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CONTENTS

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Provisional listing: number of laboratory-confirmed cases in South Africa of diseases under surveillance reported to the NICD, corresponding periods 1 January-31 December 2004/2005

	Disease/ Organism	Case Definition	Subgroup	Cumulative to 31 Dec. year	EC	FS	GA	KZ	LP	MP	NC	NW	WC	South Africa
VIRAL DISEASES	Acute Flaccid Paralysis	Cases < 15 years of age from whom specimens have been received as part of the Polio Eradication Programme	<=15 years	2004	24	17	28	36	56	14	5	25	25	230
				2005	25	16	27	36	58	14	5	25	26	232
	Measles	Measles IgM positive cases from suspected measles cases, all ages	All ages	2004	7	0	560	90	5	11	4	10	33	720
				2005	478	1	44	74	2	5	0	1	16	621
	Rubella	Rubella IgM positive cases from suspected measles cases , all ages	All ages	2004	104	2	245	31	40	285	4	122	20	853
				2005	162	28	277	166	63	125	77	79	35	1012
	VHF	Laboratory-confirmed cases of CCHF (unless otherwise stated), all ages	All ages	2004	0	1	0	0	0	0	1	2	0	4
				2005	0	0	0	0	0	0	0	0	1	1
	Rabies	Laboratory-confirmed human cases, all ages	All ages	2004	0	0	0	6	0	1	0	0	0	7
				2005	4	1	0	2	0	0	0	0	0	7
BACTERIAL AND FUNGAL DISEASES	*Haemophilus influenzae*	Invasive disease, all ages	All serotypes	2004	9	13	132	29	2	6	1	3	41	236
				2005	10	21	132	29	1	10	2	1	42	248
		Invasive disease, < 5 years	Serotype b	2004	1	2	21	2	1	1	0	0	4	32
				2005	4	3	18	4	0	0	0	1	6	36
			Serotypes a,c,d,e,f	2004	1	0	7	2	0	0	0	0	3	13
				2005	1	1	9	2	0	1	0	0	5	19
			Non-typeable (unencapsulated)	2004	0	6	30	7	0	0	0	0	11	54
				2005	2	4	39	4	0	2	0	0	5	56
			No isolate available for serotyping	2004	3	2	12	6	0	1	1	1	7	33
				2005	0	2	12	3	0	2	0	0	10	29
	Neisseria meningitidis	Invasive disease, all ages		2004	29	22	184	23	9	11	6	18	58	360
				2005	10	25	355	25	12	21	8	15	68	539
	Streptococcus pneumoniae	Invasive disease, all ages	Total cases	2004	161	216	2024	496	68	180	21	114	504	3784
				2005	215	215	2225	467	73	229	32	114	478	4048
			Penicillin non-susceptible isolates	2004	63	77	643	175	18	46	6	33	220	1281
				2005	73	74	600	175	19	64	5	23	196	1229
			No isolate available for susceptibility	2004	33	43	546	145	12	40	1	29	119	968
				2005	52	56	652	139	16	56	8	23	130	1132
		Invasive disease, < 5 years		2004	9	21	189	25	9	15	0	6	37	311
				2005	22	10	243	37	12	21	3	10	31	389
	Salmonella spp. (not typhi)	Invasive disease, all ages		2004	19	15	597	69	3	15	0	6	65	790
				2005	38	26	523	104	9	36	0	4	68	808
		Confirmed cases, isolate from a non-sterile site, all ages		2004	127	30	262	166	39	12	0	28	160	824
				2005	143	31	206	178	29	70	7	43	173	880
	Salmonella typhi	Confirmed cases, isolate from any specimen, all ages		2004	13	0	20	8	7	9	0	0	10	67
				2005	31	0	32	12	8	91	0	0	10	184
	Shigella dysenteriae 1	Confirmed cases, isolate from any specimen		2004	0	0	0	1	0	0	0	0	0	1
				2005	0	0	0	0	0	0	0	0	5	5
	Shigella spp. (Non Sd1)	Confirmed cases, isolate from any specimen, all ages	All serotypes	2004	114	48	226	149	33	12	0	15	361	958
				2005	145	36	264	178	19	55	8	15	317	1037
	Vibrio cholerae O1	Confirmed cases, isolate from any specimen, all ages	All serotypes	2004	23	0	3	0	0	213	0	28	0	267
				2005	0	0	0	0	0	0	0	0	0	0
	Cryptococcus spp.	Invasive disease, all ages	*C. gattii*	2004	U	U	U	U	U	U	U	U	U	U
				2005	2	3	27	15	16	14	0	8	7	92
			C. neoformans	2004	U	U	U	U	U	U	U	U	U	U
				2005	448	245	1611	941	133	358	40	237	343	4356

Abbreviations: VHF - Viral Haemorrhagic Fever; CCHF - Crimean-Congo Haemorrhagic Fever

Provinces of South Africa: EC – Eastern Cape, FS – Free State, GA – Gauteng, KZ – KwaZulu-Natal, LP – Limpopo, MP – Mpumalanga, NC – Northern Cape, NW – North West, WC – Western Cape

U = unavailable, 0 = no cases reported

SOUTH AFRICAN LABORATORY SURVEILLANCE FOR ENTERIC DISEASE, 2005

Karen Keddy, EDRU, NICD

During the year, enteric surveillance specimens were received from all the provinces, with a greater than 10 % increase in the number of specimens noted for the whole of South Africa. This was primarily due to increased numbers of isolates from the laboratories in KwaZulu-Natal and the Northern Cape, and may not reflect a real increase in isolates sent to the Enteric Diseases Reference Unit (EDRU), but rather an increase in awareness regarding surveillance.

Of the Salmonella isolates received, there was a marked predominance of *Salmonella* Typhimurium, the majority of which were resistant to four or more antimicrobials. Approximately 50% of isolates were from invasive cultures. Multi-drug resistant *Salmonella* Isangi represented about 1/3 of all the isolates received, probably reflecting ongoing nosocomial transmission, and *Salmonella* Typhi became the third commonest isolate as a result of the outbreak in Delmas, Mpumalanga. *Salmonella* Enteritidis, which was also common, has remained relatively susceptible to most antimicrobials; with only four of the 95 strains received producing ESBL (extended spectrum beat lactamase).

Antimicrobial resistance in *Salmonella* Typhi appears to be increasing. Approximately 15% of isolates were resistant to antibiotics previously recommended as first line therapy, including ampicillin and cotrimoxazole, although only 4 of 185 isolates were chloramphenicol resistant. A worrying trend is 11 of 185 strains being resistant to nalidixic acid. Note that these results are arguably skewed, as the seventy-odd typhoid strains from Delmas, which could be epidemiologically linked, were all fully sensitive.

Salmonella isolates from enhanced surveillance were a representative reflection of the HIV situation at these sites. Invasive cases vastly outnumbered non-invasive cases and quinolone resistance and ESBL production were high in the commoner serotypes. There were a number of refractory infections in patients, as evidenced by repeat specimens sent within the same period of hospitalisation. Also noteworthy were the number of recurrent infections, particularly in immune suppressed patients. This is probably a direct reflection of the challenge that these multi-drug resistant organisms present in the immune-suppressed population. Co-infections with more than one serotype of *Salmonella* or *Salmonella* mixed with another pathogens, such as *Shigella*, were also noted. Optimal therapy for such organisms should include a carbapenem if the organism is quinolone resistant as high-dose fluoroquinolones have had documented failures in these patients or if the organism is susceptible to quinolones.

Invasive salmonellosis was predominantly seen in the very young and the 20-40 year age group, unlike the disease in developed countries, where it is associated with extremes of age. Noteworthy features included the number of CNS and pulmonary infections. Non-invasive specimens primarily included stool specimens, where *Salmonella* Typhimurium and *Salmonella* Isangi again predominated, and were multi-drug resistant.

Slightly more than 1 000 *Shigella* isolates were received. Most *Shigella* isolates were from stool specimens. *Shigella flexneri* 2a remained the commonest isolate, as would be expected in a developing country. Other serotypes of *S. flexneri* were also common, with differing frequencies in different provinces. *S. sonnei* I and II were seen less frequently and appeared to have a more urban distribution. As these last two are the commonest isolates in the developed world, this probably reflects the differences in service delivery and the availability of potable water between the more rural and the urban areas of South Africa. *S. dysenteriae* type 1 now appears to be a rare isolate, with only five isolates being received from the Western Cape, and none from KwaZulu-Natal.

Shigella isolates were primarily from stool specimens, reflecting that this organism usually causes more severe diarrhoea or dysentery and may be associated with outbreaks because of the small infectious dose. As a result, practices regarding submission of stools for culture may be skewed towards identifying this organism, resulting in a predominance of *Shigella* isolates from stool specimens received by EDRU. Most isolates (80%) were resistant to cotrimoxazole and about 40% were resistant to ampicillin. Serotype had little impact on antimicrobial resistance, with the exception of *Shigella dysenteriae* type 1: four of the five isolates received were resistant to ampicillin, trimethoprim, sulfamethoxazole and tetracycline. No nalidixic acid resistance was detected in these five isolates. Nalidixic acid resistance in *Shigella* isolates is till rare (approximately 1% of isolates) and this would still be a treatment option for *Shigella* dysentery. With regards to management, *Shigella* dysentery, irrespective of serotype, responds well to antimicrobial therapy with antibiotics to which the organism is susceptible. Trimethoprim-sulfamethoxazole and ampicillin are therefore inappropriate choices of antibiotic for these organisms. In refractory cases, a fluoroquinolone may be a better option.

Of the 140 putative diarrhoeagenic *Escherichia coli* isolates analysed, just over a third were entero-pathogenic *E. coli* (EPEC), both typical EPEC and

atypical EPEC (containing *bfp* or *eae* gene sequences, but not both), including those isolates identified as serotype O111, reported from the outbreak in the Northern Cape, a quarter were entero-aggregative *E. coli* (EAggEC), six enterotoxigenic *E. coli* (ETEC) and one enteroinvasive *E. coli* (EIEC). No entero-haemorrhagic *E. coli* (EHEC) were detected. Sixty isolates had no virulence genes associated with diarrhoeagenic *E. coli*. No *Vibrio cholerae* specimens were received in 2005.

RESPIRATORY AND MENINGEAL PATHOGEN SURVEILLANCE SOUTH AFRICA, 2005

Anne von Gottberg, Linda de Gouveia, RMPRU, NICD for GERMS-SA#

INTRODUCTION

The Respiratory and Meningeal Pathogens Reference Unit (RMPRU) of the National Institute for Communicable Diseases (NICD) collects data from hospitals in all 9 South Africa's provinces, on cases with normally sterile site specimens culture positive for *Neisseria meningitidis*, *Haemophilus influenzae* and *Streptococcus pneumoniae*. Also included are cases with positive latex agglutination tests from normally sterile site specimens with one or more confirmatory laboratory test/s (*e.g*. Gram stain and/or PCR result).

Data are reported in the NICD Bulletin provisional listing[1], provincial quarterly reports that are faxed to laboratories, and through summaries and articles in the NICD Bulletin.[2;3]

MENINGOCOCCAL DISEASE IN 2005

In 2005, 539 cases of meningococcal disease were reported to RMPRU at the NICD. Although this was an increase from the previous year, these increases were only seen in, Gauteng and Mpumalanga (Table 1). Disease in South Africa follows a clear endemic pattern of sporadic disease, with a seasonal increase during the winter and spring months (Figure 1).

Since the 1970s[4] and confirmed by our surveillance more recently,[3] most cases of meningococcal disease have been reported from two provinces, Gauteng and Western Cape. The predominant serogroup by province differs, with serogroup B predominant in the Western Cape and serogroup A in Gauteng.[3] This has changed in 2005: serogroup B is still the most common strain in the Western Cape, however serogroup W135 has become predominant in Gauteng (Figure 2). This emergence of W135 in Gauteng started in 2004, and has become more marked in 2005 (Figure 3). Only one outbreak was confirmed, constituting 13 laboratory-confirmed cases over 32 weeks from one institution in Gauteng.

Burden of disease was greatest in children less than five years of age. In the two provinces with most disease, incidence rates were highest in children less than one year of age, both for total disease and for serogroup B in the Western Cape and for W135 in Gauteng (Figure 4).

Case fatality rates as calculated in enhanced surveillance sites where outcome is specifically looked for was 34/181 (19%). This was similar compared to 16/100 (16%) in 2004. These rates are higher than those (10%-14%) quoted from the USA for example.[5]

Only 12/413 (3%) isolates had penicillin MICs >0.06µg/ml, and would be considered non-susceptible. This was a reduction from previous years.[3] The clinical relevance of increasing MICs is unclear; however, penicillin is at present still recommended as the drug of choice for therapy.

Table 1: Number of cases and incidence rates* of meningococcal disease in South Africa as reported to RMPRU by province, 2004 and 2005

Province	2004		2005	
	n	Incidence*	n	Incidence*
Eastern Cape	29	0.44	10	0.15
Free State	22	0.80	25	0.90
Gauteng	184	1.89	355	3.52
KwaZulu Natal	23	0.23	25	0.25
Limpopo	11	0.20	12	0.22
Mpumalanga	6	0.18	21	0.62
Northern Cape	9	1.10	8	0.98
North West	18	0.47	15	0.38
Western Cape	58	1.19	68	1.36
South Africa	**360**	**0.76**	**539**	1.12

*Cases per 100 000 mid-year population estimates, South African District Health Information System (DHIS)

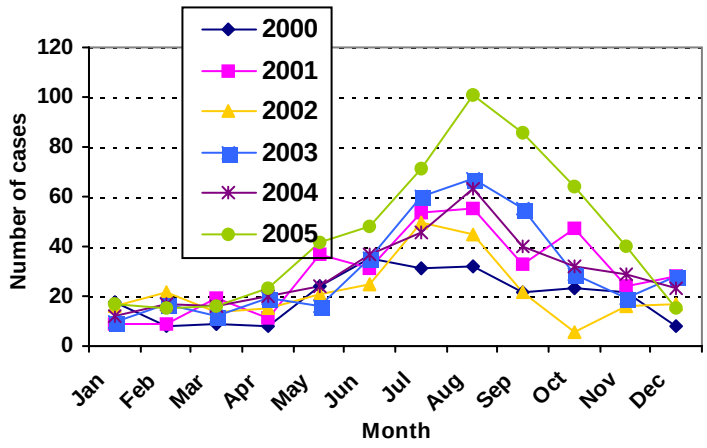

Figure 1: Number of cases of meningococcal disease in South Africa as reported to RMPRU by month and year (2000-2005)

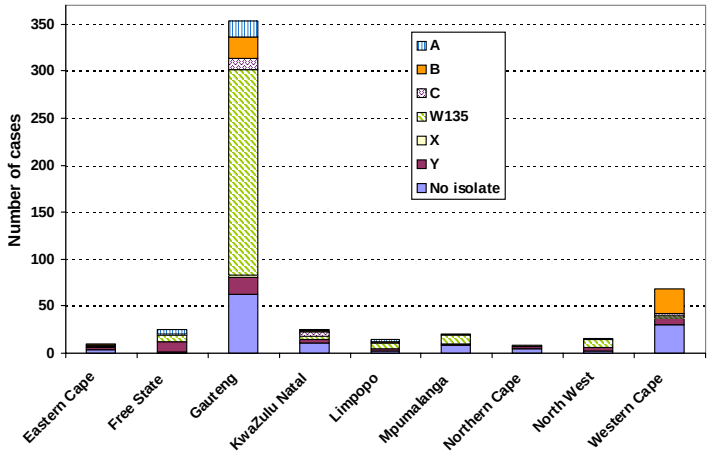

Figure 2: Number of cases of meningococcal disease in 2005 in South Africa reported to RMPRU by serogroup and province (n=541, 414 [76%] with isolates for further testing)

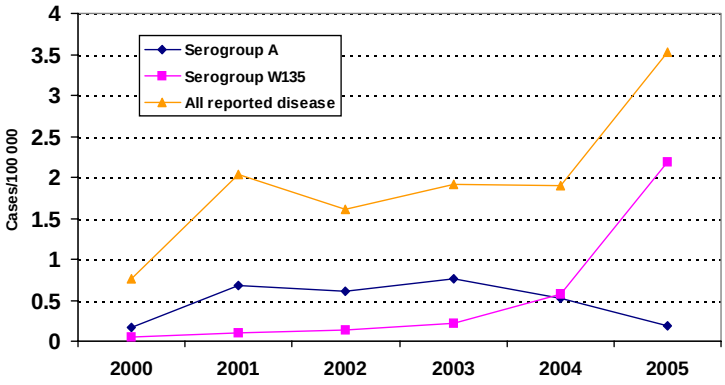

Figure 3: Incidence rates of serogroup-specific disease and all reported meningococcal disease in Gauteng by year (2000-2005

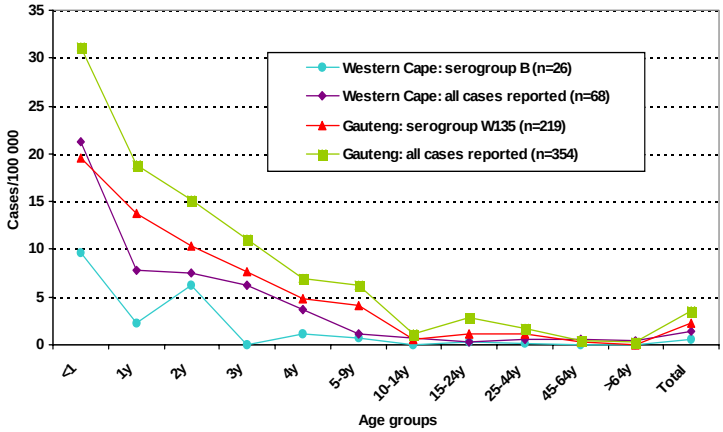

Figure 4: Age-specific incidence rates for all reported meningococcal disease and confirmed serogroup B and W135 disease in the Western Cape and Gauteng as reported to RMPRU in 2005

HAEMOPHILUS INFLUENZAE DISEASE IN 2005

The total number of cases of *Haemophilus influenzae* invasive disease reported to our unit was 248. Of these 190 (77%) had viable isolates for further testing and 59 (31%) were confirmed as serotype b.

Since the introduction of the *Haemophilus influenzae* serotype b (Hib) conjugate vaccine into the Expanded Programme on Immunisation (EPI) for South Africa in 1999, there has been a reduction in cases reported due to this serotype.[6] In 2003, 33 cases of Hib in children less than 5 years were reported to us,[7] with 32 cases in 2004 and provisionally 36 in 2005 (Figure 5). Vaccination histories on these children had not been routinely recorded, however obtaining more data may help understanding the dynamics of this residual disease. Data from Soweto, Johannesburg, have shown that effectiveness of the Hib vaccine may be reduced in HIV-infected children.[8] As numbers of Hib cases have declined, non-typeable disease has become more common in almost all age groups in 2005 (Figure 6).

Serotype b strains are more resistant than non-typeable isolates: in 2005, 16/59 (27%) were non-susceptible to ampicillin, compared to 10/105 (10%) of isolates confirmed as non-typeable (p=0.007) (data not shown). These isolates caused disease mostly in children less than 10 years of age (15/16 serotype b- and 7/10 non-typeable non-susceptible isolates). Multidrug resistance (testing non-susceptible to ampicillin, chloramphenicol and trimethoprim/sulfamethoxazole) was common in serotype b isolates (12/16, 75%) in children < 10 years of age (data not shown).

INVASIVE PNEUMOCOCCAL DISEASE (IPD) IN 2005

Calculated rates of invasive pneumococcal disease vary greatly between provinces (Table 2). This may in part reflect underreporting, but also differential specimen-taking practices by clinicians.[9] Rates of disease in 2005 remain highest in children less than 1 year of age (Figure 7). The second peak in adults is most likely associated with HIV co-infection.

Figure 5: Number of cases of *Haemophilus influenzae* reported to RMPRU in 2005 by serotype and age group (n=244)

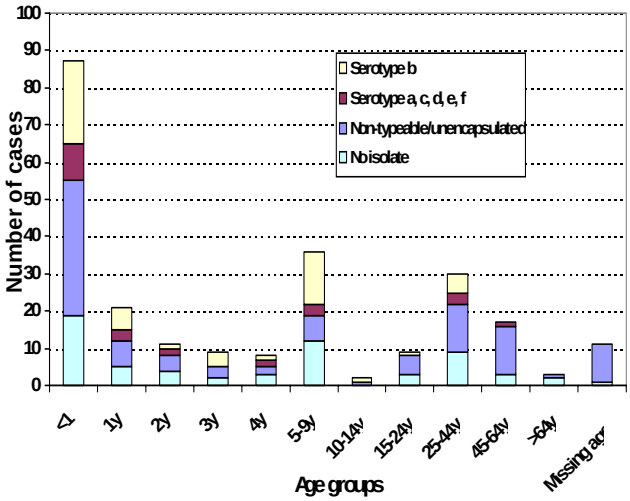

Figure 6: Age-specific incidence rates of serotype b and non-typeable *Haemophilus influenzae* disease in 2005 in South Africa as reported to

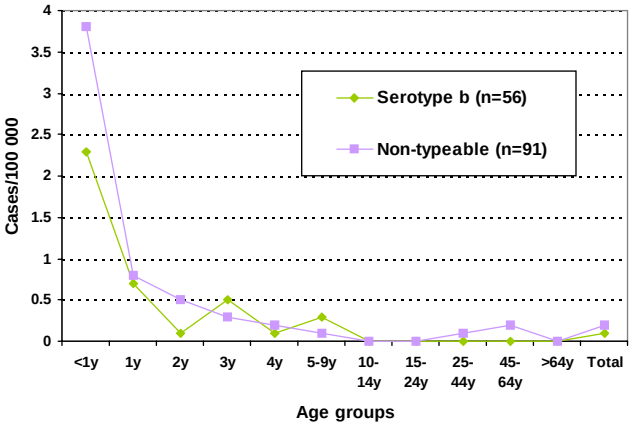

Table 2: Number of cases and incidence rates* of invasive pneumococcal disease (IPD) in South Africa as reported to RMPRU by province, 2004 and 2005

Province	2004		2005	
	n	Incidence*	n	Incidence*
Eastern Cape	161	2.46	215	3.27
Free State	216	7.84	215	7.75
Gauteng	2024	20.77	2225	22.08
KwaZulu Natal	496	4.98	467	4.61
Limpopo	68	1.24	73	1.31
Mpumalanga	180	5.43	229	6.76
Northern Cape	21	2.57	32	3.93
North West	114	2.95	114	2.90
Western Cape	504	10.36	478	9.58
South Africa	**3784**	**7.99**	**4048**	8.39

*Cases per 100 000 mid-year population estimates, South African District Health Information System (DHIS)

Penicillin non-susceptible isolates have increased from 2004, and approximately 20 to 30% of isolates are non-susceptible across all provinces (Table 3). Non-susceptible isolates are more common in children less than 1 year (282/625, 45%) and have increased significantly from last year (236/602, 39%), p=0.04 (Figure 8). There was no significant change in prevalence in adults aged 25 to 44 years, 274/1231 (22%) in 2005, compared to 04/1079 (19%) in 2004, p=0.053. Prevalence of ceftriaxone resistance (using meningitis breakpoints: non-susceptible >0.5µg/ml) is still low, with only 25/3659 (0.6%) testing non-susceptible in 2005, and 30/3473 (0.8%) in 2004.

A 7-valent conjugate pneumococcal vaccine was launched in South Africa in the private sector in 2005 and is at present the only vaccine for the prevention of pneumococcal disease in children. As clinicians and parents advocate for the vaccine price to be reduced and with the possible inclusion of this vaccine in the EPI in the future, potential coverage of disease serotypes in children less than five is more than 50% in South Africa according to our data (Table 4), and this increases to 788/1155 (68%) if potential cross-protection with serotype 6A is considered.

Table 3: Proportion of penicillin non-susceptible isolates from IPD cases reported to RMPRU in 2005 by province (n=3659 with viable isolates)

Province	Susceptible		Intermediately resistant		Resistant	
	n	%	n	%	n	%
Eastern Cape	141	73	51	26	1	0.5
Free State	149	73	54	26	2	1.0
Gauteng	1330	67	648	33	4	0.2
KwaZulu Natal	291	68	137	32	2	0.5
Limpopo	45	74	16	26	0	0.0
Mpumalanga	152	73	55	26	1	0.5
Northern Cape	21	72	8	28	0	0.0
North West	81	78	23	22	0	0.0
Western Cape	317	71	126	28	4	0.9
South Africa	**2527**	**69**	**1118**	**31**	**14**	**0.4**

Figure 7: Incidence rates of IPD as reported in 2005 to RMPRU by age group (n=3 744)

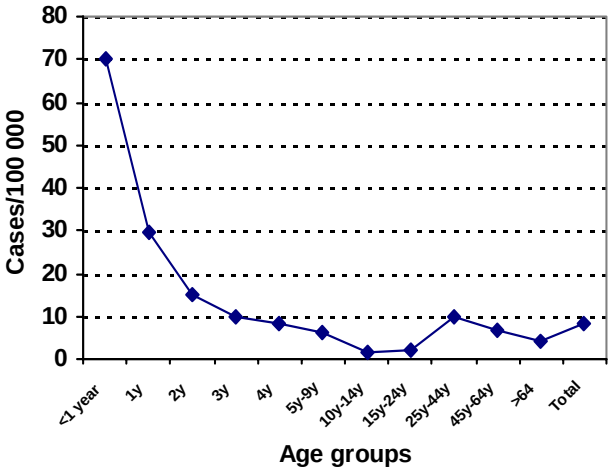

Figure 8: Number of cases of IPD reported to RMPRU in 2005 by age group and susceptibility to penicillin (n=3 458)

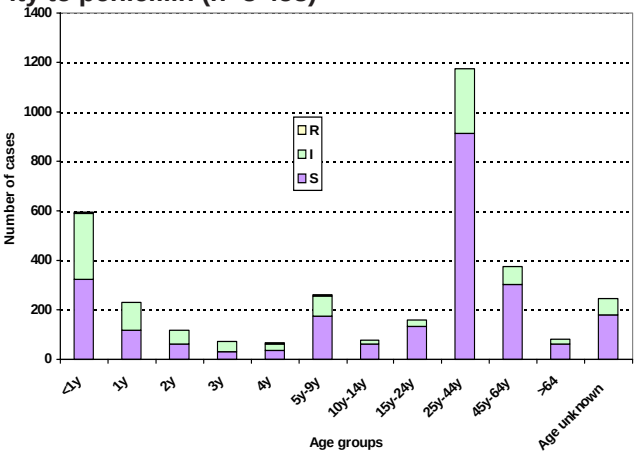

Table 4: Number of cases reported in 2005 in children less than 5 years of age caused by the serotypes contained in the 7-valent vaccine (4, 6B, 9V, 14, 18C, 19F and 23F), with total viable isolates confirmed for this age group and proportion of disease caused by the 7-valent serotypes

Province	n	Viable isolates	%
Eastern Cape	32	65	49
Free State	44	71	62
Gauteng	332	574	58
KwaZulu Natal	78	160	49
Limpopo	11	16	69
Mpumalanga	37	59	63
Northern Cape	1	5	20
North West	6	20	30
Western Cape	109	185	59
South Africa	**650**	**1155**	**56**

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CRYPTOCOCCAL SURVEILLANCE, SOUTH AFRICA, 2005

Kerrigan McCarthy, Mycology Reference Unit (MRU), NICD

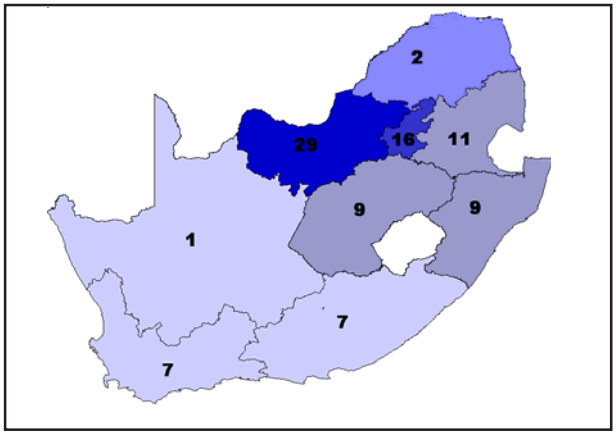
Surveillance for cryptococcosis started in January 2005 as part of the GERMS-SA surveillance network. The bulletin table represents number of incident cases of cryptococcosis in South Africa during the course of 2005 by province. Cases were collected according to the case definition below.

Any case of cryptococcosis (CC) is any case where any specimen submitted to the laboratory has a positive result for one or more of the following tests:

- India Ink test
- Cryptococcal antigen detection (any titre)
- Growth of *Cryptococcus* species

Cases where the diagnosis was made on histopathological evidence alone were not identified or included in the surveillance, but these are likely to be a very small proportion of cases (<0.5% in Gauteng surveillance 2002-4[1]). Cases where the culture was negative and only an India ink or cryptococcal latex agglutination test was positive may not have been submitted to the MRU by regional laboratories. These cases were probably few in number as in South Africa these tests are 98% sensitive.[1] Audits on culture results were done at enhanced surveillance sites through the year to pick up missed culture positive cases.

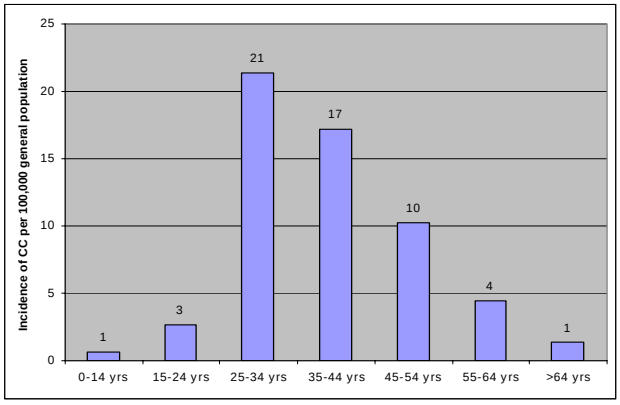
Figure 1. Provincial Cryptococcal Incidence per 100 000 general population, South Africa, 2005



RATES AND DEMOGRAPHICS OF CRYPTOCOCCUS IN SOUTH AFRICA, 2005

The overall incidence rate in South Africa for 2005, using projected denominators for the year, was 9 cases per 100 000 general population. Using estimated denominators for 2004[2], the incidence of infection in HIV-infected persons aged 15-64 years was 78/100 000 and the incidence per 1 000 persons with AIDS was 6.6/1 000. Provincial incidence and national age-related incidence rates are shown in Figure 1 and Figure 2. Ninety-nine paediatric cases younger than 15 years of age (2.6%) were collected across the country. Figure 3 illustrates the concordance in the age-related incidence rates between the HIV seroprevalence expressed as a proportion of the South African population infected and the age-related incidence of cryptococcosis. During 2005, 215 recurrences (defined as any case meeting the above case-definition > 30 days after a previous episode) were recorded and 14 second recurrences. Additional

Figure 2. Cryptococcus age-related incidence in the general population, 2005.



information on 1017 cases was obtained by completion of an extensive case report form at 7 sites across South Africa. Outcome at end of hospitalization for this subset of cases by province is shown in Figure 5. Fifty-nine cases of CC were recorded in individuals who were simultaneously on anti-retroviral therapy (ART); of these, 31 cases occurred in patients who had been on ART for one month only.

Figure 3. Age-related incidence of Cryptococcus (cases per 100,000 population) and age-related incidence of HIV infection by gender in 2004[2] (as a percentage of the whole population)

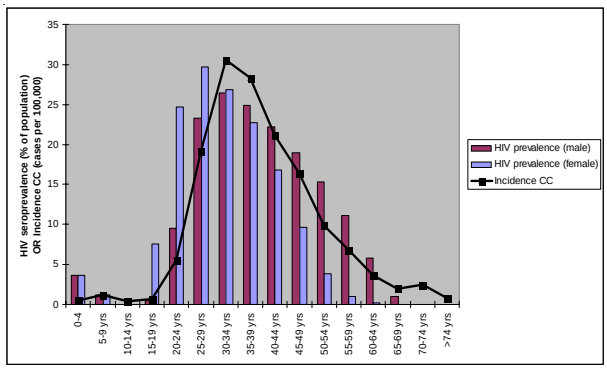


Figure 5. Outcome at end of hospitalization by province for 1 013 cases collected in 7 provinces of South Africa, 2005 (Data for Northern Cape and North West province were not collected)

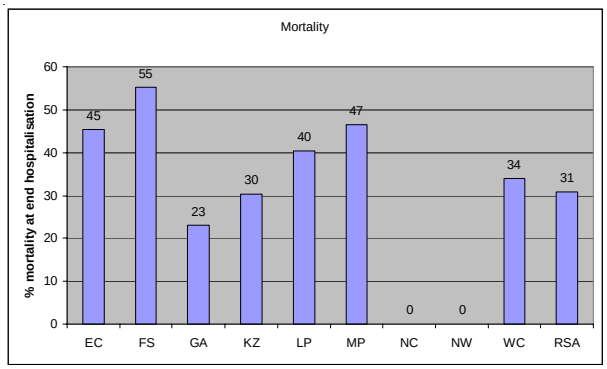
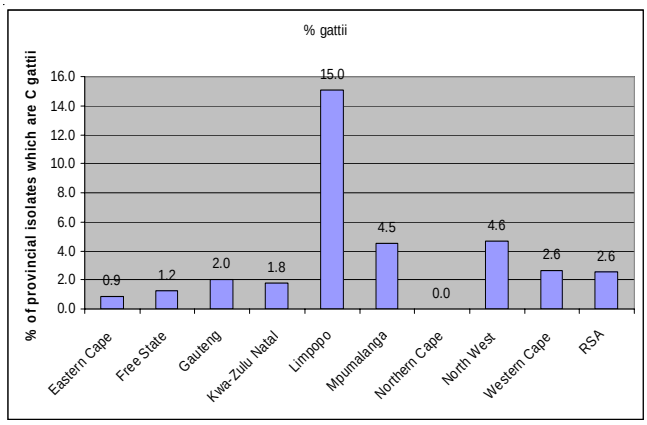


Figure 4. Proportion of provincial isolates of *Cryptococcus* species that are *C. gattii*



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2 Dorrington RE, Bradshaw D, Johnson L, Budlender D. The Demographic impact of HIV/AIDS in South Africa. National indicators for 2004. Cape Town: Centre for Actuarial Research, South African Medical Research Council and Actuarial Society of South Africa. 2004.

3 Dorrington R E, Bradshaw D and Budlender D. HIV/AIDS profile of the provinces of South Africa – indicators for 2002. Centre for Actuarial Research, Medical Research Council and the Actuarial Society of South Africa. 2002.

ANTHRAX IN SOUTH AFRICA, 2005

John Frean, Special Bacterial Pathogens Unit, NICD

Three laboratory-confirmed cases of cutaneous anthrax in humans occurred in Schmidtsdrift and Delportshoop in the Northern Cape Province. One of the cases also had fatal systemic involvement with *Bacillus anthracis* identified on a blood culture. A further 9 suspected human cases of cutaneous anthrax were identified. It appears that members of the community handled and ate the meat of a dead cow from a farm in Schmidtsdrift. It is unclear how widely the meat was distributed. Environmental health officials confiscated the remains of the carcass.

Animal anthrax is endemic in parts of southern Africa and recent outbreaks in animals have occurred in Zimbabwe, Botswana and Namibia. A program for annual immunisation of cattle is in place in South Africa, but compliance is often incomplete, as demonstrated by this outbreak.

The most common clinical presentation of anthrax is the cutaneous form and accounts for more than 95% of cases. Spores are usually introduced via skin breaches and the initial lesion is a papule resembling an insect bite, often surrounded by satellite vesicular lesions. This evolves into the pathognomonic black eschar with surrounding severe oedema. Cutaneous anthrax is usually a self-limited disease but antibiotics are used to prevent systemic invasion. The inhalational and gastro-intestinal forms are associated with high mortality despite treatment.

Control of disease should include animal vaccination, proper disposal of carcasses and community education to discourage any contact with diseased animals, in particular, consumption of carcasses.

NATIONAL CLINICAL SURVEILLANCE FOR SEXUALLY TRANSMITTED INFECTIONS (STIs)

Simeon Odugwu, Sexually Transmitted Infections Reference Centre (STIRC), NICD

A national clinical STI surveillance programme for South Africa was launched in November 2003 and completed its first full year of data collection in March 2005 from 270 sentinel sites across the country. During this period, additional STI data were collected through the Primary Health Care (PHC) District Health Information System (DHIS). A total of 1 654 776 new episodes of STIs were recorded at primary health clinics (PHCs) and level-one hospitals throughout the country in 2004/5, representing an incidence rate of 63 STI episodes per 100 000 population aged 15 to 49 years. For male urethritis syndrome, the national incidence rate was 35 episodes per 100 000 men aged 15–49 years of age.

The overall reporting rate from sentinel sites was 82%. About 27% (n=456 389) of new STIs episodes were recorded in KwaZulu-Natal (KZN), 15.6% in Gauteng and over 14% each in Limpopo and the Eastern Cape Province. The STI attributable fraction of PHC attendance calculated as the total number of new episodes of STI treated/PHC > 5yr headcount for the period (adjusted by the 2004 mid year population aged 15–49 years) varied from 1.56% (Western Cape) to 5.03% (KZN) in the different provinces with a national average of 3.38%.

At the sentinel sites a total of 145 818 new episodes of STI syndromes were recorded in 126 565 clients, mostly aged 20-29 years with a peak in the 20-24 year age group. Vaginal discharge was the commonest syndrome recorded in females in all the provinces (range 48.3% - 75.2%) with a national average relative prevalence of 59.7% and in men, male urethritis syndrome (MUS), with a national relative prevalence of 64.9% (range: 59.2 – 76.4%). The proportion of incident STI syndromes accounted for by other major syndromes are shown below.

Figure 1: New Episodes of STI Syndromes by Province, 2004/5

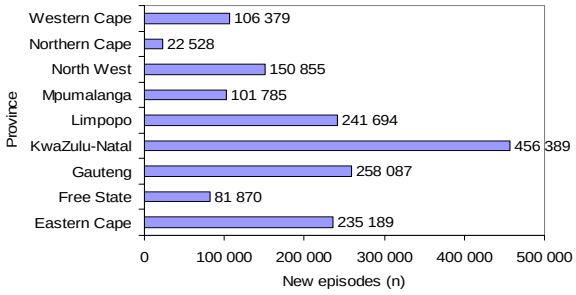


Figure 2: Incidence of STI Syndromes in 2004/5 by Provinces

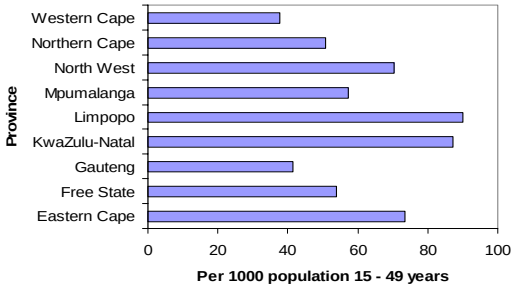


Figure 3: Relative Prevalence of STI syndromes among non-pregnant female sentinel site attenders

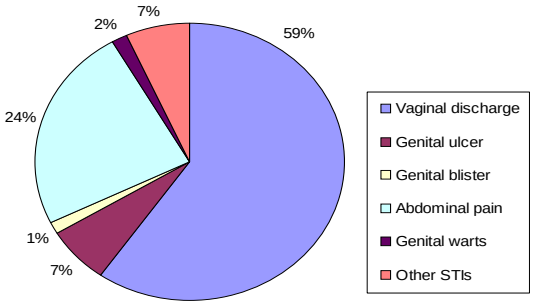
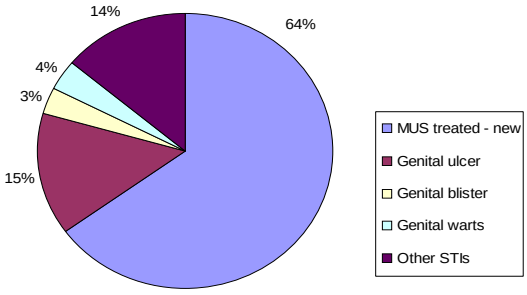


Figure 4: Relative Prevalence of STI syndromes among male sentinel site attenders



MICROBIOLOGICAL SURVEILLANCE OF SEXUALLY TRANSMITTED INFECTIONS

Inge Zietzman, Sexually Transmitted Infections Reference Centre (STIRC), NICD

NATIONAL MICROBIOLOGICAL SURVEILLANCE OF STIs

In conjunction with National Department of Health (NDoH), STIRC is coordinating the national microbiological surveillance of sexually transmitted infections (STIs) in South Africa. The Microbiology departments at the Universities of KwaZulu-Natal, Cape Town, Stellenbosch, Limpopo (Medunsa), Free-State and Walter Sisulu University are participating. The aim is to establish a sustainable network for

national microbiological surveillance that covers all 9 provinces in South Africa and monitors the syndromes of male urethritis, vaginal discharge and genital ulcer disease. The aetiologies of the syndromes, their local or regional epidemiology and antimicrobial susceptibility patterns of *Neisseria gonorrhoeae* will be investigated. Surveillance in the Northern Cape, Mpumalanga and the North West provinces has been scheduled for February and March 2006 with the other provinces to follow.

SURVEILLANCE ACTIVITIES IN GAUTENG PROVINCE

i) Male Urethritis Syndrome

Male urethritis syndrome (MUS) was investigated at primary health care clinics in Gauteng in 2005. *N. gonorrhoeae* remains the predominant pathogen with 16% resistance to the first-line agent, ciprofloxacin (figure 1).

ii) Genital Ulcer Disease

Genital ulcer disease (GUD) surveillance was conducted in men presenting to primary health care facilities in Johannesburg. Results showed that the main cause of genital ulceration is genital herpes (figure 2).

ANTIMICROBIAL RESISTANCE FOR *NEISSERIA GONORRHOEAE*

Results from the gonococcal antimicrobial resistance survey in 2004 were presented at the 1st Congress of the Federation of Infectious Diseases Societies of South Africa in July 2005. Nationally, there was a range from 0-24% resistance to ciprofloxacin with the highest rates in Durban (24%) and Johannesburg (11%). The outcome has been recognition by the NDoH for the need to change first line therapy for *Neisseria gonorrhoeae* from ciprofloxacin to 3rd generation cephalosporins.

Figure 1: Aetiology of new cases of MUS by patient numbers

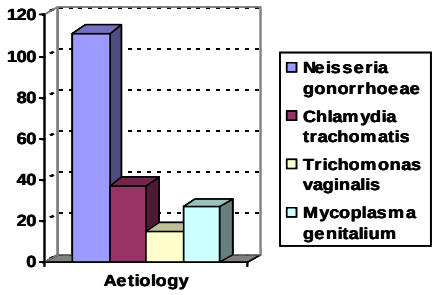
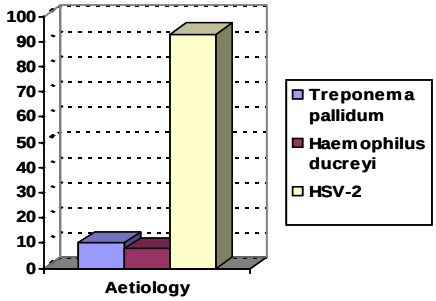


Figure 2: Aetiology of GUD by patient number



SUSPECTED MEASLES CASE BASED SURVEILLANCE, SOUTH AFRICA, 2005

Bernice Harris, Jo McAnerney, Epidemiology Unit, NICD

World wide, measles is still the major cause of vaccine preventable deaths and although South Africa has maintained vaccination levels above 70% for many years, measles outbreaks continued to occur. Since 1995, six southern African nations (Botswana, Malawi, Namibia, South Africa, Swaziland, and Zimbabwe) have launched measles-elimination initiatives in accordance with the recommendations of the World Health Organization (WHO) African Regional Office (AFRO). Strategies include programs to 1) achieve routine vaccination coverage of $\geq$ 95% with one dose of measles vaccine administered at age 9 months; 2) implement a one-time national catch-up measles vaccination campaign to interrupt indigenous transmission of measles; 3) implement periodic national follow-up measles campaigns to maintain interruption of measles transmission; and 4) establish case-based measles surveillance with laboratory confirmation.

The NICD is accredited by WHO to perform measles and rubella IgM testing for the national case based surveillance and trace the molecular epidemiology of the measles virus in South Africa. Blood and urine specimens from each suspected measles case (smc) is sent to the NICD for confirmation. Case investigation forms are completed by facility or district personnel and forwarded to the National Department of Health. The numbers presented here only represent specimens received by the NICD and may differ from those presented by the National Department as they may receive information on epidemiologically linked cases where no specimens were taken.

During 2005 the NICD tested 4 438 blood specimens from cases of rash and fever for suspected measles case based surveillance of which 1 363 (31%) were collected in the Eastern Cape and 1 108 (25%) in Gauteng. All provinces met the criterion for sufficient number of specimens collected, more than 1 smc per 100 000 population with the Eastern Cape, Northern Cape and Mpumalanga collecting more than 16/100 000. This may however mask silent districts and sub districts (Table 1). Of all specimens 706 (16%) tested positive for measles and 1047 (24%) for rubella.

Table 1: Suspected measles case based surveillance, South Africa, 2005

Province	ECP	FSP	GAP	KZP	LPP	MPP	NCP	NWP	WCP	*TOTAL*
Number of SMC	1 363	102	1 108	580	181	469	195	215	225	4 438
% of total	31%	2%	25%	13%	4%	11%	4%	5%	5%	100%
SMC / 100 000 population	19.1	3.6	13.1	6.3	3.0	16.1	18.3	7.2	4.7	9.9
Measles cases	565	1	42	77	2	3	0	1	15	706
Rubella cases	189	28	280	170	64	126	76	79	35	1 047

MEASLES

80% of all measles cases occurred in 2 districts of the Eastern Cape of whom 48.9% were 5 to 14 years of age. This epidemic peaked with 275 cases in April and tapered to 5 cases in December following a province wide <15 years of age vaccination campaign. (Figure 1)

Small clusters of cases occurred in Gauteng in the first half of the year and only sporadic cases thereafter.

RUBELLA

73% of all rubella cases occurred in 4 provinces namely Gauteng (27%), Eastern Cape (18%), KwaZulu-Natal (16%) and Mpumalanga (12%). The median age of cases was 6 years of age with a range of 3 months to 77years. Most cases occurred in the spring and early summer (Figure 2).

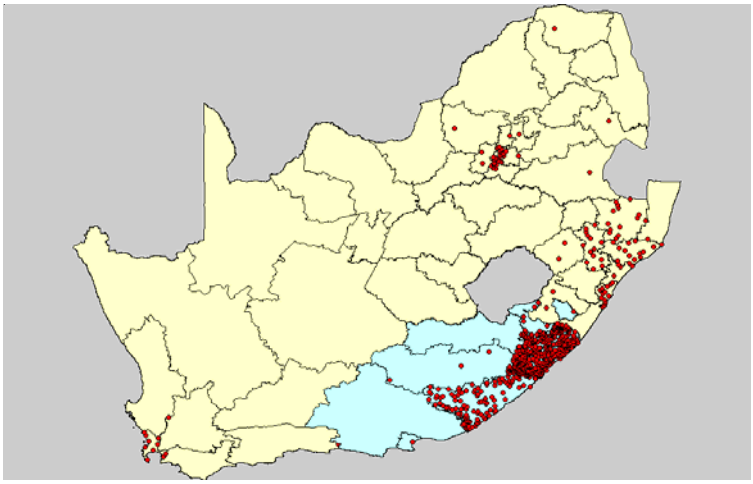


Figure 1: Measles IgM positive cases, South Africa, 2005. (Eastern Cape districts highlighted in blue.)

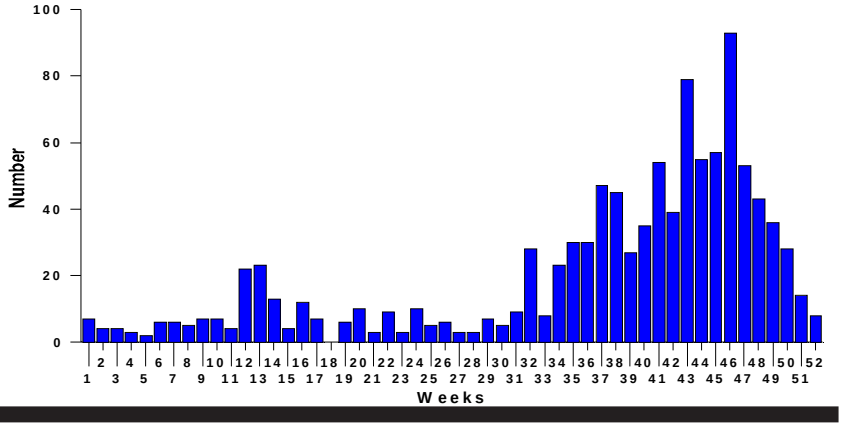


Figure 2: Seasonal rubella distribution, South Africa, 2005

ACUTE FLACCID PARALYSIS (AFP) SURVEILLANCE, SOUTHERN AFRICA, 2005

Jo McAnerney, Epidemiology Unit, NICD

AFP surveillance is a critical component of the global polio eradication campaign In keeping with this WHO lead programme, AFP was made a notifiable condition in South Africa in April 1994. The WHO definition of AFP cases to be notified to the Department of Health is as follows:- Any case of acute flaccid paralysis including Guillain-Barré syndrome, in a child less than 15 years of age, or a patient of any age diagnosed as polio by a medical doctor. All cases of AFP must be regarded as possibly polio until proven otherwise and therefore require two stool specimens of sufficient quantity collected at least 24 hours apart within 14 days after onset of paralysis, and sent to the National Institute for Communicable Diseases for polio identification. During 2003, at a detection rate of one case of AFP per 100 000 children younger than 15 years of age, 157 cases needed to be identified.

The NICD also serves as national isolation laboratory for six other Southern African countries i.e. Angola, Botswana, Lesotho, Mozambique, Namibia, and Swaziland.

During the year 1 501 stool specimens were received from patients with AFP of which 953 were from patients outside South Africa, and 548 from South African cases, 8 of whom had onset of paralysis prior to 2005. (Figure 1)

SOUTH AFRICAN CASES

Case detection rate (only patients from whom specimens were received included) ranged from 1.48 to 2.44 (mean=1.80). Of the 273 South African cases with onset of paralysis in 2005, one specimen only was received from 40 cases, and two or more specimens from 233. The date of onset of paralysis was known for 236 cases. Two specimens taken at least 24 hours apart and within 14 days of onset were received from 191/273 (69.96%) cases (range per province 33.33% to 90.91%)(Figure 2). Non-polio enteroviruses were isolated from 59 of the 540 specimens (non-polio isolation rate10.93%), and poliovirus, identified as Sabin type poliovirus from two specimens of one patient. The date of the last dose of OPV was unknown.

OTHER SOUTHERN AFRICAN COUNTRIES

Of the 953 specimens received from other African countries, 754 were from the six southern block countries served by the NICD, of which 54 were from patients with onset of paralysis prior to 2005. Of the 350 patients with onset of paralysis during 2005, two adequate specimens were received from 85.71% of cases (range per country 62.50% to 90.27%) (Figure 3). Non-polio enteroviruses were isolated from 154/754 specimens with a non-polio enterovirus isolation rate of 20.42% (range per country 11.43% to 23.81%). Poliovirus was isolated from 47 specimens, 19 of which were identified as wild type polio 1 and the remainder as Sabin strains. All the wild type isolates were from patients in Angola i.e.10 patients and one contact. The date of paralysis onset for the first case was 25 April, and for the last 13 November and cases originated from 7 different districts in 4 provinces (Figure 4).

Figure 1: Stool specimens from AFP cases received by NICD, 2005

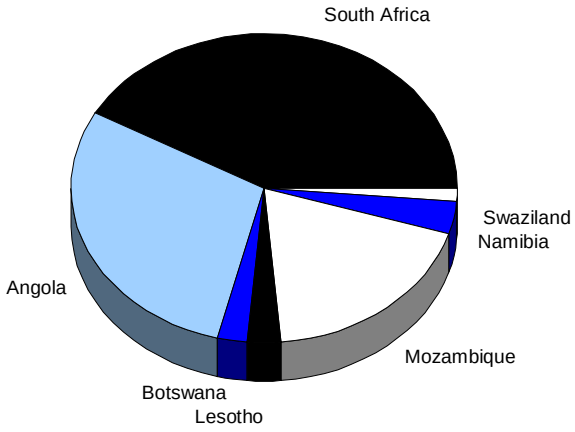
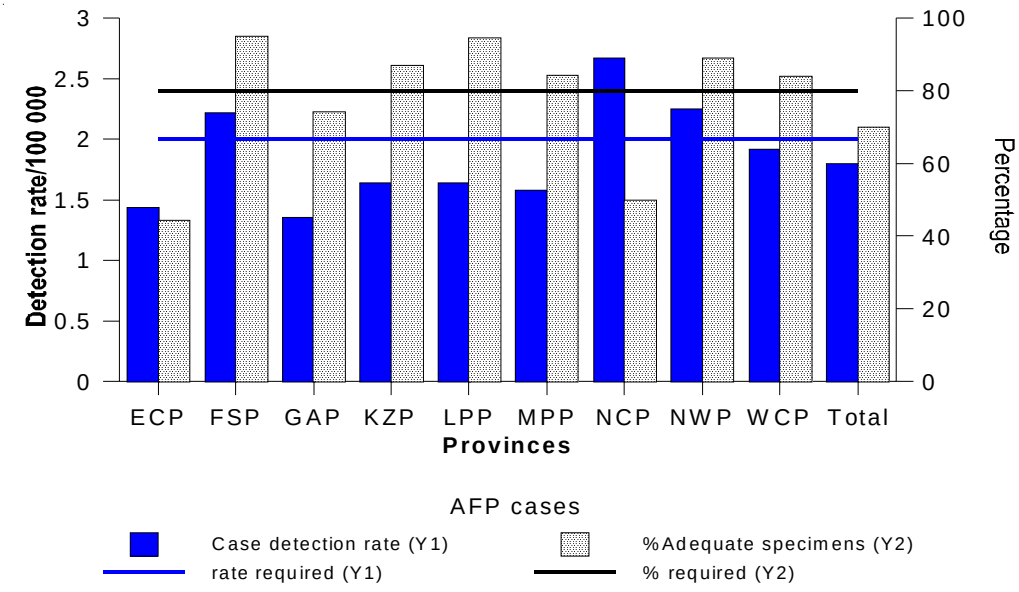


Figure 2: AFP case detection and stool adequacy rate, South Africa, 2005



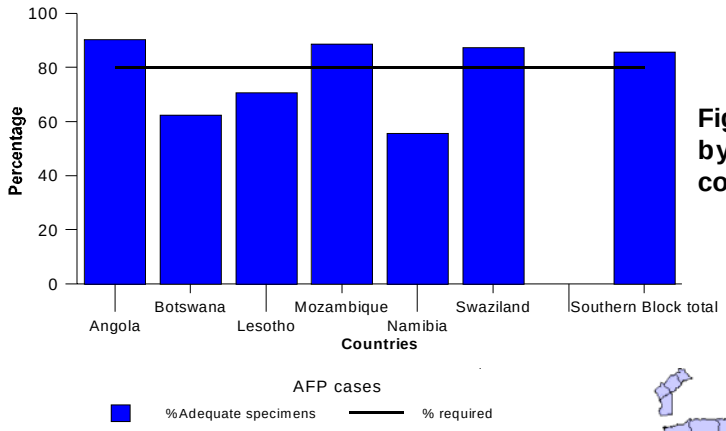


Figure 3: AFP stool specimens received by the NICD from other African countries, 2005

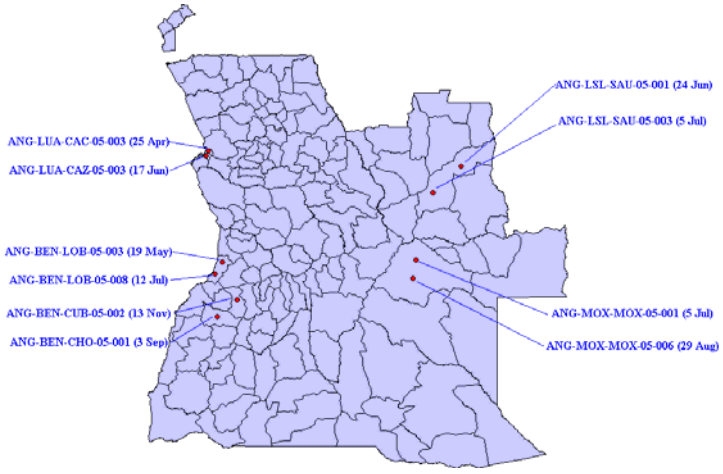


Figure 4: Distribution of polio cases, Angola, 2005

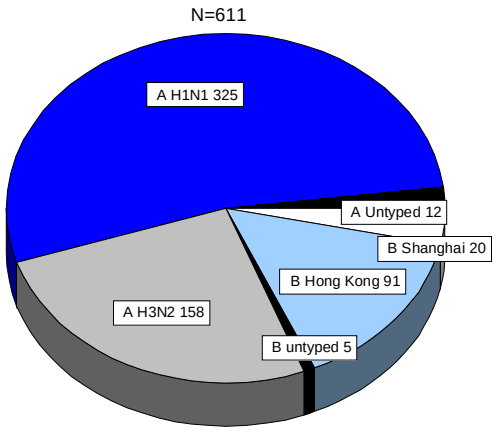
RESPIRATORY VIRUS SURVEILLANCE, 2005

Jo McAnerney, Epidemiology Unit, NICD

During 2005 a total of 1 609 specimens were received for detection of respiratory virus. Of these 1 360 (84.5%) were received from the Viral Watch programme, started in 1984 to monitor influenza activity in the community and detect the type of influenza strains prevalent. The number of centres was increased substantially during 2005, bringing the total to 85 mainly general medical practitioners at 65 centres. Throat swabs are submitted from these centres throughout the year from patients with respiratory tract infections of recent onset i.e. within 48 - 72 hours, and without obvious bacterial cause, and transported to the NICD in viral transport medium for isolation of virus.

A total of 581 influenza isolates were made, of which 554 (95.4%) were from the Viral Watch. The isolates were further identified as 405 influenza A of which A H1N1 (A/NewCaledonia/20/99-like) accounted for the majority, and 116 influenza B, mainly B/Hong Kong/330/01-like (Figure 1).

Figure 1: Influenza virus isolates, NICD, 2005



The first influenza isolate of the season was made from a specimen collected on 20 April and the last from a specimen collected on 29 September (Figure 2). In addition 30 influenza isolates were made from specimens submitted from the Seychelles.

A further 79 respiratory virus isolations were made during the year including 22 respiratory syncytial virus, 23 parainfluenza virus (8 type 1, 5 type 2, 10 type 3), and 11 adenovirus. The majority of these were made from routine specimens.

A small number of the Viral Watch centres also submitted respiratory infection morbidity data that showed an increase from week 19, peaking during week 23 and declining gradually thereafter (Figure 3).

Figure 2: Seasonal variation in viral types, NICD, South Africa, 2005

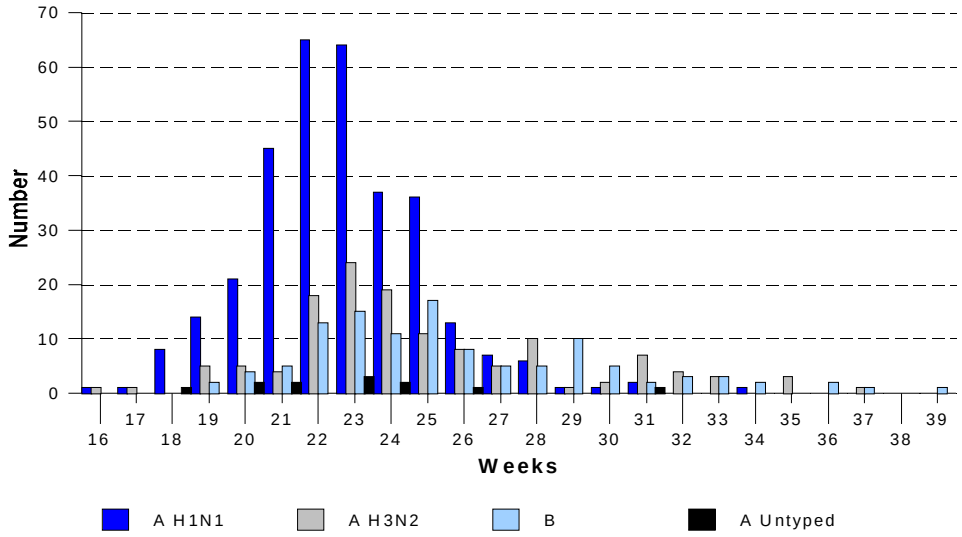
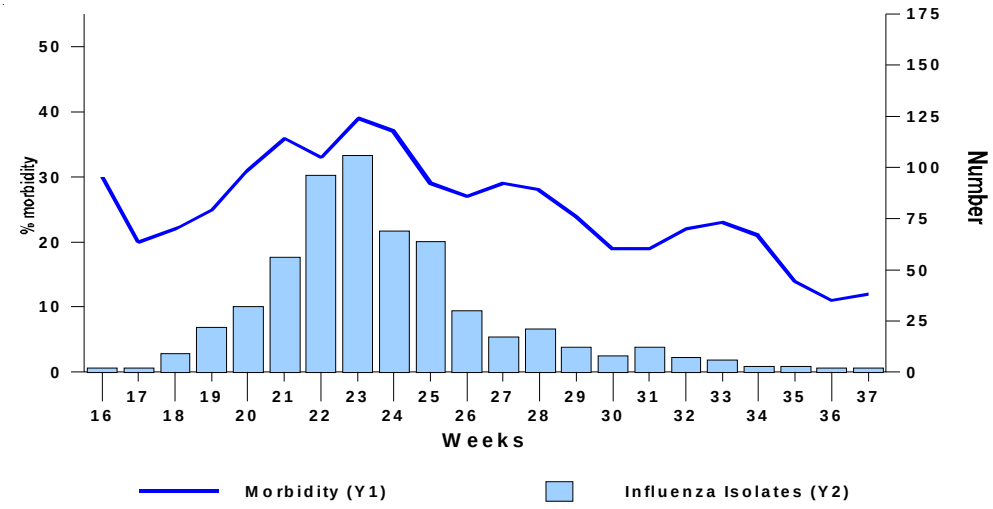


Figure 3: Influenza isolates and respiratory infection morbidity, Viral Watch, South Africa, 2005



AFRICAN TRYPANOSOMIASIS IN 2005

Lucille Blumberg, Special Pathogens Unit, NICD; John Frean, Parasitology Reference Unit, NICD

A 60-year-old farmer from the Kariba area in Zimbabwe presented with fever and headache whilst visiting South Africa and trypanosomiasis was confirmed on a peripheral smear submitted for suspected malaria. The disease was complicated by severe thrombocytopenia and probable myocarditis and despite a rapid diagnosis and early institution of suramin treatment, the patient died. A British soldier acquired the disease in Malawi during field exercises. He presented within a week of the tsetse fly bite with fever, a trypanosomal chancre and multi-organ failure, but responded well to suramin and had no evidence of CNS involvement. A third patient was probably also infected in Malawi. He presented with fever and drowsiness and was investigated as probable malaria. He had a trypanosomal chancre on his foot. Suramin treatment was effective, and although early CSF results were slightly abnormal, it was decided to withhold melarsoprol and follow up with serial lumbar punctures.

East African (Rhodesian-type) trypanosomiasis, caused by the tsetse fly-transmitted prototozoan parasite *Trypanosoma brucei rhodesiense*, is an acute disease that may progress rapidly to serious complications (acute pancarditis, ARDS, CNS invasion) and a fatal outcome if not rapidly diagnosed and correctly treated. This is in contrast with the West African or Gambian form of the disease, which has a much more chronic clinical course. In the last 5 years there has been resurgence in cases of East African trypanosomiasis in tourists, including at least 10 South Africans, some of whom died of the disease.

VIRAL HAEMORRHAGIC FEVERS (VHF) AND RABIES

Felicity Burt, Lucille Blumberg, Janusz Paweska, SPU, NICD

Two cases of Crimean-Congo haemorrhagic fever (CCHF) were confirmed in southern Africa during 2005 (Table 1). In a farmer from Namibia, there was evidence that the infection resulted from a tick bite and the patient survived. A farm worker in the Western Cape became ill after slaughtering a cow and subsequently died. There is no specific treatment for CCHF infections; although there is some evidence that ribavirin can improve the prognosis if administered before day 5 after onset of illness.

A total of 178 cases of CCHF have been diagnosed in southern Africa from the time that the presence of the disease was first recognised in 1981 up until the end of 2005, including 17 in Namibia, one in DRC, one in Tanzania, and 159 cases in South Africa. Marginally the largest group of cases, 78/178 (43,8%), arose from known tick bite or the squashing of ticks; a similar number, 72/178 (40.4%), arose from known or potential contact with fresh blood or other tissues of livestock and/or ticks; 7/178 (3.9%) nosocomial infections arose from contact with blood or fomites of known CCHF patients, while in 21/178 (11.8%) cases there was no direct evidence of contact with livestock or ticks, but the patients lived in or visited a rural environment where such contact was possible.

Most patients were employed in the livestock industry, and males constitute 149/178 (83.7%) of all cases of the disease diagnosed to date. The case fatality rate fluctuated around 30% in the first few years when CCHF was initially recognised in southern Africa, but gradually declined to an overall rate of 19.9% (29/146) for a period of 1981-1998, most likely as a result of increased awareness leading to earlier recognition and institution of appropriate supportive therapy. However, the case fatality rate markedly increased to 63.3% (19/31) for a period of 1999-2005. One possibility is that there is a decline in awareness of the disease among clinicians resulting inthe disease among clinicians, resulting in delayed diagnosis of cases.

RABIES

Eight cases of human rabies were confirmed by the SPU during 2005 (Table 2). The number of rabies cases confirmed was still low compared to the number of cases observed prior to 1997. The majority of patients contracted rabies from contact with rabid dogs in KwaZulu-Natal (KZ) or the Eastern Cape (EC). In one case the patient was bitten by a caracal in the Free State (FS) and did not receive any post exposure prophylaxis (PEP). Two patients from KZ had no history of receiving PEP. It was not possible to determine if the patient from Sterkspruit received PEP. The remaining patients had a history of incomplete PEP with vaccine but with no documented record of rabies anti-immunoglobulin.

Table 1: Confirmed cases of Crimean-Congo haemorrhagic fever virus infection in Southern Africa, January to December 2005

Location of exposure	Month	Age/Sex	Virus isolation	PCR	Antibody*	Died/ Survived	*Source of infection*
Rehoboth, Namibia	Mar	48M	Not done	Neg.	Pos.	Survived	Tick bite
Riversdale, Western Cape	Sep	44M	Neg.	Pos.	Pos.	Died	Slaughtered cow

* Demonstration of IgM and/or IgG antibody.

Table 2: Confirmed cases of rabies, South Africa, 2005

Name	Age/ sex	District of exposure	Exposure: bitten by	Admitted hospital	Died	Final hospital
PR	12 f	Jagersfontein, Free State	Caracal Aug 04	21 Jan	22 Jan	Pelonomi
MK	20m	Sterkspruit, Eastern Cape	Dog 20 Dec	31 Jan	3 Feb	Lady Grey
SN	12 m	Ngqamakwe, Eastern Cape	Dog 9 June	27 June	28 June	Died on way to Cecilia Makawane
LS	12 m	Ngqamakhwe, Eastern Cape	Dog 9 June	28 June	11 July	Cecilia Makawane
ST	8	Umzimkulu, Eastern Cape	Dog 28 Aug		17 Sept	Died at home
MS	4 m	Mathuhini, KZN	Dog Aug	3 Nov	4 Nov	Port Shepstone
CM	12 f	Kwabangibizo, KZN	unknown	14 Nov	15 Nov	Port Shepstone
RJ	9 m	Namibia	Dog 12 May		June	RS Hospital