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Respiratory Pathogen Surveillance

Programme Descriptions

Programme	Influenza-like illness (ILI)	Viral Watch	National syndromic surveillance for pneumonia	Private hospital consultations
Start year	2012	1984	2009	2002
Provinces*	KZ NW WC**	EC FS GP LP MP NC NW WC	GP KZ MP NW WC	EC FS GP LP MP NW WC
Type of site	Primary health care clinics	General practitioners	Public hospitals	Private 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	ICD codes J10-J18
Specimens collected	Oropharyngeal & nasopharyngeal swabs	Throat and/or nasal swabs or Nasopharyngeal swabs	Oropharyngeal & nasopharyngeal swabs	Not applicable
Main pathogens tested***	INF RSV BP	INF RSV BP	INF RSV BP	Not applicable

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*

Respiratory Pathogen Surveillance

Reporting period 01/01/2020 to 29/03/2020

Results until end of epidemiologic week 13 (2020)

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) have been made, from Western Cape Province, in all surveillance programmes. Influenza has only occasionally been detected from other provinces. The increase in cases in the Western Cape Province began as a localised increase in case numbers with clusters identified in universities and schools but now appears to be more widespread as indicated by influenza detection in all surveillance programmes.

ILI programme: In 2020 to date, specimens from 371 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.

Viral Watch programme: During the same period, specimens were received from 175 patients from Viral Watch sites in 8 provinces. Influenza was detected in 75 patients (74 from Western Cape and one imported case from Gauteng provinces), of which 73 (97%) were influenza A(H1N1)pdm09, one (1%) influenza A(H3N2) and one (1%) influenza B(Victoria). Seven (9%; 7/75) of the positive cases had history of international travel.

Pneumonia surveillance: Since the beginning of 2020, specimens from 807 patients with severe respiratory illness (SRI) were received from the 6 sentinel sites. Influenza was detected in 22 patients (all from Western Cape province), of which 18 (82%) were influenza A(H1N1)pdm09, one (5%) influenza A subtype inconclusive and three (14%) influenza B(Victoria).

Respiratory syncytial virus

The 2020 RSV season has not yet started. However, sporadic detections of RSV are being made. In the previous 3 years the average start of RSV season ranged between week 7 to week 9, therefore the start of the season is delayed compared to previous years in 2020.

ILI programme: In 2020 to date, 371 specimens were tested and RSV was detected in specimens of seven (2%) patients.

Viral Watch programme: During the same period, 175 specimens were tested and RSV was not detected.

Pneumonia surveillance: Since the beginning of 2020, 807 specimens were tested and RSV was detected in specimens of 52 (6%) patients.

Bordetella pertussis

ILI programme: From 1 January 2020 to date, combined nasopharyngeal and oropharyngeal specimens were tested from 364 patients for *B. pertussis*, one (<1%) tested positive.

Pneumonia surveillance: During the same period, combined nasopharyngeal and oropharyngeal specimens were tested from 802 patients for *B. pertussis*, which was detected in seven (1%) specimens.

In addition, *B. pertussis* was not detected in 33 specimens from patients who met suspected *B. pertussis* case definition but did not meet the pneumonia/ILI surveillance case definition.

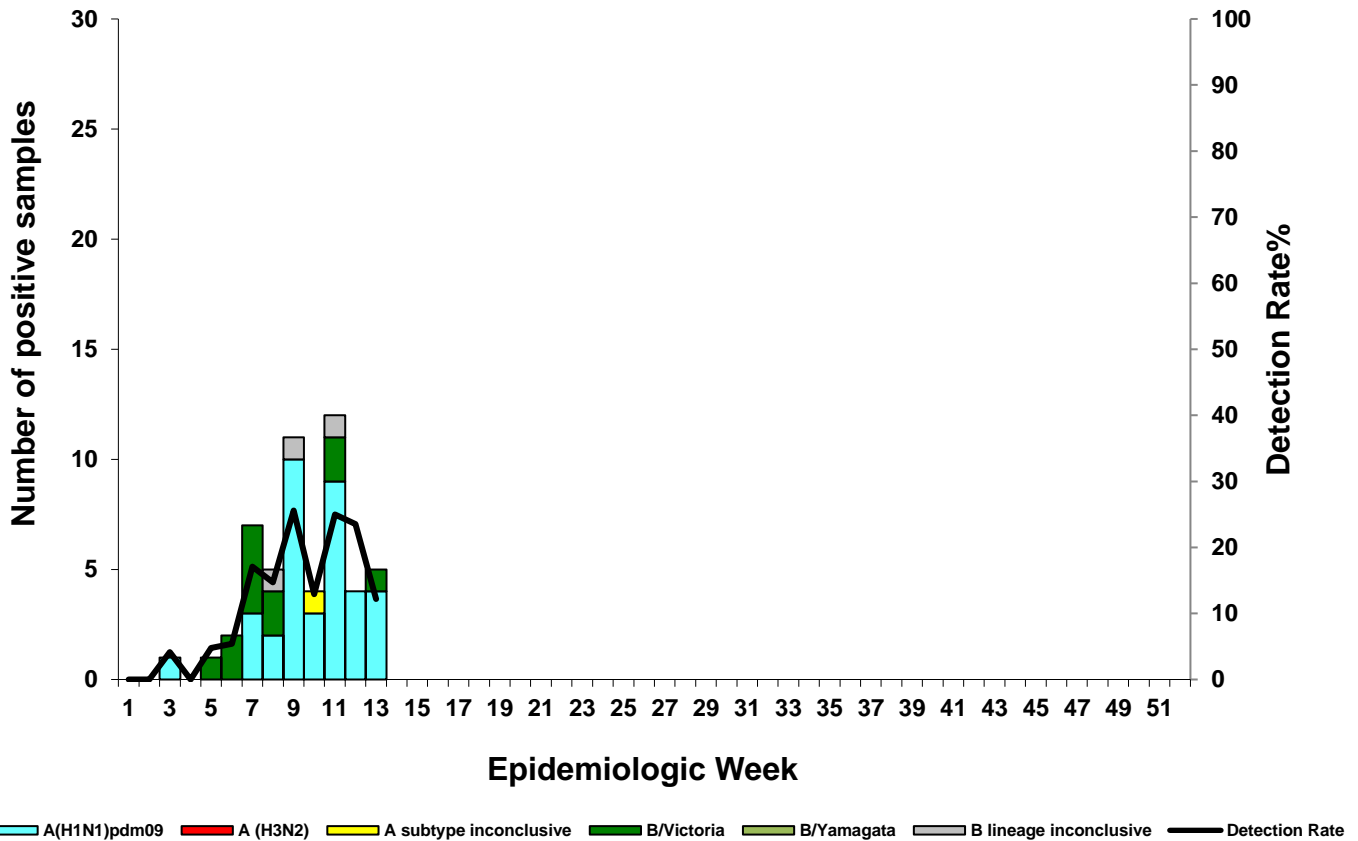
Respiratory Pathogen Surveillance

Reporting period 01/01/2020 to 29/03/2020

Results until end of epidemiologic week 13 (2020)

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	184
Edendale Gateway (KZ)	0	0	0	0	0	0	74
Jouberton (NW)	0	0	0	0	0	0	66
Mitchell's Plain (WC)	3	0	0	0	0	0	47
Total:	36	0	1	12	0	3	371

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

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

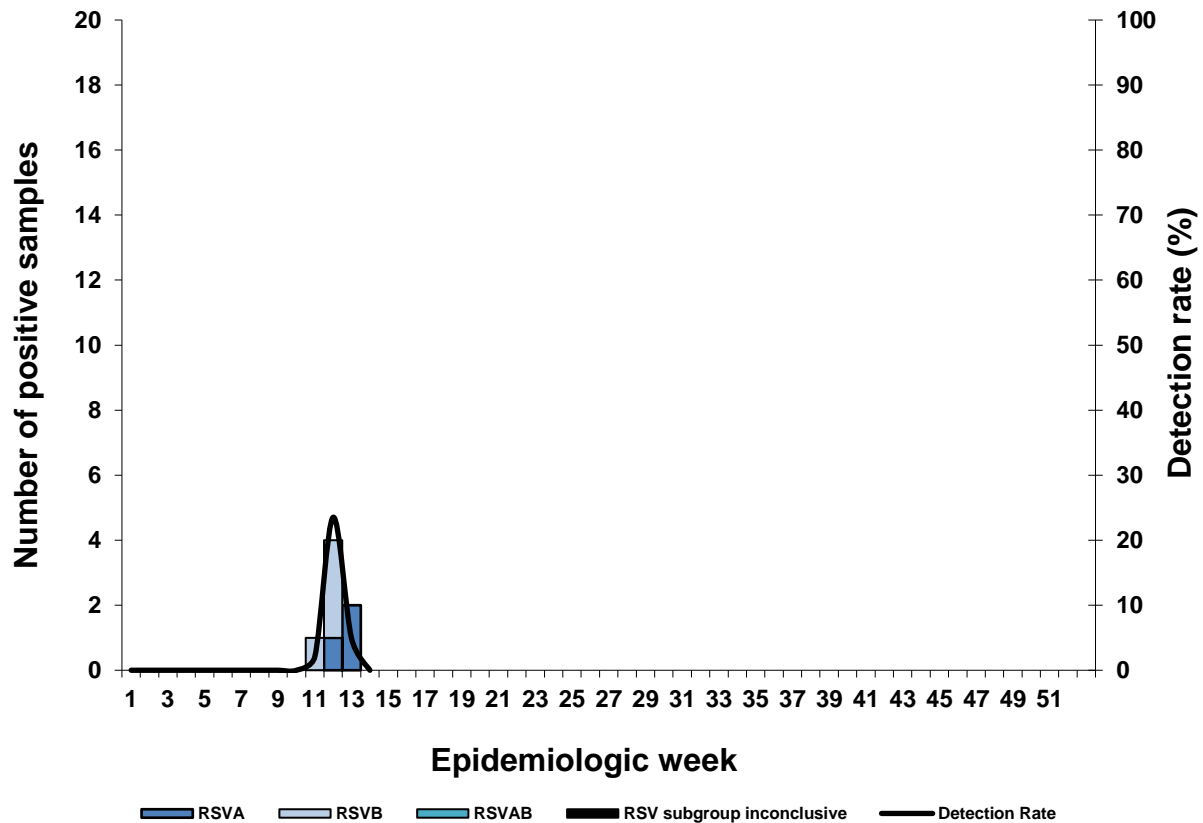
Respiratory Pathogen Surveillance

Reporting period 01/01/2020 to 29/03/2020

Results until end of epidemiologic week 13 (2020)

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)	0	2	0	0	184
Edendale Gateway (KZ)	3	2	0	0	74
Jouberton (NW)	0	0	0	0	66
Mitchell's Plain (WC)	0	0	0	0	47
Total	3	4	0	0	371

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

Reporting period 01/01/2020 to 29/03/2020

Results until end of epidemiologic week 13 (2020)

Influenza-like illness (ILI) surveillance primary health care clinics

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

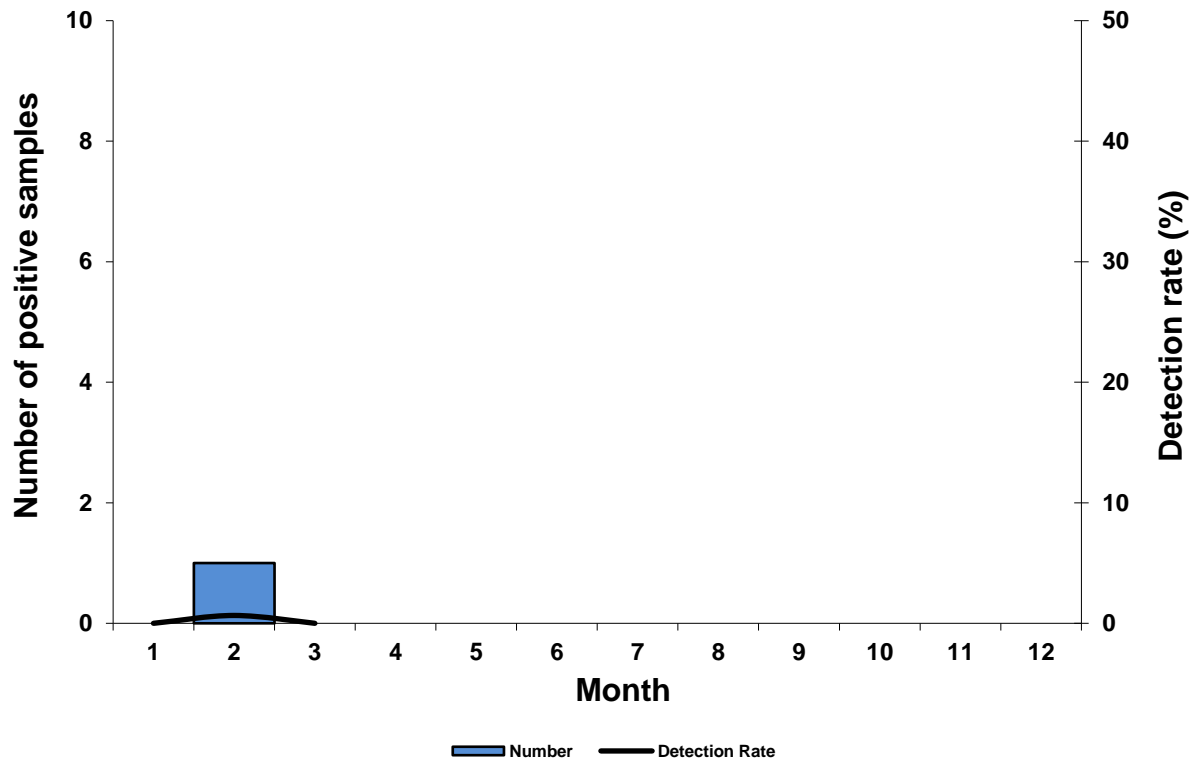


Table 3. Cumulative number of *B. pertussis* identified and total number of samples tested by province**

Clinic (Province)	<i>B. pertussis</i> Positive**	Total samples
Eastridge (WC)	0	184
Edendale Gateway (KZ)	0	74
Jouberton (NW)	1	59
Mitchell's Plain (WC)	0	47
Total:	1	364

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

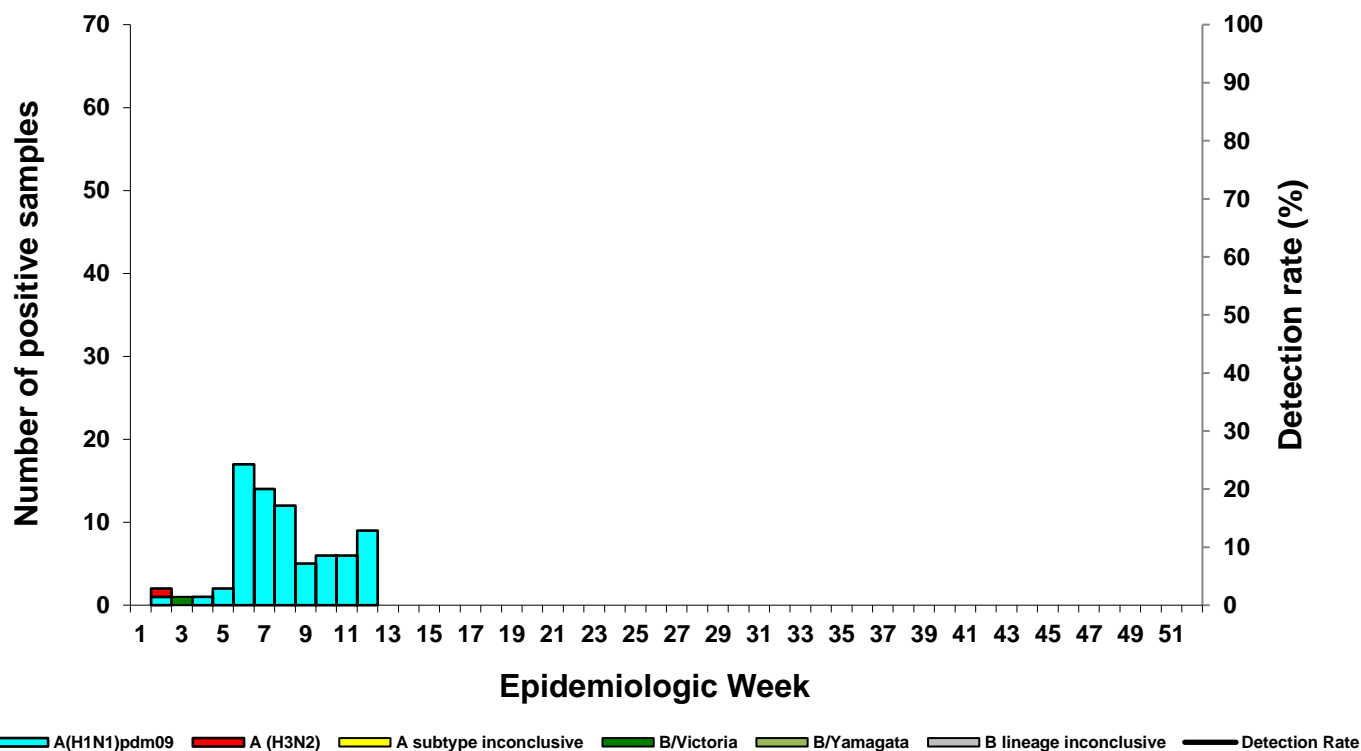
Respiratory Pathogen Surveillance

Reporting period 01/01/2020 to 29/03/2020

Results until end of epidemiologic week 13 (2020)

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 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 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	0
Gauteng	1	0	0	0	0	0	36
Limpopo	0	0	0	0	0	0	1
Mpumalanga	0	0	0	0	0	0	2
North West	0	0	0	0	0	0	0
Northern Cape	0	0	0	0	0	0	4
Western Cape	72	1	0	1	0	0	128
Total:	73	1	0	1	0	0	175

*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.

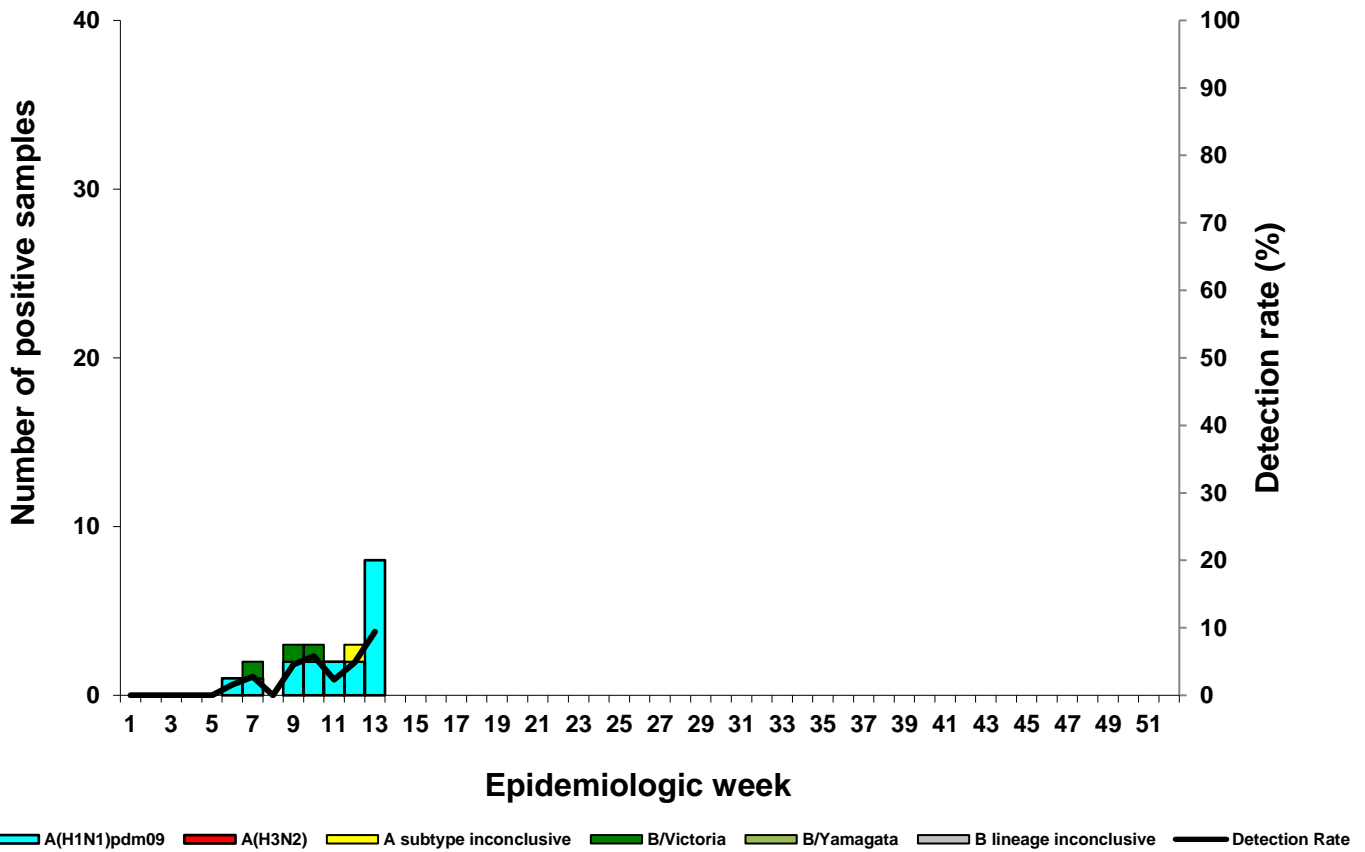
Respiratory Pathogen Surveillance

Reporting period 01/01/2020 to 29/03/2019

Results until end of epidemiologic week 13 (2020)

National syndromic surveillance for pneumonia

Figure 5. 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 5. 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	103
Helen Joseph-Rahima Moosa (GP)	0	0	0	0	0	0	199
Klerksdorp-Tshepong (NW)	0	0	0	0	0	0	108
Mapulaneng-Matikwana (MP)	0	0	0	0	0	0	83
Red Cross (WC)	16	0	0	1	0	0	229
Mitchell's Plain (WC)	2	0	1	2	0	0	85
Total:	18	0	1	3	0	0	807

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

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

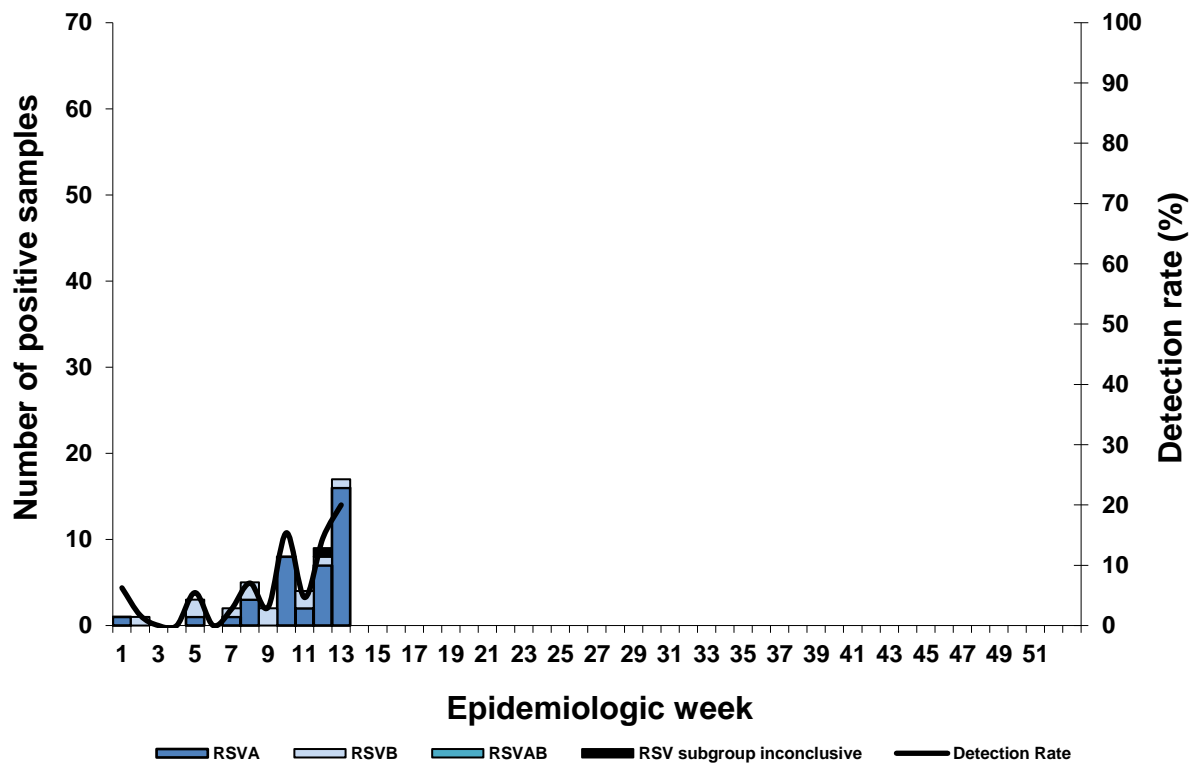
Respiratory Pathogen Surveillance

Reporting period 01/01/2020 to 29/03/2020

Results until end of epidemiologic week 13 (2020)

National syndromic surveillance for pneumonia

Figure 6. 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 6. 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	0	0	1	103
Helen Joseph-Rahima Moosa (GP)	19	4	0	0	199
Klerksdorp-Tshepong (NW)	0	0	0	0	108
Mapulaneng-Matikwana (MP)	0	0	0	0	83
Red Cross (WC)	18	8	0	0	229
Mitchell's Plain (WC)	0	0	0	0	85
Total:	39	12	0	1	807

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

Respiratory Pathogen Surveillance

Reporting period 01/01/2020 to 29/03/2020

Results until end of epidemiologic week 13 (2019)

National syndromic surveillance for pneumonia

Figure 7. Number of samples testing positive for *B. pertussis* and detection rate by month

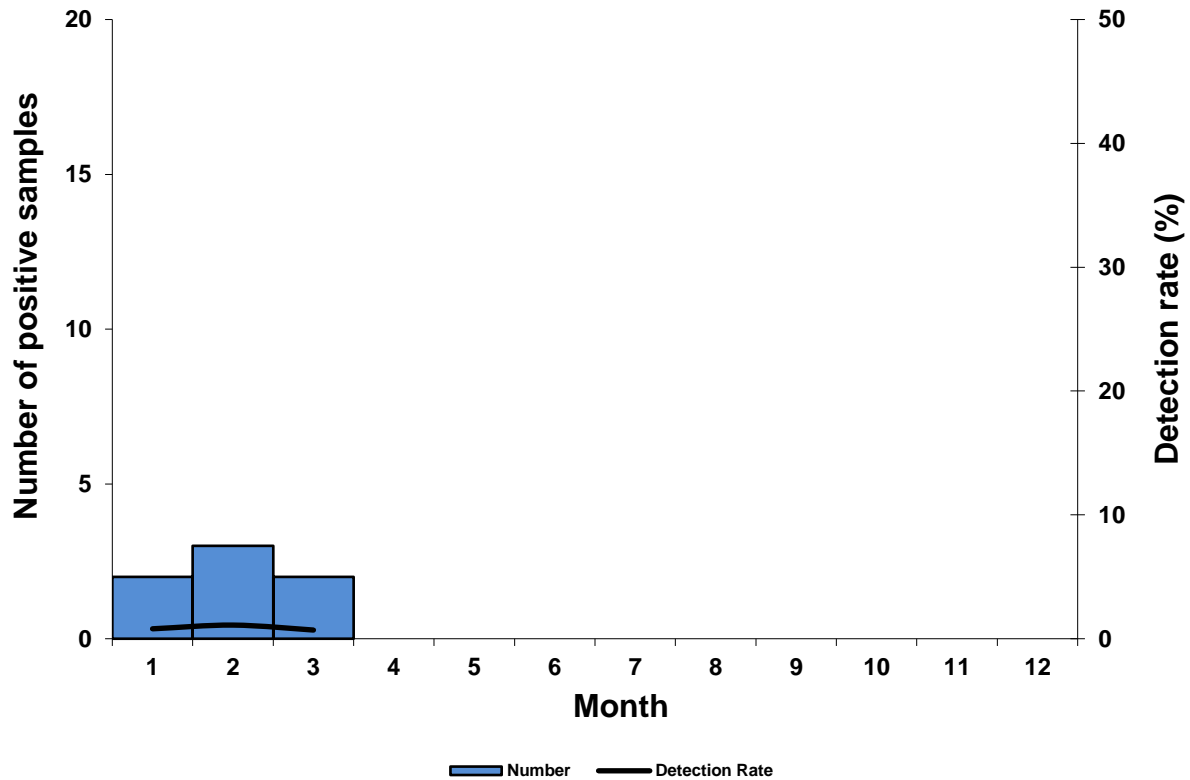


Table 7. Cumulative number of *B. pertussis* identified and total number of samples tested by hospital and province

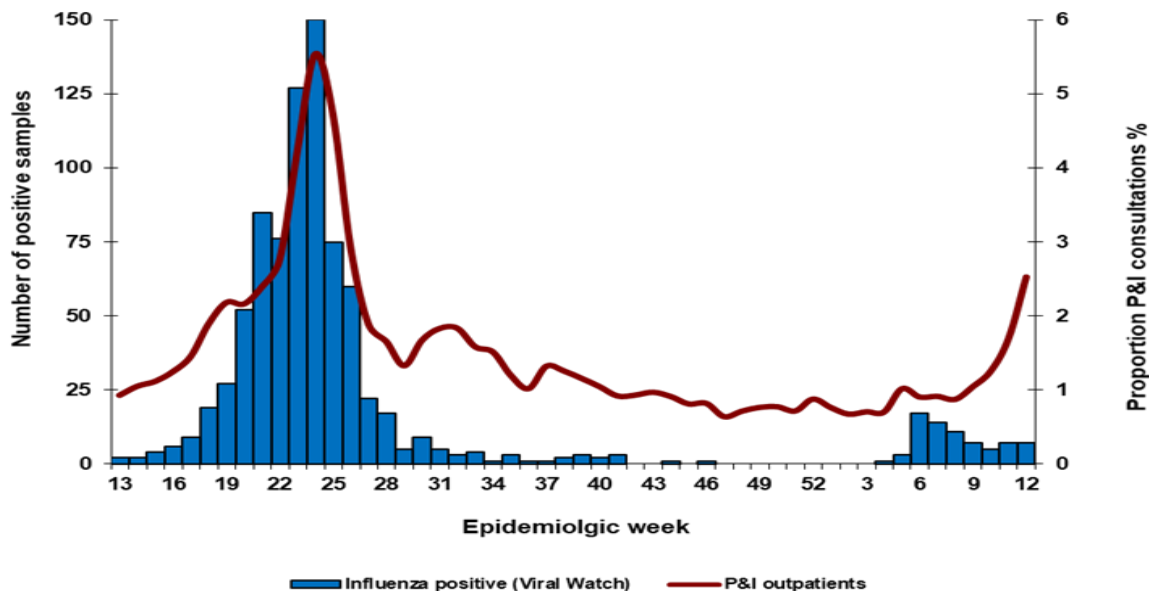
Hospital (Province)	<i>B. pertussis</i> Positive**	Total samples
Edendale (KZ)	1	103
Helen Joseph-Rahima Moosa (GP)	1	199
Klerksdorp-Tshepong (NW)	0	106
Mapulaneng-Matikwana (MP)	0	81
Red Cross (WC)	4	228
Mitchell's Plain (WC)	1	85
Total:	7	802

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

**33 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.

Private hospital consultations

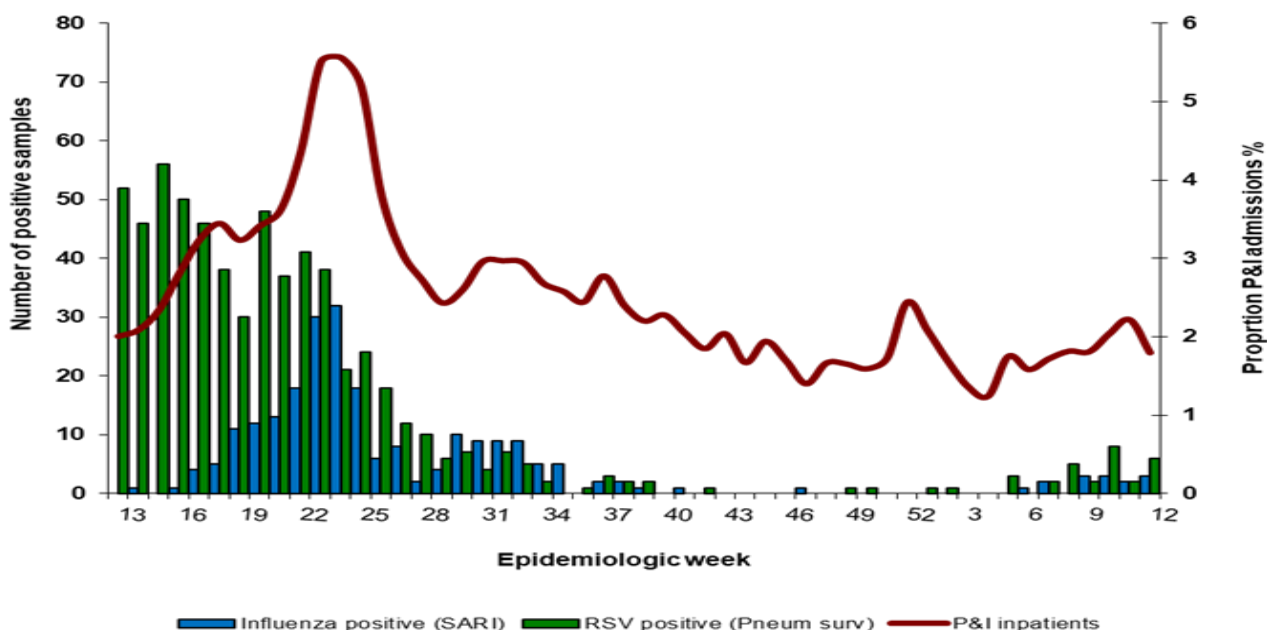
Figure 8. Number of private hospital outpatient consultations* with a diagnosis of pneumonia and influenza (P&I) and viral isolates**



* Hospital outpatient data from weekly reports of consultations to the Netcare hospital group. Discharge diagnosis is according to International Statistical Classification of Diseases and Related Health Problems coding by clinicians and does not represent laboratory confirmation of aetiology

** Influenza positive specimens from the Viral Watch surveillance programme

Figure 9. Number of private hospital admissions* with a discharge diagnosis of pneumonia and influenza (P&I) and viral isolates**



*Hospitalisation admission data from weekly reports of consultations to the Netcare hospital group. Discharge diagnosis is according to International Statistical Classification of diseases and Related Health Problems/ ICD by clinicians and does not represent laboratory confirmation of aetiology ** Influenza positive specimens from the national syndromic surveillance for pneumonia.