MONTHLY RESPIRATORY PATHOGENS SURVEILLANCE **REPORT**



SOUTH AFRICA WEEK 26 2021

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HIGHLIGHTS: WEEK 26

- · RSV activity remains below seasonal threshold in both influenza-like illness (ILI) and pneumonia surveillance programmes.
- · Two new cases of influenza, each from Gauteng Province and North West Province were detected in week 26. From 1 January 2021 to date, 50 influenza cases have been detected from Gauteng, Western Cape, North West, Eastern Cape and KwaZulu-Natal sentinel surveillance sites. The influenza season has not started.
- From 2 March 2020 to 4 July 2021, a total of 1 635 COVID-19 cases were detected from all surveillance programmes. An increase in number of positive samples detected has been noted in pneumonia surveillance in this reporting week compared to previous week, whereas in ILI a slight decline in positive cases was reported. Of the 1190 hospitalised COVID-19 cases reported with available data on outcome, 174 (15%) died.

WEEK 26 2021 REPORTING PERIOD 4 JANUARY 2021 TO 4 JULY 2021

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	GP KZ MP NW WC
Type of site	Primary health care clinics	General practitioners	Public hospitals
Case definition	ILI: An acute respiratory illness with a temperature (≥38°C) and cough, & onset ≤10 days	ILI: An acute respiratory illness with a temperature (≥38°C) and cough, & onset ≤10 days	SRI: Acute (symptom onset≤10 days) or chronic (symptom onset >10) lower respiratory tract infection
	Suspected pertussis Any person with an acute cough illness lasting ≥14 days (or cough illness of any duration for children <1 year), without a more likely diagnosis AND one or more of the following signs or symptoms: • paroxysms of coughing, • or inspiratory "whoop", • or post-tussive vomiting • or apnoea in children <1 year; OR Any person in whom a clinician suspects pertussis		Suspected pertussis Any person with an acute cough illness lasting ≥14 days (or cough illness of any duration for children <1 year), without a more likely diagnosis AND one or more of the following signs or symptoms: • paroxysms of coughing, • or inspiratory "whoop", • or post-tussive vomiting • or apnoea in children <1 year; OR Any person in whom a clinician suspects pertussis.
	Suspected SARS-CoV-2 Any person presenting with an acute (≤14 days) respiratory tract infection or other clinical illness compatible with COVID-19 ^β	Suspected SARS-CoV-2 Any person presenting with an acute (≤14 days) respiratory tract infection or other clinical illness compatible with COVID-19 ^β	Any person admitted with a physician-diagnosis of suspected COVID-19 and not meeting SRI case definition.
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.

\$Symptoms include ANY of the following respiratory symptoms: cough, sore throat, shortness of breath, anosmia (loss of sense of smell) or dysgeusia (alteration of the sense of taste), with or without other symptoms (which may include fever, weakness, myalqia, or diarrhoea)

^{*} 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

WEEK 26 2021 REPORTING PERIOD 4 JANUARY 2021 TO 4 JUNE 2021

COMMENTS

Influenza

The influenza 2021 season has not started. Since the first influenza positive case of 2021 was detected in pneumonia surveillance in week 9 of 2021 (week ending on the 07 March 2021), sporadic cases have been reported from week 16 to date. Of the 50 influenza cases detected in surveillance sites in 2021, the majority (40. 80%) were influenza B/Victoria.

ILI programme: In 2021 to date, specimens from 857 patients meeting ILI case definition were received from 4 ILI sites. Influenza was detected in seven (0.8%) patients, of which four (57.1%) were influenza B(Victoria), two (28.6%) were influenza B (lineage inconclusive) and one (14.2%) influenza B (lineage pending results). (Figure 1 and Table 1).

Viral Watch programme: In 2021 to date, specimens were received from 138 patients from Viral Watch sites in five of the 8 provinces participating in surveillance. Influenza was detected in nine (6.5%) patients, of which four (44%) were influenza B (Victoria), four (44%) influenza B (lineage inconclusive) and one (12%) influenza B (pending lineage results). (Figure 5 and Table 4).

Pneumonia surveillance: Since the beginning of 2021, specimens from 2 745 patients with severe respiratory illness (SRI) were received from the 7 sentinel sites. Influenza was detected in 23 (0.8%) patients, of which one (4.3%) was influenza A(H3N2), 21 (91.4%) influenza B (Victoria) and one (4.3%) was influenza B (pending lineage results). (Figure 9 and Table 7).

In addition, influenza was detected in 11 (2%) specimens, all were influenza B (Victoria) from 481 patients who met suspected SARS-CoV-2 case definition but did not meet the pneumonia/ILI surveillance case definitions.

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, 857 specimens were tested and RSV was detected in specimens of 65 (8%) patients.

Viral Watch programme: During the same period, 138 specimens were tested and RSV was detected in specimens of six (4%) patients.

Pneumonia surveillance: Since the beginning of 2021, 2 745 specimens were tested and RSV was detected in specimens of 342 (12%) patients.

In addition, RSV was detected in 20 of 481 (4%) specimens from patients who met suspected SARS-CoV-2 case definition but did not meet the pneumonia/ ILI surveillance case definitions.

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 839 patients and B. pertussis was not detected.

Pneumonia surveillance: During the same period, combined nasopharyngeal and oropharyngeal specimens were tested from 2 672 patients and B. pertussis was not detected.

In addition, B. pertussis was not detected in 479 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 of 2020 (week starting 2 March 2020).

ILI programme: From March 2020 to date, specimens from 2 168 patients were tested and SARS-CoV-2 was detected in 368 (17%) patients.

Viral Watch programme: From March 2020 to date, specimens were tested from 417 patients and SARS-CoV-2 was detected in 69 (17%) patients.

Pneumonia surveillance: From March 2020 to date, specimens from 6 723 patients with severe respiratory illness (SRI) were tested and SARS-CoV-2 was detected in 1 198 (18%) patients.

In addition, SARS-CoV-2 was detected in 100 of 673 (15%) specimens from patients who met suspected SARS-CoV-2 case definition but did not meet the pneumonia/ ILI surveillance case definitions.

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

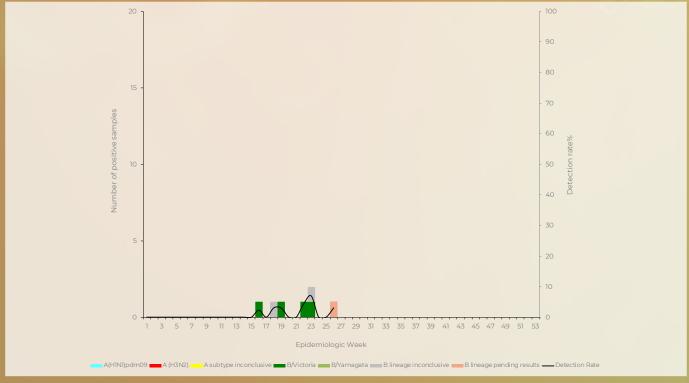


Figure 1. Number of positive samples* by influenza subtype and lineage** and detection rate*** by week

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	B lineage pending results ***	Total samples
Agincourt (MP)	0	0	0	О	0	0	0	120
Eastridge (WC)	0	0	0	О	0	0	0	144
Edendale Gateway (KZ)	0	0	0	2	0	2	0	98
Jouberton (NW)	0	0	0	2	0	0		404
Mitchell's Plain (WC)	0	0	О	О	0	0	0	91
Total:	0	0	0	4	0	2	1	857

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

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

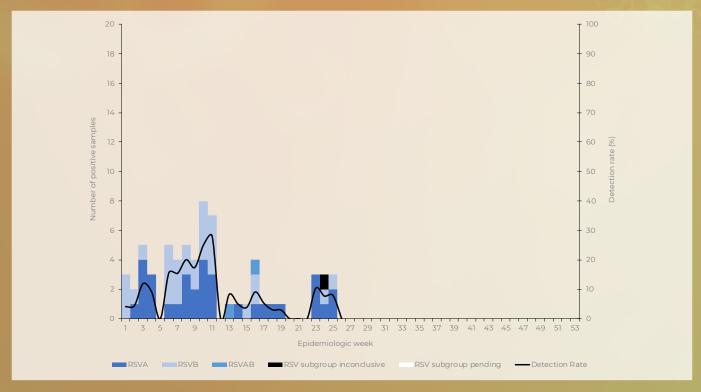


Figure 2. Number of samples testing positive for respiratory syncytial virus** by subgroup and detection rate by week

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)	11	7	(1)	0	0	120
Eastridge (WC)	17	0		0	0	144
Edendale Gateway (KZ)		6	0	0	0	98
Jouberton (NW)	2	16	0		О	404
Mitchell's Plain (WC)	2	0	0	0	0	91
Total	33	29	2	1	0	857

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

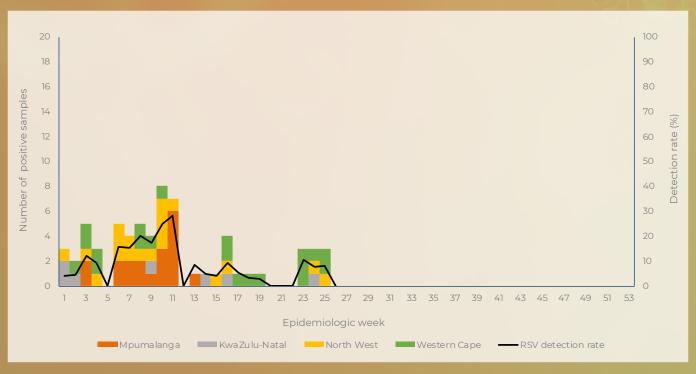


Figure 3. Number of samples testing positive for respiratory syncytial virus* by province and detection rate by week

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

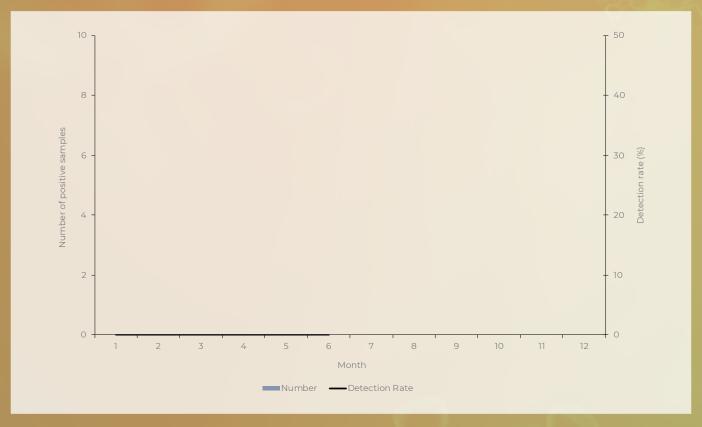


Figure 4. Number of samples testing positive for *B. pertussis* and detection rate by month

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

Clinic (Province)	B. pertussis Positive**	Total samples tested
Agincourt (MP)	0	115
Eastridge (WC)	0	1144
Edendale Gateway (KZ)	0	98
Jouberton (NW)	0	391
Mitchell's Plain (WC)	0	91
Total:	0	839

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

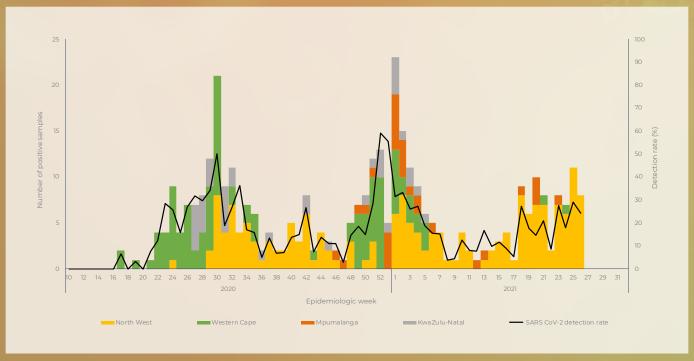


Figure 5. Number of samples testing positive for SARS-CoV-2* by province and detection rate by week

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)	30	150
Eastridge (WC)	47	632
Edendale Gateway (KZ)	39	239
Jouberton (NW)	185	727
Mitchell's Plain (WC)	67	420
Total:	368	2 168

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE VIRAL WATCH

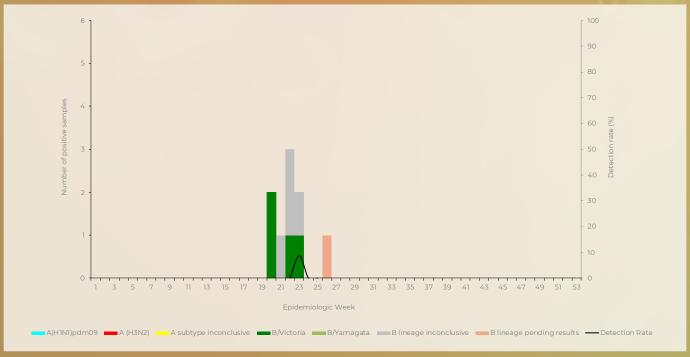


Figure 6. Number of positive samples* by influenza subtype and lineage and detection rate** by week

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	B lineage pending results*	Total samples
Eastern Cape	0	0	0	-1	0	0	0	1
Free State	0	0	0	О	О	0	0	0
Gauteng	0	0	0	3	О	4		121
Limpopo	0	0	0	О	О	0	0	0
Mpumalanga	0	0	0	О	О	0	0	
North West	0	0	0	О	0	0	0	2
Northern Cape	0	0	0	О	0	0	0	0
Western Cape	0	0	0	0	0	0	0	13
Total:	0	0	0	4	0	4	1	138

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE VIRAL WATCH



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

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

Clinic (Province)	RSV positive	Total samples tested
Eastern Cape	0	
Free State	0	0
Gauteng	4	121
Limpopo	0	0
Mpumalanga	0	
North West	0	2
Northern Cape	0	0
Western Cape	2	13
Total:	6	138

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE VIRAL WATCH

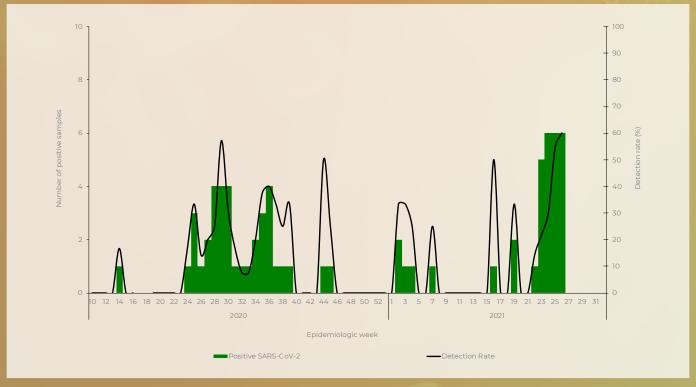


Figure 8. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

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		5
Free State		14
Gauteng	56	281
Limpopo	0	2
Mpumalanga		6
North West	0	2
Northern Cape	0	2
Western Cape	10	105
Total:	69	417

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

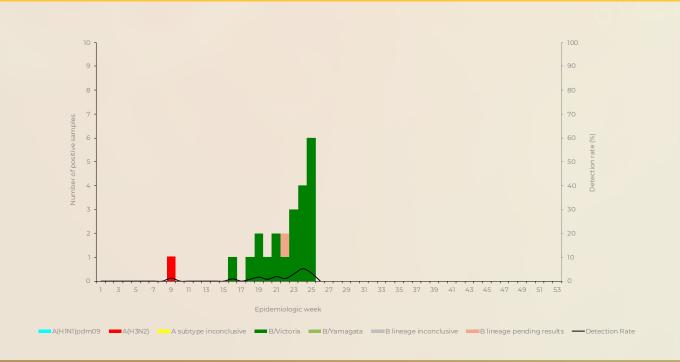


Figure 9. Number of positive samples* by influenza subtype and lineage** and detection rate*** by week

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	B lineage pending results ***	Total samples
Edendale (KZ)	0	0	0	7	0	0	0	370
Helen Joseph-Rahima Moosa (GP)	0	0	0	11	0	0		772
Klerksdorp-Tshepong (NW)	0	0	0	3	0	0	0	440
Mapulaneng-Matikwana (MP)	0	0	0	0	0	0	0	328
Red Cross (WC)	0	0	0	О	0	О	0	399
Mitchell's Plain (WC)	0		0	О	0	0	0	328
Tintswalo (MP)	О	0	0	О	0	0	0	108
Total:	0	1	0	21	0	0	1	2 745

GP: Gauteng; KZ: KwaZulu-Natal; NW: North West; MP: Mpumalanga (Tintswalo started enrolling on the 10th Feb 2021); WC: Western Cape

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

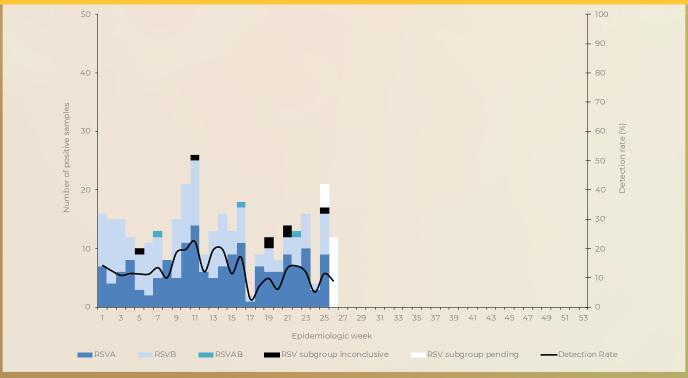


Figure 10. Number of samples testing positive for respiratory syncytial virus* by subgroup and detection rate by week

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)	5	25	0	0	3	370
Helen Joseph-Rahima Moosa (GP)	35	42	0	0	0	772
Klerksdorp-Tshepong (NW)	8	41	0	2		440
Mapulaneng-Matikwana (MP)	20	7		0	0	328
Red Cross (WC)	64	25		4	6	399
Mitchell's Plain (WC)	27	4			6	328
Tintswalo (MP)	10	3	0	0	0	108
Total:	169	147	3	7	16	2 745

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

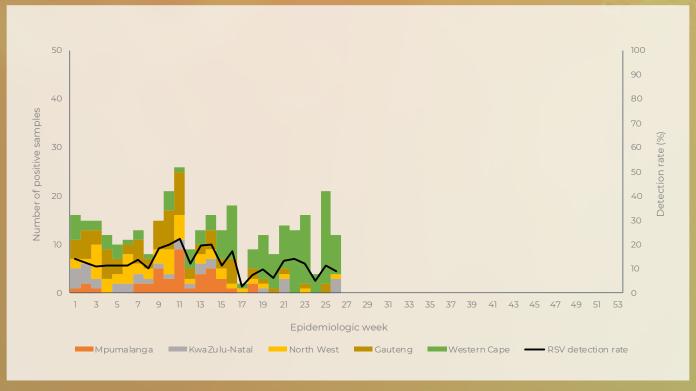


Figure 11. Number of samples testing positive for respiratory syncytial virus* by province and detection rate by week

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

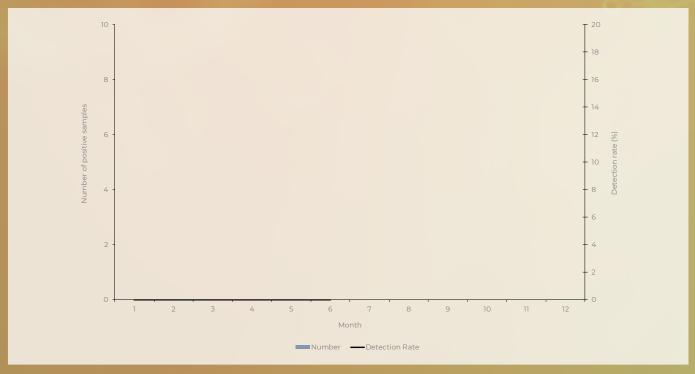


Figure 12. Number of samples testing positive for *B. pertussis* and detection rate by month

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

Hospital (Province)	B. pertussis Positive**	Total samples
Edendale (KZ)	0	368
Helen Joseph-Rahima Moosa (GP)	0	756
Klerksdorp-Tshepong (NW)	0	415
Mapulaneng-Matikwana (MP)	0	317
Red Cross (WC)	0	393
Mitchell's Plain (WC)	0	316
Tintswalo (MP)	0	107
Total:	0	2 672

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

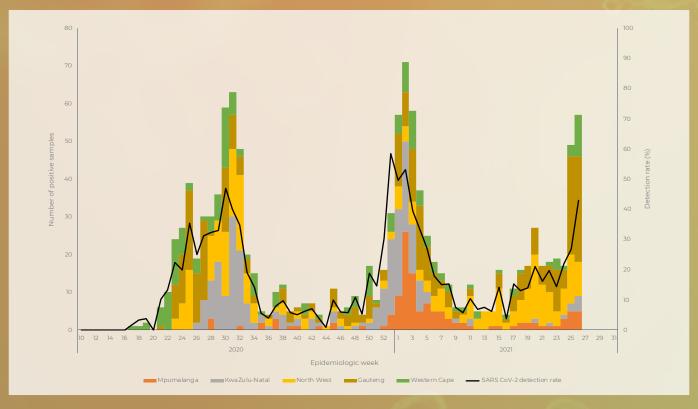


Figure 13. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

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)	249	1191
Helen Joseph-Rahima Moosa (GP)	346	1611
Klerksdorp-Tshepong (NW)	296	1033
Mapulaneng-Matikwana (MP)	106	630
Red Cross (WC)	43	1355
Mitchell's Plain (WC)	139	795
Tintswalo (MP)	19	108
Total:	1 198	6 723

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SUMMARY OF LABORATORY CONFIRMED SARS-COV-2 CASES

Table 12. Characteristics of laboratory-confirmed cases of COVID-19, enrolled in influenza-like illness (ILI) and pneumonia surveillance programmes, South Africa, 2 March 2020- 04 July 2021

Characteristic	Influenza-like illness (ILI), public-sector, n=368 (%)	Pneumonia, n=1 198 (%)
Age group		
0-9	35/368 (10)	76/1198 (6)
10-19	26/368 (7)	8/1198 (1)
20-39	156/368 (42)	202/1198 (17)
40-59	119/368 (32)	448/1198 (37)
60-79	30/368 (8)	423/1198 (35)
≥80	2/368 (1)	41/1198 (3)
Sex-female	211/368 (57)	723/1198 (60)
Province*		
Gauteng	N/A	346/1198 (29)
KwaZulu-Natal	39/368 (11)	249/1198 (21)
Mpumalanga**	30/368 (8)	125/1198 (10)
North West	185/368 (50)	296/1198 (25)
Western Cape	114/368 (31)	182/1198 (15)
Race		
Black	260/368 (70)	986/1190 (83)
Coloured	98/368 (27)	138/1190 (12)
Asian/Indian	1/368 (<1)	35/1190 (3)
Other	9/368 (2)	31/1190 (2)
Presentation		
Fever	357/368 (97)	623/1190 (52)
Cough	365/368 (99)	1147/1190 (96)
Shortness of breath	122/368 (33)	942/1190 (79)
Chest pain	157/368 (43)	482/1190 (41)
Diarrhoea	40/368 (11)	74/1190 (6)

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Characteristic	Influenza-like illness (ILI), public-sector, n=368 (%)	Pneumonia, n=1 198 (%)
Underlying conditions		
Hypertension	12/368 (3)	124/1190 (10)
Cardiac	0/368 (0)	8/1190 (1)
Lung disease	0/368 (0)	2/1190 (<1)
Diabetes	7/368 (2)	248/1190 (21)
Cancer	0/368 (0)	7/1190 (1)
Tuberculosis	2/368 (1)	30/1190 (3)
HIV-infection	57/368 (15)	247/1190 (21)
Other ***	9/368 (2)	84/1190 (7)
Management		
Oxygen therapy	3/368 (1)	859/1190 (72)
ICU admission	N/A	33/1190 (3)
Ventilation	N/A	36/1190 (3)
Outcome***		
Died	0/368 (0)	174/1190 (15)

Note: Children may be over-represented amongst hospitalised patients due to the inclusion of a large paediatric hospital in Cape Town.

Of the 174 patients who died, one was in <20 age group, 15 in the 20-39 year age group, 52 in the 40-59 year age group, and 106 were ≥60 years; 107/174 (61%) were female. All except seven were known to have underlying medical conditions.

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