National Institute for Communicable Diseases
-- Monthly Surveillance Report --

This Surveillance Report is published by the National Institute for Communicable Diseases (NICD), a division of the National Health Laboratory Service (NHLS), on a monthly basis to provide information on communicable diseases in South Africa. Much of the information is therefore preliminary and should not be cited or utilised for publication. Questions and comments may be addressed to the Division of Public Health Surveillance and Response and will be referred on to the responsible Centres: pennyc@nicd.ac.za; Private Bag X4, Sandringham, 2131, South Africa

Surveillance Summary

- *Salmonella* Typhi has been reported for 47 cases to date in 2015.
- No cases of *Vibrio cholerae* O1 have been reported to date in 2015. For the same period last year, 2 cases had been reported in Gauteng province, serotype Ogawa.
- One hundred and fifty-seven specimens (157/658; 23.8%) have tested positive for rotavirus to date in 2015.
- Laboratory-based reflex screening for cryptococcal disease has been operational in Gauteng in the City of Johannesburg Metro since September 2012, and in the City of Ekurhuleni Metro since April 2013. Screening in Lejweleputswa and Fezile Dabi districts in the Free State commenced in October 2014 and February 2015 respectively. Between 3 September 2012 and 16 April 2015, 29 778 patients were screened at selected facilities in these four districts, 1170 (4%) of whom tested positive for cryptococcal antigenaemia (CrAg).
- To 31 August 2015, 1637 *S. aureus* cases were reported. The majority of cases were <10 years old (33%). The proportion of methicillin-resistant isolates was 32%.
- A total of 5131 patients over a 40 month period were tested *for Pneumocystis jirovecii.* Seven hundred and ninety-two (15%) cases were positive for *P. jirovecii*. These cases positive for *P. jirovecii* could indicate colonization or it could be true disease.
- By week 39 in 2015, 108 meningococcal cases had been reported to the NICD. Serogrouping results to date include 31 B, 8 C, 28 W, 1 X and 20 Y . Most of the cases occurred in children aged <10 years.
- By week 39 in 2015, 198 cases of *H. influenzae* had been reported. Serotyping results to date include 9 a, 23 b, 1 c, 1 d, 2 e, 9 f and 85 non-typeable. Most cases occur in individuals aged <10 years.
- The number of pneumococcal cases was lower than that reported last year (1712 versus 2057). Most cases occur in children aged <5 years and adults aged 35-39 years.
- At the end of week 39, twenty five laboratory-confirmed measles cases were detected with date of onset of rash in 2015, of which 11 were classified as measles vaccine-related cases. Two measles IgM cases detected are still to be classified, 1 from each of Gauteng and KwaZulu Natal provinces. Of the 14 measles IgM cases not classified as vaccine-related, 4 from Western Cape province, 3 from Northern Cape Province, 2 from each of Eastern Cape and Gauteng provinces, and 1 from each of Free State, KwaZulu Natal and North West provinces.
- Between 1 January—27 September 2015, 374 AFP cases <15 years of age have been reported with an annualized non-polio AFP detection rate of 3.2 per 100,000 population.

Laboratory-Based Enteric Disease Surveillance

Reporting period 01/01/2015 to 30/09/2015 *Results until end of epidemiologic week 39 (2015)*

Programme Description:

The Centre for Enteric Diseases (CED) at the National Institute for Communicable Diseases (NICD) of the National Health Laboratory Service (NHLS) monitors disease caused by *Salmonella* Typhi and *Vibrio cholerae* through a national, active, laboratory-based surveillance system (as part of GERMS-SA). All microbiology diagnostic laboratories throughout South Africa are requested to report laboratory-confirmed disease (defined as the isolation of *Salmonella* Typhi and *Vibrio cholerae* from any specimen. Reporting laboratories should include all private- and public-sector health care laboratories, and other specialist laboratories e.g. laboratories serving mining or military hospitals. Available isolates are sent to CED for confirmation and further characterisation, including serotyping.

Some of the limitations of this surveillance system are that we include only individuals that arrive at hospitals and have specimens taken, and cases are only counted if laboratories report them to us. Quarterly audits to verify completeness of reporting are conducted for all public-sector laboratories. Frequent communications and visits are conducted to improve case reporting. Isolates for serotyping are not available for cases identified by audit.

Comments:

By week 39 in 2015, *Salmonella* Typhi had been reported for 47 cases (37 invasive), in Eastern Cape, Free State, Gauteng, KwaZulu Natal, Limpopo, Mpumalanga and Western Cape provinces. For the same period last year, 78 cases of *Salmonella* Typhi had been reported.

No cases of *Vibrio cholerae* O1 have been reported to date in 2015. For the same period last year, 2 cases had been reported in Gauteng province, serotype Ogawa.

Reporting period 01/01/2015 to 30/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 1. Number of *Salmonella* Typhi cases by month in South Africa, 2014 and 2015

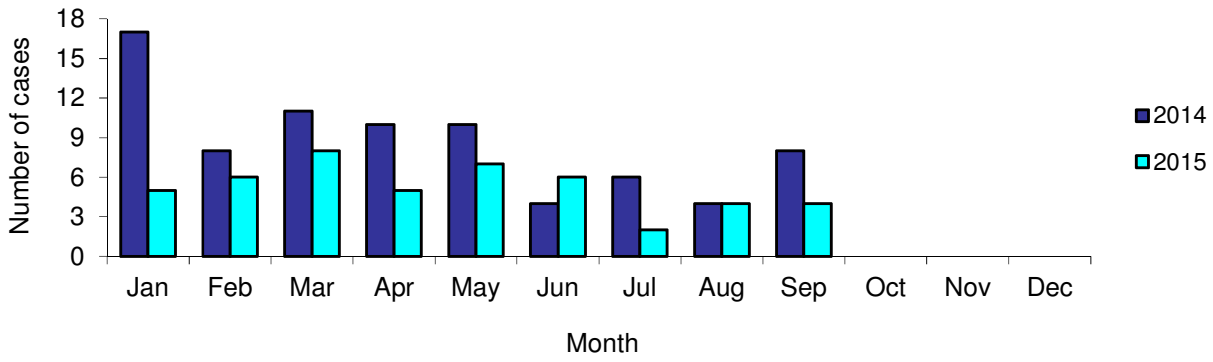


Figure 2. Number of *Salmonella* Typhi cases by province in South Africa, 2014 and 2015

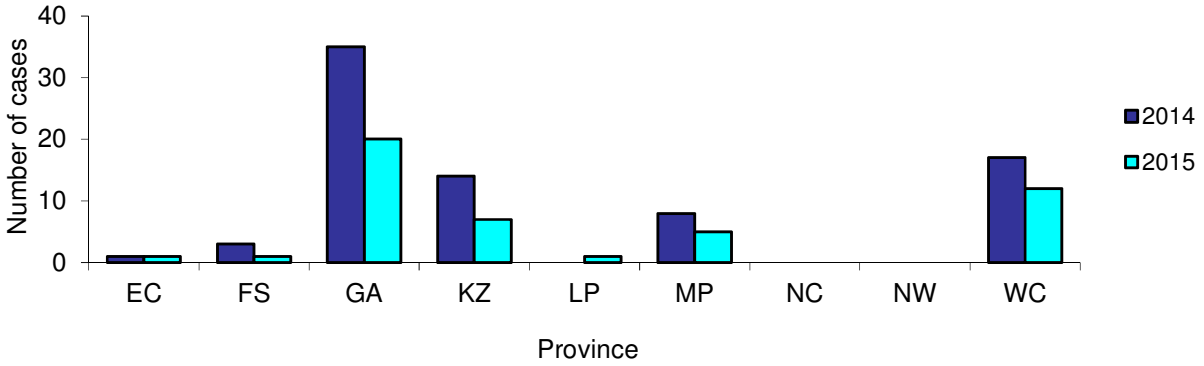
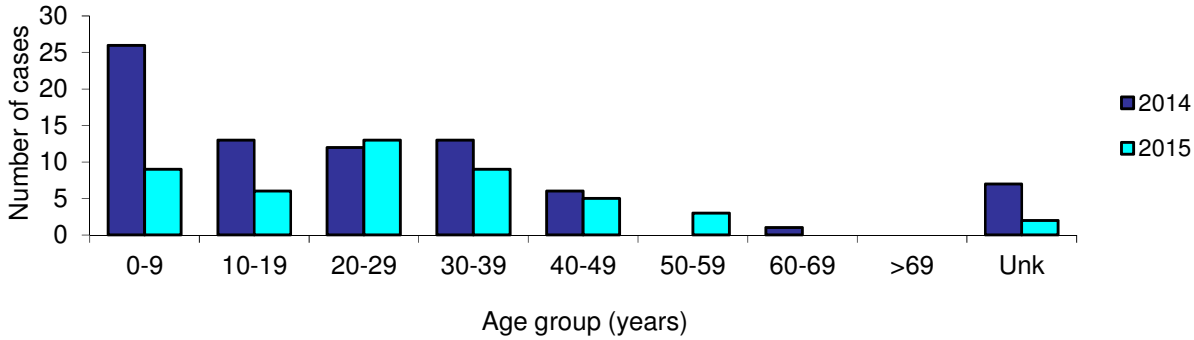


Figure 3. Number of *Salmonella* Typhi cases by age group in South Africa, 2014 and 2015



Reporting period 01/01/2015 to 30/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 4. Number of *Vibrio cholerae* O1 cases by month in South Africa, 2014 and 2015

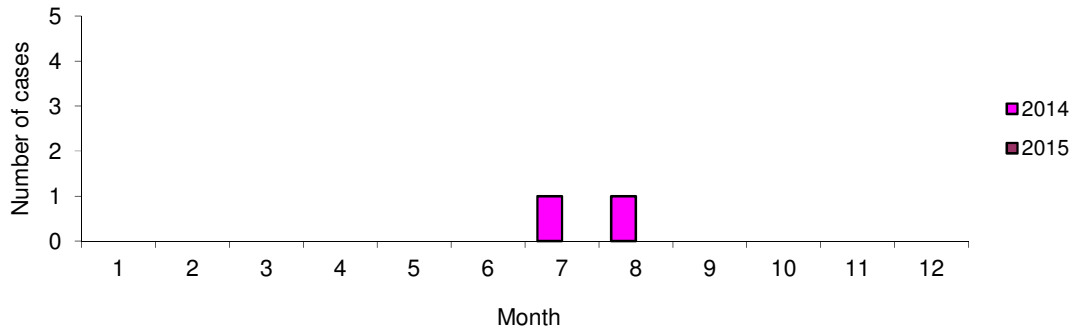


Figure 5. Number of *Vibrio cholerae* O1 cases by province in South Africa, 2014 and 2015

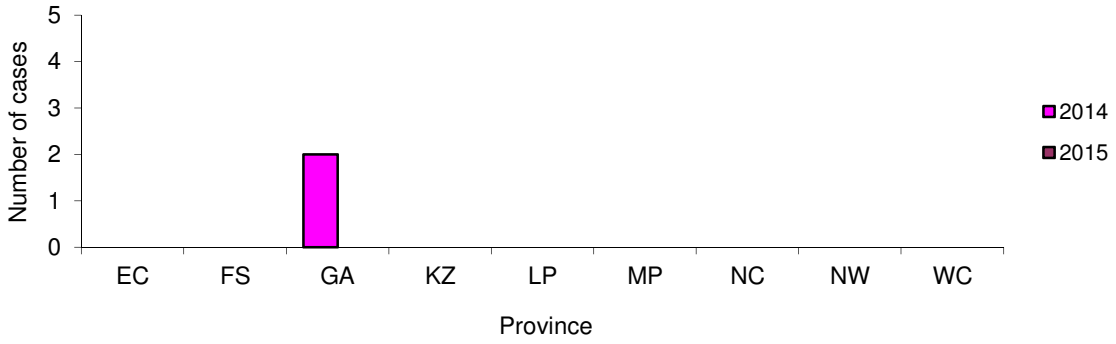
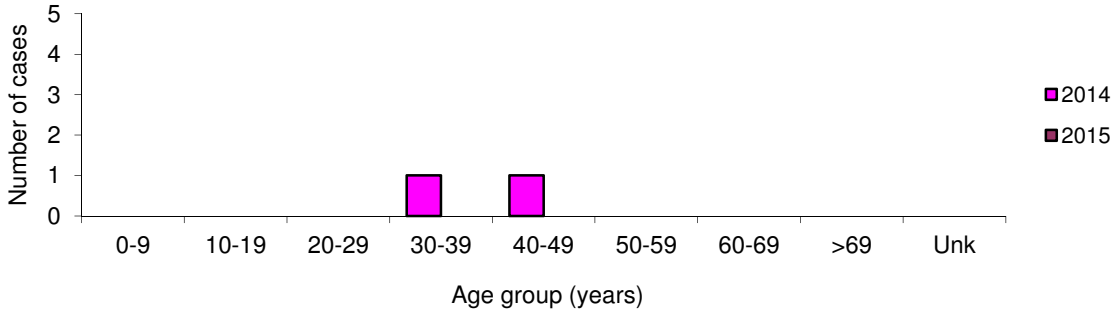


Figure 6. Number of *Vibrio cholerae* O1 cases by age group in South Africa, 2014 and 2015



Syndromic Diarrhoeal Disease Surveillance

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Programme Description:

The Centre for Enteric Diseases (CED) of the National Institute for Communicable Diseases (NICD) monitors severe gastroenteritis in nine hospitals in seven provinces (Gauteng, Gauteng/North West border, KwaZulu Natal, Mpumalanga, Western Cape, Northern Cape, Limpopo and Free State) through the diarrhoeal sentinel surveillance programme. The aim of the programme is to evaluate the prevalence of rotavirus and other important enteric pathogens in severe diarrhoea cases in children <5 years of age. The programme also monitors the continued performance and impact of the monovalent Rotarix vaccine that was introduced into the expanded programme on immunisation in August 2009.

Children <5 years admitted (slept overnight in hospital) to one of the sentinel hospitals for acute diarrhoea (≥3 loose stools in 24 hour period and onset within 7 days) are eligible for enrolment in the surveillance. Stool specimens are collected and tested for rotavirus at the CED, NICD and the SAMRC Diarrhoeal Pathogens Research Unit, Sefako Makgatho Health Sciences University using the ProSpecT Rotavirus ELISA kit (Oxoid, UK). Stool samples are also screened for other viral, bacterial and parasitic enteric pathogens at CED, NICD.

Comments:

The start of the rotavirus season is defined as rotavirus detection rate of >20% for two consecutive weeks and the end as rotavirus detection rate <20% for two consecutive weeks.

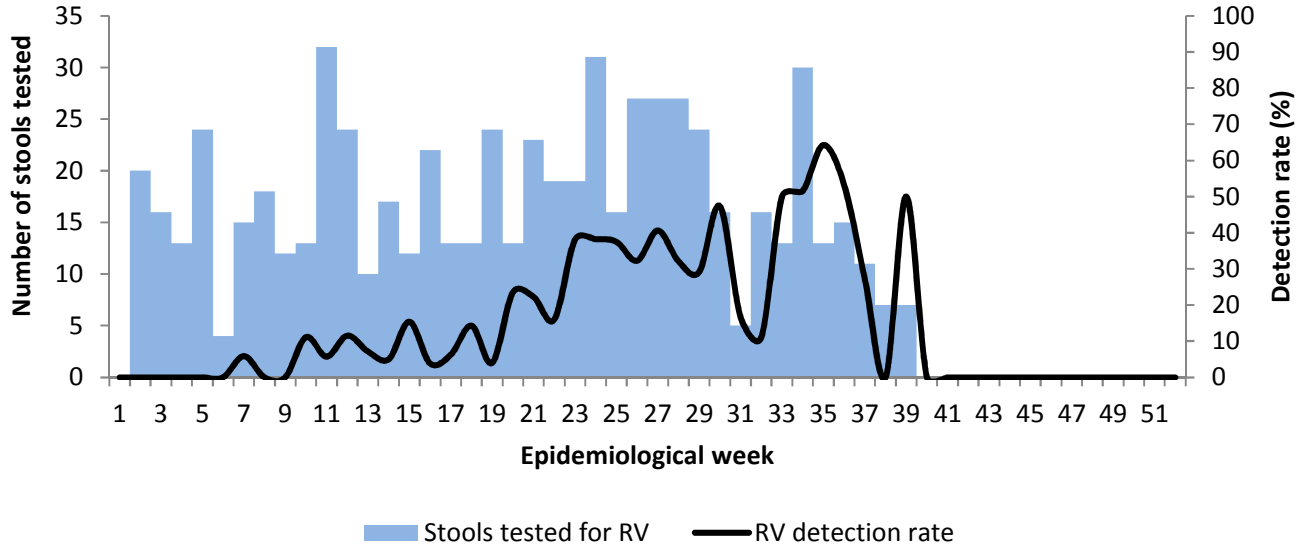
In 2014, the rotavirus season started in week 16 (14 April) and ended in week 34 (week ending 24 August). The maximum detection rate (65%; 30/44) for the 2014 rotavirus season was in week 27 (30 June).

For the period 5 January to 27 September 2015, 658 patients were tested for rotavirus with 157 positive for rotavirus (157/658; 23.8%). The rotavirus season for 2015 started in week 20 (11 May) with a rotavirus detection rate of 23.5%. The maximum detection rate (64%; 9/14) thus far was recorded in week 35 (24 August). The rotavirus detection rates for September have decreased although the 2015 season has not yet been declared over.

Rotavirus (ROTA) surveillance

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 7. Number of stools tested for rotavirus and detection rate by week, 2015



The rotavirus detection (in percentage) is the number of rotavirus-positive stool tests divided by the number of rotavirus stool tests in acute diarrhoea hospitalisations.

Table 1. Cumulative number of stools tested rotavirus positive and total number of stools collected by hospital, 2015

Site	Rotavirus Positive	Total stools tested
Chris Hani Baragwanath	56	237
Mapulaneng	9	32
Matikwane	16	41
Dr George Mukhari	21	91
Edendale	12	33
Red Cross Children's	13	81
Kimberley	13	40
Polokwane	2	21
Free State	15	82
Total	**157**	**658**

Sexually Transmitted Disease Surveillance

Reporting period 01/06/2015 to 30/06/2015 *Results until end of epidemiologic week 26 (2014)*

Programme Description:

The Gauteng clinical STI sentinel surveillance programme was introduced in 1997 by the Sexually Transmitted Infections Reference Centre (Centre for HIV and STI, National Institute for Communicable Diseases) in partnership with the Gauteng Department of Health. The aim of the surveillance program is to monitor STI trends and set up priorities for STI management and provincial control programmes. The data presented below are a summary for the period 1 June - 30 June 2015.

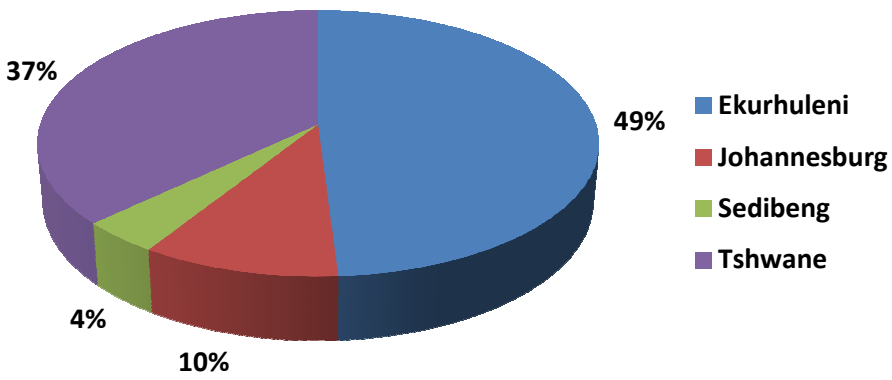
Comments:

For the period 1—30 June 2015, 815 new STI syndrome episodes were reported by sentinel sites.

Females represented 57% (n=466) and males 43% (n=349) of the surveyed population. Amongst males, 60% (211/349) of STI syndromes were MUS (Male Urethritis Syndrome) and amongst females, 55% (254/466) of STI syndromes were VDS (Vaginal Discharge Syndrome). A total of 719 partner notification slips were issued to 815 patients with new STI episodes, resulting in an overall partner slip issue rate of 88%.

MUS and VDS continued to be the most common syndromes in this patient population group.

Figure 8. Percentage distribution of new STI syndrome episodes per surveillance region, 1-30 June 2015



Laboratory-Based Screening for Cryptococcal Disease (Phase 1)

Reporting period 01/09/2012 to 16/04/2015 *Results until end of epidemiologic week 16 (2015)*

Programme Description:

The NICD's Centre for Opportunistic, Tropical and Hospital Infections (COTHI), in collaboration with the Department of Health and several partner organizations, implemented the first phase of reflex laboratory-based screening for cryptococcal disease. The screen-and-treat programme began at 21 health care facilities in the City of Johannesburg in September 2012. In April 2013, 85 facilities in Ekurhuleni were also included. Since October 2014, 93 facilities in two Free State districts (Lejweleputswa and Fezile Dabi) were also included. Routine blood samples submitted for a CD4+ T-lymphocyte (CD4) count from patients seen at these 199 facilities were reflexively tested for cryptococcal antigen (CrAg) using a cryptococcal lateral flow assay (LFA), if the CD4 count was less than 100 cells/µl. CrAg test results were included on the CD4 count laboratory report. As part of intensive monitoring and evaluation, patients with cryptococcal antigenaemia, who provide informed consent, were followed up prospectively for up to 6 months. The following data were collected: lumbar puncture results; antifungal treatment; antiretroviral treatment; time from CrAg testing to treatment initiation; adverse events and outcome (i.e. development of cryptococcal meningitis (CM), death or loss to follow-up). Other key programme indicators such as number of cases of CM detected at hospitals in the screening districts, the number of healthcare workers trained and availability of fluconazole at facilities were collected. The objective of this report is to provide quarterly updates of selected programme indicators to all stakeholders. Data in this report are incomplete due to retrospective collection of clinical data.

Comments:

Up to 16 April 2015, 29,778 patients with a CD4 count <100 cells/µl have been screened in the four districts in Gauteng and the Free State, 1,170 (4%) tested positive for CrAg. In Johannesburg, 52% (219/420) of cases were detected at Helen Joseph Hospital and in Ekurhuleni, 12% (87/698) of cases were detected at Tambo Memorial Hospital. Twenty three per cent (211/915) of CrAg-positive patients with available age data were between the age of 30 and 34 years. During the reporting period, 431 cases of laboratory-confirmed CM were diagnosed at three hospitals (Helen Joseph, Rahima Moosa Mother & Child and South Rand) in Johannesburg and 553 cases of CM were diagnosed at four hospitals in Ekurhuleni (Bertha Gxowa, Natalspruit, Pholosong and Tambo Memorial); this number may include hospitalised patients who were not screened through this programme.

NB. Numbers in reporting may have changed relative to the previous quarterly report (Nov 2014) due to data source changes aimed at improving statistical accuracy

Reporting period 01/09/2012 to 16/04/2015 *Results until end of epidemiologic week 16 (2015)*

Table 2. NHLS CD4 lab statistics for Phase 1 of the cryptococcal screening programme*, GA and FS

Laboratory Statistics	Number
Number of NHLS CD4 laboratories enrolled in screening programme	3
Number of NHLS CD4 laboratories reporting data	3
Number of CrAg screening tests performed	32,759
Number of CrAg-positive tests/ number of specimens tested (%)	1,190/32,759 (4%)

*Data source: NHLS Corporate Data Warehouse and NHLS laboratory information system

Table 3.1. Case statistics for Phase 1 of the cryptococcal screen & treat programme*, Gauteng

Case Statistics	Sep-Dec 2012	Jan-Jun 2013	Jul-Dec 2013	Jan-Jun 2014	Jul-Dec 2014	Jan-April 2015	Total n/n (%)
Number of patients tested for CrAg*	1739	4214	4711	6817	4495	5107	**27 083**
Number of CrAg-positive patients^/ number of patients tested for CrAg (%)*	84/1739 5%	206/4214 5%	288/4711 6%	194/6817 3%	170/4495 4%	166/51073 3%	**1108/27 083 4%**
Number of CrAg-positive patients at enhanced M&E sites (%)	84 100%	196 95%	206 72%	127 65%	123 72%	129 78%	**865 78%**
Number of CrAg-positive patients known to have had a lumbar puncture**(%)	13 15%	21 11%	41 20%	34 27%	24 20%	36 28%	**169/865 20%**
Number of CrAg-positive patients known to have had a lumbar puncture with CM† (%)	9 69%	15 71%	31 76%	24 71%	8 33%	31 86%	**118 70%**
Number of CrAg-positive patients known to be treated with fluconazole†(%)	58/84 69%	119/196 61%	137/206 67%	83/127 65%	53/113# 47%	41/75# 55%	**491/801 61%**

*Data source: NHLS Corporate Data Warehouse, NHLS laboratory information system and NICD; where specimen date was unknown, tested date/reviewed date was used as the reference date. Numbers may be lower than previously reported as previous CrAg-negative results are excluded if the same patient tested CrAg-positive when screened at a later stage; ^Missing date data for 10 cases;†Data may be incomplete at the time of reporting due to retrospective collection of clinical data; **lumbar puncture is indicated based on clinical findings; CrAg: cryptococcal antigenaemia; CM: cryptococcal meningitis; # Intensive M+E in CoJ stopped 31 October 2014; hence fluconazole data are reported for subset of patients

Table 3.2. Case statistics for Phase 1 of the cryptococcal screen & treat programme*, Free State

Case Statistics	Oct-Dec 2014	Jan-April 2015	Total n/n (%)
Number of patients tested for CrAg*	897	1798	**2695**
Number of CrAg-positive patients/ number of patients tested for CrAg (%)*	23/897 3%	39/1798 2%	**62/2695 2%**

Figure 9.1. Number of CrAg-positive patients, by facility in City of Johannesburg, n =420

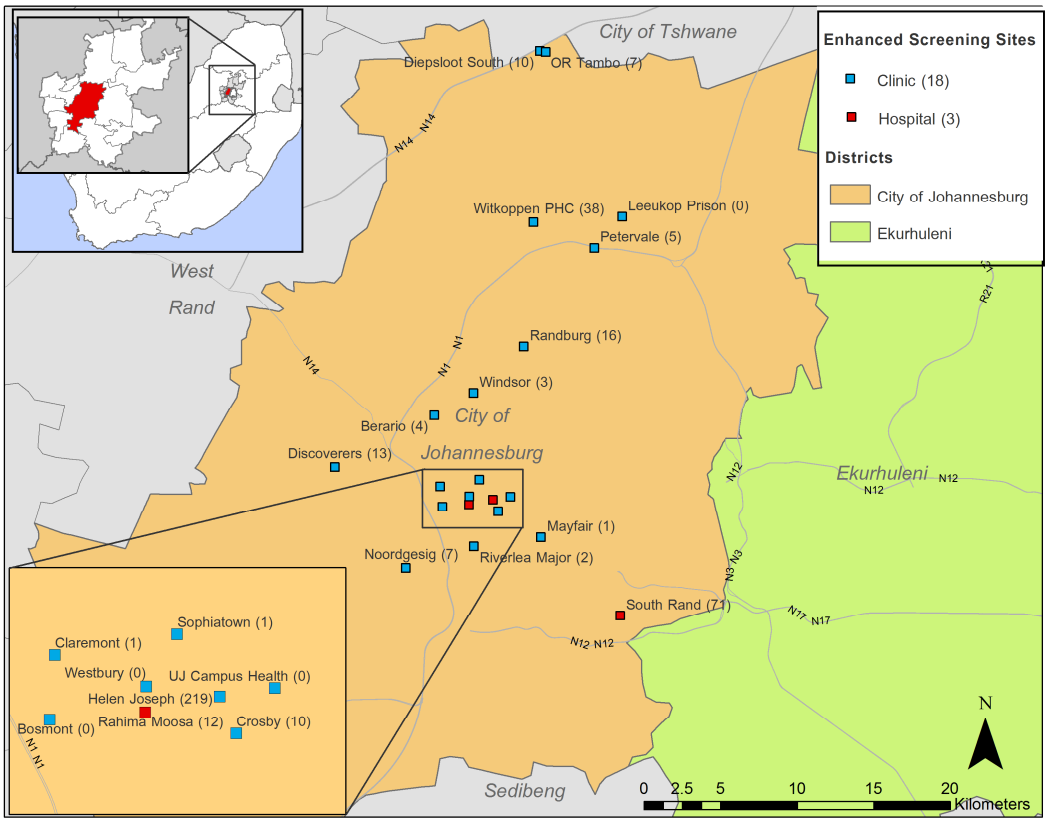
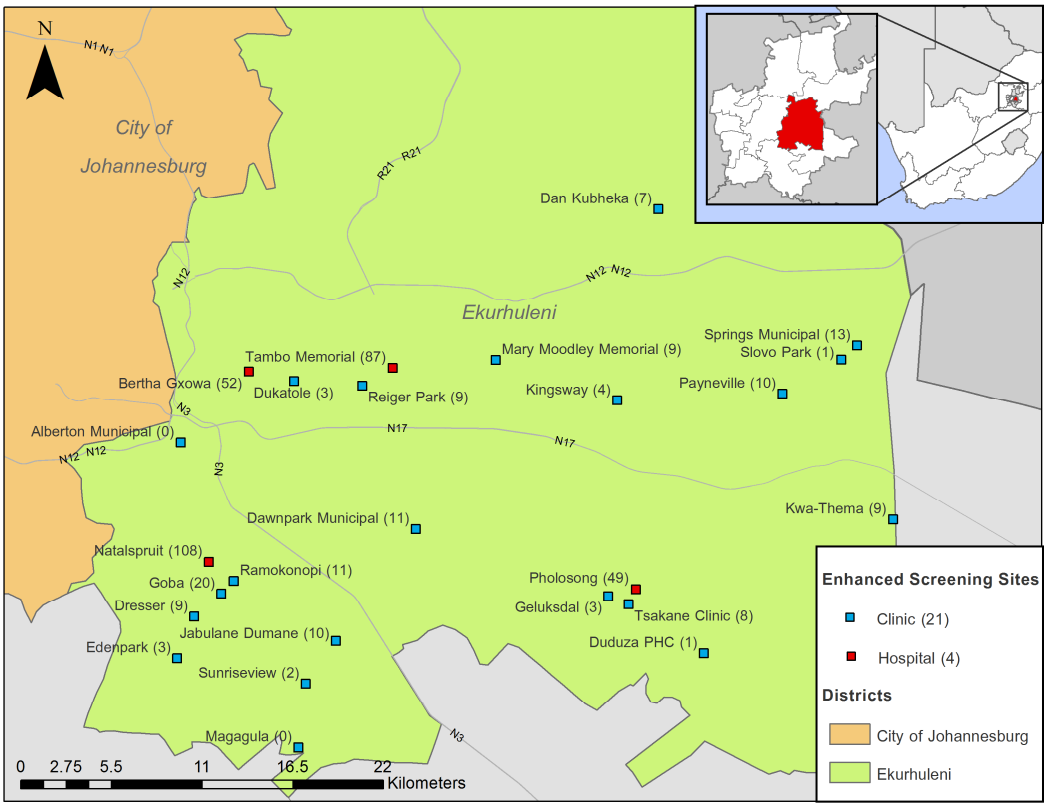
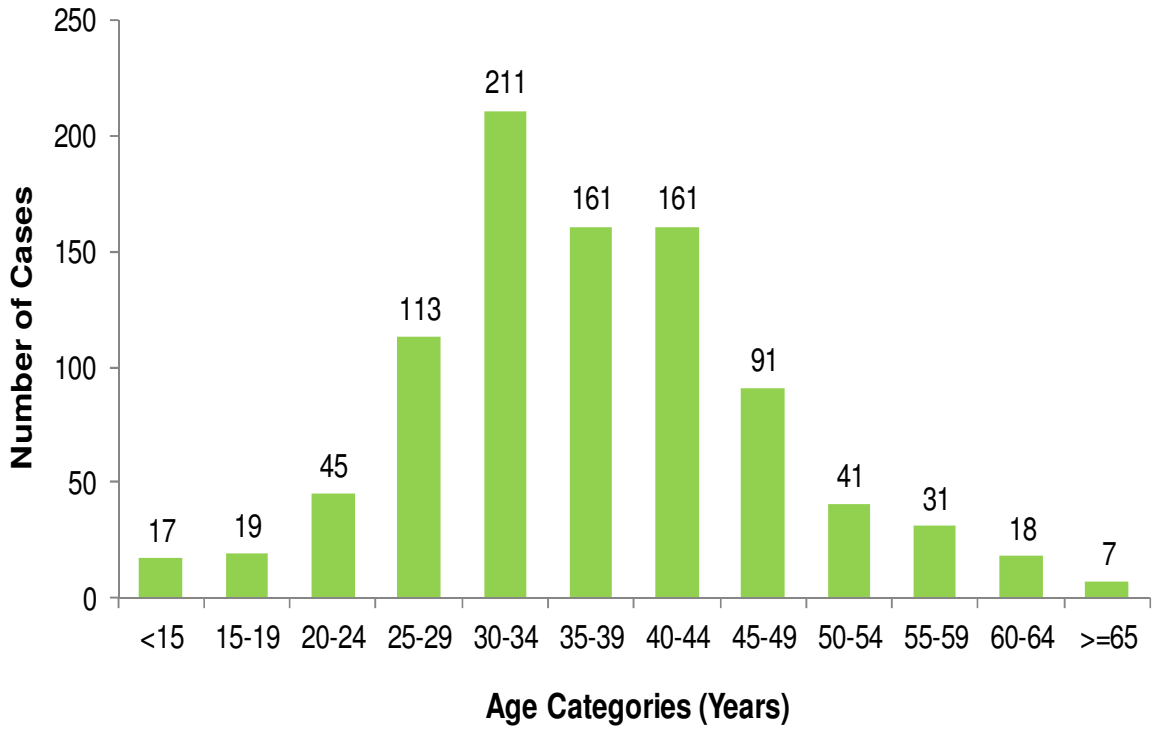


Figure 9.2. Number of CrAg-positive patients, by facility in Ekurhuleni, n=439*



* Non-Enhanced Sites (not shown on map) n=259

Figure 10. Number of CrAg-positive patients, by age category, at 106 facilities that refer specimen to Charlotte Maxeke Johannesburg Academic Hospital and Tambo Memorial Hospital NHLS CD4 Laboratories, September 2012 through April 2015, n=915



*Data source: NHLS Corporate Data Warehouse and NHLS laboratory information system ** Only included patients with known age

Figure 11.1. Number of laboratory-confirmed cases of cryptococcal meningitis† diagnosed for City of Johannesburg*, September 2012 through December 2014, n=431

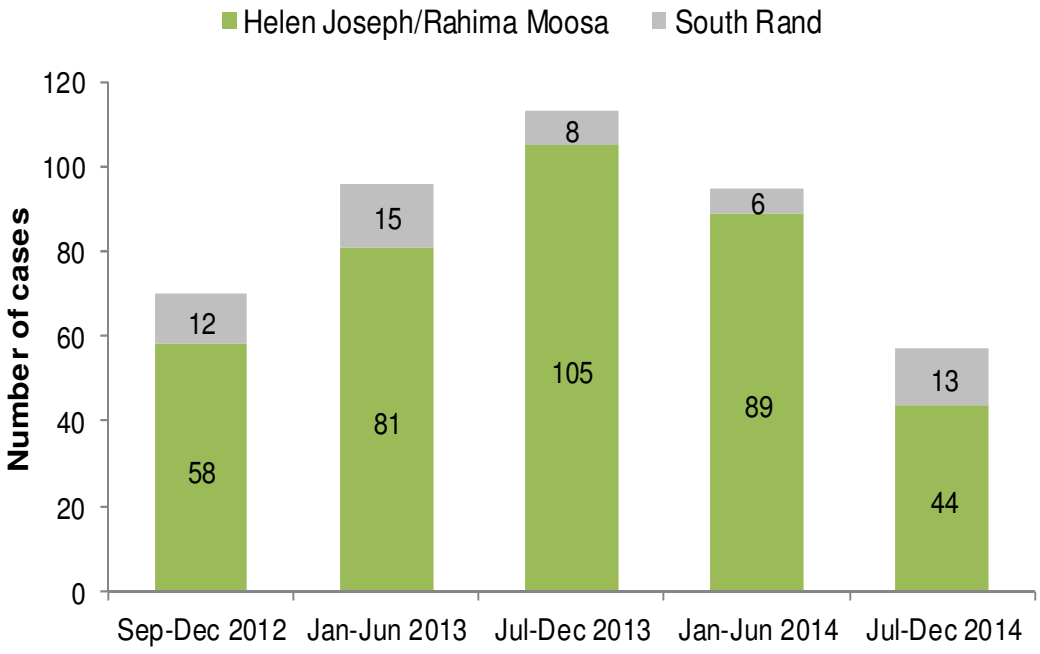
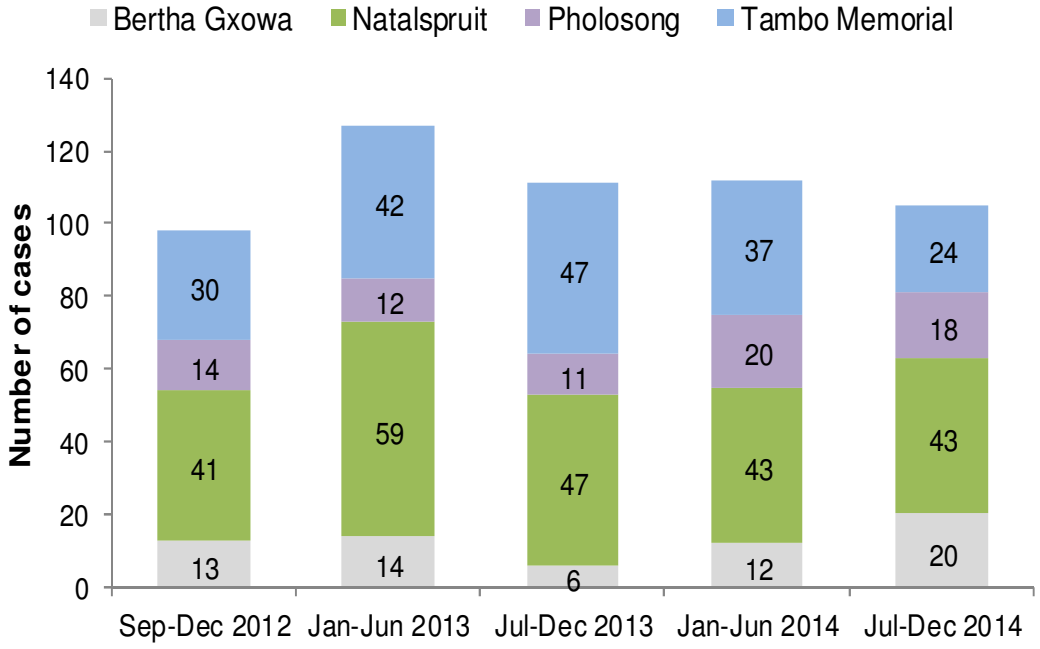


Figure 11.2. Number of laboratory-confirmed cases of cryptococcal meningitis† diagnosed for Ekurhuleni*, September 2012 through December 2014, n=553



†May include hospitalised patients who were not screened through this programme; *Data source: GERMS-SA surveillance programme; *Data may be incomplete because surveillance audits have not been performed; *11.1: Data from three regional hospitals (Helen Joseph/ Rahima Moosa Mother & Child and South Rand Hospital); *11.2: Data at four regional hospitals (Bertha Gxowa, Natalspruit, Pholosong and Tambo Memorial)

Laboratory-Based Nosocomial Disease Surveillance

Reporting period 01/09/2012 to 31/08/2015 *Results until end of epidemiologic week 35 (2015)*

Programme Description:

Staphylococcus aureus (SA) is seen as a common pathogen associated with a wide range of clinical infections (blood stream, lower respiratory tract, skin and soft tissue infections, ventilator-associated pneumonia and central venous catheter associated with blood stream infections and foreign body infections).

The epidemiology of SA is changing. It is one of the most significant pathogens responsible for causing both nosocomial- and community-associated infections, particularly MRSA, which has a high prevalence worldwide as well as a high morbidity and mortality rate. Previously, MRSA was considered a nosocomial pathogen; now it is recovered from patients at admission to hospitals. This community-associated MRSA (CA-MRSA) occurs either from patients that have never been exposed to healthcare settings or patients that have been exposed to recent hospital admissions or any interventions in health care settings.

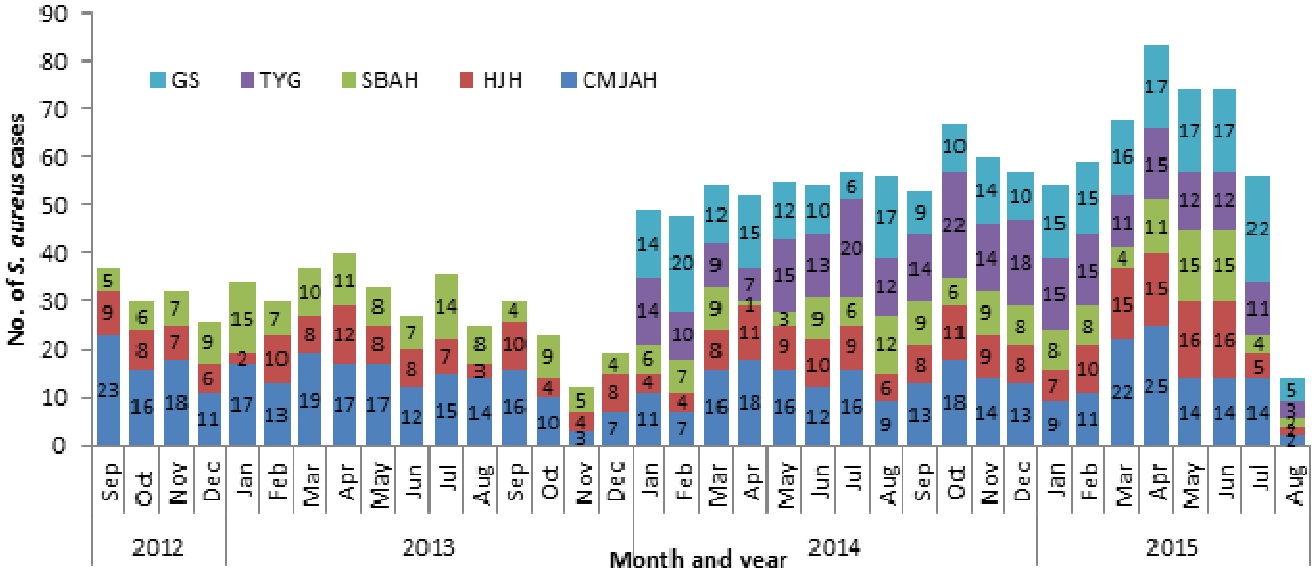
SA enhanced surveillance from patients with bacteraemia was introduced in September 2012 at three sentinel sites in Gauteng Province: Charlotte Maxeke Johannesburg Academic Hospital, Helen Joseph/Rahima Moosa Mother and Child Hospital, and Steve Biko Pretoria Academic Hospital. From January 2014, surveillance was introduced at two sentinel sites in Western Cape Province: Groote Schuur Hospital and Tygerberg Hospital. We report basic demographic findings from September 2012 to August 2015.

Comments:

- For the period 1 September 2012 to 31 August 2015, 1637 *S. aureus* cases were reported.
- The majority of *S. aureus* cases were 0-9 years of age (33%) and 30-39 years of age (15%).
- The highest case-fatality rate occurred in the ≥60 year age group, with just less than half of patients dying (49%).
- Antibiotic susceptibility varied by site.
- Thirty-two percent of *S. aureus* isolates were methicillin-resistant.

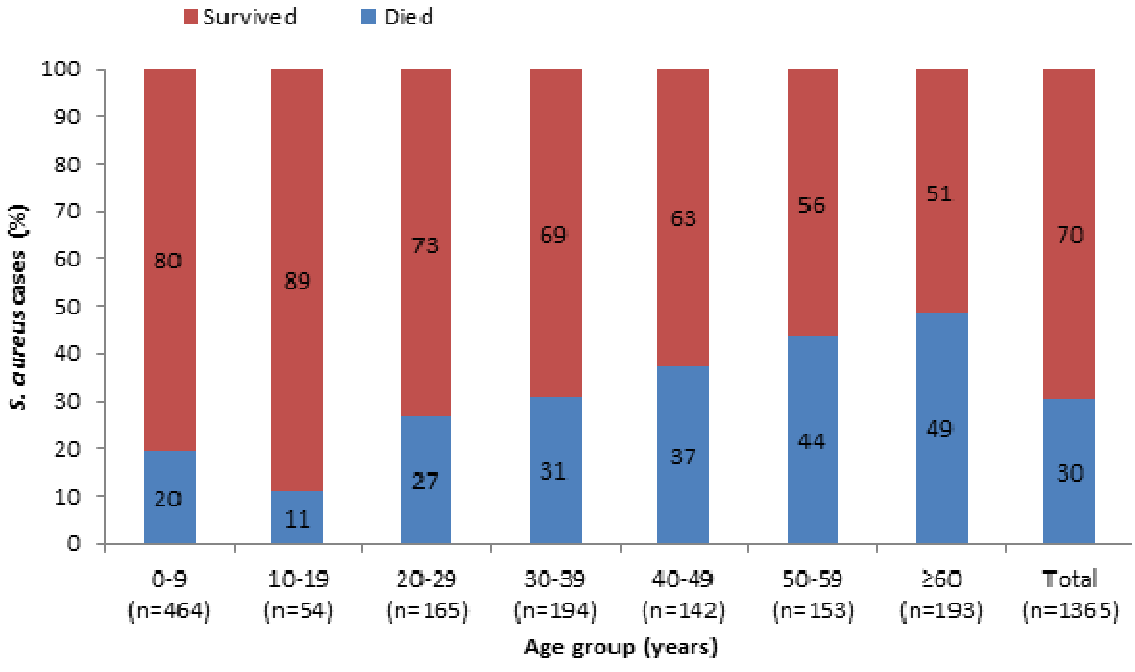
Reporting period 01/09/2012 to 31/08/2015 *Results until end of epidemiologic week 35 (2015)*

Figure 12. Number of *S. aureus* cases* reported by month and site from September 2012 to August 2015 (n=1638)



*Data may be incomplete because surveillance audits have not been performed

Figure 13. *S. aureus* cases by age category and outcome from September 2012 to August 2015 (N=1365)



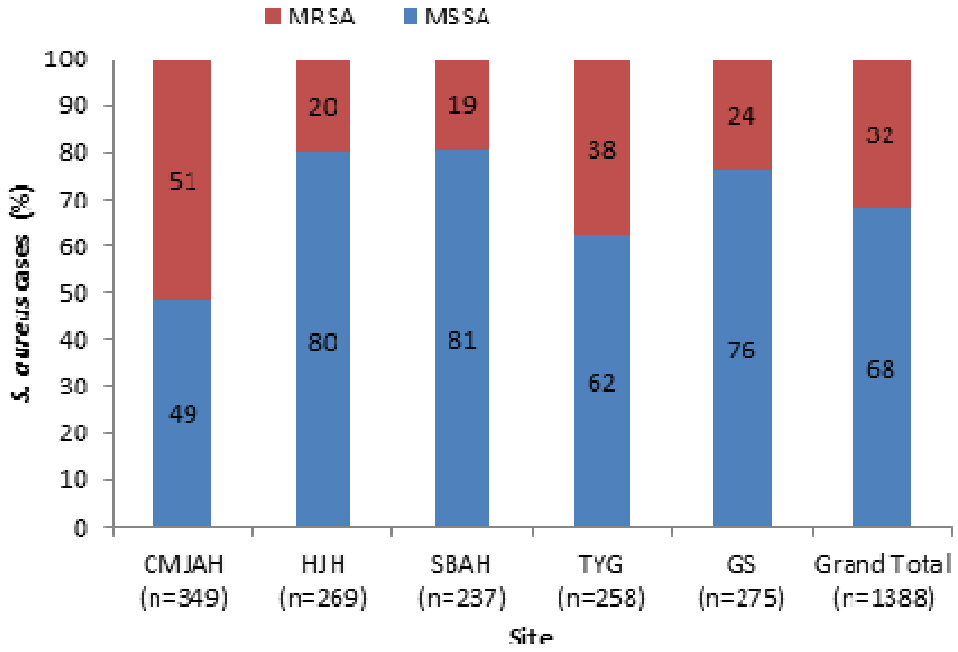
Reporting period 01/09/2012 to 31/08/2015 *Results until end of epidemiologic week 35 (2015)*

Figure 14. Antibiotic susceptibility profile of *S. aureus* isolates by percentage and site from September 2012 to August 2015

Antibiotic	CMJAH (%)	HJH (%)	SBAH/TDH (%)	GSH (%)	TYG (%)	Total (%)
Amikacin	47	64	65	98	89	72
Cefoxitin	85	91	90	100	99	93
Clindamycin	53	82	78	81	66	71
Ciprofloxacin	48	78	79	81	67	69
Erythromycin	46	79	75	81	67	68
Gentamycin	46	69	73	79	75	67
Linezolid	99	100	100	99	100	100
Oxacillin	49	80	81	76	62	68
Rifampicin	93	86	90	86	94	90
Cotrimoxazole	51	76	83	85	84	74
Teicoplanin	99	100	100	99	99	100
Vancomycin	99	100	100	99	99	99

CMJAH: Charlotte Maxeke Johannesburg Academic Hospital, HJH: Helen Joseph Hospital, SBAH: Steve Biko Academic Hospital/Tshwane District Hospital, GSH: Groote Schuur Hospital, TYG: Tygerberg Hospital

Figure 15. *S. aureus* bacteremia isolates by oxacillin susceptibility and site from September 2012 to August 2015



MSSA: Methicillin-susceptible *S. aureus*, MRSA: Methicillin-resistant *S. aureus*
CMJAH: Charlotte Maxeke Johannesburg General Academic; HJH: Helen Joeseph Hospital; SBAH/TSHW: Steve Biko Academic Hospital/ Tshwane District Hospital, GSH: Groote Schuur Hospital, TYG: Tygerberg Hospital

Laboratory-Based Nosocomial Disease Surveillance - ESKAPE

Reporting period 01/01/2014 to 30/11/2014 *Results until end of epidemiologic week 48 (2014)*

Programme Description:

The Centre for Opportunistic, Tropical and Hospital Infections is involved in antimicrobial resistance surveillance amongst hospital-associated infections utilising various sources. The source of data for this report is from the NHLS corporate data warehouse (CDW). Blood culture results from *Enterococcus, Staphylococcus, Klebsiella, Acinetobacter, Pseudomonas* and ESBL *(Enterobacter* and *E. coli*) (ESKAPE) organisms were cleaned and analysed. These are common, nosocomial, bacterial pathogens that are highly antibiotic-resistant. The data used were from the following hospitals: Charlotte Maxeke Johannesburg Academic Hospital, Chris Hani Baragwanath Hospital, Dr George Mukhari Hospital, Grey's Hospital, Groote Schuur Hospital, Helen Joseph Hospital, Inkosi Albert Luthuli Central Hospital, King Edward VIII Hospital, Mahatma Gandhi Hospital, Nelson Mandela Academic Hospital, RK Khan Hospital, Steve Biko Academic Hospital and Tygerberg Hospital. Cleaning of the data involved creating unique patient identifiers, which enabled us to de-duplicate and produce patient-level data. There was a lack of standardisation across NHLS laboratories on how data was captured. Extensive recoding of antibiotic names, organism names and susceptibility results were required to clean the data and to minimise errors. Six monthly reports will be generated to reflect overall antimicrobial susceptibility patterns per organism and trend of resistance. Due to limited space, hospital-level antibiotic susceptibility data are not included in this report but are available if required.

Comments:

For the 11-month reporting period we reported the most common organisms and their antimicrobial susceptibility; amongst them *K. pneumoniae* was the commonest organism (total of 2369 cases) followed by *S. aureus* (total of 2154 cases).

S. aureus was resistant to oxacillin in 722 (33%) of 2178 isolates. Amongst all isolates, 0.4% was recorded as non-susceptible to vancomycin (no confirmation) and to linezolid, respectively.

Susceptibility testing showed 98% of *E. faecalis* and 96% of *E. faecium* cases were susceptible to vancomycin.

P. aeruginosa showed susceptibility to piperacillin-tazobactam (65%) and high susceptibility to colistin (98%).

K. pneumoniae cases revealed a high rate of ESBL (69%) and retained susceptibility to carbapenems, except 5% consumed non-susceptibility for ertapenem.

Acinetobacter baumannii isolates were highly resistant to most of the antimicrobial agents tested and indicated 5% resistance to colistin.

We would like to acknowledge the CDW team for cleaning the data and preparing the tables and figures.

ESKAPE surveillance

Reporting period 01/01/2014 to 30/11/2014 *Results until end of epidemiologic week 48 (2014)*

Table 6. Number of ESKAPE cases per month from January to November 2014

	A. baumannii complex	*E. Cloacae* complex	*E. coli*	*E. faecalis*	*E. faecium*	*K. pneumoniae*	*P. aeruginosa*	*S. aureus*
Month	No of cases							
Jan	130	73	189	67	59	317	48	203
Feb	120	54	148	71	44	251	48	158
Mar	137	70	189	71	58	270	61	225
Apr	147	69	154	74	59	257	52	198
May	96	51	154	69	63	188	45	221
Jun	86	55	127	68	81	182	59	167
Jul	128	42	151	71	65	169	51	196
Aug	138	24	118	62	74	180	39	219
Sep	112	34	127	56	74	190	45	221
Oct	114	55	140	45	79	199	41	196
Nov	73	52	106	57	64	166	38	150
Total	**1281**	**579**	**1603**	**711**	**720**	**2369**	**527**	**2154**

Figure 16. Antimicrobial susceptibility of Gram-positive ESKAPE organisms

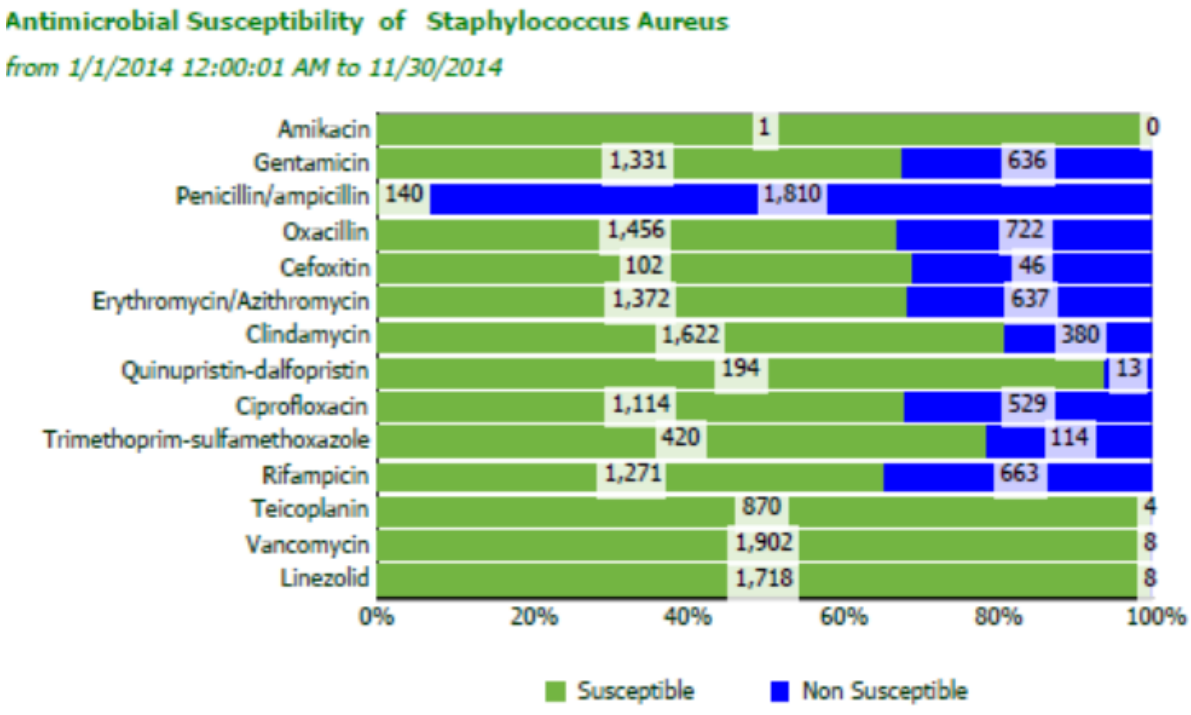


Figure 16 cont. Antimicrobial susceptibility of Gram-positive ESKAPE organisms

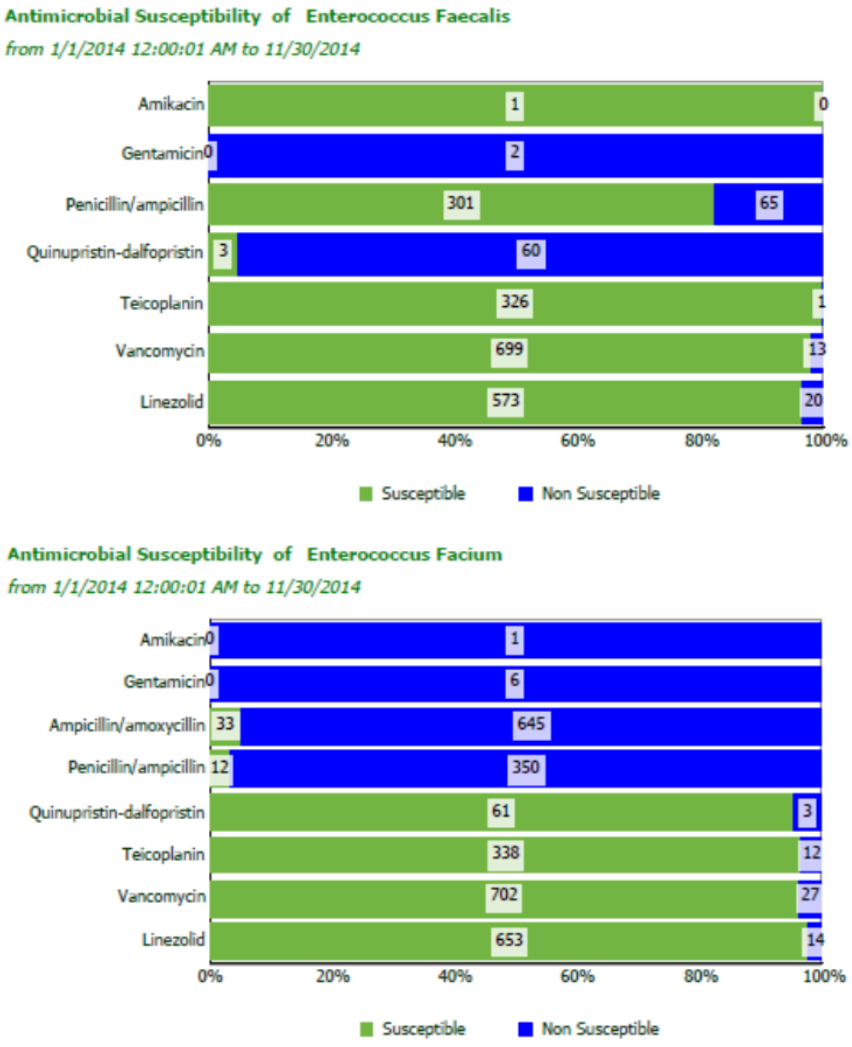
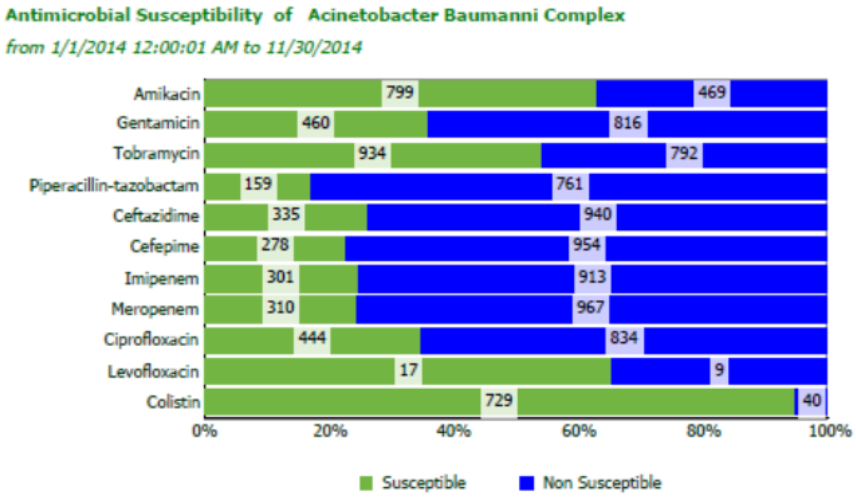


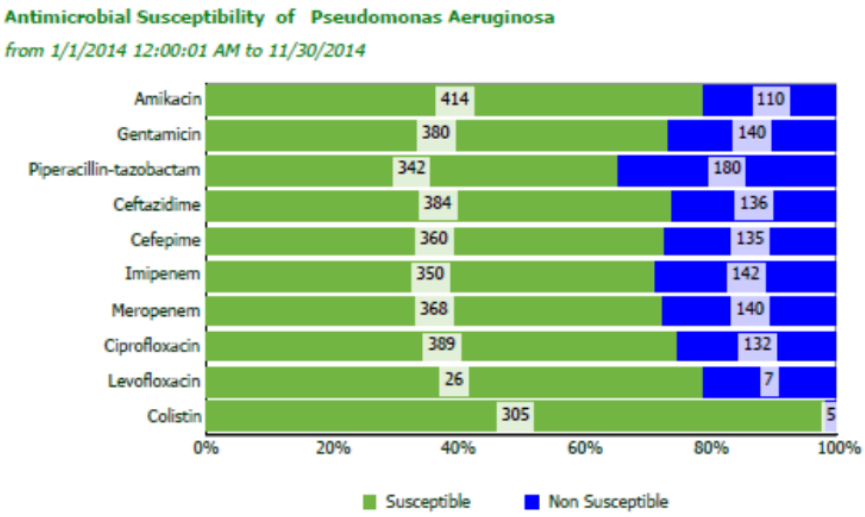
Figure 17. Antimicrobial susceptibility of Gram-negative ESKAPE organisms

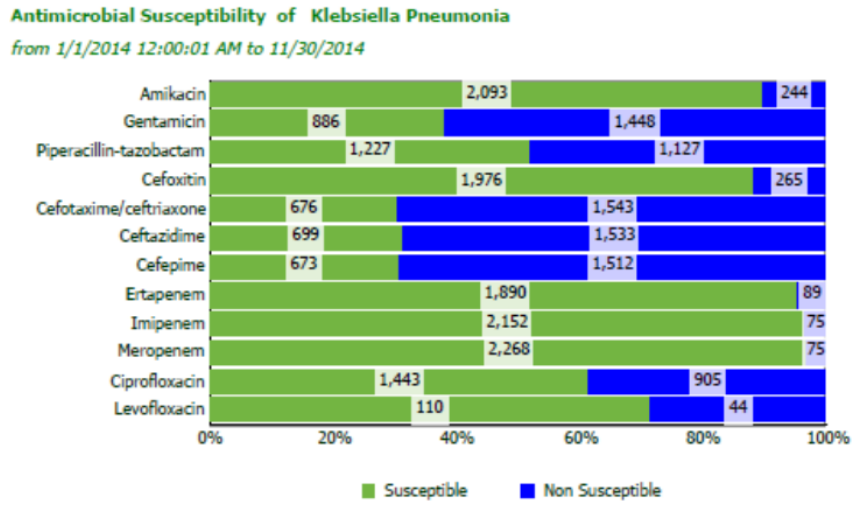


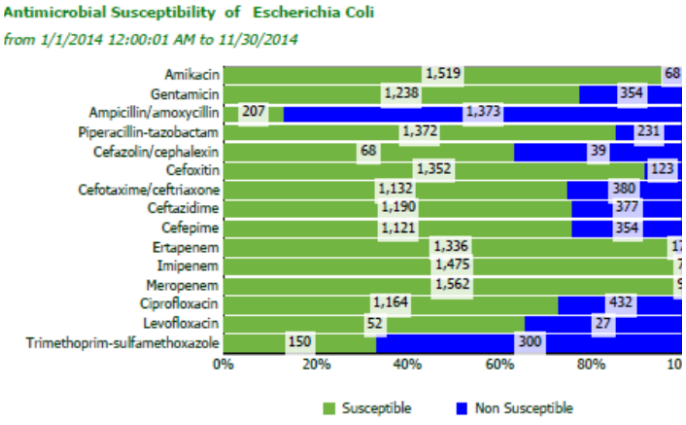
ESKAPE surveillance

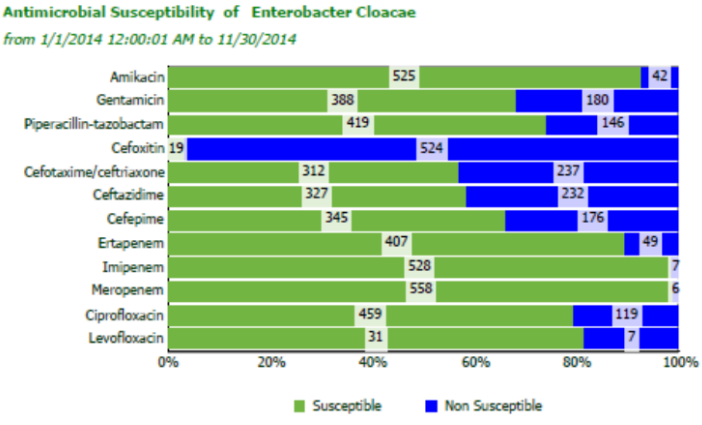
Reporting period 01/01/2014 to 30/11/2014 *Results until end of epidemiologic week 48 (2014)*

Figure 17 cont. Antimicrobial susceptibility of Gram-negative ESKAPE organisms









Due to the lack of standardisation of capturing data at NHLS laboratories across the country, errors might have occurred. However, we have cleaned the data to miminise these errors.

Reporting period 01/06/2012 to 30/09/2015 *Results until end of epidemiologic week 39 (2015)*

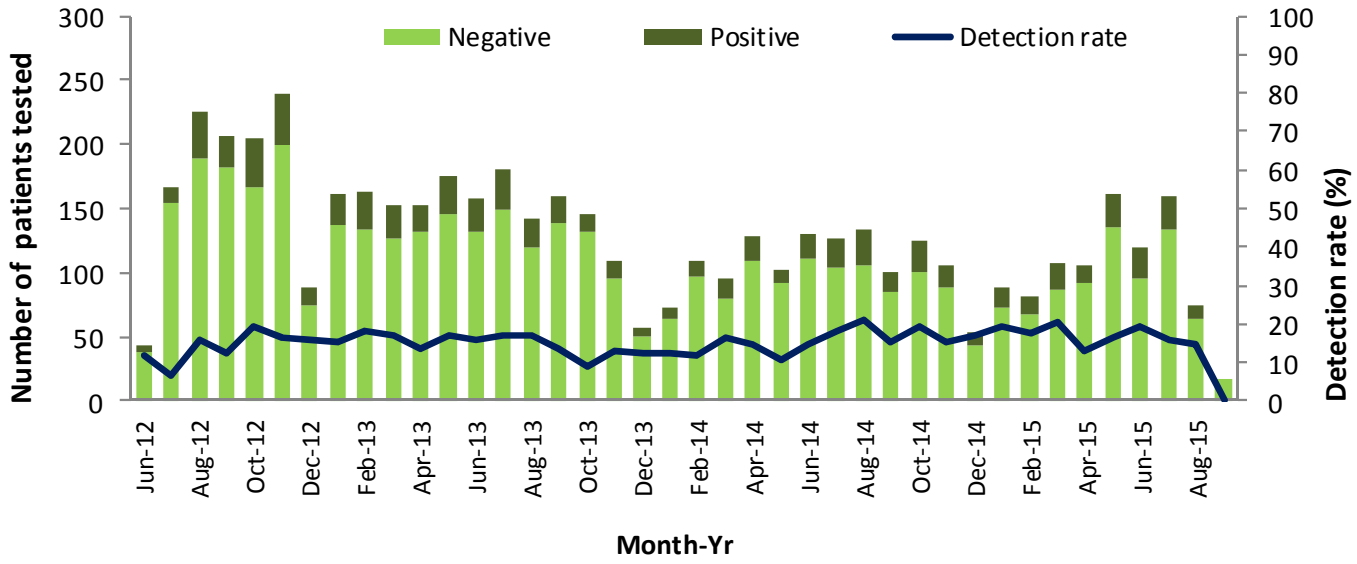
Programme Description:

The data source for this report is the Severe Acute Respiratory Illness (SARI) surveillance programme. SARI is a prospective sentinel hospital-based surveillance system. *Pneumocystis jirovecii* surveillance was conducted at 3 sites: Edendale, Klerksdorp and Tshepong Hospitals. Respiratory tract samples of 3 types (induced sputum (<5 and ≥5 year olds), oral rinses, and nasopharyngeal swabs (only in ≥5 year olds)) were obtained from cases that met the severe respiratory infection case definition. A quantitative real-time PCR was used to test for *P. jirovecii.*

Comments:

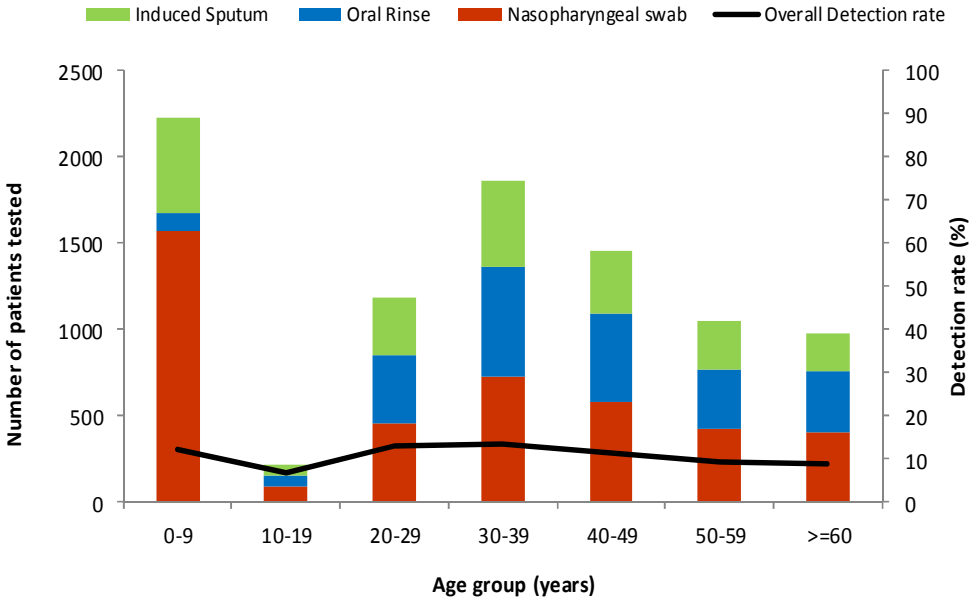
During the reporting period, 10032 specimens from 5131 patients were tested for *P. jirovecii*. The overall detection rate was 15% (792/5131). The detection rate is between 6-21%. Nasopharyngeal specimens accounted for almost half of all specimens taken (4720/10032, 47%). More than one-third of *P. jirovecii* cases were 0-9 years old (1865/5118, 36%). HIV-uninfected individuals with *P. jirovecii* were more common at the extremes of age, whereas HIV-infected individuals with *P. jirovecii* were mostly between the ages of 20-49 years.

Figure 18. Number of specimens tested for *Pneumocystis jirovecii* and detection rate by month from June 2012 to September 2015 (n=5131)



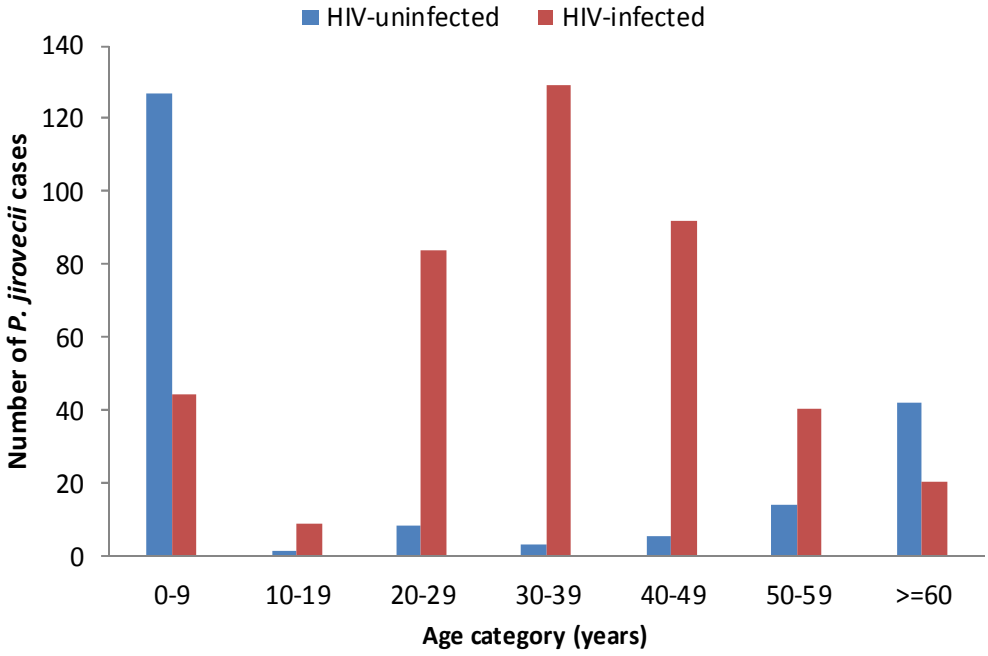
Reporting period 01/06/2012 to 30/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 19. Number of patients tested for *P. jirovecii* by age category and specimen type and the overall detection rate* from June 2012 to September 2015



*Overall detection rate refers to the number of positive cases for *P. jirovecii* derived from all specimen types by age category

Figure 20. Number of *P. jirovecii* cases by age and HIV status from June 2012 to September 2015 (N=616)



Laboratory-Based Respiratory and Meningeal Disease Surveillance

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Programme Description:

The Centre for Respiratory Diseases and Meningitis (CRDM) at the National Institute for Communicable Diseases (NICD) of the National Health Laboratory Service (NHLS) monitors invasive disease caused by *Neisseria meningitidis*, *Haemophilus influenzae*, and *Streptococcus pneumoniae* through a national, active, laboratory-based surveillance system (as part of GERMS-SA). All microbiology diagnostic laboratories throughout South Africa are requested to report laboratory-confirmed disease (defined as the isolation of *Neisseria meningitidis*, *Haemophilus influenzae*, or *Streptococcus pneumoniae* from normally sterile site specimens e.g. CSF or blood, or for culture-negative cases, any two of the following: a positive antigen latex agglutination test, a consistent Gram stain, and/or positive polymerase chain reaction [PCR]). Reporting laboratories should include all private- and public-sector health care laboratories, and other specialist laboratories e.g. laboratories serving mining or military hospitals. Available isolates are sent to CRDM for confirmation and further characterisation, including serogrouping. Increasingly more culture-negative specimens are being sent for PCR testing.

Some of the limitations of this surveillance system are that we include only individuals that arrive at hospitals and have specimens taken, and cases are only counted if laboratories report them to us. Quarterly audits to verify completeness of reporting are conducted for all public-sector laboratories. Frequent communications and visits are conducted to improve case reporting. Isolates for serogrouping are not available for cases identified by audit.

Comments:

By week 39 in 2015, 108 meningococcal cases had been reported to the NICD. Serogrouping results to date include 31 B, 8 C, 28 W, 1 X and 20 Y. Most of the cases occurred in children aged <10 years. For the same period last year, a total of 140 cases had been reported.

One hundred and ninety eight cases of *H. influenzae* have been reported to date in 2015. Serotyping results to date include 9 a, 23 b, 1 c, 1 d, 2 e, 9 f and 85 non-typeable. Most cases occur in individuals aged <10 years. For the same period last year, a total of 266 cases had been reported.

To date this year, 1712 pneumococcal cases have been reported, compared to 2057 cases reported for the same period last year. Most cases occur in children aged <5 years and adults aged 35-39 years.

Reductions of cases reported in 2015 may reflect the inherent delays of laboratory-based reporting, but may also reflect ongoing operational changes.

* Previously known as serogroup W135. For a comprehensive description of all current *N. meningitidis* serogroups and nomenclature, please refer to the following article: Harrison OB, Claus H, Jiang Y *et al*. Description and nomenclature of *Neisseria meningitidis* capsule locus. Emerg Infect Dis (Internet). 2013 April. Free online access at: http://wwwnc.cdc.gov/eid/article/19/4/11-1799_article.htm

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 21. Number of *Neisseria meningitidis* cases by month in South Africa, 2014 and 2015

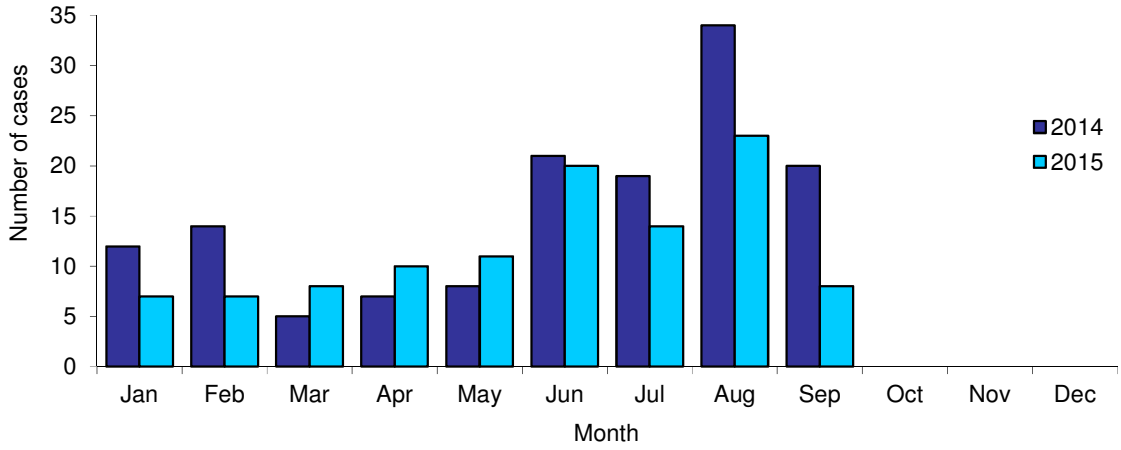


Figure 22. Number of *Neisseria meningitidis* cases by age group in South Africa, 2014 and 2015

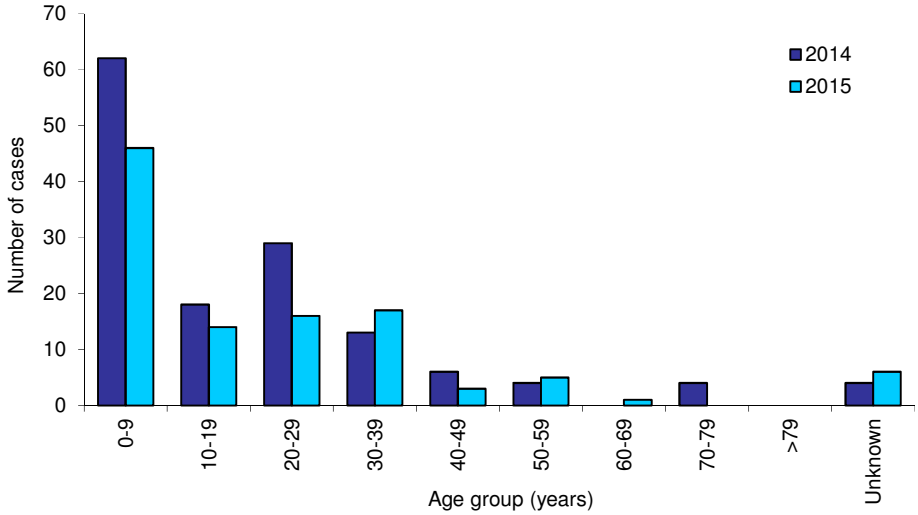
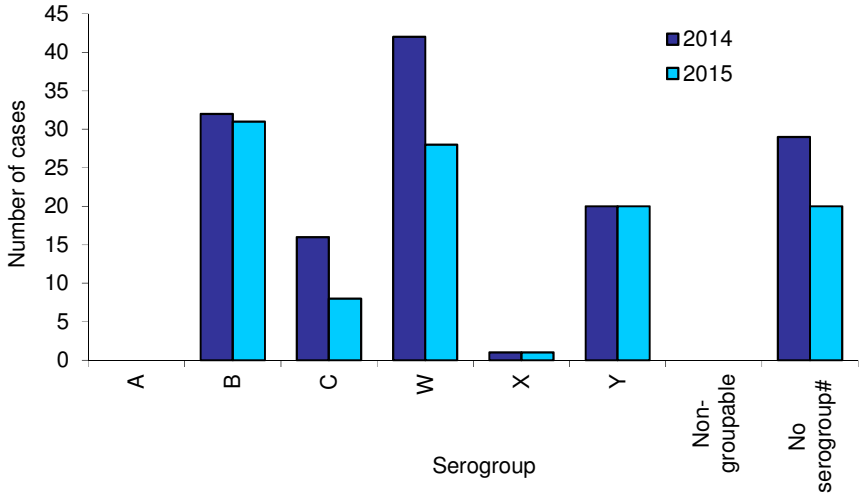


Figure 23. Number of *Neisseria meningitidis* cases by serogroup in South Africa, 2014 and 2015



No serogroup: Cases with serogrouping results not yet available, no isolate, or identified on audit

Haemophilus influenzae surveillance

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 24. Number of *Haemophilus influenzae* cases by month in South Africa, 2014 and 2015

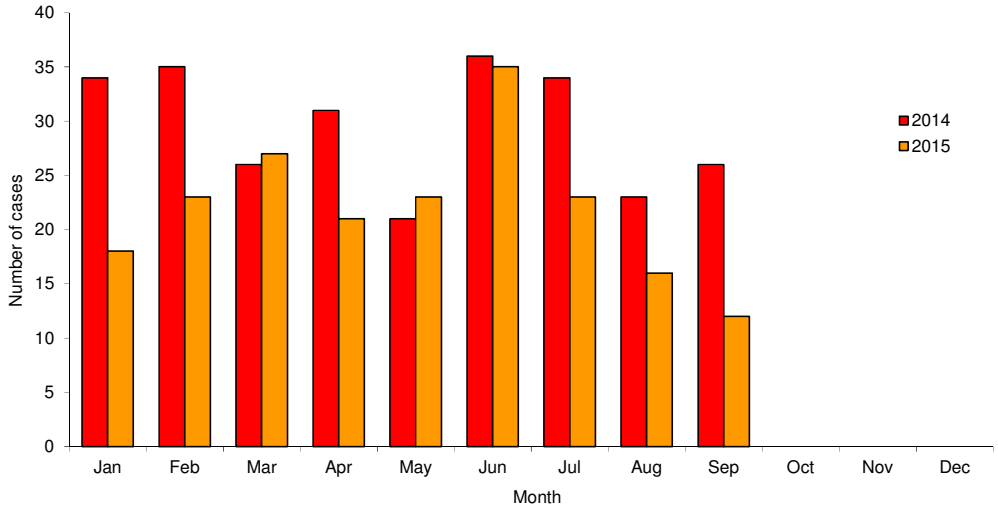


Figure 25. Number of *Haemophilus influenzae* cases by age group in South Africa, 2014 and 2015

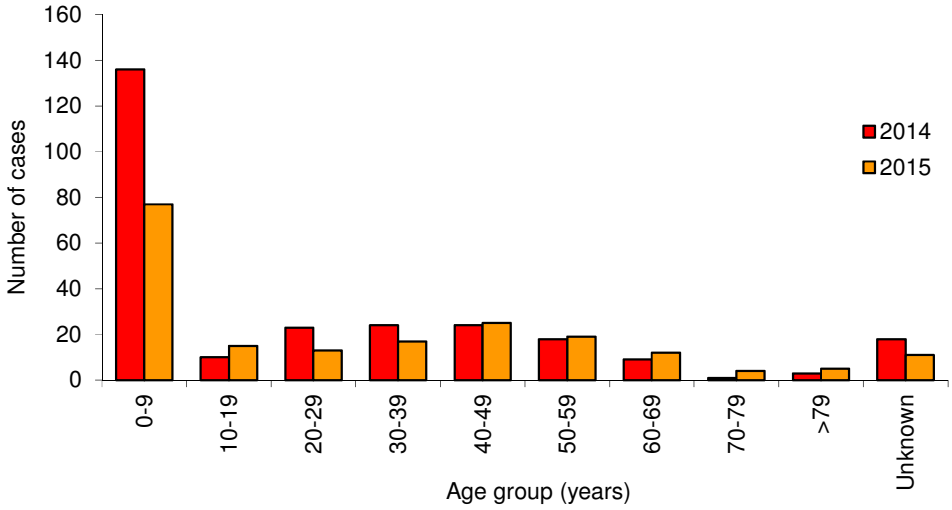
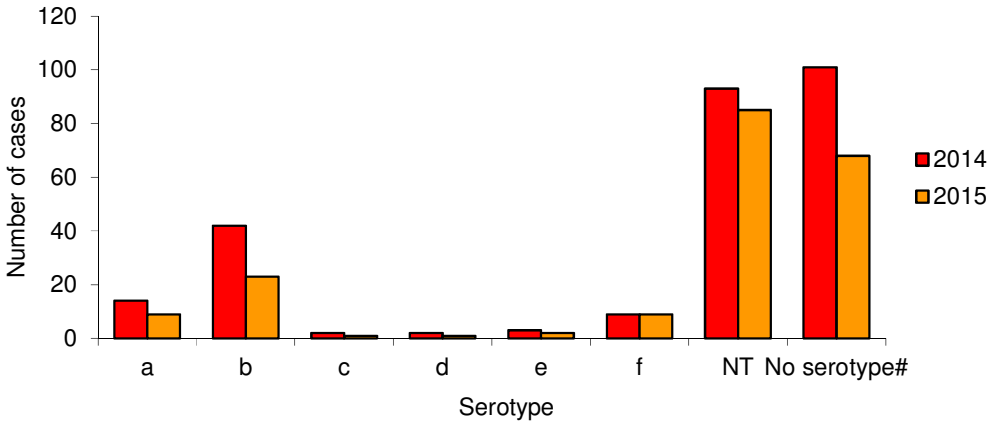


Figure 26. Number of *Haemophilus influenzae* cases by serotype in South Africa, 2014 and 2015



No serotype: Cases with serotyping results not yet available, no isolate, or identified on audit

Streptococcus pneumoniae surveillance

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 27. Number of *Streptococcus pneumoniae* cases by week in South Africa, 2014 and 2015

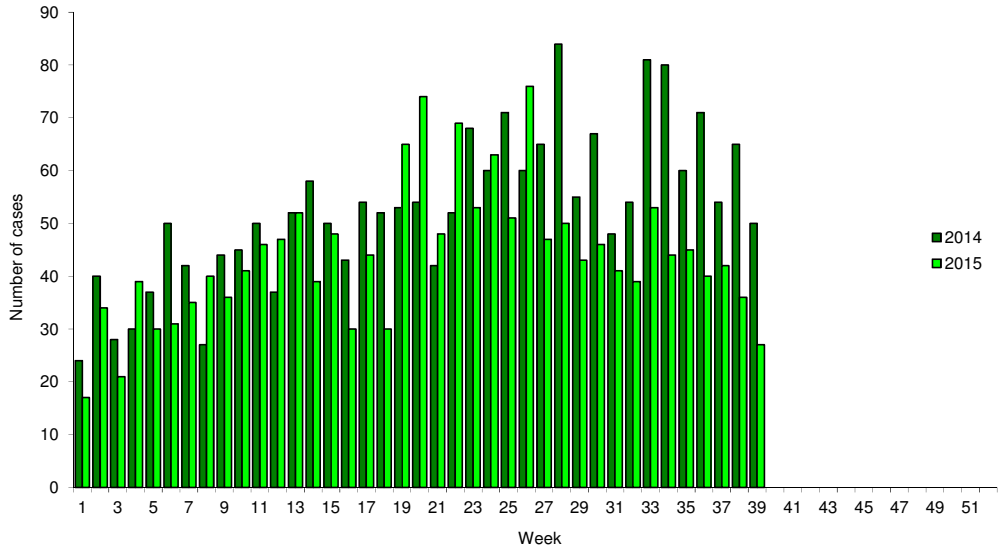


Figure 28. Number of *Streptococcus pneumoniae* cases by age group in South Africa, 2014 and 2015

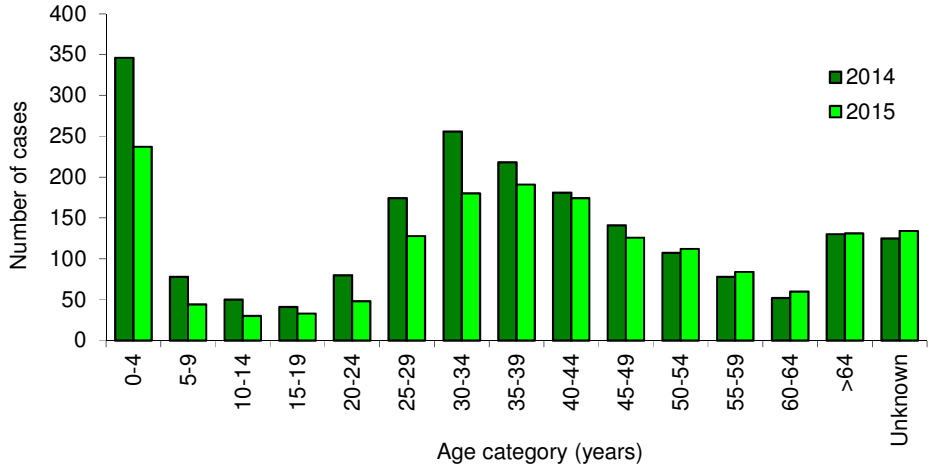
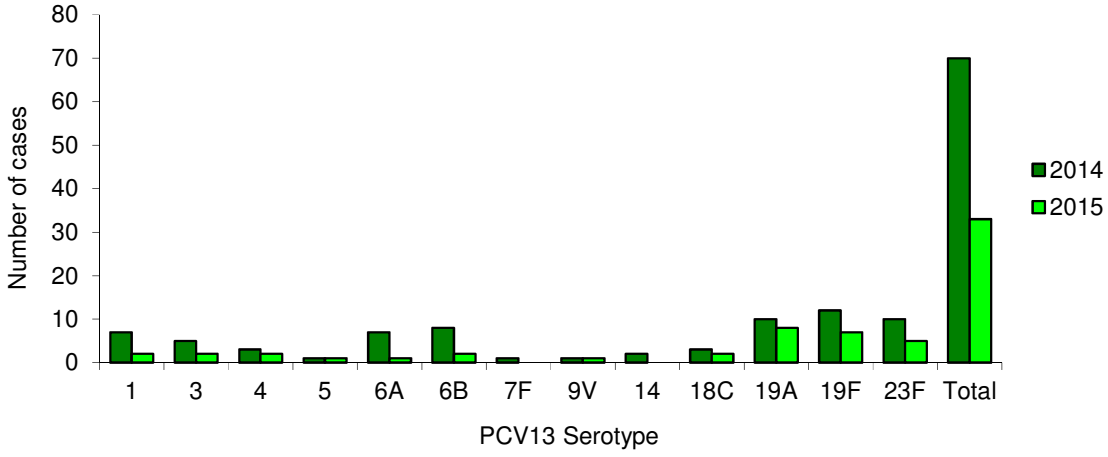


Figure 29. Number of *Streptococcus pneumoniae* cases by 13-valent pneumococcal conjugate vaccine (PCV13) serotype in children <5 years in South Africa, 2014 and 2015



Syndromic Respiratory Disease Surveillance

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Programme Description:

Programme	ILI	Viral Watch	National syndromic surveillance for pneumonia	Private hospital consultations
Start year	2012	1984	2009	2002
Provinces*	KZ	EC	GP	EC
	NW	FS	KZ	FS
		GP	MP	GP
		LP	NW	LP
		MP	WC	MP
		NC		NW
		NW		WC
		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	≥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 AD EV hMPV PIV 1-3 RSV RV BP	INF RSV BP	INF AD EV hMPV PIV 1-3 RSV RV SP BP LEG	Not applicable

* 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; AD: Adenovirus; EV: Enterovirus; hMPV: human Metapneumovirus; PIV 1-3: parainfluenza types 1-3; RSV: respiratory syncytial virus; RV: Rhinovirus; BP: Bordetella pertussis; SP: Streptococcus pneumoniae; LEG: Legionella species

Number of consultations/specimens are reported/analysed by date of consultation/specimen collection.

Syndromic Respiratory Disease Surveillance

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Comments:

Influenza

The 2015 influenza season, which started in week 19 (week ending 10 May), ended in week 37 when the number of specimens received by the Viral Watch dropped below 10 per week. Sporadic detections of influenza are still being made by all programmes.

ILI programme: In 2015 to date, specimens from 1006 patients were received from 2 ILI sites. A(H1N1)pdm09 was detected in 42 specimens, influenza A(H3N2) in 38 and influenza B in 44 of these specimens.

Viral Watch programme: During the same period, specimens from 1089 patients were received from Viral Watch sites. Influenza A(H1N1)pdm09 was detected in 255 specimens, influenza A(H3N2) in 191 and influenza B in 70.

Pneumonia surveillance: In this time period, specimens from 2945 patients with severe respiratory illness (SRI) were received from the 6 sentinel sites. Influenza A(H1N1)pdm09 was detected in 79, influenza A(H3N2) in 49, and influenza B in 29 of these specimens.

Respiratory syncytial virus

The 2015 RSV season, started in week 9 (week ending 1 March) when the detection rate of RSV in the national pneumonia surveillance programme rose above 10%, and continued to rise. The detection rate peaked at 42% in week 17 (week ending 26 April), and fell below 10% in week 29 (week ending 19 July). To date RSV has been detected in the specimens of 75 patients in the ILI programme, 32 patients from the Viral Watch and 451 patients with pneumonia.

Streptococcus pneumoniae

Pneumonia surveillance: In 2015 to date, blood specimens from 1486 patients were tested for *S. pneumoniae* which was detected in 192 (13%) specimens.

Bordetella pertussis

ILI programme: In 2015 to date, nasopharyngeal/oropharyngeal specimens were tested from 877 patients for *B.pertussis* which was detected in 20 (2%) specimens.

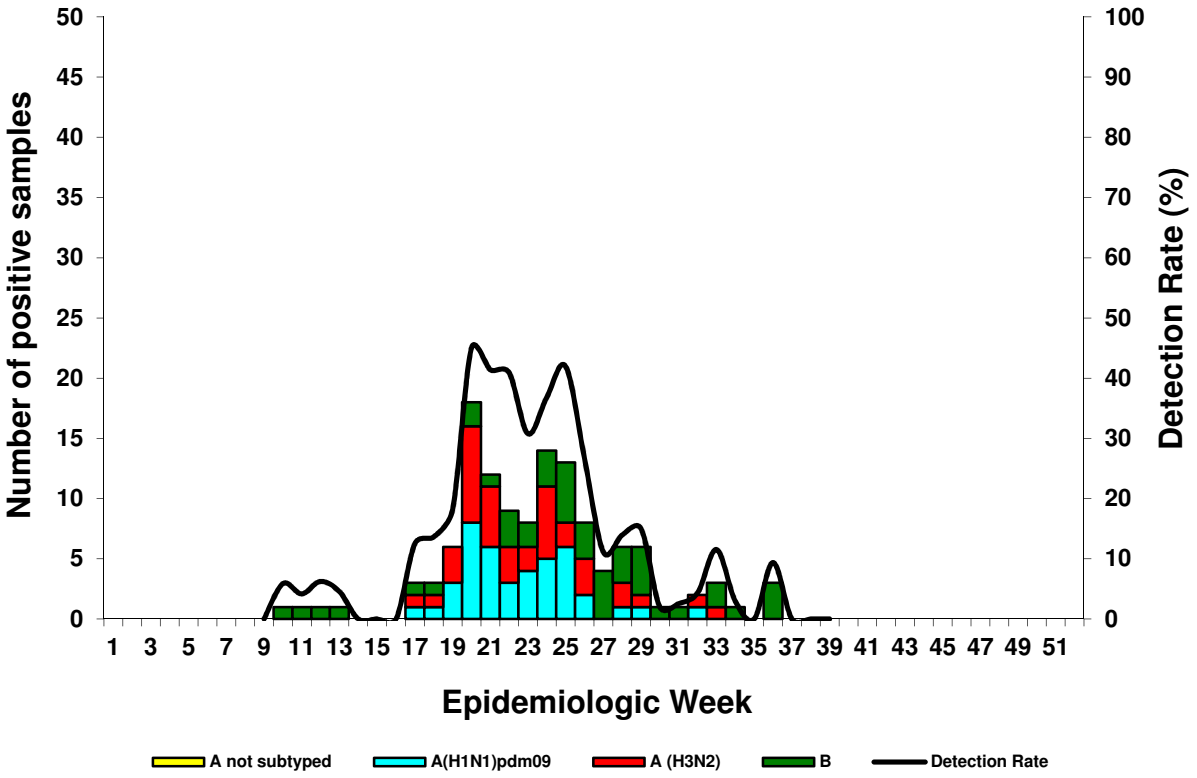
Pneumonia surveillance: In 2015 to date, sputa and/or nasopharyngeal specimens were tested from 2465 patients for *B. pertussis* which was detected in in 82 (3%) specimens.

Legionella spp

Pneumonia surveillance: In 2015 to date, sputa and/or nasopharyngeal specimens were tested from 2655 patients for *Legionella spp*. Two patients tested positive for *Legionella species*. One from KwaZulu-Natal and the other from the North West province.

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 30. Number of positive samples* by influenza types and subtypes and detection rate by week**



*Specimens from patients with Influenza-like illnesses at 2 sentinel sites in 2 provinces
**Only reported for weeks >10 specimens

Table 7. Cumulative number of influenza type and subtype and total number of samples collected by province

Clinic (Province)	A not subtyped	A(H1N1)pdm09	A(H3N2)	B	Total samples
Edendale Gateway Clinic (KZ)	0	41	18	44	711
Jouberton Clinic (NW)	0	1	20		295
Total:	**0**	**42**	**38**	**44**	**1006**

KZ: KwaZulu-Natal; NW: North West Province

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 31. Number of samples testing positive for respiratory syncytial virus and detection rate by week

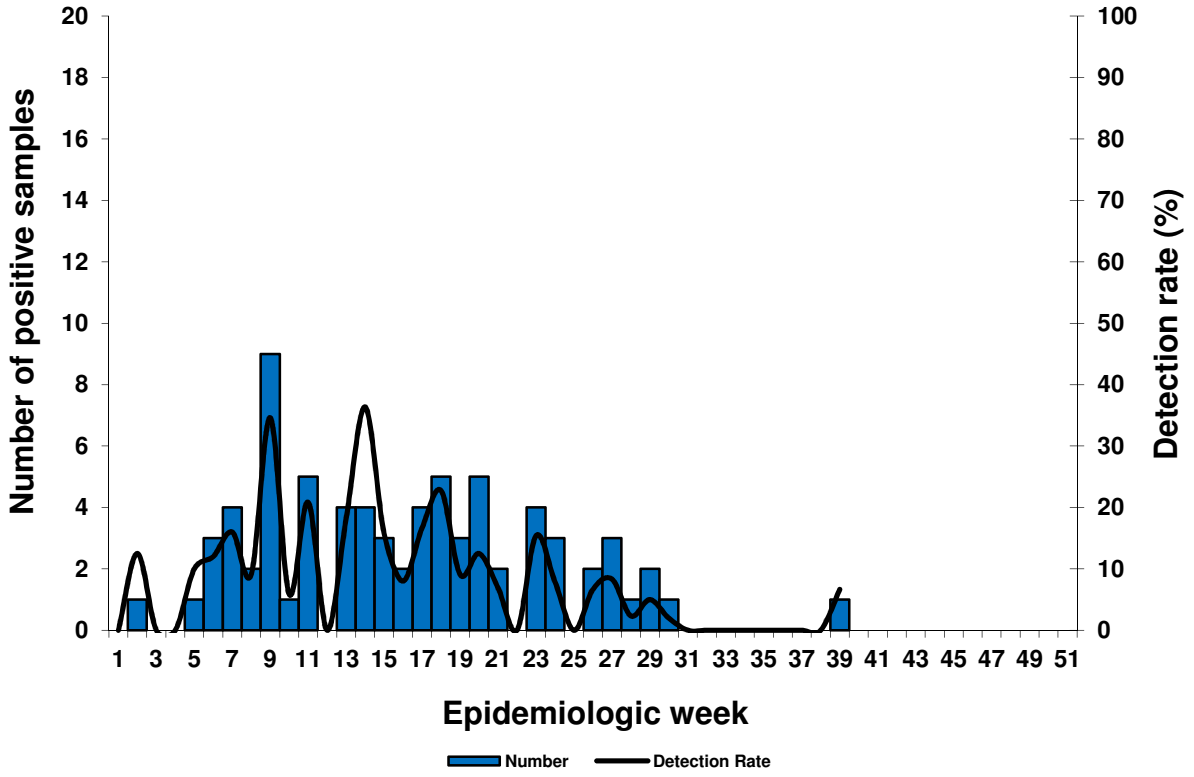


Table 8. Cumulative number of respiratory syncytial virus identified and total number of samples tested by clinic and province

Clinic (Province)	RSV Positive	Total samples
Edendale Gateway Clinic (KZ)	45	711
Jouberton Clinic (NW)	30	295
Total:	**75**	**1006**

KZ: KwaZulu-Natal; NW: North West

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 32. Number of samples testing positive for *B. pertussis* and detection rate by month

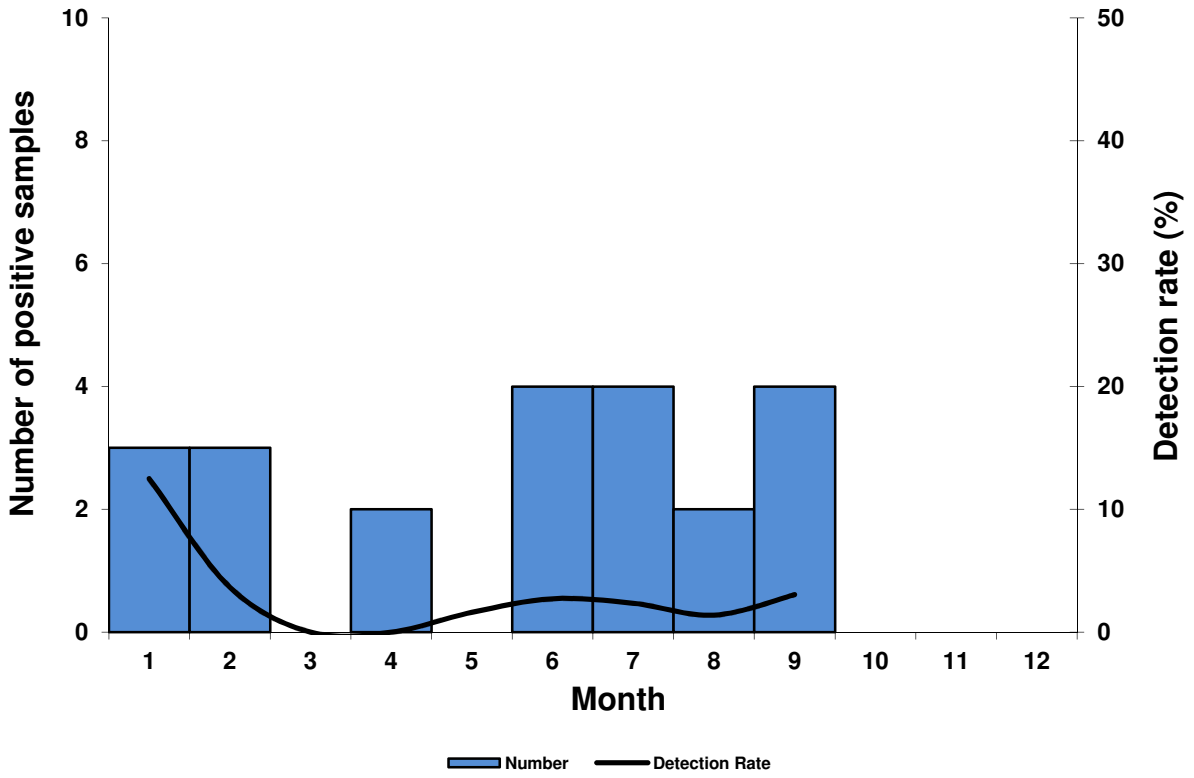


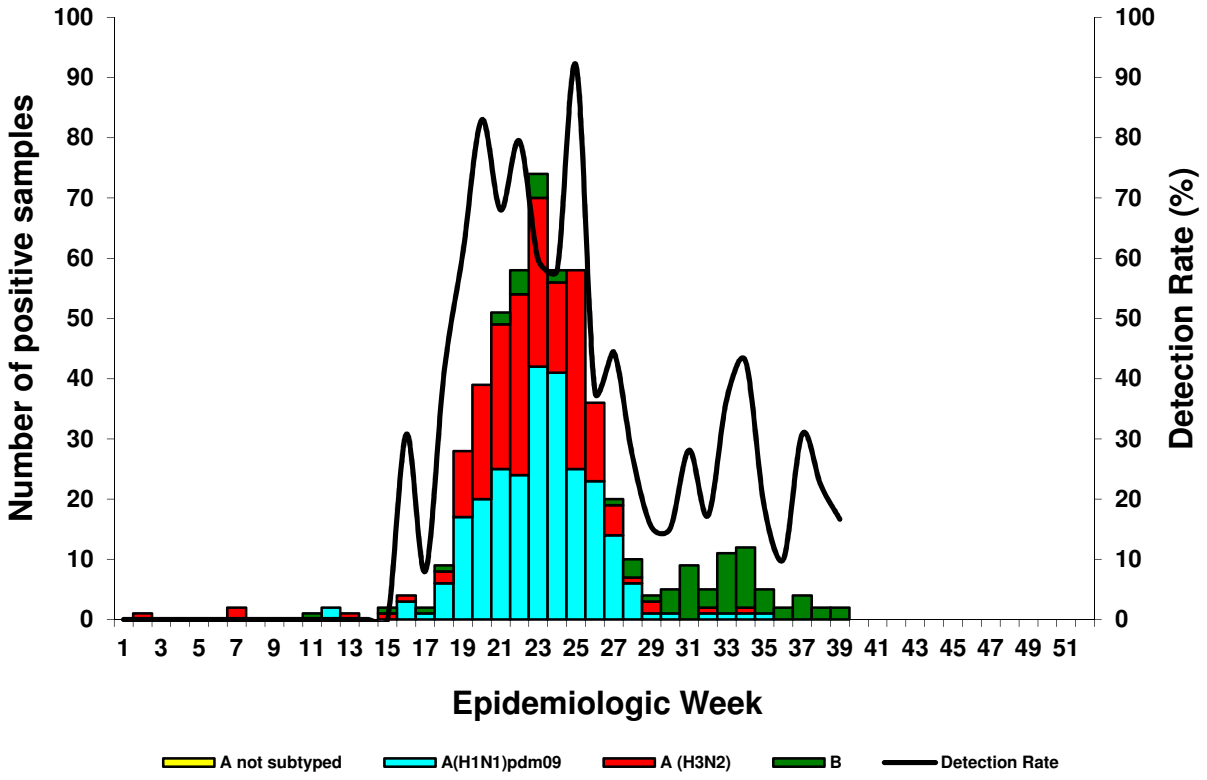
Table 9. Cumulative number of *B. pertussis* identified and total number of samples tested by province

Clinic (Province)	*B. pertussis* positive	Total samples
Edendale Gateway Clinic (KZ)	16	627
Jouberton Clinic (NW)	6	272
Total:	**22**	**899**

KZ: KwaZulu-Natal; NW: North West Province

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 33. Number of positive samples* by influenza types and subtypes and detection rate by week**



*Specimens from patients with Influenza-like illnesses at 104 sentinel sites in 8 provinces
** Only reported for weeks with >10 specimens submitted.

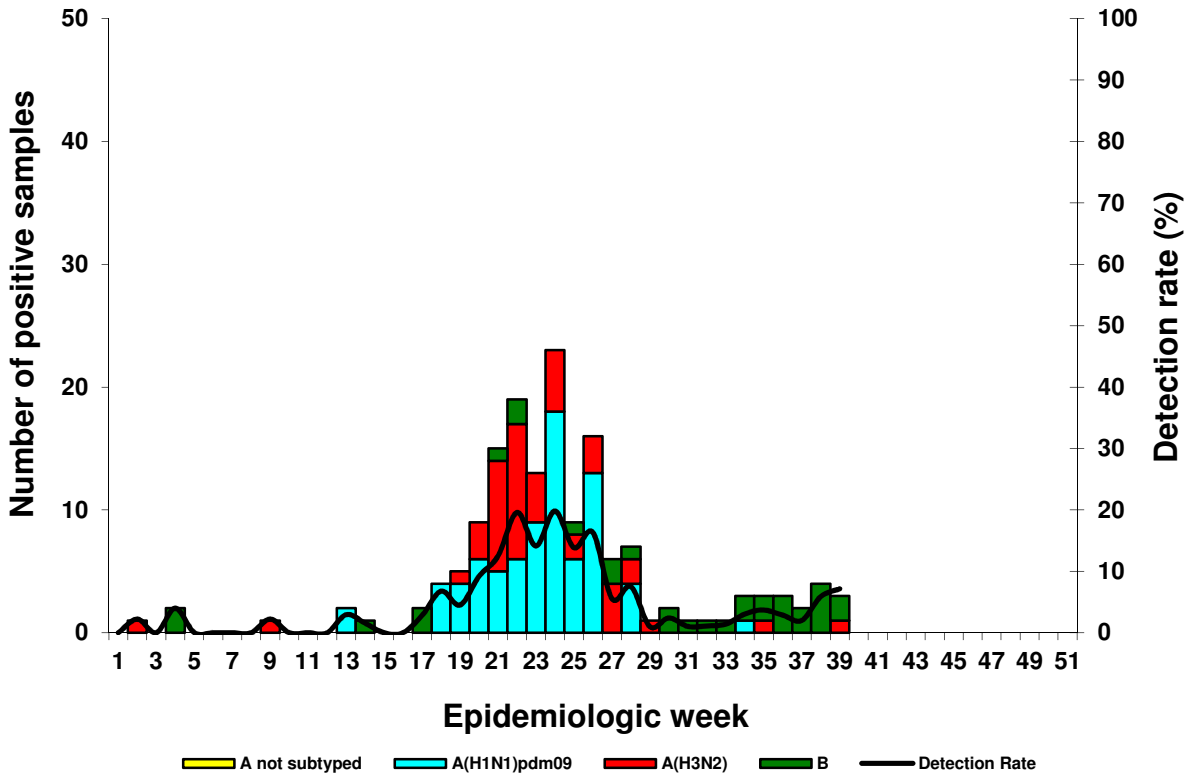
Table 10. Cumulative number of influenza type and subtype and total number of samples tested by province

Province	A not subtyped	A(H1N1)pdm09	A(H3N2)	B	Total samples
Eastern Cape		28	18	2	94
Free State		13	7	4	61
Gauteng		86	85	22	435
Limpopo		22	21	3	94
Mpumalanga		9	12	6	58
Northern Cape		2	4		24
North West			1		3
Western Cape		95	43	33	320
Total:	**0**	**255**	**191**	**70**	**1089**

To date in 2015, 42 patients have been tested for influenza at the time of entry into South Africa following travel abroad and 24 have tested influenza positive.
Patients known to have acquired influenza abroad are not included in the table or epidemiological curve.

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 34. Number of positive samples by influenza types and subtypes and detection rate by week**



*Specimens from patients hospitalised with severe acute respiratory infections at 6 sentinel sites in 5 provinces
**Only reported for weeks >10 specimens

Table 11. Cumulative number of identified influenza types and subtypes and total number of samples collected by hospital

Hospital (Province)	A not subtyped	A(H1N1)pdm09	A(H3N2)	B	Total samples
Edendale (KZ)	0	16	4	9	435
Helen Joseph-Rahima Moosa (GP)	0	36	13	8	1130
Klerksdorp-Tshepong (NW)	0	6	21	2	594
Mapulaneng-Matikwana (MP)	0	10	9	2	244
Red Cross (WC)	0	11	2	8	542
Total:	**0**	**79**	**49**	**29**	**2945**

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

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 35. Number of samples testing positive for respiratory syncytial virus and detection rate by week

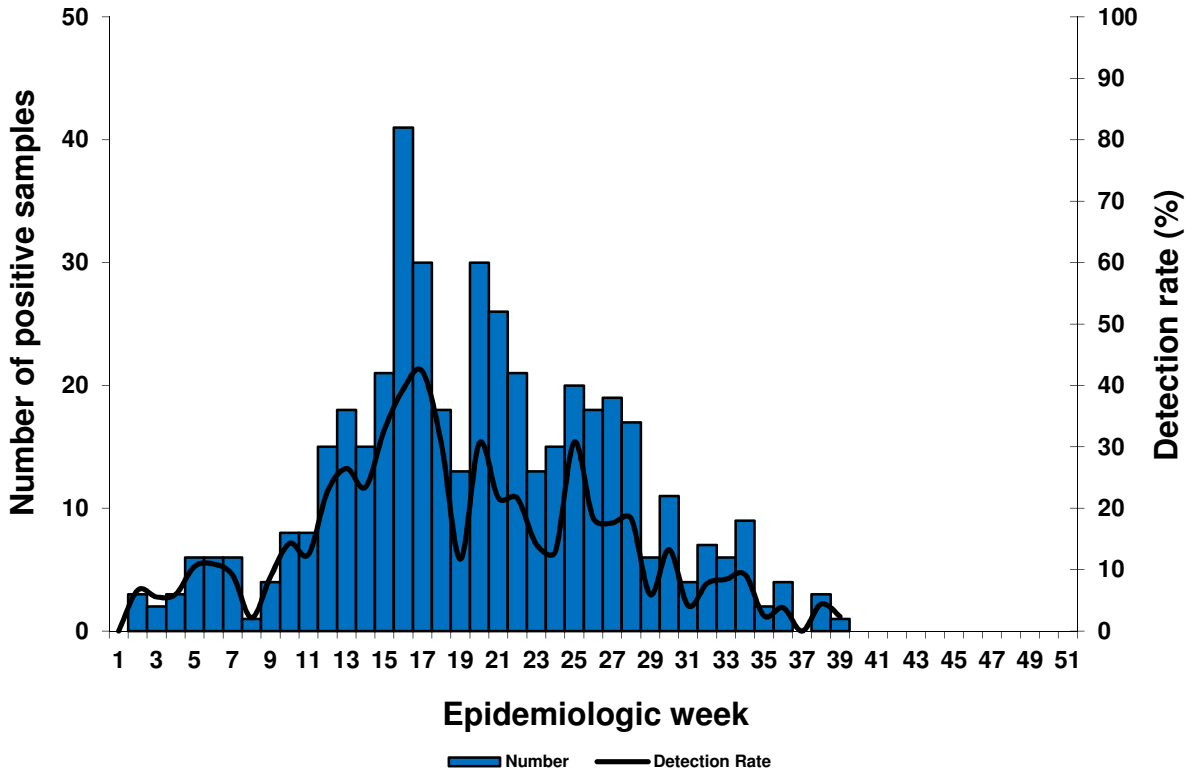


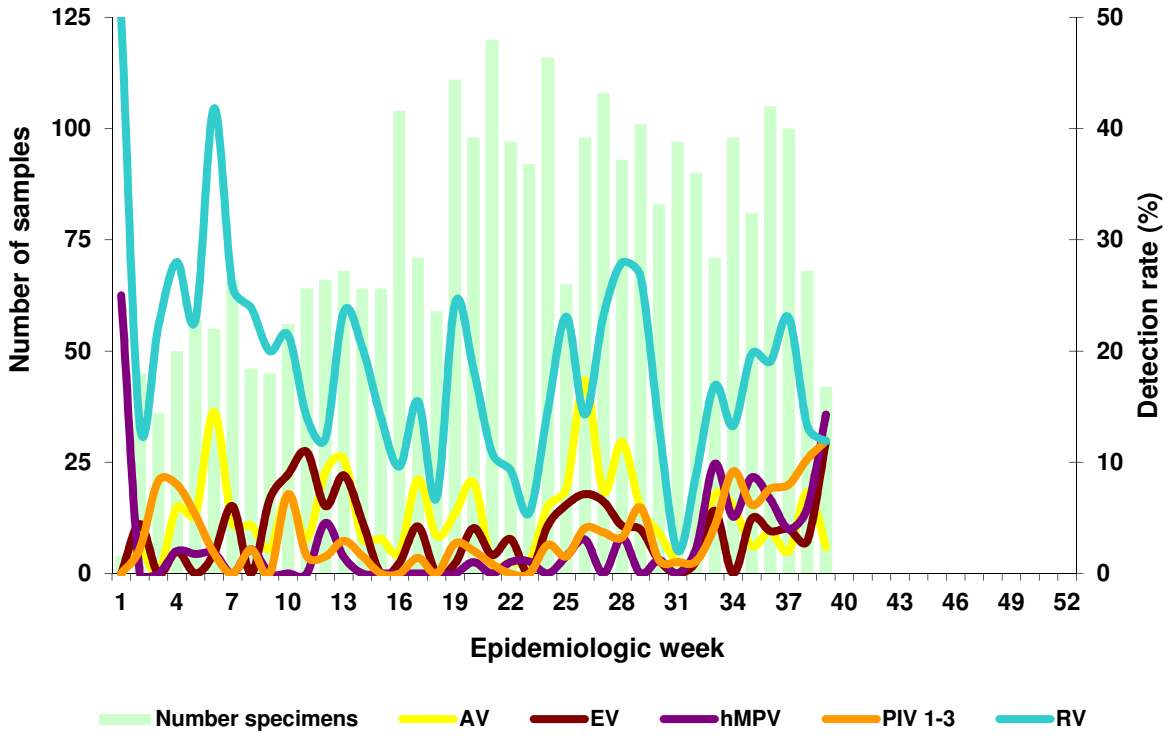
Table 12. Cumulative number of identified influenza types and subtypes and total number of samples collected by hospital

Hospital (Province)	RSV Positive	Total samples
Edendale (KZ)	53	435
Helen Joseph-Rahima Moosa (GP)	154	1130
Klerksdorp-Tshepong (NW)	67	594
Mapulaneng-Matikwana (MP)	30	244
Red Cross (WC)	147	542
Total:	**451**	**2945**

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

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 36. Number of samples testing positive for other respiratory viruses* and detection rate by week



*AV: Adenovirus; EV: Enterovirus; hMPV: human Metapneumovirus; PIV 1-3: Parainfluenza types 1-3; RV: Rhinovirus

Table 13. Cumulative number of *Legionella* spp identified and total number of samples tested by hospital and province

Hospital (Province)	*Legionella* spp Positive	Total samples
Edendale (KZ)	1	408
Helen Joseph-Rahima Moosa (GP)		1051
Klerksdorp-Tshepong (NW)	1	558
Mapulaneng-Matikwana (MP)		152
Red Cross (WC)		486
Total:	**2**	**2655**

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

Figure 37. Number of samples testing positive for *S. pneumoniae* and detection rate by week

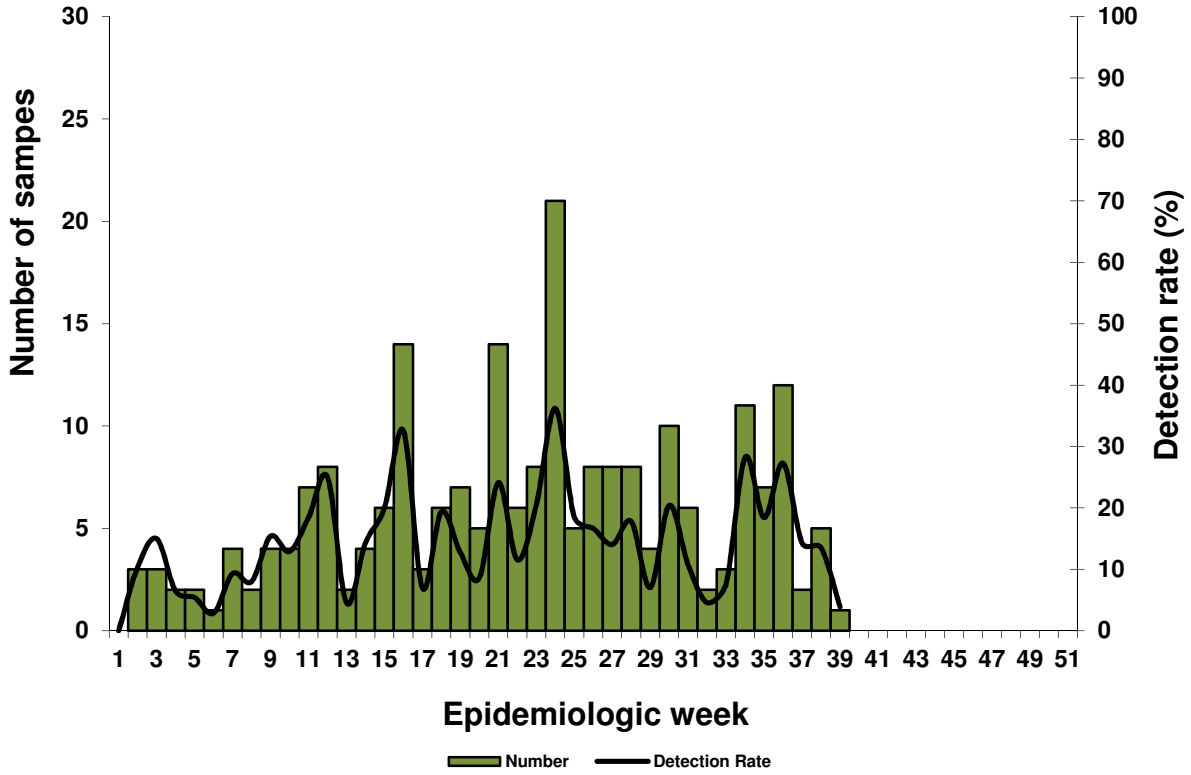


Table 14. Cumulative number of *S. pneumoniae* identified and total number of samples tested by hospital and province

Hospital (Province)	*S. pneumoniae* Positive	Total samples
Edendale (KZ)	40	322
Helen Joseph-Rahima Moosa (GP)	54	348
Klerksdorp-Tshepong (NW)	45	388
Mapulaneng-Matikwana (MP)	31	184
Red Cross (WC)	22	244
Total:	**192**	**1486**

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

Figure 38. Number of samples testing positive for *B. pertussis* and detection rate by month

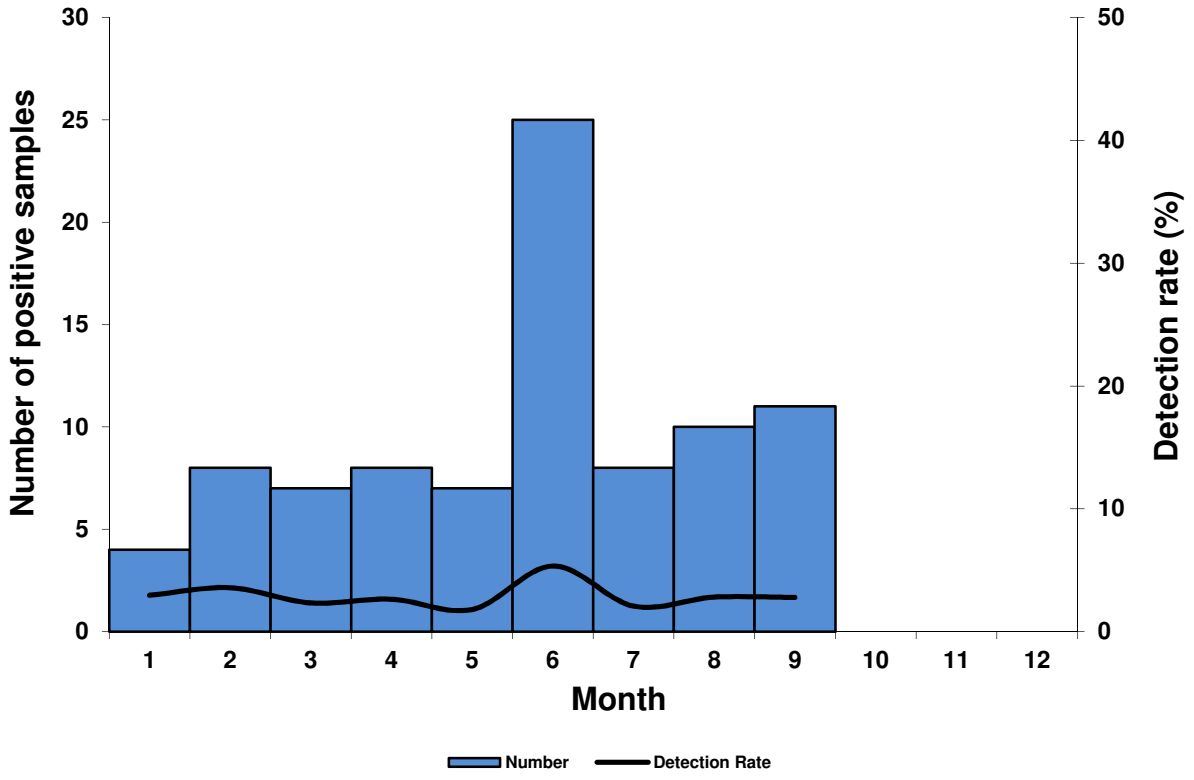


Table 15. Cumulative number of *S. pneumoniae* identified and total number of samples tested by hospital and province

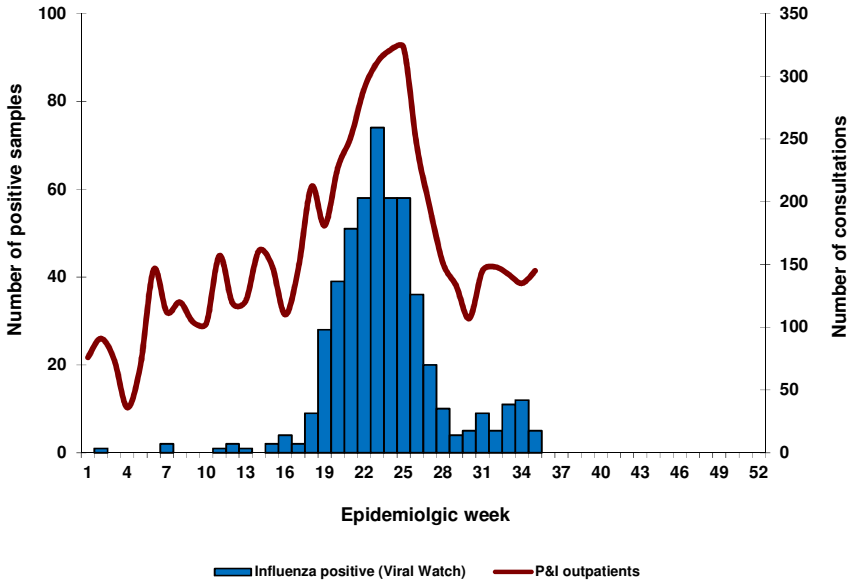
Hospital (Province)	*B. pertussis* Positive	Total samples
Edendale (KZ)	16	412
Helen Joseph-Rahima Moosa (GP)	29	1049
Klerksdorp-Tshepong (NW)	24	561
Mapulaneng-Matikwana (MP)	13	155
Red Cross (WC)	5	468
Total:	**87**	**2645**

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

Private hospital consultations

Reporting period 01/01/2015 to 30/08/2015 *Results until end of epidemiologic week 35 (2015)*

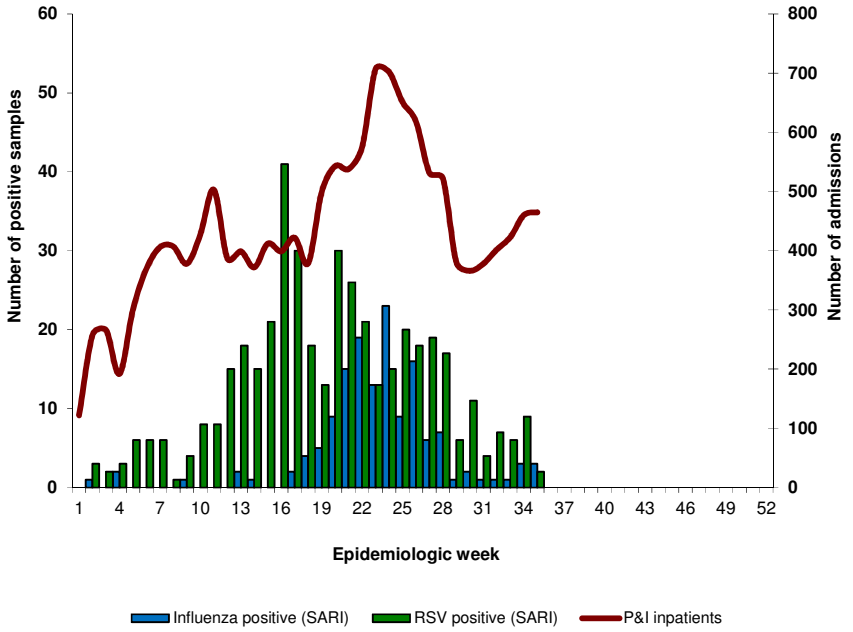
Figure 39. Number of private hospital outpatient consultations* with a discharge diagnosis of pneumonia and influenza (P&I) and viral isolates**



* 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 40. 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 programme

Suspected Measles Case-Based Surveillance

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Programme Description:

Case-based measles surveillance programme with laboratory support started in 1998 as part of the National Department of Health's measles elimination strategy. Blood and urine or throat/nasopharyngeal swab specimens from suspected measles cases (patients with fever ≥38°C and rash, and at least one of: cough, coryza or conjunctivitis) nationally are submitted to the NICD for laboratory confirmation. The numbers presented here represent specimens received by the National Institute for Communicable Diseases (NICD) of the National Health Laboratory Service (NHLS) and may differ from those presented by the National Department of Health as they may receive information on cases where no specimens were taken.

Comments:

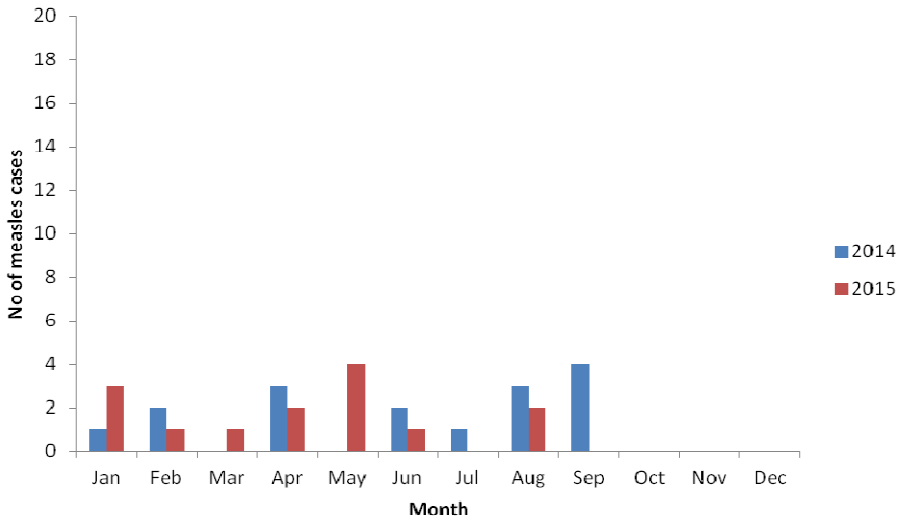
For the period 1 January to 27 September 2015 (week 39), 14 laboratory-confirmed measles IgM positive cases were detected through measles surveillance, 4 from Western Cape province, 3 from Northern Cape Province, 2 from each of Eastern Cape and Gauteng provinces, and 1 from each of Free State, KwaZulu Natal and North West provinces. This includes two unclassified measles IgM positive cases: 1 from Gauteng and another one from KwaZulu Natal province. No new measles IgM positive cases were detected since the last reporting date on 28 August 2015.

Table 16. Number of laboratory-confirmed cases per province, South Africa, 2015

Province	Measles positive
Eastern Cape	2
Free State	1
Gauteng	2*
KwaZulu-Natal	1*
Limpopo	0
Mpumalanga	0
Northern Cape	3
North West	1
Western Cape	4
South Africa	**14**

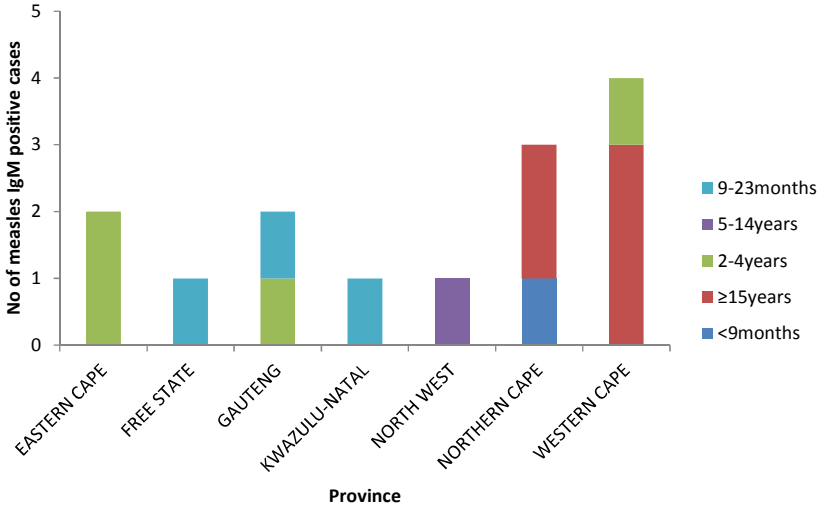
*Provinces with unclassified measles IgM positive cases

Figure 41. Number* of laboratory-confirmed measles cases by month of specimen collection, South Africa, 2014 and 2015



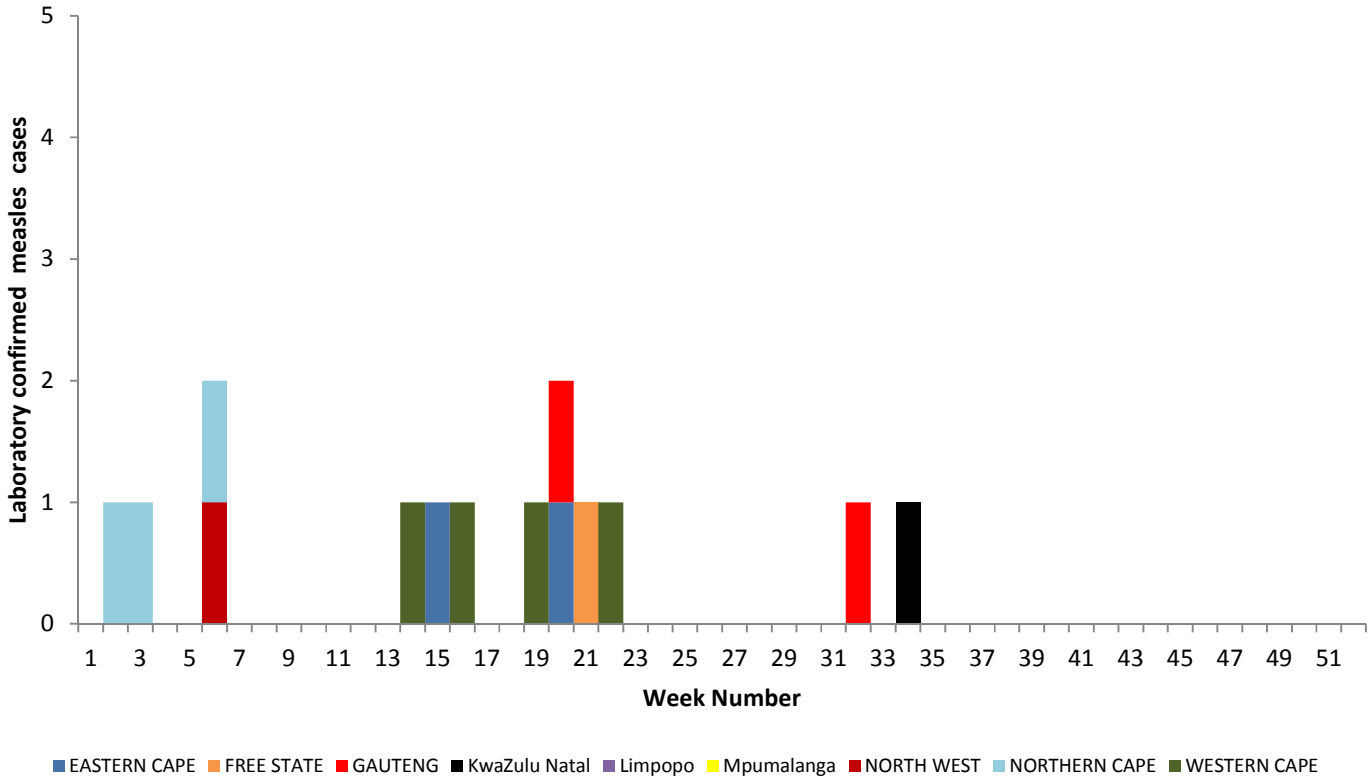
**Includes two unclassified measles IgM positive cases from Gauteng province and KwaZulu Natal province

Figure 42. Number of measles cases by province and age group in South Africa, 2015



Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Figure 43. Number of laboratory-confirmed measles cases by epidemiological week of specimen collection, South Africa, 2015



Polio/ Acute Flaccid Paralysis (AFP) Surveillance

Reporting period 01/01/2015 to 27/09/2015 *Results until end of epidemiologic week 39 (2015)*

Programme Description:

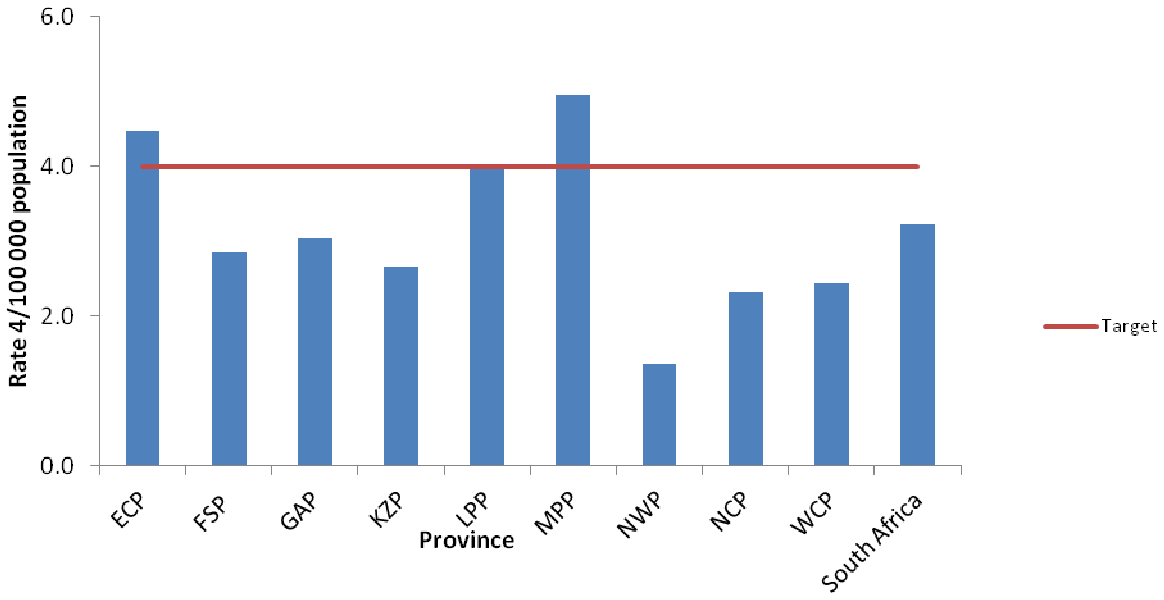
Data presented in this report are generated from the AFP surveillance database and represent specimens received at the National Institute for Communicable Diseases (NICD) of the National Health Laboratory Service (NHLS). These figures may differ from those presented by the National Department of Health who may receive information on cases from whom no specimen was taken. Every patient with AFP, including Guillain-Barre syndrome, in children younger than 15 years of age, or a patient of any age with a clinical diagnosis of polio made by a medical doctor, must be regarded as a possible polio case until proven otherwise. To meet sample adequacy requirements, all cases require two stool specimens in good condition and sufficient quantity collected at least 24 -48 hours apart within 14 days of the onset of paralysis.

Comments:

From 1 January to 27 September 2015 (epidemiological week 39 of 2015), 841 specimens were received from AFP surveillance in South Africa. Three hundred and eighty four AFP cases were detected with date of onset of paralysis in 2015. Of the 384 AFP cases with date of onset in 2015, 374 were <15 years old corresponding to an annualised Non-Polio AFP detection rate of 3.1 per 100 000 population: range 1.2 to 5.3 (Fig 44). The overall AFP surveillance detection rate of 3.2 per 100 000 is below the new 2015 WHO target of 4 per 100 000 population. Provinces and districts are struggling to meet the AFP detection of 4 per 100 000 population of children under 15 years of age. AFP surveillance needs to be intensified in all district hospitals. Health care workers need to be trained and reminded to notify all AFP cases as part of the notification system.

Ninety-nine percent (99%) of the specimens were received in good condition, while 54% arrived at the NICD within 3 days of collection. Where results were available, 100% were resulted within 14 days of receipt with a Non-Polio enterovirus isolation of 12% (Table 17).

Figure 44. Annualised Non-Polio AFP detection rate by province, South Africa, 2015



*2015 Target for detection rate is 4/100,000 population (2014 target was 2/100,000)

Table 17. Acute Flaccid Paralysis (AFP) surveillance, laboratory performance indicators, South Africa, 2015*

Laboratory indicators	2015*	Target
Specimens received in good condition	99%	90%
Specimens received within 3 days of collection	54%	80%
Specimens resulted within 14 days of receipt	100%	80%
Non-Polio enterovirus isolation rate	11%	10%

* Samples received in 2015