

WEEKLY RESPIRATORY PATHOGENS SURVEILLANCE REPORT

SOUTH AFRICA WEEK 43 2020

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CUMULATIVE DATA FROM



HIGHLIGHTS: WEEK 43

- 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.

- In recent weeks, there has been an increase in RSV detections in pneumonia surveillance and to a lesser extent in the ILI programme. The RSV detections breached the low threshold in week 39 (week starting 21 September) as determined by Moving Epidemic Method and activity has continued on this level to date.

- Since the last report seven additional patients tested positive for SARS-CoV-2 of which six were detected in the current reporting week (week 43) four in SARI and two in ILI surveillance. To date, 638 cases have been detected from all surveillance programmes. Of the 449 hospitalised COVID-19 cases with available data on outcome, 57 (13%) died.

INFLUENZA, RESPIRATORY SYNCYTIAL VIRUS 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

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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 1241 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 371 patients from Viral Watch sites in 8 provinces. Influenza was detected in 78 patients and five imported cases detected in the first weeks of the year. Of the 73 local cases, all were influenza A(H1N1)pdm09. (Figure 4 and Table 4).

Pneumonia surveillance: Since the beginning of 2020, specimens from 3469 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 7 and Table 6).

Respiratory syncytial virus

In recent weeks, there has been an increase in RSV detections in pneumonia surveillance and to a lesser extent in the ILI programme. The RSV detections breached the low threshold in week 39 (week starting 21 September) as determined by Moving Epidemic Method and activity has continued on this level to date.

ILI programme: In 2020 to date, 1241 specimens were tested and RSV was detected in specimens of 60 (5%) patients.

Viral Watch programme: During the same period, 371 specimens were tested and RSV was detected in one (<1%) patient.

Pneumonia surveillance: Since the beginning of 2020, 3469 specimens were tested and RSV was detected in specimens of 401 (12%) patients.

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 1007 patients were tested and SARS-CoV-2 was detected in 145 (14%) patients.

Viral Watch programme: In 2020 to date, specimens were tested from 267 patients and SARS-CoV-2 was detected in 35 (13%) patients.

Pneumonia surveillance: In 2020 to date, specimens from 2988 patients with severe respiratory illness (SRI) were tested and SARS-CoV-2 was detected in 458 (15%) patients.

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

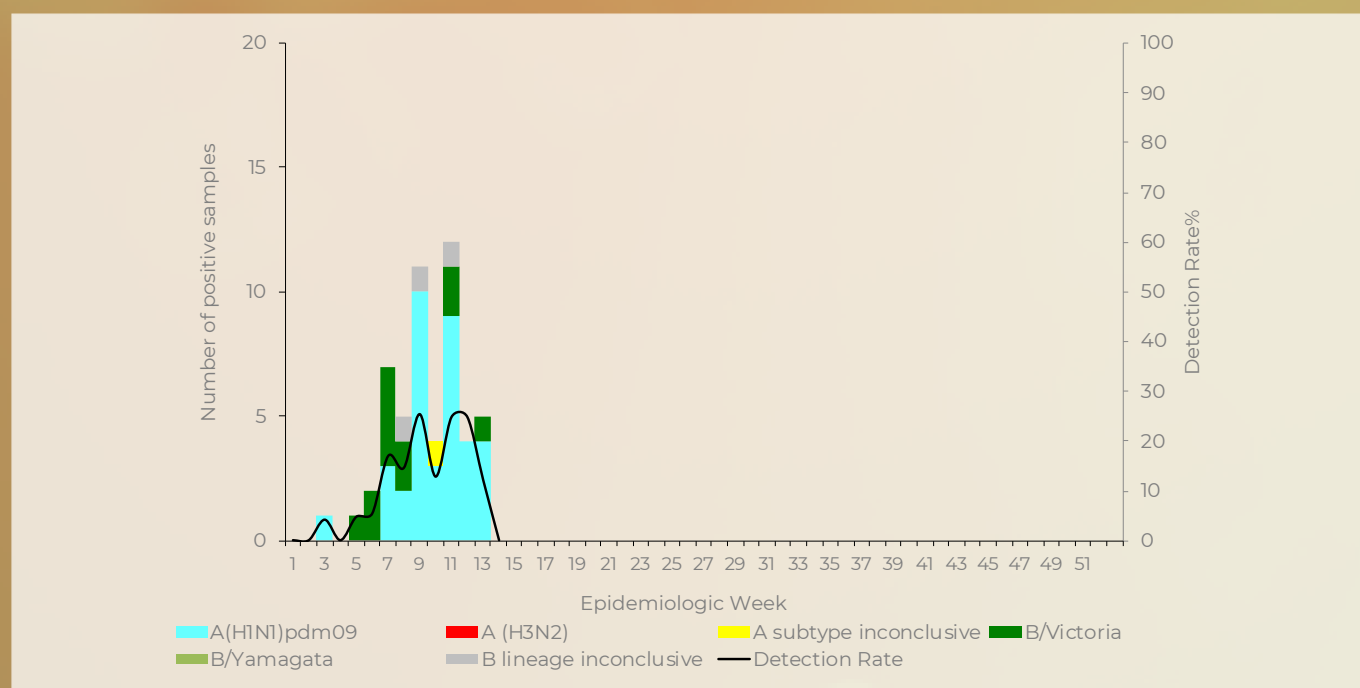


Figure 1. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*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	501
Edendale Gateway (KZ)	0	0	0	0	0	0	151
Jouberton (NW)	0	0	0	0	0	0	293
Mitchell's Plain (WC)	3	0	0	0	0	0	296
Total:	36	0	1	12	0	3	1241

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

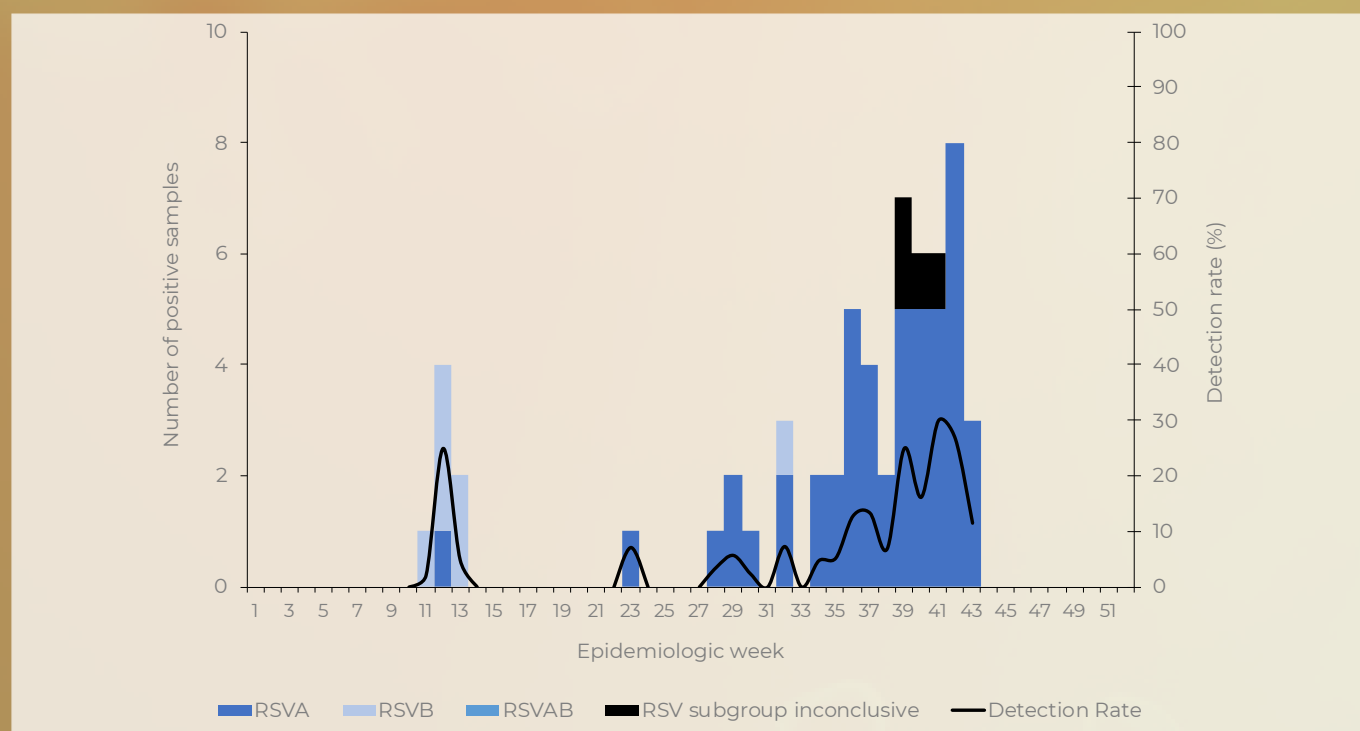


Figure 2. Number of samples testing positive for respiratory syncytial virus by subgroup and detection rate by week

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	501
Edendale Gateway (KZ)	1	5	0	0	151
Jouberton (NW)	1	0	0	2	293
Mitchell's Plain (WC)	14	0	0	0	296
Total	49	7	0	4	1241

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

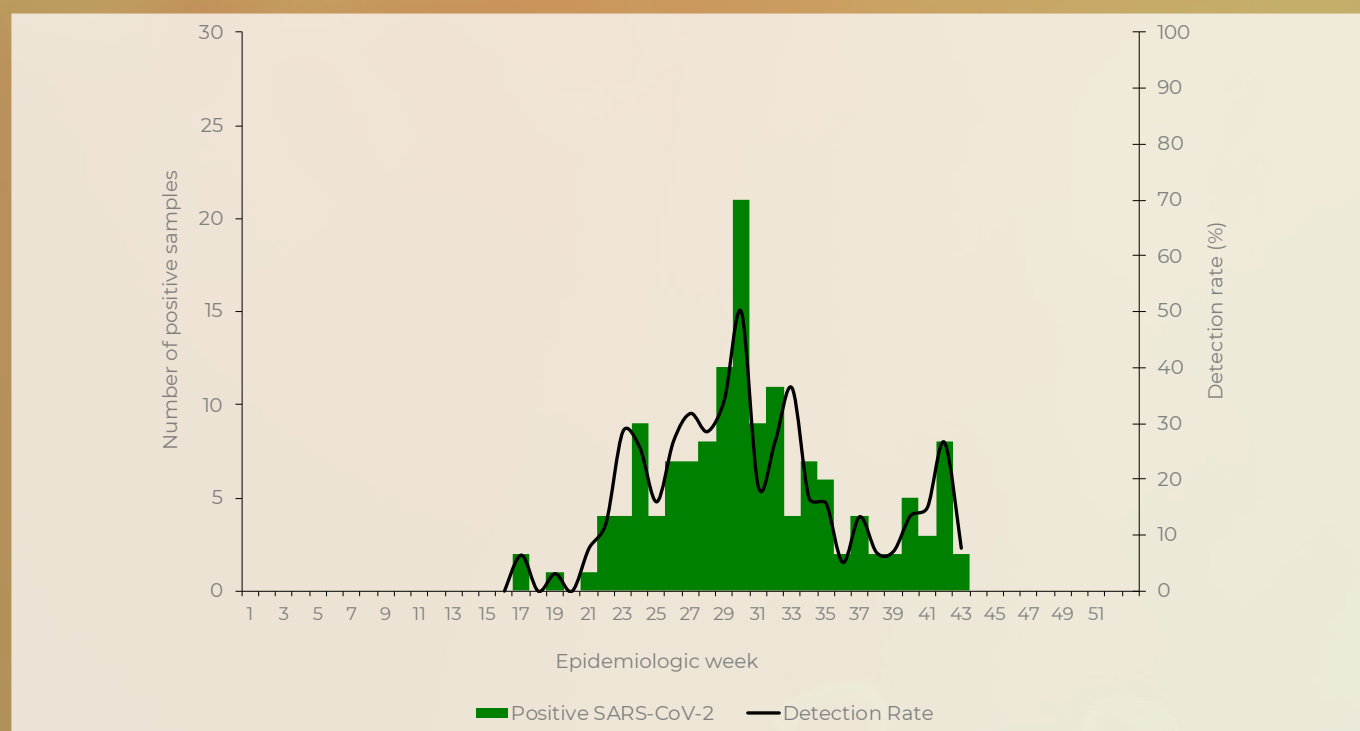


Figure 3. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

*Specimens from patients with influenza-like illnesses at 4 sentinel sites in 3 provinces

Table 3. 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	398
Edendale Gateway (KZ)	23	101
Jouberton (NW)	57	244
Mitchell's Plain (WC)	39	264
Total:	145	1007

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

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE VIRAL WATCH

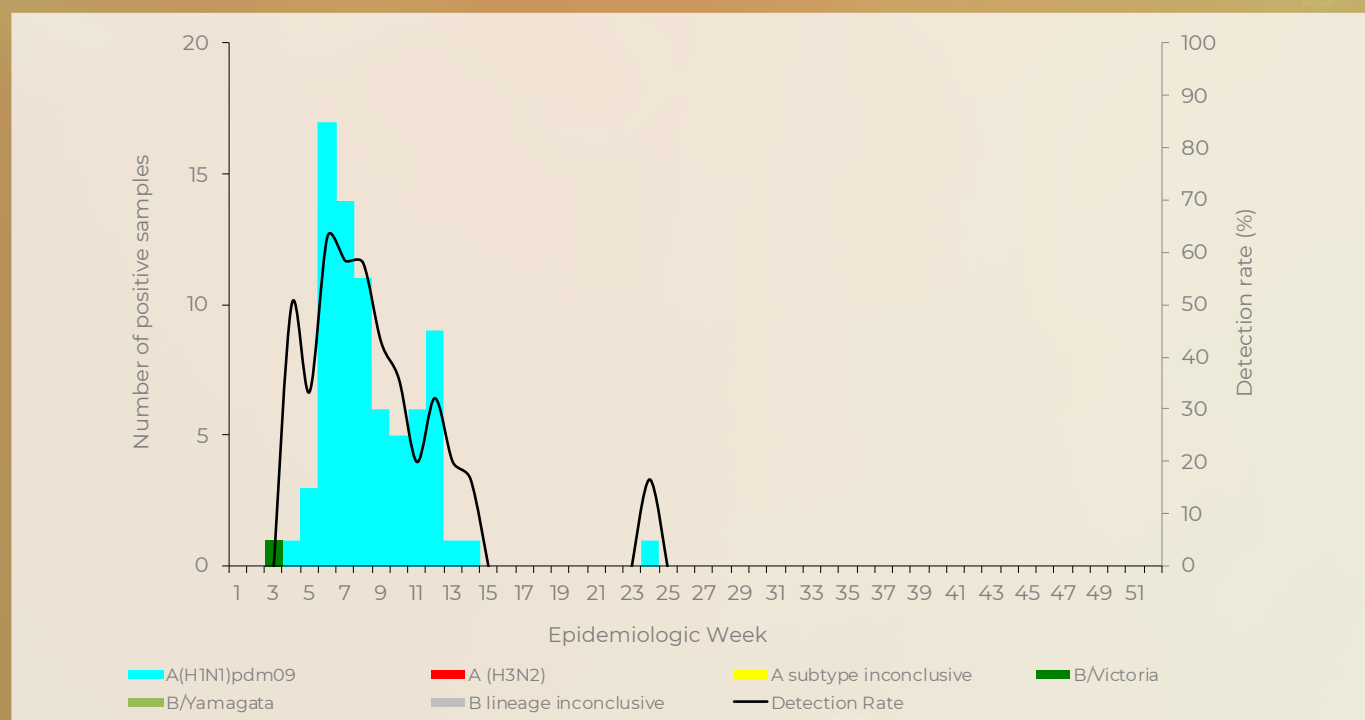


Figure 4. Number of positive samples* by influenza subtype and lineage and detection rate** by week

*Specimens from patients with Influenza-like illnesses at 92 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 4. 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	14
Gauteng	1	0	0	0	0	0	163
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	176
Total:	73	0	0	0	0	0	371

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

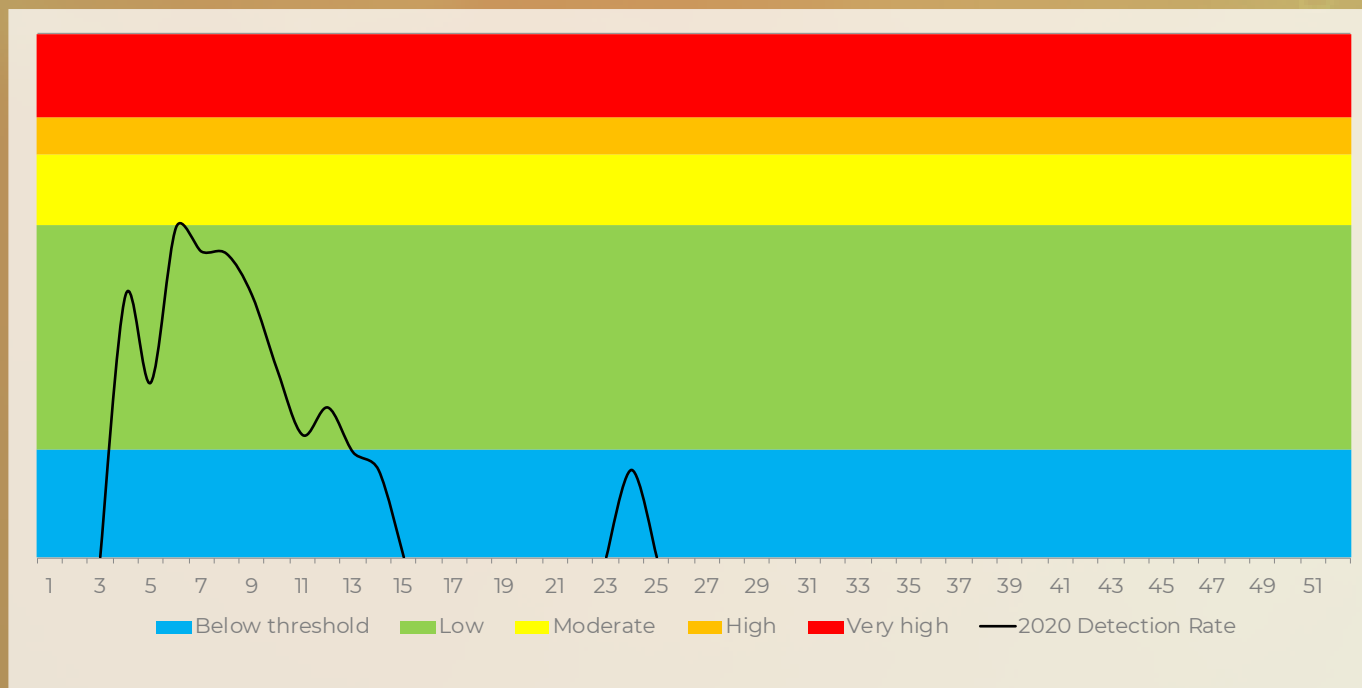


Figure 5. ILI surveillance (Viral Watch) percentage influenza detections and epidemic thresholds*

*Thresholds based on 2010-2019 data

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INFLUENZA-LIKE ILLNESS (ILI) SURVEILLANCE VIRAL WATCH

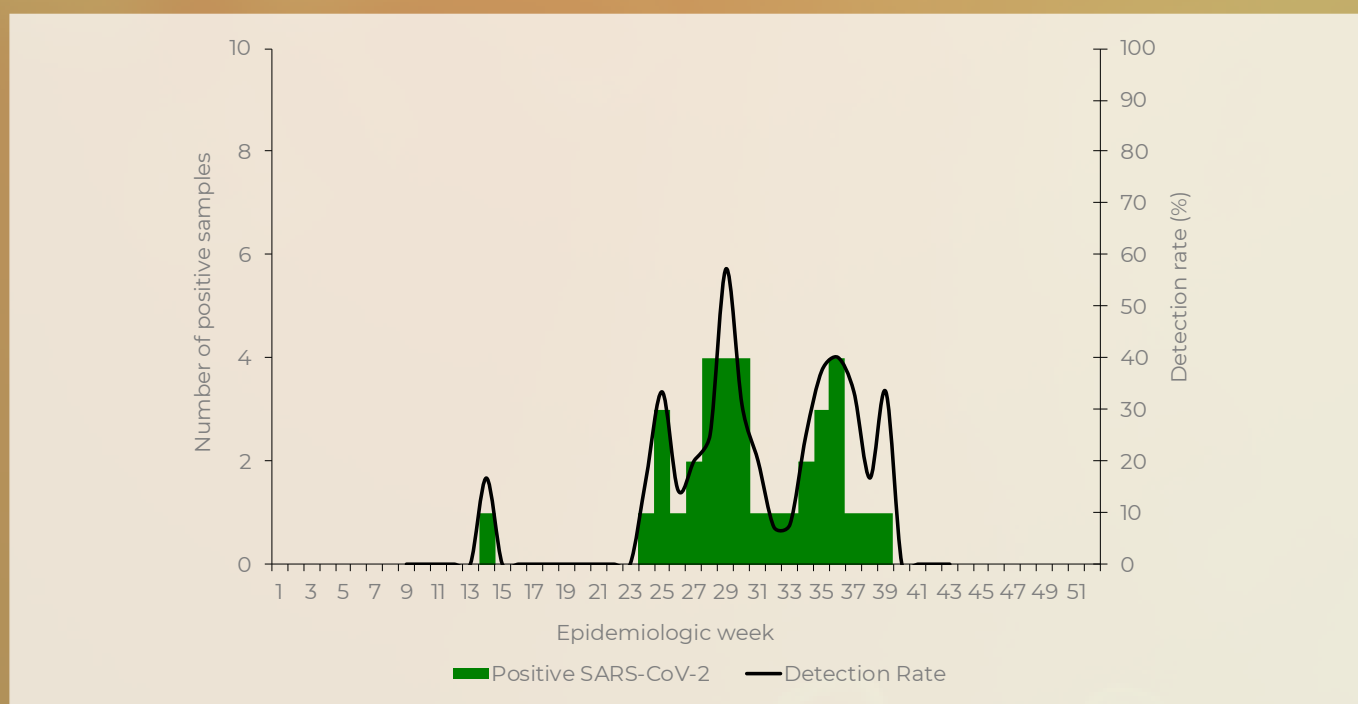


Figure 6. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

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

Table 5. 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	14
Gauteng	25	152
Limpopo	0	2
Mpumalanga	1	5
North West	0	0
Northern Cape	0	2
Western Cape	8	89
Total:	35	267

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

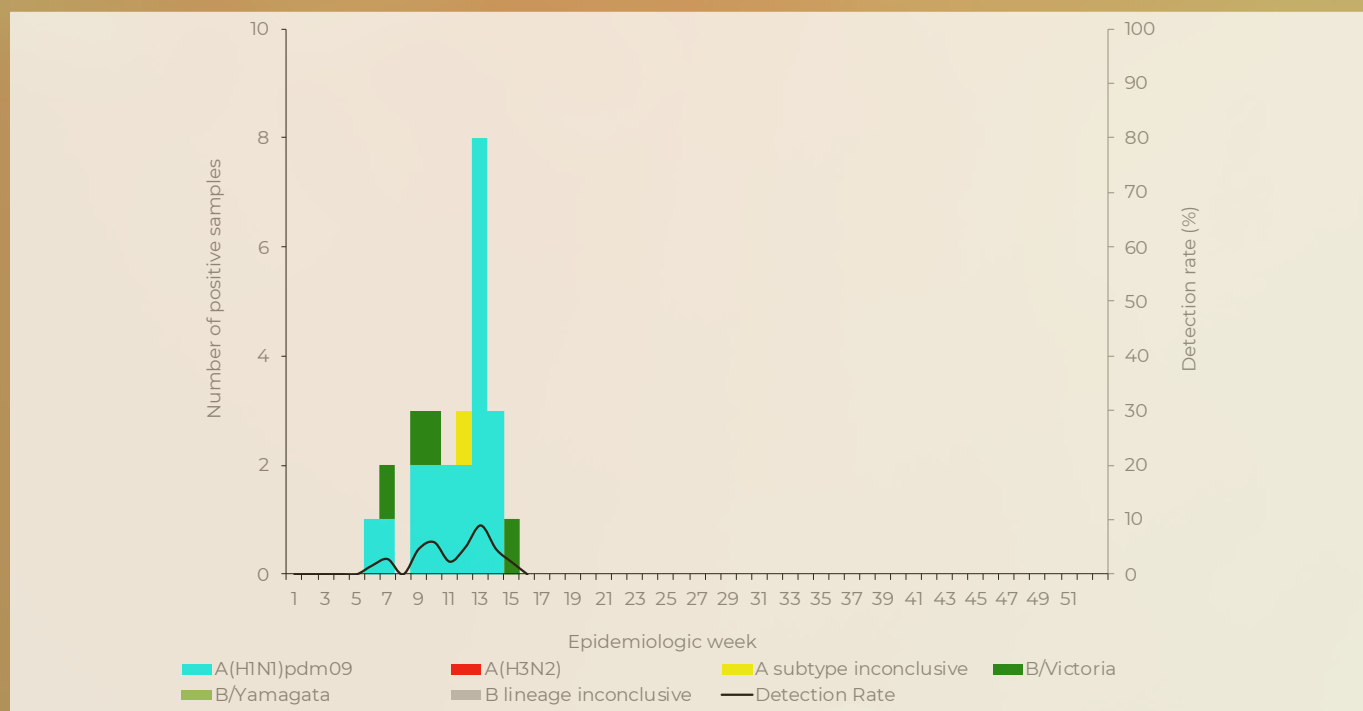


Figure 7. Number of positive samples* by influenza subtype and lineage and detection rate by week**

*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 6. 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	595
Helen Joseph-Rahima Moosa (GP)	0	0	0	0	0	0	752
Klerksdorp-Tshepong (NW)	0	0	0	0	0	0	576
Mapulaneng-Matikwana (MP)	0	0	0	0	0	0	269
Red Cross (WC)	19	0	0	2	0	0	878
Mitchell's Plain (WC)	2	0	1	2	0	0	399
Total:	21	0	1	4	0	0	3469

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

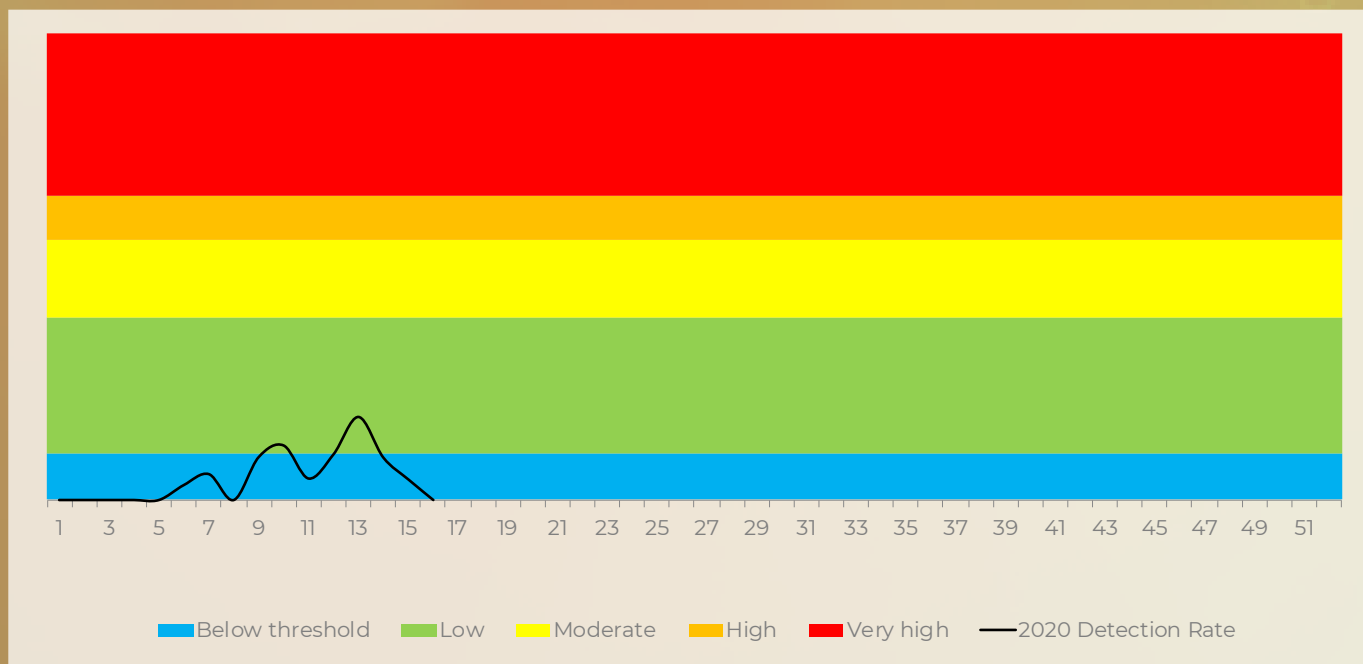


Figure 8. National syndromic surveillance for pneumonia percentage influenza detections and epidemic thresholds*

*Thresholds based on 2010-2019 data

INFLUENZA, RESPIRATORY SYNCYTIAL VIRUS AND SARS-CoV-2 SURVEILLANCE REPORT

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NATIONAL SYNDROMIC SURVEILLANCE FOR PNEUMONIA

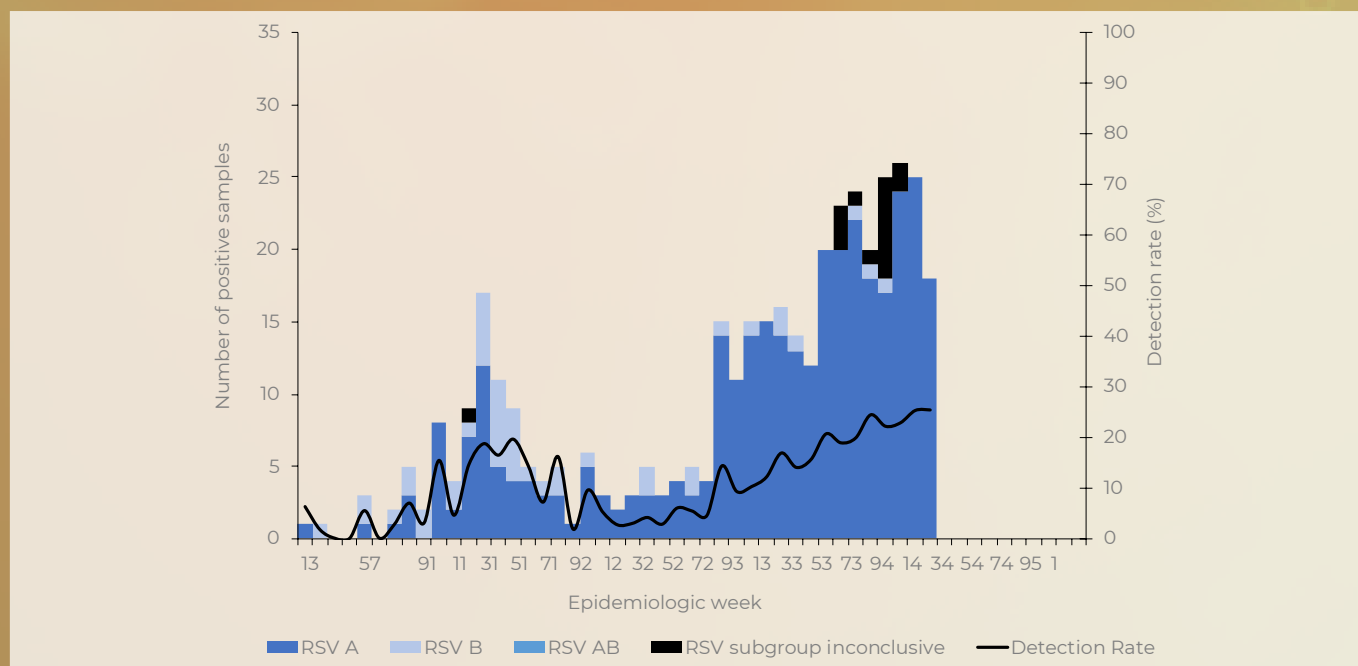


Figure 9. Number of samples testing positive for respiratory syncytial virus by subgroup and detection rate by week

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

Table 7: 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)	4	9	0	1	595
Helen Joseph-Rahima Moosa (GP)	42	10	0	0	752
Klerksdorp-Tshepong (NW)	2	0	0	1	576
Mapulaneng-Matikwana (MP)	0	0	0	0	269
Red Cross (WC)	227	25	0	8	878
Mitchell's Plain (WC)	67	0	0	5	399
Total:	342	44	0	15	3469

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

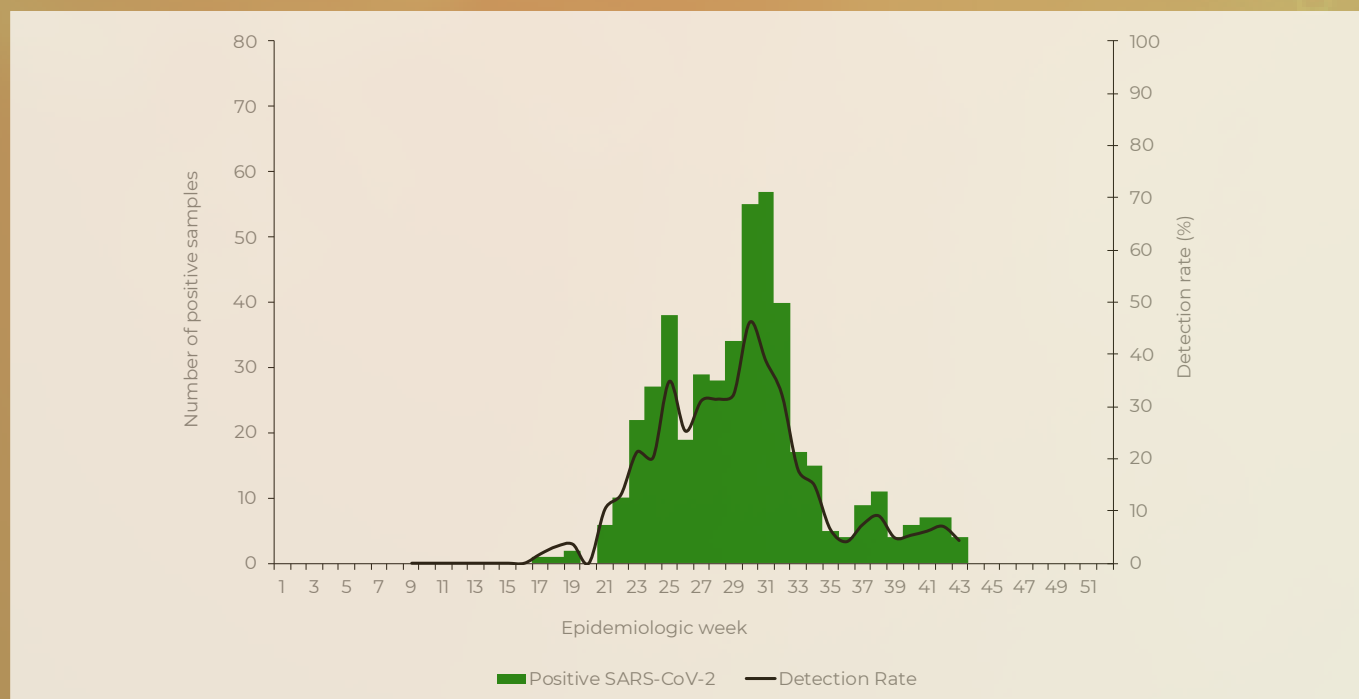


Figure 10. Number of samples testing positive for SARS-CoV-2*, and detection rate by week

*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)	100	520
Helen Joseph-Rahima Moosa (GP)	125	621
Klerksdorp-Tshepong (NW)	130	501
Mapulaneng-Matikwana (MP)	12	220
Red Cross (WC)	30	749
Mitchell's Plain (WC)	61	377
Total:	458	2988

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 8. Characteristics of laboratory-confirmed cases of COVID-19, enrolled in influenza-like illness (ILI) and pneumonia surveillance programmes, South Africa, 2 March - 25 October 2020

Characteristic	Influenza-like illness (ILI), public-sector, n=145 (%)	Pneumonia, n=458 (%)
Age group		
0-9	22/145 (15)	39/458 (9)
10-19	12/145 (8)	4/458 (1)
20-39	68/145 (47)	90/458 (20)
40-59	33/145 (23)	174/458 (38)
60-79	10/145 (7)	143/458 (31)
≥80	0/145 (0)	8/458 (2)
Sex-female	77/145 (53)	276/458 (60)
Province*		
Gauteng	N/A	125/458 (27)
KwaZulu-Natal	25/145 (17)	100/458 (22)
Mpumalanga	N/A	12/458 (3)
North West	56/145 (39)	130/458 (28)
Western Cape	64/145 (44)	91/458 (20)
Race		
Black	96/143 (67)	367/449 (82)
Coloured	47/143 (33)	60/449 (13)
Asian/Indian	0/143 (0)	18/449 (4)
Other	0/143 (0)	4/449 (<1)
Presentation		
Fever	139/143 (97)	271/449 (60)
Cough	142/143 (99)	445/449 (99)
Shortness of breath	35/143 (24)	360/449 (80)
Chest pain	52/143 (36)	215/449 (48)
Diarrhoea	18/143 (13)	30/449 (7)

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Characteristic	Influenza-like illness (ILI), public-sector, n=145 (%)	Pneumonia, n=458 (%)
Underlying conditions		
Hypertension	9/143 (6)	56/449 (12)
Cardiac	0/143 (0)	8/449 (2)
Lung disease	0/143 (0)	1/449 (<1)
Diabetes	2/143 (1)	99/449 (22)
Cancer	0/143 (0)	1/449 (<1)
Tuberculosis	0/143 (0)	14/449 (3)
HIV-infection	19/143 (13)	93/449 (21)
Other **	6/143 (4)	73/449 (16)
Management		
Oxygen therapy	1/143 (<1)	288/449 (64)
ICU admission	N/A	16/449 (4)
Ventilation	N/A	13/449 (3)
Outcome***		
Died	0/143 (0)	57/449 (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 57 patients who died, six were in the 20-39 year age group, 19 in the 40-59 year age group, and 32 were ≥60 years; 37/57 (65%) were female. All except four were known to have underlying medical conditions.