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RBM Complex Emergency Malaria Data Base

THE DEMOCRATIC REPUBLIC OF THE CONGO (DRC)

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RBM Complex Emergencies Technical Support Network

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SUMMARY

The complex emergency	Ongoing conflict from 1996 to 1998 contributed to the instability of the country.
Refugees	There is a complex pattern of refugee movement from and into DRC, due to conflicts in neighbouring countries. DRC is currently host to 360,000 refugees, from countries including Angola, Burundi, the Central African Republic, and Sudan. In 2001, refugees fled from south-eastern DRC into Zambia, many of which remain.
Internally displaced People (IDPs)	Since the early 1990s millions of people have been displaced within the borders of DRC with the highest numbers in the provinces of Katanga, North Kivu, Orientale, and South Kivu. Currently there are estimated to be more than 2,000,000 internally displaced people.
The malaria situation	
Epidemiological characteristics	Malaria is endemic in most of DRC, with levels ranging from hypo to holo-endemic.
Environment and transmission	In most areas of the country, transmission peaks during the rainy season. In areas north of the Equator the rainy season runs from April to October, and the dry season from December to February. Whereas, south of the Equator, the rainy season is from November to March and the dry season from April to October.
Vectors	The main vectors are *Anopheles gambiae* s.s and *An. funestus,* with secondary vectors being *An. Moucheti* and *An.nili*. In a few areas, however, *An. Paludis* is an important vector.
Plasmodium species	*Plasmodium falciparum* 95%, *P.malariae* and *P.ovale* 5%
Drug sensitivity	*Plasmodium falciparum in vivo* resistance to chloroquine widespread (treatment failure > 25% in standardised tests 2000-1); resistance developing for sulphadoxine-pyramethamine (treatment failure ≤25% in standardised tests 2001)
% OPD attendance due to malaria	Reports vary (e.g. 70% South Kivu), data unreliable
% admissions due to malaria	Estimated 30%
% deaths due to malaria	Estimated 25-30% childhood mortality
Potential for epidemics	Climatic change in highland fringe areas of eastern DRC. Movement of non-immune populations (refugees and IDPs) to endemic areas

High risk groups	Pregnant women and children; non-immune populations moving to endemic areas.
Control measures used	Case management through the MOH has broken down or been reduced in many areas of DRC. Health delivery activities have been reinforced jointly by International NGOs and faith based organizations (since 1972). Since early 1990's, ITN programmes have been initiated in several locations throughout the country.
Health services	
National Malaria Control Programme	The WHO/MOH National Malaria Control Programme is being strengthened, with initial activities based in Kinshasa.
Access	Access to health facilities has been severely reduced by insecurity, reduced economic capacity, and poor infrastructure. There is also a significant lack of trained health personnel.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF MAPS

ACRONYMS

An. arabiensis	*Anopheles arabiensis*
An. funestus	*Anopheles funestus*
An. moucheti	*Anopheles moucheti*
An. nili	*Anopheles nili*
An. paludis	*Anopheles paludis*
DDT	Dichlorodiphenyltrichlorethane
DRC	Democratic Republic of the Congo
EPI	Expanded Programme on Immunisation
GDP	Gross Domestic Product
ICRC	International Committee of the Red Cross
IDP	Internally Displaced People
IMR	Infant Mortality Rate
ITN	Insecticide Treated Mosquito Net
MARA	Mapping Malaria Risk in Africa
MEDS	Mission for Essential Drugs and Supplies
MMR	Maternal Mortality Ratio
MOH	Ministry of Health
NGO	Non-Governmental Organisation
OPD	Out Patients Department
P. falciparum	*Plasmodium falciparum*
P. malariae	*Plasmodium malariae*
P.ovale	*Plasmodium ovale*
RAF	Rwandan Armed Forces (ex-Far)
RBM	Roll Back Malaria
S-P	Sulphadoxine-pyrimethamine
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
USCR	United States Commission for Refugees
WHO	World Health Organization

THE DEMOCRATIC REPUBLIC OF THE CONGO (DRC)

Link to Map 1: General position of DRC*

The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations

1. SOCIO-POLITICAL BACKGROUND

1.1 Basic Indicators

Table 1: Basic indicators of the population [1,2,3]

Total population (2001 est)	53, 624, 718
Average annual growth rate (2001 est)	3.1 %
Age distribution <15 years	48 %
Infant Mortality Rate IMR *per 1,000* (1978)	117
Infant Mortality Rate IMR *per 1,000* (2001)	128
Maternal Mortality Ratio *per 100,000* (1990)	870 [4]
Adult literacy rate *>15 years can read and write* (1995)	
Male	87 %
Female	68 %
Urban population *% of total population* (1997)	2.7[5]

[1,2,3] The World Health Report 2001 www.who.int/whr
UNICEF: The state of the World's Children www. unicef.org/statis
CIA Government Factbook www.cia.gov/cia/publications/factbook.
[4] This has approximately doubled by 2001 according to the WHO
[5] Current estimates are greater than 10%
* CIA Government Factbook www.cia.gov/cia/publications/factbook.

1.2 Economic situation [3]

The country has great potential wealth, with considerable mineral resources including gold, cobalt, coltan and diamond deposits. However, since the mid-1980s, the economy has been in decline. The conflict, particularly the rebellion in the eastern part of the country since 1998, has greatly curtailed foreign investment. The economy is in unstable, with inflation estimated at 540%[6] and no unified monetary system.

1.3 Government type

Dictatorship; presumably undergoing a transition to representative government.

1.4 Legal system

Based on the Belgian civil law system and tribal law

1.5 Religion

Roman Catholic 50%, Protestant 20%, Kimbanguist (Christian prophetic movement based in DRC) 10%, Muslim 10%, others 10%

1.6 Ethnic groups

There are more than 200 African ethnic groups, the majority of which are Bantu. The four largest tribes constitute 45% of the population, they are Mongo, Luba, Kongo (which are all Bantu), and the Mangbetu-Azande (which is Hamitic).

1.7 Languages

French is the official language, others include Lingala, Kingwana (a dialect of Kiswahili), Kikongo, and Tshiluba

1.8 The complex emergency [6,7,8,9]

DRC is affected by both the war and uprisings within its own borders, and by similar instabilities in neighbouring countries. In the early 1990s inter-ethnic rivalry and political instability caused the displacement hundreds of thousands of people, mainly from the central and eastern regions of DRC. In April 1994, conflict in Rwanda resulted in large-scale population displacement. An estimated 233,000 refugees moved from Rwanda into Burundi, 1 million Rwanda fleeing to DRC and 500,000 fled to Tanzania.

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[6] UNHCR Democratic Republic of the Congo Update www.unhcr.org
[7] United nations website www.un.org/depts/dpko/monuc/monuc_body.htm

[8] Global IDP Database, Norwegian Refugee Council www.idpproject.org
[9] United States Commission for Refugees www.refugees.org/world/

In October 1996, following the outbreak of a new conflict in eastern provinces an estimated 600,000 refugees previously living in camps around Bukavu and Goma returned to their countries of origin (Rwanda and Burundi). An estimated 200,000 to 400,000 refugees fled, deeper into DRC and remain within DRC or in 3rd Countries.

Renewed conflict across every region of DRC resulted in further large population displacement and is ongoing.

2. REFUGEES AND INTERNALLY DISPLACED PERSONS (IDPs)

2.1 Refugees [6,7,8,9,10]

The situation in the Great Lakes region is complex: DRC has generated refugees who have left to many countries within the region, and has provided refuge to populations from many of the same countries. According to UNHCR data, DRC hosted the greatest number of refugees of all countries for the period January-September 2001 (48,588). By 30 September 2001, there were some 363,095 refugees in DRC Congo. At present, the numbers of internally displaced within DRC due to ongoing insecurity far exceed the number of refugees within DRC (see 2.2). In 2001, in addition to longstanding refugees from Burundi, Rwanda, Congo and Sudan, refugees fleeing fighting in Angola crossed the border into southern DRC (some 20000 between January and September); and from the Central African Republic into northern DRC (some 27000 between January and September). Ongoing fighting in south-eastern DRC saw refugees cross into neighbouring Zambia (some 13000 refugees between January and September). See Table 2 for summary data from 1998 and 1999. Ongoing conflict in DRC has prevented meaningful refugee returns and new refugee and IDP case loads have been reported through 2002.

Table 2: Refugees in, from and returning to DRC in 1998 and 1999 [10]

Refugees in Democratic Republic of Congo		
Country of origin	***No. at end of 1998***	***No. at end of 1999***
Angola	137,000	150,000
Burundi	20,000	19,200
Congo	15,000	11,800
Rwanda	35,000	33,000
Sudan	31,200	68,000
Uganda	2,000	3,200
Refugees from Democratic Republic of Congo		
Country of asylum	***No. at end of 1998***	***No. at end of 1999***
Angola	10,400	12,800
Burundi	23,100	20,800
Congo	300	12,400
Rwanda	32,000	33,000
Tanzania	58,300	98,500
Uganda	5,400	8,000
Zambia	12,200	38,400

[10] UNHCR www.unhcr.ch/statis/99oview/intro.htm

Returned refugees		
Country of asylum	***Returns in 1998***	***Returns in 1999***
Burundi	3,600	-
Central African Republic	**-**	**1300**
Uganda	9,500	-
Tanzania	52,700	-
Zambia	200	-

People have also sought refuge in European countries particularly Belgium and France.

DRC has been host to perhaps the largest recorded refugee crisis in recent history. In July 1994, an estimated 500,000 to 800,000 Rwandan refugees fled to the North Kivu region of DRC. This vast number of people arriving within such a short period of time completely overwhelmed not only local, but also global response capacity. During the first month after the influx, almost 50,000 refugees died (6 to 10% of the refugee population) [11], mainly due to diarrhoeal diseases. The death rates in DRC (34-54 deaths per 10,000 per day) were among the highest to be documented during recent refugee emergencies [12].

2.2 Internally Displaced Persons (IDPs)[8]

Over the years of conflict since the early 1990s there have been thousands upon thousands of people displaced within the borders of DRC. True numbers of IDPs at any point in time are very difficult to obtain, especially when people are dispersed, rather than in camps. Figures quoted are best estimates. Since 1998 there has been a steady increase in the number of displaced people, reaching more than 2,000,000 by the end of September 2001. (Table 3)

Table 3. Estimated numbers of IDPs by year[8]

Year	1996	1997	1998	1999	2001
No of IDPs	400,000	100,000	500,000	960,000	>2,000,000

Estimates of the numbers of IDPs per province for DRC as of October 2001 are given in Table 4. The main areas of displacement at this time were the provinces of South Kivu, Katanga, North Kivu and Equateur, each with more than 100,000 IDPs. Other provinces with several thousands of IDPs are Orientale, Kasai Oriental and Maniema. Population displacement continues due to ongoing hostilities between different ethnic groups.

[11] MMWR 1996 Feb9, Vol 45 No. 5 p104-107

[12] Goma epidemiology group (1995) Public health impact of Rwandan refugee crisis: what happened in Goma, Zaire, in July 1994? *The Lancet* 345, February 11, 339 - 344

Table 4: Estimated number of IDPs by affected area [8]

Area	July 1999	June 2000	December 2000	End September 2001
Katanga	150,000	250,000	305,000	415,000
Eastern Kasai	60,000	30,000	30,000	130,000 (including Western Kasai)
Equator	100,000	250,000	300,000	85,000
Kinshasa	NA	NA	NA	40,000
Maniema	20,000	110,000	137,000	160,000
North Kivu	160,000	287,000	640,000	760,000
Orientale	70,000	215,000	160,000	230,000
South Kivu	195,000	220,000	350,500	225,000
Western Kasai	NA	140,000	80,000	See Eastern Kasai

3. MALARIA SITUATION

3.1 Epidemiological

Malaria is endemic in DRC. Levels of endemicity vary, ranging from hypo to holo-endemic [13]. Transmission also varies greatly within different areas of Kinshasa. An entomological study conducted in 1993 found that in one rural area of Kinshasa, transmission was intense and perennial, whereas in one urban area transmission was almost interrupted at the end of the dry season[14]. In the urban areas nuisance biting of non-vectors was much higher than in the rural areas, which had higher levels of malaria transmission. Within the country transmission is predominantly continuous with seasonal fluctuations in intensity. Transmission is less intense in the mountainous east, although there are suggestions that transmission has increased in intensity over the last 10 years as in other highland areas in the region.

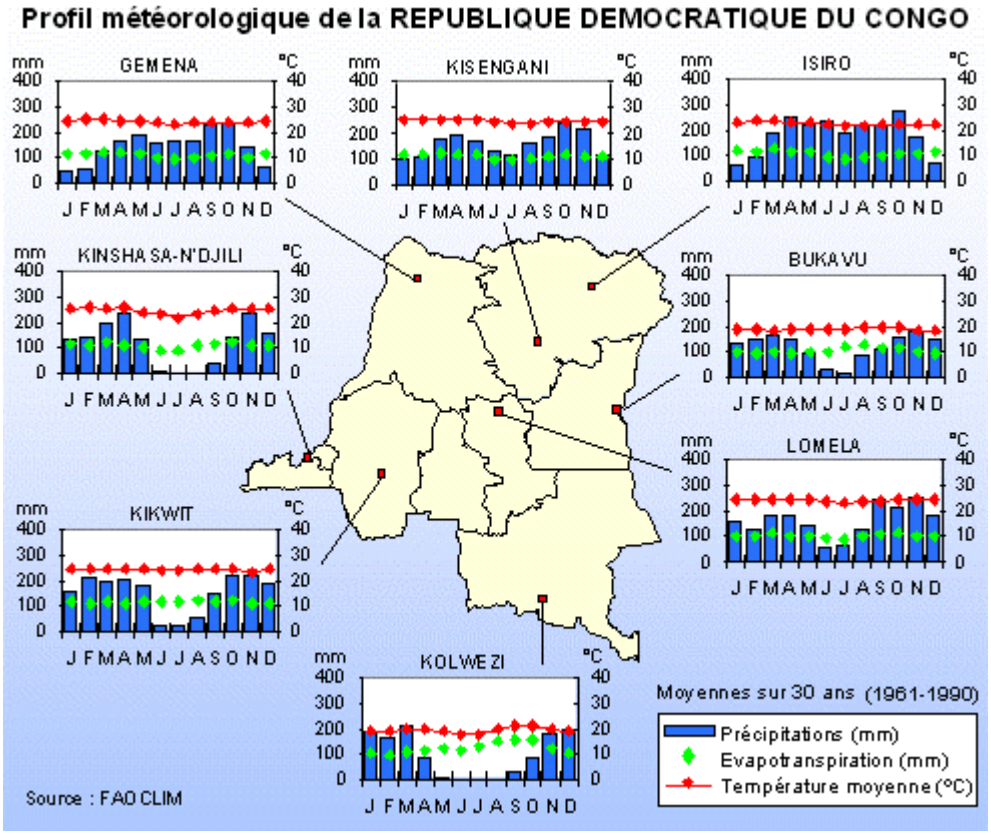
3.2 Environment and Transmission

The majority of DRC has a climate that is eminently suitable for the transmission of stable malaria as shown in Map 2. However, this map represents pure climatic suitability for transmission and does not necessarily reflect true endemicity on the ground. Actual endemicity varies (see 3.1). The climate of DRC is basically tropical, there are three main climatic zones, it is hot and humid in the equatorial river basin, cooler and drier in the southern highlands and, cooler and wetter in the eastern highlands. North of the Equator the rainy season runs from April to October, and the dry season from December to February. Whereas, south of the Equator the rainy season is from November to March and dry from April to October. Temperatures do

[13] Intercountry seminar on vector control in unstable areas Bujumbura 11-15 December 1989 and Addis Ababa 21-25 January 1991 WHO Regional Office for Africa

[14] Coene, J. (1993) Malaria in urban and rural Kinshasa: the entomological input *Medical and Veterinary Entomology* 7, 127-137.

Map 2: Meteorological profile [15]



The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations

not vary greatly across the country. (Map 3: MARA map of climatic suitability for the stable transmission of malaria [16]). In most areas of the country, malaria transmission peaks during the rainy season. The terrain constitutes an enormous central basin of low-lying plateau with mountains in the east. Elevation extremes vary from sea level to 5,110m.

[15] Food and Agriculture Organisation (FAO) www.fao.org
[16] Mapping Malaria Risk in Africa (MARA) www.mara.org.za

3.3 Parasites

Plasmodium falciparum 95%, *P.malariae* + *P.ovale* 5% [17]

3.4 Malaria Burden

Data on the burden of malarial disease is not readily available. The surveillance system has been interrupted, attendance at health centres is low, diagnosis is usually clinical, and deaths go largely unrecorded.

% OPD attendance due to malaria

Malaria accounts for 86% (n=4457) attendances at the paediatric emergency department of the Kinshasa General Reference Hospital (HGR), Kinshasa, 2000[18,] Malaria (clinical diagnosis) accounted for 69% of outpatient attendances for the year 2000 in the health zone of Katana in the mountainous east[19]. Other data is variable and often unreliable.

% admissions due to malaria

According to the National Malaria Control Programme, malaria accounts for 30% of hospital admissions. [18] Malaria accounted for 44% (n=85677) of attendances at the Centre Hospitalier de Kingasani, Kinshasa, 1997-9[18].

% deaths due to malaria

Malaria was estimated as the primary cause of excess mortality in one recent mortality survey in eastern DRC [20]. Malaria is thought to account for 25-30% childhood mortality according to the National Malaria Control Programme[18]

3.5 Malaria management

There is a National Malaria Control Programme in place with goals, objectives and targets [17], however, this is not well established in eastern rebel held DRC . A new national policy was released in November 2001[18], and a Five Year Strategic Plan to Roll Back Malaria (2002-2006) was finalised in December 2001.

3.5.1 National standard case definition [17]

There is a national standard case definition for both suspected and confirmed malaria

- Suspected malaria ‘fever of unknown origin’
- Confirmed malaria ‘thick preparation positive at microscopy’

Laboratory diagnostic services are available at regional and district hospitals, other district health facilities and private laboratories.

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[17] WHO Country Representative for DRC in the *Malaria Consortium Questionnaire on Malaria Control in Complex Emergencies 1999*

[18] Programme Nationale de Lutte Contre le Paludisme, Politique Nationale, Ministère de la Santé, DRC, Novembre 2001

[19] International Rescue Committee unpublished data

[20] Mortality in Eastern DRC, Les Roberts et al, IRC New York, 2001

3.5.2 National recommended treatment[18]

For **uncomplicated** *P.falciparum*
1st line sulphadoxine-pyrimethamine
2nd line quinine
Treatment is based on clinical diagnosis.

For **severe** *P.falciparum*
Quinine

3.6 Drug resistance

In vivo Plasmodium falciparum resistance to chloroquine was reported in the Kivu region of DRC (previously named Zaire) in 1982 [21]. Since this time there have been many studies on chloroquine and other anti-malarial resistance of *P.falciparum* in different areas of DRC.

In 1994 *in vivo* resistance studies of *P.falciparum* to chloroquine and sulphadoxine-pyrimethamine (S-P), using a slightly modified WHO 7 day test [22] were conducted in Rwandan refugees in Kibumba camp, Goma, eastern DRC. Only 8 (20.5%) of the 39 cases treated with chloroquine, had a sensitive or RI (delayed) response, and 31 (79.5%) showed resistance, of these resistance levels were RI (30.8%), RII (33.3%) and RIII (15.4%) levels [23] Of the 38 people given S-P 13 (34.2%) showed sensitive or RI (delayed) responses, and 25 (65.8%) showed resistance at RI (26.3%), RII (36.8%) and RIII (2.6%) levels [23]. The refugees were from various regions of Rwanda and most had not had malaria before.

Studies conducted by the National Malaria Control Programme in 2000 and 2001 using standard WHO guidelines[24] (children 5-59 months with uncomplicated *P falciparum* monoinfection given a supervised dose of quality controlled medication) revealed treatment failure (using clinical and parasitological criteria during the 14 day follow-up period) of the following proportions:
For chloroquine: Bukavu (South Kivu) 80%; Kapolowe (Katanga) 34%; Kimpese, (Bas Congo) 50%; Kinshasa 35,2%; Kisangani (Province Orientale) 49%; Mikalayi (Western Kasai) 29%; and Vanga (Bandudu) 49%.

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[21] Delacollette, C., BinyingoEmbonga, Malengreau, M. (1983) Response to chloroquine of infections with Plasmodium falciparum in the Kivu region of Zaire: preliminary observations Annales de la Societe Belge de Medicine Tropicale 63, 2, 171-173
[22]Bruce-Chwatt, L.J. (1986) Chemotherapy of Malaria. Geneva: World Health Organization 102-118.
[23]Wolday, D., Kibreab, T., Bukenya, D., Hodes, R. (1995) Sensitivity of *Plasmodium falciparum in vivo* to chloroquine and pyrimethamine-sulfadoxine in Rwandan patients in a refugee camp in Zaire *Transactions of the Royal Society of Tropical Medicine and Hygiene* 89, 654-656.
[24]WHO (1996) *Assessment Of The Therapeutic Efficacy Of Antimalarial Drugs For Uncomplicated Falciparum Malaria for Areas of Intense Transmission* (WHO/MAL/96.1007) Division of Control of Tropical Diseases, Geneva, WHO
[25]Fontenille, D., Lochouarn, L. (1999) The complexity of the malaria vectorial system in Africa *Parassitologia* 41: 267-271

For sulfadoxine-pyrimethamine: Bukavu (South Kivu) 9%; Kapolowe (Katanga) 4%; Kimpese, (Bas Congo) 10%; Kinshasa 6%; Kisangani (Province Orientale) 19%; Mikalayi (Western Kasai) 0%; and Vanga (Bandudu) 5%.[18]

3.7 Vectors

The relative importance of each vector of malaria common to DRC varies with both area of the country, and with season. The most important vector in most areas is *Anopheles gambiae*, followed by *An. funestus*. Other secondary vectors include *An. moucheti* and *An. nili,* these vectors have not been very intensively studied, but *An. nili* is known to favour the edges of rivers as a breeding site [25]. In certain areas *An. paludis* may be the main vector. A study carried out in the Bandundu region recorded 5 species of *Anopheles*, of which *An. paludis* followed by *An. gambiae* were the main vectors. Table 5 lists some of the breeding places, biting and resting habits of the major vectors of DRC.

3.8 Insecticide resistance

An. gambiae s.s. has been reported resistant to DDT in DRC. Both *An. gambiae* and *An. funestus* are thought to be sensitive to deltamethrin (pyrethroid) [17].

Table 5: Major vectors of DRC, breeding places, biting and resting habits [26]

Vector	Breeding places	Biting habits	Resting habits
Anopheles gambiae	Mainly temporary habitats such as pools, puddles, hoof prints, borrow pits, but also in rice fields. Standing water and irrigation sites.	Anthropophilic (bites humans); may show zoophily (bites animals) in some areas. Exophagic (bites outdoors) especially in urban areas [14], and endophagic (bites indoors) especially in rural areas. Preference for nocturnal feeding.	Predominantly endophilic (rests indoors after feeding).
An. funestus	Swamps, marshes, edges of streams, rivers, ditches and other stagnant waters especially along the coastline. Irrigation sites. Prefers shaded habitats.	Predominantly anthropophilic but also some degree of zoophily. Exophagic and endophagic Preference for nocturnal feeding	Predominantly endophilic
An. paludis		Exophagic [14]	Exophilic (rests outdoors after feeding), but has shown endophilic tendencies in DRC [27]

3.9 Impact of the complex emergency

The movement of populations from, into and within DRC is likely to affect the malaria situation. Refugees, returnees and displaced people have moved between regions of a range of endemicities. Although malaria is perennial in the majority of DRC, due to variations in local endemicity, not all of the population will have protective levels of acquired immunity. Immunity will vary dependent upon previous exposure. Many of the IDP population, due to inadequate immune protection through low levels of previous exposure and trauma, will have a high susceptibility to clinical malaria.

Population movement may also contribute to patterns of antimalarial drug resistance.

3.10 Epidemics

3.10.1 Potential

In most of DRC malaria is endemic. There are small pockets in eastern DRC of high altitude where temperatures are lower than are ideal for the transmission of malaria.

[26] Bruce-Chwatt's Essential Malariology H.M. Gilles & D.A. Warrell 1993.
[27] Karch, S., Mouchet, J. (1992) Anopheles paludis vecteur important du paludisme au Zaire *Bull. Soc. Path. Ex.* 85, 388 – 389.

There is a potential for temperature increase in these areas to increase malaria transmission.

3.10.2 Recent epidemics

In September 1999 in Rutshuru, North Kivu Province, there was an apparent outbreak of malaria with an increased number of cases and an increase in the number of fatal cases. However, specific data is not available. The outbreak was initially thought to be due to meningitis, but subsequently found to be malaria (with the aid of laboratory confirmations). The response to the outbreak was the provision of quinine, carried out by the local health authorities, international NGOs were not involved. The outbreak was thought to be due to the movement into endemic malaria areas of non-immune IDPs [28]

There are anecdotal reports of an increase in incidence of malaria in higher altitude areas of South Kivu coinciding with the documented epidemic in neighbouring Burundi, commencing in October 2000. There is scant reliable data to confirm this, beyond a steep increase in admissions to Bukavu hospital in the under 5 year old age group[29].

3.10.3 Surveillance systems

Malaria is included in weekly surveillance of diseases of epidemic potential from health facilities. Most febrile illness is reported as malaria: 88% of all reports for disease surveillance were for malaria in 1999[30]. Monthly data is also collected from health facilities. In addition, supporting agencies often have their own reporting requirements. There are considerable barriers to the effective functioning of this system, including lack of standardisation and training, reporting delays, variations in reporting rates and logistic and security difficulties. In 1999, 30% of health zones submitted at least one weekly surveillance report for the year[31].

3.11 Recent control measures

3.11.1 Case management

At present malaria control rests primarily on treatment at health centres, hospitals, traditional medical practitioners, private pharmacies, mobile traders, and home based care. Chloroquine remains the first line treatment both in the formal and informal sector, often with recourse to quinine as second line therapy.

Although MOH policy is to provide case management services to the population, the effect of the complex emergency has been that these services have broken down in many areas, particularly in eastern DRC. Recent policy development encourages home-based first-line therapy for presumptive treatment of malaria, but is yet to be introduced.

[28] MSF Holland eastern DRC Representative in *Malaria Consortium Questionnaire on Malaria Control in Complex Emergencies 1999*
[29] Bukavu Hospital, unpublished data
[30] Republique Democratique du Congo, Rapport épidemiologique des maladies à potential épidemique sous surveillance en Republique Democratique du Congo, Année 1999.
[31] WHO DRC estimate, unpublished data

3.11.2 Insecticide Treated Mosquito Nets (ITNs)

National policy promotes the use of insecticide tread materials, although at present usage remains low (8% in one household study in Maniema[32]). BASICS are providing support to the MOH to implement an ITN programme using UNICEF / WHO donated ITNs in Kinshasa. The local NGO MAP, sells nets and treatment kits in Kisangani, accompanied by promotional activities (1100 nets sold by March 2001). In 2002, projects are planned for targetted health areas in Maniema (with support of MERLIN), North Kivu (with the support of ASRAMES), South Kivu (with the support of UNICEF and IRC) and Orientale (with the support of OXFAM).

3.11.3 Presumptive intermittent treatment in pregnancy

National policy has recently changed to presumptive intermittent treatment in pregnancy with sulphadoxine-pyrimethamine, once in the second trimester and again in the third trimester. This is yet to be introduced.

3.12 Cultural factors

3.12.1 Perceptions of malaria

A study carried out in June 1990 among 420 households in 6 districts of urban Kinshasa found that 92.4% of the surveyed families considered mosquitoes a nuisance and 83.8% of people used control measures. Of the people who used control measures, 43.5% paid money for them: mosquito coils (85.6%), insecticide sprays (55.5%), and bednets (38.6%) [33]

Another study carried out in two health zones of Maniema province in March and April 2001 among 350 households found that febrile episodes were most frequently treated at health centres (50% of respondents). The remainder of respondents indicated that febrile episodes among household members were treated at home with herbs by (32%), with medications bought at pharmacies (8%), and by a traditional healer 2%. The majority of respondents said mosquitoes caused malaria (83%) and that malaria could be avoided (84%)[32].

3.12.2 Traditional practises

Investigations among the Pygmies (Mbute) in Upper Zaire found 24 different species of plant used to treat malaria. Certain Bantu tribes, also living in Upper Zaire use 17 similar plant species to treat malaria [34]

[32] Community malaria survey, Kindu and Kalima Health Zones, Maniema Province, DRC (2001), MERLIN (Medical Emergency Relief International), London.
[33] Zandu, A., Malengreau, M. Wery, M. (1991) Methods and expenditure for protection against mosquitoes in households in Kinshasa, Zaire. *Annales de la Societe Belge de Medicine Tropicale*, Vol 71 No 4 p 259-266
[34] Magilu M, Mbuyi M, Ndjele MB 'Use of medicinal plants among the Pygmes (Mbute) to treat malaria in the area of Mambasa, Ituri, Zaire. *The biodiversity of African plants. Proceeding of the 14th AETFAT Congress 22-27 August 1994*, Wageningen, Netherlands

3.12.3 Treatment seeking behaviour

It is estimated that in some catchment areas less than 10% of the population visit health facilities. The more frequent behaviour is to visit traditional healers, buy anti-malarials in the market place, or do nothing at all [28]. The National Malaria Control Programme estimates that at least 50 % of the population self-treat[18].

3.13 Recommended prophylaxis for international staff [35]

Mefloquine 250mg weekly

4. HEALTH SERVICES

4.1 Statistics

Table 6: Health service statistics [1,2]

Children immunized against measles *% 2000*	15
Children immunized against measles *% 1987*	41
Health expenditures	
Total *% of GDP*	-
Public sector *% of GDP*	-
Public sector *% of total*	-
% of routine EPI vaccines funded by government	-

The statistics in Table 6 show that a very low number of children are immunised against measles in DRC, and that the percentage immunised decreased by more than 50% between 1987 and 2000. Government expenditure on health is very low (approximately 1% of the national budget[36]), figures are not available for the percentage of routine EPI vaccines that are funded by the government.

4.2 Coverage by health facilities

DRC is divided into approximately 400 health zones, with each zone serving a population of 100-300,000 people, and supporting a network of primary health centres, with one centre for approximately 10,000 people. 50% of the health structures are supported by religious groups and NGOs[36]. Limited and deteriorating infrastructure, and the downward spiralling economy, are exacerbating the declining access to health facilities. Health workers are losing skills due to a lack of training and supervision, and this is adding to the decreasing confidence of the population in the abilities of health workers. These problems are compounded by ongoing insecurity, and many health facilities have been looted or damaged, particularly in Orientale, North and South Kivu, Maniema, Katanga and Equateur provinces. The health care management system is paralysed in many provinces as a number of

[35] www.who.org/ith/english/country.htm
[36] Programme Nationale de Lutte Contre le Paludisme, Plan Strategique 2002-2006, Ministère de la Santé, draft 2001.

qualified specialists fled the war-affected regions. As a result, the proportion of functioning health centres in some areas (such as northern Katanga province) has dropped to below 30%, and is approximately 70% in Maniema, North and South Kivu[37].

4.3 Health personnel, training and institutions

The number of trained health workers has decreased drastically over the last few years due to many leaving conflict areas. Many of the remaining health staff are lacking training and losing confidence in their abilities. Training institutions in the medicine, nursing, medical science, and (in Kinshasa) public health, continue to function in the major population centres, despite the economic and security situation and the flight of experienced educators.

4.4 Health systems

For many years there has been an ideology of free private enterprise within the health system of DRC. Health care is managed, in a context of *de facto* decentralization, with a cost recovery system and various types of health insurance schemes. Only a limited number of people are able to pay the fees imposed by the cost recovery schemes, compounding the low rates of attendance at health facilities estimated at 17.9% by the National Malaria Control Programme[18]

4.5 Health partners

Health care access in DRC is highly variable with large populations with poor access to effective treatement. International agency and MoH support is largely concentrated in areas across the west east and limited parts of the south, but central and northern provinces have limited or no international support due to ongoing conflict and insecurity in much of the area.

ECHO International Health Services Ltd [38]
In order to improve access to a reliable supply of quality nets and treatments for smaller orders, ECHO has established a pilot subsidy scheme to benefit malaria prevention projects requiring between 100-1,000 nets and treatments. The scheme specifically targets community based projects which are already established or are at an advanced stage of planning and who can provide a strong input to evaluation. These projects should involve either free or cost recovery based distribution, target the poor and other vulnerable groups and ideally be supported for the longer term by an established donor who can help to secure sustainable re-supply, medical and technical support.

[37] WHO district epidemiologists, unpublished data, July 2001
[38] Kaur, M. (2000) Access to Insecticide Treated Mosquito Nets in Complex Emergencies. Abstract presented at the Partnership Meeting on Rolling Back Malaria in Complex Emergencies, Geneva 30, June 2000.

In the first stage of the project, up to 3,000 subsidised nets and treatments will be distributed. The subsidy package includes: 100 denier, rectangular, blue colour, x-family size nets (190x180x150cm); 2 x treatments per net (initial treatment dose at time of distribution and second re-treatment dose to encourage re-treatment practice); and one copy of 'Insecticide Treated Net Projects: A Handbook for Managers (Malaria Consortium 1999)' per project. Each subsidised net and treatment package costs USD $4.00.

ASRAMES (Approvisionment en medicaments essentiels)
ASRAMES is a local NGO which supports supply of essential drugs and additional primary care activities including ITNs across North Kivu, and is extending operations into Orientale and South Kivu, in association with the local NGO APAMESK (Approvisionment en medicements Sud Kivu).

Several international NGOs provide support with a substantial malaria control component, including:

- IRC (International Rescue Committee) in three health zones in the provinces of South Kivu and Orientale. Malaria control activities include support to antimalarial drug efficacy studies, baseline data collection activities and targetted ITN promotion.
- MERLIN (Medical Emergency Relief International) in 4 health zones in the provinces of Maniema and Eastern Kasai. Malaria control activities include baseline data collection activities and targetted ITN promotion.
- Oxfam are commencing a community health project with a substantial malaria control component including ITNs in one health area in Orientale.

Other partners supporting primary health care include the international NGOs:

- ACF (Action contre le Faim, Uvira, South Kivu);
- AMI (Health education, Uvira, South Kivu);
- Caritas
- Fometro (South Kivu);
- Johaniter (South Kivu);
- Malteser (South Kivu, Orientale);
- MEC (Medecins en Catastrophe, Goma, North Kivu)
- MEDAIR (Orientale);
- MEMISA;
- MSF Belgium (Equateur, Katanga);
- MSF Holland (South Kivu, Orientale)
- MSF Spain (Pweto, northern Katanga);
- PSF (Pharmaciens sans Frontières, Lubao, Eastern Kasai);
- World Vision

Faith based partners have provided long standing support across the country, including ECC (Eglise de Christ de Congo) and BDOM (Bureau d'Oeuvre Medicale)

BASICS/USAID (Basic Institutional Support to Child Survival) provides institutional support to the National Malaria Control Programme.

SANRU (Projet de developpement de santé rural)

SANRU is a USAID supported project implemented by the protestant church to support primary health care through essential drug provision in more than 100 health zones across DRC.

5. MISCELLANEOUS

5.1 Suppliers

5.1.1 Nets

Chemdol (Zambia) Ltd
P.O. Box 33325
Lusaka
Zambia
Tel: 260-1 272 793
Fax: 260-1 272 840
E-mail: chemdol@zamnet.zm
Website: http://chemdol.hypermart.net

Dodhia Traders (Kenya) Ltd
P.O.Box 42686
Nairobi
Kenya
Tel: 254-2 222 961 / 223 248
Fax: 254-2 225 595

Vestergaard Frandsen (EA) Ltd.
P.O. Box 66889
ABC Place, Waiyaki Way
Nairobi, Kenya
Mobile: 254-733-515228
Tel: 254-2-444758/9
Fax: 254-2-444526/782
website: www.vestergaard-frandsen.com
www.permanet.dk

Mission for Essential Drugs and Supplies (MEDS)
P.O. Box 14059
Nairobi
Kenya
Tel: 254-2 542 290 / 545 062
Fax: 254-2 545 062
E-mail: sahibu@users.africaonline.co.ke

5.1.2 Insecticides

Chemdol (Zambia) Ltd
As above

Mission for Essential Drugs and Supplies (MEDS)
As above

Zeneca Agrochemicals
P.O. Box 1088
Harare
Zimbabwe
Tel: 263-4 660 495 / 660 496
Fax: 263-4 663 599
E-mail: martham@zeneca.sni.co.zw

Gabonaise de Chimie (GCIAE)
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