SUDAN

Malaria transmission in the northern, eastern and western states of Sudan is low-to-moderate, highly seasonal and occasionally epidemic. In the southern, malaria transmission is generally perennial with moderate-to-high intensity. The data presented in this report are from 15 states in the north, east and west of the country as the information from the southern states was incomplete. In the northern, eastern and western states, in 2008, there were 3 073 966 reported malaria cases and 1 125 deaths. In the states from which information is complete, more than 95% of malaria cases are due to *P. falciparum*. In these areas, the malaria control programme distributed over 3.3 million long-lasting insecticide-impregnated nets between 2006 and 2008. About 90% of public heath facilities provide ACTs free of charge; in 2008, about 3 million treatment courses were delivered, enough to treat all reported cases. During the past 5 years, the Government has allocated more than US$ 31 million for malaria control, complemented by more than US$ 69 million from the Global Fund.

I. EPIDEMIOLOGICAL PROFILE

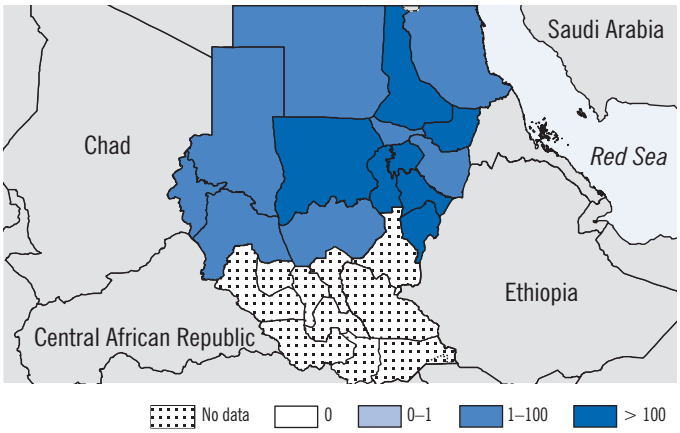
Population, endemicity and malaria burden

Population (in thousands)	**2008**	**%**
All age groups	41 348	
< 5 years	5 836	14
≥ 5 years	35 511	86

Population by malaria endemicity (in thousands)	**2008**	**%**
High transmission ≥ 1/1000	6 808	16
Low transmission (0–1/1000)	34 501	83
Malaria-free (0 cases)	40	0
Rural population	23 372	57

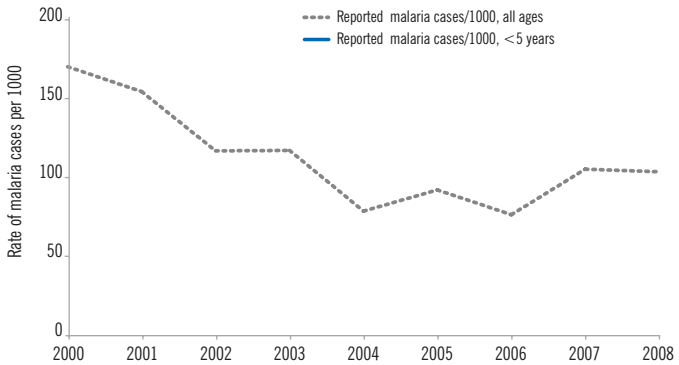
Vector and parasite profiles	
Major *Anopheles* species	*arabiensis*
Plasmodium species	*falciparum, vivax*

Stratification of burden (reported cases, per 1000)

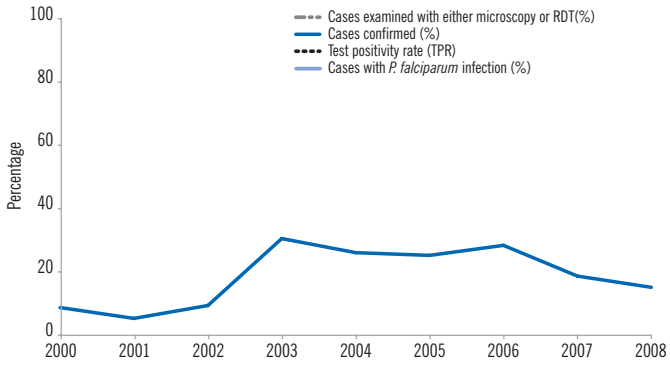


Trends in malaria morbidity and mortality

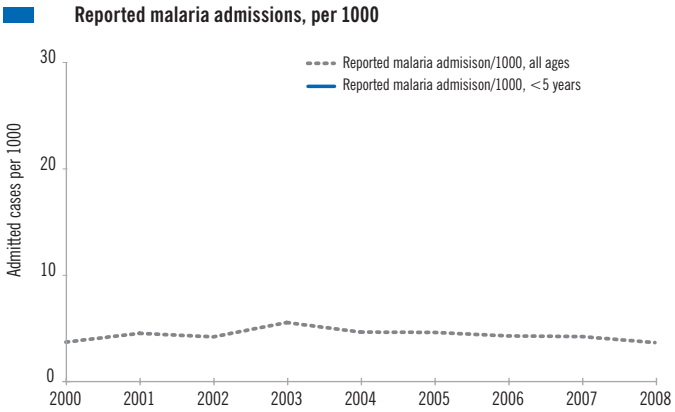
Reported malaria cases, per 1000

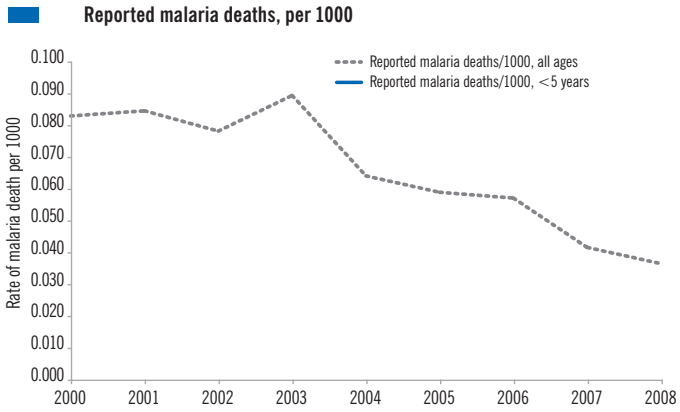


Rate of examination, case confirmation, malaria test positivity, % of confirmed cases that are *P. falciparum*



Year	Reported malaria cases, all ages	Reported malaria cases, < 5 years	All-cause outpatient consultations, all ages	All-cause outpatient consultations, < 5 years	Examined	Positive	*P. falciparum*	Reporting completeness of outpatient health facilities (%)	Reporting completeness of districts (%)
2000	4 428 277	1 159 328	25 151 371	6 255 772		464 007			
2001	4 105 613	868 893	20 337 398	5 700 642		323 402			
2002	3 167 456	760 572	20 486 801	5 058 783		393 606			
2003	3 237 006	676 525	19 628 283	4 499 077		1 085 953			
2004	2 214 296	547 011	18 285 220	4 401 768		668 484			
2005	2 648 310	654 044	17 462 890	4 347 518		761 034			
2006	2 243 064	379 172	8 703 556	1 760 093		721 233			
2007	3 166 661	771 419	13 988 723	2 879 177		686 908		81	
2008	3 185 930	886 294	13 745 635	3 205 353		569 296		83	





Year	Reported malaria admissions, all ages	Reported malaria admissions, < 5 years	All-cause admissions, all ages	All-cause admissions, < 5 years	Reported malaria deaths, all ages	Reported malaria deaths, < 5 years	All-cause deaths, all ages	All-cause deaths, < 5 years	Reporting completeness of inpatient health facilities (%)	Reporting completeness of districts (%)
2000	95 450	26 542	365 740	74 499	2 162	798	11 344	3 419		
2001	119 911	34 750	466 460	115 143	2 252	816	14 207	4 855		
2002	113 056	34 216	494 358	136 117	2 125	700	15 057	5 267		
2003	152 686	45 736	724 630	194 919	2 479	863	19 267	7 031		
2004	130 585	38 495	724 695	192 577	1 814	749	17 771	6 654		
2005	132 617	41 725	811 645	206 343	1 703	570	19 654	6 116		
2006	125 550	39 615	845 099	222 803	1 686	565	19 353	6 447		
2007	126 480	38 547	927 941	248 714	1 254	446	25 954	6 779	81	
2008	111 934	40 304	791 066	199 151	1 125	359	17 311	5 360	83	

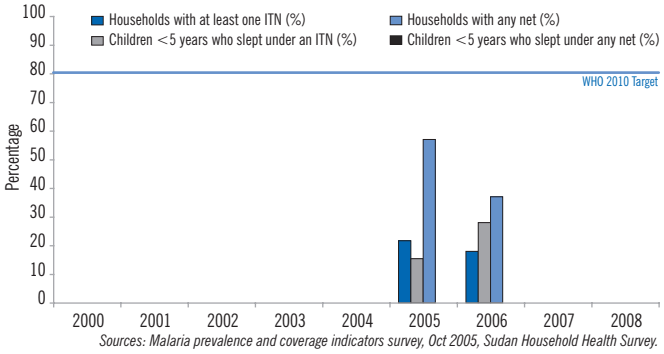
II. INTERVENTION POLICIES AND STRATEGIES

Intervention	WHO-RECOMMENDED POLICIES / STRATEGIES	Yes or No	Year adopted	OPTIONAL POLICIES / STRATEGIES	Yes or No	Year adoped
Insecticide-treated nets (ITN)	Distribution of ITN/LLINs – Free	Yes	2001	Distribution – Antenatal care	Yes	2007
	Targeting all age groups	Yes	2006	Distribution – EPI routine and campaign	Yes	2008
				Targeting children < 5 years and pregnant women	Yes	2001
				ITN distribution is subsidized	Yes	2002
Indoor residual spraying (IRS)	IRS is a primary vector control intervention	No	–	Insecticide-resistance management implemented	Yes	1999
	DDT is used for IRS (public health) only	No	–	Where IRS is conducted, other options are also implemented, e.g. ITN	Yes	2003
				IRS is used for prevention and control of epidemics	Yes	1998
Intermittent preventive treatment (IPT)	IPT used to prevent malaria during pregnancy	Yes	2005			
Case management	Oral artemisinin monotherapies banned (prohibited from registration or removed from the system)	Yes	2004	Parasitological confirmation for patients ≥ 5 years only	Yes	2000
	Parasitological confirmation for patients of all ages	Yes	2000	Malaria diagnosis is free of charge in the public sector	No	–
	ACT is free of charge for < 5 years old in the public sector	Yes	2005	ACT is free of charge for patients ≥ 5 years in the public sector	Yes	2004
	Diagnosis of malaria of inpatients is based on parasitological confirmation	Yes	2001	ACT is delivered at community level through community agents (beyond the health facilities)	Yes	2007
	Pre-referral treatment with quinine or artemether IM or artesunate suppositories	Yes	2004	Uncomplicated malaria cases are admitted	No	–
	Oversight regulation of case management in the private sectors	Yes	2004			
	RDTs used at community level	Yes	2005			

			Results of therapeutic efficacy tests							
Antimalarial policy	Type of medicine	Year adopted	Study year	No. of studies	Median	Minimum	Maximum	Percentiles:	25%	75%
First-line treatment of *P. falciparum* (unconfirmed)	AS+SP	2004								
First-line treatment of *P. falciparum* (confirmed)	AS+SP	2004								
Treatment failure of *P. falciparum*	AL	2004								
Treatment of severe malaria	QN (7d), AM (7d), AM (3d) + AS+SP	2004								
Treatment of *P. vivax*	CQ+PQ(14d)	2004								

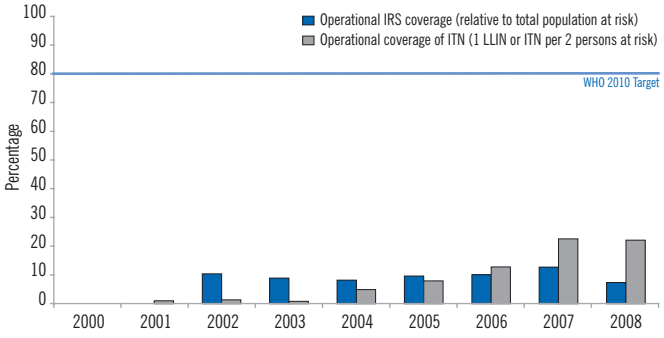
III. IMPLEMENTING MALARIA CONTROL

Coverage of ITN: survey data

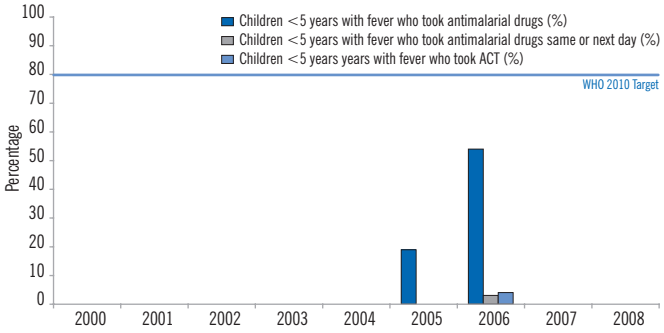


Sources: Malaria prevalence and coverage indicators survey, Oct 2005, Sudan Household Health Survey.

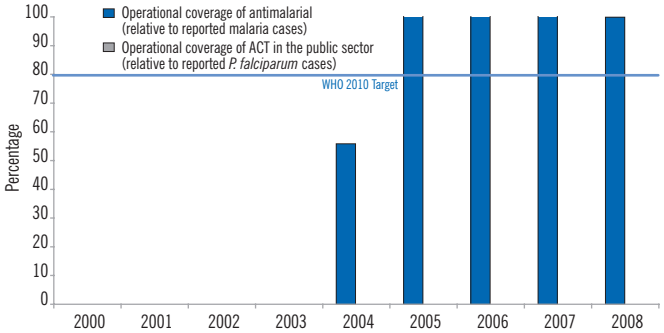
Coverage of IRS and ITN: programme data



Access by febrile children to effective treatment: survey data



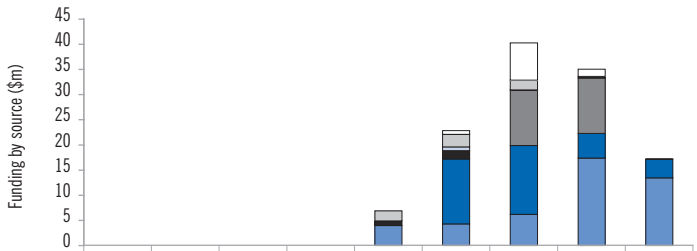
Access to effective treatment: programme data



Year	Pregnant women who slept under any net (%)	Pregnant women who slept under an ITN (%)	Children < 5 years with fever (%)	Febrile children < 5 years who sought treatment in HF (%)	Number of households protected by IRS	Number of people protected by IRS	Number of ITNs and/or LLINs	Number of 1st-line treatment courses received	Number of ACT treatment courses received
2000									
2001							135 000		
2002					565 605	2 828 025	160 600		
2003					494 795	2 473 973	76 500		
2004					465 454	2 327 272	665 400	1 165 019	
2005		13	–	–	555 311	2 776 555	752 900	3 613 133	
2006			–	–	595 486	2 977 432	796 199	2 888 943	2 814 000
2007					641 123	3 846 738	1 910 000	3 337 103	2 677 199
2008					456 337	2 281 687	1 806 540	3 073 996	3 073 996

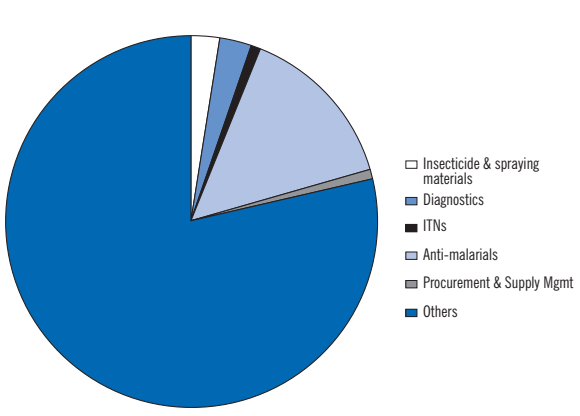
IV. FINANCING MALARIA CONTROL

Governmental and external financing



	2000	2001	2002	2003	2004	2005	2006	2007	2008
Other bilaterals						765 000	7 399 410	1 468 893	
PMI					2 000 000	2 500 000	1 972 000		
European Union						732 830	39 900		
WHO					885 141	1 673 351		312 151	39 416
World bank							11 000 000	11 000 000	
GFATM						12 903 414	13 692 691	4 903 414	3 700 680
Government					4 000 000	4 278 544	6 185 187	17 394 010	13 325 129

Breakdown of expenditure by intervention in 2008



V. SOURCE OF INFORMATION

PROGRAMME DATA		SURVEY AND OTHER DATA	
Reported cases	Surveillance data	**Insecticide-treated nets (ITN)**	Malaria prevalence and coverage indicators survey, Oct 2005, Sudan Household Health Survey
Operational coverage of ITNs, IRS and access to medicines	Programme report	**Treatment**	
Financial data	Programme report	**Use of health services**	0