Monthly Respiratory Pathogens Surveillance Report **Week 35, 2019**

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 (≥38°C) and cough, & onset ≤10 days	An acute respiratory illness with a temperature (≥38°C) and cough, & onset ≤10 days	Acute or chronic 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*

Data are provisional as reported to date (Data for this report drawn on 05/09/2019). Number of consultations/specimens are reported/analysed by date of consultation/specimen collection.

Respiratory Pathogen Surveillance

Reporting period 01/01/2019 to 01/09/2019 *Results until end of epidemiologic week 35 (2019)*

Comments:

Influenza

The 2019 season started in week16 (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 week25 (week ending 23 June) was noticed until week 29 when the detection rate rose again to form a second peak in week 31. Influenza transmission is currently below threshold and impact is low.

ILI programme: In 2019 to date, specimens from 1299 patients were received from 3 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 1277 patients from Viral Watch sites in 7 provinces. Influenza was detected in 770 patients, of which 43 (6%) were influenza A(H1N1)pdm09, 713 (92%) influenza A(H3N2), 15 (2%) A subtype inconclusive, one (<1%) influenza B(Victoria) and one (<1%) influenza B(Yamagata). From the total of detected influenza we had two dual specimens positive for influenza A(H1N1)pdm09 and A(H3N2) in week25 and one dual positive for influenza A(H3N2) and influenza B(Yamagata) in week 27. Of the influenza-positive individuals, 21 gave a history of travel to the Northern Hemisphere prior to their illness.

Pneumonia surveillance: Since the beginning of 2019, specimens from 3145 patients with severe respiratory illness (SRI) were received from the 6 sentinel sites. Influenza was detected in 214 patients, of which 13 (6%) were influenza A(H1N1)pdm09, 192 (90%) influenza A(H3N2), seven (3%) A subtype inconclusive, one (<1%) influenza B(Victoria) and one (<1%) influenza B(Yamagata). This includes one dual positive for influenza A(H1N1)pdm09 and A(H3N2) in week21.

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 was tested in 1299 specimens and has been detected in the specimens of 142 (11%) patients in the ILI programme.
Pneumonia surveillance: 3145 specimens were tested and RSV was detected in specimens of 766 (24%) patients.
Viral Watch programme: 1277 specimens were tested and RSV was detected in specimens of 27 (2%) patients.

Bordetella pertussis

ILI programme: From 1 January 2019 to date, combined nasopharyngeal and oropharyngeal specimens were tested from 1293 patients for *B. pertussis*, nine (0.7%) tested positive.
Pneumonia surveillance: During the same period, combined nasopharyngeal and oropharyngeal specimens were tested from 3119 patients for *B. pertussis,* which was detected in 30 (1.0%) specimens.
In addition, *B. pertussis* was detected in two of 128 (1.6 %) specimens from patients who did not meet the pneumonia/ILI surveillance case definition, but who did meet the suspected pertussis case definition.

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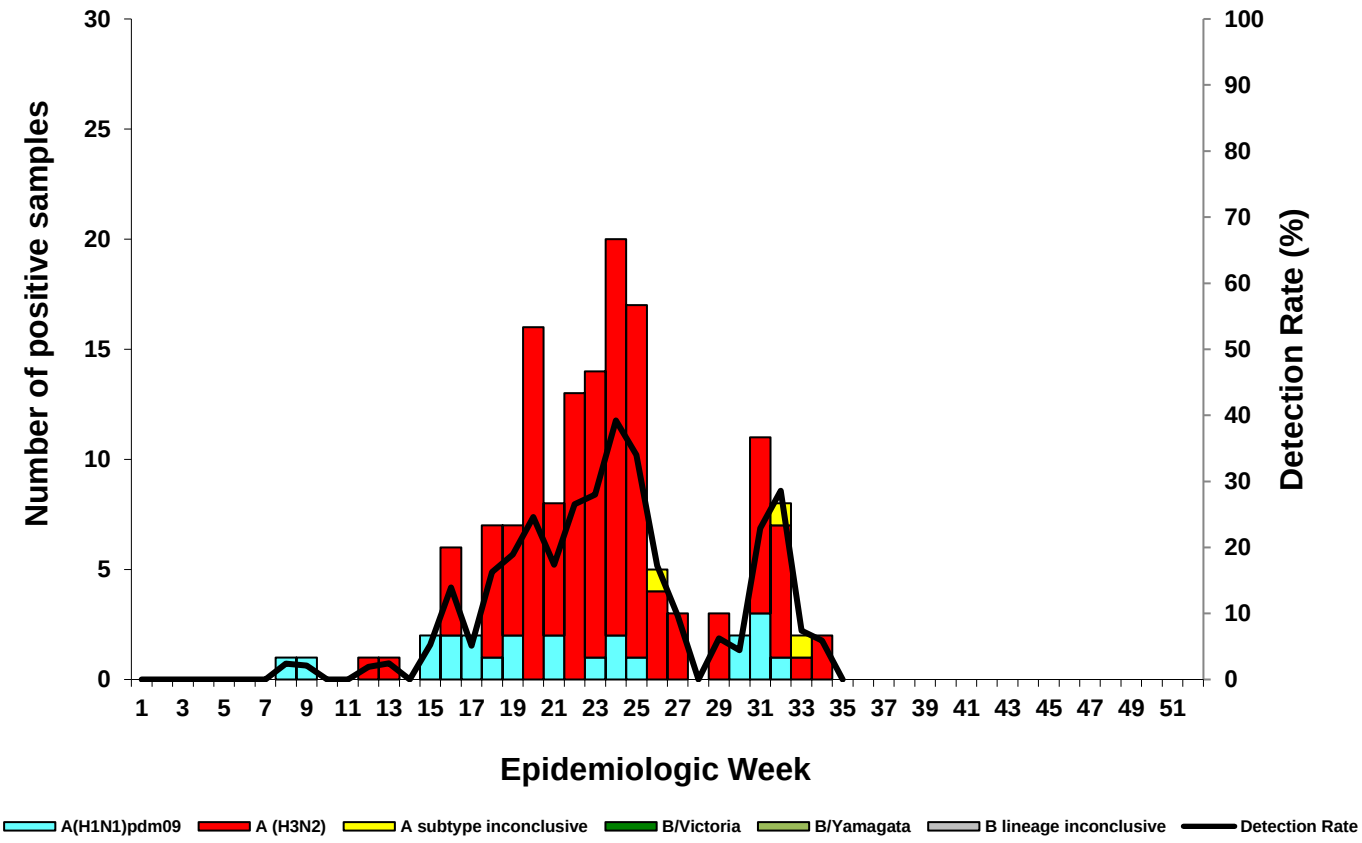
Reporting period 01/01/2019 to 01/09/2019 *Results until end of epidemiologic week 35 (2019)*

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

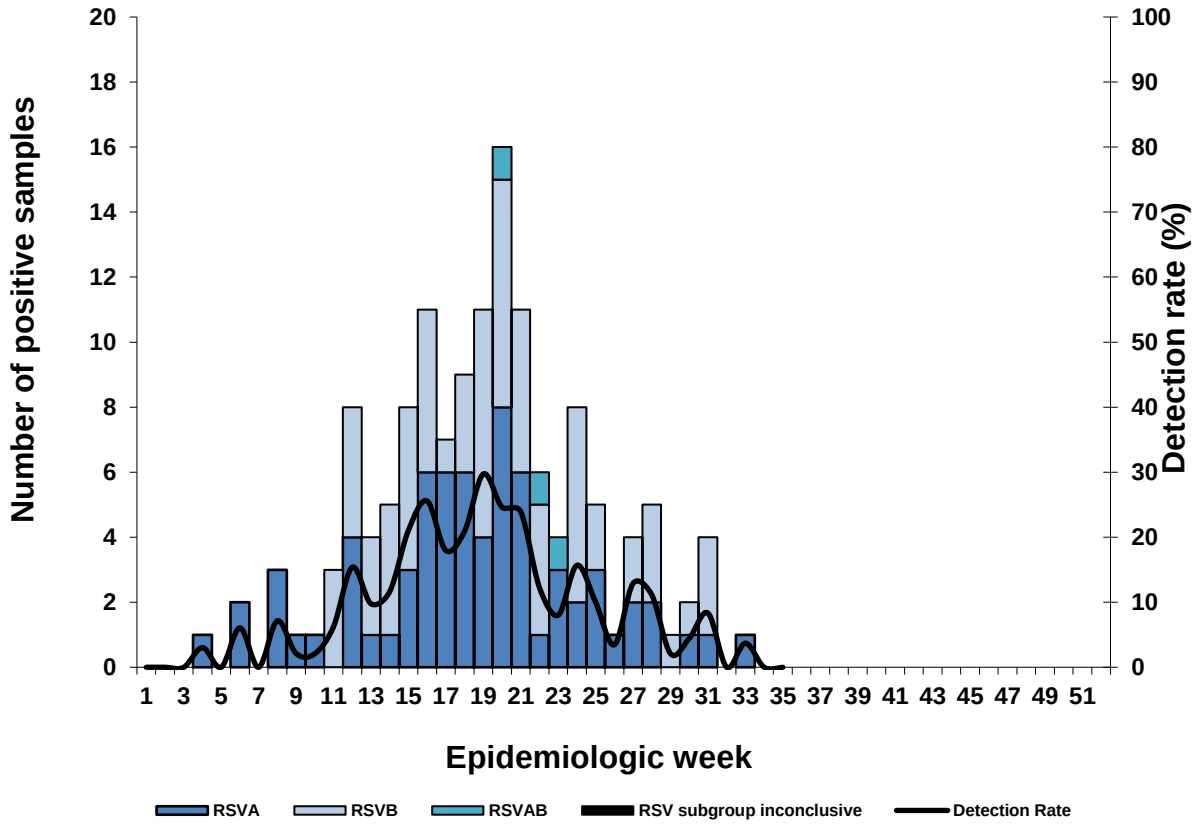
Table 1. Cumulative number of influenza subtype and lineage and total number of samples tested by clinic and province

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	679
Edendale Gateway (KZ)	3	22	3	0	0	0	103
Jouberton (NW)	2	44	0	0	0	0	427
Mitchell's Plain (WC)	2	5	0	0	0	0	90
Total:	23	126	3	0	0	0	1299

KZ: KwaZulu-Natal; NW: North West; WCP: Western Cape
Inconclusive: insufficient viral load in sample and unable to characterise further

Data are provisional as reported to date (Data for this report drawn on 05/09/2019). Number of consultations/specimens are reported/analysed by date of consultation/specimen collection.

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	64	2	0	679
Edendale Gateway (KZ)	5	0	0	0	103
Jouberton (NW)	37	0	1	0	427
Mitchell's Plain (WC)	0	5	0	0	90
Total	70	69	3	0	1299

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 01/01/2019 to 01/09/2019 *Results until end of epidemiologic week 35 (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

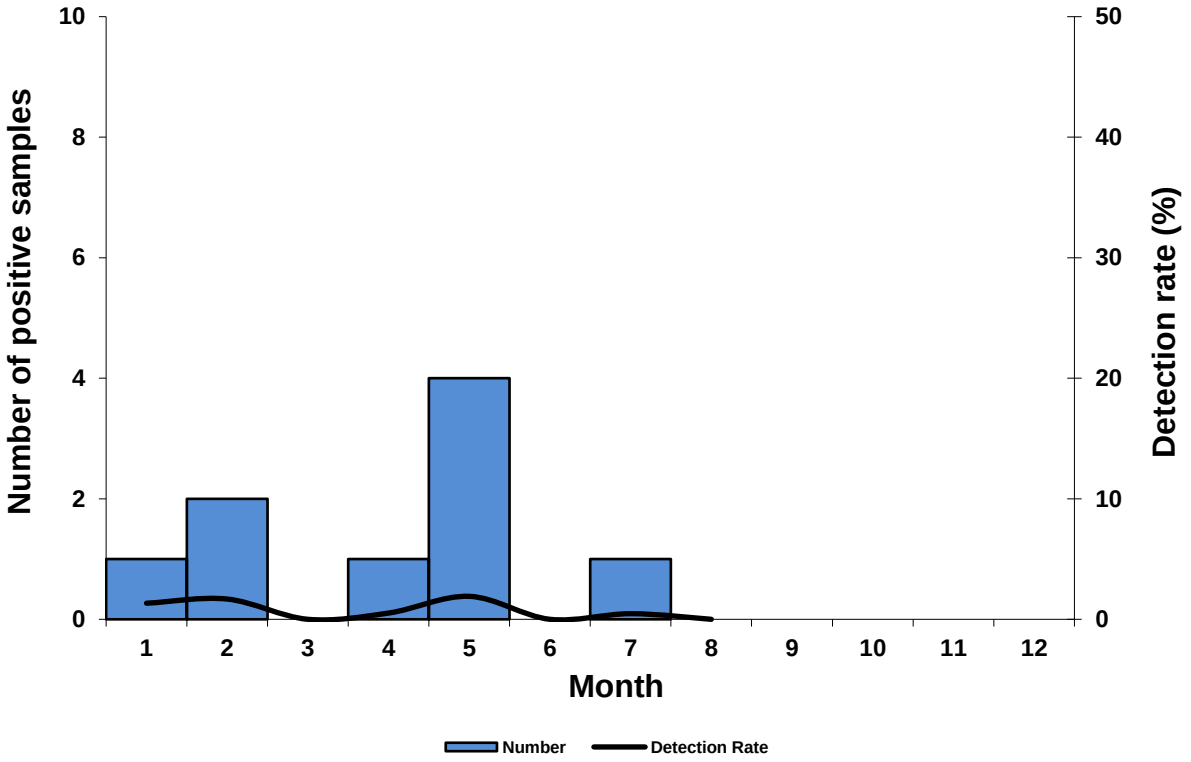


Table 3. Cumulative number of *B. pertussis* identified and total number of samples tested by province**

Clinic (Province)	*B. pertussis* Positive**	Total samples
Eastridge (WC)	4	678
Edendale Gateway (KZ)	2	101
Jouberton (NW)	3	426
Mitchell's Plain (WC)	0	88
Total:	9	1293

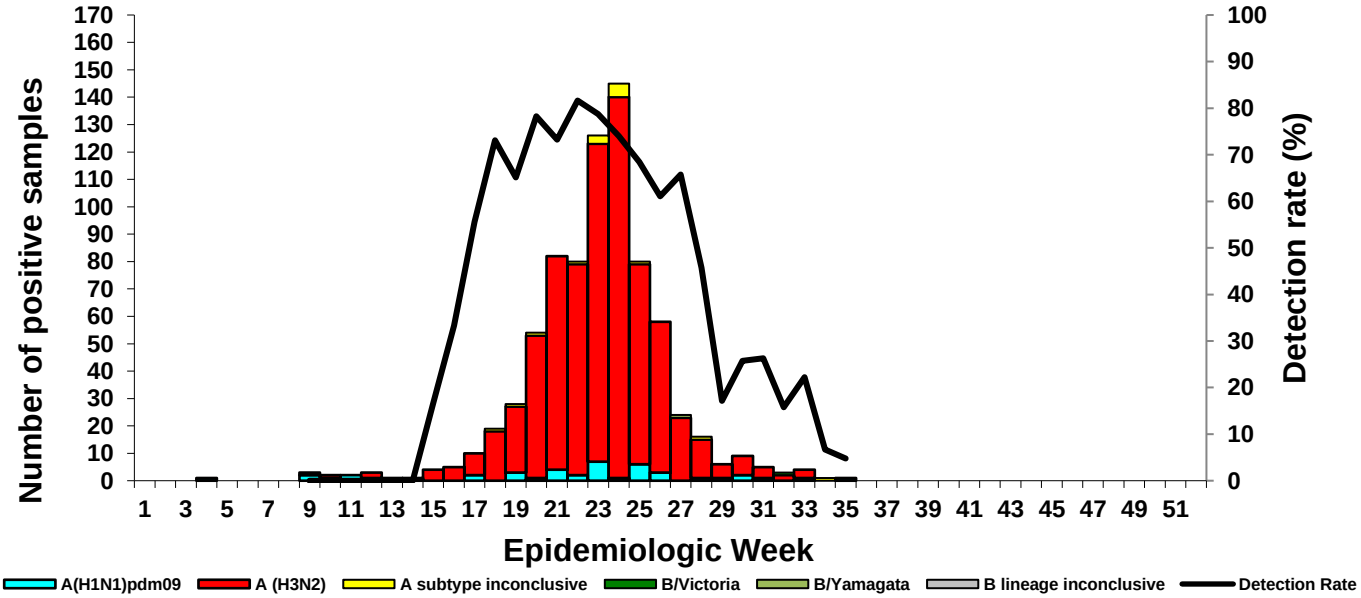
KZ: KwaZulu-Natal; NW: North West; WC: Western Cape

**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

Reporting period 01/01/2019 to 01/09/2019 *Results until end of epidemiologic week 35 (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 7 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	1	48	3	0	0	0	67
Free State	0	52	0	0	0	0	73
Gauteng	12	373	8	0	1	0	653
Limpopo	1	32	0	0	0	0	47
Mpumalanga	4	27	1	0	0	0	74
North West	0	4	0	0	0	0	8
Western Cape	24	177	3	1	0	0	355
Total:	43	713	15	1	1	0	1277

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

Included in the table are 2 dual specimens positive for influenza A(H1N1)pdm01 & influenza A(H3N2) in week25 and one dual positive for influenza A(H3N2) & influenza B(Yamagata) in week27

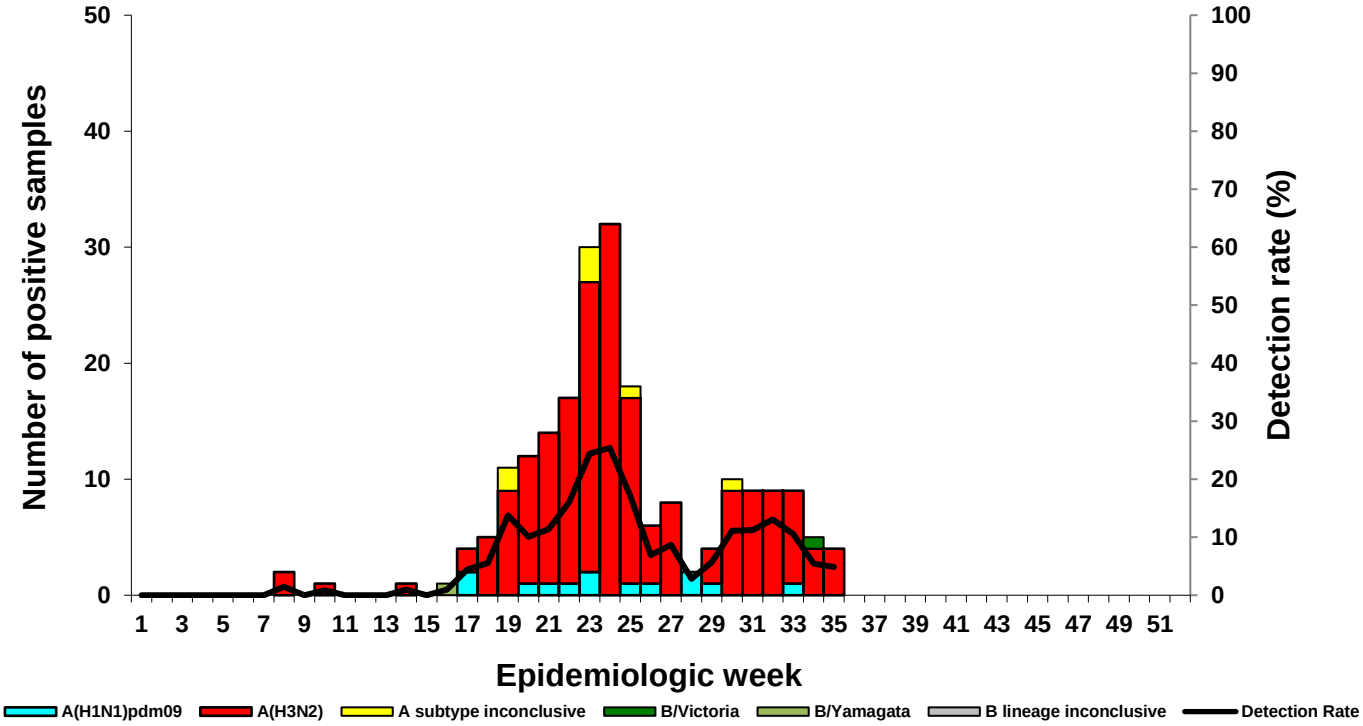
From 01 January 2019 to date, 31 patients were tested for influenza at the time of entry into South Africa following travel abroad and influenza was detected in four patients, of which one influenza A(H1N1)pdm09, two influenza A(H3N2) and one influenza B (lineage inconclusive).

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

Reporting period 01/01/2019 to 01/09/2019 *Results until end of epidemiologic week 35 (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	31	2	0	0	0	533
Helen Joseph-Rahima Moosa (GP)	0	36	2	1	0	0	744
Klerksdorp-Tshepong (NW)	0	50	0	0	0	0	470
Mapulaneng-Matikwana (MP)	1	28	0	0	1	0	328
Red Cross (WC)	3	32	1	0	0	0	806
Mitchell's Plain (WC)	2	15	2	0	0	0	264
Total:	13	192	7	1	1	0	3145

GP: Gauteng; KZ: KwaZulu-Natal; NW: North West; MP: Mpumalanga; WC: Western Cape
Inconclusive: insufficient viral load in sample and unable to characterise further

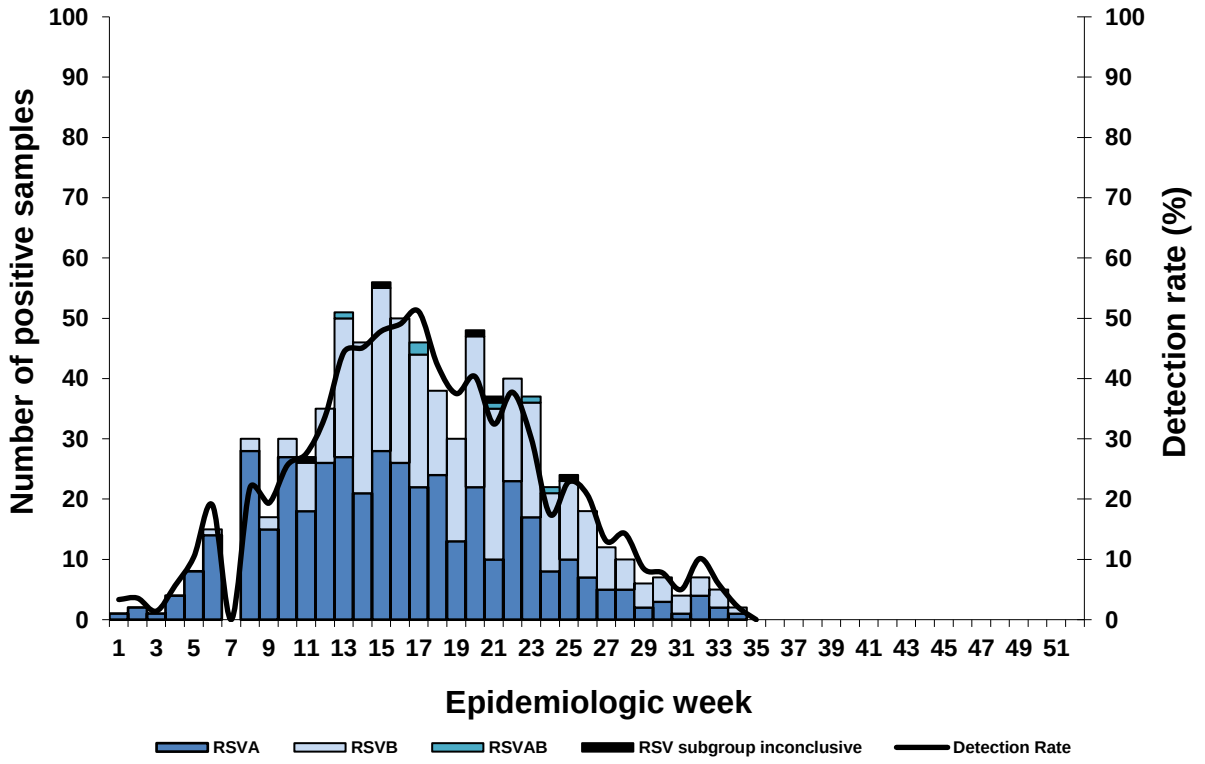
From the influenza positive specimens reflected on the above table we detected one dual specimen positive for influenza A(H1N1)pdm01 & influenza A(H3N2) in week21

Data are provisional as reported to date (Data for this report drawn on 05/09/2019). Number of consultations/specimens are reported/analysed by date of consultation/specimen collection.

Reporting period 01/01/2019 to 01/09/2019 *Results until end of epidemiologic week 35 (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	533
Helen Joseph-Rahima Moosa (GP)	108	58	2	0	744
Klerksdorp-Tshepong (NW)	50	8	0	1	470
Mapulaneng-Matikwana (MP)	54	1	0	0	328
Red Cross (WC)	69	211	4	3	806
Mitchell's Plain (WC)	21	47	0	0	264
Total:	425	330	6	5	3145

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

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

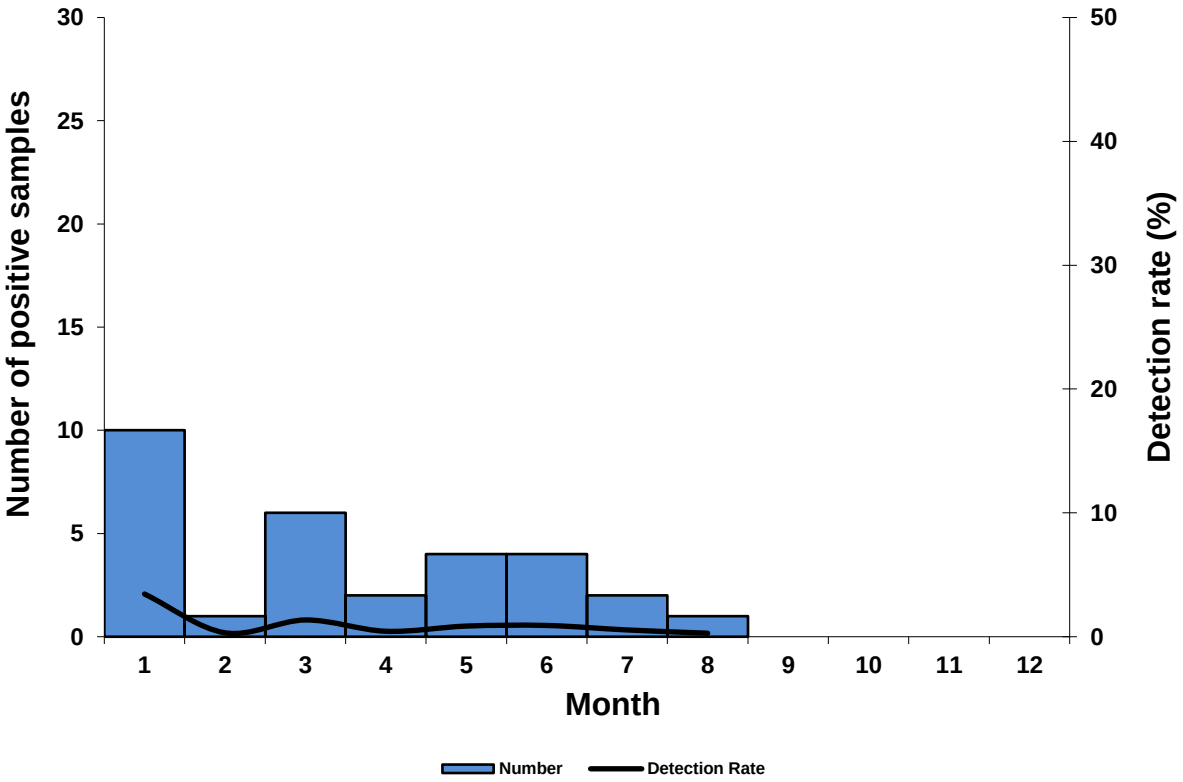


Table 7. Cumulative number of *B. pertussis* identified and total number of samples tested by hospital and province

Hospital (Province)	*B. pertussis* Positive**	Total samples
Edendale (KZ)	5	532
Helen Joseph-Rahima Moosa (GP)	8	743
Klerksdorp-Tshepong (NW)	3	470
Mapulaneng-Matikwana (MP)	4	325
Red Cross (WC)	10	790
Mitchell's Plain (WC)	0	259
Total:	30	3119

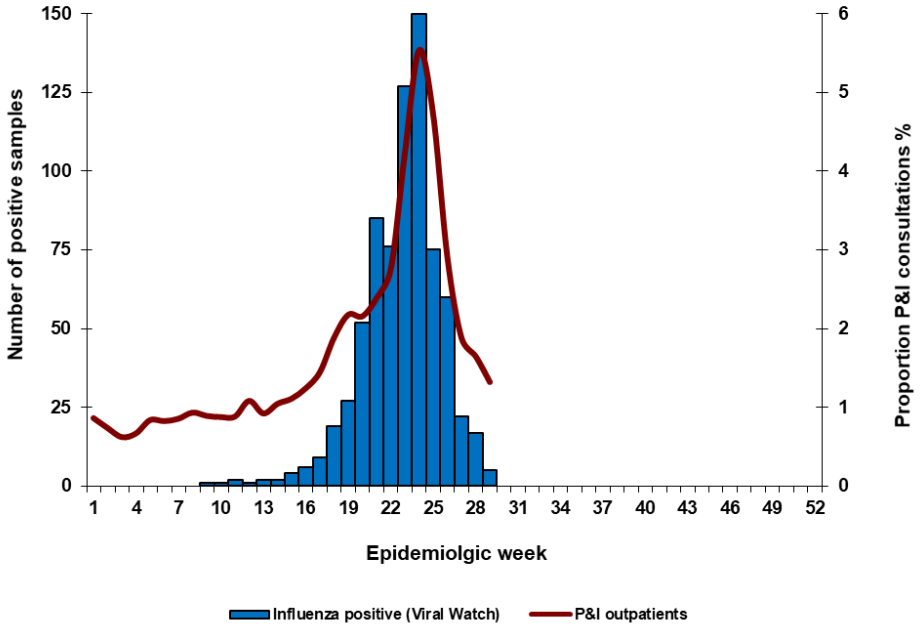
GP: Gauteng; KZ: KwaZulu-Natal; NW: North West; MP: Mpumalanga; WC: Western Cape

**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.

Reporting period 01/01/2019 to 21/07/2019 *Results until end of epidemiologic week 29 (2019)*

Private hospital consultations

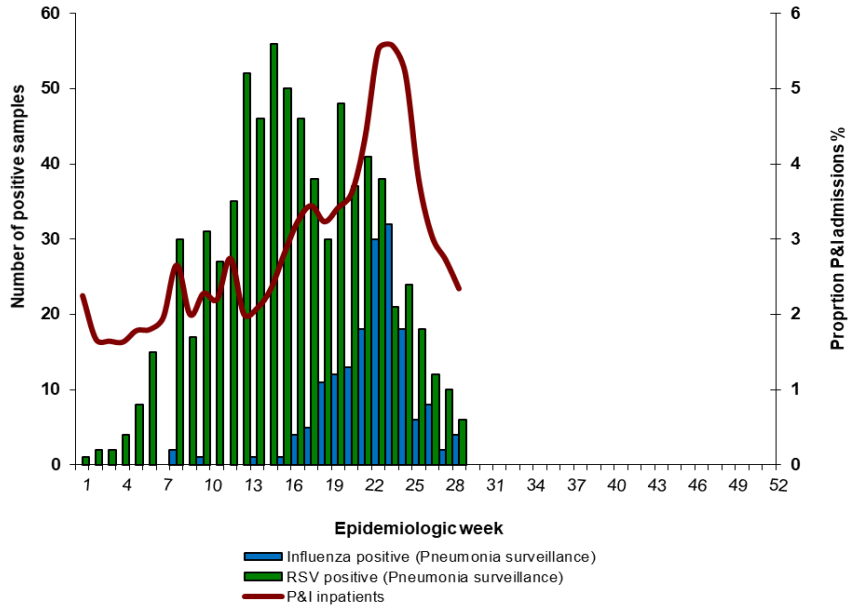
Figure 8. Number of private hospital outpatient consultations* with a diagnosis of pneumonia and influenza (P&I) and viral isolates**



* 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.

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