

Overview of malaria control activities and programme progress

Malaria is the leading cause of morbidity and mortality in Sudan. Symptomatic malaria accounts for 20–40% of outpatient clinic visits and approximately 30% of hospital admissions. The entire population of Sudan is at risk of malaria, although to different degrees. In the northern, eastern and western states malaria is mainly low to moderate with predominantly seasonal transmission and epidemic outbreaks. In southern Sudan, malaria is moderate to high or highly intense, generally with perennial transmission. *P. falciparum* is by far the predominant parasite species.

Between the 1970s and the mid-1990s, malaria control efforts suffered major disruptions. Khartoum State, formerly a nearly malaria-free area, increasingly suffered from malaria epidemics, with more than 700 000 cases annually between 1998 and 2001.

In 1998, with the support of WHO, the government initiated a plan to revitalize malaria control. In 2001, a national 10-year strategic plan was developed; in 2002, the Malaria Free Initiative was launched; in 2003, a plan was developed for scaling up the use of ITNs including using communication for behavioural impact; and in 2004 a national policy for control of malaria in pregnancy was initiated. Also in 2004, the national drug policy was updated to use the ACT ASU+SP for first-line treatment.

The infrastructure of the programme continues to be strengthened. The federal malaria control office and malaria control units in the priority states of Gezira, Khartoum and White Nile were established with full operations by the end of 2001. Training was extended to a large part of the curative health care and environmental health structures, which are an integral part of the malaria control efforts in these states. A network of sentinel sites for epidemic early warning and monitoring of drug and insecticide resistance were also established. In Gezira, ITN coverage has reached 30% of the target population, and large-scale distribution of subsidized ITNs to pregnant women and children continues. Community mobilization and participation have resulted in a high degree of public awareness of malaria and its control in the priority states. In nine more states, malaria control units were strengthened in 2000–2001. This development was accompanied by a major effort in staff training. Partnerships with numerous NGOs have been instrumental and are expected to be central to scaling up interventions.

Limited financial resources and delay in the release of a GFATM grant have hindered the implementation of the new drug policy and the plan for scaling up the use of ITNs. Malaria diagnosis and treatment in public sector health facilities are payable by the patient, which follows the principle of “cost sharing”; there is some evidence that this limits the use of public sector facilities and promotes haphazard self-treatment.

National malaria policy and strategy environment

National malaria strategy overview for 2003

	Strategy
Treatment and Diagnosis Guidelines	Yes
Published/updated in	2004
Monitoring antimalarial drug resistance	Yes
Number of sites currently active	10
Home management of malaria	Yes
Vector control using insecticides	Yes
Monitoring insecticide resistance	Yes
Number of sites currently active	12
Insecticide-treated mosquito nets (ITNs)	Yes
Intermittent preventive treatment (IPT)	Yes
Epidemic preparedness	Yes

Current antimalarial drug policy

	Current policy
Uncomplicated malaria	
<i>P. falciparum</i> (unconfirmed)	ASU+SP (North) ASU+AQ (South)
<i>P. falciparum</i> (lab confirmed)	ASU+SP (North) ASU+AQ (South)
<i>P. vivax</i>	CQ+PQ(14d) (South)
Treatment failure	ATM-LUM (North) Q(7d) (South)
Severe malaria	Q(7d) or ATM(6d) or ATM(3d) +ASU+SP (North)
Pregnancy	
Prevention	SP (IPT)
Treatment	Q(7d) or ASU+SP(from 13 weeks)

EPIDEMIOLOGICAL DATA

Following WHO recommendations, malaria case reporting is carried out in most countries. The data presented below reflect aggregated malaria cases at the national level and are presented by gender, age and subnational level as submitted to WHO. Malaria reporting from national surveillance systems varies in quality and reporting completeness and may have limited value in understanding the actual malaria burden, but may be useful for understanding trends in the relative burden of malaria in the public health sector.

Reported malaria cases (annual)

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
7 508 704	6 947 787	9 326 944	9 867 778	8 562 205	6 347 143	4 595 092	4 065 460	5 062 000	4 215 308
2000	2001	2002	2003	Date of last report: 25 November 2004					
4 332 827	3 985 702	3 056 400	3 084 320						

Reported malaria by type and quality

For most recent year

Reported malaria cases	3 084 320
Reported malaria deaths	2 479

Probable or clinically diagnosed

Malaria cases	1 998 367
Severe (inpatient or hospitalized) cases	105 813
Malaria deaths	2 479

Slides taken

Rapid diagnostic tests (RDTs) taken

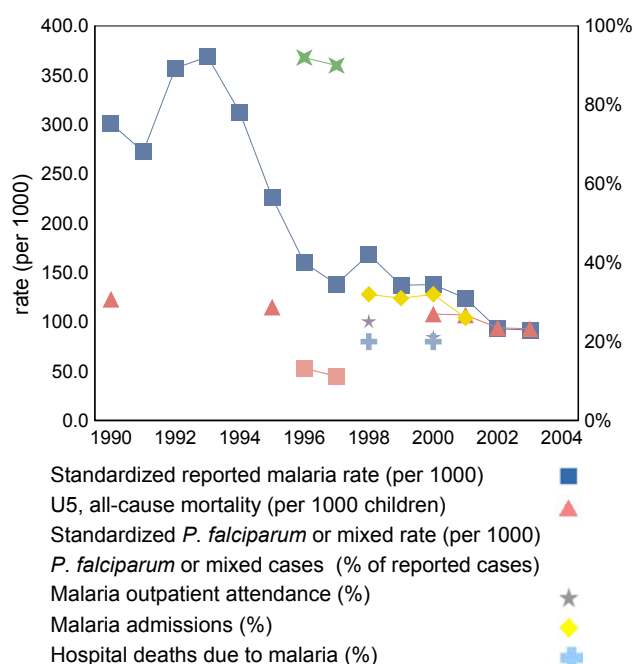
Laboratory confirmed

Malaria cases	1 085 853
<i>P. falciparum</i> or mixed	
<i>P. vivax</i>	
Severe (inpatient or hospitalized) cases	
Malaria deaths	

Investigations

Imported cases

Estimated reporting completeness (%)



Reported malaria cases by age and gender

Group	Subgroup	2000	2001	2002	2003	%
	Total	4 332 827	3 985 702	3 056 400	3 084 320	100
Gender	Male		1 994 132	1 507 629	1 739 351	56
	Female		1 991 570	1 548 771	1 344 969	44
Age	<5 years		868 893	760 572	676 525	22
	5> years		3 116 809	2 295 828	2 407 795	78

Reported malaria cases by selected subnational area

7 areas	2000	2001	2002	2003	%
Khartoum				397 658	13
Central				272 759	9
Eastern				197 014	6
Kordofan				149 751	5
Southern				106 299	3
Northern				43 775	1
Darfur				29 701	1

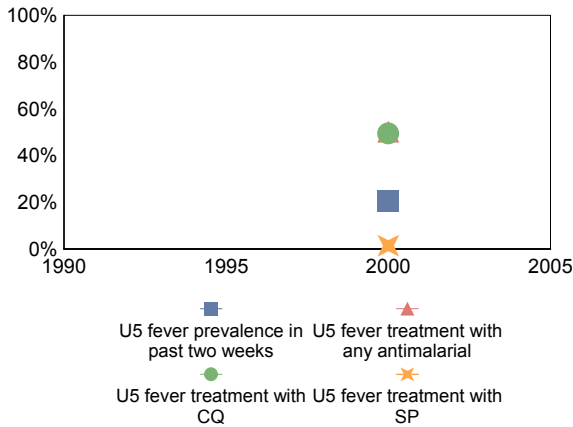
COVERAGE OF ROLL BACK MALARIA INTERVENTIONS

Information related to the coverage of RBM key interventions is presented here. This includes coverage of antimalarial treatment, possession and use of insecticide-treated nets (ITNs), and use of intermittent preventive treatment (IPT) among pregnant women (PW) where national policy indicates.

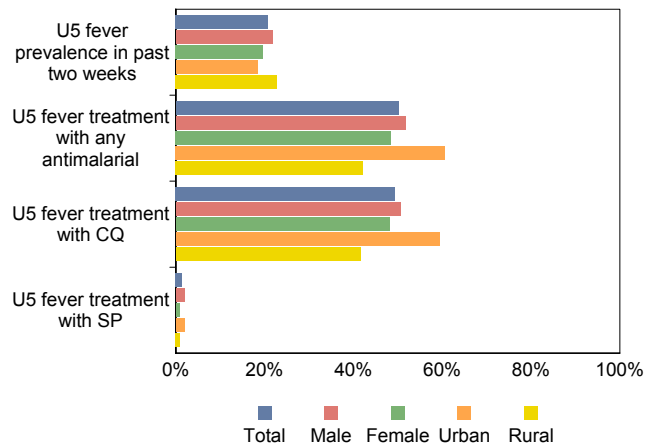
Fever prevalence and treatment with antimalarials

Prompt access to effective treatment is one of the key interventions promoted by RBM. Information presented below is from household surveys on fever prevalence and reported treatment of fever with antimalarials among children under 5 years of age (U5) within the previous 2 weeks.

Trend in fever prevalence and antimalarial coverage estimates from national surveys



Estimate of fever prevalence and treatment with antimalarials from most recent national survey



Available national surveys

MICS 2000

Sample size (U5s): 23 295

Field work: Jul-Sep 2000

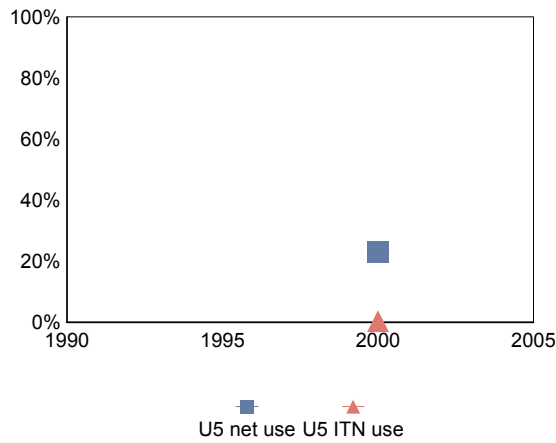
Scale: national

Supporting organization: UNICEF

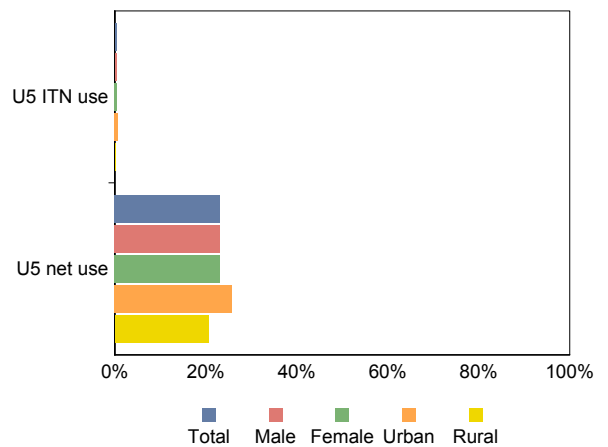
Insecticide-treated nets

ITNs are one of the key interventions promoted by RBM. Coverage of ITNs is best assessed through household (HH) surveys which ask questions on possession and use of nets, as well as insecticide treatment status, among the target populations of children under 5 years of age (U5) and pregnant women. Data below represent available household survey results in which household possession and use of nets and ITNs have been assessed.

Trend in mosquito net coverage estimates from national surveys



Estimates of ITN coverage from most recent national survey



Available national surveys

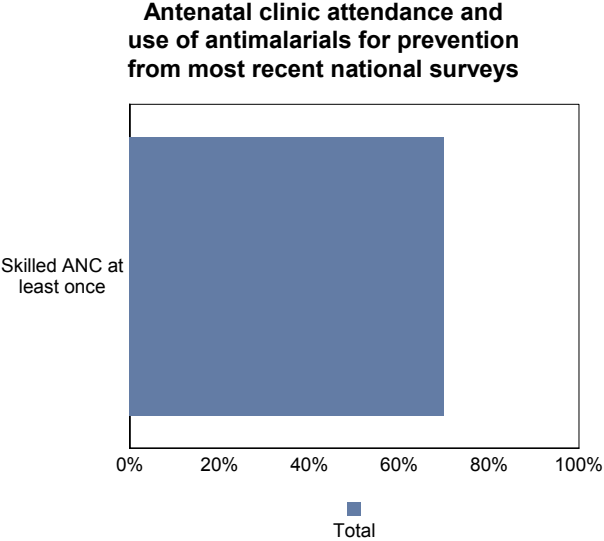
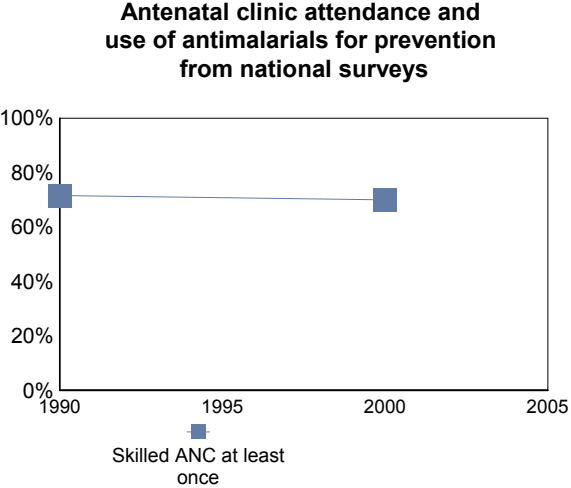
MICS 2000

Sample size (HHs or U5s): 23 287
 Field work: Jul-Sep 2000
 Scale: national

Supporting Organization: UNICEF

Intermittent preventive treatment during pregnancy

RBM promotes IPT with SP in countries with areas of stable malaria transmission as one of its key prevention strategies for pregnant women (PW). However, few surveys have assessed the coverage of IPT among pregnant women. Data below represent available household survey results in which indicators related to monitoring IPT have been assessed. The level of skilled antenatal attendance and the percentage of women attending antenatal clinics (ANC) at least twice are presented as a background for which improvements in IPT can be achieved.



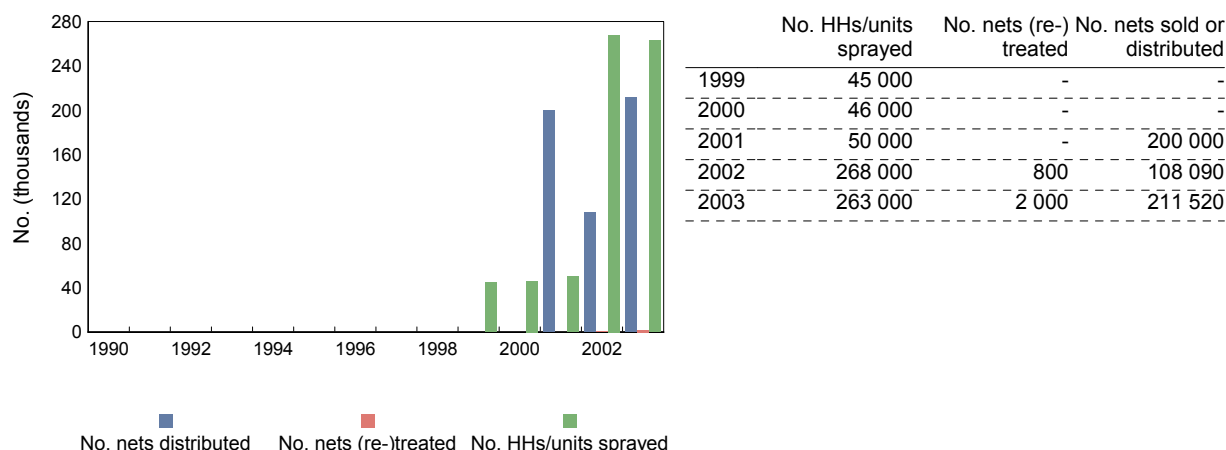
Available national surveys

MICS 2000		Supporting organization: UNICEF
Sample size (PW):		
Field work:	Jul-Sep 2000	
Scale:	national	
DHS 1989-90		Supporting organization: Macro DHS
Sample size (PW):	3 956	
Field work:	Nov 1989-May 1990	
Scale:	national	

SERVICE DELIVERY AND MALARIA-RELATED COMMODITIES

General malaria-related services delivered

Services delivered for malaria control include numbers of nets and insecticides delivered or sold, numbers of nets (re-)treated with insecticide and numbers of households (HHs)/units sprayed during IRS campaigns. These services and service-related commodities mostly reflect core malaria control activities of national malaria control programmes. The information reflects annual, country-reported data.

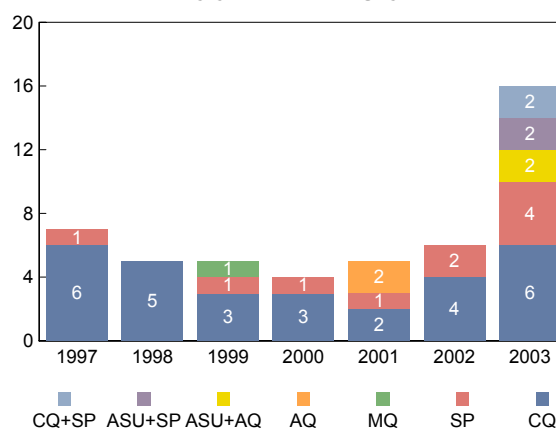


MONITORING ANTIMALARIAL DRUG EFFICACY

Monitoring antimalarial drug efficacy is important for understanding the impact of antimalarial treatment being delivered and the need for drug policy change, essential for ensuring prompt access to effective treatment. Median, range and quartiles are based on percentage clinical failure for uncomplicated *P. falciparum* malaria for countries in Africa south of the Sahara, and percentage total failure for all other areas. Included are studies that used WHO protocol among selected drugs.

Study years	Number of studies	Median	Range		Percentile	
			Low	High	25th	75th
High transmission area						
CQ						
2001-2003	5	53.1	16.6	60.7	32.4	59.4
SP						
2001-2002	3	6.0	0.0	12.0	0.0	12.0
AQ						
2001	2	6.5	6.0	7.0	6.0	7.0
ASU+AQ						
2003	2	0.4	0.0	0.8	0.0	0.8
ASU+SP						
2003	2	1.7	0.8	2.5	0.8	2.5
Moderate/low transmission area						
CQ						
1996-2003	24	47.6	0.0	76.9	33.8	57.4
SP						
1996-2003	7	4.2	0.0	11.7	2.0	8.1
MQ						
1999	1	2.5				
CQ+SP						
2003	2	10.2	5.9	14.4	5.9	14.4

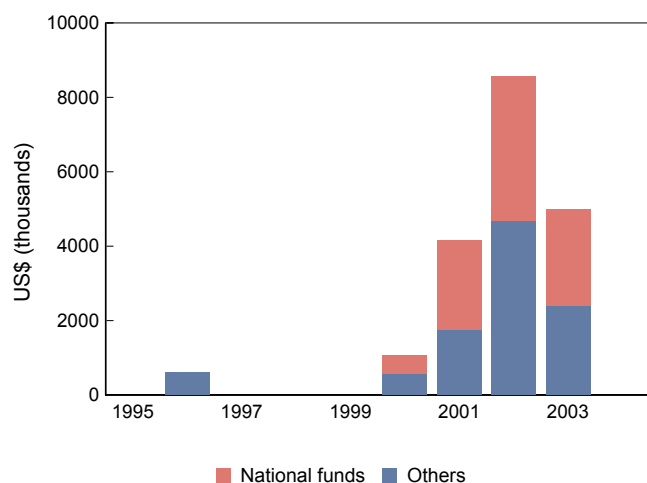
Number of drug efficacy studies available by year and drug type



FINANCING FOR MALARIA

Annual funding for malaria control

This information represents country-reported national and other resources budgeted or spent for national malaria control programme efforts. If information was reported in a different currency than US\$, the annual average of the official exchange rate from the World Development Index was used for conversion. Currency is presented in US\$ (thousands).



	National funds	Others
1995	-	-
1996	-	600
1997	-	-
1998	-	-
1999	-	-
2000	500	574
2001	2 400	1 744
2002	3 887	4 670
2003	2 600	2 406
2004	-	-

Malaria funds from the Global Fund to Fight HIV, Tuberculosis, and Malaria

Information on additional resources provided to countries through GFATM from 2-year committed funds for malaria from successful proposals through the first four rounds is presented. The details on approved proposals, grant agreements and disbursements to date are provided. Figures are presented in US\$. These data are maintained and updated by GFATM.

Approved proposals			Grant agreements and disbursements (as of 13 January 2005)						
Source	Round	Total year 1-2 budgets	Principal recipient	Signed	Signature date	Grant amount	No. of disbursements	Total disbursed	% disbursed
CCM	2	14 237 853		No			-		
			UNDP	Yes	24-Aug-04	12 855 490	1	4 903 414	38.1%

General notes and remarks

See explanatory notes at the beginning of the section.

For antimalarial drug efficacy results, data for high transmission areas reflect clinical failure and data for moderate/low transmission areas reflect total failure.

For more information, please refer to the Federal Ministry of Health web site at <http://www.fmoh.gov.sd> and the RBM Progress in Sudan 2003.