
Western Cape	64/132 (48)	82/433 (19)
Race		
Black	83/128 (65)	342/422 (81)
Coloured	45/128 (35)	58/422 (14)
Asian/Indian	0/128 (0)	18/422 (4)
Other	0/128 (0)	4/422 (1)
Presentation		
Fever	125/128 (98)	255/422 (60)
Cough	127/128 (99)	417/422 (99)
Shortness of breath	29/128 (23)	338/422 (80)
Chest pain	41/128 (32)	204/422 (48)
Diarrhoea	16/128 (13)	28/422 (7)

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SUMMARY OF LABORATORY-CONFIRMED SARS-CoV-2 CASES

Characteristic	Influenza -like illness (ILI), public sector, n =132 (%)	Pneumonia surveillance, n=433 (%)
Underlying conditions		
Hypertension	9/128 (7)	55/422 (13)
Cardiac	0/128 (0)	8/422 (2)
Respiratory	0/128 (0)	1/422 (<1)
Diabetes	1/128 (1)	94/422 (22)
Cancer	0/128 (0)	1/422 (<1)
Tuberculosis	0/128 (0)	13/422 (3)
HIV-infection	15/128 (11)	88/422 (21)
Other **	5/128 (3)	74/422 (18)
Management		
Oxygen therapy	1/128 (1)	272/422 (64)
ICU admission	N/A	16/422 (4)
Ventilation	N/A	13/422 (3)
Outcome***		
Died	0/128 (0)	51/415 (12)

* 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 51 patients who died, six were in the 20-39 year age group, 17 in the 40-59 year age group, and 28 were ≥60 years; 34/51 (67%) were female. All except four were known to have underlying medical conditions