



Report for 1 to 31 January 2013

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

<b>Page</b>	
2	<b>Surveillance Summary</b>
3	<b>CENTRE FOR ENTERIC DISEASES</b>
3	<b>Laboratory-Based Enteric Disease Surveillance</b>
4	<i>Salmonella</i>
5	<i>Shigella</i>
6	<i>Escherichia coli</i> EHEC
7	<i>Vibrio cholerae</i> O1
8	<b>Syndromic Diarrhoeal Disease Surveillance</b>
8	Rotavirus (ROTA)
10	<b>CENTRE FOR HIV AND STI</b>
10	<b>HIV Surveillance</b>
10	Drug resistance patterns among HIV-infected children
12	Surveillance of transmitted HIV-1 drug resistance
14	<b>Sexually Transmitted Infections Surveillance</b>
16	<b>CENTRE FOR OPPORTUNISTIC, TROPICAL AND HOSPITAL INFECTIONS</b>
16	<b>Laboratory-Based Screening for Cryptococcal Disease</b>
19	<b>CENTRE FOR RESPIRATORY DISEASES AND MENINGITIS</b>
19	<b>Laboratory-Based Respiratory and Meningeal Disease Surveillance</b>
20	<i>Neisseria meningitidis</i>
21	<i>Haemophilus influenzae</i>
22	<i>Streptococcus pneumoniae</i>
23	<b>Syndromic Respiratory Disease Surveillance</b>
24	Severe Acute Respiratory Illness (SARI)
25	Influenza-like illness (ILI) (Viral Watch)
26	Private hospital respiratory consultations
27	<b>CENTRE FOR TUBERCULOSIS</b>
27	<b>Tuberculosis Surveillance</b>
29	<b>CENTRE FOR VACCINES AND IMMUNOLOGY</b>
30	<b>Measles and Rubella Surveillance</b>
31	<b>Polio/ Acute Flaccid Paralysis (AFP) Surveillance</b>

*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 6 cases to date.
- No cases of Enterohaemorrhagic *Escherichia coli* (EHEC) have been reported to date, the same as in 2012.
- No cases of *Vibrio cholerae* O1 have been reported to date in 2012, the same as in 2012.
- One specimen has tested positive for rotavirus to date (detection rate 0.02%).
- STI aetiological profile and HIV co-infection status remains similar to other surveys undertaken in Gauteng in recent years, with gonorrhoea accounting for the majority of urethral discharge cases, trichomoniasis being the main STI responsible for vaginal discharge, and herpes accounting for most genital ulcers, many of whom were co-infected with HIV.
- Laboratory-based screening for cryptococcal disease started at the NHLS CD4 laboratory at Charlotte Maxeke Johannesburg Academic Hospital on 3 September 2012. To date, 2 571 patients have been screened; 102 (4.0%) tested positive for cryptococcal antigen (CrAg).
- The number of meningococcal cases was lower than that reported last year, with two serogroup W135 cases reported to date. Cases were most prevalent in children aged <10 years.
- The number of *H. influenzae* cases was lower than that reported last year, with no serotypes reported to date. Cases were most prevalent in children aged <10 years.
- Most pneumococcal cases to date were reported in adults aged 35-39 years and in children aged <5 years.
- To date, no influenza isolates have been detected by Viral Watch from patients without a travel history. One influenza B has been detected through SARI.
- The South African National Tuberculosis Drug Resistance Survey (DRS) has been running for seven months with a total of 20,109 patients enrolled by the end of December. Preliminary analysis shows a smear-positivity rate of 8% and a culture positivity rate of 12% among people suspected to have TB, with variation across provinces. In addition, surveillance for rifampicin-resistant TB through the GERMS-SA platform got underway in October 2012 and a total of 40 cases have been notified and have complete case report forms up to the end of January 2013. Laboratory-based surveillance data is being prepared and analysed for inclusion in future reports.
- One case of measles has been reported to date from Gauteng province.
- 45 rubella IgM positive cases have been reported from 8 provinces.
- 19 AFP cases <15 years of age have been reported to date with an annualized non-polio AFP detection rate of 1.44 per 100,000 population.

# Laboratory-Based Enteric Disease Surveillance

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

## 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* spp, *Shigella* spp, *Escherichia coli*, and *Vibrio cholerae* through a national, active, laboratory-based surveillance system (as part of GERMS-SA [Group for Enteric, Respiratory and Meningeal Disease Surveillance in South Africa]). All microbiology diagnostic laboratories throughout South Africa are requested to report laboratory-confirmed disease (defined as the isolation of *Salmonella* spp, *Shigella* spp, *Escherichia coli*, 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 5 in 2013, 168 cases of *Salmonella* had been reported to the NICD, 114 (68%) of which were non-invasive. Most cases occurred in children aged <10 years. For the same period last year, 226 cases had been reported. *Salmonella* Typhi has been reported for 6 cases to date. For the same period last year, 8 cases of *Salmonella* Typhi had been reported.

To date, 64 cases of *Shigella* have been reported, 62 (97%) of which were non-invasive. Most cases occurred in children aged <10 years. Cases occurred in 6 provinces. For the same period last year, 182 cases of *Shigella* had been reported.

No cases of Enterohaemorrhagic *Escherichia coli* (EHEC) have been reported to date in 2013. For the same period last year, 0 cases had been reported.

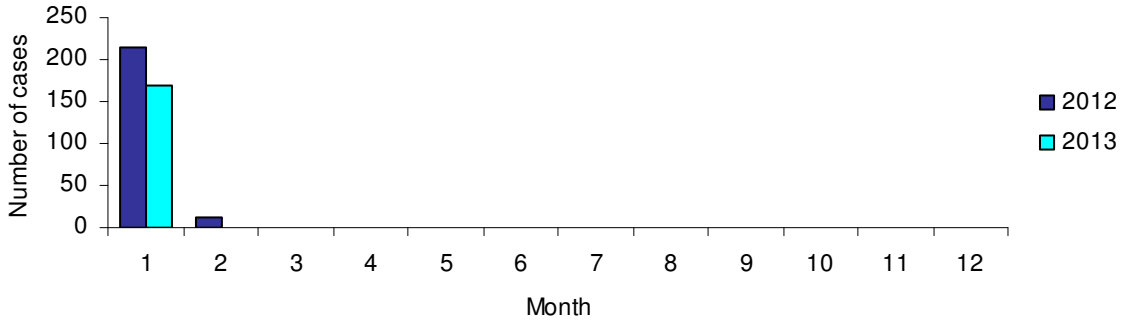
No cases of *Vibrio cholerae* O1 have been reported to date in 2013. For the same period last year, 0 cases had been reported.

## Salmonella surveillance

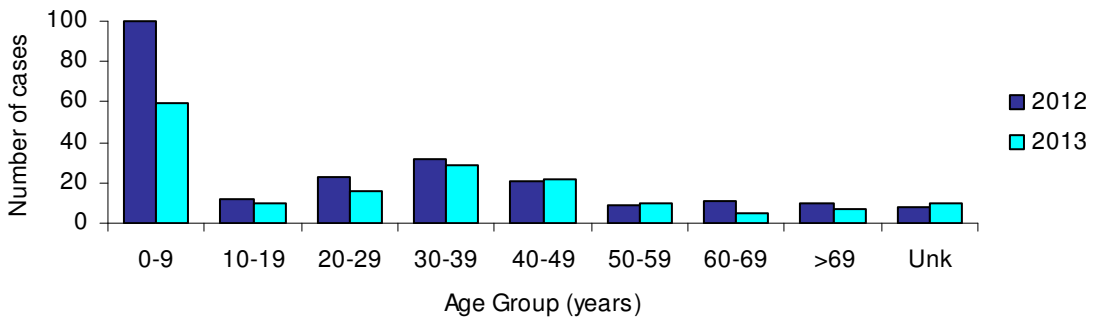
Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

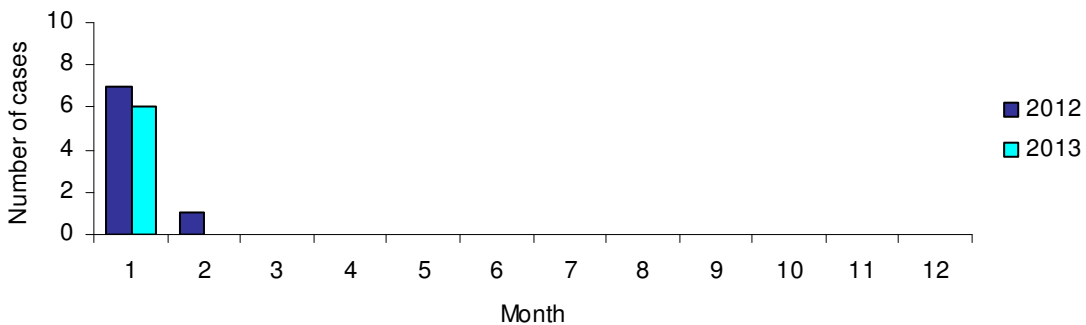
**Figure 1. Number of *Salmonella* cases by month in South Africa, 2012 and 2013**



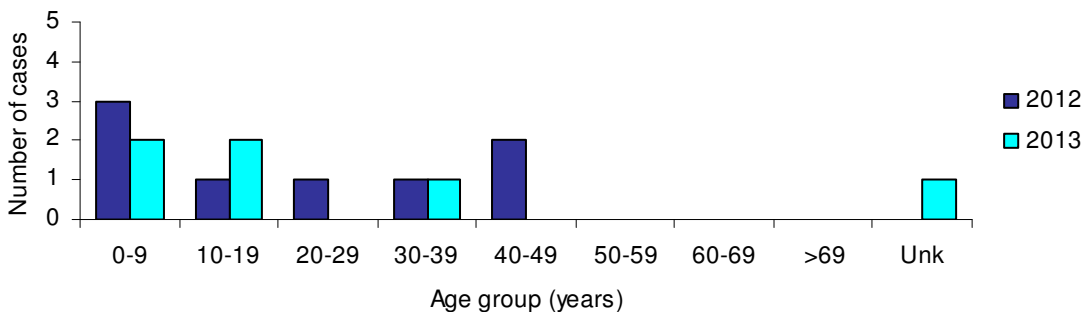
**Figure 2. Number of *Salmonella* cases by age group in South Africa, 2012 and 2013**



**Figure 3. Number of *Salmonella* Typhi cases by month in South Africa, 2012 and 2013**



**Figure 4. Number of *Salmonella* Typhi cases by age group in South Africa, 2012 and 2013**

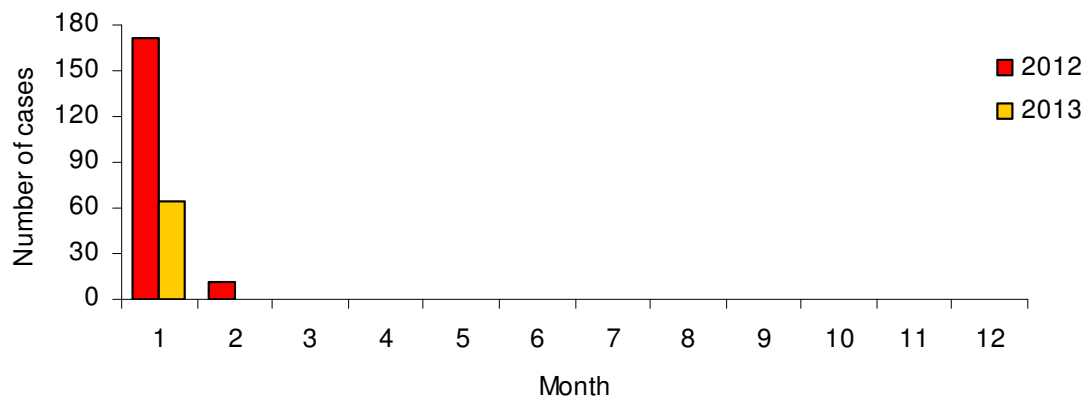


## Shigella surveillance

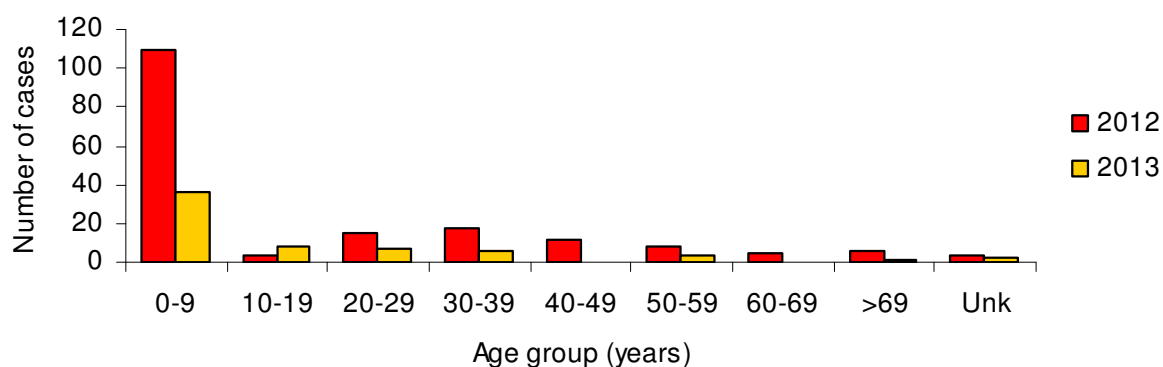
Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

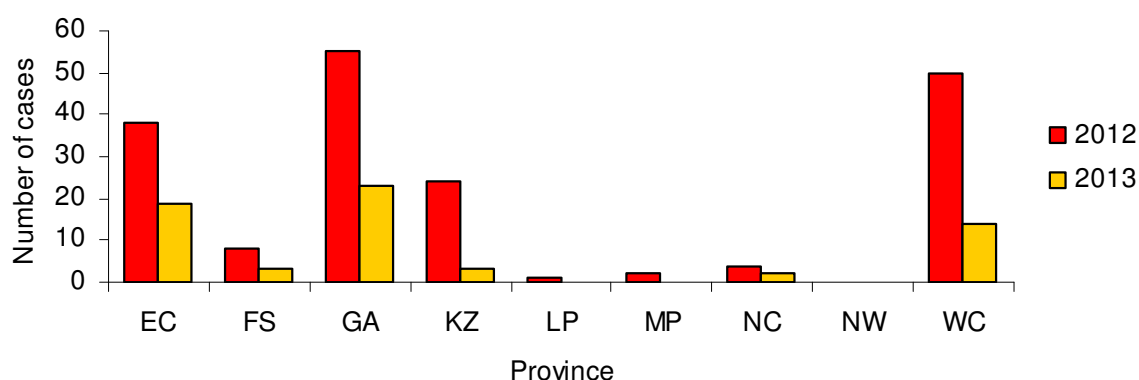
**Figure 5. Number of *Shigella* cases by month in South Africa, 2012 and 2013**



**Figure 6. Number of *Shigella* cases by age group in South Africa, 2012 and 2013**



**Figure 7. Number of *Shigella* cases by province\* in South Africa, 2012 and 2013**



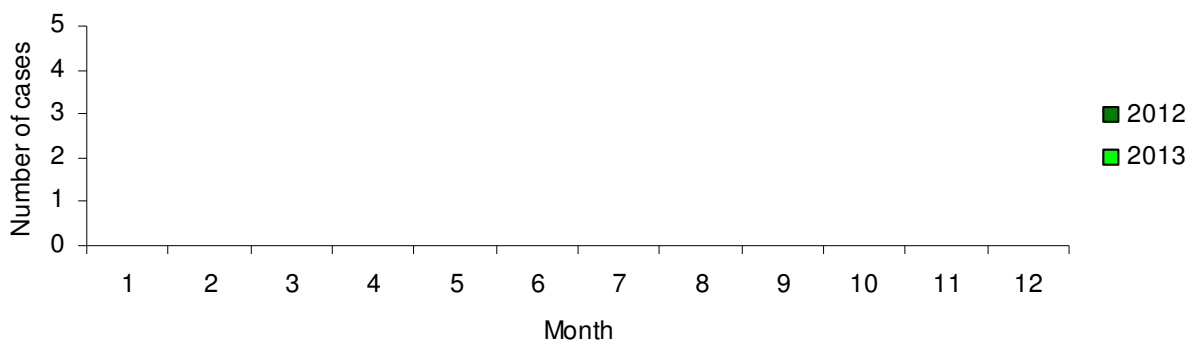
\*EC: Eastern Cape; FS: Free State; GA: Gauteng; KZ: KwaZulu-Natal; LP: Limpopo; MP: Mpumalanga; NC: Northern Cape; NW: North West; WC: Western Cape

## *Escherichia coli* EHEC surveillance

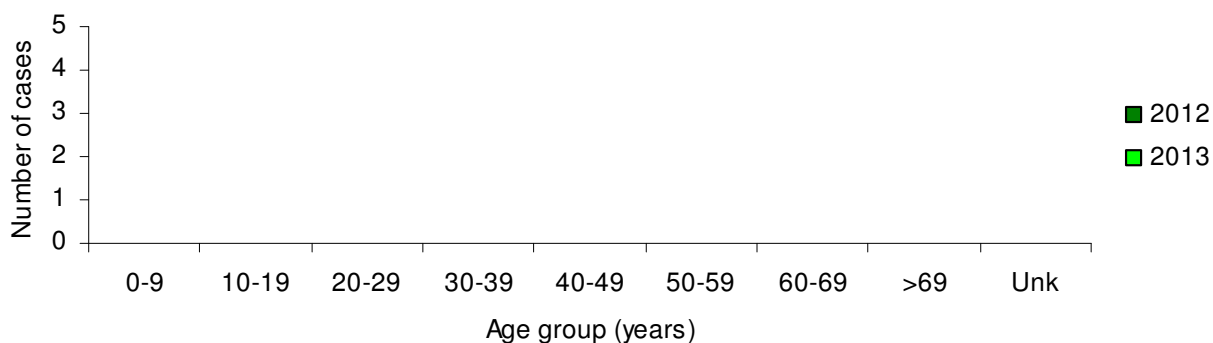
Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

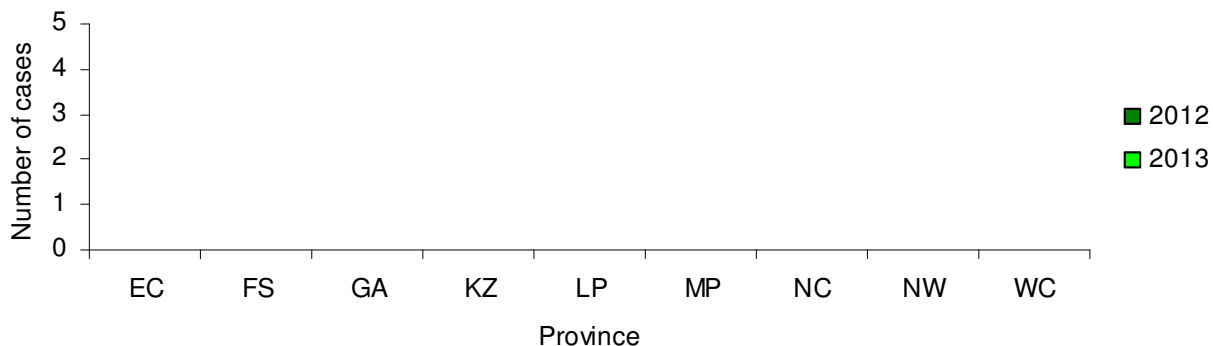
**Figure 8. Number of *Escherichia coli* EHEC cases by month in South Africa, 2012 and 2013**



**Figure 9. Number of *Escherichia coli* EHEC cases by age group in South Africa, 2012 and 2013**



**Figure 10. Number of *Escherichia coli* EHEC cases by province\* in South Africa, 2012 and 2013**



\*EC: Eastern Cape; FS: Free State; GA: Gauteng; KZ: KwaZulu-Natal; LP: Limpopo; MP: Mpumalanga; NC: Northern Cape; NW: North West; WC: Western Cape

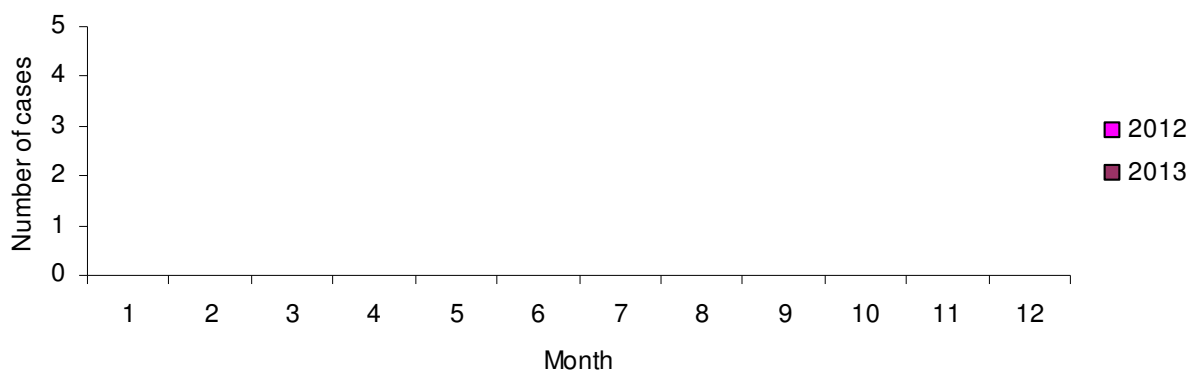
# Laboratory-Based Enteric Disease Surveillance

## *Vibrio cholerae* O1 surveillance

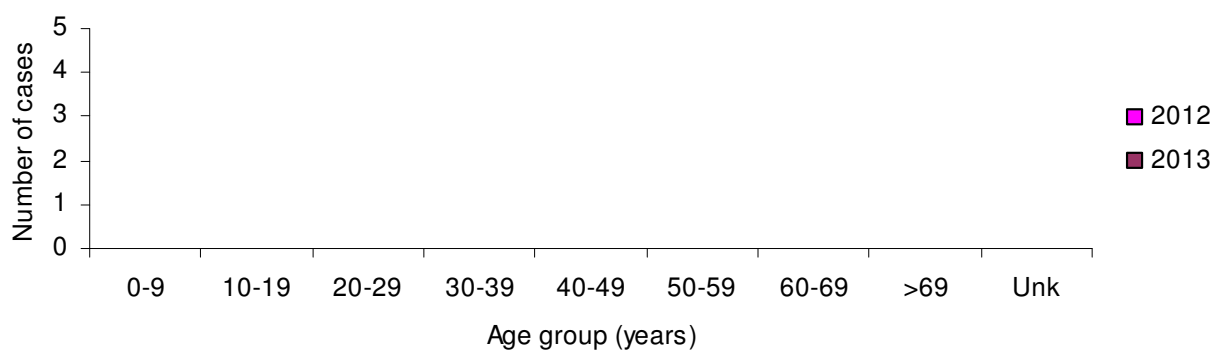
Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

**Figure 11. Number of *Vibrio cholerae* O1 cases by month in South Africa, 2012 and 2013**



**Figure 12. Number of *Vibrio cholerae* O1 cases by age group in South Africa, 2012 and 2013**



# Syndromic Diarrhoeal Disease Surveillance

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

## Programme Description:

In April 2009, the National Institute for Communicable Diseases of the National Health Laboratory Service (NICD/NHLS) in Johannesburg implemented a diarrhoea sentinel surveillance programme at five hospitals in four provinces of South Africa (Gauteng, North West, KwaZulu-Natal and Mpumalanga). The aim of the programme is to evaluate the prevalence of rotavirus in diarrhoea cases and to monitor the effect of the introduction of the monovalent Rotarix<sup>®</sup> vaccine into the expanded programme on immunisation. The rotavirus vaccine was introduced in August 2009.

Children < 5 years admitted (slept overnight in hospital) to one of the sentinel hospitals for acute diarrhoea ( $\geq 3$  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 NICD/NHLS and at the Diarrhoeal Pathogens Research Unit (DPRU), University of Limpopo, Medunsa Campus using the ProSpecT Rotavirus ELISA kit (Oxoid, UK).

## Comments:

From the start of 2013 up to week 5 (week ending 2 February), 56 stool samples were received. Only one specimen tested rotavirus positive (detection rate 0.02%). The rotavirus season in South Africa typically starts in April when the rotavirus detection rate rises above 20%, and since the introduction of the rotavirus vaccine in the EPI programme in 2009, the season has been delayed.



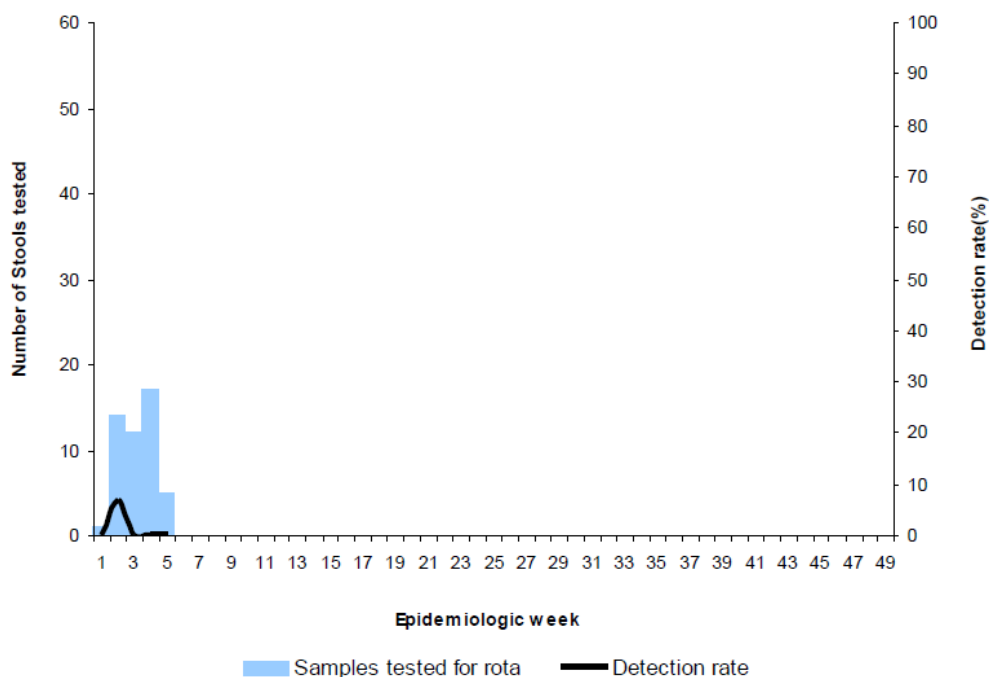
# Syndromic Diarrhoeal Disease Surveillance

## Rotavirus (ROTA) surveillance

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

**Figure 13. Number of stools tested for rotavirus and detection by week, 2013**



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, 2013**

Hospital	Rotavirus positive	Total stool tested
Chris Hani Baragwanath	0	8
Edendale	0	3
George Mukhari	0	9
Mapulaneng	0	14
Matikwane	1	22
<b>Total:</b>	<b>1</b>	<b>56</b>

### Drug resistance patterns among HIV-infected children following pMTCT in South Africa during 2011

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

#### Programme Description:

The South African Department of Health implemented new pMTCT guidelines in April 2010. These include provision of HAART for pregnant women with CD4 counts <350 cells/mm<sup>3</sup> and AZT and intrapartum NVP with extended infant NVP during breastfeeding for women who do not. In 2011, the FinHDER (Finding Infants with HIV Disease: Evaluation of Resistance, pMTCT Failures and Linking Access to Care) Study evaluated drug resistance in HIV-infected infants <2 years of age. Children were recruited from a variety of settings in Johannesburg to represent those who had full, partial or no access to pMTCT interventions. The study was undertaken jointly by the Centre for HIV and STI of the National Institute for Communicable Diseases and Wits and Columbia Universities.

#### Comments:

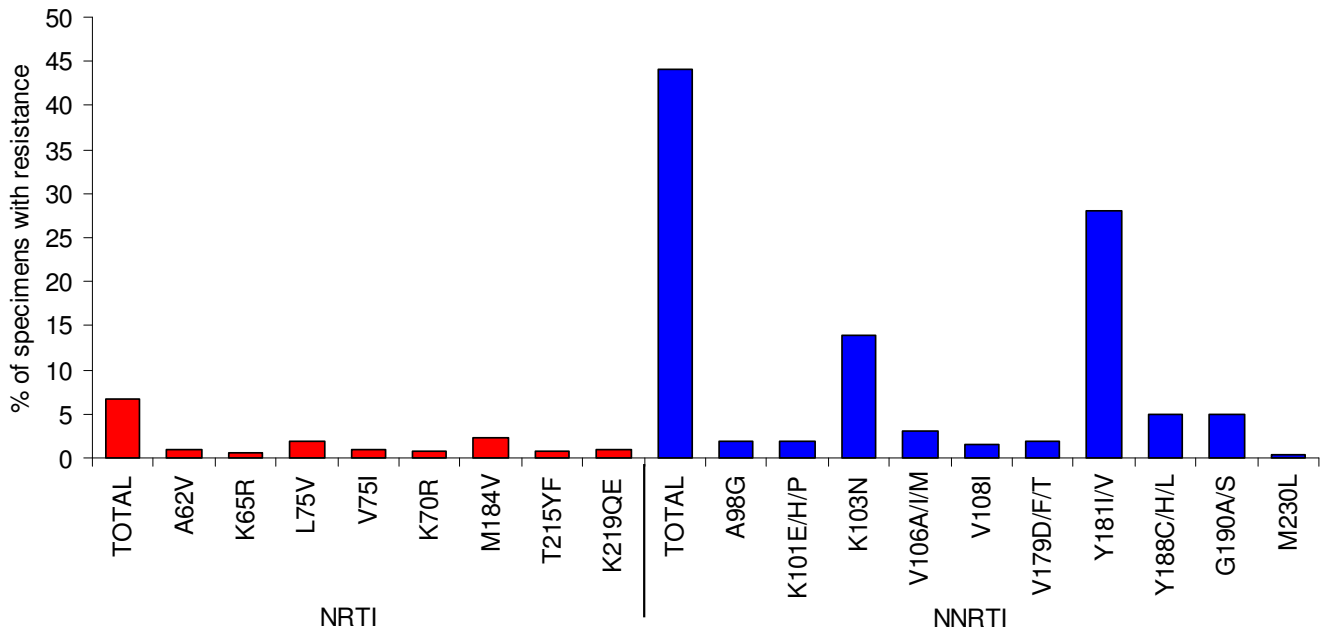
A total of 263 dried blood spot (DBS) and/or plasma specimens were collected from HIV infected infants. PCR amplification of the polymerase gene was successful in 256 specimens in plasma and/or DBS. Specimens from 7 patients could not be amplified. Of these 256 specimens, NNRTI mutations were detected in 113 (44%). The Y181I/C mutation was most predominant, being detected in 72 (28%) specimens, followed by K103N in 35 (14%) specimens. Additional NNRTI mutations detected were G190A/S (n=12), Y188C/L/H (n=12), V106A/I/M (n=7), A98G (n=6), K101E/H/P (n=5), V179D/F/T (n=5), V108I (n=4) and M230L (n=1). Resistance to the other drug classes was minimal, with major NRTI mutations being detected in only 17 specimens (M184V (n=6), L74V (n=5), A62V, K65R, K70R, V75I, T215Y/F and K219Q/E) and only 1 specimen with major PI mutations (L10F, M46I, I54V, L76V and V82A). These data emphasize the high levels of NNRTI drug resistance in infants following pMTCT and the continued need to initiate these infants on ART regimens that contain protease inhibitors.

## Drug resistance patterns among HIV-infected children following pMTCT in South Africa during 2011

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

**Figure 14. Patterns and frequency of HIV-1 drug resistance mutations in children exposed to pMTCT in 2011**



### Surveillance of transmitted HIV-1 drug resistance among recently-infected blood donors in South Africa

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

#### Programme Description:

Surveillance of transmitted HIV drug resistance in recently-infected individuals in South Africa is critical to measure the effectiveness of the treatment program and to inform policy on 1<sup>st</sup>-line treatment regimens. Specimens from HIV sero-negative blood donors that test positive for HIV through nucleic acid testing (NAT) are sent to NICD for genotypic analysis of drug resistance mutations. This data contributes to a wider pool of data collected at a national level.

#### Comments:

Fifty-two NAT positive donor unit specimens collected by SANBS between September 2010 and September 2011 were genotyped for HIV drug resistance mutations in September and October 2012. Of these, 34 were amplifiable by PCR. Major Non-Nucleoside RT Inhibitor (NNRTI) mutations were detected in 3 (8.8%) specimens. Two of these donors were from Mpumalanga and one from the Free State. The mutations K103N, V106M and K101E were each found in 1 specimen. No major Nucleoside RT Inhibitor (NRTI) or Protease Inhibitor (PI) mutations were detected. Eighteen specimens could not be amplified. Of these, 12 (23%) had viral loads <1000 copies/ml, which is below the detectable sensitivity limit of our genotyping assay. Three specimens had low viral loads (1033 – 1944 copies/ml) and one non-amplifiable specimen had a viral load of 6422 copies/ml. These data together with our previous data from KwaZulu-Natal suggests that transmitted drug resistance may be increasing in South Africa and ongoing surveillance in all provinces is needed.

## Surveillance of transmitted HIV-1 drug resistance among recently-infected blood donors in South Africa

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

**Table 2. Patterns of HIV-1 drug resistance mutations in HIV-1 NAT-positive specimens obtained from SANBS**

Year	Number of specimens	Not tested VL <1000 cpm	Amplification Rate	Number of sequences analysed	HIV-1 Subtype	Number with mutations	Mutational patterns
2008	34	9	100%	15	C (1 CRF02_AG)	0	-
2009	39	12	96%	26	C (2 B)	4	K70R (NRTI) D67N K219Q (NRTI) K103N (NNRTI) K103N (NNRTI) V106M (NNRTI)
2010	40	10	100%	30	C	3	M46I (PI) V106M (NNRTI) K101E (NNRTI)
2011	37	9	89%	25	C	1	K103N (NNRTI)

# Sexually Transmitted Disease Surveillance

## Microbiological surveillance for aetiologies of three important sexually transmitted infection syndromes, Gauteng province, 2012

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

### Programme Description:

As part of national microbiology surveillance of sexually transmitted infections (STI), consecutive STI patients were enrolled in Gauteng province (Alexandra), South Africa from January to April 2012. The surveillance programme determines the aetiology of three major sexually transmitted infection (STI) syndromes, namely male urethritis syndrome (MUS), vaginal discharge syndrome (VDS), and genital ulcer syndrome (GUS). The aetiological pathogens tested for were *Neisseria gonorrhoeae* (NG), *Chlamydia trachomatis* (CT), *Trichomonas vaginalis* (TV), *Mycoplasma genitalium* (MG), *Treponema pallidum* (TP), *Haemophilus ducreyi* (HD), Herpes simplex virus (HSV), *Chlamydia trachomatis* L1-3 (CTL1-3) and granuloma inguinale (GI). In addition, women with VDS were screened for the presence of bacterial vaginosis and *Candida* morphotypes. Patients with each syndrome were tested for RPR seroreactivity, anti-herpes simplex virus type 2 (HSV-2) antibodies and HIV serostatus.

### Comments:

A total of 461 STI patients were recruited (MUS=166, VDS=208, GUS=87). The STI prevalences as determined by M-PCR were: gonorrhoea (MUS 75.3%, VDS 11.5%), chlamydial infection (MUS 23.5%, VDS 19.2%), trichomoniasis (MUS 4.8%, VDS 23.1%), and *Mycoplasma genitalium* infection (MUS 8.4%, VDS 10.1%) (Figure 15). Bacterial vaginosis and candidiasis accounted for 57.7% and 21.6% of VDS cases respectively. Fifty-five of 87 genital ulcer specimens were due to HSV (63.2%), 2 cases were due to syphilis (2.3%) and 1 case due to lymphogranuloma venereum (1.2%). No cases of donovanosis or chancroid were detected (Figure 16). No aetiological cause was found for 22 (10.6%) VDS, 29 (33.3%) GUS and 13 (7.8%) MUS cases. The rapid plasma reagin (RPR) test was reactive for 8.1% GUS, 6.6% MUS and 5.8% VDS (Figure 17). Anti-HSV-2 antibodies were detected in 85.1% of GUS cases, 76.9% of the VDS cases and 54.2% of MUS cases. Co-infection with HIV was detected in 64.4% of GUS cases, 51.0% of VDS cases and 35.4% of MUS cases (Figure 18).

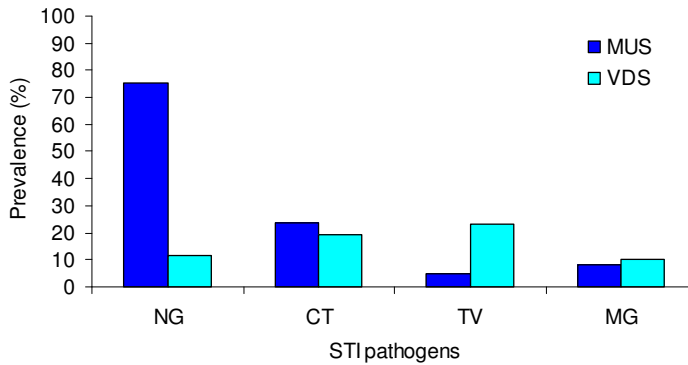
We are grateful to the management of the Alexandra Health Centre for sharing their facilities and allowing NICD staff access to their patients. We also thank the participants for their willingness to participate in this study.

# Sexually Transmitted Disease Surveillance

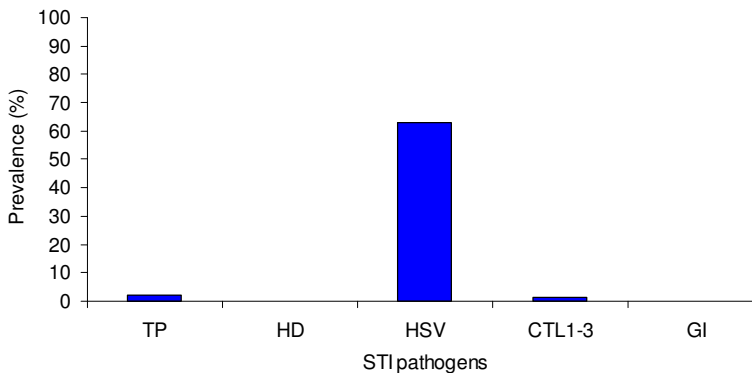
Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

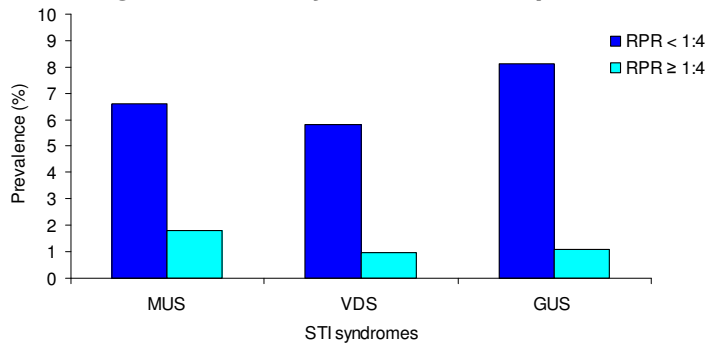
**Figure 15. Aetiology of male urethritis syndrome (MUS) and vaginal discharge syndrome (VDS) determined by M-PCR**



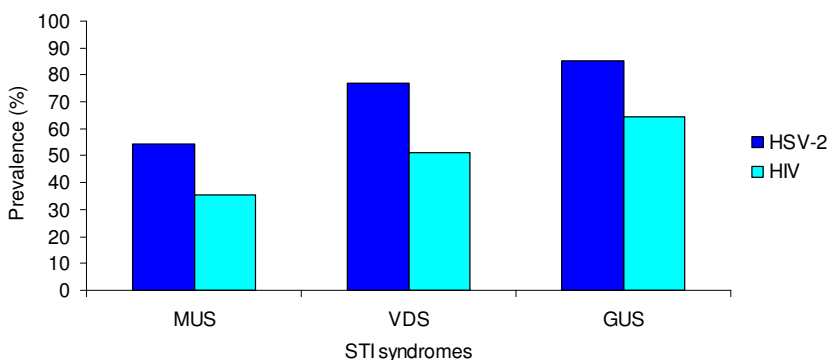
**Figure 16. Aetiology of genital ulcer syndrome (GUS) determined by M-PCR**



**Figure 17. RPR serology in male urethritis syndrome (MUS), vaginal discharge syndrome (VDS) and genital ulcer syndrome (GUS) patients**



**Figure 18. HIV and HSV-2 seroprevalence for patients with male urethritis syndrome (MUS), vaginal discharge syndrome (VDS) and genital ulcer syndrome (GUS)**



# Laboratory-Based Screening for Cryptococcal Disease (Phase 1: Gauteng)

Reporting period 03/09/2012 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

## Programme Description:

The NICD's Centre for Opportunistic, Tropical and Hospital Infections (COHI), in collaboration with several partner organizations including the Department of Health, implemented laboratory-based screening for cryptococcal disease at the NHLS CD4 laboratory at Charlotte Maxeke Johannesburg Academic Hospital on 3 September 2012. Twenty-five health care facilities (including three regional hospitals) that refer specimens to this laboratory have begun participating in the programme. Blood samples submitted for a CD4+ T-lymphocyte count from these facilities are tested for cryptococcal antigen (CrAg) using a cryptococcal lateral flow assay (LFA) if the CD4+ T-lymphocyte count is less than 100 cells/ $\mu$ l. Results for patients who test CrAg-positive are communicated by the laboratory to a pre-selected point of contact at each health facility, as well as added to the CD4 laboratory report to alert the healthcare worker of the CrAg test result. Patients with cryptococcal antigenaemia, who provide informed consent, are being followed up prospectively for up to 12 months. The following data are collected for patients who screen CrAg-positive: lumbar puncture results; antifungal treatment; antiretroviral treatment; time from CrAg testing to treatment initiation; adverse events and outcome (i.e. development of cryptococcal meningitis; death or loss to follow-up). Other key programme indicators such as number of cases of cryptococcal meningitis detected at the regional hospitals in the screening area, the number of healthcare workers trained and availability of fluconazole at facilities are collected. The objective of this report is to provide monthly updates of selected programme indicators to all stakeholders. Data reported in this report are incomplete due to retrospective collection of clinical data.

## Comments:

To date, 2 571 patients with a CD4+ T-lymphocyte count  $<100$  cells/ $\mu$ l have been screened; 102 (4.0%) tested positive for CrAg. Sixty-four percent (65/102) of patients were detected at Helen Joseph Hospital and 66% (67/102) of patients screened thus far, were between 30 and 44 years old. During the reporting period, 64 cases of laboratory-confirmed cryptococcal meningitis were diagnosed at three regional hospitals (Helen Joseph, Rahima Moosa Mother and Child and South Rand) that serve clinics participating in the screening programme; however, this number may include hospitalised patients who were not screened through this programme.



# Laboratory-Based Screening for Cryptococcal Disease (Phase 1: Gauteng)

Reporting period 03/09/2012 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

**Table 3. NHLS CD4 laboratory statistics for Phase 1 of the cryptococcal screening programme\***

Laboratory Statistics	Number
Number of NHLS CD4 laboratories enrolled in screening programme	1
Number of NHLS CD4 laboratories reporting data	1
Number of CrAg screening tests performed	2674
Number of CrAg-positive tests/ number of specimens tested (%)	119/ 2674 (4.5%)

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

**Table 4. Case statistics for Phase 1 of the cryptococcal screening programme\***

Case Statistics	Sep	Oct	Nov	Dec	Jan	Total
Number of patients tested for CrAg	467	607	548	378	571	2571
Number of CrAg-positive patients/ number of patients tested for CrAg (%)	25/467 (5.4%)	30/607 (4.9%)	16/548 (2.9%)	13/378 (3.4%)	18/571 (3.2%)	102/2571 (4.0%)
Number of CrAg-positive patients who had a lumbar puncture <sup>†</sup> **	3	9	6	0	1	19
Number of CrAg-positive patients who had a lumbar puncture with laboratory-confirmed CM <sup>†</sup>	2	3	3	0	0	8
Number of CrAg-positive patients treated with fluconazole <sup>†</sup>	17	20	9	8	12	66

\*Data source: NHLS Corporate Data Warehouse, NHLS laboratory information system and NICD; <sup>†</sup>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

**Table 5. Number of CrAg-positive patients, by facility, at 25 facilities that refer specimens to the NHLS CD4 laboratory at Charlotte Maxeke Johannesburg Academic Hospital, n=102**

Facility Name*	Number of Cases
Helen Joseph Hospital	65
South Rand Hospital	16
Witkoppen Clinic	7
OR Tambo Clinic	4
Discoverers Centre	3
Rahima Moosa Mother and Child Hospital	3
Crosby Clinic	2
Berario Clinic	1
Randburg Clinic	1
<b>Total:</b>	<b>102</b>

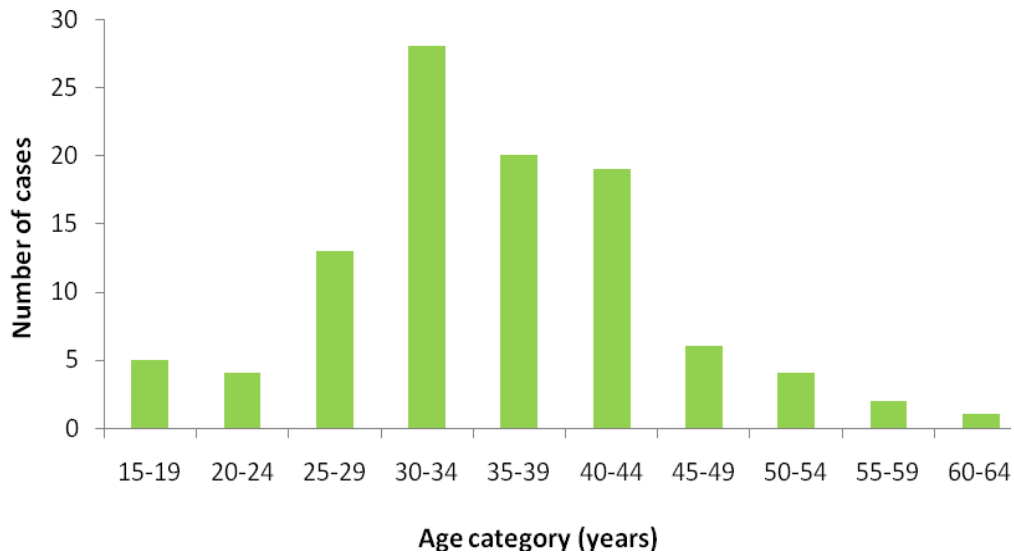
\*Only facilities with CrAg-positive patients are included

# Laboratory-Based Screening for Cryptococcal Disease (Phase 1: Gauteng)

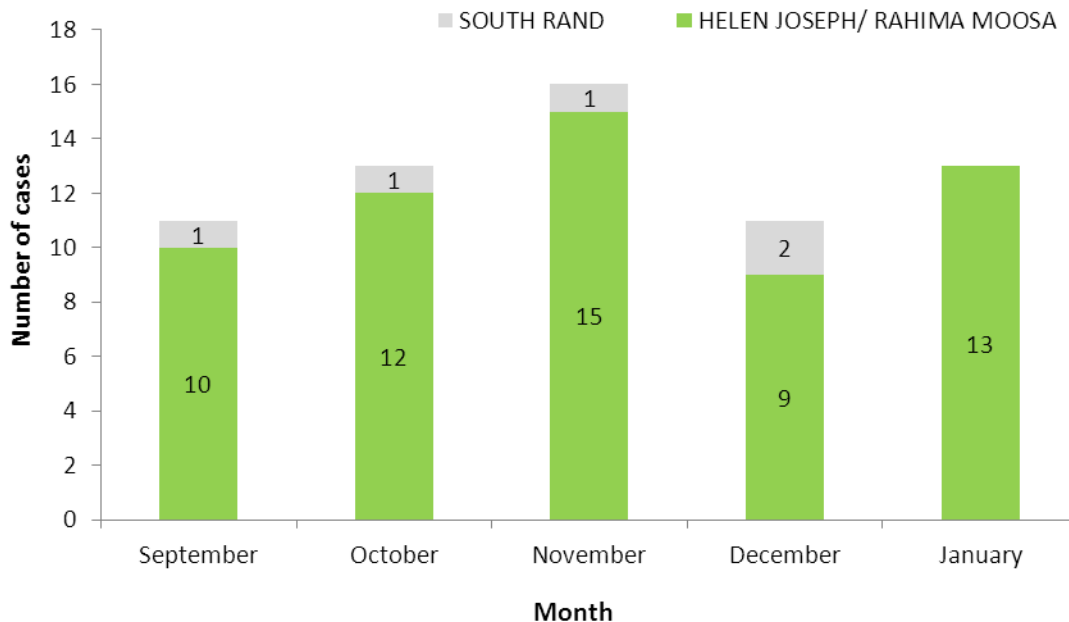
Reporting period 03/09/2012 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

**Figure 19. Number of CrAg-positive cases, by age category, at 25 facilities that refer specimens to the NHLS CD4 laboratory at Charlotte Maxeke Johannesburg Academic Hospital, n=102**



**Figure 20. Number of laboratory-confirmed cases of cryptococcal meningitis<sup>†</sup> diagnosed at three regional hospitals (Helen Joseph, Rahima Moosa Mother and Child, and South Rand) that serve clinics participating in the screening programme, n=64<sup>\*</sup>**



<sup>\*</sup>Data source: GERMS-SA surveillance programme (data may be incomplete because surveillance audits have not been performed); <sup>†</sup>may include hospitalised patients who were not screened through this programme.

# Laboratory-Based Respiratory and Meningeal Disease Surveillance

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

## 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 [Group for Enteric, Respiratory and Meningeal Disease Surveillance in South Africa]). 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 5 in 2013, 7 meningococcal cases had been reported to the NICD. Two serogroup W135 have been identified to date. The most cases occurred in children aged <10 years. For the same period last year, a total of 13 cases had already been reported.

14 cases of *H. influenzae* have been reported to date in 2013. Serotypes have yet to be identified. Most cases occurred in individuals aged <10 years. For the same period last year, a total of 27 cases had been reported.

To date this year, 64 pneumococcal cases have been reported, compared to 184 cases reported for the same period last year. Most cases occurred in adults aged 35-39 years and in children aged <5 years.

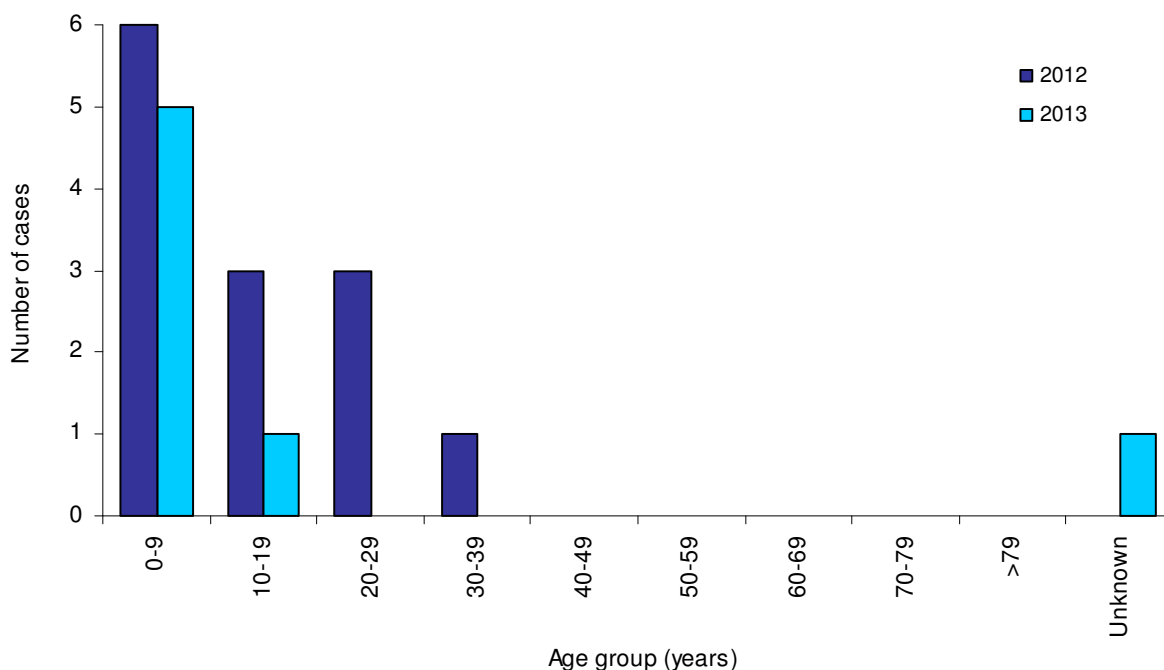
Reductions of cases reported in 2013 may reflect the inherent delays of laboratory-based reporting, but may also reflect ongoing operational changes.

## *Neisseria meningitidis* surveillance

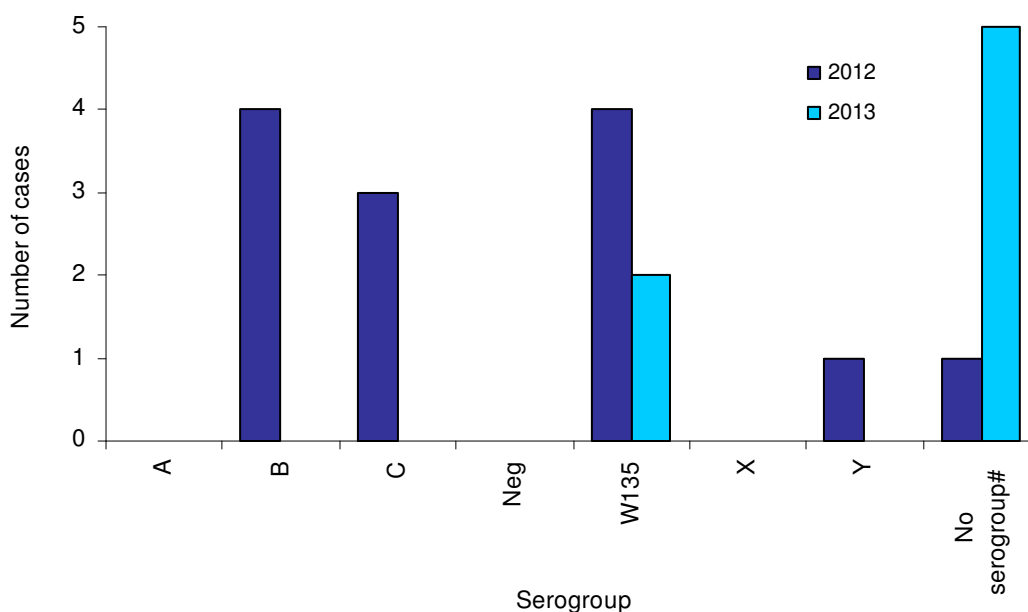
Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

**Figure 21. Number of *Neisseria meningitidis* cases by age group in South Africa, 2012 (N=13) and 2013 (N=7)**



**Figure 22. Number of *Neisseria meningitidis* cases by serogroup in South Africa, 2012 (N=13) and 2013 (N=7)**



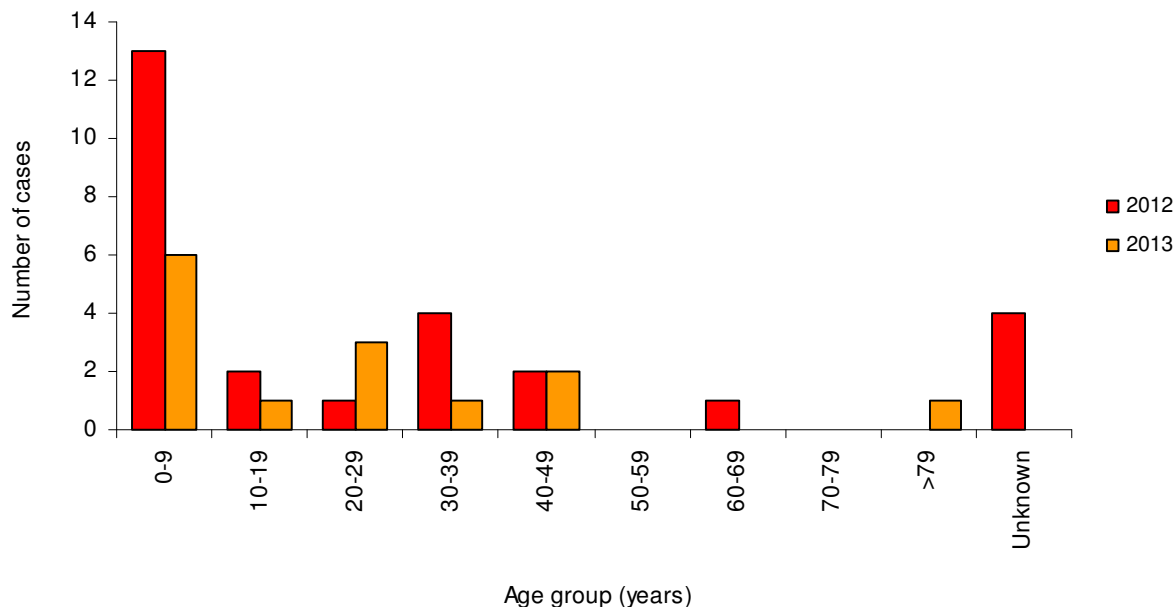
# No serogroup: Cases with serogrouping results not yet available, no isolate, or identified on audit

## Haemophilus influenzae surveillance

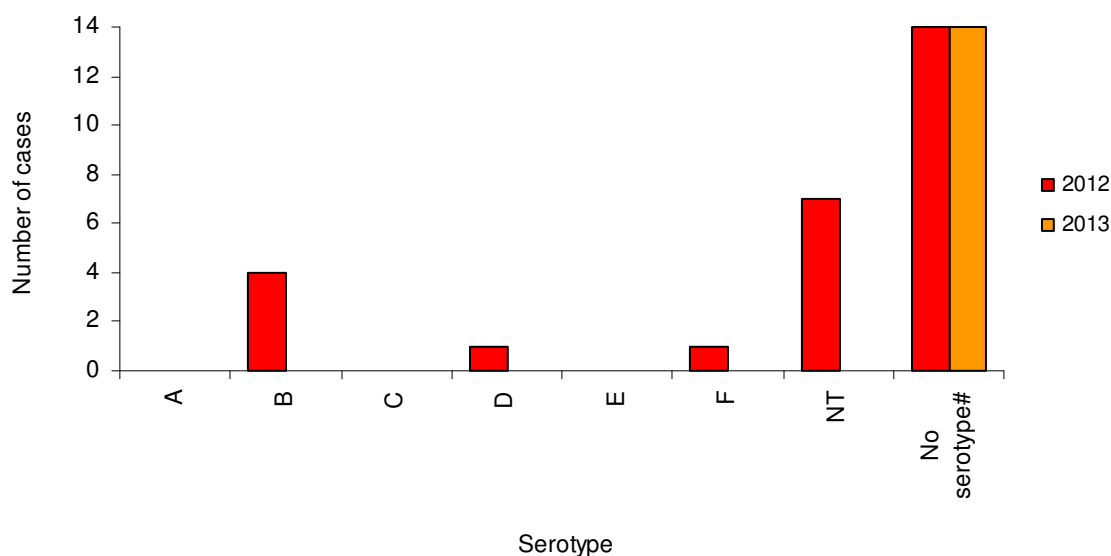
Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

**Figure 23. Number of *Haemophilus influenzae* cases by age group in South Africa, 2012 (N=27) and 2013 (N=14)**



**Figure 24. Number of *Haemophilus influenzae* cases by serotype in South Africa, 2012 (N=27) and 2013 (N=14)**



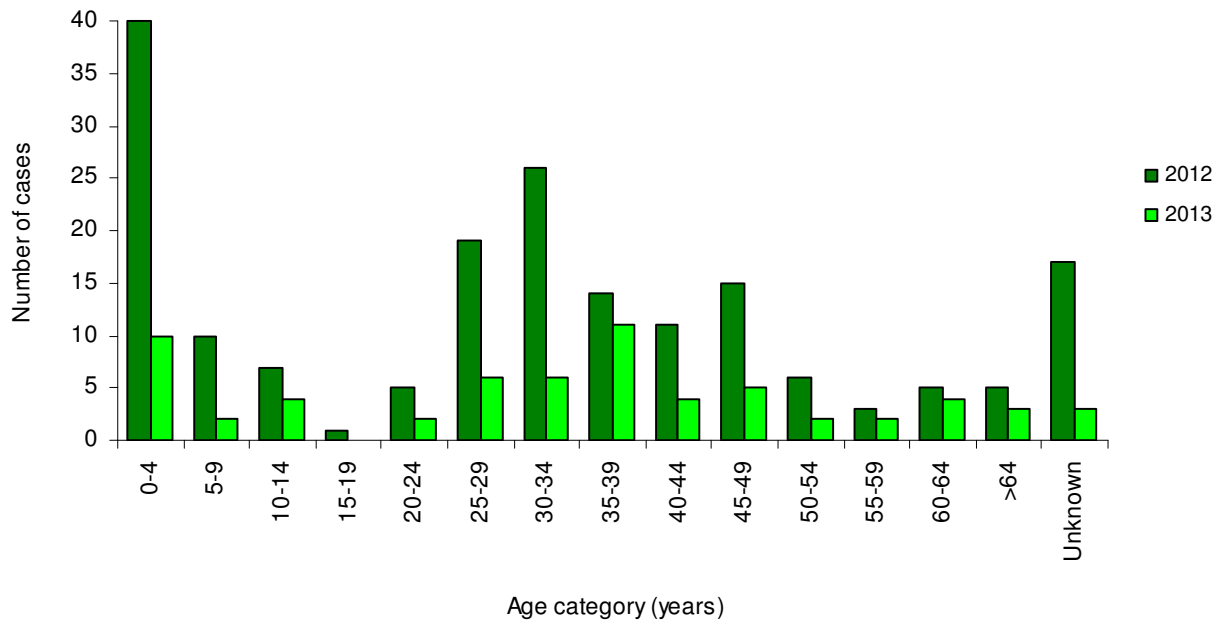
# No serotype: Cases with serotyping results not yet available, no isolate, or identified on audit

## *Streptococcus pneumoniae* surveillance

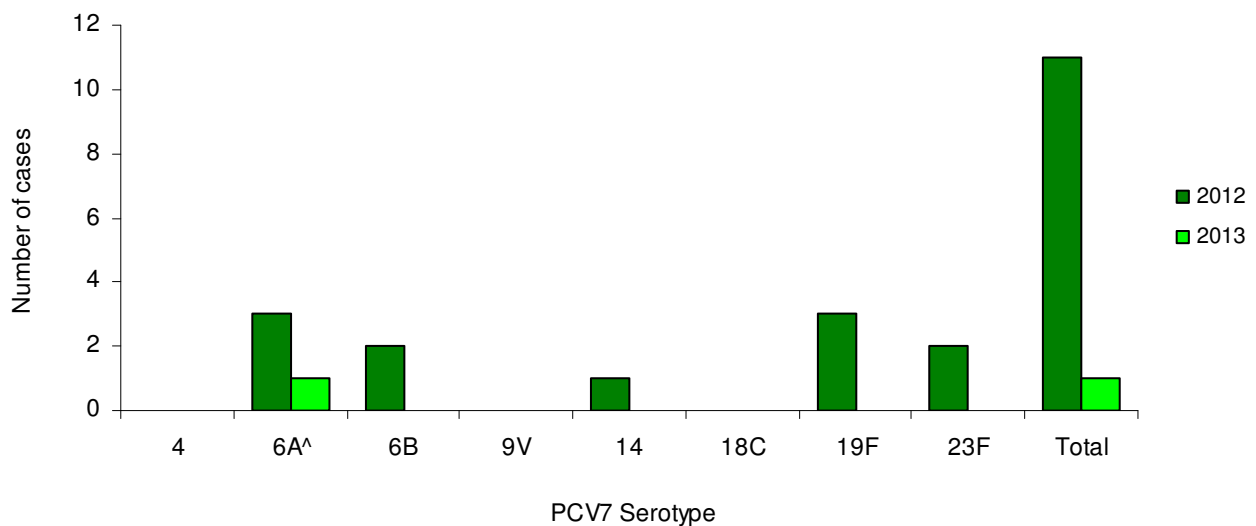
Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

**Figure 25. Number of *Streptococcus pneumoniae* cases by age group in South Africa, 2012 (N=184) and 2013 (N=64)**



**Figure 26. Number of *Streptococcus pneumoniae* cases by 7-valent pneumococcal conjugate vaccine (PCV7) serotype in children <5 years in South Africa, 2012 (N=11) and 2013 (N=1)**



<sup>^</sup>Included as potential cross-protection against 6A disease with the 6B antigen has been documented in some studies.

# Syndromic Respiratory Disease Surveillance

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

## Programme Description:

The data presented in this report are generated from three influenza surveillance programmes: the Viral Watch [influenza-like illness (ILI)], Severe Acute Respiratory Illness (SARI) and the respiratory consultations and hospitalisations surveillance system.

The Viral Watch 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 or nasal swabs) are collected from patients of all ages meeting the ILI case definition, which is an acute respiratory illness with a measured temperature of  $\geq 38^{\circ}\text{C}$  and cough, with onset within the past 7 days prior to consultation. Specimens are tested for the presence of influenza and other respiratory viruses by RT-PCR.

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  $\geq 5$  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:

Data from these programmes show that during the 2012 influenza season the predominant circulating influenza subtype was influenza A(H3N2). The season started in week 21 (ending 27 May), peaked in week 33 (ending 19 August) and ended in week 39 (ending 30 September).

In the first four weeks of 2013, 27 specimens were received from Viral Watch sites: 21 were taken at the time of entry into South Africa from abroad, four from sites in Gauteng and one each from the Eastern Cape and Mpumalanga. No influenza isolates were detected from patients without a travel history. Influenza A(H1N1)pdm09 was detected in 10 patients arriving in South Africa from abroad who had visited Europe, Russia, India, The Middle East or Mauritius, A(H3N2) from two patients who had visited Hong Kong, and influenza B from four patients who had visited the United Kingdom or United States of America. In this time period, 309 patients with SARI were tested at the 5 sentinel sites. Influenza B was detected in one patient from the North West Province.

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.

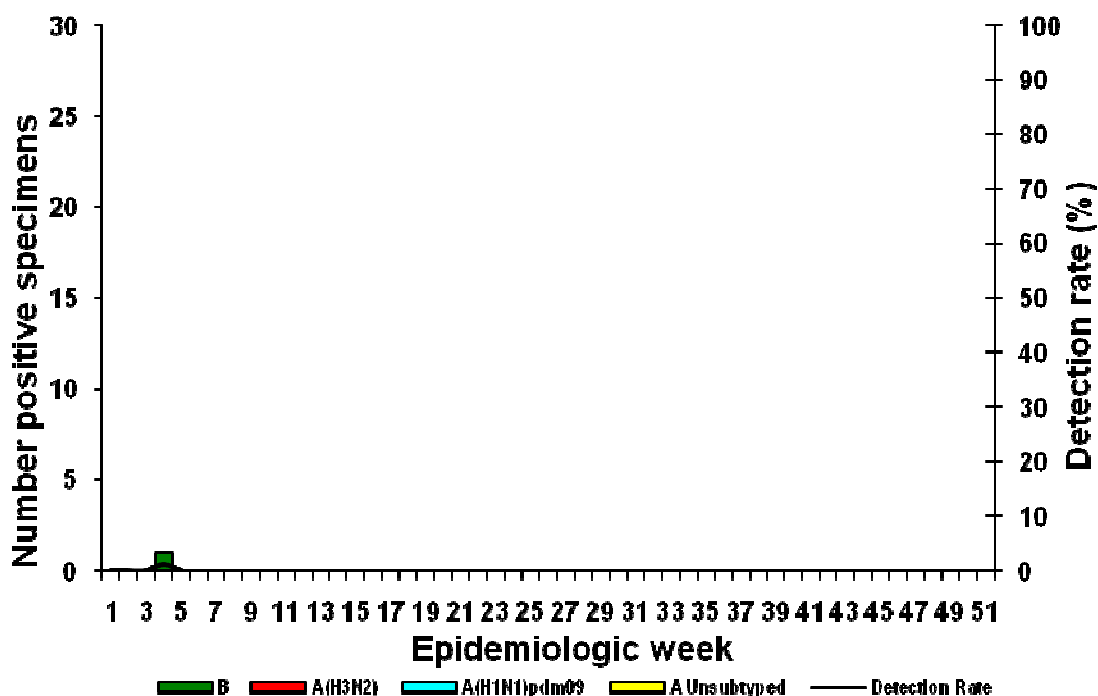
# Syndromic Respiratory Disease Surveillance

## Severe acute respiratory illness (SARI) surveillance

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

Figure 27. Number of positive samples\* by influenza types and subtypes and detection rate by week



\*Specimens from patients hospitalised with severe acute respiratory infections at 5 sentinel sites in 4 provinces

Table 6. Cumulative number of identified influenza types and subtypes and total number of samples collected by hospital

Hospital	A unsubtype	A(H1N1)pdm09	A(H3N2)	B	Total samples
Chris Hani Baragwanath (GP)	0	0	0	0	106
Edendale (KZ)	0	0	0	0	79
Klerksdorp-Tshepong (NW)	0	0	0	1	90
Mapulaneng (MP)	0	0	0	0	8
Matikwane (MP)	0	0	0	0	26
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>309</b>



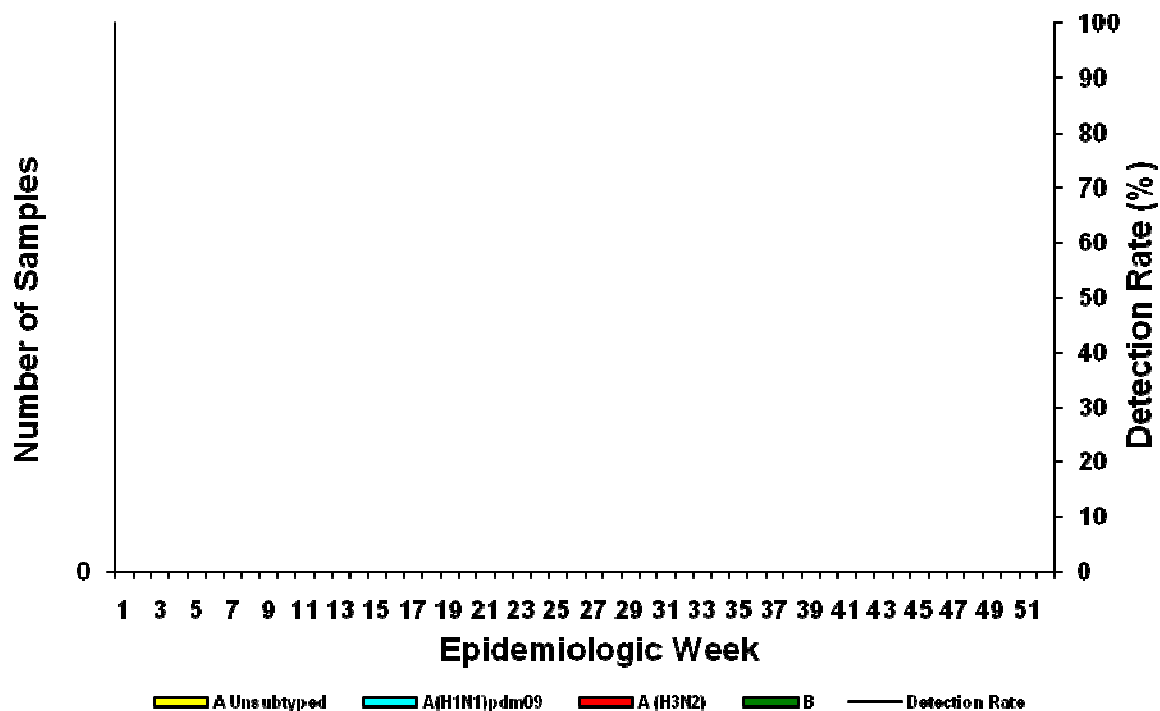
# Syndromic Respiratory Disease Surveillance

## Influenza-like illness (ILI) surveillance (Viral Watch)

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

**Figure 28. Number of positive samples\* by influenza types and subtypes and detection rate\*\* by week**



\*Specimens from patients with Influenza-like illnesses at 223 sentinel sites in 9 provinces

\*\*Detection rate calculated on specimens tested at NICD only, not shown before onset of season

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

Province	A unsubtype	A(H1N1)pdm09	A (H3N2)	B	Total samples
Eastern Cape	0	0	0	0	1
Free State	0	0	0	0	0
Gauteng	0	0	0	0	4
KwaZulu-Natal	0	0	0	0	0
Limpopo	0	0	0	0	0
Mpumalanga	0	0	0	0	1
Northern Cape	0	0	0	0	0
North West	0	0	0	0	0
Western Cape	0	0	0	0	0
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>

To date in 2013, 10 patients have tested influenza positive at the time of entry into South Africa following travel abroad.

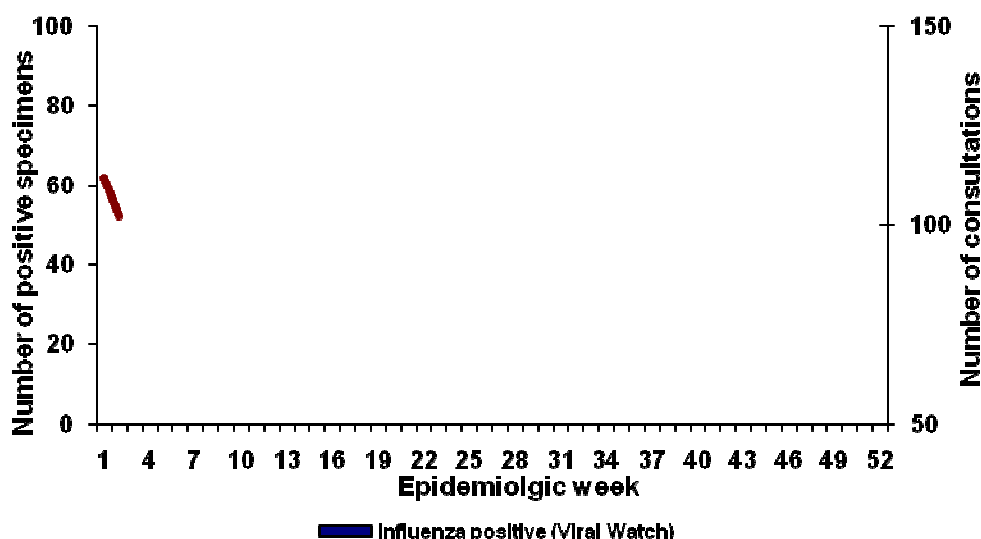
# Syndromic Respiratory Disease Surveillance

## Private hospital consultations

Reporting period 01/01/2013 to 13/01/2013

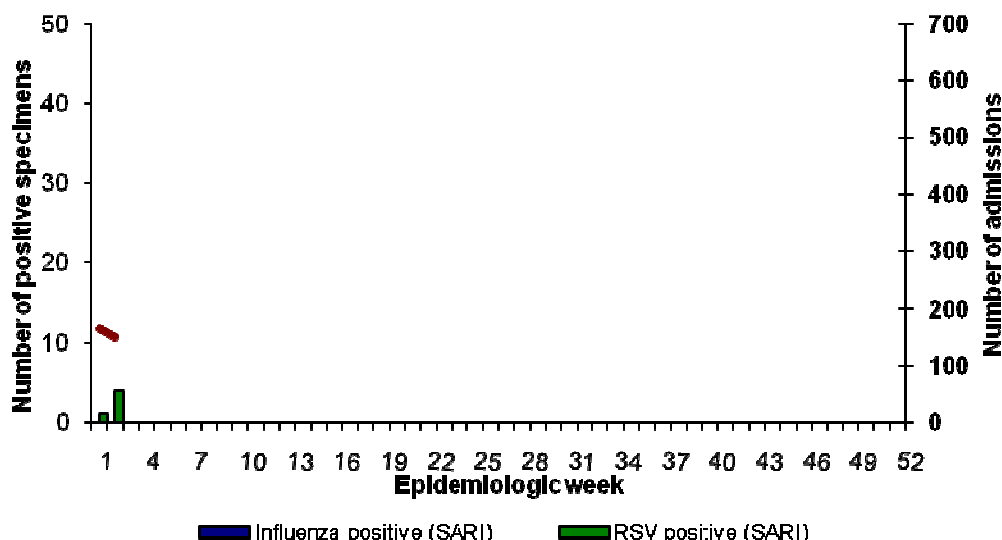
Results until end of epidemiologic week 2 (2013)

**Figure 29. 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 30. 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 SARI surveillance programme

## Programme Description:

The surveillance data that the Centre for Tuberculosis will be including in this report will come from the following sources:

- **Routine TB surveillance using data reported through the NHLS corporate data warehouse.** We are currently in the process of cleaning, collating and analysing historical TB data from 2004 to 2011. This process involves the identification of groups of records relating to individual patients and assigning them unique patient identifying numbers in order to produce true patient-level data.
- **Integration of TB into Group for Enteric, Respiratory and Meningeal Disease Surveillance in South Africa (GERMS-SA).** Through GERMS-SA, the CTB is conducting enhanced surveillance of rifampicin-resistant TB in South Africa. The objective is to deliver accurate, timely and detailed surveillance information on patients with rifampicin-resistant TB to stakeholders in selected sentinel surveillance sites using Xpert MTB/RIF in South Africa.
- **Integration of TB into the Severe Acute Respiratory Infections (SARI) surveillance network.** Through SARI, the CTB will estimate the proportion of patients with laboratory-confirmed tuberculosis (TB) amongst patients admitted with severe respiratory infection at selected surveillance sites in the country.
- **Ad hoc population-based surveys, such as the nationwide Drug Resistance Survey (DRS).** The DRS is a collaborative project between the National Department of Health (NDoH) and the NICD-NHLS Centre for Tuberculosis (CTB) and their partners that seeks to determine the prevalence of TB drug resistance nationally and in all nine provinces of South Africa. Other objectives of the DRS include describing trends of TB drug resistance in all nine provinces and determining the proportion of drug resistance in new versus retreatment patients. Molecular epidemiological studies will be conducted on MTB isolates identified in the survey to describe MDR-TB strains circulating in the country and to better understand transmission patterns. An estimated 170 000 TB suspects are being enrolled into the survey in 349 clusters of one to four healthcare facilities each, randomly selected to be representative of South Africa and its provinces. Data from the survey will enable the NTBCP to evaluate the quality of TB control, and provide information for planning and budgeting.

## Comments:

- Routine TB surveillance – Data cleaning, management and analysis is progressing well. The first outputs from this will be available in the next report, and will be updated with every report subsequently.
- GERMS – the TB surveillance programme kicked off at Chris Hani Baragwanath Hospital and selected surrounding clinics on 01 October 2012. The Mthatha site in the Eastern Cape will commence on 25 February 2013. Preparations are underway for implementation of TB surveillance in Mpumalanga and the Northern Cape within the next 2 months.

# Tuberculosis Surveillance

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

**Table 8. Clinic/ NHLS laboratory statistics for TB surveillance through the GERMS platform\***

Laboratory Statistics	Number
Clinics implementing TB surveillance	14
NHLS laboratories reporting data	1

**Table 9. Number of rifampicin-resistant TB cases that refer specimens to the NHLS laboratory at Chris Hani Baragwanath Hospital\***

Facility Name	Number of Cases
Chris Hani Baragwanath Hospital	13
Diepkloof TB Clinic	2
Eldorado Park Ext 2 Clinic	2
Chiawelo CHC	7
Elias Motsualedi Clinic	2
Itereleng Clinic	2
Michael Maponya Clinic	3
Mofolo Clinic	2
Mofolo South Clinic	1
Senaoane Clinic	2
Shanty Clinic	1
Tladi Clinic	1
Moroka Clinic	1
Zola CHC	1
<b>Total:</b>	<b>40</b>

\*Data presented above is sourced from the GERMS-SA TB surveillance programme and has yet to be audited. Furthermore, this data is very early and as such cannot be interpreted as yet.

## Update from the National TB Drug Resistance Survey

DRS - The South African National Tuberculosis Drug Resistance Survey (DRS) has now been running for seven months. The survey was started in Gauteng province on 18 June 2012. It has since been initiated in North West, Northern Cape, Limpopo, Eastern Cape and Mpumalanga and will run for a period of 12 months in each province.

Data from this survey will provide a baseline from which the national TB control programme can be monitored and strengthened. The data enable us to evaluate the quality of TB control in the nine provinces and provide data for planning and budgeting.

The survey has been met with much enthusiasm in all provinces and all facilities selected for the survey are recruiting patients.

Between 18 June and 31 December 2012 a total of 20109 patients were enrolled in the survey. Preliminary analysis shows a smear-positivity rate of 8% and a culture positivity rate of 12% among people suspected to have TB, with variation across provinces. Thirty percent of survey participants responded that they had been previously diagnosed and treated for TB.

The survey will roll-out to the Western Cape and KwaZulu-Natal in the next month.

# Measles and Rubella Surveillance

Reporting period 01/01/2013 to 06/02/2013

Results until end of epidemiologic week 5 (2013)

## Programme Description:

The 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  $\geq 38^{\circ}\text{C}$  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 01 January to 06 February 2013, specimens were collected from 247 suspected measles cases. Of these, 18% (45/247) were rubella IgM positive and 0.4% (1/247) measles IgM positive.

Rubella: Where age and sex were recorded (n=44), females accounted for 65.9% (29/44) of the cases and 13.6% (6/44) were among women of child-bearing age 12-49 years. Rubella IgM positive cases were reported from eight of the nine provinces, with Gauteng (11/44, 25%), Eastern Cape (9/44, 20%) and Mpumalanga (7/44, 16%) provinces accounting for the highest proportion of the total cases (Table 10).

Measles: A measles case (aged 9 months) was reported from City of Tshwane, Gauteng Province (Table 10).

## Measles and Rubella Surveillance

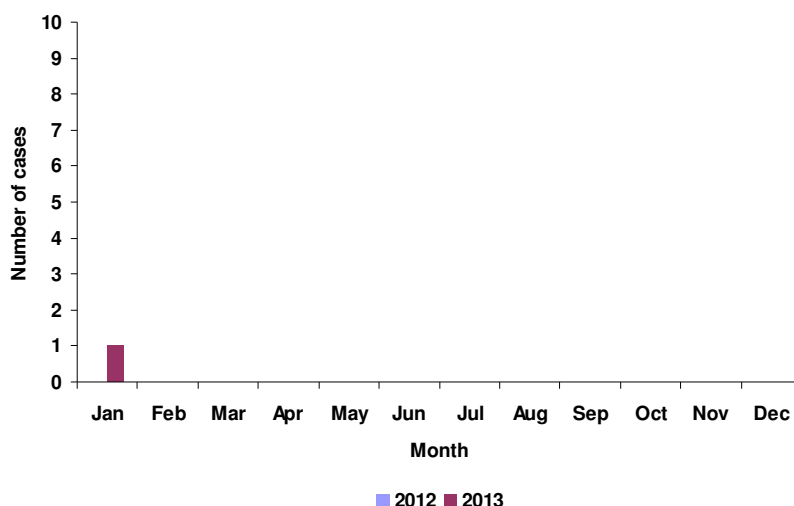
Reporting period 01/01/2013 to 06/02/2013

Results until end of epidemiologic week 5 (2013)

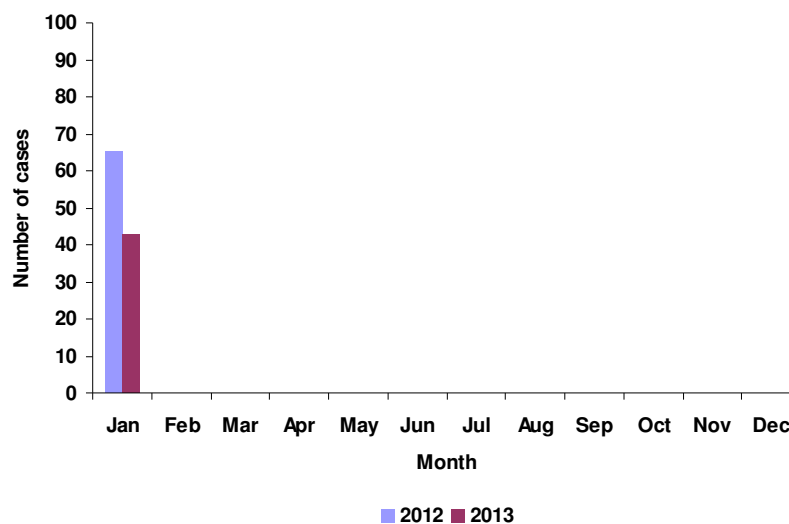
**Table 10. Number of laboratory-confirmed cases per province, South Africa, 2013**

Province	Measles IgM positive	Rubella IgM positive
Eastern Cape	0	9
Free State	0	2
Gauteng	1	11
KwaZulu-Natal	0	5
Limpopo	0	0
Mpumalanga	0	7
Northern Cape	0	5
North West	0	1
Western Cape	0	5
<b>Total:</b>	<b>1</b>	<b>45</b>

**Figure 31. Number of laboratory-confirmed measles cases by month of specimen collection, South Africa, 2012 and 2013**



**Figure 32. Number of rubella IgM positives by month of specimen collection, South Africa, 2012 and 2013**



## Polio/ Acute Flaccid Paralysis (AFP) Surveillance

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

### Programme Description:

Data presented in this report are generated from Acute Flaccid Paralysis (AFP) Surveillance and represent specimens received by the National Institute for Communicable Diseases (NICD) of the National Health Laboratory Service (NHLS). 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 of good condition and sufficient quantity collected at least 24-48 hours apart within 14 days of onset of paralysis.

### Comments:

For the reporting period given above, a total of 66 specimens were received from 32 South African cases. Of the 32 AFP cases, 12 had onset of paralysis in 2012, bringing the total AFP cases for 2013 to 20. Of the 20 AFP cases, 19 (95%) were aged <15 years with an annualised Non-Polio AFP detection rate of 1.44 per 100,000 population: range per province 0.72 to 3.96 (Figure 33).

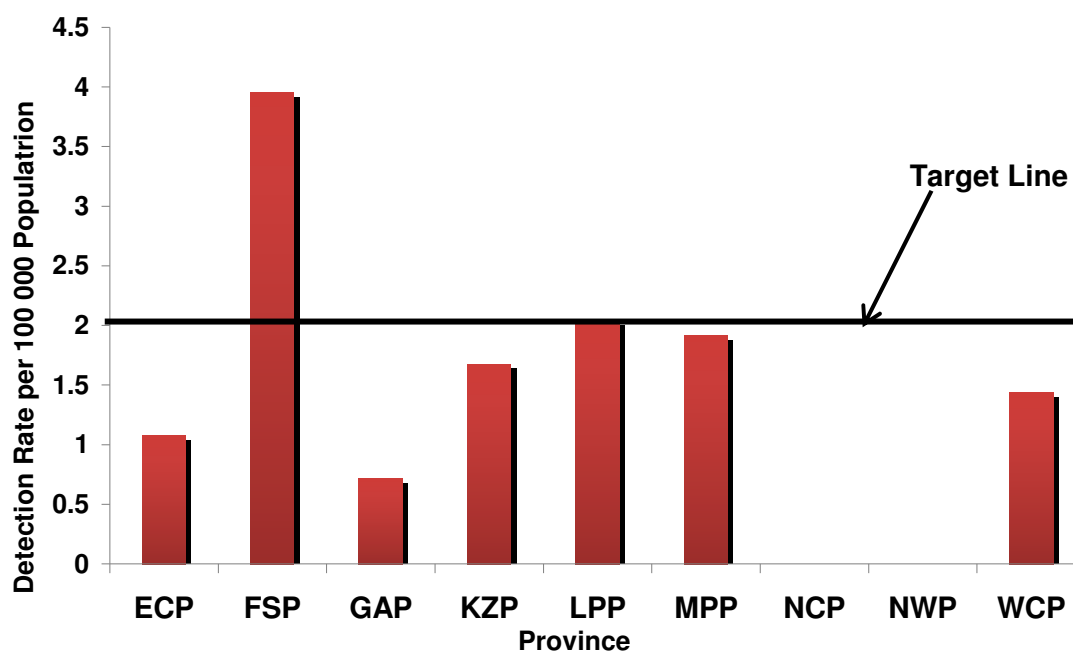
Ninety-two percent of the specimens were received in good condition while 56% arrived at the NICD within 3 days of collection. Where results were available, 97% were resulted within 14 days of receipt with a Non-Polio enterovirus isolation rate of 9% (Table 11).

## Polio/ Acute Flaccid Paralysis (AFP) Surveillance

Reporting period 01/01/2013 to 31/01/2013

Results until end of epidemiologic week 5 (2013)

**Figure 33. Annualised Non-Polio AFP detection rate by province\*, South Africa, 1 to 31 January 2013**



\*ECP: Eastern Cape; FSP: Free State; GAP: Gauteng; KZP: KwaZulu-Natal; LPP: Limpopo; MPP: Mpumalanga; NCP: Northern Cape; NWP: North West; WCP: Western Cape

**Table 11. Polio/ Acute Flaccid Paralysis (AFP) laboratory performance indicators, South Africa, 2013\***

Laboratory indicators	2013*	Target
Specimens received in good condition	92%	90%
Specimens received within 3 days of collection	56%	80%
Specimens resulted within 14 days of receipt	97%	80%
Non-Polio enterovirus isolation rate	9%	10%

\* Samples received in 2013 (1 January to 31 January) including those with onset in 2012