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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 04/08/2019

Results until end of epidemiologic week 31 (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. A sustained decline in influenza detection rate since week 25 (week ending 23 June) has been noticed. Influenza transmission is currently below threshold and impact is moderate.

ILI programme: In 2019 to date, specimens from 1183 patients were received from 3 ILI sites. Influenza was detected in 140 specimens, 19 were identified as influenza A(H1N1)pdm09, 120 as influenza A(H3N2) and one A subtype inconclusive.

Viral Watch programme: During the same period, specimens were received from 1190 patients from Viral Watch sites in 7 provinces. Influenza was detected in 756 patients, of which 39 were influenza A(H1N1)pdm09, 700 influenza A(H3N2), 15 A subtype inconclusive and two dual positive for influenza A(H1N1)pdm09 and A(H3N2). Of these, 19 gave a history of travel to the Northern Hemisphere.

Pneumonia surveillance: In this time period, specimens from 2770 patients with severe respiratory illness (SRI) were received from the 6 sentinel sites. Influenza was detected in 184 patients, influenza A(H1N1)pdm09 in 11, influenza A(H3N2) in 164, A subtype inconclusive in seven and influenza B(Yamagata) in one. In addition, there was one dual positive for influenza A(H1N1)pdm09 and A(H3N2).

### 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, RSV has been detected in the specimens of 139 patients in the ILI programme, 751 patients in the pneumonia surveillance programme and in 26 patients in the Viral Watch programme.

### *Bordetella pertussis*

ILI programme: From 1 January 2019 to date, combined nasopharyngeal and oropharyngeal specimens were tested from 1185 patients for *B. pertussis*, nine (0.8%) tested positive.

Pneumonia surveillance: During the same period, combined nasopharyngeal and oropharyngeal specimens were tested from 2803 patients for *B. pertussis*, which was detected in 29 (1.0%) specimens.

In addition, *B. pertussis* was detected in one of 118 (0.8 %) specimens from patients who did not meet the pneumonia/ILI surveillance case definition, but who did meet the suspected pertussis case definition.

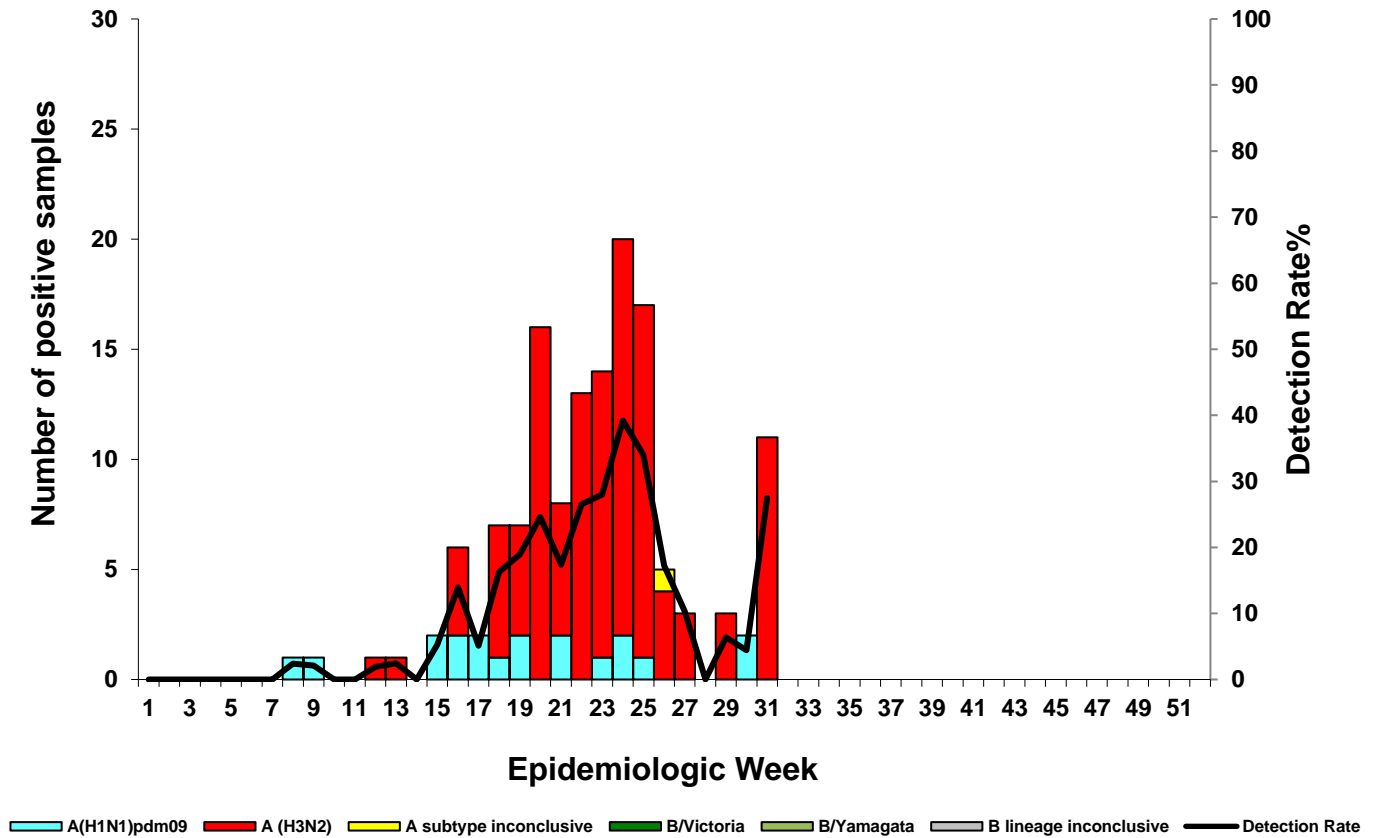
# Respiratory Pathogen Surveillance

Reporting period 01/01/2019 to 04/08/2019

Results until end of epidemiologic week 31(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)	15	55	0	0	0	0	628
Edendale Gateway (KZ)	1	15	1	0	0	0	80
Jouberton (NW)	1	45	0	0	0	0	390
Mitchell's Plain (WC)	2	5	0	0	0	0	85
<b>Total:</b>	<b>19</b>	<b>120</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1183</b>

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

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

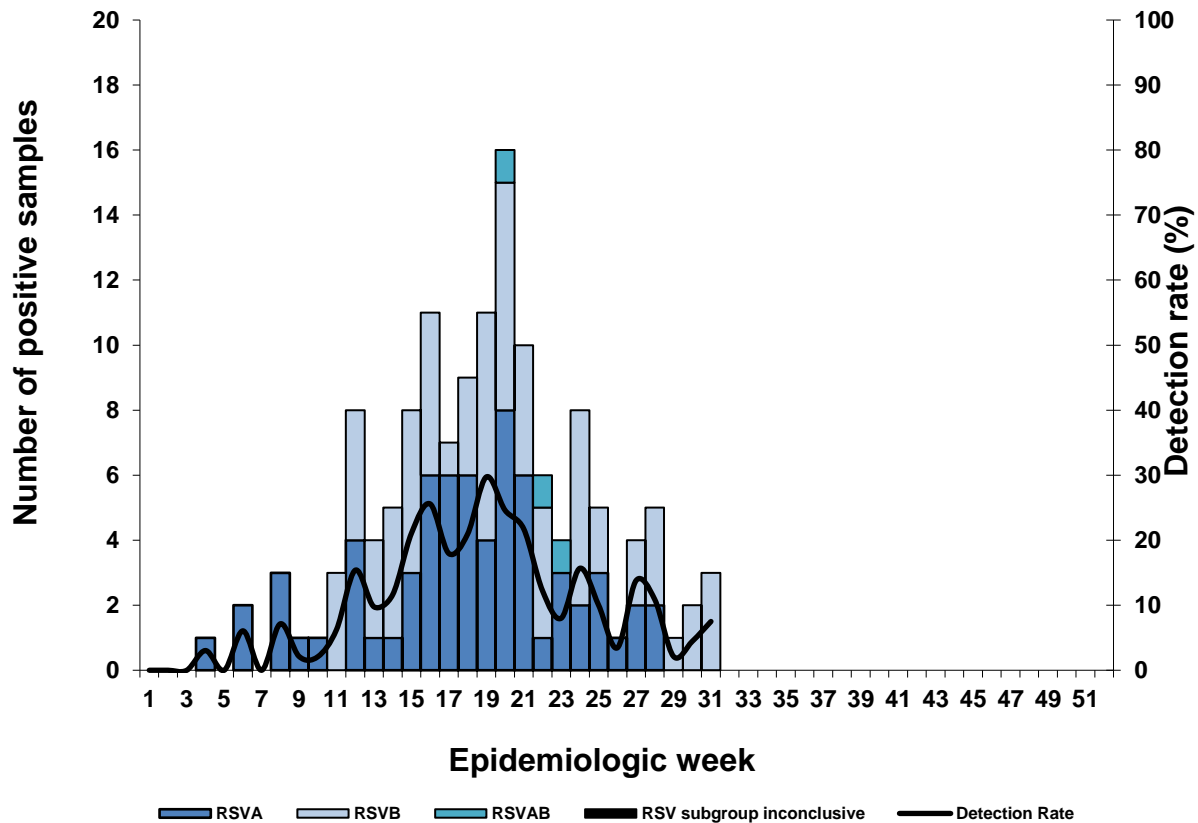
# Respiratory Pathogen Surveillance

Reporting period 01/01/2019 to 04/08/2019

Results until end of epidemiologic week 31(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**

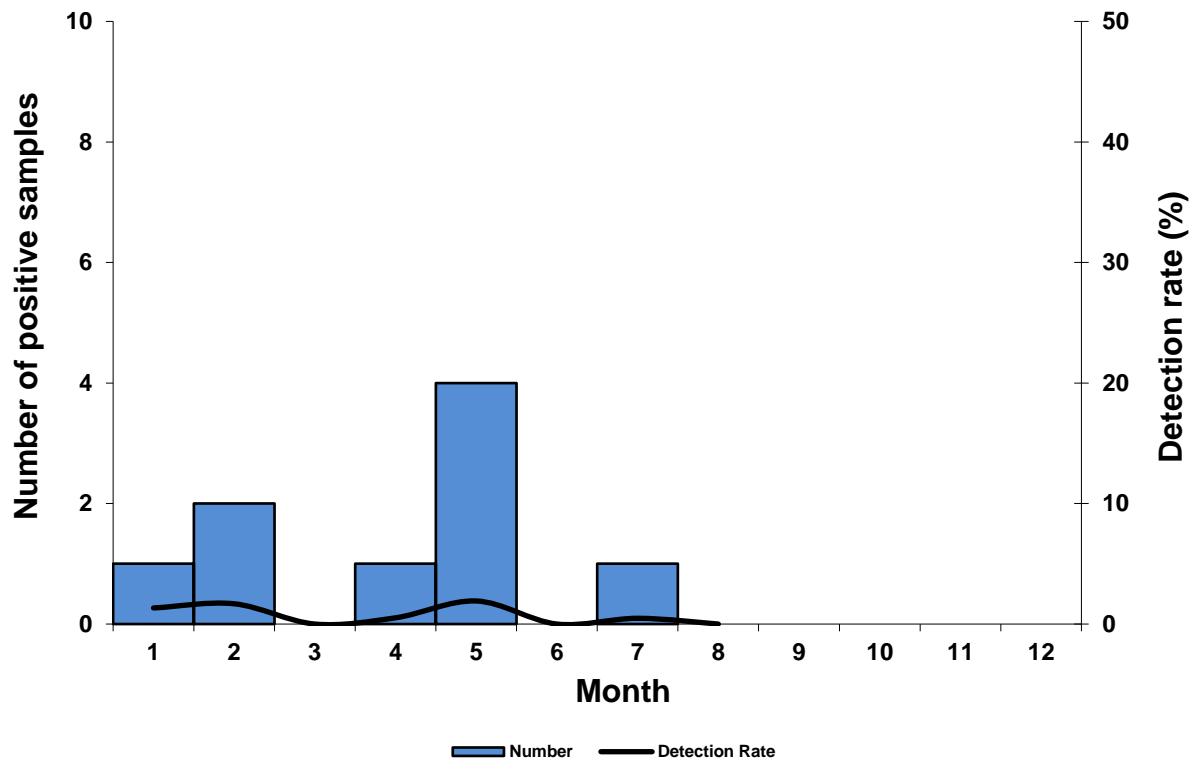
Clinic (Province)	RSVA	RSVB	RSVAB	RSV subgroup inconclusive	Total samples
Eastridge (WC)	27	63	2	0	628
Edendale Gateway (KZ)	5	0	0	0	80
Jouberton (NW)	35	1	1	0	390
Mitchell's Plain (WC)	0	5	0	0	85
<b>Total</b>	<b>67</b>	<b>69</b>	<b>3</b>	<b>0</b>	<b>1183</b>

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

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

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**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	627
Edendale Gateway (KZ)	2	80
Jouberton (NW)	3	391
Mitchell's Plain (WC)	0	87
<b>Total:</b>	<b>9</b>	<b>1185</b>

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

\*\*20 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

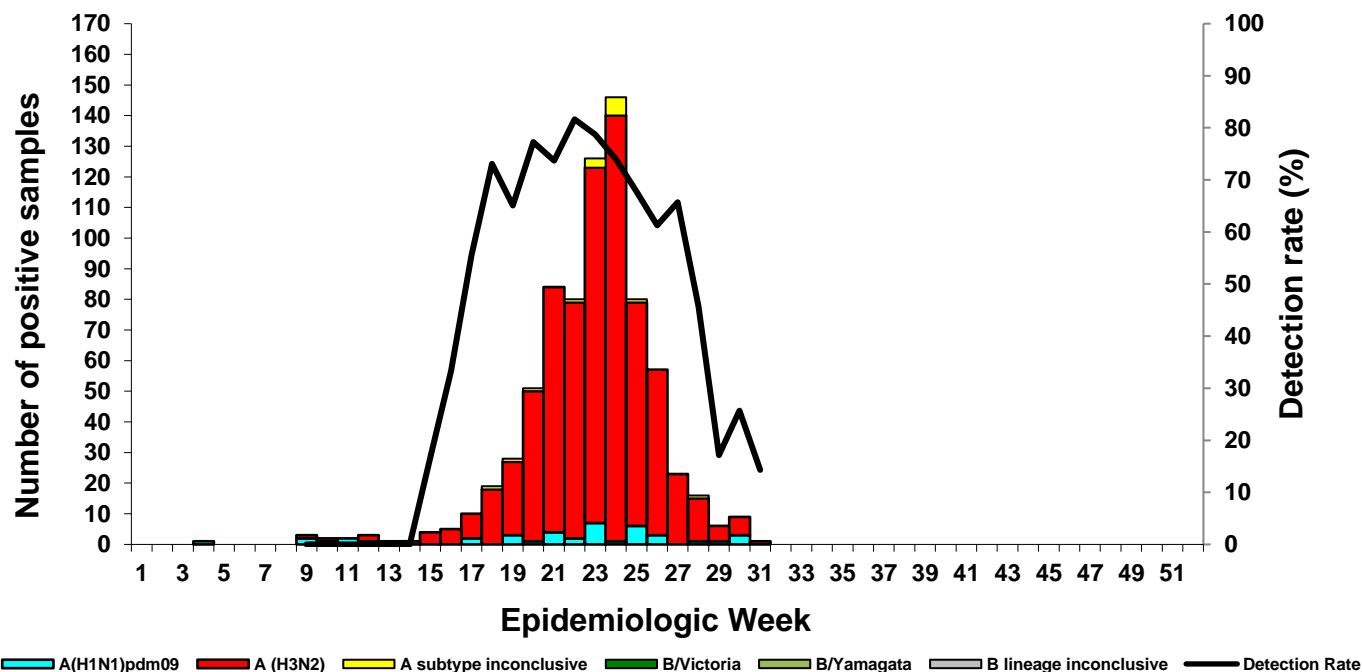
# Respiratory Pathogen Surveillance

Reporting period 01/01/2019 to 04/08/2019

Results until end of epidemiologic week 31(2019)

## 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 6 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	1	46	3	0	0	0	63
Free State	0	52	0	0	0	0	69
Gauteng	11	370	8	0	0	0	623
Limpopo	2	29	0	0	0	0	39
Mpumalanga	4	25	1	0	0	0	64
North West	0	4	0	0	0	0	8
Northern Cape	0	0	0	0	0	0	0
Western Cape	23	176	3	0	0	0	324
<b>Total:</b>	<b>41</b>	<b>702</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1190</b>

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

From 01 January 2019 to date, 27 patients were tested for influenza at the time of entry into South Africa following travel abroad and influenza was detected in 3 patients, of which one were influenza A(H1N1)pdm09 and 2 influenza A(H3N2).

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

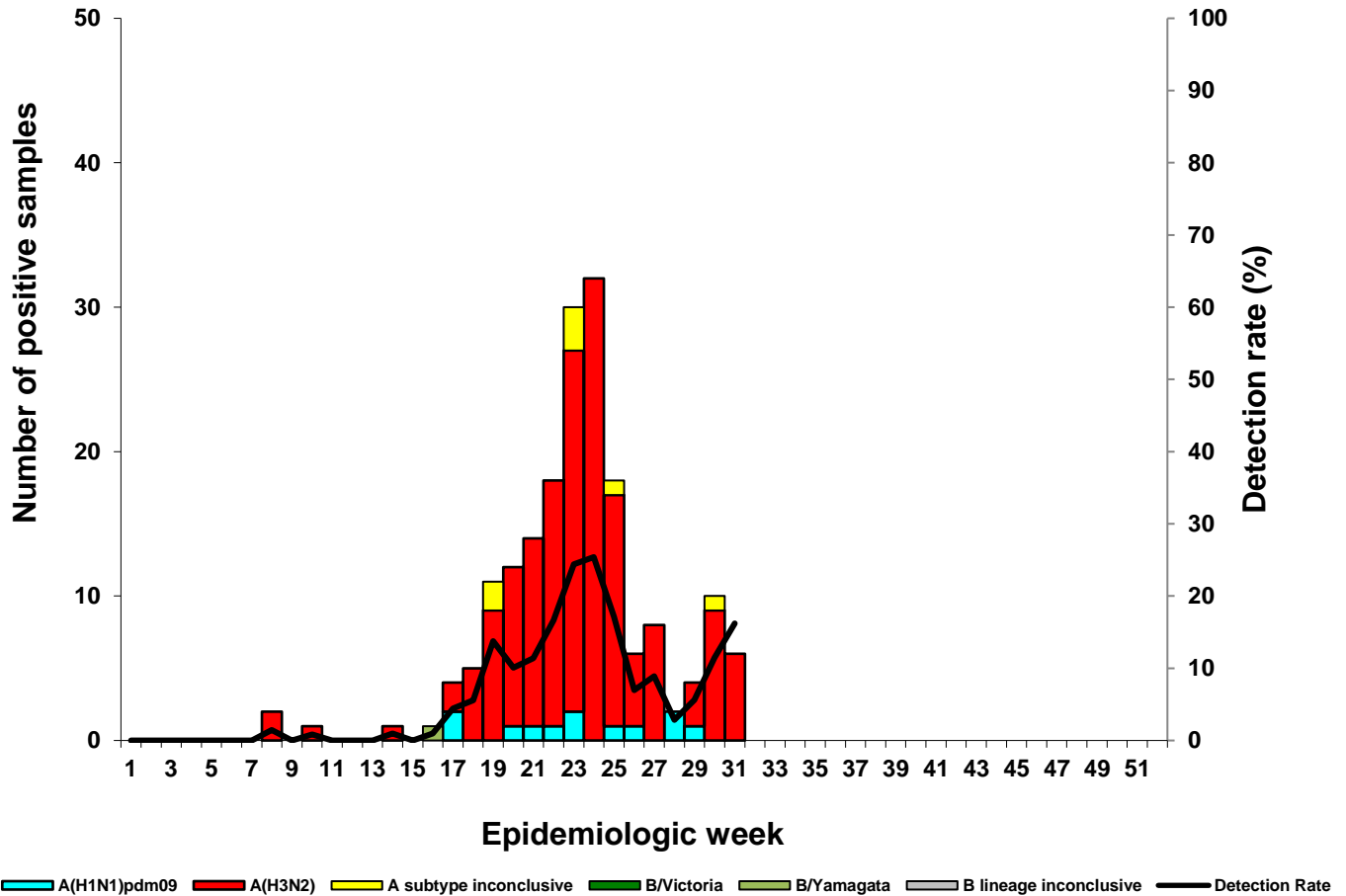
# Respiratory Pathogen Surveillance

Reporting period 01/01/2019 to 04/08/2019

Results until end of epidemiologic week 31(2019)

## National syndromic surveillance for pneumonia

**Figure 6. 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 subtype					B lineage inconclusive	Total samples
	A(H1N1)pdm09	A(H3N2)	inconclusive	B/Victoria	B/Yamagata		
Edendale (KZ)	7	20	2	0	0	0	489
Helen Joseph-Rahima Moosa (GP)	0	37	2	0	0	0	662
Klerksdorp-Tshepong (NW)	0	48	0	0	0	0	421
Mapulaneng-Matikwana (MP)	0	13	0	0	1	0	279
Red Cross (WC)	3	32	1	0	0	0	700
Mitchell's Plain (WC)	2	15	2	0	0	0	219
<b>Total:</b>	<b>12</b>	<b>165</b>	<b>7</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2770</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



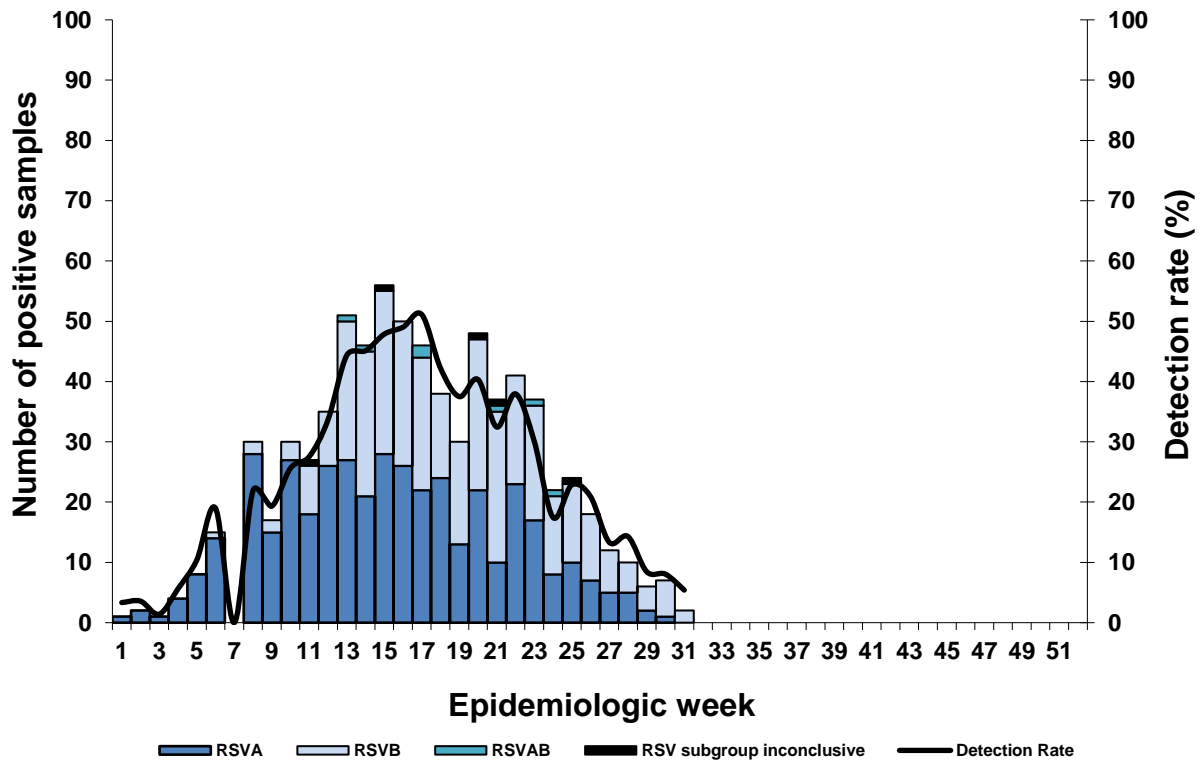
# Respiratory Pathogen Surveillance

Reporting period 01/01/2019 to 04/08/2019

Results until end of epidemiologic week 31(2019)

## 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 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	489
Helen Joseph-Rahima Moosa (GP)	107	57	4	0	662
Klerksdorp-Tshepong (NW)	49	8	0	1	421
Mapulaneng-Matikwana (MP)	53	1	0	0	279
Red Cross (WC)	63	206	3	3	700
Mitchell's Plain (WC)	20	47	0	0	219
<b>Total:</b>	<b>415</b>	<b>324</b>	<b>7</b>	<b>5</b>	<b>2770</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

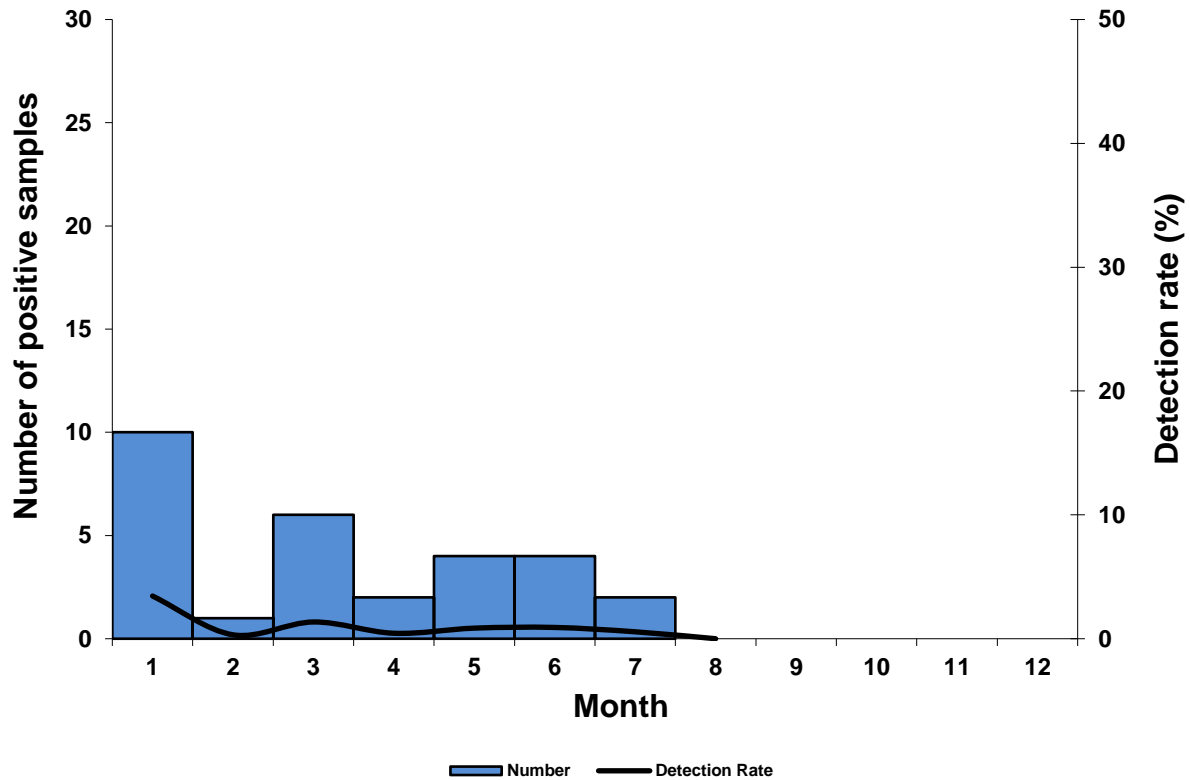
# Respiratory Pathogen Surveillance

Reporting period 01/01/2019 to 04/08/2019

Results until end of epidemiologic week 31(2019)

## National syndromic surveillance for pneumonia

**Figure 10. 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**

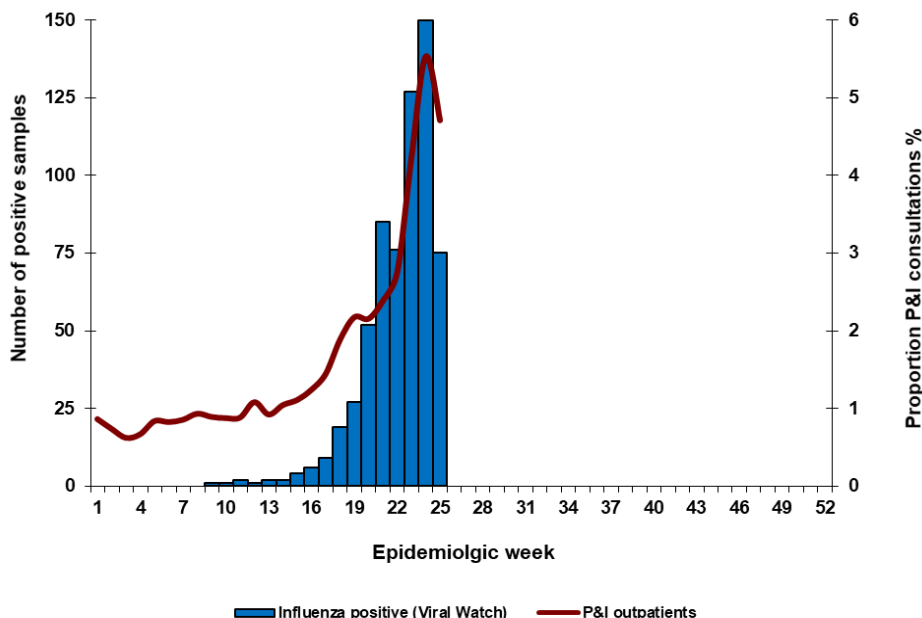
Hospital (Province)	<i>B. pertussis</i> Positive**	Total samples
Edendale (KZ)	5	488
Helen Joseph-Rahima Moosa (GP)	8	670
Klerksdorp-Tshepong (NW)	2	427
Mapulaneng-Matikwana (MP)	4	284
Red Cross (WC)	10	709
Mitchell's Plain (WC)	0	225
<b>Total:</b>	<b>29</b>	<b>2803</b>

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

\*\*98 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

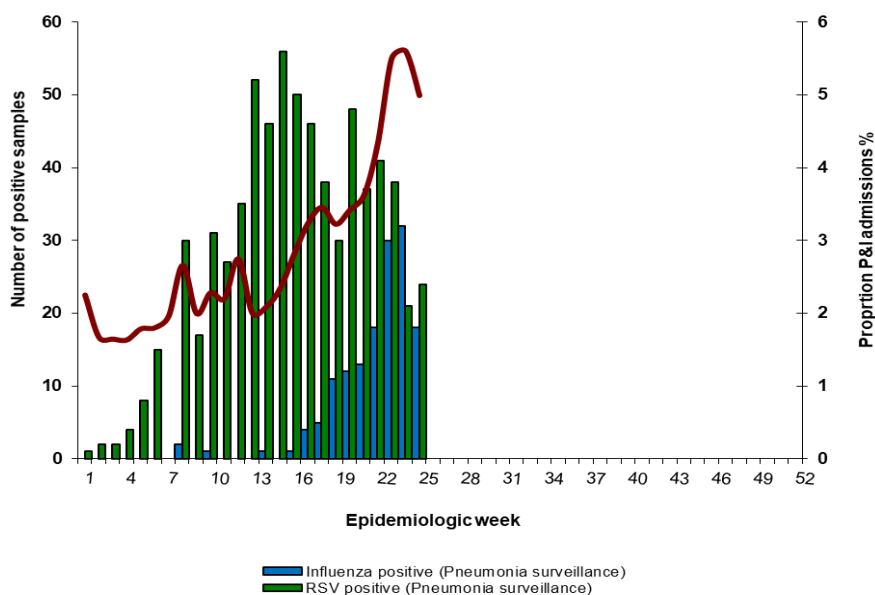
**Figure 9. Number of private hospital outpatient consultations\* with a diagnosis of pneumonia and influenza (P&I) and viral isolates\*\***



\* 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 10. 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.