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Respiratory Pathogen Surveillance

Programme Descriptions

Programme	ILI	Viral Watch	National syndromic surveillance for pneumonia	Private hospital consultations
Start year	2012	1984	2009	2002
Provinces*	KZ NW MP	EC FS KZ 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 or chronic lower respiratory tract infection	ICD codes J10-J18
Specimens collected	≥ 5 years of age: oropharyngeal/nasopharyngeal swabs <5 years of age: nasopharyngeal aspirates	Throat and/or nasal swabs or Nasopharyngeal swabs	≥ 5 years of age: oropharyngeal/nasopharyngeal swabs <5 years of age: nasopharyngeal aspirates Induced/expectorated sputum	Not applicable
Main pathogens tested**	INF RSV BP	INF RSV BP	INF RSV SP*** 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

**INF: Influenza; RSV: respiratory syncytial virus; BP: Bordetella pertussis; SP: Streptococcus pneumoniae

Respiratory Pathogen Surveillance

Reporting period 01/01/2018 to 29/07/2018

Results until end of epidemiologic week 30 (2018)

Comments:

Influenza

The 2018 influenza season continues. The season started in week 18 (first week of May), when influenza detections in the Viral Watch programme rose above the seasonal threshold, as determined by the Moving Epidemic Method. Influenza transmission and impact is below threshold.

ILI programme: In 2018 to date, specimens from 651 patients were received from 3 ILI sites. Influenza was detected in 69 specimens, all identified as influenza A(H1N1)pdm09.

Viral Watch programme: During the same period, specimens from 939 patients were received from Viral Watch sites. Since April, when the number of specimens received started to increase, influenza has been detected in 404 specimens, 368 of which were identified as influenza A(H1N1)pdm09, seven influenza A(H3N2), 25 as influenza B and four influenza A not typed.

In addition, before the start of this year's influenza season: influenza A(H1N1)pdm09 was detected in four, A(H3N2) in three, and influenza B in 14 patients, most of whom had a history of travel or contact with tourists.

Pneumonia surveillance: In this time period, specimens from 2930 patients with severe respiratory illness (SRI) were received from the 6 sentinel sites. Influenza was detected in 175 specimens, 161 of which were identified as A(H1N1)pdm09 and fourteen as influenza B.

Respiratory syncytial virus

The 2018 RSV season started in week 9 (week starting 26 February) when RSV detections in pneumonia surveillance rose above the seasonal threshold as determined by the Moving Epidemic Method. The season has ended although sporadic detections of RSV are still being made.

In 2018 to date, RSV has been detected in the specimens of 87 patients in the ILI programme, and 784 from patients in the pneumonia surveillance programme.

During the same period, 39 specimens from viral watch surveillance programme sites tested positive for RSV.

Streptococcus pneumoniae

Pneumonia surveillance: From the 1st January 2018 to date, blood specimens from 1059 patients from 3 sentinel sites were tested for *S. pneumoniae* which was detected in 39 (3.7 %) specimens.

Bordetella pertussis

ILI programme: From 1st January 2018 to date, nasopharyngeal/oropharyngeal specimens were tested from 640 patients for *B. pertussis*, seven (1.1%) tested positive. An increase in cases testing positive for *B. pertussis* has been noted from May.

Pneumonia surveillance: During the same period, sputa and/or nasopharyngeal specimens were tested from 2899 patients for *B. pertussis* which was detected in 53 (1.8 %) specimens. There has been an increase in number of cases testing positive for *B. pertussis* from all provinces participating in surveillance in July 2018.

Below is a link of an alert for an Increase of *B. pertussis* cases in South Africa

<http://www.nicd.ac.za/wp-content/uploads/2017/03/Pertussis-Alert-8-August-2018.pdf>

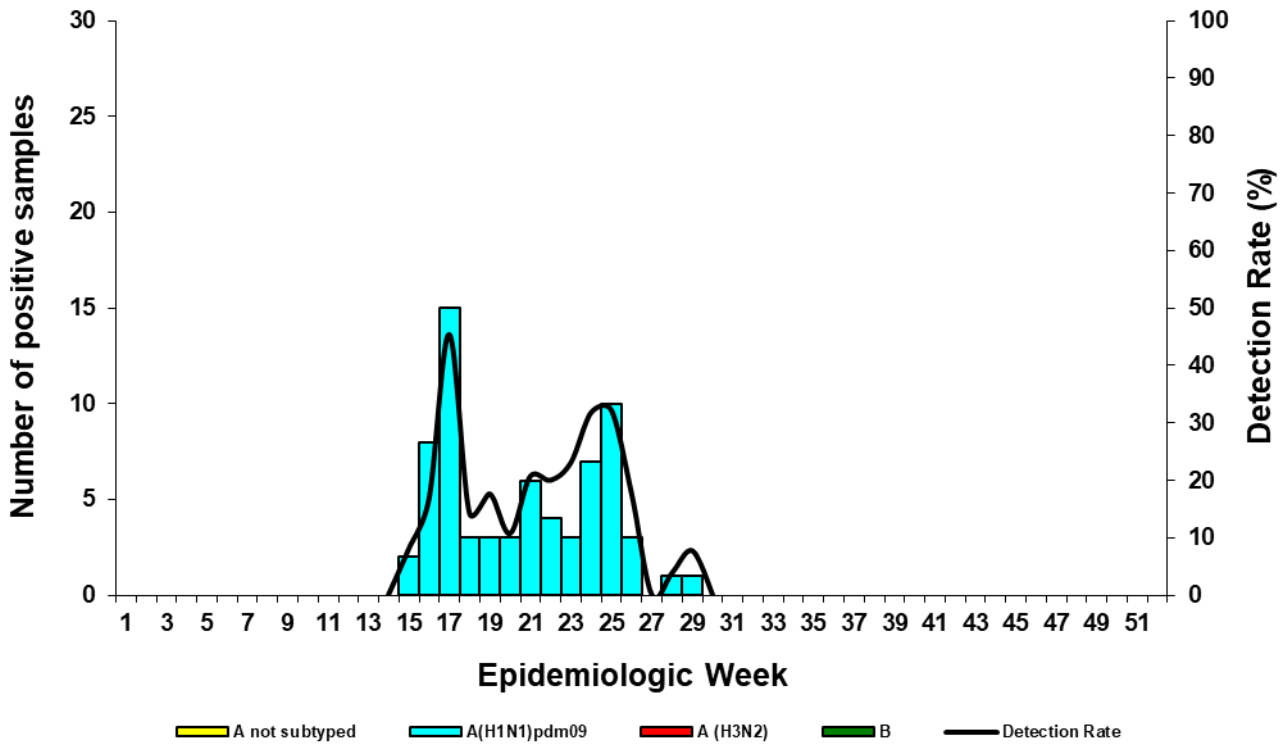
Respiratory Pathogen Surveillance

Reporting period 01/01/2018 to 29/07/2018

Results until end of epidemiologic week 30 (2018)

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

Figure 1. Number of positive samples* by influenza types and subtypes and detection rate by week**



*Specimens from patients with influenza-like illnesses at 3 sentinel sites in 3 provinces from week 1 – week 21 and from 2 sites in 2 provinces from week 22 (surveillance in Mpumalanga suspended since week 22).

**Only reported for weeks with >10 specimens submitted

Table 1. Cumulative number of influenza type and subtype and total number of samples tested by clinic and province

Clinic (Province)	A not typed as yet	A(H1N1)pdm09	A(H3N2)	B	Total samples
Agincourt Clinic (MP)*	0	3	0	0	141
Edendale Gateway Clinic (KZ)	0	40	0	0	270
Jouberton Clinic (NW)	0	26	0	0	240
Total:	0	69	0	0	651

KZ: KwaZulu-Natal; NW: North West, MP: Mpumalanga *Surveillance suspended at Mpumalanga site since week 22

Respiratory Pathogen Surveillance

Reporting period 01/01/2018 to 29/07/2018

Results until end of epidemiologic week 30 (2018)

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

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

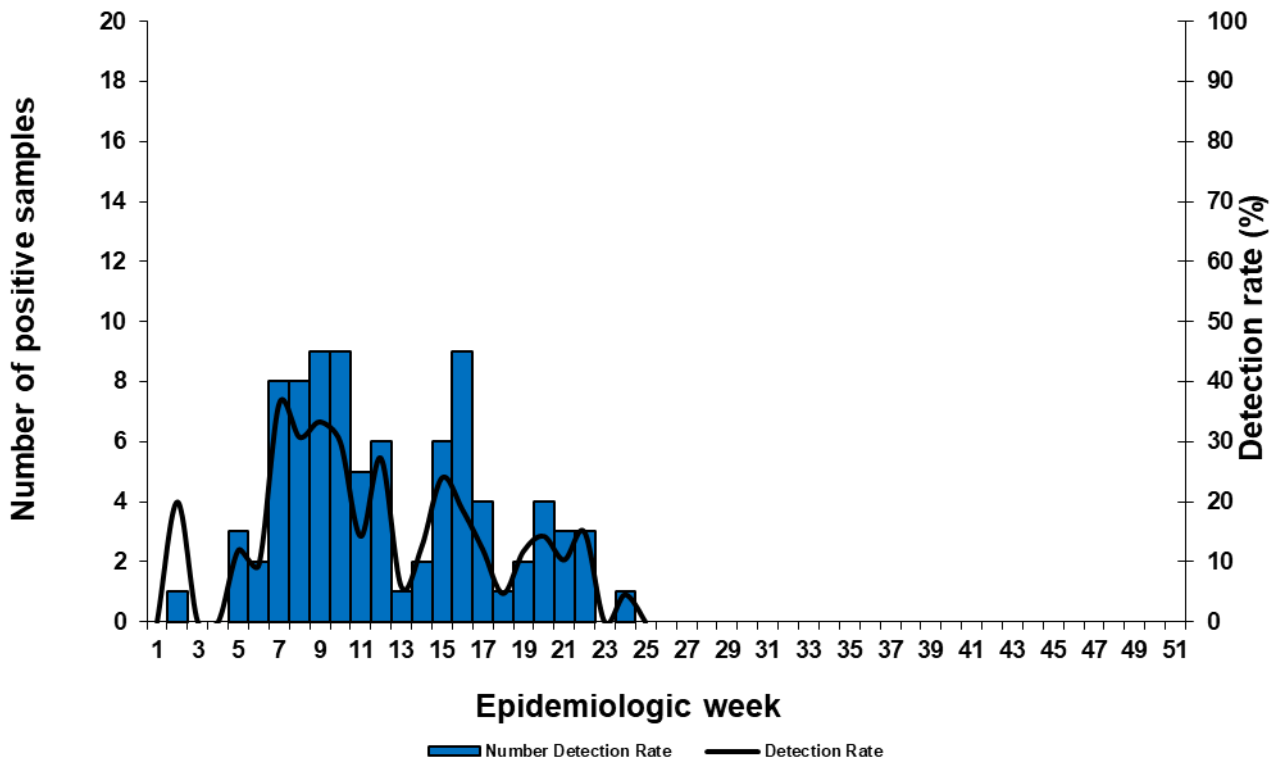


Table 2. Cumulative number of respiratory syncytial virus identified and total number of samples tested by clinic and province

Clinic (Province)	RSV Positive	Total samples
Agincourt Clinic (MP)*	38	141
Edendale Gateway Clinic (KZ)	27	270
Jouberton Clinic (NW)	22	240
Total:	87	651

KZ: KwaZulu-Natal; NW: North West, MP: Mpumalanga *Surveillance suspended at Mpumalanga site since week 22

Respiratory Pathogen Surveillance

Reporting period 01/01/2018 to 29/07/2018

Results until end of epidemiologic week 30 (2018)

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

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

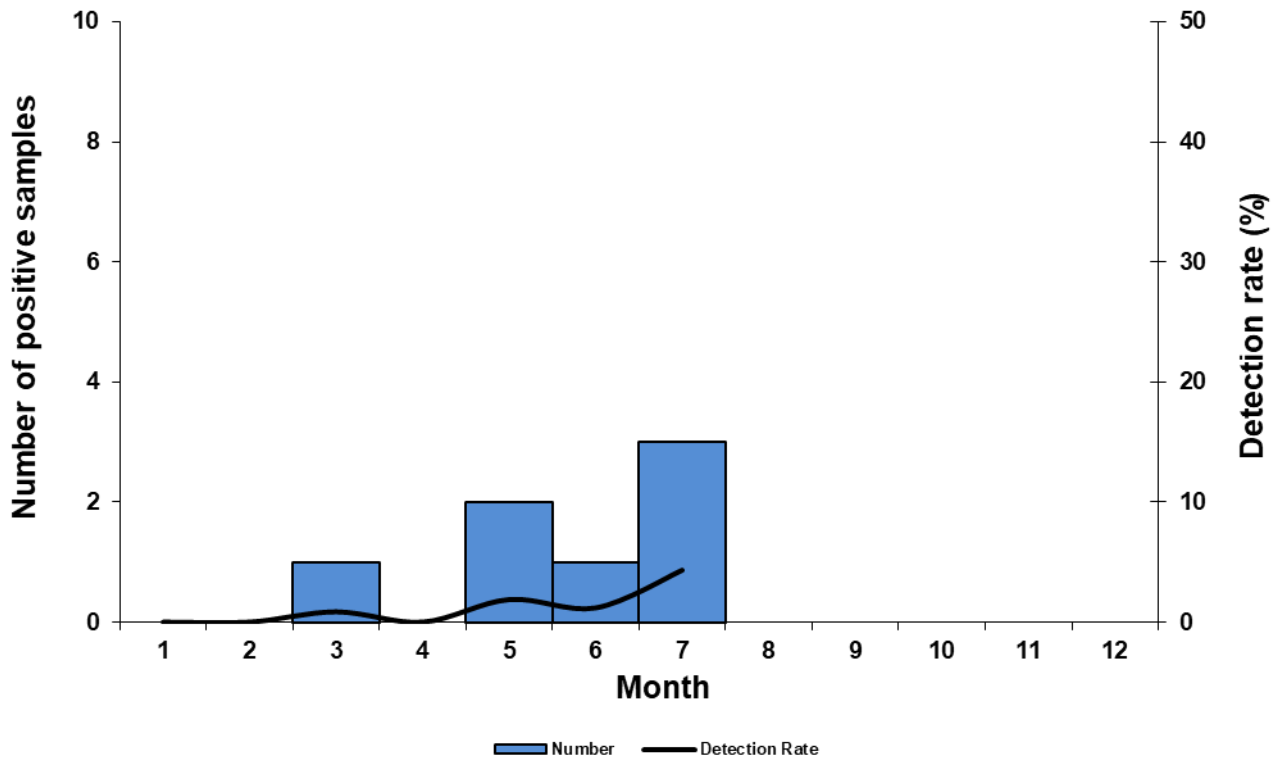


Table 3 Cumulative number of *B. pertussis* identified and total number of samples tested by province

Clinic (Province)	<i>B. pertussis</i> Positive	Total samples
Agincourt Clinic (MP)*		138
Edendale Gateway Clinic (KZ)	2	267
Jouberton Clinic (NW)	5	235
Total:	7	640

KZ: KwaZulu-Natal; NW: North West, MP: Mpumalanga *Surveillance suspended at Mpumalanga site since week 22

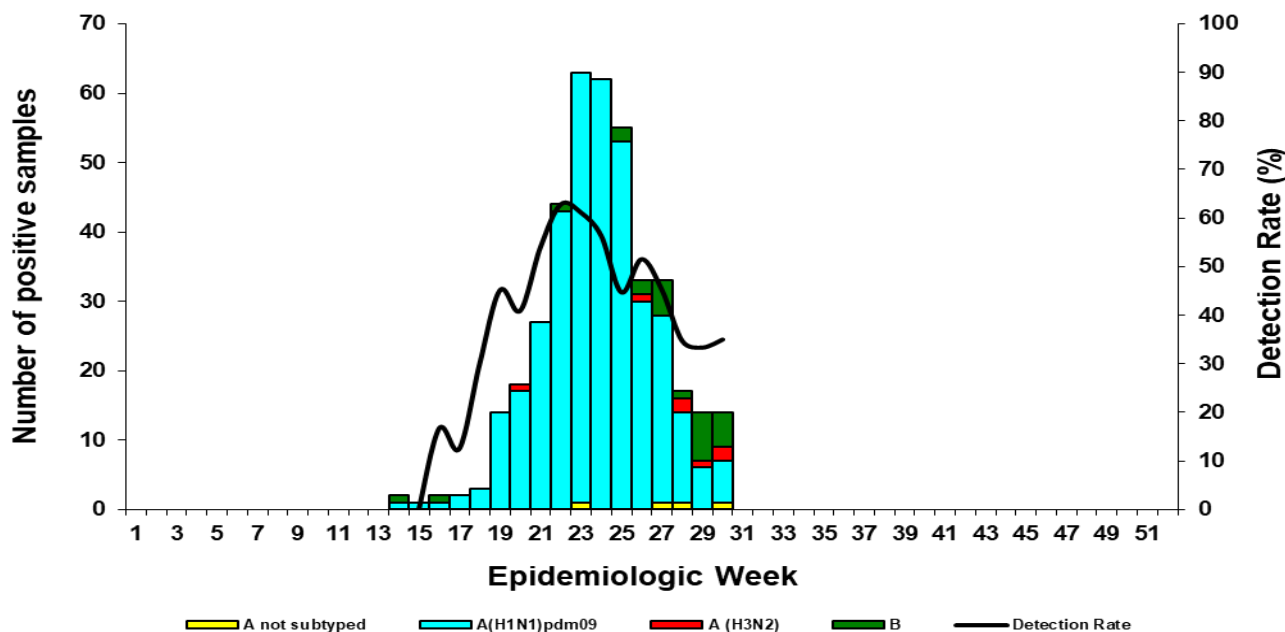
Respiratory Pathogen Surveillance

Reporting period 01/01/2018 to 29/07/2018

Results until end of epidemiologic week 30 (2018)

Influenza-like illness (ILI) surveillance Viral Watch

Figure 4. Number of positive samples* by influenza types and subtypes 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.

Table 4. Cumulative number of influenza type and subtype and total number of samples tested by province

Province	A not subtyped	A(H1N1)pdm09	A(H3N2)	B	Total samples
Eastern Cape	1	51		9	91
Free State					10
Gauteng	2	197	7	8	486
Limpopo		15			22
Mpumalanga	1	20		2	71
North West		1			2
Northern Cape		3			12
Western Cape		81		6	245
Total:	4	368	7	25	939

From 01 January 2018 to date, 84 patients were tested for influenza at the time of entry into South Africa following travel abroad and 26 have tested influenza positive.

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

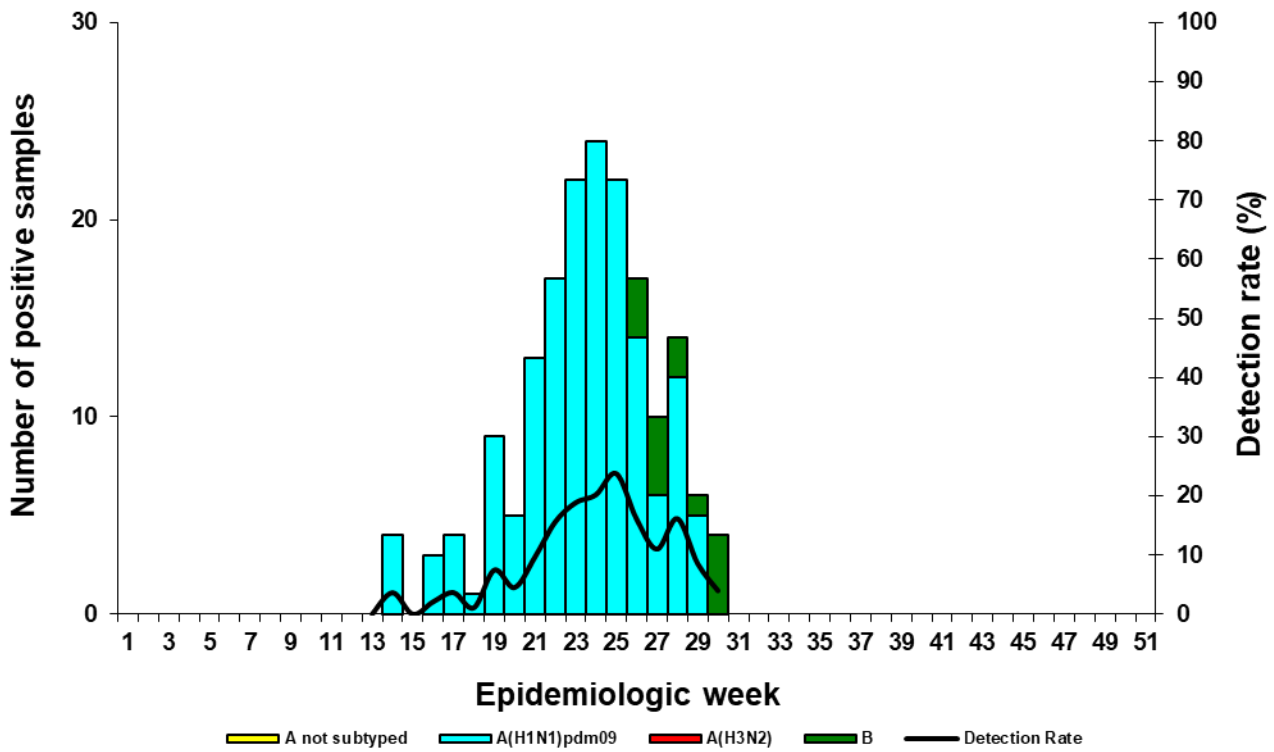
Respiratory Pathogen Surveillance

Reporting period 01/01/2018 to 29/07/2018

Results until end of epidemiologic week 30 (2018)

National syndromic surveillance for pneumonia

Figure 6. Number of positive samples* by influenza types and A not typed as yet 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

Table 5. Cumulative number of identified influenza types and subtypes and total number of samples tested by hospital

Hospital (Province)	A not typed as yet	A(H1N1)pdm09	A(H3N2)	B	Total samples
Edendale (KZ)		28			461
Helen Joseph-Rahima Moosa (GP)		36		2	671
Klerksdorp-Tshepong (NW)		13			425
Mapulaneng-Matikwana (MP)		25			173
Red Cross (WC)		33		9	802
Mitchell's Plain (WC)		23		3	398
Total:		161		14	2930

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

In addition 88 specimens have been tested from pregnant women in Groote Schuur Hospital and Mowbray Maternity Hospital, two of whom were positive for influenza A(H1N1)pdm09.

Respiratory Pathogen Surveillance

Reporting period 01/01/2018 to 29/07/2018

Results until end of epidemiologic week 30 (2018)

National syndromic surveillance for pneumonia

Figure 8. Number of samples testing positive for respiratory syncytial virus and detection rate by week

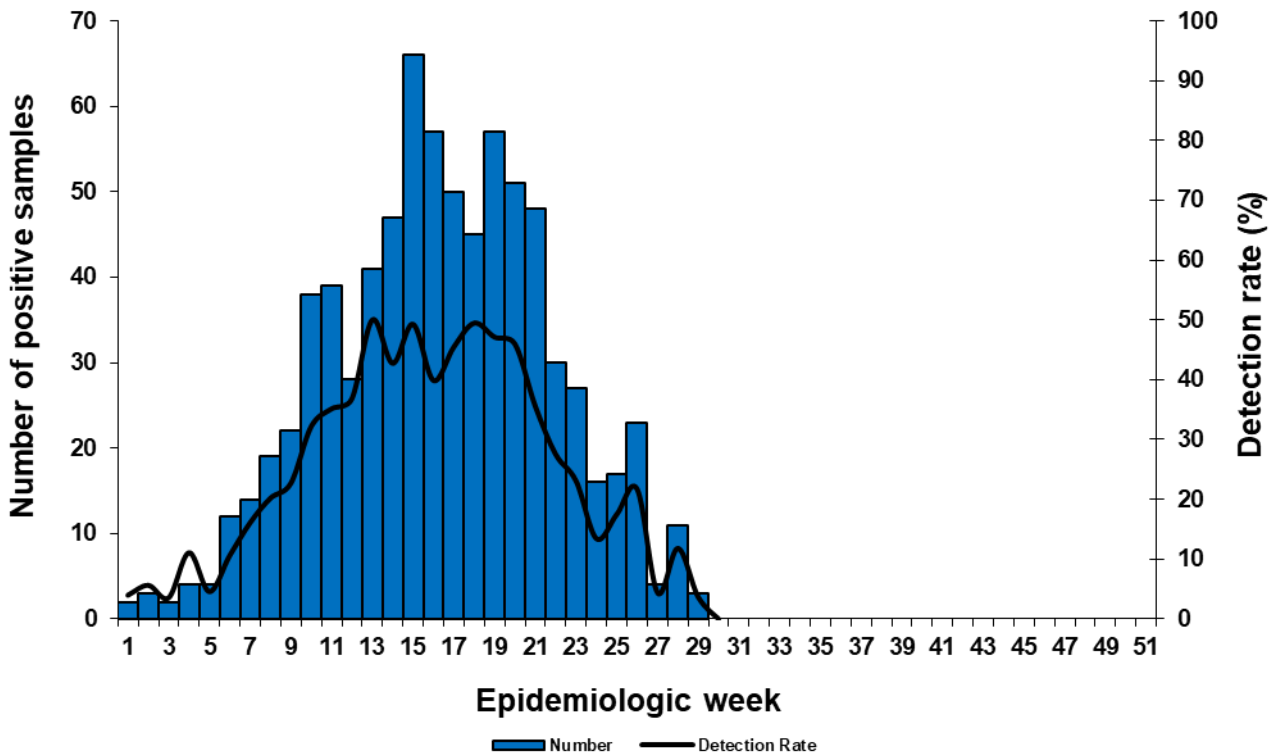


Table 6: Cumulative number of respiratory syncytial virus identified and total number of samples tested by hospital

Hospital (Province)	RSV Positive	Total samples
Edendale (KZ)	77	461
Helen Joseph-Rahima Moosa (GP)	161	671
Klerksdorp-Tshepong (NW)	40	425
Mapulaneng-Matikwana (MP)	46	173
Red Cross (WC)	323	802
Mitchell's Plain (WC)	137	398
Total:	784	2930

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

Respiratory Pathogen Surveillance

Reporting period 01/01/2018 to 29/07/2018

Results until end of epidemiologic week 30 (2018)

National syndromic surveillance for pneumonia

Figure 9. Number of samples testing positive for *S. pneumoniae and detection rate by week**

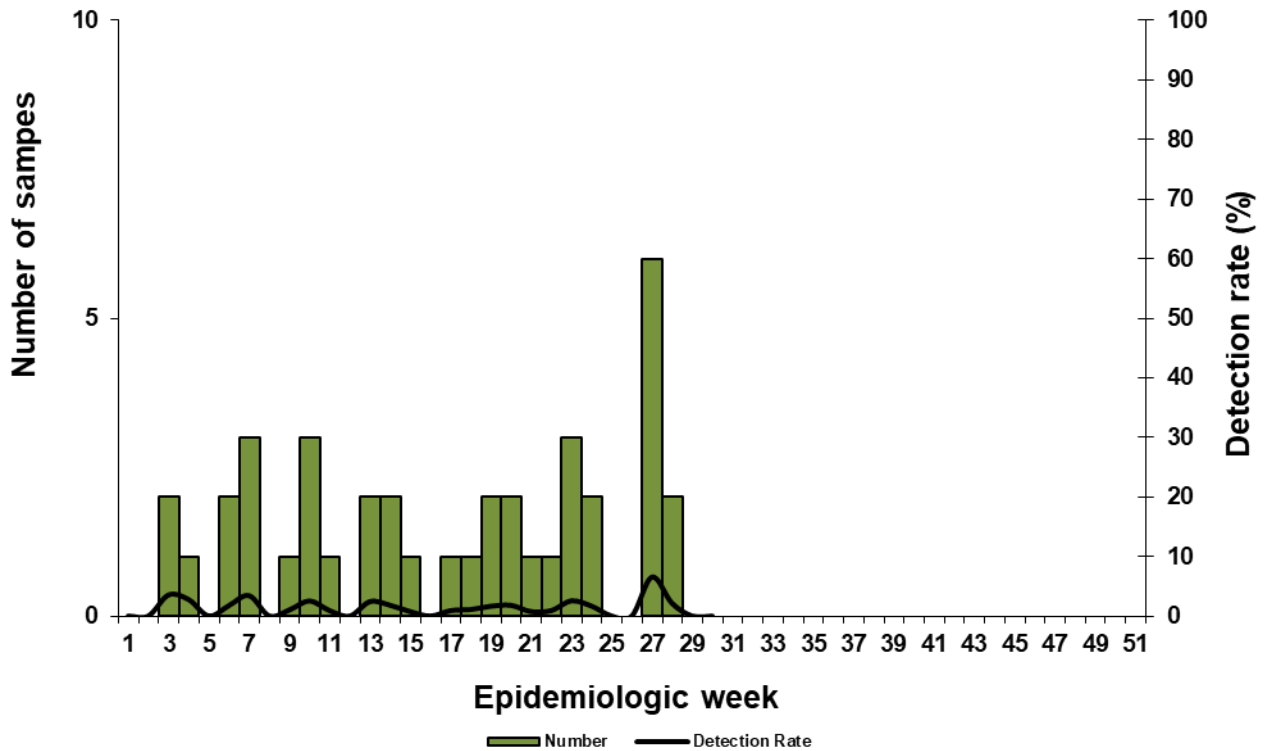


Table 7. Cumulative number of *S. pneumoniae* identified and total number of samples tested by hospital and province

Hospital (Province)	<i>S. pneumoniae</i> Positive	Total samples
Edendale (KZ)	4	461
Klerksdorp-Tshepong (NW)	23	425
Mapulaneng-Matikwana (MP)	12	173
Total:	39	1059

KZ: KwaZulu-Natal; NW: North West; MP: Mpumalanga;

* Children <1 year tested at KZ and all age groups tested at MP and NW

Respiratory Pathogen Surveillance

Reporting period 01/01/2018 to 29/07/2018

Results until end of epidemiologic week 30 (2018)

National syndromic surveillance for pneumonia

Figure 10. Number of samples testing positive for *B. pertussis* and detection rate by month

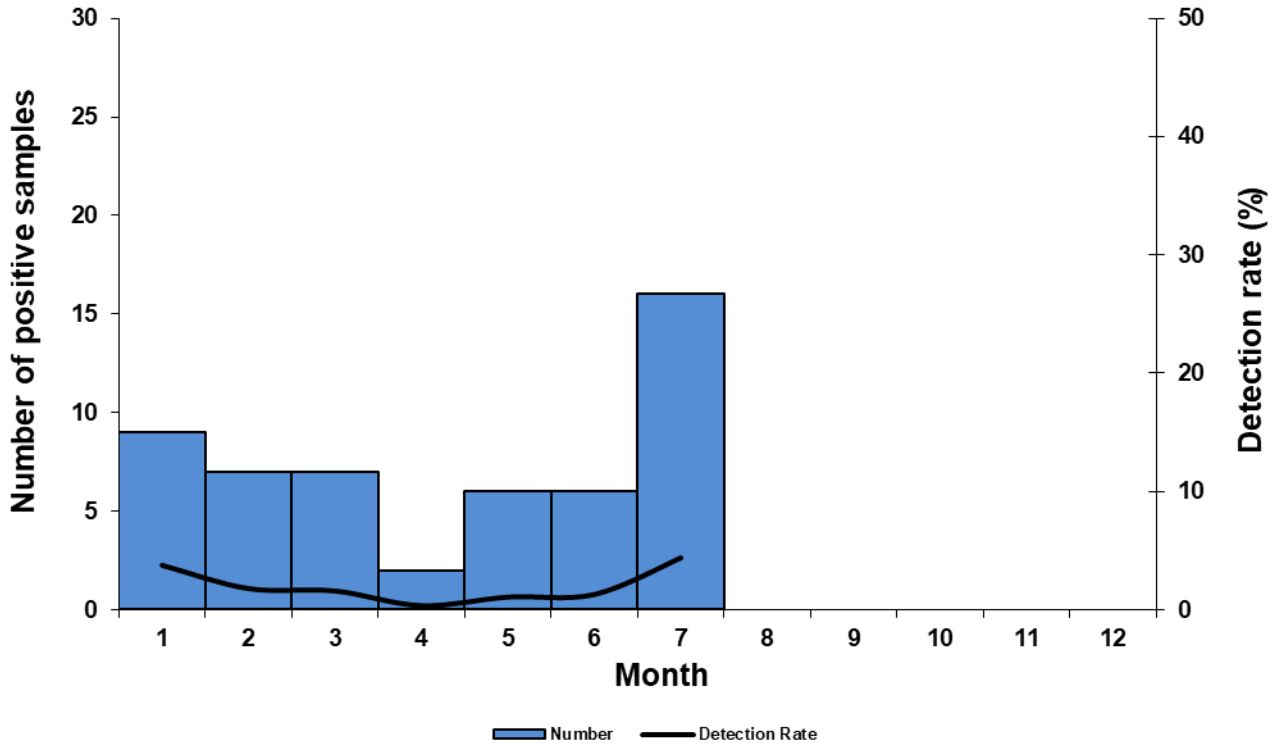


Table 9. Cumulative number of *B. pertussis* identified and total number of samples tested by hospital and province

Hospital (Province)	<i>B. pertussis</i> Positive	Total samples
Edendale (KZ)	5	461
Helen Joseph-Rahima Moosa (GP)	12	664
Klerksdorp-Tshepong (NW)	5	417
Mapulaneng-Matikwana (MP)	2	170
Red Cross (WC)	20	794
Mitchell's Plain (WC)	9	393
Total:	53	2899

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

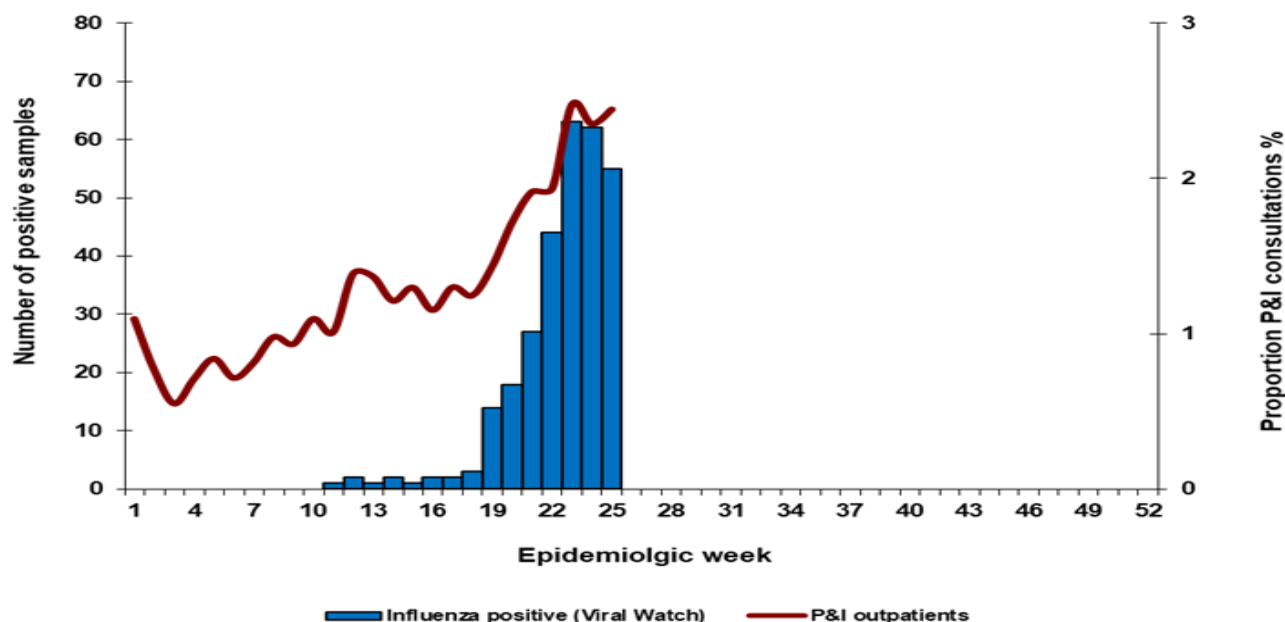
Respiratory Pathogen Surveillance

Reporting period 01/01/2018 to 24/06/2018

Results until end of epidemiologic week 25 (2018)

Private hospital consultations

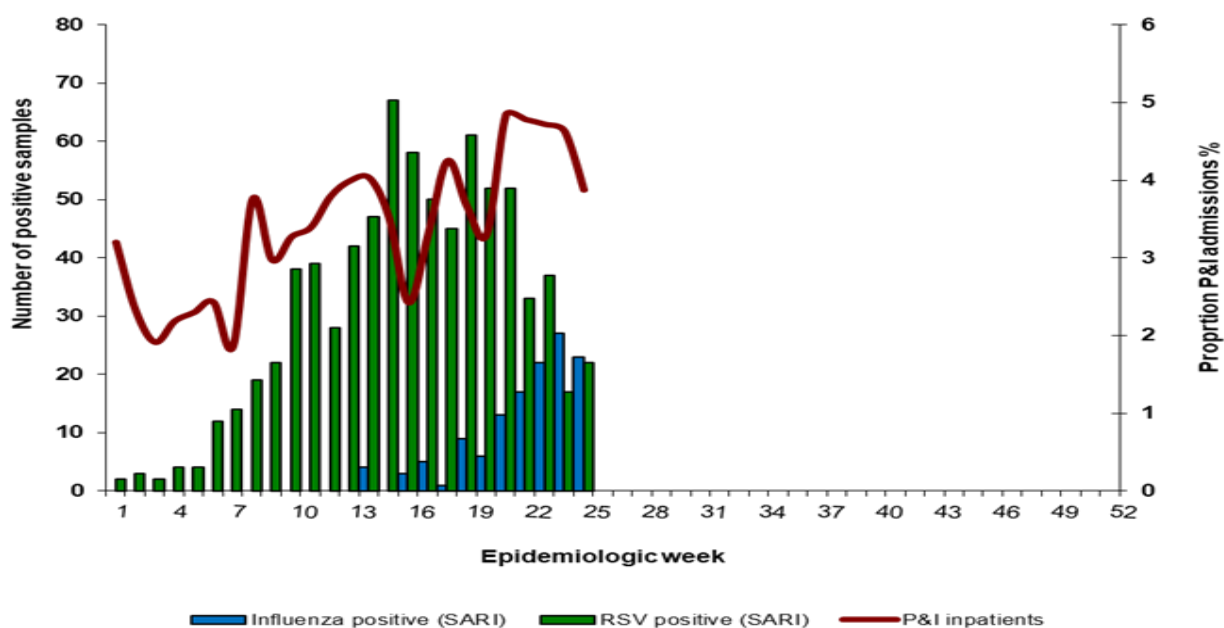
Figure 11. Number of private hospital outpatient consultations* with a diagnosis of pneumonia and influenza (P&I) and viral isolates**



* 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 12. 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.