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 27 cases to date in 2015.
- No cases of *Vibrio cholerae* O1 have been reported to date in 2015. For the same period last year, no cases had been reported.
- Twenty-one specimens (21/331; 6.3%) 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 May 2015, 1108 *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 4848 patients over a 3 year period were tested *for Pneumocystis jirovecii.* Seven hundred and twenty-two (15%) cases were positive for *P. jirovecii*. These cases positive for *P. jirovecii* could indicate colonisation or it could be true disease.
- By week 22 in 2015, 31 meningococcal cases had been reported to the NICD. Serogrouping results to date include 7 B, 2 C, 8 W and 5 Y . Most of the cases occurred in children aged <10 years.
- By week 22 in 2015, 72 cases of *H. influenzae* had been reported. Serotyping results to date include 2 a, 9 b, 1 c, 2 f and 27 non-typeable. Most cases occur in individuals aged <10 years.
- The number of pneumococcal cases was lower than that reported last year (617 versus 964). Most cases occur in children aged <5 years and adults aged 35-39 years.
- To date in 2015, 268 influenza isolates have been detected. 169 of the isolates were detected through Viral Watch, 52 through pneumonia surveillance and 47 through the influenza-like illness programme.
- At the end of week 22, seventeen measles cases were detected with date of onset of rash in 2015, of which 9 were wild type measles, 5 were classified as measles vaccine-related cases and 3 are still to be classified. Of the 9 true measles IgM positive cases detected, 4 were from Western Cape province, 3 from Northern Cape Province and 1 from each of Eastern Cape and North West provinces.
- Between 1 January—29 May 2015, 168 AFP cases <15 years of age have been reported with an annualized non-polio AFP detection rate of 3.1 per 100,000 population.

Laboratory-Based Enteric Disease Surveillance

Reporting period 01/01/2015 to 31/05/2015 *Results until end of epidemiologic week 22 (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 22 in 2015, *Salmonella* Typhi had been reported for 27 cases (21 invasive), in Eastern Cape, Gauteng, KwaZulu Natal, Mpumalanga and Western Cape provinces. For the same period last year, 56 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, no cases had been reported.

Reporting period 01/01/2015 to 31/05/2015 *Results until end of epidemiologic week 22 (2015)*

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

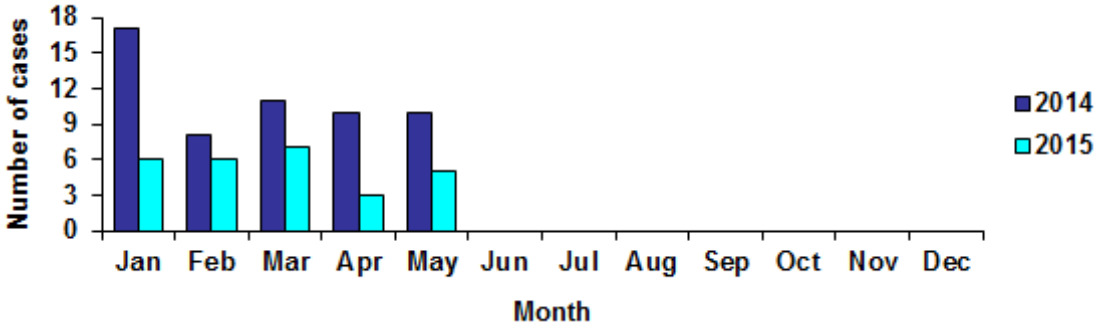


Figure 2. Number of *Salmonella* Typhi cases by province in South Africa, 2014 and 2015

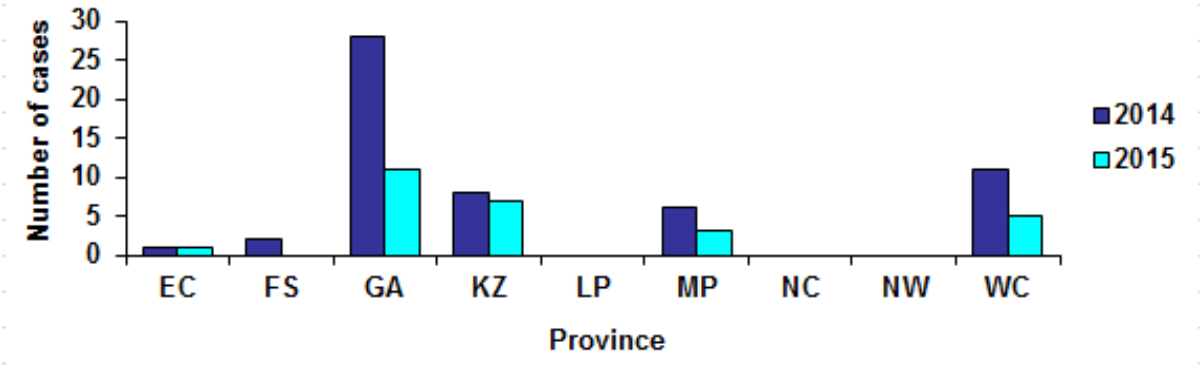
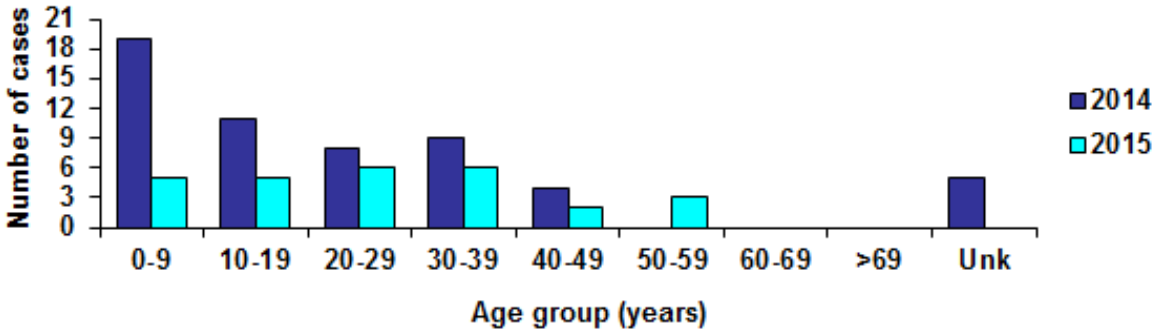


Figure 3. Number of *Salmonella* Typhi cases by age group in South Africa, 2014 and 2015



Reporting period 01/01/2015 to 31/05/2015 *Results until end of epidemiologic week 22 (2015)*

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

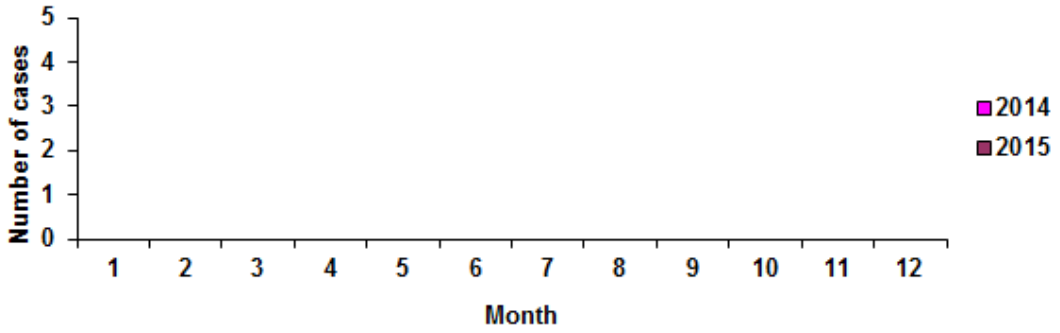


Figure 5. Number of *Vibrio cholerae* O1 cases by province in South Africa, 2014 and 2015

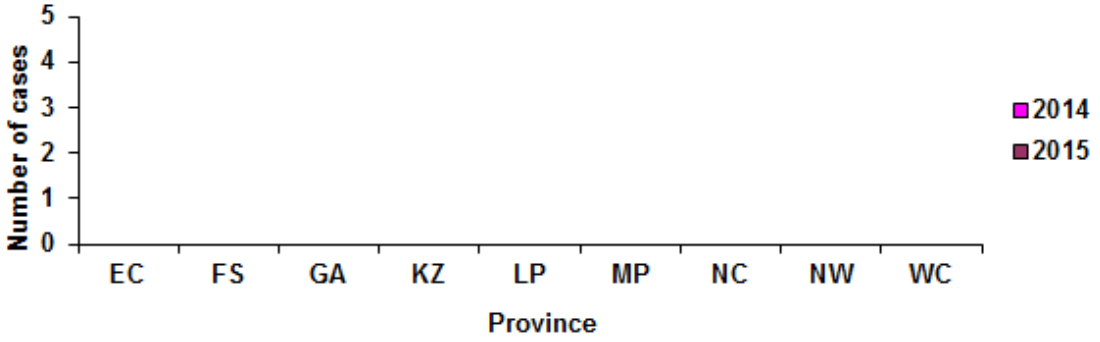
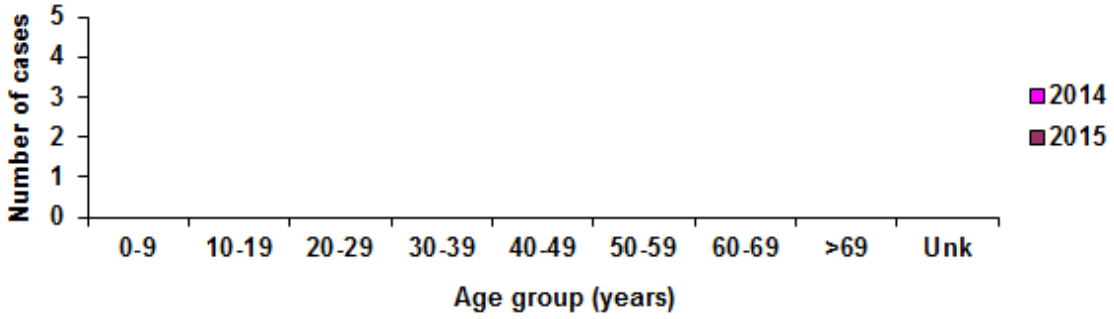


Figure 6. Number of *Vibrio cholerae* O1 cases by age group in South Africa, 2014 and 2015



Syndromic Diarrhoeal Disease Surveillance

Reporting period 01/01/2015 to 31/05/2015 *Results until end of epidemiologic week 22 (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:

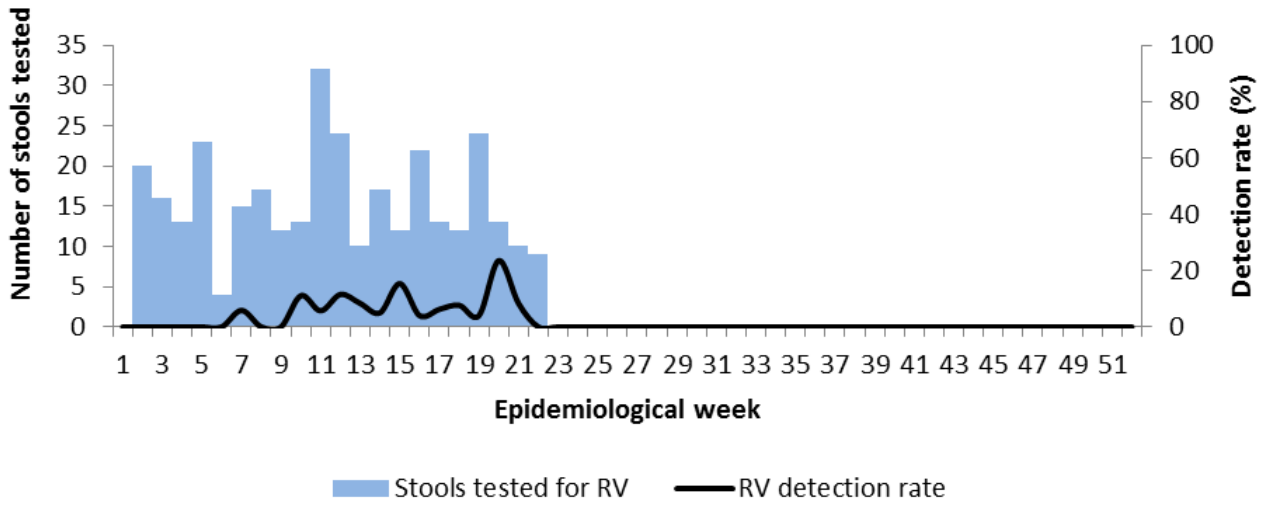
The start of the rotavirus season is defined as rotavirus detection rate of >20% for two consecutive weeks and the end as rotavirus detection rate <20% for two consecutive weeks.

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 31 May 2015, 331 patients were tested for rotavirus. Twenty-one were positive for rotavirus (21/331; 6.3%). The cases originated from seven different sites in six provinces. In week 20 (11 May), the rotavirus detection rate was 23.5% but the rate was not maintained in weeks 21 and 22. This may be partially due to a lag between stool collection and transport and testing. Screening in mid-June may elucidate the beginning of the 2015 rotavirus season.

Reporting period 01/01/2015 to 31/05/2015 *Results until end of epidemiologic week 22 (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	4	133
Mapulaneng	0	13
Matikwane	1	15
Dr George Mukhari	1	50
Edendale	1	9
Red Cross Children's	12	64
Kimberley	0	13
Polokwane	1	7
Free State	1	27
Total:	**21**	**331**

Sexually Transmitted Disease Surveillance

Reporting period 01/04/2015 to 30/04/2015 *Results until end of epidemiologic week 18 (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 April - 30 April 2015.

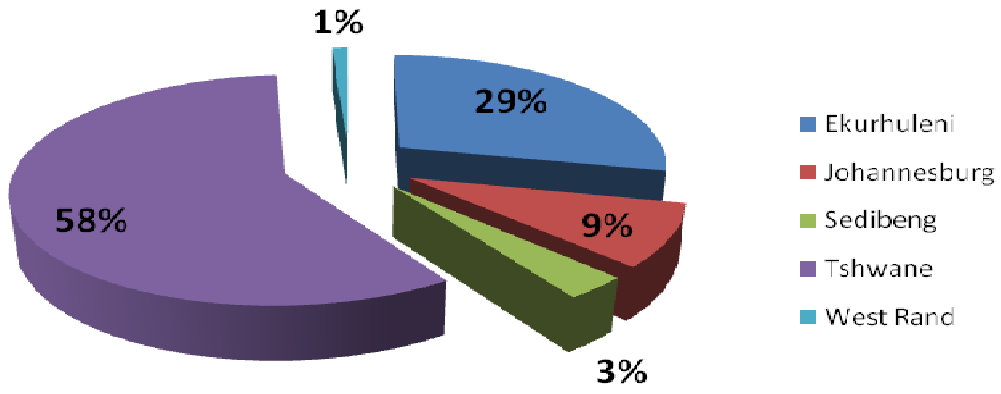
Comments:

For the period 1 January - 31 March 2015, 1,500 new STI syndrome episodes were reported by sentinel sites.

Females represented 53% (n=792) and males 47% (n=708) of the surveyed population. Amongst males, 41% (292/ 708) of STI syndromes were MUS (Male Urethritis Syndrome) and amongst females, 48% (381/ 792) of STI syndromes were VDS (Vaginal Discharge Syndrome). A total of 1,222 partner notification slips were issued to 1,500 patients with new STI episodes, resulting in an overall partner slip issue rate of 82%.

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 April 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

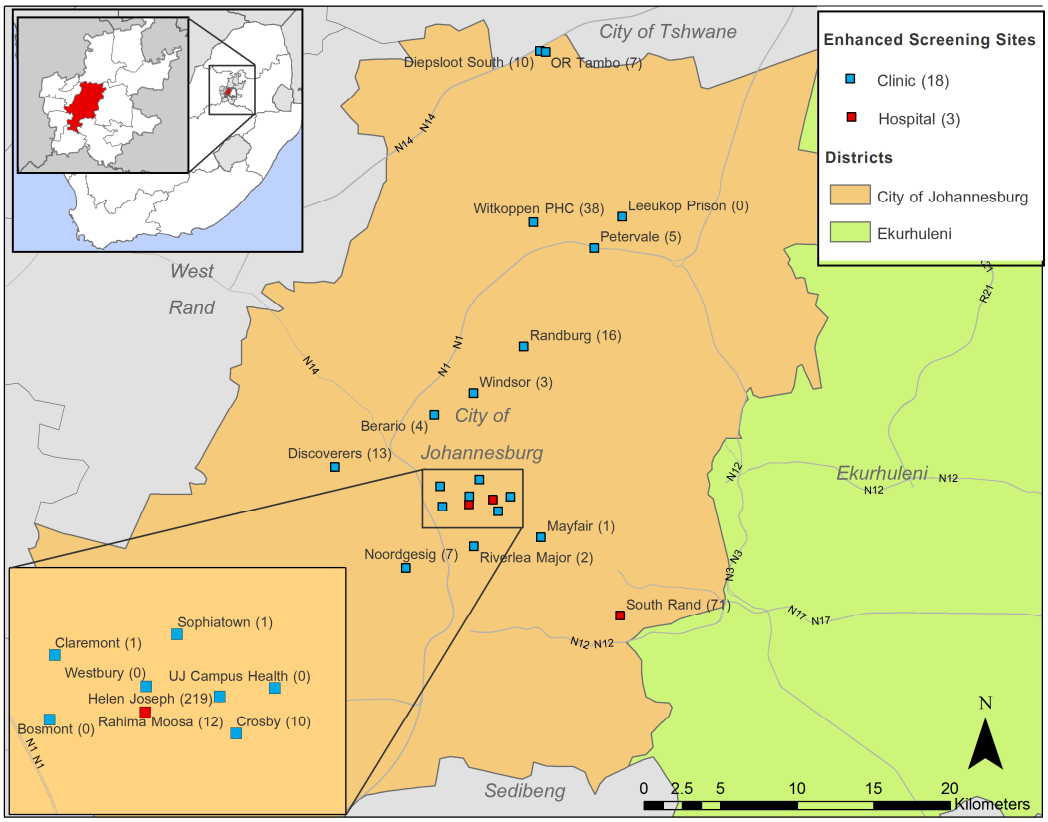
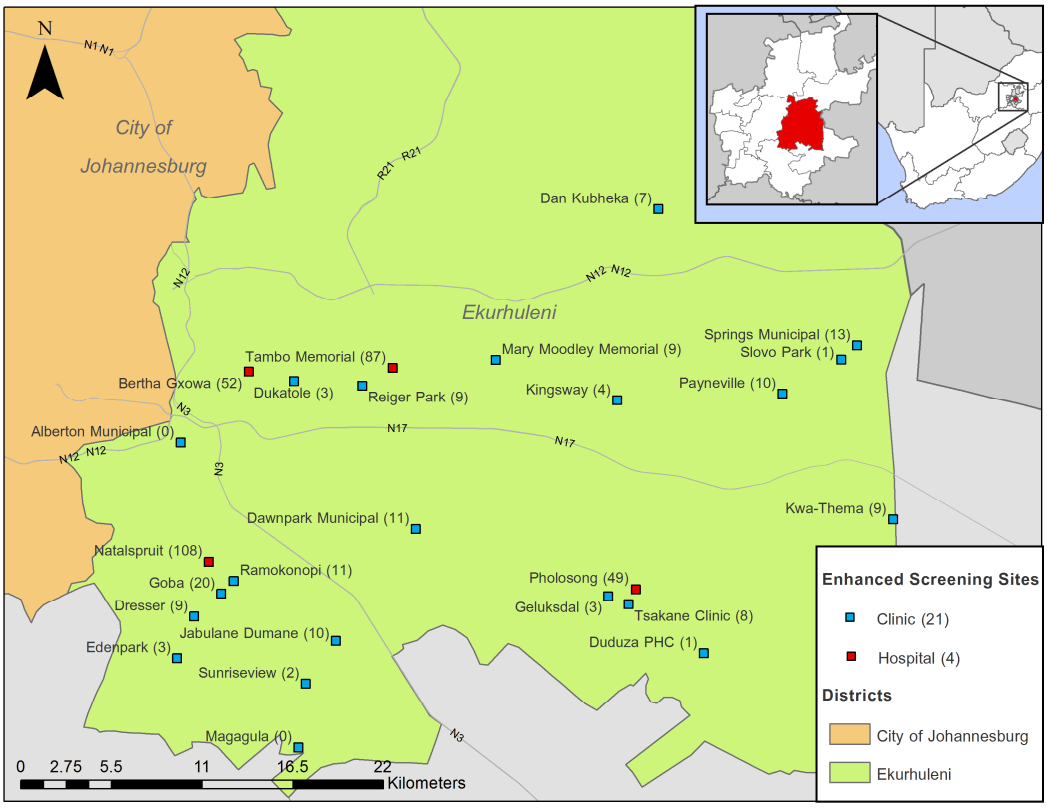
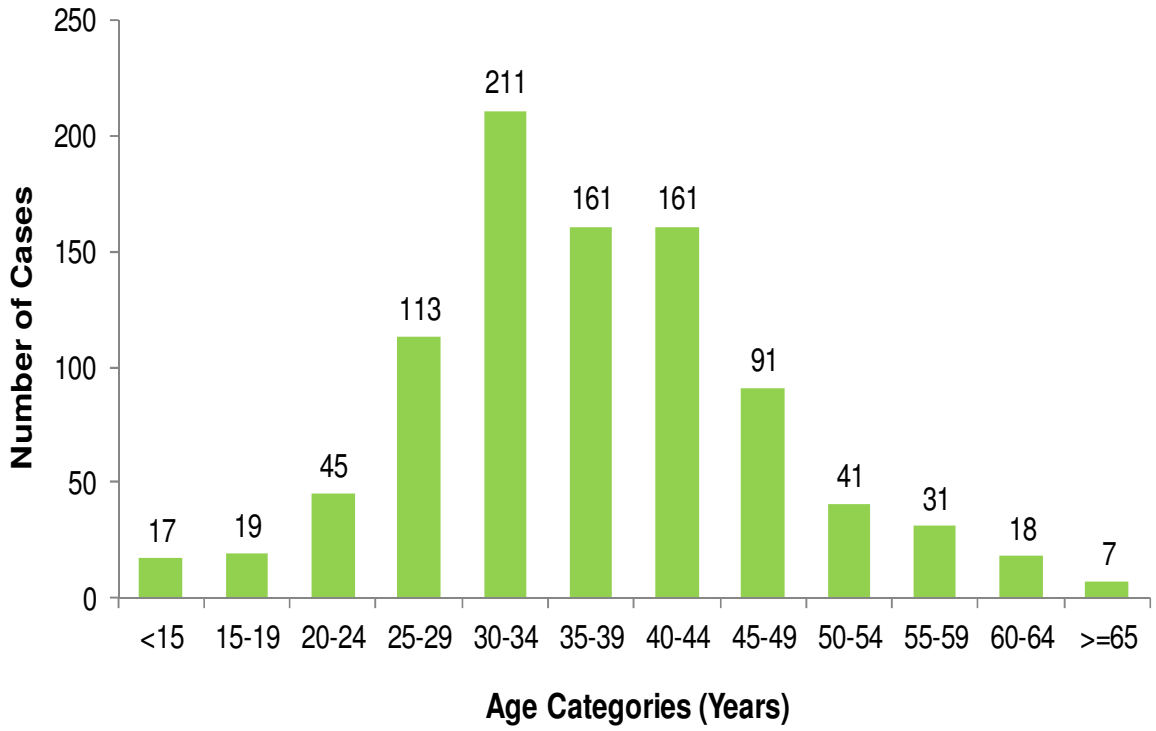


Figure 9.2. Number of CrAg-positive patients, by facility in Ekurhuleni, n=439*



* 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

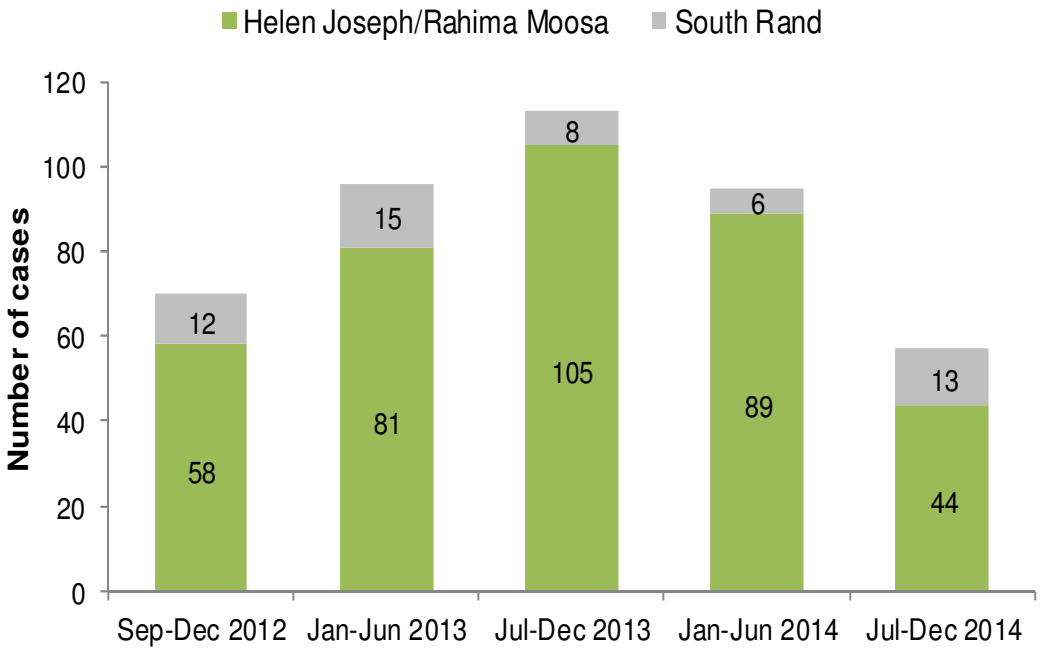
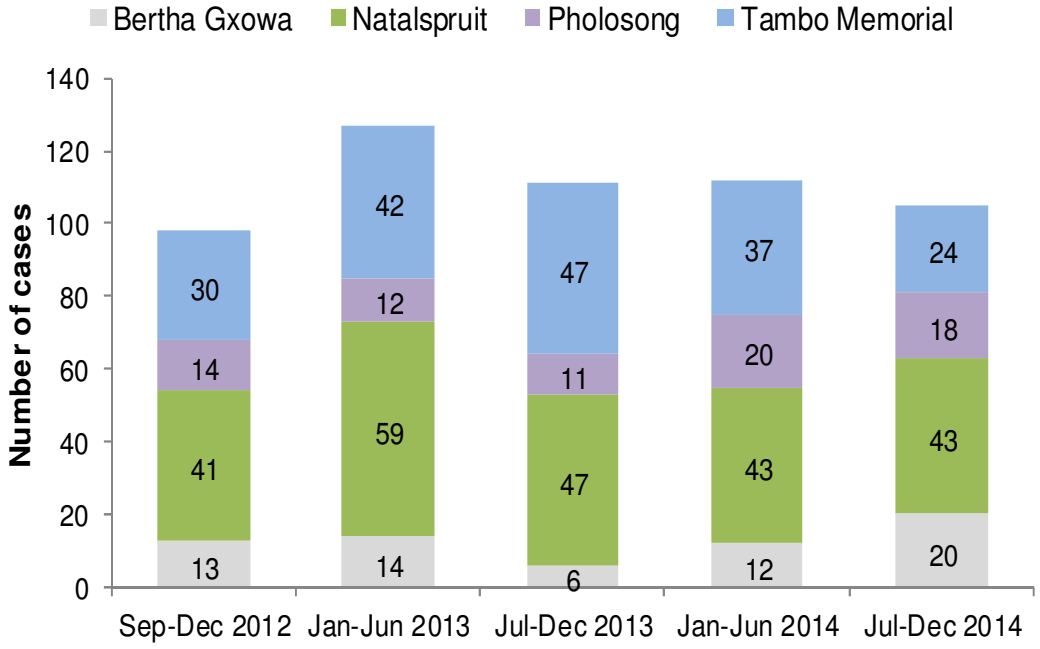


Figure 11.2. Number of laboratory-confirmed cases of cryptococcal meningitis† diagnosed for Ekurhuleni*, September 2012 through December 2014, n=553



†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 31/05/2015 *Results until end of epidemiologic week 22 (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.

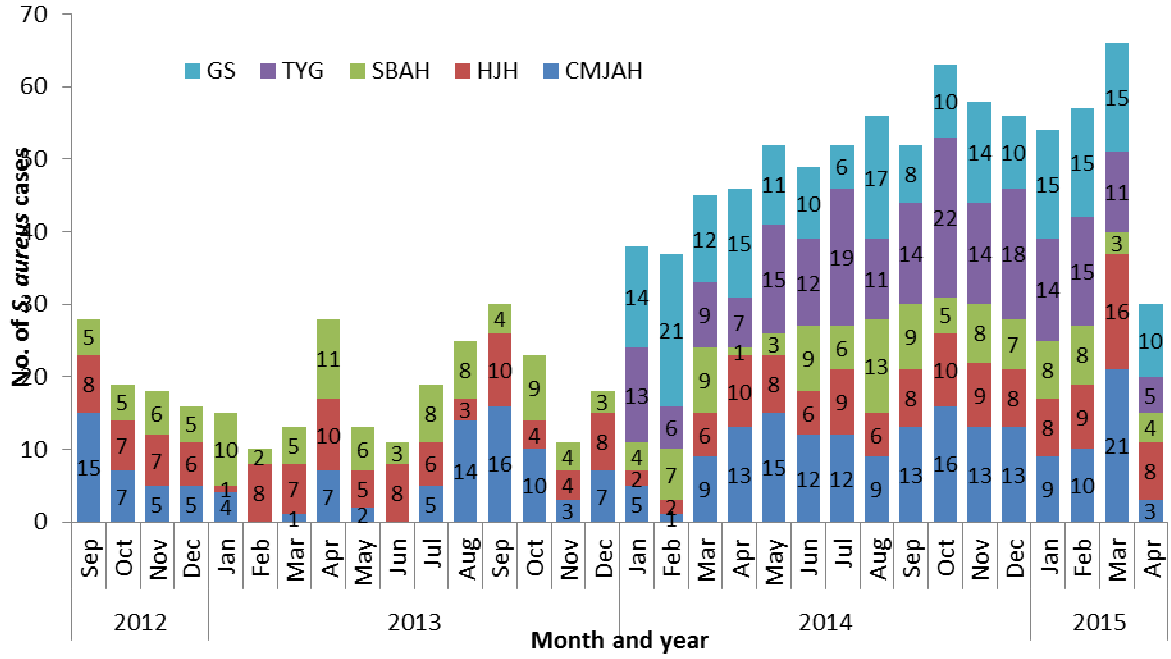
SA enhanced surveillance from patients with bacteraemia was introduced in September 2012 at three sentinel sites in Gauteng Province: Charlotte Maxeke Johannesburg Academic Hospital, Helen Joseph/Rahima Moosa Mother and Child Hospital, and Steve Biko Pretoria Academic Hospital. From January 2014, surveillance 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 May 2015.

Comments:

- For the period 1 September 2012 to 31 May 2015, 1108 *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 more than half of patients dying (55%).
- Antibiotic susceptibility varied by site.
- Thirty-two percent of *S. aureus* isolates were methicillin-resistant.

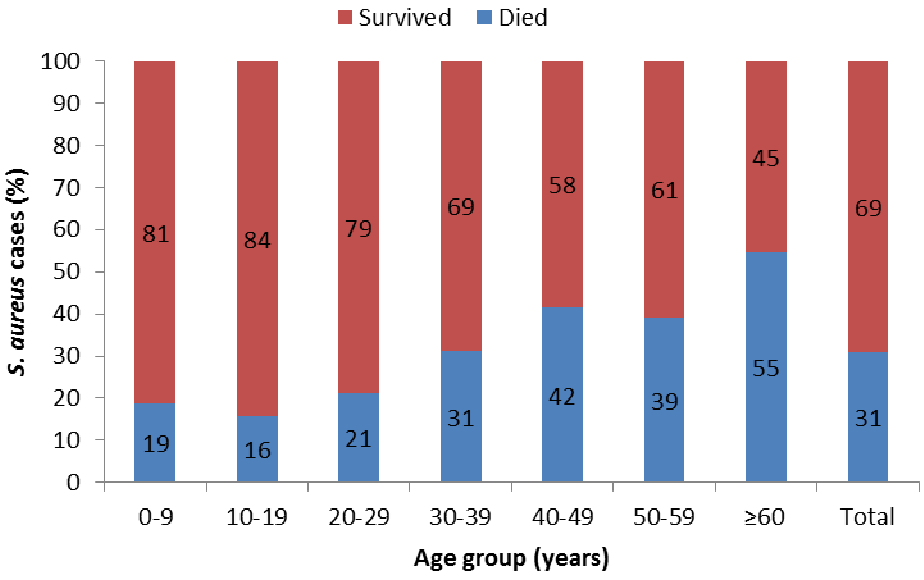
Reporting period 01/09/2012 to 31/05/2015 *Results until end of epidemiologic week 22 (2015)*

Figure 12. Number of *S. aureus* cases* reported by month and site from September 2012 to May 2015 (n=1108)



*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 May 2015 (N=746)



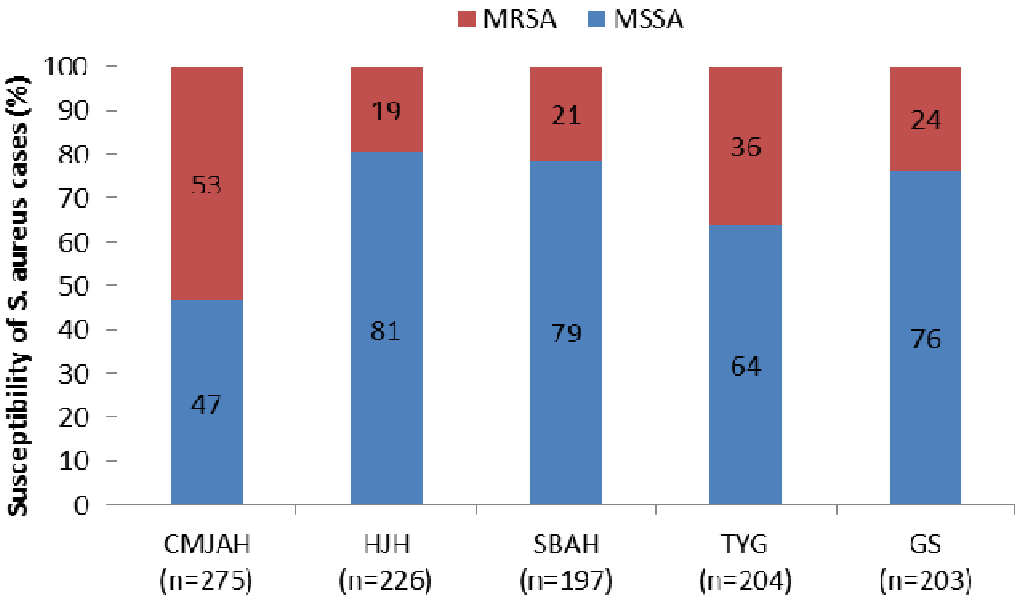
Reporting period 01/09/2012 to 31/05/2015 *Results until end of epidemiologic week 22 (2015)*

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

Antibiotic	CMJAH (%)	HJH (%)	SBAH (%)	GSH (%)	TYG (%)	Total (%)
Amikacin	42	58	59	97	88	68
Cefoxitin	82	90	89	100	100	92
Clindamycin	47	81	77	81	67	69
Ciprofloxacin	47	78	79	81	66	69
Erythromycin	43	79	73	81	68	67
Gentamycin	45	69	72	79	77	67
Linezolid	100	100	100	100	100	100
Oxacillin	47	80	79	76	64	68
Rifampicin	93	85	90	86	94	90
Cotrimoxazole	50	76	82	85	83	73
Teicoplanin	99	100	99	100	100	99
Vancomycin	99	100	99	100	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 May 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

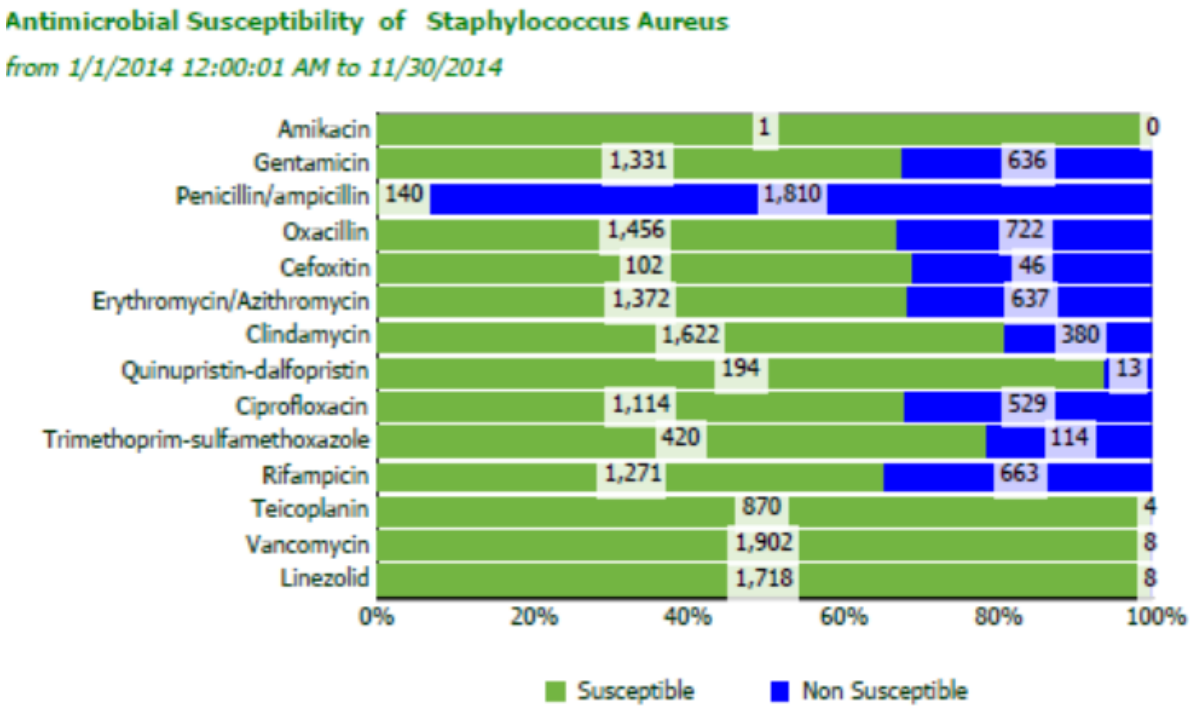


Figure 16 cont. Antimicrobial susceptibility of Gram-positive ESKAPE organisms

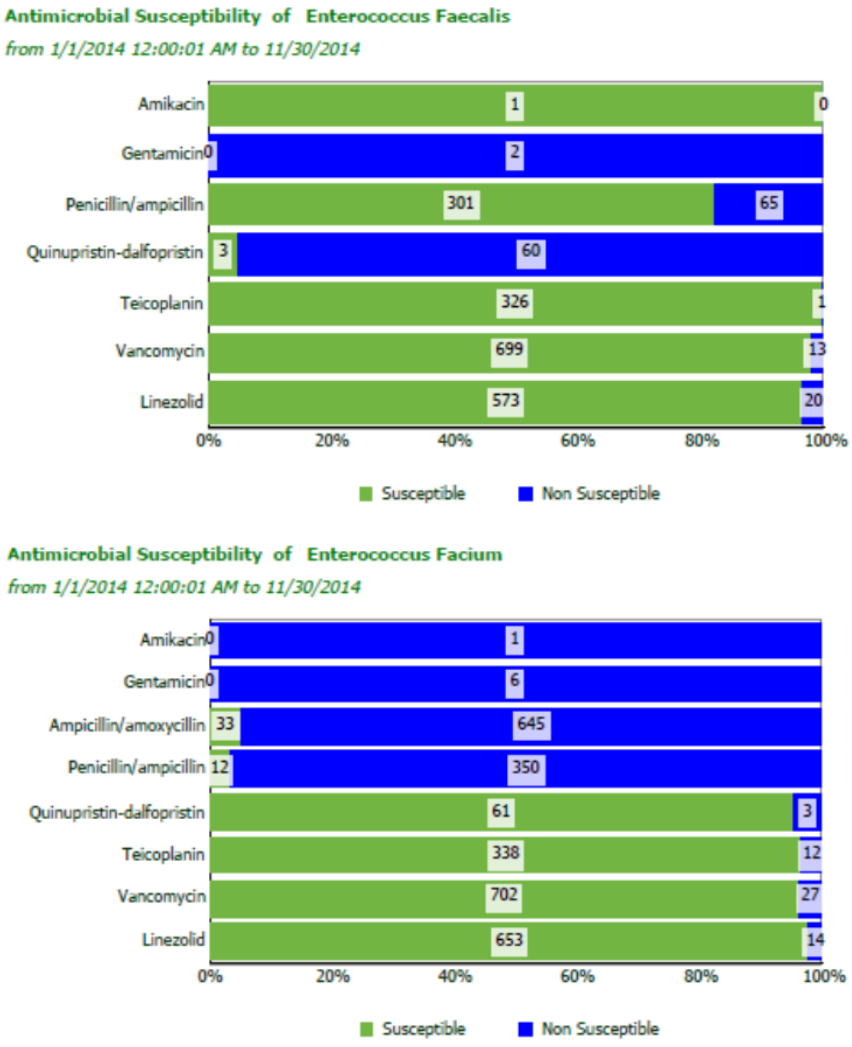
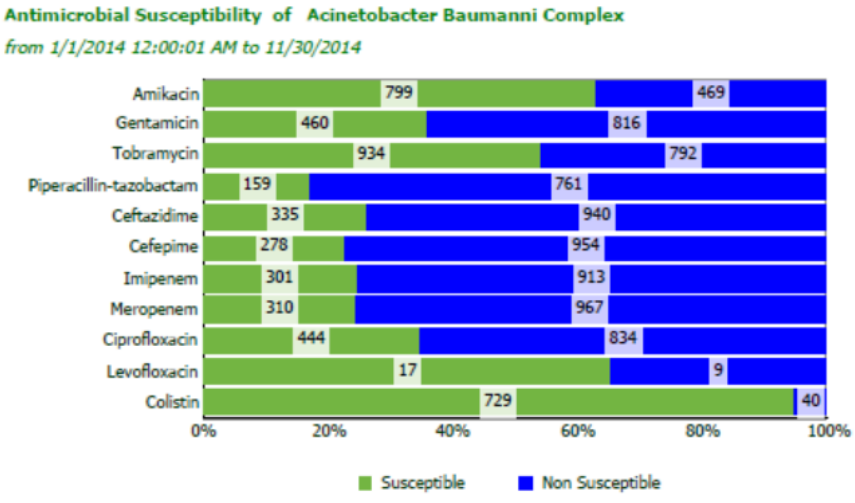


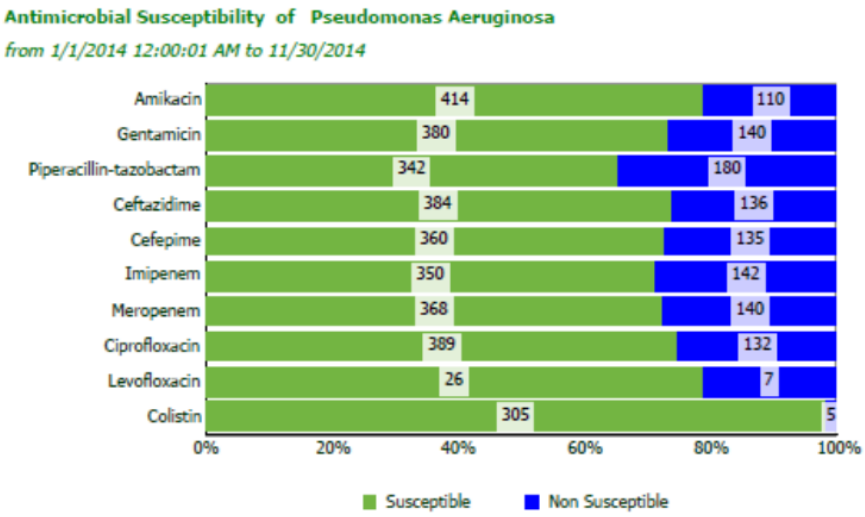
Figure 17. Antimicrobial susceptibility of Gram-negative ESKAPE organisms

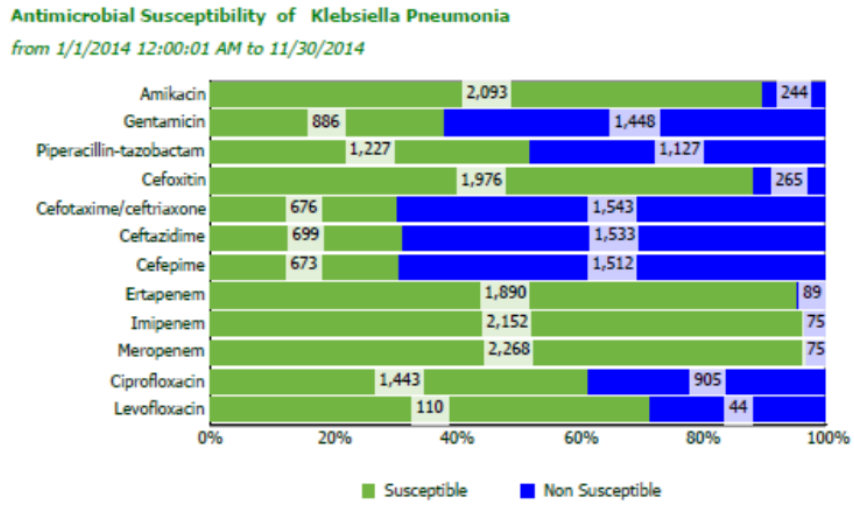


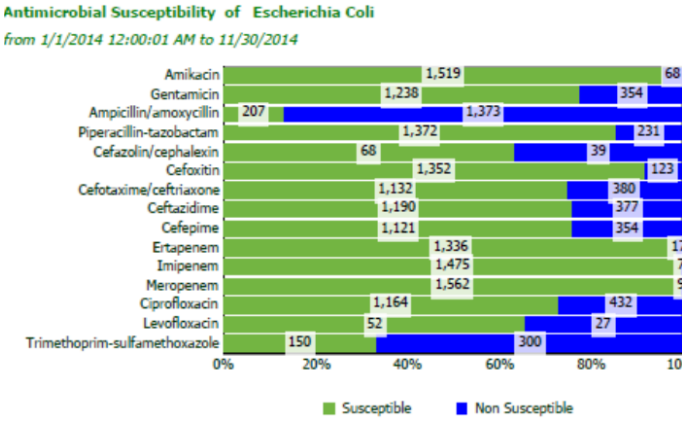
ESKAPE surveillance

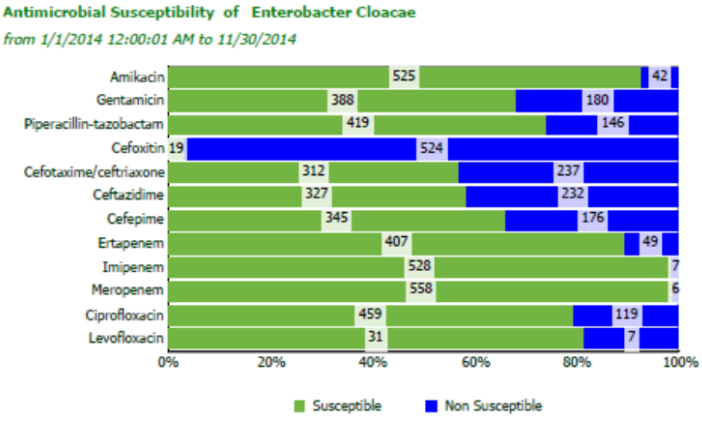
Reporting period 01/01/2014 to 30/11/2014 *Results until end of epidemiologic week 48 (2014)*

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 31/05/2015 *Results until end of epidemiologic week 22 (2015)*

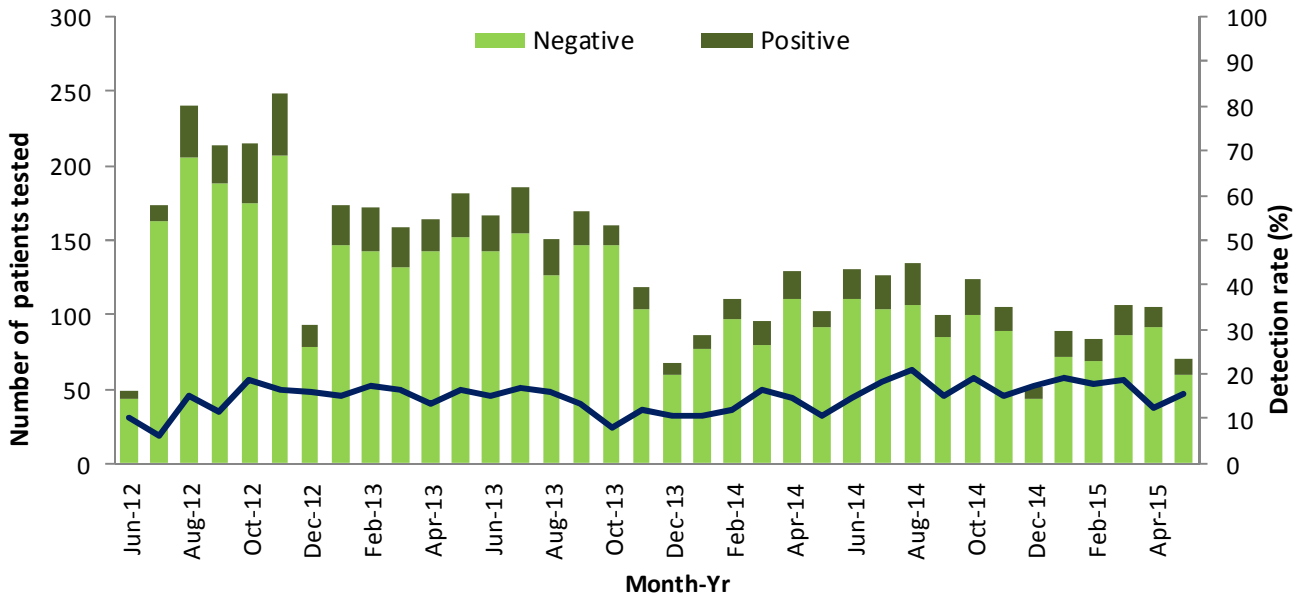
Programme Description:

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:

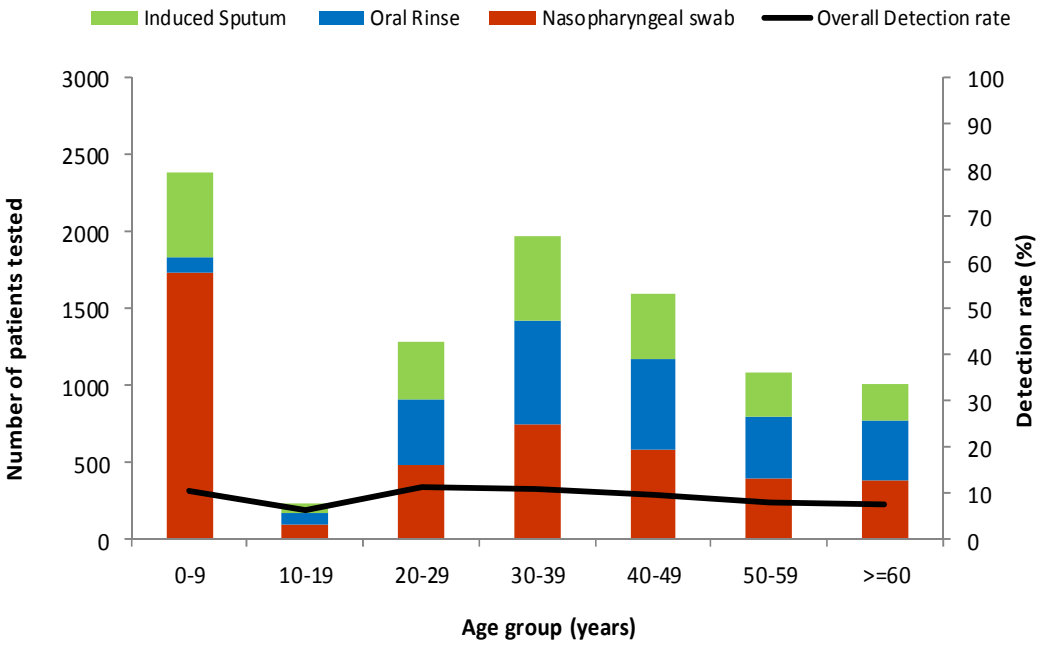
During the reporting period, 9464 specimens from 4848 patients were tested for *P. jirovecii*. The overall detection rate was 15% (722/4848). The detection rate is between 6-21%. Nasopharyngeal specimens accounted for almost half of all specimens taken (4454/9464, 47%). More than one-third of *P. jirovecii* cases were 0-9 years old (1816/4816, 37%). 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 May 2015 (n=4848)



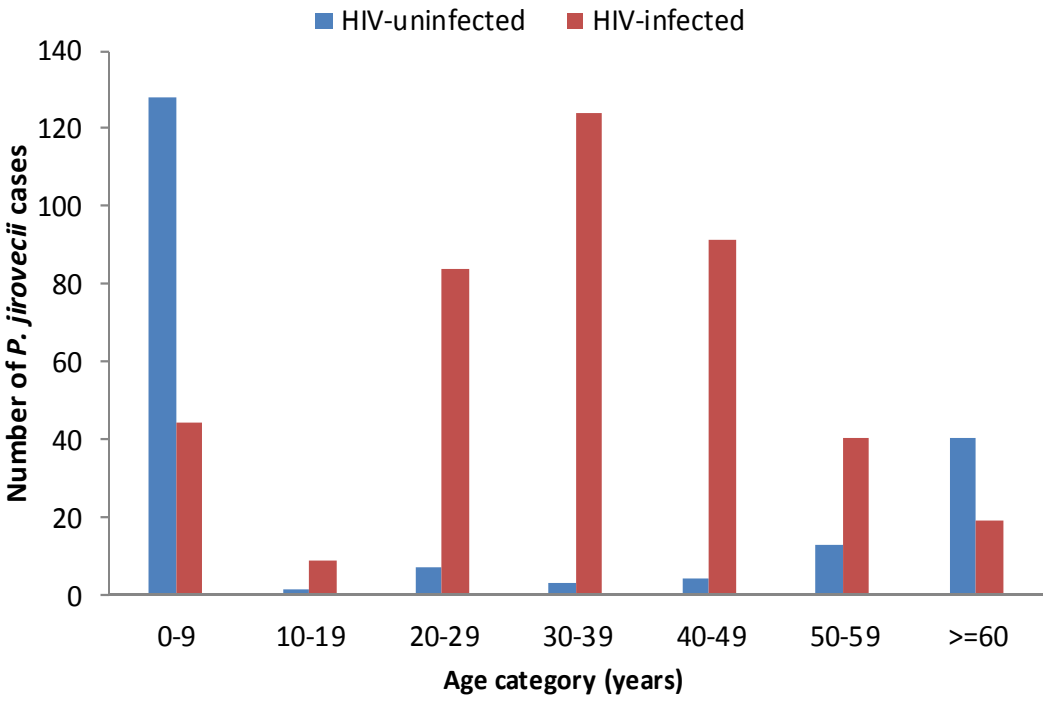
Reporting period 01/06/2012 to 31/05/2015 *Results until end of epidemiologic week 22 (2015)*

Figure 19. Number of patients tested for *P. jirovecii* by age category and specimen type and the overall detection rate* from June 2012 to May 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 May 2015 (N=607)



Laboratory-Based Respiratory and Meningeal Disease Surveillance

Reporting period 01/01/2015 to 31/05/2015 *Results until end of epidemiologic week 22 (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 22 in 2015, 31 meningococcal cases had been reported to the NICD. Serogrouping results to date include 7 B, 2 C, 8 W* and 5 Y. Most of the cases occurred in children aged <10 years. For the same period last year, a total of 47 cases had been reported.

Seventy-two cases of *H. influenzae* have been reported to date in 2015. Serotyping results to date include 2 a, 9 b, 1 c, 2 f and 27 non-typeable. Most cases occur in individuals aged <10 years. For the same period last year, a total of 147 cases had been reported.

To date this year, 617 pneumococcal cases have been reported, compared to 964 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 31/05/2015 *Results until end of epidemiologic week 22 (2015)*

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

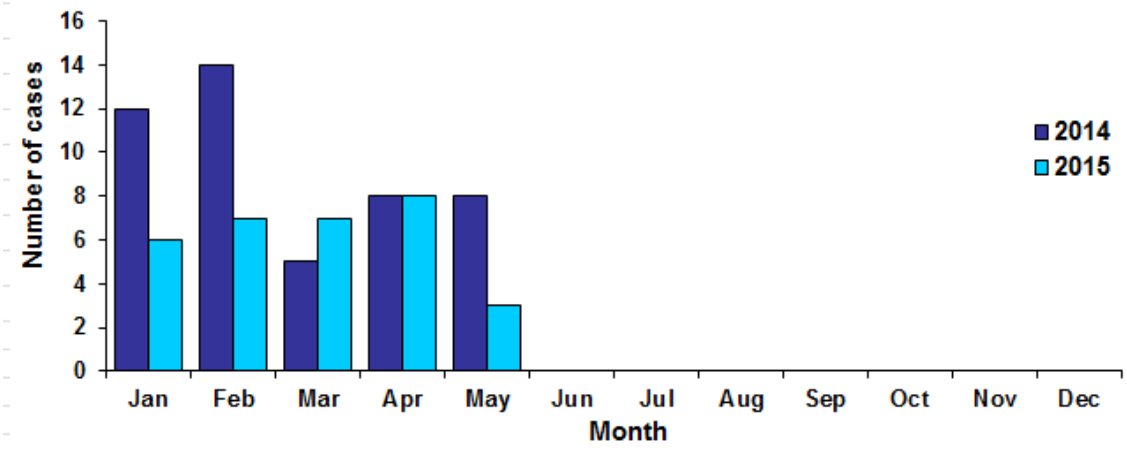


Figure 22. Number of *Neisseria meningitidis* cases by age group in South Africa, 2014 and 2015

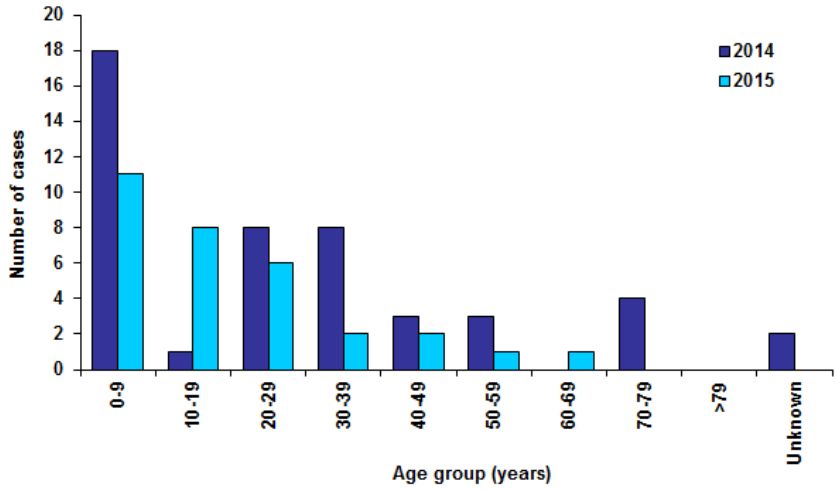
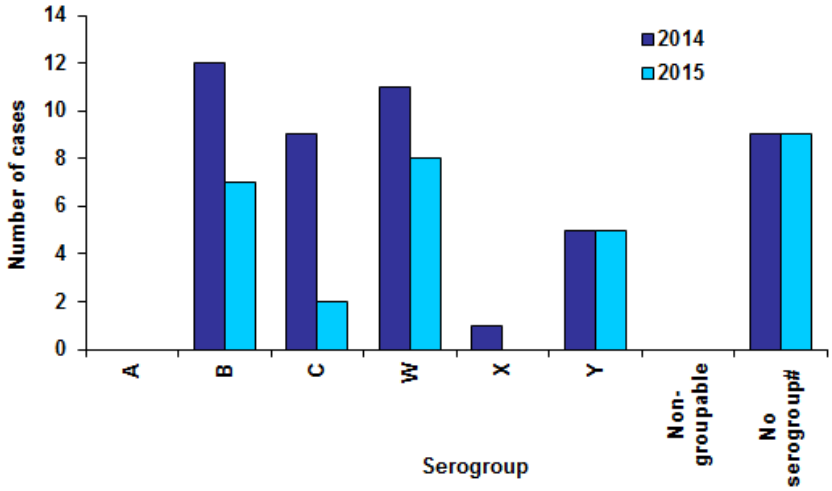


Figure 23. Number of *Neisseria meningitidis* cases by serogroup in South Africa, 2014 and 2015



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

Haemophilus influenzae surveillance

Reporting period 01/01/2015 to 31/05/2015 *Results until end of epidemiologic week 22 (2015)*

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

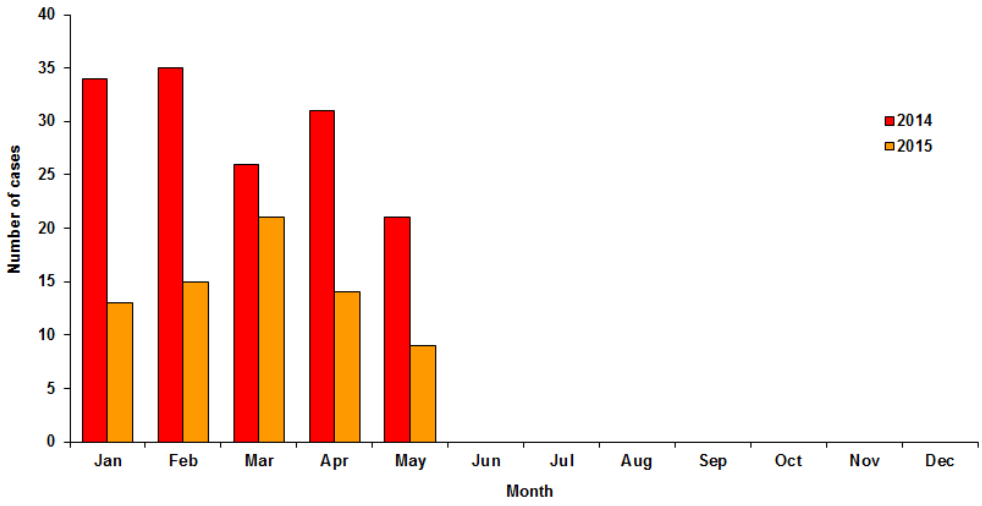


Figure 25. Number of *Haemophilus influenzae* cases by age group in South Africa, 2014 and 2015

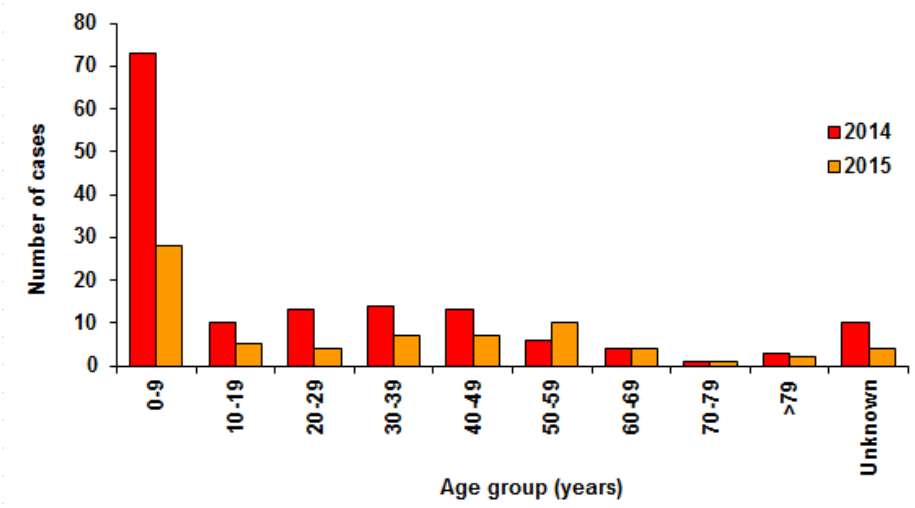
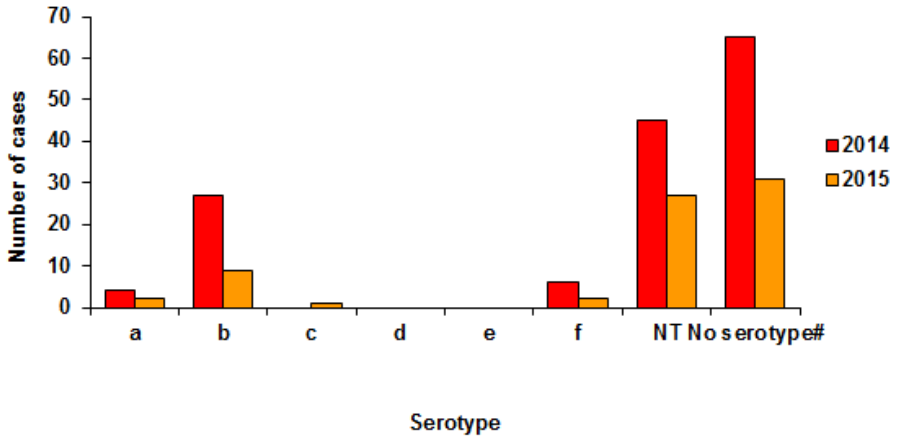


Figure 26. Number of *Haemophilus influenzae* cases by serotype in South Africa, 2014 and 2015



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

Reporting period 01/01/2015 to 31/05/2015 *Results until end of epidemiologic week 22 (2015)*

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

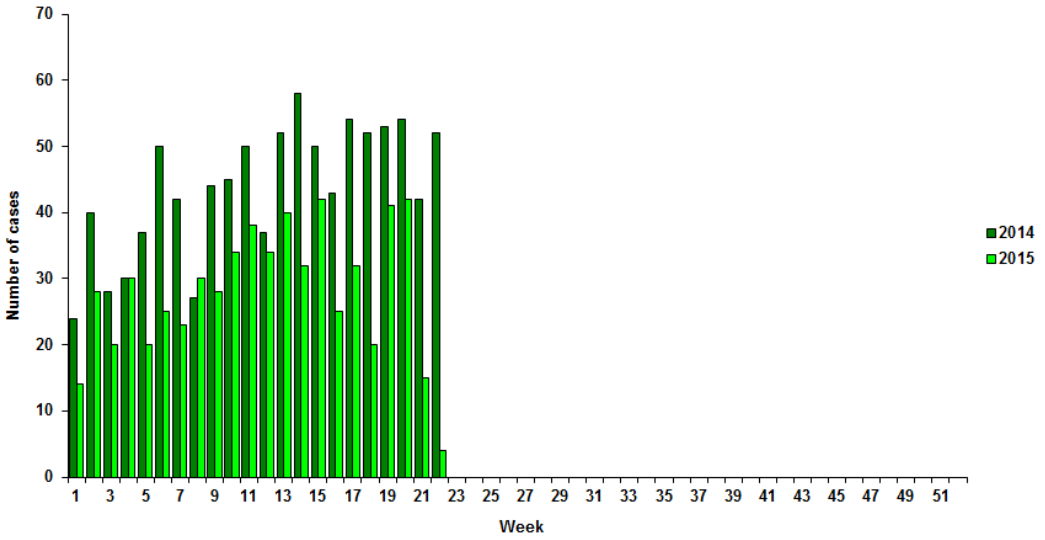


Figure 28. Number of *Streptococcus pneumoniae* cases by age group in South Africa, 2014 and 2015

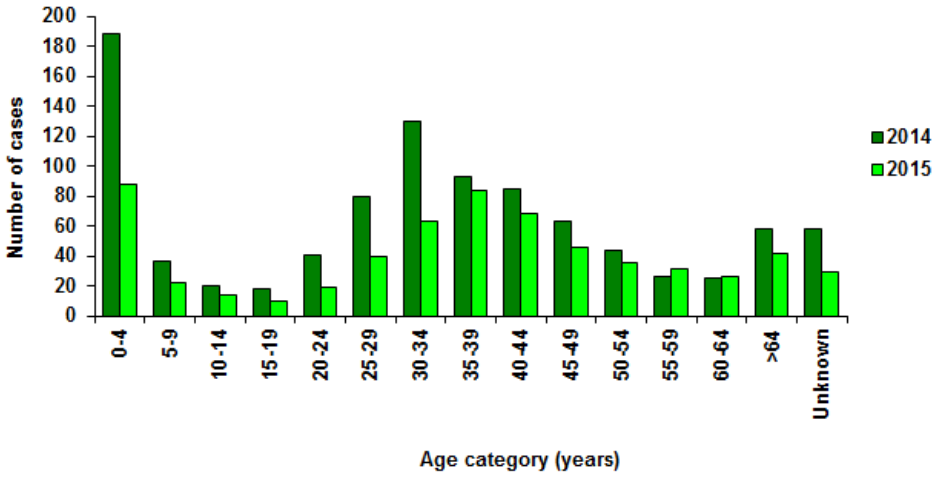
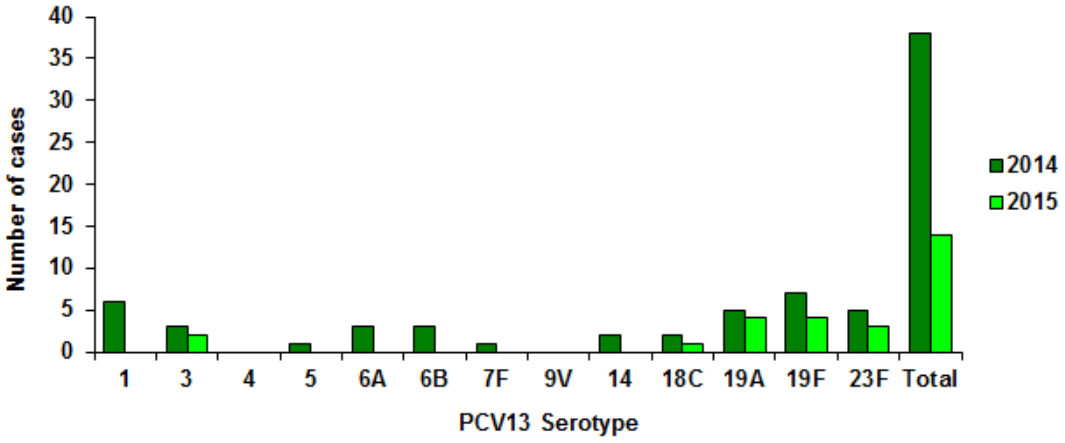


Figure 29. Number of *Streptococcus pneumoniae* cases by 13-valent pneumococcal conjugate vaccine (PCV13) serotype in children <5 years in South Africa, 2014 and 2015



Syndromic Respiratory Disease Surveillance

Reporting period 01/01/2015 to 31/05/2015 *Results until end of epidemiologic week 22 (2015)*

Programme Description:

The data presented in this report are generated from influenza surveillance programmes: the Influenza-like illness (ILI) at primary health clinics and Viral Watch (VW) sites, Severe Acute Respiratory Illness (SARI) and the respiratory consultations and hospitalisations surveillance system.

ILI surveillance at primary health care clinics was started in 2012 at 2 clinics in two provinces, 4 additional clinics were added in 2013.

The Viral Watch (VW) is a sentinel influenza surveillance programme started in 1984 in Gauteng and expanded from 2005 onward to include all 9 provinces in South Africa. The majority (90%) of the sentinel sites are general practitioners. Respiratory specimens (throat, nasal swabs or nasopharyngeal aspirates) are collected from patients of all ages meeting the ILI case definition, which is an acute respiratory illness with a measured temperature of ≥ 38 ˚C and cough, with onset within the past 7 days prior to consultation.

The Severe Acute Respiratory Illness (SARI) surveillance program is a prospective sentinel hospital-based surveillance program. It was established in 2009 and is currently conducted at 5 sentinel sites (public hospitals) in 4 provinces of South Africa. Hospitalised patients meeting the surveillance case definition of acute respiratory illness are prospectively enrolled. Clinical and epidemiologic data are collected using standardised questionnaires. Information on in-hospital management and outcome is collected. Upper respiratory tract samples (oropharyngeal and nasopharyngeal swabs in cases ≥5 years old or nasopharyngeal aspirate in cases <5 years of age) are tested for the presence of influenza and other respiratory viruses using RT-PCR.

The respiratory consultations and hospitalisations surveillance system collects anonymous influenza- and pneumonia-associated outpatient consultations and hospitalisations data from one private hospital group in 7 provinces (Gauteng, North West, Free State, Mpumalanga, Eastern and Western Cape and KwaZulu-Natal). These data on the number of consultations and hospitalisations are compared to the influenza season as described by the viral watch and SARI programmes.

Comments:

The 2015 influenza season started in week 19 when the Viral Watch influenza detection rate rose to 28.7% and continued to rise with a detection rate of 66.7% in week 20.

ILI programme: In the first 22 weeks of 2015, 417 specimens were received from 2 ILI sites. Influenza A untyped as yet was detected in five specimens, influenza A(H1N1)pdm09 in 17, influenza A(H3N2) in 16 and influenza B in nine of these specimens.
VW programme: During the same period, 368 specimens were received from VW sites. Influenza A untyped as yet was detected in one patient, influenza A(H1N1)pdm09 in 96, influenza A(H3N2) in 62 and influenza B in 10 patients.
Pneumonia surveillance: In this time period, 1374 specimens from patients with Severe respiratory illness (SRI) were received from the 6 sentinel sites. Influenza A untyped as yet was detected in two specimens, influenza A(H1N1)pdm09 in 27, influenza A(H3N2) in 17, and influenza B in six of these specimens. In addition, 569 other respiratory viruses were detected in the specimens of 486 patients, RSV (246) accounted for the majority followed by rhinovirus (196).

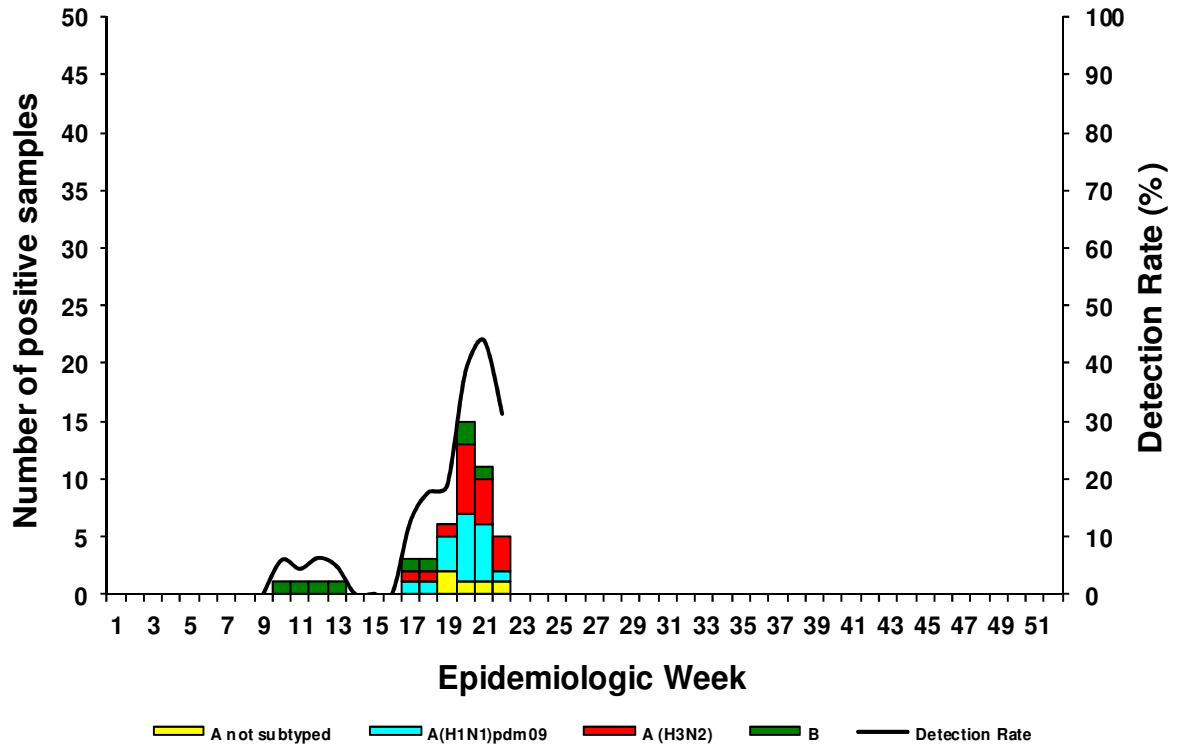
There are a number of specimens collected during week 22 awaiting results.

Please note that these data are from sentinel sites and reflect trends in the areas with participating sites. Numbers reported reflect numbers of patients enrolled into the surveillance programmes and do not reflect total numbers of patients in the community.

Number of consultations/specimens are reported /analysed by date of consultation. Patients known to have acquired influenza abroad are not included in the tables or epidemiological curves. Source: Pneumonia surveillance, Viral Watch surveillance and Hospital Consultations Netcare

Reporting period 01/01/2015 to 31/05/2015 *Results until end of epidemiologic week 22 (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

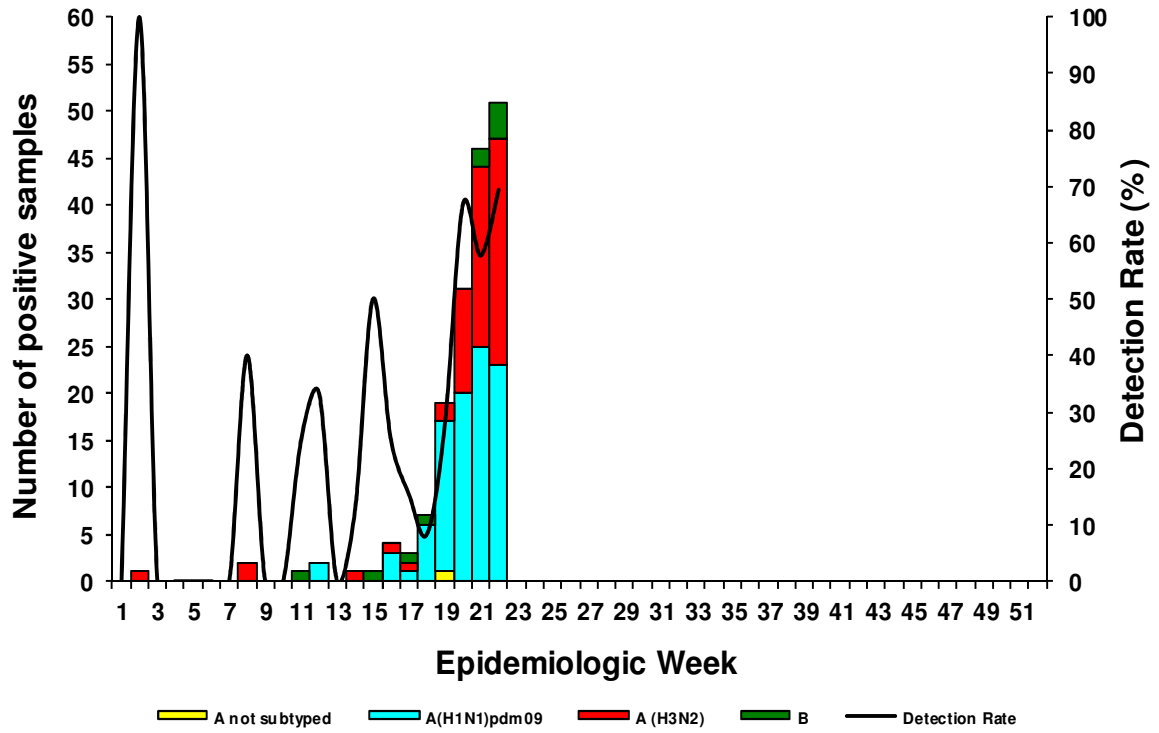
Table 7. Cumulative number of influenza type and subtype and total number of samples collected by province

Clinic	A not subtyped	A(H1N1)pdm09	A(H3N2)	B	Total samples
Edendale Gateway Clinic (KZ)	5	17	4	9	271
Jouberton Clinic (NW)			12		146
Total:	**5**	**17**	**16**	**9**	**417**

KZ: KwaZulu-Natal; NW: North West Province

Reporting period 01/01/2015 to 31/05/2015 *Results until end of epidemiologic week 22 (2015)*

Figure 31. Number of positive samples by influenza types and subtypes and detection rate by week**



*Specimens from patients with Influenza-like illnesses at 167 sentinel sites in 8 provinces
**Detection rate calculated on specimens tested at NICD only.

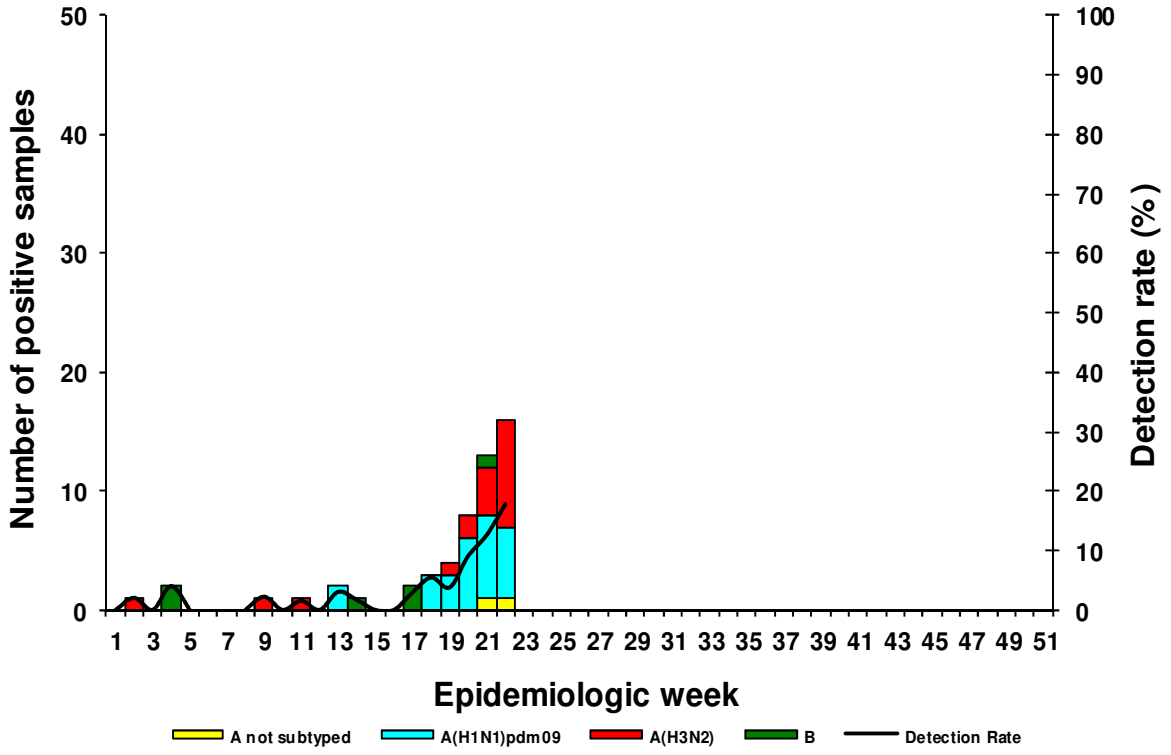
Table 8. Cumulative number of influenza type and subtype and total number of samples collected by province

Province	A not subtyped	A(H1N1)pdm09	A(H3N2)	B	Total samples
Eastern Cape		14	11	1	43
Free State		4			11
Gauteng	1	21	27	2	124
Limpopo		1			6
Mpumalanga			3	2	16
Northern Cape					15
North West					
Western Cape		56	21	5	153
Total:	**1**	**96**	**62**	**10**	**368**

To date in 2015, 27 patients have been tested for influenza at the time of entry into South Africa following travel abroad and 17 have tested influenza positive.

Reporting period 01/01/2015 to 31/05/2015 *Results until end of epidemiologic week 22 (2015)*

Figure 32. 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

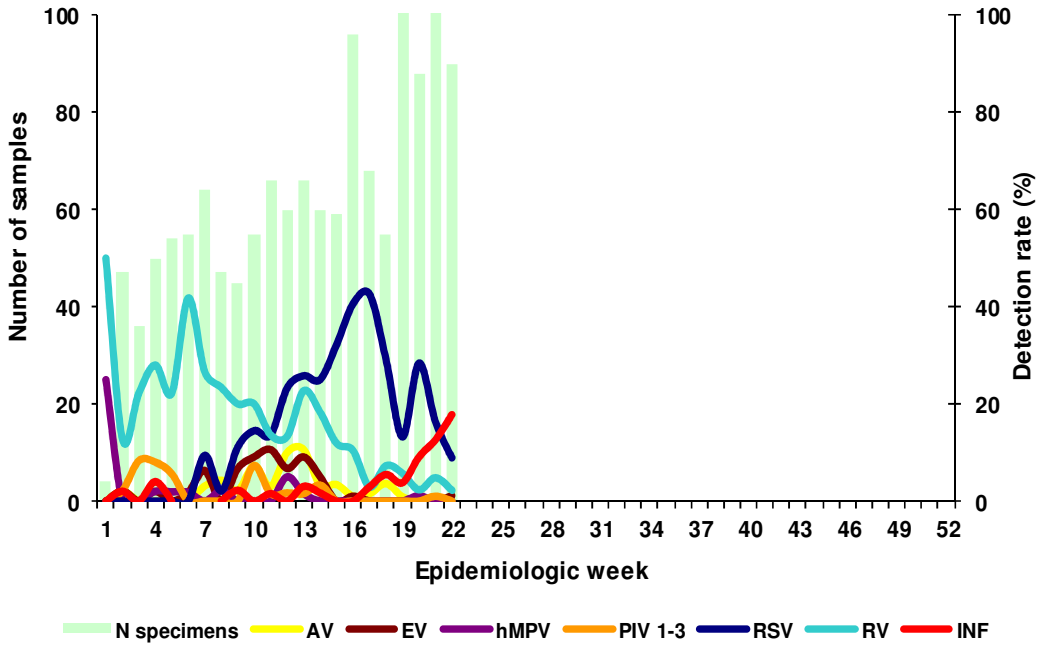
Table 9. Cumulative number of identified influenza types and subtypes and total number of samples collected by hospital

Hospital	A not subtyped	A(H1N1)pdm09	A(H3N2)	B	Total samples
Edendale (KZ)	1	4	2	3	187
Helen Joseph-Rahima Moosa (GP)	0	9	3	0	563
Klerksdorp-Tshepong (NW)	0	5	12	2	351
Mapulaneng (MP)	0	1	0	1	89
Matikwane (MP)	0	0	0	0	40
Red Cross (WC)	1	8	0	0	144
Total:	**2**	**27**	**17**	**6**	**1374**

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

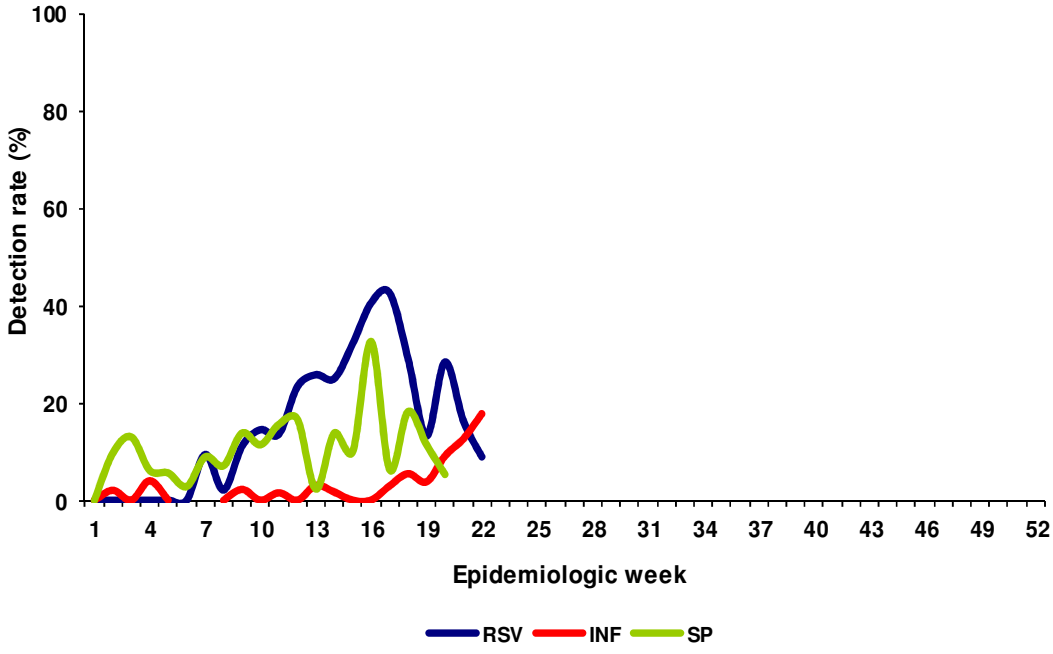
Reporting period 01/01/2015 to 31/05/2015 *Results until end of epidemiologic week 22 (2015)*

Figure 33. Number of specimens and detection rate for respiratory viruses* by week



*AV: Adenovirus; EV: Enterovirus; hMPV: human Metapneumovirus; PIV: Parainfluenza virus; RSV: Respiratory syncytial virus; RV: Rhinovirus; INF: Influenza virus

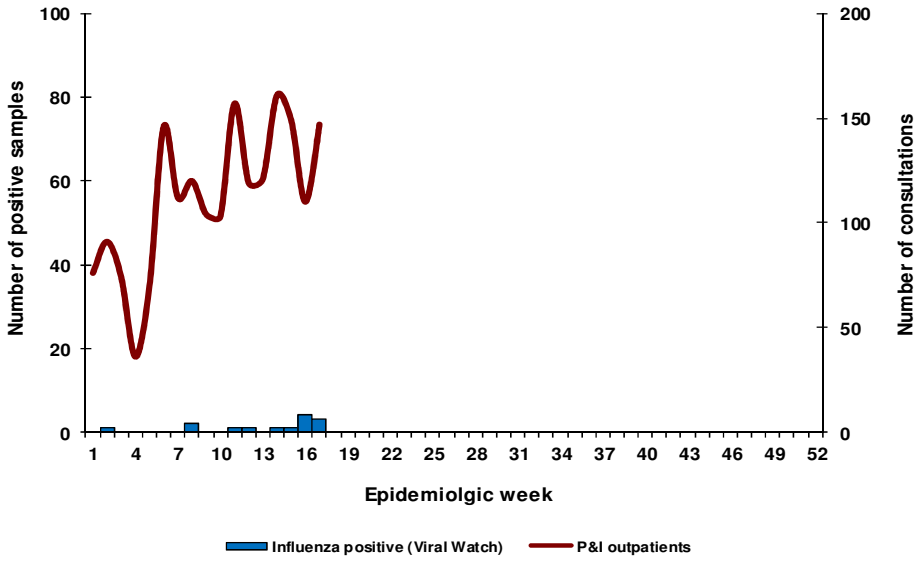
Figure 37. Detection rate for influenza (INF), respiratory syncytial virus (RSV) and pneumococcus (SP) by week



Private hospital consultations

Reporting period 01/01/2015 to 26/04/2015 *Results until end of epidemiologic week 17 (2015)*

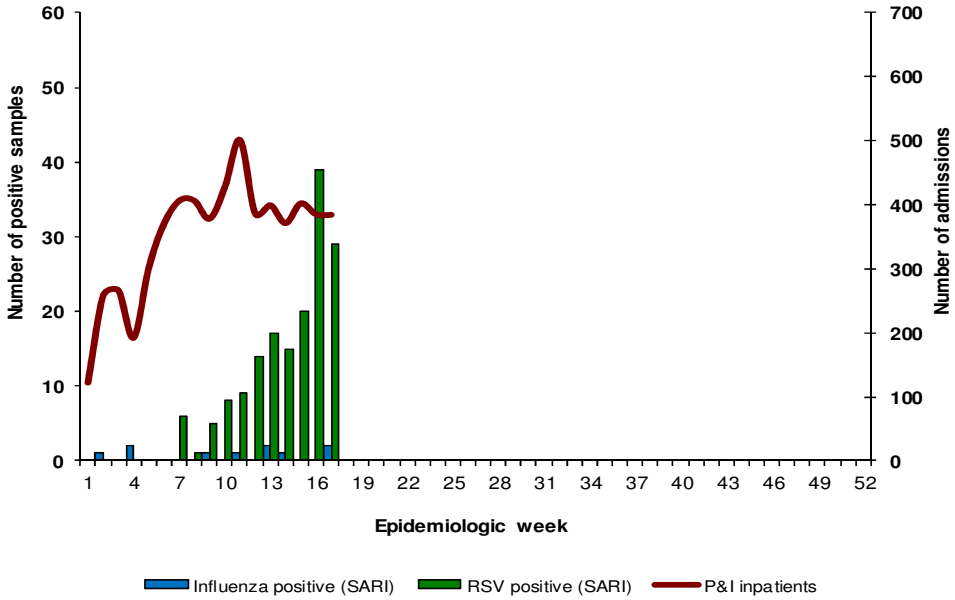
Figure 34. Number of private hospital outpatient consultations* with a discharge diagnosis of pneumonia and influenza (P&I) and viral isolates**



* 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 35. 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 29/05/2015 *Results until end of epidemiologic week 22 (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:

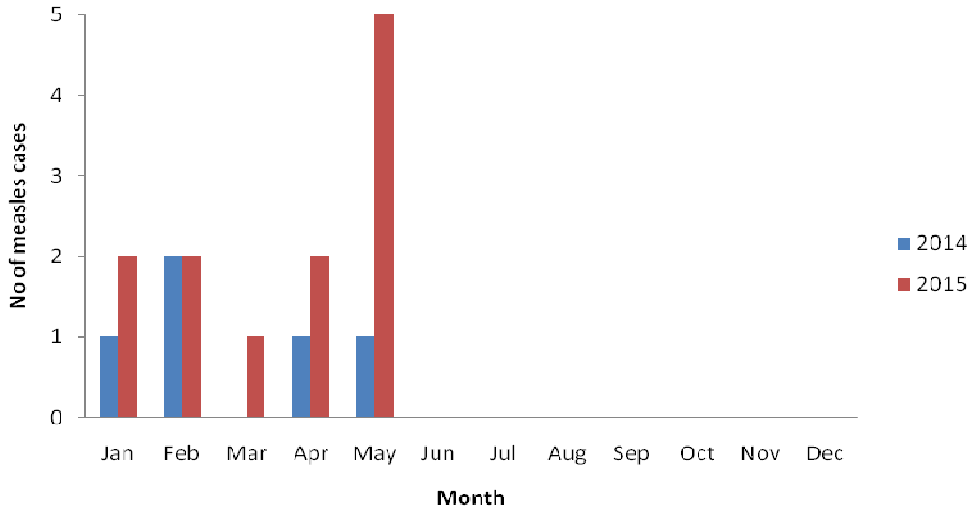
For the period 1 January to 29 May 2015 (week 22), 17 laboratory-confirmed measles IgM positive cases were detected through measles surveillance, of which 9 were wild type measles, 5 were vaccine-related cases and 3 are still to be classified. Of the 9 wild-type measles cases, 4 were from Western Cape province, 3 from Northern Cape Province and 1 from each of Eastern Cape and North West provinces.

Table 12. Number of laboratory-confirmed cases per province, South Africa, 2015

Province	Measles IgM positive
Eastern Cape	2#
Free State	1*
Gauteng	1*
KwaZulu-Natal	0
Limpopo	0
Mpumalanga	0
Northern Cape	3
North West	1
Western Cape	4
South Africa	**12**

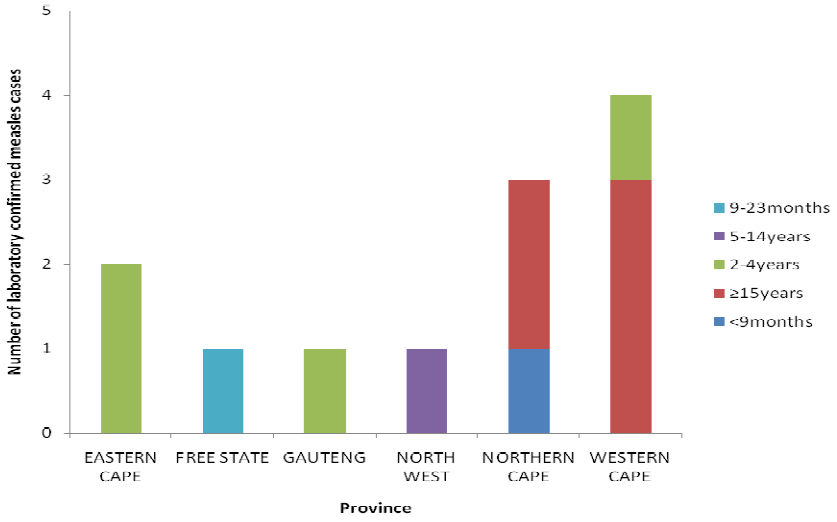
*Unclassified laboratory confirmed cases, #ECP has 1 unclassified measles case

Figure 36. Number* of laboratory-confirmed measles cases by month of specimen collection, South Africa, 2014 and 2015



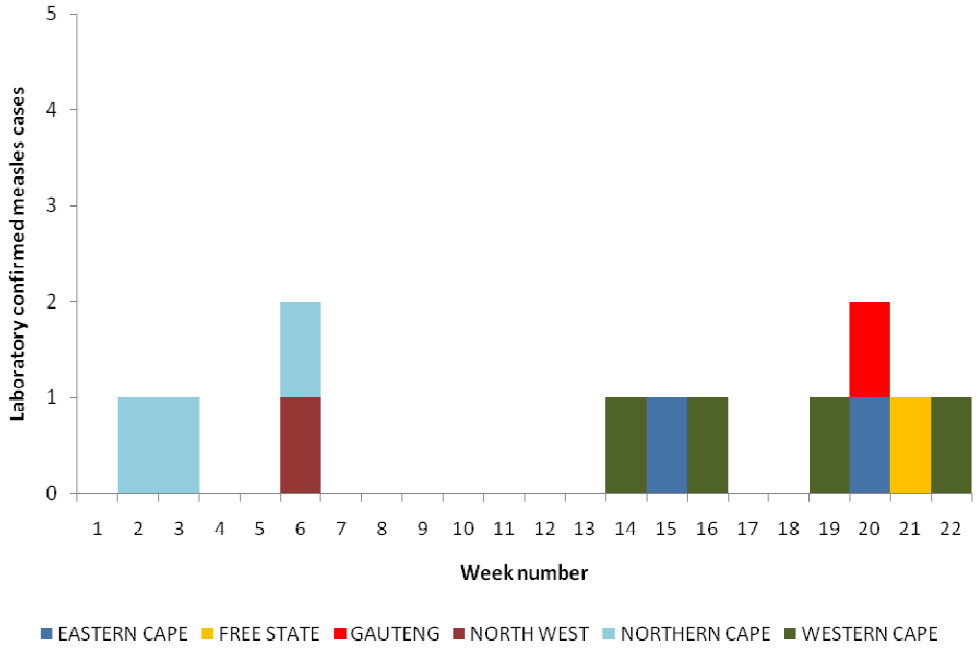
*Includes measles cases from Northern Cape Province outbreak which started in September 2014. Only measles cases with date of onset in 2015 were included for comparison.

Figure 37. Number of measles cases by province and age group in South Africa, 2015



Reporting period 01/01/2015 to 29/05/2015 *Results until end of epidemiologic week 22 (2015)*

Figure 38. 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 29/05/2015 *Results until end of epidemiologic week 22 (2015)*

Programme Description:

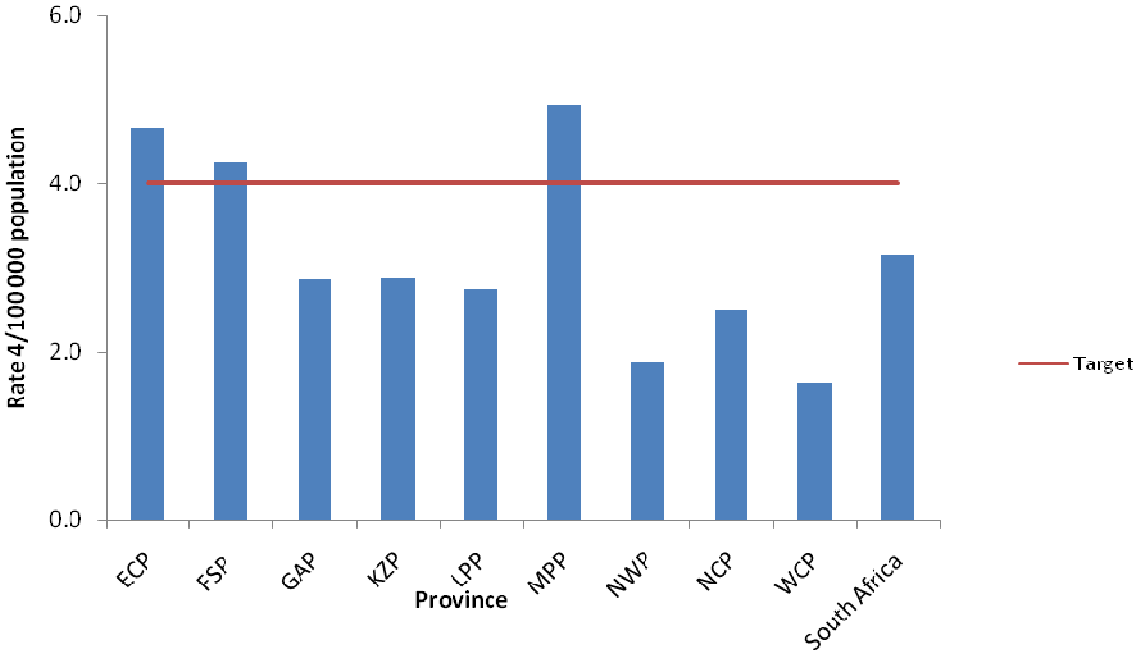
Data presented in this report are generated from the AFP surveillance database and represent specimens received at the National Institute for Communicable Diseases (NICD) of the National Health Laboratory Service (NHLS). These figures may differ from those presented by the National Department of Health 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 29 May 2015 (epidemiological week 22 of 2015), 351 specimens were received from AFP surveillance in South Africa. One hundred and seventy-one AFP cases were detected with date of onset of paralysis in 2015. Of the 171 AFP cases with date of onset in 2015, 168 were <15 years old corresponding to an annualised Non-Polio AFP detection rate of 3.1 per 100 000 population: range 1.6 to 4.9 (Fig 39). The overall AFP surveillance detection rate of 3.1 per 100 000 is below the new 2015 WHO target of 4 per 100 000 population. Eight of the 52 districts are silent districts with no AFP case detection. These districts need support to intensify AFP surveillance so that they do not miss AFP cases used as a proxy for polio cases surveillance.

Ninety-nine percent (99%) of the specimens were received in good condition, while 57% 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 14).

Figure 39. 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 14. 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	57%	80%
Specimens resulted within 14 days of receipt	100%	80%
Non-Polio enterovirus isolation rate	12%	10%

* Samples received in 2015