



health

Department:  
Health  
REPUBLIC OF SOUTH AFRICA



## STATISTICAL NOTES

MARCH 2009

Welcome to this edition of Statistical Notes

### 1. MENINGITIS

#### 1.1. Background

Bacterial meningitis is a major cause of death and disability in children world wide >1000 000 cases and 200 000 deaths are estimated to occur each year<sup>2</sup>. Twelve subtypes or serogroups of *N. meningitidis* have been identified and four (*N. meningitidis* A, B, C and W135) are recognized to cause epidemics<sup>3</sup>. The pathogenicity, immunogenicity, and epidemic capabilities differ according to the serogroup.

An epidemic of Group A meningococcal meningitis has been ongoing in various countries especially to the north of South Africa, particularly in Mozambique. In South Africa, sporadic cases of meningitis occur annually and the distribution of meningococcal serogroups has been fairly even between groups A, B and C in South Africa.. The group A strains have been typed by the World Health Organization Meningococcal Reference Center and represent a unique South African clone. This epidemic clone was discovered for the first time in South Africa in 1997<sup>1</sup>.

## 1.2. Description

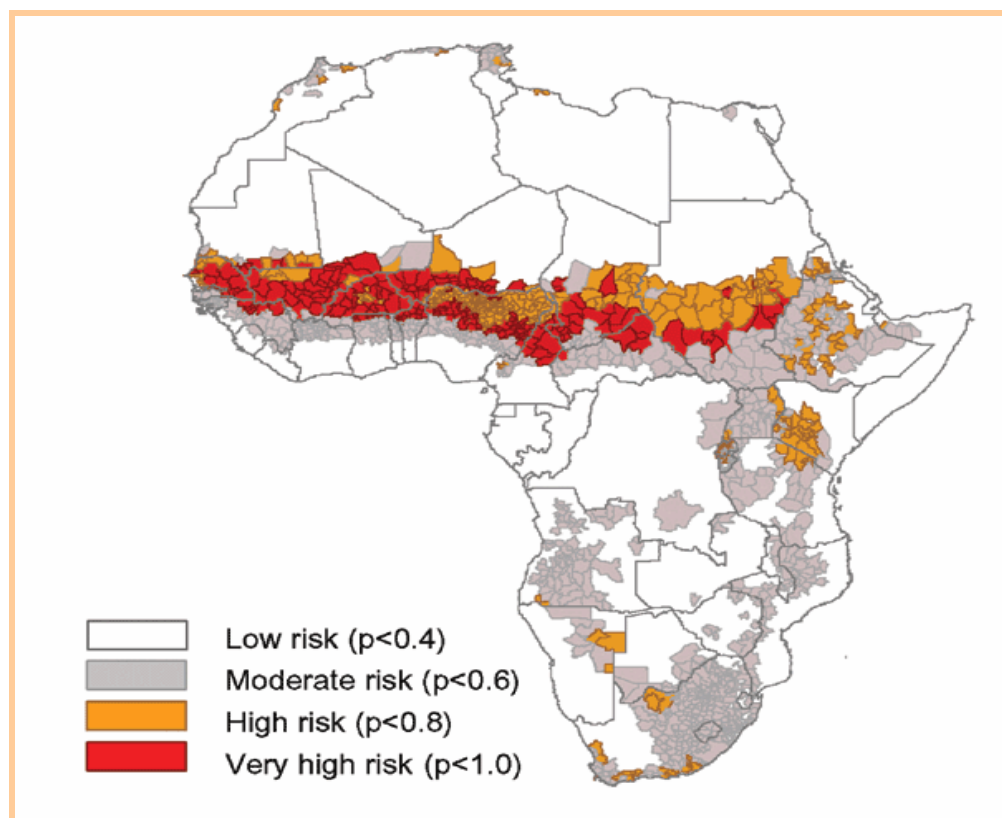
Meningitis is described as being inflammation of the meninges, the membranes surrounding the brain and the spinal cord and can be caused by either bacterial or viral infection. The bacterial meningitis is uncommon but life threatening condition, while viral is less common with generally less serious consequences. The most important cause of bacterial meningitis are meningococcal meningitis caused by the bacterium *Nisseria meningitides*, pneumococcal meningitis, caused by the bacterium *streptococcus pneumoniae* and *Haemophilus influenza* type b (Hib) meningitis, however there are many types<sup>4</sup>. The bacteria which cause meningococcal and pneumococcal meningitis are very common and live naturally in the back of the nose or throat. They can be spread by prolonged close contact and by coughing, sneezing and kissing.

Viral meningitis can be caused by many different viruses, the commonest being Coxsackie and echovirus (enteroviruses). Coxsackie viruses can be found in the intestines, and therefore in faeces and sewage-polluted water. Viral meningitis can also develop as a result of infection with herpes simplex, influenza, measles, polio or chicken pox. The most at risk are children under five, teenagers and young adults (14-25 age group), older people (over 55 years) and people with certain chronic illnesses.

## 1.3 Environmental risk and meningitis Epidemic epidemics in Africa

According to the environmental risk and Centre for Disease Prevention and control (CDC) health information for international travel report, epidemics of meningitis occur worldwide, large epidemics are attributed to predominantly group A meningococci. Although factors predisposing populations to meningitis epidemics are not very clear, population susceptibility, introduction of new strains, poor living conditions and concurrent infections have all been implicated. Epidemics occur throughout Africa in the dry season; these epidemics coincide with periods of very low humidity and dusty conditions and disappear with the onset of the rains, suggesting that these environmental factors may play an important role in the occurrence of the disease. Evidence suggests that the epidemics largely occur in a semi-arid zone, with

300-1100 mm mean annual rainfall, while epidemics have rarely reported from the humid forested or coastal regions (figure 1), even when neighboring areas are severely affected<sup>5</sup>.



**Figure 1: Distribution of meningococcal meningitis in districts where epidemics are likely to occur in African countries**

Source: CDC-Environmental Risk and meningitis Epidemics in Africa

#### 1.4 Diagnosis

The diagnosis of *meningococcal meningitis* is suspected by the clinical presentation and a lumbar puncture showing a purulent spinal fluid; sometimes the bacteria can be seen in microscopic examinations of the spinal fluid. The diagnosis is confirmed by growing the bacteria from specimens of the spinal fluid or the blood. More specialized laboratory tests are needed for the identification of the serogroups as well as for

testing susceptibility to antibiotics. In addition, scan of the brain, X-ray of the skull, sinus or chest may also be done.

### 1.5 Distribution of meningococcal cases in South Africa

According to the National Institute for Communicable Diseases (NICD) annual report , sporadic cases of meningococcal disease continue to be reported across the country, in keeping with trends in previous years. A total of 108 laboratory-confirmed cases were reported to the Respiratory and Meningeal Pathogens Reference Unit NICD (Table 1 below) in the period -----of 2008 and 2009. Gauteng Province reported greatest number of cases in the period 2008 and 2009.

**Table 1: Number of meningococcal cases reported in the Provinces, South Africa, 2008 and 2009**

Province	2008	2009
Eastern Cape	6	8
Free State	6	3
Gauteng	58	51
KwaZulu-Natal	3	12
Limpopo	*	*
Mpumalanga	10	7
Northern Cape	2	2
North West	1	3
Western Cape	17	22
<b>South Africa</b>	<b>103</b>	<b>108</b>

Source: National Institute for Communicable Diseases

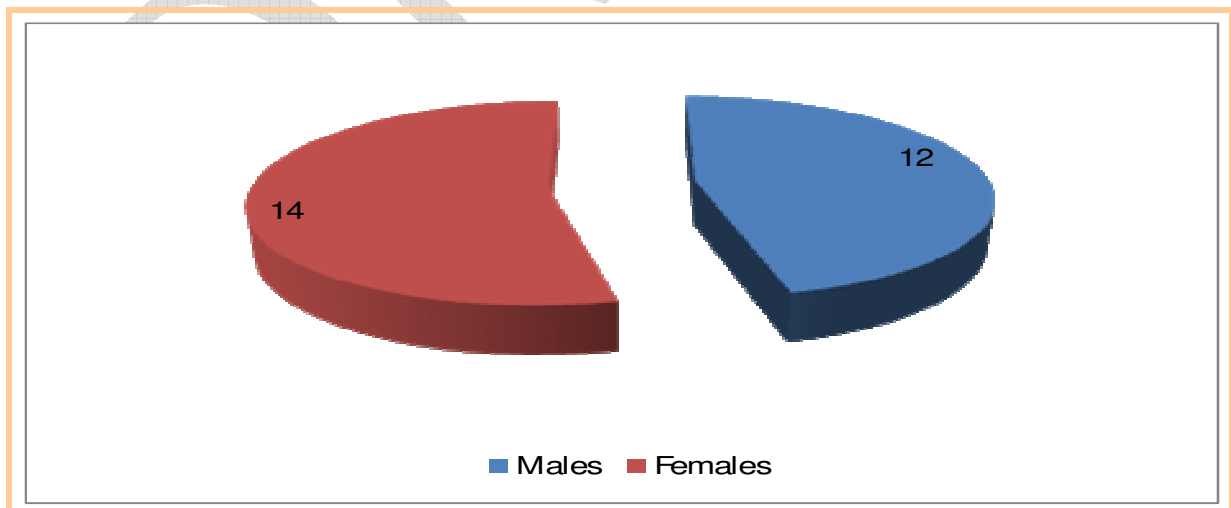
## 2. SPORADIC CASES OF MENINGITIS GAUTENG PROVINCE, JANUARY TO MARCH 2009

Sporadic cases of meningococcal meningitis were reported during the month of February 2009 at the National Department of Health. The first report was a death of a learner 15 year old from one of the secondary schools in the Johannesburg area. This report was later followed by several reports of suspected and confirmed cases around the neighboring vicinities.

The analysis of data from 04 January to 25 March 2009 revealed that twenty six (26) cases and four (4) deaths (case fatality rate was 15%) of Meningitis were reported in Gauteng during the period under review. The Gauteng Province routinely expects 10-20 laboratory confirmed meningococcal cases per month during summer months, and this increases to 30-50 cases per month during the winter months. Following the pattern of cases reported during the same period in the previous years, Gauteng Province was not experiencing an outbreak during the period under review.

### 2.1. Distribution of cases by gender and age

The age distribution ranged from 1 to 42 years. Of the total cases reported, 12 were males and 14 were females (Figure 2). Where is the age distribution graph



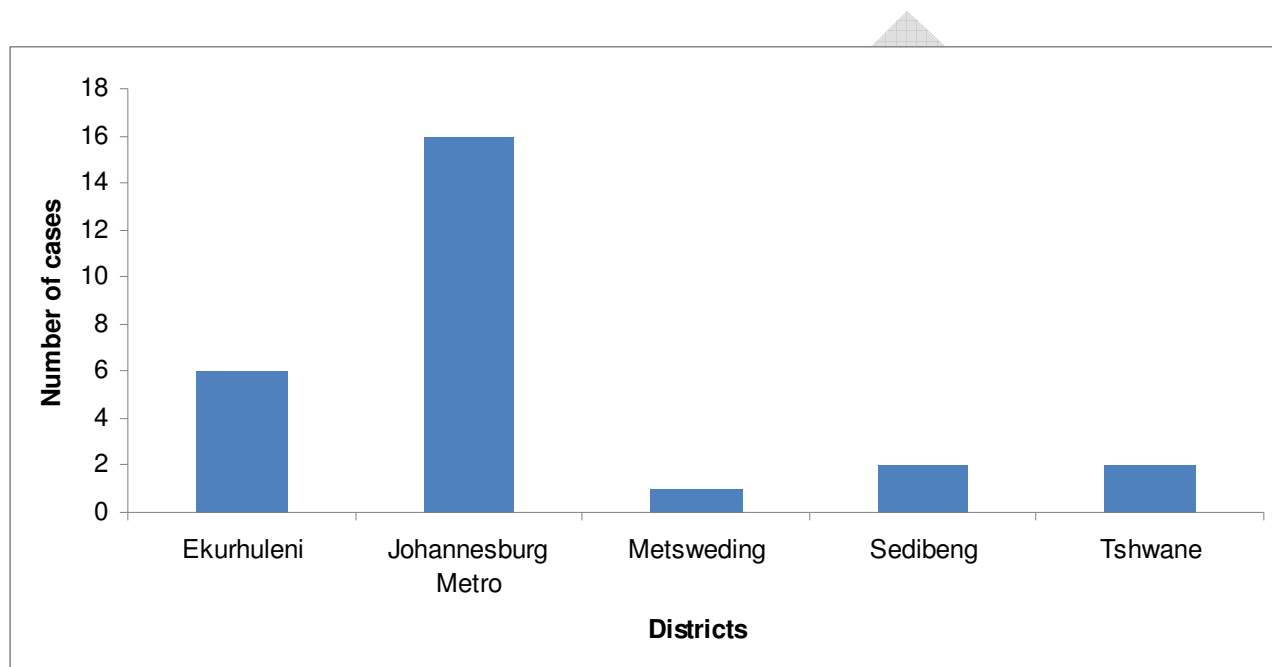
**Figure 2: Total number of Meningitis cases by gender reported in Gauteng province, South Africa, January – March 2009.**

Source: Gauteng Department of Health

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## 2.2. Distribution of cases by districts

Most cases were recorded in the City of Johannesburg district (59%), followed by Ekurhuleni district with 22%. Metsweding district recorded the lowest number of cases (Figure 3).

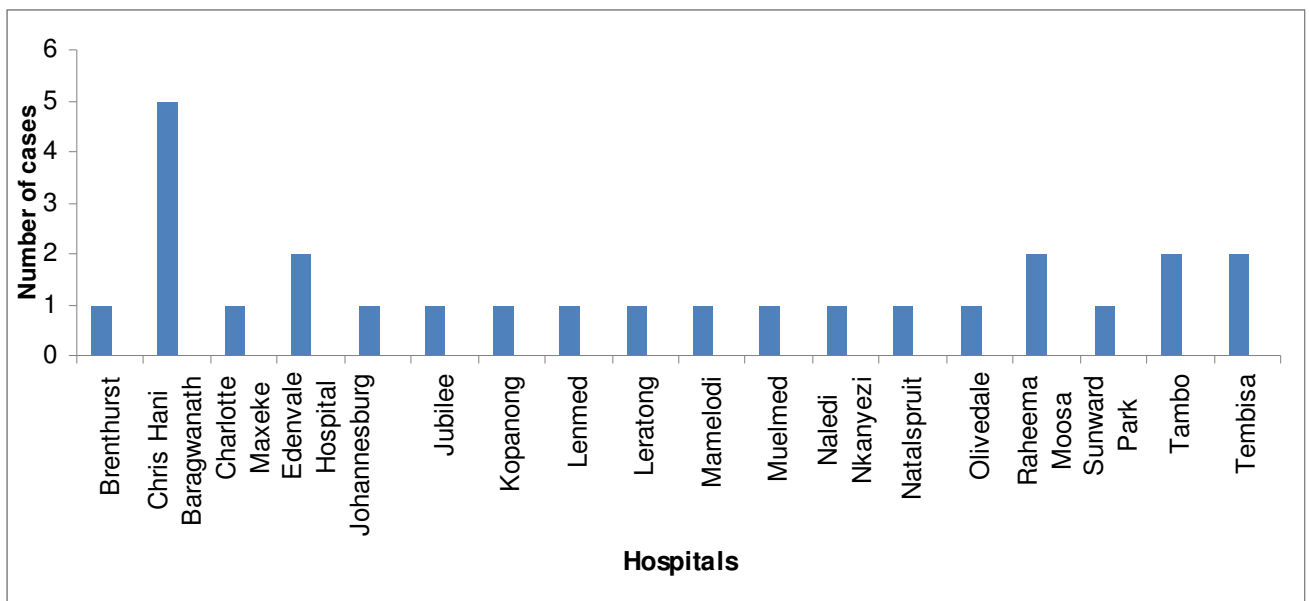


**Figure 3: The number of Meningitis cases reported in the districts of Gauteng, South Africa, January – March 2009.**

Source: Gauteng Department of Health

## 2.3. Distribution of cases by health facility

Chris Hani Baragwanath Hospital reported the highest cases (n=5), followed by Edenvale, Raheema Moosa, Tambo and Tembisa hospitals with 2 cases each, (Figure 4).



**Figure 4: The number of Meningitis cases reported in the hospitals of Gauteng province, South Africa, January – March 2009.**

Source: Gauteng Department of Health

### 3. CONCLUSION

- Meningococcal disease is viewed as medical emergency and rapid empiric treatment, ceftriaxone should be given to all suspected cases.
- All suspected cases should be notified immediately by telephone to the local/district Health Department to allow rapid follow up of close contacts and to facilitate provision of chemoprophylaxis. Clinical suspicion is sufficient for notification.
- Close contacts include: household contacts, people living in the same house and or sharing eating utensils with the case and persons exposed to nasopharyngeal secretions of the patient.
- An increase in the number of meningococcal disease is typically seen during the winter season. A high index of suspicion for meningococcal disease, which may present with non-specific early signs and symptoms, has to therefore be maintained.

### 3. References

1. Emerging infectious Diseases South Africa, Keith P. Klugman. Volume 4 number 4, 1998.
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3. <http://www.who.int/mediacentre/factsheets/fs141/en/>
4. Meningitis, 2009, ([http://www.health24.com/medical/Condition\\_centres/777-792-824-1855,13738.asp](http://www.health24.com/medical/Condition_centres/777-792-824-1855,13738.asp))
5. Environmental risk and meningitis epidemics in Africa, Anna M. Molesworth, Luis E. Cuevas, Stephen J. Connor et. Al
6. Meningococcal disease update, NICD publications, Respiratory and Meningeal Pathogens Reference Unit; and Outbreak Response Unit. [www.nicd.ac.za](http://www.nicd.ac.za)