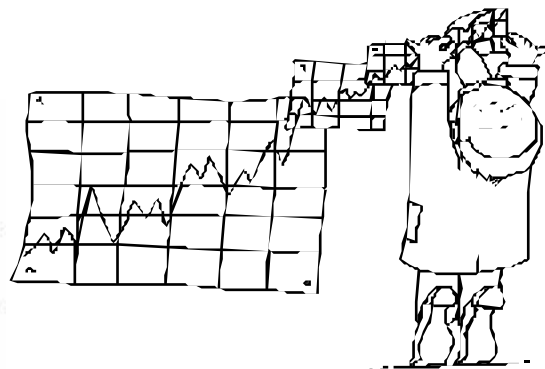




health

Department:
Health
REPUBLIC OF SOUTH AFRICA



STATISTICAL NOTES

March 2008

Welcome to this edition of Statistical Notes!

THE PREVALANCE AND DISTRIBUTION OF MALARIA IN SOUTH AFRICA

1.1 INTRODUCTION

Malaria is one of the main leading causes of death and disease in many developing countries, where children under 5 years and pregnant women are mostly affected¹.

Historically in South Africa malaria was a major cause of mortality and morbidity claiming thousands of lives and causing major economic losses particularly in Mpumalanga and Northern KwaZulu -Natal. Today malaria is mostly confined to the low attitude border areas of Limpopo, Mpumalanga and the North East of KwaZulu-Natal provinces. These malaria endemic areas form the South Eastern extremity of the tropical and subtropical malaria belt of Africa adjoining neighbouring endemic areas in Mozambique, Swaziland and Zimbabwe. Occasionally limited focal transmission may develop in the North West and Northern Cape provinces adjacent to Molopo and Orange rivers².

1.2. Malaria life cycle

Malaria is a vector-borne disease transmitted by the *Anopheles* mosquito, caused by parasitic protozoa of the genus *Plasmodium*, with man as primary host and mosquito as a secondary host³. Sporozoites in mosquito salivary glands are injected while feeding and migrate to the liver, staying in the blood circulation for about 30 minutes. The sporozoites

are taken up by the Kupffer cells in the liver into the hepatocyte and develop into schizont, releasing 1000s of merozoites into the general circulation. Merozoites mature and release new merozoites responsible for recurrent infections, possibly for life, if not specifically treated. Hepatic merozoites invade red blood cells (RBC) and develop into blood schizonts. These schizonts rupture the RBC realizing more merozoites. Gametocytes which are responsible for transmission of parasite develop in the RBC cycle. In the mosquito the male and female gametocytes develop into gametes and fuse in the stomach of the mosquito to form zygote. The Zygote develops into a mobile ookinete which migrates through the stomach to form oocyst which matures and releases sporozoites which migrate to the salivary glands for delivery with the next blood meal ⁴.

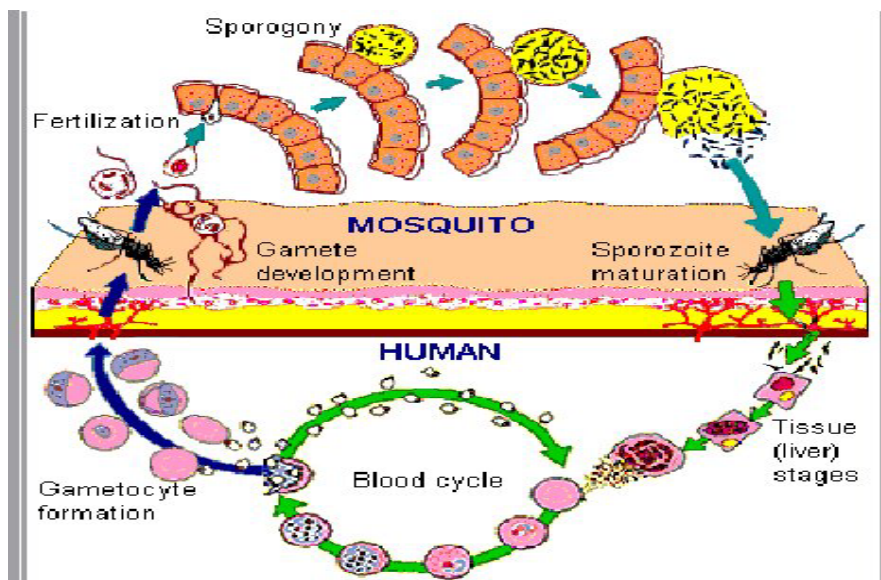


Figure 1: Life cycle of *Plasmodium vivax*

1.3 Transmission and clinical presentation

The period between the mosquito bite and the onset of the malarial illness is usually one to three weeks (7 to 21 days). The primary symptoms are high fever, accompanied by rigors, severe headaches, vomiting, epigastric tenderness, enlargement of spleen, abnormal discomfort, diarrhoea, and dehydration⁵. There are four types of malaria

causative agent that belongs to genus Plasmodium and are *P. malaria*, *P. vivax*, *P. ovale* and *P. falciparum*. *Plasmodium falciparum* is the most common type in South Africa.

2. MALARIA NOTIFICATION IN SOUTH AFRICA, 1999 to 2007

2.1 Annual malaria trends

A total of 209, 602 malaria cases and 1,497 deaths were reported from 1999 till 2007, accounting for an overall case fatality rate of 0.7%. The number of cases has been declining drastically over the years. The highest number of cases (61 934) was reported in 2000, with KwaZulu-Natal being the hardest hit province (Figure 2).

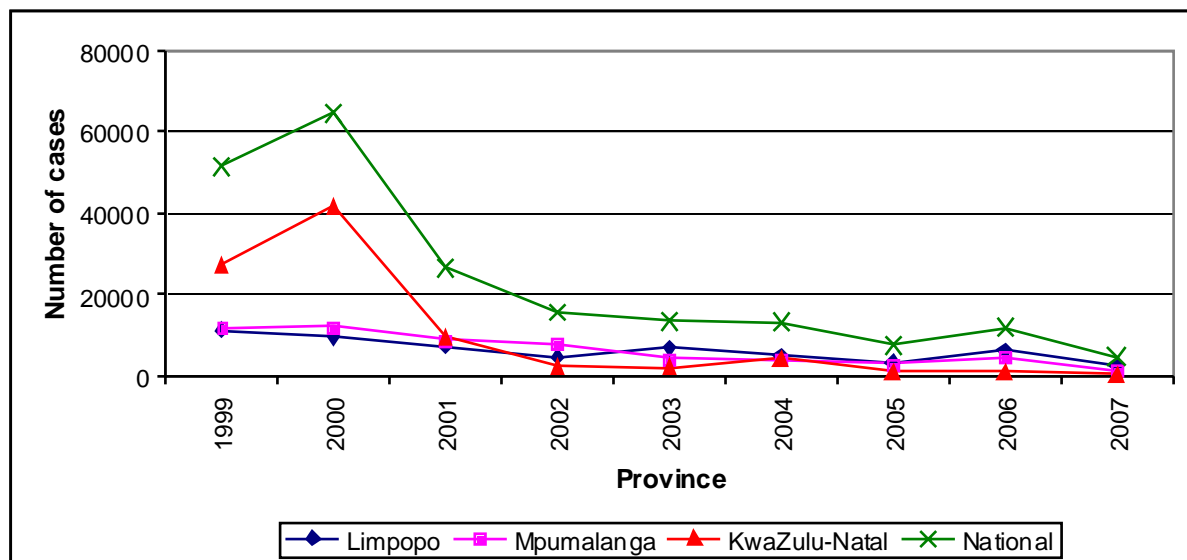


Figure 2: Distribution of cases in Malaria endemic Provinces and in South Africa, 1999-2007

Source: Epidemiology and Surveillance Directorate and Communicable Disease Control Directorate

2.2 National malaria cases by month, 1999 to 2007

The transmission of malaria in South Africa occurs in distinct seasons and periodic epidemics that are regional and localized in their extent. These epidemics are frequently triggered by climate anomalies. Figure 3 shows the number of malaria cases by month for the period 1999 to 2007. Cases start to increase in September peak in January and

March and decreased towards May to the end of August. These peaks correlate with the rainy summer season and increased mosquito breeding sites⁶.

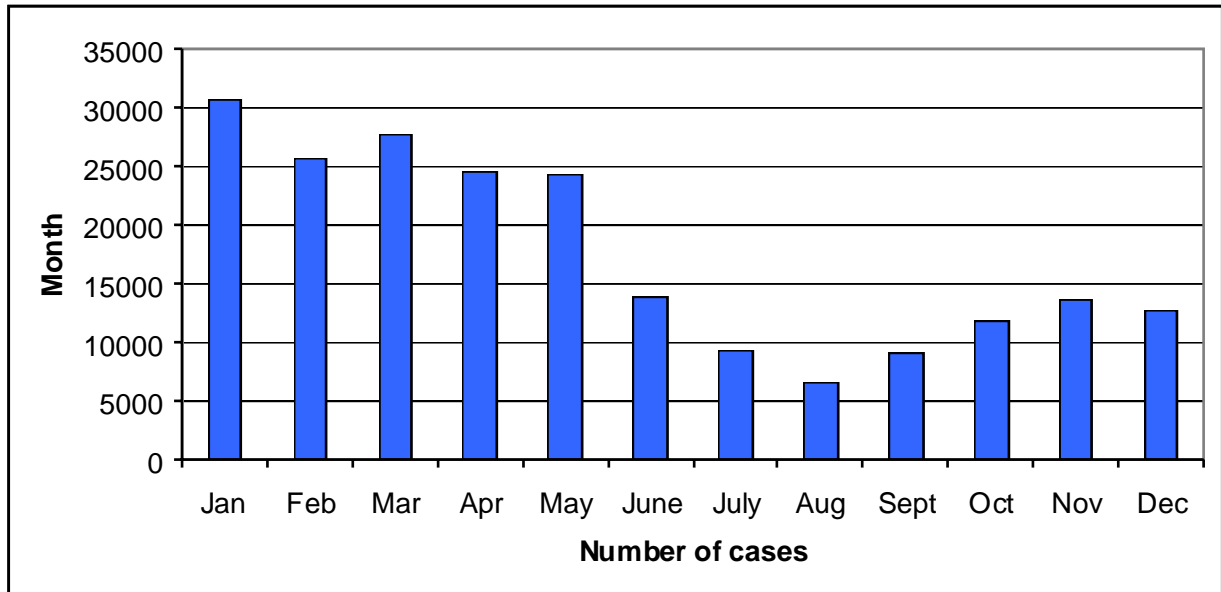


Figure 3: Overall number of malaria cases for the period 1999-2007 by month, South Africa

Source: Epidemiology and Surveillance Directorate and Communicable Disease Control Directorate

2.3 Malaria case fatality rate, 1999 to 2007

One of the main objectives of the malaria control programme is prevention of premature deaths due to malaria. Despite extensive measures to prevent malaria deaths, a number of deaths are still notified every year. The country has not been able to maintain its case fatality target of 0.5%. The case fatality rates have ranged between 0.1 and 1.4% in the last nine years, some provinces fairing less well than others (Figure 4).

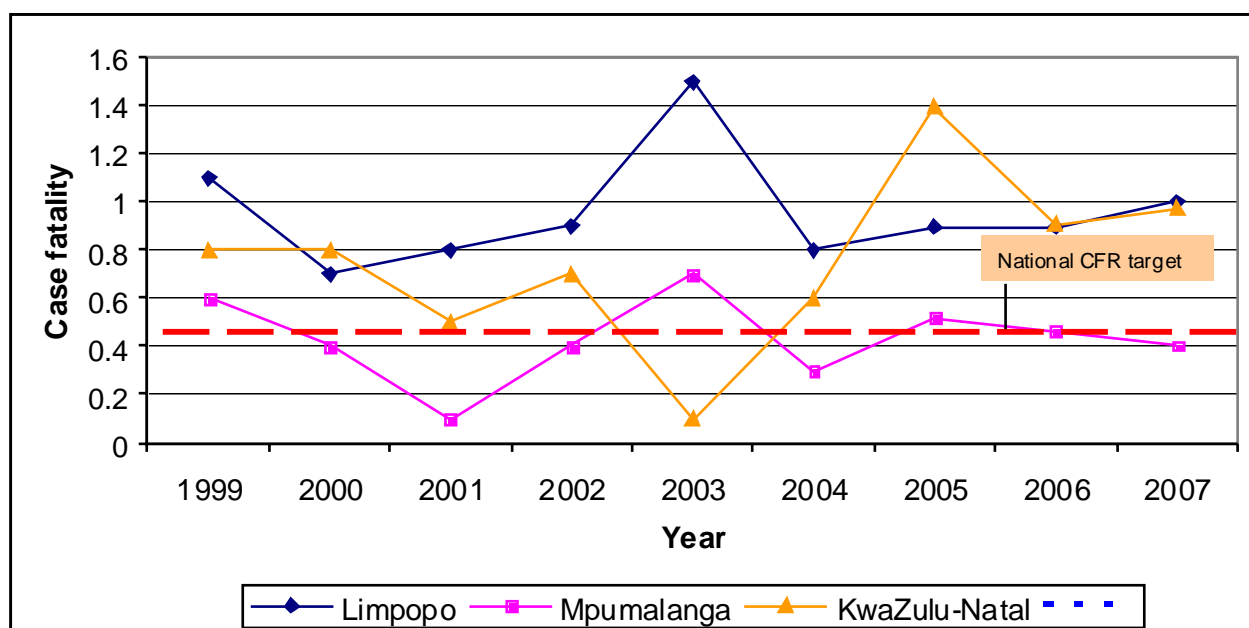


Figure 4: Case fatality rates in malaria endemic areas of South Africa (1999-2007)

Source: Epidemiology and Surveillance Directorate and Communicable Disease Control Directorate

3. SUMMARY OF MALARIA NOTIFICATIONS IN SOUTH AFRICA, JANUARY TO DECEMBER 2007

3.1 Prevalence and mortality of malaria between January and December 2007

A total of 6,615 malaria cases and 60 deaths were reported to the National Department of Health: Epidemiology and Surveillance Directorate in the year 2007. Limpopo Province accounted for majority (44%) of the cases followed by Mpumalanga (33%) followed with (Table 1 and Figure 5). No malaria cases were reported in Eastern Cape, Northern Cape and Western Cape. One of the most important indicators for evaluating the overall impact of malaria in the country is malaria case fatality rate (CFR). The national case fatality rate of reported for 2007 was 0.9%, a rate above the set target of 0.5%.

Table 1: Malaria cases reported by province in 2007, South Africa

Province	No. of Cases	No. of Deaths	Case Fatality Rate
Eastern Cape	0	0	0
Free State	41	0	0
Gauteng	910	3	0.3
KwaZulu-Natal	585	5	0.9
Limpopo	2 898	34	1.1
Mpumalanga	2 154	17	0.7
North West	27	1	3.7
Northern Cape	0	0	0
Western Cape	0	0	0
TOTAL	6 615	60	0.9

Source: Epidemiology and Surveillance Directorate and Communicable Disease Control Directorate

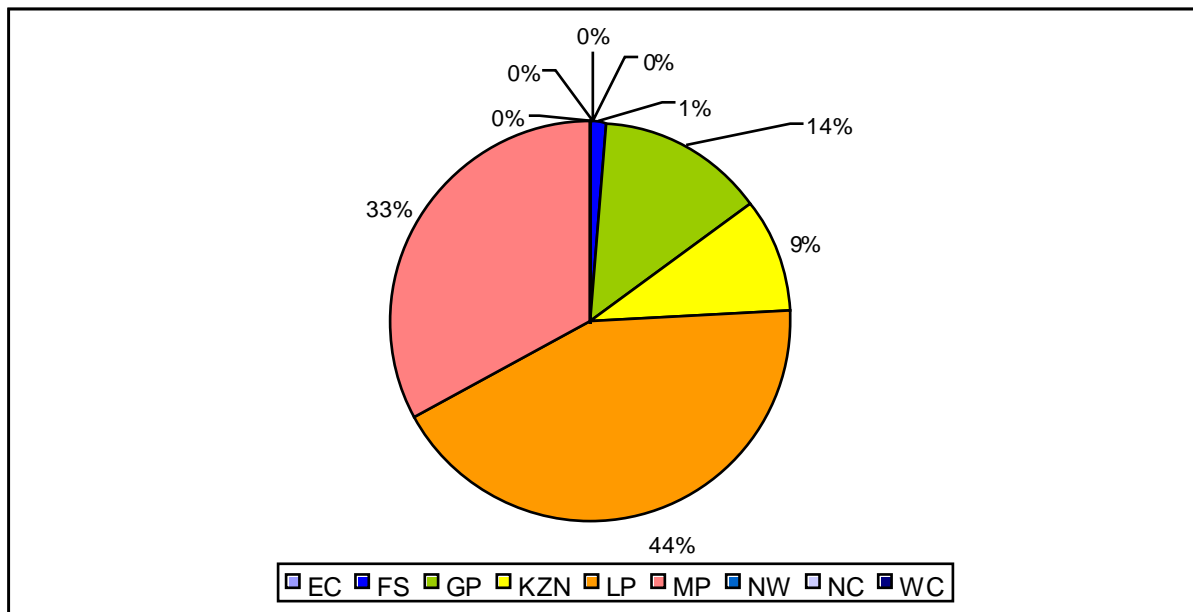


Figure 5: Proportion of malaria cases by province, South Africa, 2007

Source: Epidemiology and Surveillance Directorate and Communicable Disease Control Directorate

3.2 Prevalence of malaria by age-group, January and December 2007

Malaria cases peaked in the age group 15-24 years in the year 2007. The age group 1-4, 45-54 and >55 years had least malaria cases of 9%, 8% and 7% respectively (Figure 6).

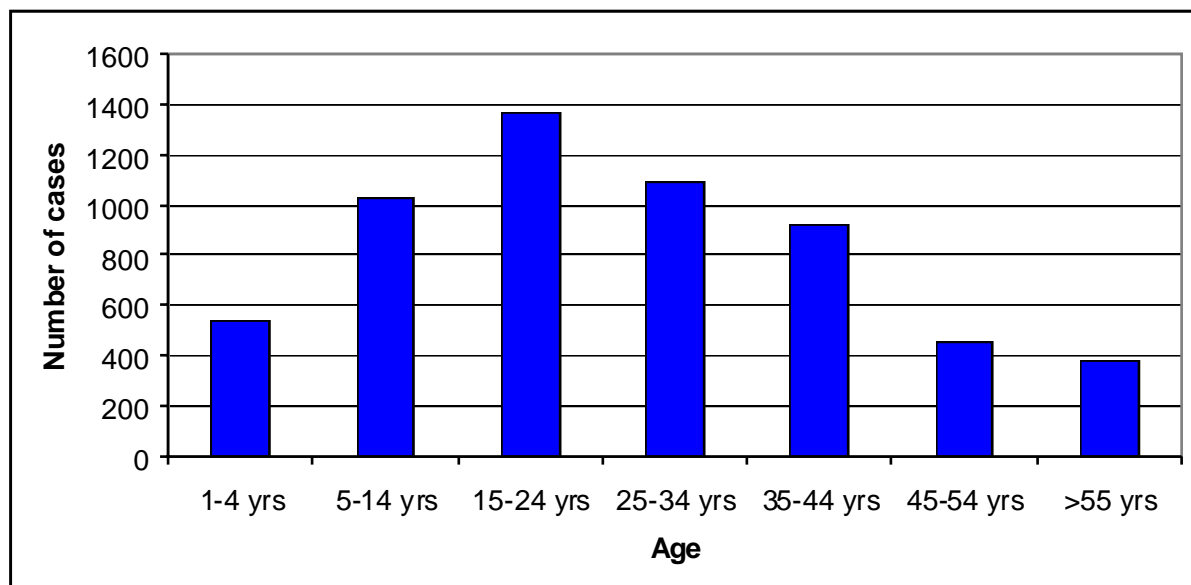


Figure 6: Reported malaria cases by age-group, South Africa, 2007

Source: Epidemiology and Surveillance Directorate and Communicable Disease Control Directorate

4. Conclusions

Malaria in South Africa is primarily a border and a population movement problem, as can be seen from the persistence of malaria in the KwaZulu-Natal, Limpopo and Mpumalanga border areas in the face of intense local malaria control. South Africa incidence data revealed that the malaria remains at an unacceptable high level in the northern most regions in KwaZulu-Natal bordering Mozambique and Swaziland (Figure 7). It is therefore acknowledged that inroads into controlling malaria can only be achieved through inter-country collaboration and that malaria could no longer be viewed as a country specific problem but should be seen as a regional problem.



Figure 7: Malaria risk areas in South Africa and SADC Regions

8. References

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