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# Respiratory Pathogen Surveillance

## Programme Descriptions

Programme	Influenza-like illness (ILI)	Viral Watch	National syndromic surveillance for pneumonia	Private hospital consultations
<b>Start year</b>	2012	1984	2009	2002
<b>Provinces*</b>	KZ NW WC**	EC FS GP LP MP NC NW WC	GP KZ MP NW WC	EC FS GP LP MP NW WC
<b>Type of site</b>	Primary health care clinics	General practitioners	Public hospitals	Private hospitals
<b>Case definition</b>	An acute respiratory illness with a temperature ( $\geq 38^{\circ}\text{C}$ ) and cough, & onset $\leq 10$ days	An acute respiratory illness with a temperature ( $\geq 38^{\circ}\text{C}$ ) and cough, & onset $\leq 10$ days	Acute or chronic lower respiratory tract infection	ICD codes J10-J18
<b>Specimens collected</b>	Oropharyngeal & nasopharyngeal swabs	Throat and/or nasal swabs or Nasopharyngeal swabs	Oropharyngeal & nasopharyngeal swabs	Not applicable
<b>Main pathogens tested***</b>	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 01/01/2019 to 31/12/2019

Results until end of epidemiologic week 52 (2019)

## Comments:

### Influenza

The 2019 season started in week 16 (week ending 21 April) when influenza detection in the Viral Watch programme rose above the seasonal threshold, as determined by the Moving Epidemic Method. The season ended in week 33 (week ending 18 August) after which transmission dropped below seasonal threshold levels.

ILI programme: In 2019 to date, specimens from 1723 patients were received from 4 ILI sites. Influenza was detected in 152 specimens, 23 (15%) were identified as influenza A(H1N1)pdm09, 126 (83%) as influenza A(H3N2) and three (2%) A subtype inconclusive.

Viral Watch programme: During the same period, specimens were received from 1377 patients from Viral Watch sites in 8 provinces. Influenza was detected in 782 patients, of which 47 (6%) were influenza A(H1N1)pdm09, 719 (92%) influenza A(H3N2), 15 (2%) A subtype inconclusive and one (<1%) influenza B(Victoria). In addition there were three patients with dual infection: Two patients tested positive for influenza A(H1N1)pdm09 and A(H3N2) in week 25 and one dual positive for influenza A(H3N2) and influenza B(Yamagata) in week 27.

Pneumonia surveillance: Since the beginning of 2019, specimens from 4399 patients with severe respiratory illness (SRI) were received from the 6 sentinel sites. Influenza was detected in 221 patients, of which 15 (7%) were influenza A(H1N1)pdm09, 196 (89%) influenza A(H3N2), seven (3%) A subtype inconclusive, two (1%) influenza B(Victoria) and two (1%) influenza B(Yamagata). This includes one dual positive patient for influenza A(H1N1)pdm09 and A(H3N2) in week 21.

### Respiratory syncytial virus

The 2019 RSV season which started in week 8 (week starting 18 February) when RSV detections in pneumonia surveillance rose above the seasonal threshold as determined by the Moving Epidemic Method ended in week 25 (week starting 17 June). However, sporadic detections of RSV are still being made.

In 2019 to date, 1723 specimens were tested and RSV was detected in specimens of 145 (8%) patients in ILI programme.

Pneumonia surveillance: 4399 specimens were tested and RSV was detected in specimens of 778 (18%) patients.

Viral Watch programme: 1377 specimens were tested and RSV was detected in specimens of 30 (2%) patients.

### *Bordetella pertussis*

ILI programme: From 1 January 2019 to date, combined nasopharyngeal and oropharyngeal specimens were tested from 1721 patients for *B. pertussis*, nine (0.5%) tested positive.

Pneumonia surveillance: During the same period, combined nasopharyngeal and oropharyngeal specimens were tested from 4383 patients for *B. pertussis*, which was detected in 33 (0.8%) specimens.

In addition, *B. pertussis* was detected in two of 190 (1.1 %) specimens from patients who did not meet the pneumonia/ILI surveillance case definition, but who did meet the suspected pertussis case definition.

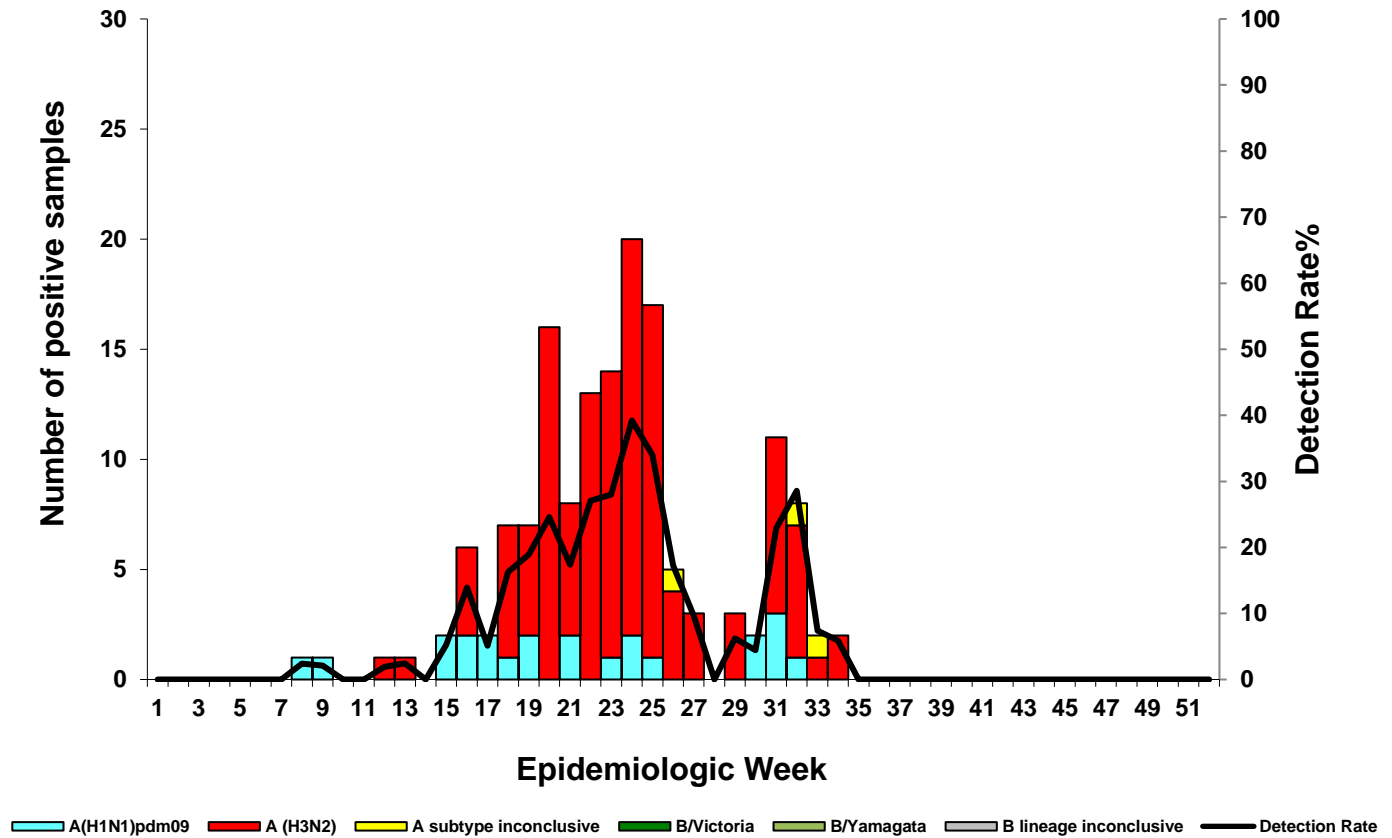
# Respiratory Pathogen Surveillance

Reporting period 01/01/2019 to 31/12/2019

Results until end of epidemiologic week 52 (2019)

## 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)	16	55	0	0	0	0	921
Edendale Gateway (KZ)	3	22	3	0	0	0	133
Jouberton (NW)	2	44	0	0	0	0	544
Mitchell's Plain (WC)	2	5	0	0	0	0	125
<b>Total:</b>	<b>23</b>	<b>126</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1723</b>

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

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

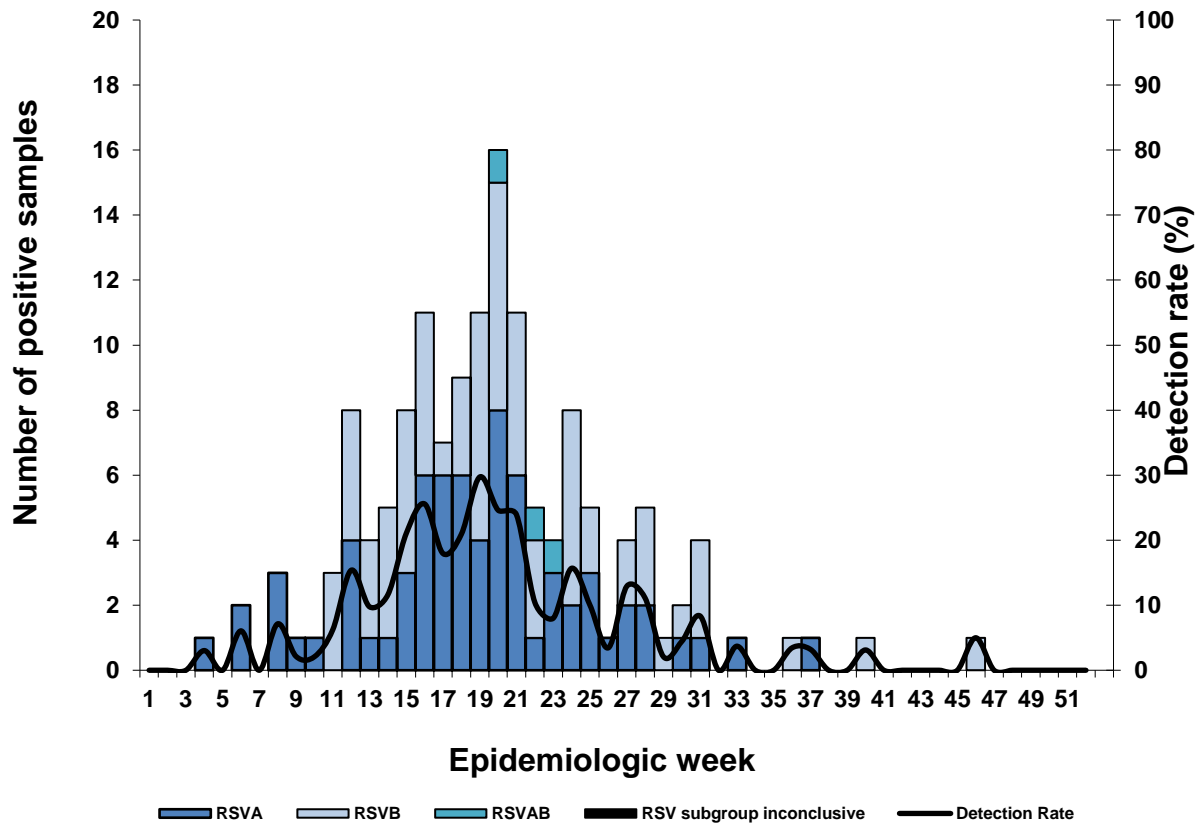
# Respiratory Pathogen Surveillance

Reporting period 01/01/2019 to 31/12/2019

Results until end of epidemiologic week 52 (2019)

## 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)	28	65	2	0	921
Edendale Gateway (KZ)	5	1	0	0	133
Jouberton (NW)	38	0	1	0	544
Mitchell's Plain (WC)	0	5	0	0	125
<b>Total</b>	<b>71</b>	<b>71</b>	<b>3</b>	<b>0</b>	<b>1723</b>

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

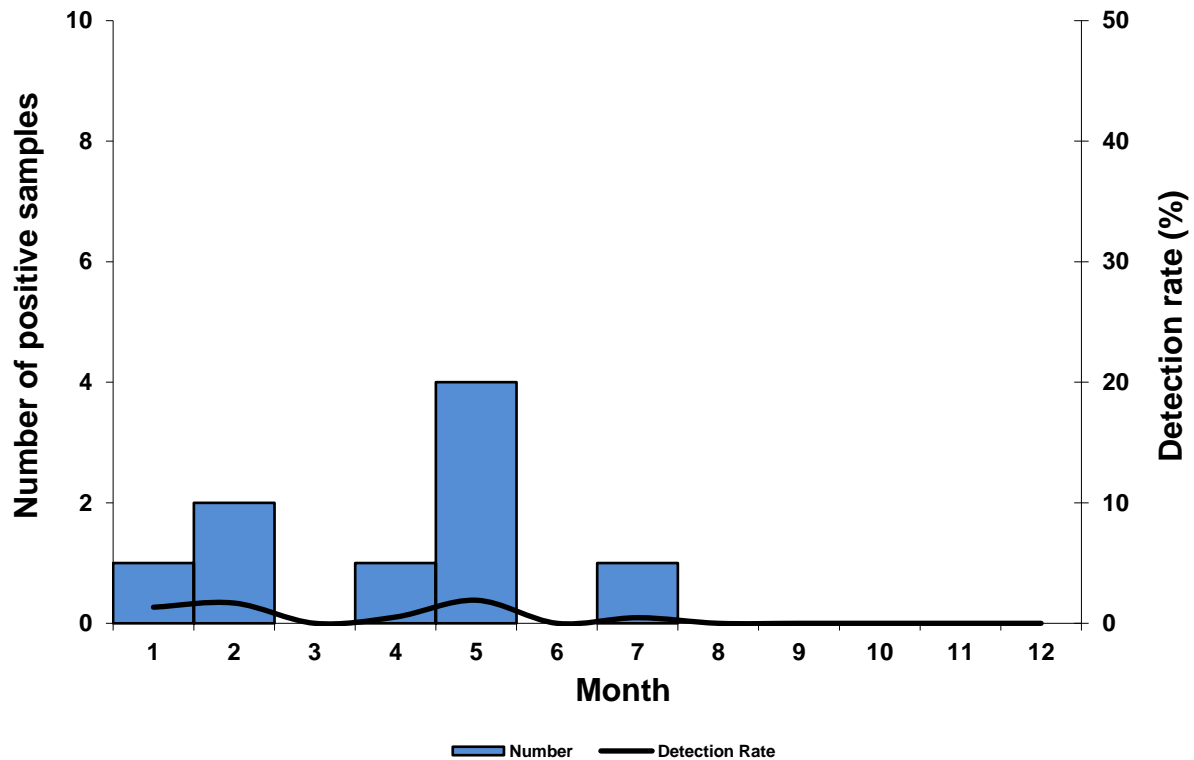
# Respiratory Pathogen Surveillance

Reporting period 01/01/2019 to 31/12/2019

Results until end of epidemiologic week 52 (2019)

## 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**

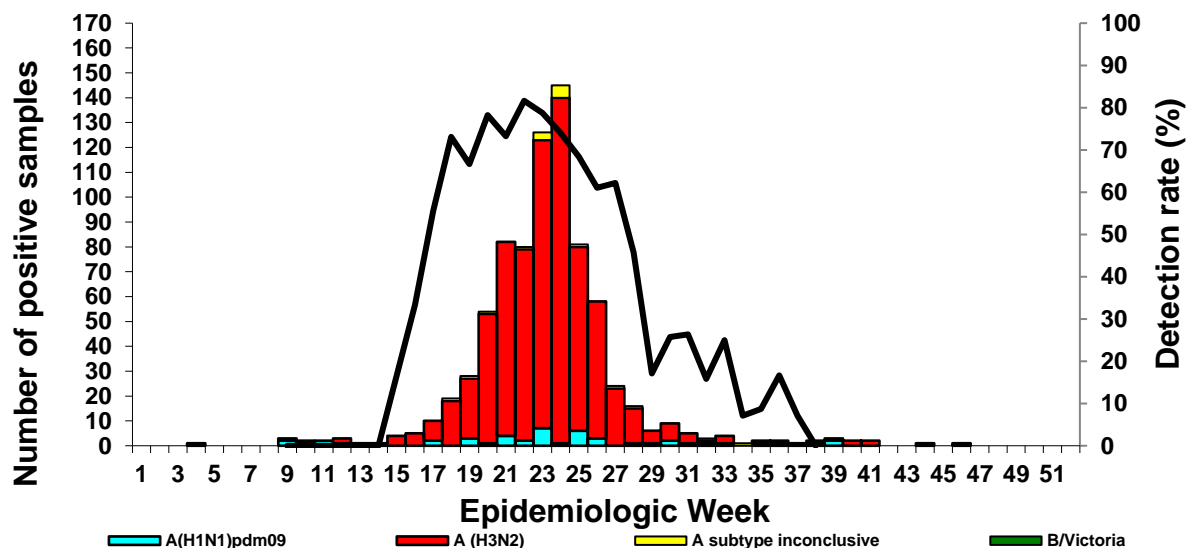
Clinic (Province)	<i>B. pertussis</i> Positive**	Total samples
Eastridge (WC)	4	920
Edendale Gateway (KZ)	2	133
Jouberton (NW)	3	543
Mitchell's Plain (WC)	0	125
<b>Total:</b>	<b>9</b>	<b>1721</b>

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

\*\*26 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

## 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

Dual positives are included in the graph cumulatively

**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	2	48	3	0	0	0	68
Free State	2	53	0	0	0	0	80
Gauteng	15	378	8	0	1	0	707
Limpopo	2	31	0	0	0	0	49
Mpumalanga	5	29	1	0	0	0	79
North West	0	4	0	0	0	0	8
Northern Cape	0	0	0	0	0	0	3
Western Cape	24	179	3	1	0	0	383
<b>Total:</b>	<b>50</b>	<b>722</b>	<b>15</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1377</b>

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

Included in the table are 3 dual specimens positive for influenza A(H1N1)pdm09 & influenza A(H3N2) in week 25 and one dual positive for influenza A(H3N2) & influenza B(Yamagata) in week27

From 01 January 2019 to date, 39 patients were tested for influenza at the time of entry into South Africa following travel abroad and influenza was detected in five patients, of which one influenza A(H1N1)pdm09, two influenza A(H3N2), one influenza A (subtype inconclusive) and one influenza B (lineage inconclusive).

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

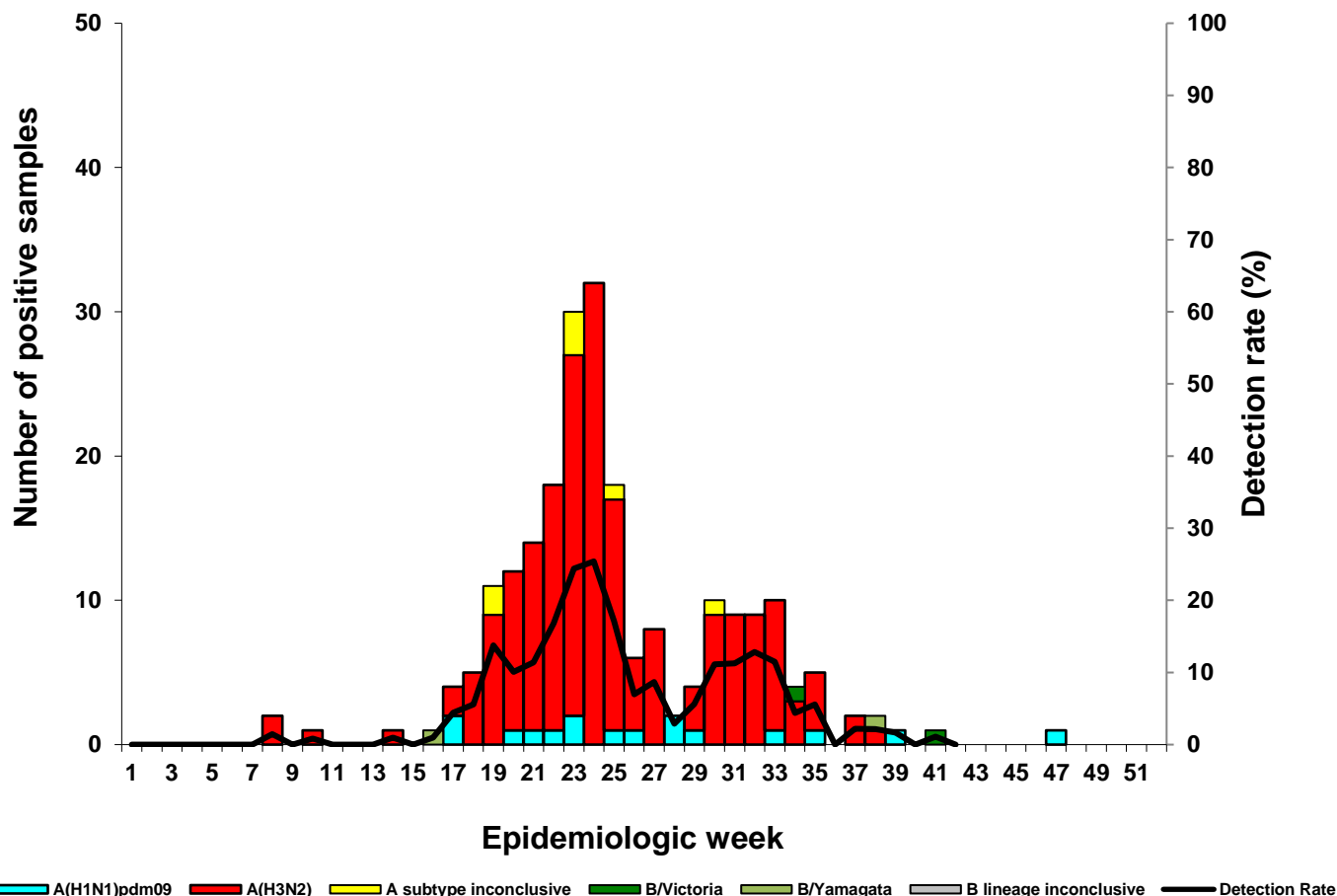
# Respiratory Pathogen Surveillance

Reporting period 01/01/2019 to 31/12/2019

Results until end of epidemiologic week 52 (2019)

## 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

Dual positives are included in the graph cumulatively

**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)	7	32	2	0	0	0	693
Helen Joseph-Rahima Moosa (GP)	0	38	2	2	0	0	1055
Klerksdorp-Tshepong (NW)	1	50	0	0	0	0	678
Mapulaneng-Matikwana (MP)	2	29	0	0	1	0	435
Red Cross (WC)	4	32	1	0	1	0	1123
Mitchell's Plain (WC)	2	15	2	0	0	0	415
<b>Total:</b>	16	196	7	2	2	0	4399

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

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

From the influenza positive specimens reflected on the above table we detected one dual positive specimen for influenza A(H1N1)pdm09 & influenza A(H3N2) in week21



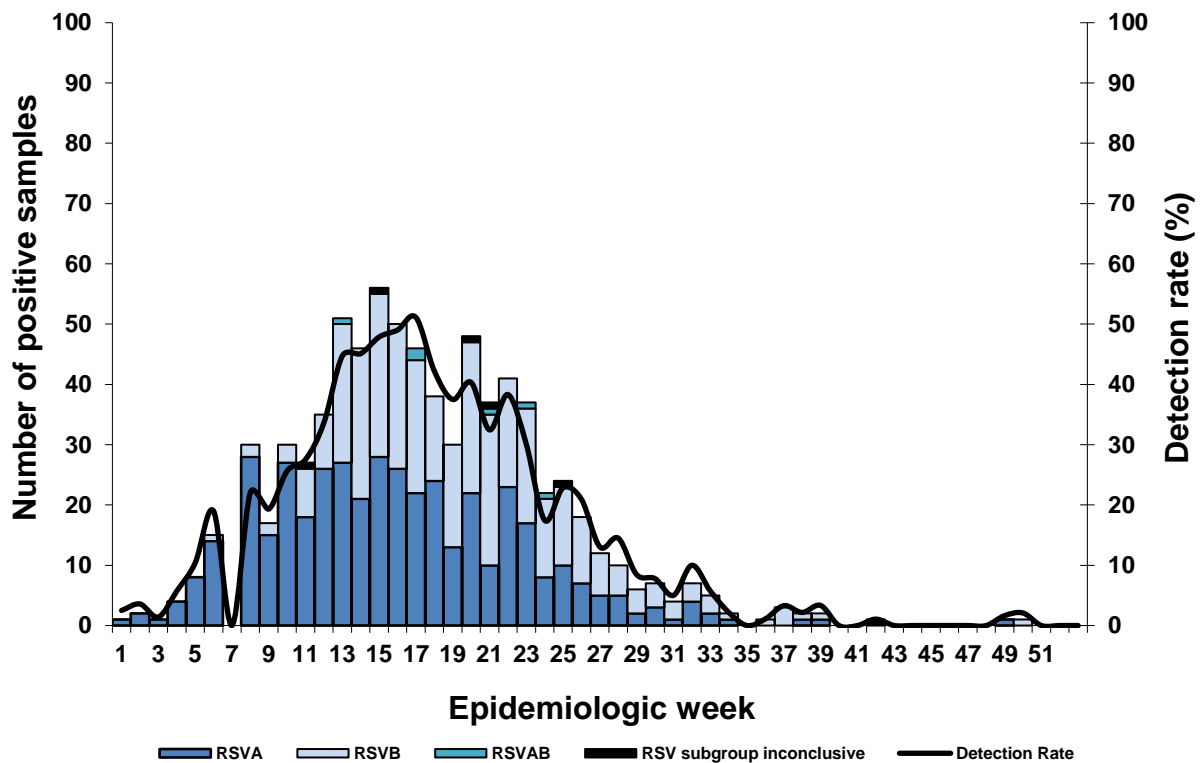
# Respiratory Pathogen Surveillance

Reporting period 01/01/2019 to 31/12/2019

Results until end of epidemiologic week 52 (2019)

## 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)	123	5	0	1	693
Helen Joseph-Rahima Moosa (GP)	110	62	2	0	1055
Klerksdorp-Tshepong (NW)	51	8	0	1	678
Mapulaneng-Matikwana (MP)	54	1	0	0	435
Red Cross (WC)	69	215	4	4	1123
Mitchell's Plain (WC)	21	47	0	0	415
<b>Total:</b>	<b>428</b>	<b>338</b>	<b>6</b>	<b>6</b>	<b>4399</b>

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

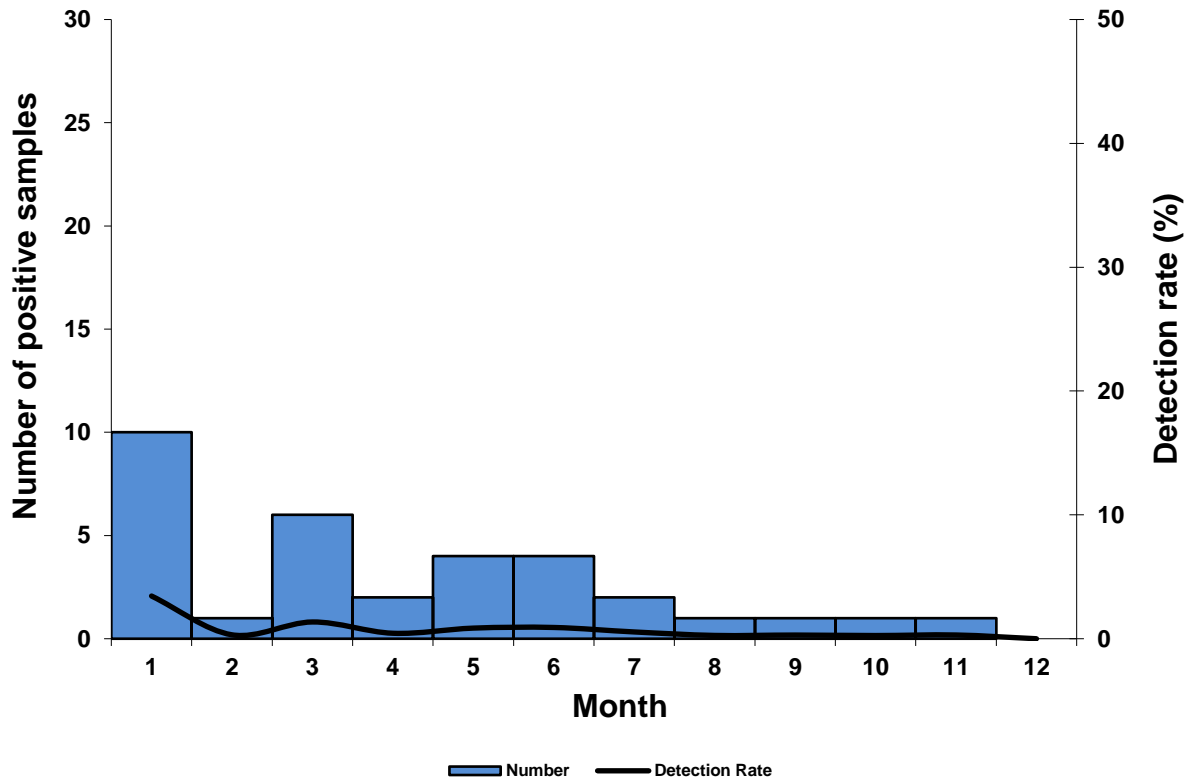
# Respiratory Pathogen Surveillance

Reporting period 01/01/2019 to 31/12/2019

Results until end of epidemiologic week 52 (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**

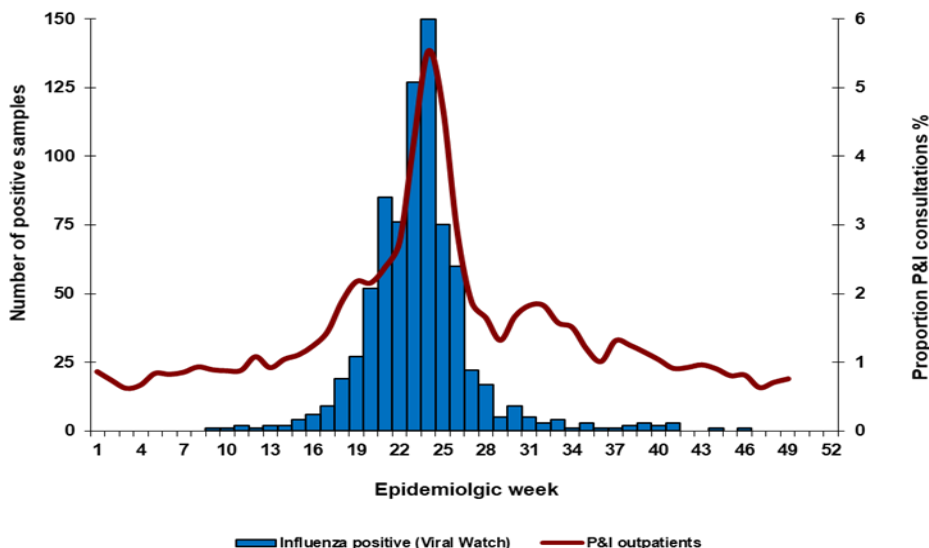
Hospital (Province)	<i>B. pertussis</i> Positive**	Total samples
Edendale (KZ)	5	691
Helen Joseph-Rahima Moosa (GP)	9	1050
Klerksdorp-Tshepong (NW)	3	676
Mapulaneng-Matikwana (MP)	4	432
Red Cross (WC)	12	1120
Mitchell's Plain (WC)	0	414
<b>Total:</b>	<b>33</b>	<b>4383</b>

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

\*\*164 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.

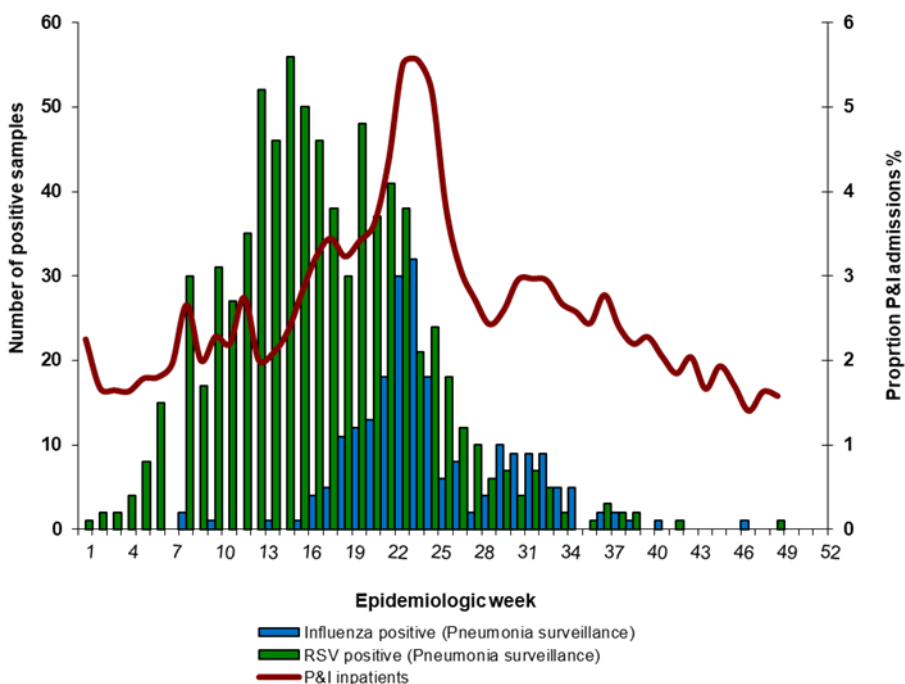
## Private hospital consultations

**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.