



SARAWAK STATE HEALTH DEPARTMENT EPIDEMIOLOGICAL NEWS

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Malaria deaths in Sarawak from 1996 to 2006

A total of 60 deaths due to malaria occurred in the state from 1996 to 2006. After 1998, the number of deaths steadily increased and seemed to level off from 2002 until 2006 with 6 to 8 deaths per year.

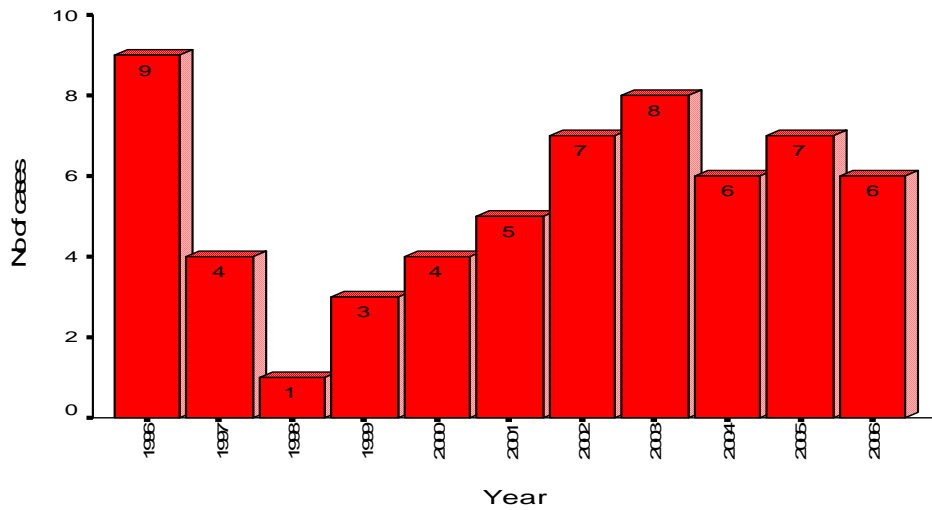


Figure 1. Number of malaria deaths in Sarawak from 1996 to 2006

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The crude mortality rate (CMR) for malaria remained below 1 per 100,000 populations each year. In 1998, the CMR dipped below 0.1 per 100,000 populations but steadily increased in the following years but remained below 0.5 per 100,000 populations.

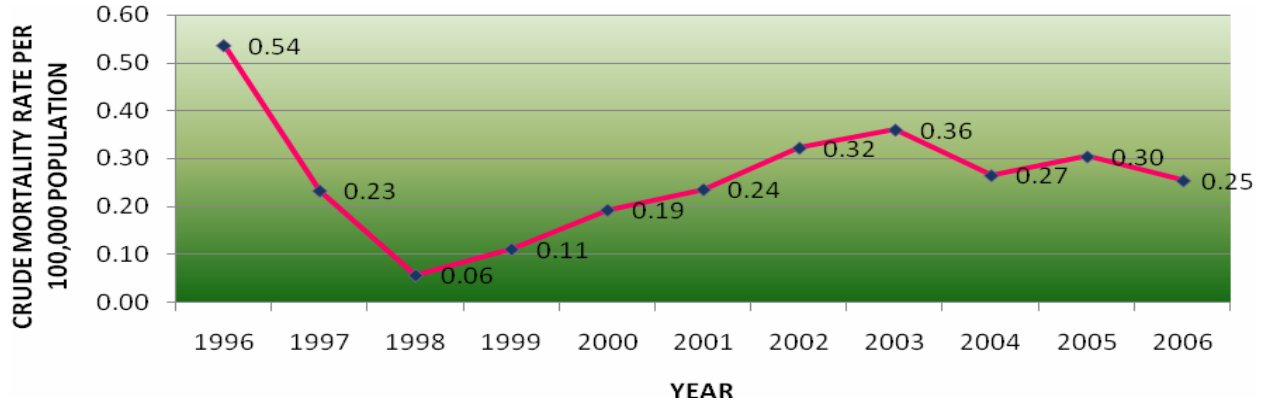


Figure 2. Crude mortality rate of malaria in Sarawak from 1996 to 2006

Linking mortality to morbidity due to malaria is shown in Figure 3 below. It can be seen that the case fatality rate (CFR) increased steadily since 1998 until 2006. In 1998 the CFR was 0.04 deaths per 100 cases of malaria which steadily increase annually until 2006 where there was a 0.42 death per 100 cases of malaria which almost reached the 1996's CFR.

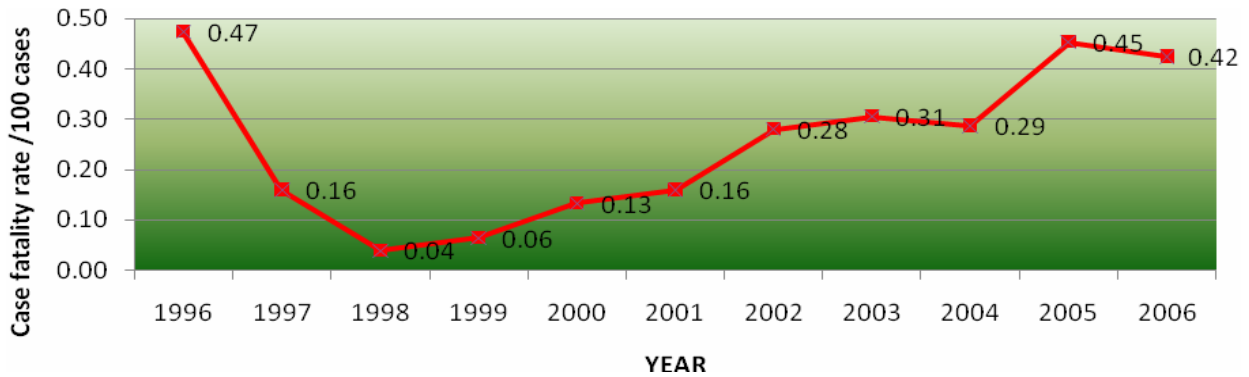


Figure 3. Case fatality rate for malaria from 1996 to 2006

Majority of deaths in the state from 1996 to 2006 were classified as indigenous cases while other categories of sources of infection contributed a much smaller number to the total deaths (Figure 4).

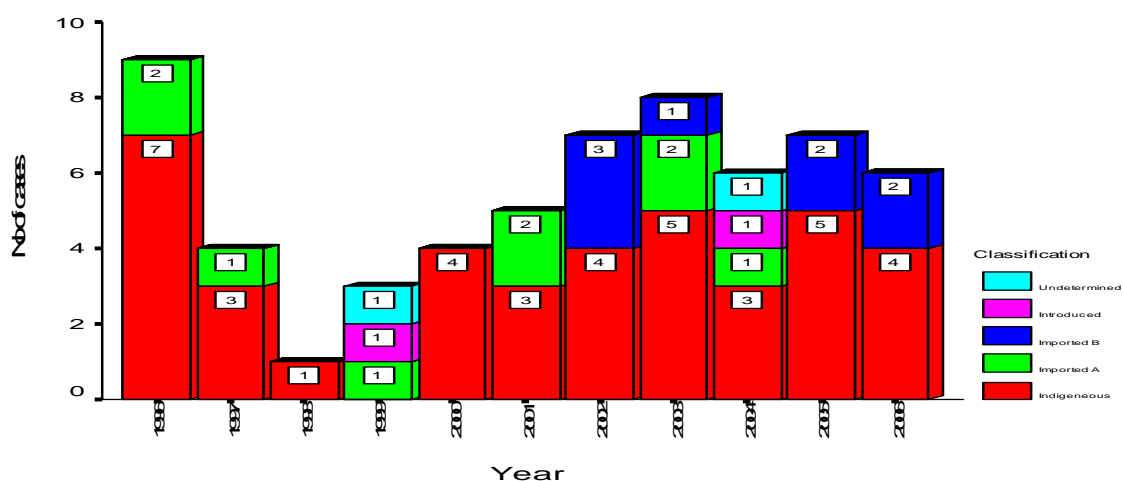


Figure 4. Proportion of malaria deaths according to classification of sources of infection from 1996 to 2006.

Three divisions that reported total number of more than 10 deaths from 1996 to 2006 were Kuching, Samarahan and Sri Aman (Table 1). With an exception of Limbang which recorded nil malaria deaths since 1996, other divisions recorded 5 or less malaria deaths within the period.

Table 1. Distribution of malaria deaths according to division from 1996 to 2006

| Year | Betong | Bintulu | Kapit | Kuching | Miri | Mukah | Samarahan | Sarikei | Sibu | Sri Aman |
|--------------|----------|----------|----------|-----------|----------|----------|-----------|----------|----------|-----------|
| 1996 | 0 | 0 | 0 | 3 | 1 | 1 | 2 | 0 | 1 | 1 |
| 1997 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |
| 1998 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1999 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 2000 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 |
| 2001 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 0 | 0 |
| 2002 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 3 |
| 2003 | 2 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 2 |
| 2004 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 2 |
| 2005 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| 2006 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 1 | 0 |
| Total | 2 | 3 | 2 | 11 | 5 | 3 | 14 | 5 | 4 | 11 |

Note: Limbang division recorded nil number of malaria deaths from 1996 to 2006.

Plasmodium falciparum was the major causative species in causing malaria deaths. In later years, it can be seen that other species such as Plasmodia malariae and vivax causing deaths albeit in smaller number than those caused by P.falciparum. Plasmodium knowlesi had been reported in three deaths in 2005.

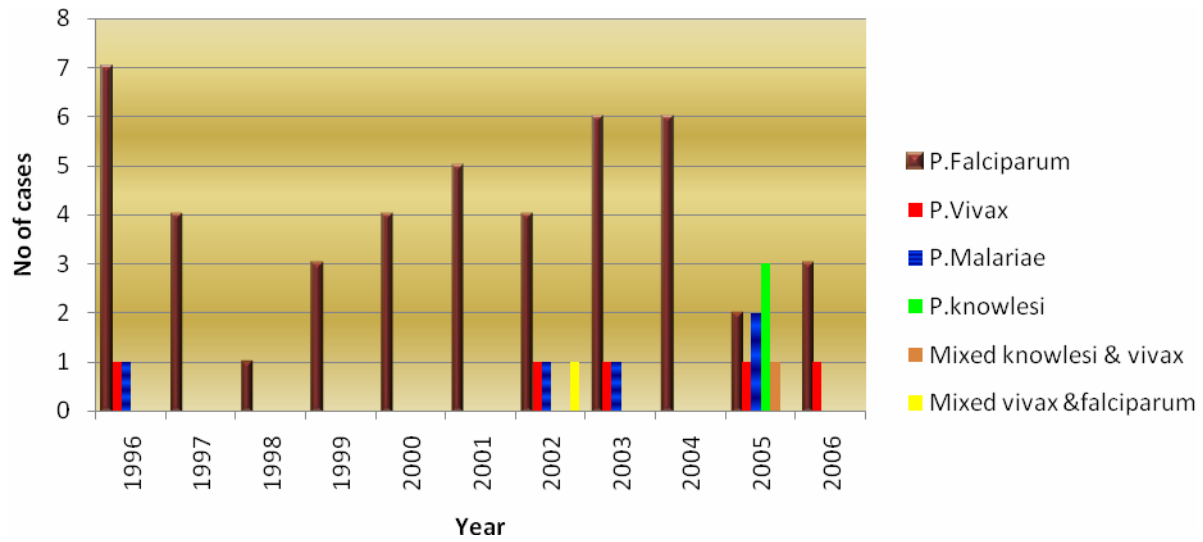


Figure 5. Proportion of causative Plasmodium species in malaria deaths in Sarawak from 1996 to 2006.

| DISTRICTS | AIDS | Cholera | Dengue Fever | Dengue H. Fever | Dysentery | Food Poisoning | Gonorrhoea | Hand, Foot & Mouth | Leprosy | Malaria | Whooping Cough | Measles | Syphilis, Congenital | Syphilis (All Forms) | Tuberculosis (All forms) | Typhoid & Paratyphoid Fever | Typhus, Scrub | Hepatitis A | Hepatitis B | Hepatitis C | Other Hepatitis | Viral Encephalitis | TOTAL |
|--------------|----------|----------|--------------|-----------------|-----------|----------------|------------|--------------------|----------|-----------|----------------|----------|----------------------|----------------------|--------------------------|-----------------------------|---------------|-------------|-------------|-------------|-----------------|--------------------|------------|
| Lundu | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Bau | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 2 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| Kuching | 0 | 0 | 30 | 0 | 1 | 9 | 14 | 121 | 0 | 4 | 0 | 1 | 0 | 5 | 24 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 213 |
| Samarahan | 0 | 0 | 1 | 0 | 0 | 50 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 65 |
| Serian | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 10 | 0 | 2 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 |
| Simunjan | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| Sri Aman | 0 | 0 | 1 | 0 | 3 | 0 | 1 | 42 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 53 |
| L/ Antu | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 |
| Betong | 0 | 0 | 8 | 0 | 0 | 8 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 |
| Saratok | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 10 |
| Sarikei | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Julau/Pakan | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 8/0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| Meradong | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Daro | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Sibu/S'gau | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 28 | 0 | 9 | 0 | 0 | 0 | 0 | 16/7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 73 |
| Kanowit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Mukah | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Dalat | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Kapit | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 28 | 0 | 10 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 47 |
| Song | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Belaga | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 19 |
| Bintulu | 0 | 0 | 6 | 0 | 1 | 0 | 9 | 53 | 0 | 3 | 0 | 0 | 1 | 2 | 9 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 85 |
| Tatau | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Miri | 5 | 0 | 1 | 0 | 0 | 0 | 2 | 35 | 0 | 2 | 0 | 0 | 0 | 4 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 74 |
| Marudi | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 13 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 21 |
| Limbang | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| Lawas | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 15 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 |
| TOTAL | 5 | 0 | 75 | 0 | 11 | 69 | 28 | 419 | 0 | 62 | 0 | 2 | 1 | 14 | 177 | 2 | 0 | 0 | 5 | 1 | 1 | 2 | 874 |

| ICD CODE | DISEASES | Median 2002-2006 | Month Ending | | Cumulative Total | |
|-----------------|----------------------------------|---------------------|--------------|------------|------------------|------|
| | | | 31/07/2006 | 31/07/2007 | 2006(Annual) | 2007 |
| B20 - B24 | HIV/AIDS (Death) | 3 | 1 | 5 | 114/69(1)(20) | 11 |
| A57 | Chancroid | 0 | 0 | 0 | 0 | 0 |
| A00.9 | Cholera | 0 | 0 | 0 | 0 | 0 |
| A90 | Dengue Fever | 83 | 76 | 75 | 1799 | 1190 |
| A91 | Dengue Haemorrhagic Fever | 4 | 0 | 0 | 22 | 22 |
| A36.0-A36.9 | Diphtheria | 0 | 0 | 0 | 0 | 0 |
| A06.0,A09 | Dysentery All Types | 10 | 9 | 11 | 86 | 85 |
| A05,T61-T62 | Food Poisoning | 111 | 6 | 69 | 187 | 424 |
| A54.0-A54.9 | Gonococcal Infections(All Forms) | 43 | 31 | 28 | 383 | 234 |
| A54.3 | Ophthalmia Neonatorum | 0 | 0 | 0 | 0 | 0 |
| A30.9 | Leprosy | 0 | 0 | 0 | 16 | 5 |
| B54 | Malaria | 115 | 78 | 62 | 1371 | 404 |
| B05 | Measles | 23 | 7 | 2 | 182 | 60 |
| A20 | Plague | 0 | 0 | 0 | 0 | 0 |
| A80.9 | Poliomyelitis, acute | 0 | 0 | 0 | 0 | 0 |
| A82 | Rabies | 0 | 0 | 0 | 0 | 0 |
| A68 | Relapsing Fever | 0 | 0 | 0 | 0 | 0 |
| A50 | Congenital Syphilis | 0 | 0 | 1 | 0 | 2 |
| A51-A53 | Syphilis(All forms) | 37 | 26 | 14 | 296 | 176 |
| A33 | Tetanus Neonatorum | 0 | 0 | 0 | 2 | 0 |
| A35 | Tetanus (adults) | 0 | 0 | 0 | 2 | 2 |
| A16-A19 | Tuberculosis(All forms) | 136 | 113 | 177 | 1632 | 857 |
| A01 | Typhoid and Paratyphoid fevers | 1 | 1 | 2 | 14 | 17 |
| A75 | Typhus, epidemic | 0 | 0 | 0 | 0 | 0 |
| A75.2 | Typhus, flea-borne | 0 | 0 | 0 | 8 | 0 |
| A75.3 | Typhus, scrub | 0 | 0 | 0 | 0 | 3 |
| A83,A84,A85,A86 | Viral Encephalitis | 2 | 4 | 2 | 35 | 14 |
| B15.0-B15.9 | Viral Hepatitis A | 1 | 0 | 0 | 2 | 0 |
| B16.0 - B 16.9 | Viral Hepatitis B | 3 | 3 | 5 | 34 | 61 |
| B 18.2 | Viral Hepatitis C | 0 | 0 | 2 | 5 | 25 |
| B19.0 - B19.9 | Viral Hepatitis (unspecified) | 0 | 0 | 0 | 1 | 3 |
| A37 | Whooping cough | 0 | 0 | 0 | 8 | 0 |
| A95 | Yellow Fever | 0 | 0 | 0 | 0 | 0 |

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