

THE MALARIA IN PREGNANCY CONTROL STRATEGIC PLAN

2004-2008



**NATIONAL MALARIA CONTROL
PROGRAMME & REPRODUCTIVE
HEALTH DIRECTORATE, FEDERAL
MINISTRY OF HEALTH. SUDAN**

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ACRONYMS

ANC	Ante Natal Care
COMBI	Communication for Behavioural Impact
DOT	Directly Observed Treatment
EANMAT	East Africa Network for Monitoring Antimalarial Therapy
EMRO	Eastern Mediterranean Regional Office (WHO)
EOC	Emergency Obstetric Care
FMOH	Federal Ministry of Health
GDATM	Global Fund to fight Aids TB & Malaria
HMIS	Health Management Information Systems
IMCI	Integrated Management of Childhood Illness
IPT	Intermittent Preventive Treatment
ITNS	Insecticide Treated Nets
LBW	Low Birth Weight
MIP	Malaria in Pregnancy
NGO	Non Government Organisation
NMCP	National Malaria Control Program
PHC	Primary Health Care
PHC	Primary Health Care
RBM	Roll Back Malaria
RH	Reproductive Health
SP	Sulphadoxine Pyrimethamine
WHO	World Health Organisation

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1. CONTEXT

Sudan is classified as a low income country and has suffered from continuous civil strife in the South, leading to successive waves of population movements, coupled with drought and desertification, major floods in the North and a severe loss of human resources, especially in the health sector. This has resulted in an extremely fractured and under-resourced health infrastructure.

Health care is delivered through a decentralised health care system, comprising 26 states, each with a Minister for Health. Whilst this State Ministry is politically powerful, it frequently does not have control over all the resources to enable translation of policy into implementation. The health system is currently fragmented, with inequitable distribution of resources and accessibility, which is exacerbated by poor health infrastructure due to sustained under investment and in some case destruction due to the ongoing civil conflict.

Health care is provided at three different levels in Sudan: the primary care level constituting 95% of facilities (i.e. PHC unit, dressing stations, dispensary and health centre), the secondary referral level (i.e. general or rural hospitals), and the tertiary level (i.e. provincial or specialist hospitals). Different levels of health care are managed by different levels of administration, which leads to difficulties with management of both human resources and supplies of essential drugs. The lower level facilities do not receive federal support and so are dependent on State and community support. The poorer States, less able to adequately fund these facilities, are likely to be in areas of greatest need.

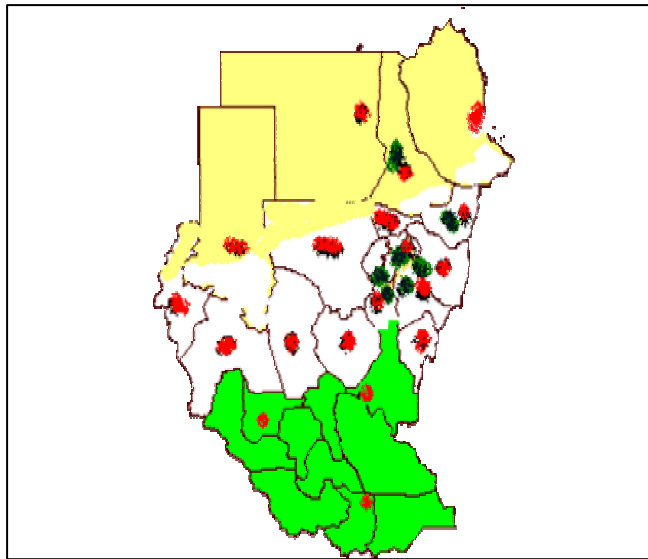
There is no culture of free health care provision in Sudan and patients must pay for both diagnosis and treatment. Over 50%¹ of the population live below the poverty line and so cost remains a major barrier to health care accessibility. There is also a sharp disparity between rural and urban health care provision, with a State such as South Kordofan reporting that 40% of its population live in a “red zone” meaning that these people have no access to any services for health, education, sanitation etc. The Federal Ministry of Health Annual Statistics Report of 2002 states that 15% of the total population have access to essential drugs.

2. EPIDEMIOLOGY OF MALARIA

Malaria is the leading cause of morbidity and mortality in Sudan, with an annual estimated number of 7.5 million clinical cases and 35,000 deaths.² *Plasmodium falciparum* is the dominant parasite and the principle vectors are *A. arabiensis*, *A. gambiae* & *A. funestus*. Table 1 (below) shows the varying epidemiological strata of malaria transmission across Sudan.

¹ WHO Sudan Country Cooperation Strategy 2004-2007.

² RBM in Sudan: Achievements, Constraints, and Challenges. Progress Report 2002. NMCP, FMoH, Sudan



Desert-fringe malaria
Urban malaria
 White area = seasonal malaria
Irrigated malaria
Perennial, high transmission malaria

Table 1: Transmission of malaria in Sudan. (NMCP data)

3. BURDEN OF MALARIA IN PREGNANCY

Each year, more than 1.2 million women become pregnant in Sudan³, of those 750,000 are in areas of intense perennial, high seasonal transmission or in areas of irrigation. It is well documented that the frequency and severity of malaria is greater in pregnant compared with non-pregnant women (Chandramohan and Greenwood 1998) 94% of clinicians interviewed in a situational analysis of malaria in pregnancy in Sudan stated that it was a problem.

Brabin estimates that 1%-23% of African hospital maternal deaths are due to malaria related complications, and from African community studies 3% - 18% of maternal deaths are due to malaria related complications. Maternal mortality in Sudan is currently 509/100,000 (Safe Motherhood Survey 1999.)

Consequences of malaria in pregnancy:

In areas with stable malaria transmission adult women are semi-immune to malaria, and therefore most malaria infections in pregnant women are asymptomatic. However, these asymptomatic infections contribute to the development of severe anaemia in the mother, resulting in an increased risk of maternal mortality. Malaria during pregnancy also impacts the infant's health, as a result of infection of the placenta and malaria-caused maternal anaemia, which both contribute to low birth weight (LBW), the single biggest risk factor for neonatal mortality (McCormick 1985). A Safe motherhood survey in 1999 in Sudan found that 46% of infant mortality occurred during the neonatal period.

In areas of low or epidemic (unstable) malaria transmission, adult women have little or no immunity to malaria and are at a 2-3-fold higher risk of developing severe disease as a result of malaria infection than are non-pregnant adults living in the same area. The consequences of malaria for pregnant women with no immunity, is that they are at risk of dying from severe malarial disease and/or of spontaneous abortion, premature delivery or stillbirth.

³ Malaria in Pregnancy in Sudan; Results of Situational Analysis. 2003. NMCP

4. MALARIA IN PREGNANCY POLICY

4.1 Malaria in pregnancy interventions will be delivered as part of a comprehensive Antenatal Care Package (in accordance with WHO policy).

4.2 Malaria in pregnancy will be treated at primary and secondary health care facilities using nationally agreed case definitions/diagnostic criteria and safe, efficacious drugs in all geographical areas of Sudan, in both the public and private sectors.

4.3 Malaria treatment for pregnant women and Intermittent Preventive Treatment (IPT) will be, wherever possible, provided free of charge through public health services.

4.4 ITNs of an agreed standard⁴ will be distributed at a subsidized price, to pregnant women.

4.5 Intermittent Preventive Treatment using Sulphadoxine-Pyrimethamine, administered as Directly Observed Treatment, will be administered as part of a comprehensive ANC package in areas of stable or high seasonal malaria transmission. Pregnant women in these areas will receive at least 2 doses of IPT after quickening, at least 1 month apart.

4.6 Key messages on malaria in pregnancy interventions will be integrated into the national malaria control communication plan and specifically target women and men.

4.7 Interventions will be targeted according to the different malaria epidemiological settings (see Annex III.)

⁴ According to the standards and specifications given in the forthcoming ITN policy and strategy for Sudan.

5.0 MALARIA IN PREGNANCY CONTROL STRATEGY

5.1 Overall Goal:

To contribute to the reduction of maternal mortality and infant mortality rate, by preventing malaria and its consequences during pregnancy.

5.2 Specific Objectives: (to be achieved by 2008)

1. To ensure that 60% of pregnant women attending ANC clinics in high transmission areas receive 2 supervised doses of Sulphadoxine-Pyrimethamine as Intermittent Preventive Treatment (IPT) according to National guidelines
2. To ensure that 60% of pregnant women report sleeping under an ITN specifically during the malaria transmission seasons
3. To ensure that 80% of households (pregnant women) retreat their nets before each malaria transmission season
4. To ensure that 75% of all primary health care facilities provide uncomplicated (simple) malaria case management for pregnant women according to National Guidelines
5. To ensure that 60% of hospitals provide severe malaria case management according to National Guidelines
6. To ensure that 40% pregnant women seek treatment from a trained health worker on the same day that fever started

See Annex I for expansion of the objectives, indicators and means of verification

5.3 Strategies:

Adopt WHO Strategic Framework for malaria control during pregnancy and gain consensus among all stakeholders for this policy. Implement strategies advocated for in this strategy according to the epidemiological zones.

Undertake the implementation and evaluation of this strategy in joint collaboration with NMCP and RH programmes of the FMOH, with support from partners such as WHO country office, EMRO and Malaria Consortium East & Southern Africa Office.

5.3.1 Case Management for Malaria in Pregnancy:

Geography- This strategy is relevant across all epidemiological zones.

Target Population- 1,550,000 pregnant women vulnerable to malaria throughout Sudan every year.

Situational Analysis: the national policy for the treatment of malaria in pregnancy is currently to use Chloroquine as first line and Sulphadoxine –Pyrimethamine as second line with Quinine (7-10 days) being reserved for severe cases. Documented resistance of malaria parasites in Sudan to Chloroquine range between 40-60% (day 14 clinical failure.) Clinical practice is widely varied and largely delivered by the private sector which is unregulated. Usual practice is either Chloroquine or Quinine parenterally. Diagnosis is made on either a clinical or laboratory basis, however, there are many issues with the quality control of blood films in Sudan (personal comms Dr El Dirieri.)

Strategies:

- i) Revise antimalarial drug policy and include malaria case management for malaria in pregnancy as a specific target (latest WHO advice-Bosman 2004 verbal comms- is to use Quinine orally as first line, given unresolved safety issues of Artemisinin based combination therapies.
- ii) Ensure endorsement of National Antimalarial Treatment Policy by professional bodies such as National Society of Obstetricians and then widely disseminate these guidelines, in collaboration with other programme such as IMCI and RH, to promote compliance and ensure adequate support supervision of clinicians in both the public and private sectors.
- iii) Link with NGO partners who are currently providing primary health care services to populations in the 8 Southern States, which are currently partially outside of the GoS control, and provide them with the new antimalarial treatment guidelines.
- iv) Make affordable case management packages (1st and 2nd line antimalarial drugs) available to primary health care facilities
- v) Expand the “reduction of severe malaria mortality project” from 7 to 75 hospitals and link with Emergency Obstetric Care training (provided by RH) to include a module on the management of severe malaria in pregnancy, for rural hospitals. Including the provision of case management packages of affordable diagnostics, drugs and supplies to all hospitals (309 in total)
- vi) Ongoing monitoring of the clinical effectiveness of antimalarial drugs through the HANMAT network

5.3.2 Intermittent Preventive Treatment:

Geography: This strategy is only recommended by WHO as a malaria prevention strategy in areas of stable, high transmission. Sudan will therefore target;

- the Southern States (high, perennial transmission) not all under the control of GoS
- irrigated areas around which there is stable transmission (Blue Nile, White Nile, Gazera & Sennar)

Target Population: 300,000 pregnant women per year

Situational Analysis: IPT is where “a full, curative treatment doses of an effective antimalarial drug given to women at predefined intervals during the second & third trimesters of pregnancy...given irrespective of peripheral parasite status & irrespective of clinical symptoms” (WHO, 2002)

There is currently no policy for IPT included in the National malaria treatment guidelines; however, as these are being revised IPT is being included. According to the WHO guidelines IPT is delivered as part of a comprehensive package of antenatal care (ANC) as directly observed treatment (DOT.) The most effective drug for IPT is Sulphadoxine-pyrimethamine due to its good safety profile in pregnancy, relative efficacy in reproductive-age women, and good programme feasibility, as a single dose treatment can be given under observation by the health worker.

SP resistance of *Plasmodium falciparum* parasites is currently less than 5% (personal comms Dr Sabatinelli WR Sudan). There are however, a number of barriers to this implementation in Sudan, as ANC is largely delivered by village midwives and health visitors that are only licensed to provide preventative services and not licensed to

administer drugs. It is also noted that SP is not a popular drug with clinicians, especially for use in pregnant women.

A pilot of Intermittent Preventive Treatment (IPT) using SP is currently being undertaken in Damazin teaching hospital (Blue Nile State) 2 health centres in Gazera State and Umger rural hospital and Kosti teaching hospital in White Nile State (implemented by NMCP & PLAN). In this pilot Drs, midwives and medical assistants are administering the IPT, 1 dose between 16-20 weeks and then the second dose after 10 weeks, but not after 30. This protocol does need to be adapted to ensure the maximum number of women receive 2 doses, at least 4 weeks apart, in accordance with WHO guidelines.

Strategies;

- i) Revise antimalarial drug policy and include IPT as a specific preventative intervention.
- ii) Ensure endorsement of National Antimalarial Treatment Policy by professional bodies such as National Society of Obstetricians and then widely disseminate these guidelines, in collaboration with other programme such as IMCI and RH, to promote compliance and ensure adequate support supervision of clinicians in both the public and private sectors.
- iii) Link with NGO partners who are currently providing primary health care services to populations in the 8 Southern States, which are currently partially outside of the GoS control, and provide them with the new antimalarial treatment guidelines.
- iv) Complete pilot of IPT and disseminate findings widely to all stakeholders, which will form the basis of lobbying for the inclusion of IPT into the preventative ANC package delivered in the community by community midwives and health visitors, in target areas.
- v) Ensure adequate supplies of SP available for the introduction and maintenance of IPT in target areas.

5.3.3 Insecticide Treated Nets for Pregnant Women:

Geography- This strategy is relevant across all epidemiological zones.

Target Population- 1,550,000 pregnant women vulnerable to malaria throughout Sudan every year.

Situational Analysis: currently, Sudan has very low ITN coverage. Existing nets are often of poor quality and few are treated with insecticide. There is generally poor availability of quality ITNs in the country and very little private sector interest. There is also the geographical challenge of an extremely large country. Therefore a phased approach to ITN distribution has been advocated for and developed by NMCP in collaboration with Communication for Behavioural Impact (COMBI.) Twelve States will be targeted for implementation during 2004 and this will be expanded to 14 States by 2005, using GFATM monies.

ITNs are an acceptable strategy to the communities of Sudan, however, a “Dumuria”⁵ net has been developed by Oxfam for use Nomadic tribes in the South of the country. This is an insecticide treated opaque net, that fulfils the need for a net which not only

⁵ Insecticide treated bed net trials, Lankien, Bieh state, Upper Nile, South Sudan. Bean, J (2001) Oxfam GB

protects against malaria, but one that also gives privacy, warmth and protection from animals and enemies, for these particular communities.

The challenges remaining for scaling up ITNs are⁶:

- Affordability of, and poor access to, ITNs, particularly for rural communities
- Lack of Ministry of Health standards and specifications for nets and insecticides
- An underdeveloped ITN commercial market
- Lack of net retreatment facilities and supplies of insecticides

Strategies:

- i) Develop means of targeting highly subsidised ITNs towards vulnerable groups, through the use of personal sellers working at community level, using a mass campaign approach.
- ii) Pilot the use of community midwives and health visitors as personal sellers, to enable targeting of newly pregnant women on an ongoing basis and the use of the preventative health services as a focus for ITN distribution. Resolve issues around these cadres handling funds. Thus encouraging the integration of malaria control and reproductive health services
- iii) Procure WHO approved ITNs and establish comprehensive distribution system to implementing areas
- iv) As part of the development of the National ITN policy (work currently undergoing NMCP/WHO Geneva and EMRO) include mechanism for monitoring retention of ITNs among target groups.
- v) Establish net re-treatment centres, encouraging community participation in all aspects of the planning, implementation and evaluation of this programme

5.3.4 Supportive Intervention Areas:

It is necessary for the success of these interventions to integrate this policy into other activities conducted by NMCP. Therefore the following strategies will be adopted.

Strategies:

- i) Establishing Technical Advisory committee for malaria in pregnancy, to ensure partnership between Reproductive Health and National Malaria Control programme and involvement of key stakeholders in all aspects of programme design and implementation.
- ii) Ensure that the new antimalarial treatment protocol, including malaria case management in pregnancy and preventative strategy of IPT, is included into pre-service and in service training and the relevant pre & post registration curricula
- iii) Integration of malaria in pregnancy communication messages, specifically use of IPT, attendance at routine ANC, use of ITNs and seeking early medical help for fevers during pregnancy, into the implementation plan of the Communication for Behavioural Impact (COMBI) plan.
- iv) To ensure that new malaria in pregnancy interventions are monitored it is important that existing ANC & delivery service tools (such as ANC cards and ANC & delivery registers) are modified to capture indicators on the implementation progress and the impact of these interventions. However, this will be challenging as the National HMIS system is not currently functioning and ANC and delivery services are segregated and so follow up will be difficult unless clients begin having client held records.

⁶ RBM Reaping Report Sudan. Malaria Consortium 2004.

- v) In the absence of a functioning HMIS system, recommend that at the meeting with State RBM teams in April 2004, a standardised monitoring tool is developed.
- vi) Identify areas in which operational research is needed and input into the design and funding of such projects.

See ANNEX II for expansion of the strategies, indicators and means of verification and key assumptions.

6.0 FINANCING:

Where cost sharing currently exists this will continue, but where this is a barrier to service utilisation (such as ITN use or prompt treatment for fevers) every effort will be made to target subsidies to these groups.

The RH and NMCP programmes will aim to fund the required training and will continue to pool resources wherever possible, to ensure that activities are conducted more efficiently, additionally IMCI training will be used as a forum for reaching a greater number of health workers. The severe malaria training will be incorporated into EOC training.

NMCP will aim to fund antimalarial drugs and ITNs and the reproductive health directorate will provide anti-haematinics

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WHO Sudan Country Cooperation Strategy 2004-2007.

WHO (2002) Strategic Framework for Malaria Control During Pregnancy in the Africa Region

ANNEX I: Objectives of Malaria Control Strategic Plan

General Objective:	Objectively Verifiable Indicators	Sources of Verification	Assumptions
To contribute to the reduction of maternal mortality and infant mortality, by preventing malaria and its consequences during pregnancy.	30% reduction in severe anaemia (Hb<50%) in pregnant women at delivery 40% reduction in low birth weight babies	ANC card and delivery records	Other causes of anaemia & low birth weight in the community stay constant
Objectives:			
1. To ensure that 60% of pregnant women attending ANC clinics in high transmission areas receive 2 supervised doses of Sulphadoxine-Pyrimethamine as Intermittent Preventive Treatment (IPT) according to National guidelines	% of pregnant women receiving 2 doses of SP out of total ANC attendees	ANC clinic records	SP remains effective. IPT is an acceptable intervention
2. To ensure that 60% of pregnant women report sleeping under an ITN specifically during the transmission seasons	% of pregnant women reporting sleeping under ITNs last night when questioned at ANC attendance	ANC clinic records	ITNs are available. ITN distributed are retained by pregnant woman
3. To ensure that 80% of households (pregnant women) retreat their nets before each transmission season	% of households re-treating their nets	Tracking survey	ITNs and insecticide are available
4. To ensure that 75% of all primary health care facilities provide simple malaria case management for pregnant women according to National Guidelines	75% of cases of simple malaria in pregnancy receiving appropriate treatment	Facility based survey	Parasites remain sensitive to 1st & 2nd line antimalarial treatments. Drugs are available
5. To ensure that 60% of hospitals provide severe malaria case management according to National Guidelines	60% of complicated malaria in pregnancy are receiving appropriate treatment	Facility based survey	Drugs & supplies are available
6. To ensure that 40% pregnant women seek treatment from a trained health worker on the same day that fever started	% of pregnant women seeking treatment on the same day that fever starts	Facility based survey	Health facilities are accessible

ANNEX II: MALARIA IN PREGNANCY WORKPLAN:

Overall Objective:	Who Responsible	Deadline				Objectively Verifiable Indicators	Sources of Verification	Assumptions
		2004	2005	2006	2007			
To contribute to the reduction of maternal mortality and infant mortality, by preventing malaria and its consequences during pregnancy.								
Activities: (IPT)								
1. Include IPT as preventative strategy in new antimalarial drug policy guidelines	NMCP	June				Policy statement on IPT, stating which drug to be used and the schedule	National Guidelines	New Drug Policy is accepted
2. Develop & print training manual and guidelines for health workers,	NMCP/RH	July				Number of Manuals and Guidelines printed	Stock card at warehouse	
3. Complete IPT pilot	NMCP	Dec				Completion of IPT pilot	Research reports	
4. Advocate for IPT with policy makers, Obstetricians, professional bodies	All	√	√	√	√	Number of policy makers aware of IPT policy	IPT policy endorsed by professional bodies	
5. Quantify & procure SP to implement IPT	NMCP	√	√	√	√	Stock of SP	Stock card at warehouse	
6. Develop system for distribution of SP to midwives and Health Visitors	NMCP, RH, Central Medical Supply	May	√	√	√	% of midwives having stocks of SP	State RBM reports	Community midwives delivering IPT is acceptable strategy
7. Undertake training of health workers in all sectors for the selected targeted areas for IPT	NMCP/RH	Sept	√	√	√	Number of health workers trained on IPT in target areas	Training reports	

	Who Responsible	Deadline				Objectively Verifiable Indicators	Sources of Verification	Assumptions
		2004	2005	2006	2007			
8. Link with NGOs providing health care in southern states and encourage them to implement IPT according to National Guidelines, using NMCP training manual	NMCP	Aug	√	√	√	% of NGOs delivering primary health care that agree to implement IPT as part of ANC	ANC clinic registers	This strategy is only relevant for as long as NGOs continue to provide PHC in SS
9. Introduce IPT in phases, to create demand for IPT amongst pregnant women	NMCP	Sept	√	√	√	% of target States implementing IPT	State RBM reports	IPT is an acceptable strategy in all target areas
Activities: (ITNs)								
1. Procurement of ITNs & insecticide	NMCP	√	√	√	√	Number of ITNs and insecticide sachets procured	Stock cards at warehouse	
2. Distribution of ITNs via mass distribution using campaigns using personal sellers,	NMCP/RH	March	√	√	√	% of target localities undertaking mass distribution	Distribution reports	
3. Pilot distribution of ITNs in Gazera. Using the health centre, as the preventative focal point for storage, then distribute ITNs to HV and community midwives, for them to distribute to ANC attendees, at a highly subsidised price	NMCP	April	√	√	√	Number of ITNs distributed by midwives in Gazera	Distribution reports	Funding available for pilot
4. Compare 2 mechanisms for distribution of ITNs and decide on way forward	NMCP	Aug				Meeting reports	Work plan for the way forward	
5. Bed net re-treatment centres established	NMCP	June	√	√	√	Number of net re-treatment centres established	State RBM reports	

	Who Responsible	Deadline				Objectively Verifiable Indicators	Sources of Verification	Assumptions
		2004	2005	2006	2007			
Activities (Case Management)								
1.Consensus reached on antimalarial treatment policy for malaria during pregnancy	NMCP	June				Treatment Advisory Committee meeting notes	MIP policy endorsed by professional bodies	Ongoing dialogue with professional bodies is possible
2.Development of guidelines and training manual for malaria in pregnancy case mx	NMCP, RH	July				Number of Manuals and Guidelines printed	Stock card at warehouse	
3.Refresher training of all health workers in MIP case management at the same time as new antimalarial drug policy training	NMCP, RH	June	√	√	√	Number of health workers trained in MIP case management	Training reports	
4. Link with EOC package for rural hospitals and add module of severe malaria case management for MIP	NMCP, RH	√	√	√	√	% of rural hospitals that have been trained in EOC/severe malaria	Training reports	
5. Expansion of malaria mortality project from 7 to 75 hospitals to include the delivery of training to state and locality level hospitals	NMCP	√	√	√	√	% of hospitals implementing the "reduction of malaria mortality project"	State RBM reports	
6. Avail malaria case management package (including diagnosis) to hospitals at affordable rates	NMCP, RH	√	√	√	√	% of hospitals having no stock outs of antimalarial drugs	State RBM reports	Depends on finalisation of protocols
7. Avail antimalarial drugs (first & second line and pre-referral dose) to all health facilities	NMCP	July	√	√	√	% of health facilities having no stock outs of antimalarial drugs	State RBM reports	Depends on finalisation of protocols

	Who Responsible	Deadline				Objectively Verifiable Indicators	Sources of Verification	Assumptions
		2004	2005	2006	2007			
Activities: (Supportive Strategies)								
1. Establishing Technical Advisory committee for malaria in pregnancy	NMCP	March	√	√	√	Meetings occurring	Minutes of meetings	
2. Incorporate new antimalarial treatment protocol, including malaria case management in pregnancy and preventative strategy of IPT, into pre-service and in service training and relevant curricula	NMCP, RH	July	√	√	√	% of health worker curricula containing new antimalarial treatment policy, MIP and IPT	Pre & post graduate health worker training curricula	
3. Communication for behavioural impact for IPT, ITNs and seeking early medical help for fevers during pregnancy, targeted pregnant women	NMCP	Aug	√	√	√	% of communities, against annual target, who have been mobilised by COMBI teams	COMBI team reports	COMBI plan receives funding
4. Review HMIS and ANC cards to ensure that MIP indicators are captured routinely	NMCP, RH		Jan			% of health facilities using adapted HMIS system	Monthly HMIS reports	Functioning HMIS system
5. Operational research	NMCP, RH		Jan	√	√	Number of research questions answered	Research reports	Funding available for research
6. Develop State RBM team monthly report format	NMCP, RH, MC	March				% of State RBM teams submitting monthly report in standardise format	State RBM teams monthly reports	

ANNEX III:

Stratum	Endemicity	Population	States	Selected areas for IPT	Selected areas for ITNs	Selected areas for case management
Desert fringe	Hypoendemic	2,000,000	Northern River Nile, Red Sea except Port Sudan and North darfour except Elfashir	-	-	All Over
Poor savannah with seasonal malaria	Hypoendemic Mesoendemic	15,000,000	Rural areas in greater Darfour, Kordofan, Blue Nile, White Nile, Sennar, Gezira, Gerdarif, Kassala, Khartoum	South Darfur, South Kordofan and areas near river Nile in Blue Nile, West Nile & Sinnar	All Over	All Over
Stable perennial transmission	Hyperendemic	4,000,000	Southern Sudan	All Over	All Over	All Over
Urban malaria	Hypoendemic Mesoendemic	8,000,000	Khartoum and all large cities e.g Port Sudan, Wad Medani	-	Areas which parts of moderate to high transmission	All Over
Irrigated schemes	Usually in the mesoendemic zones	2,000,000	All laerge sacel irrigated schemes (Gezira, Elrahad, Kinana, Asalia, West Sinnar, New Halafa & Elzidab)	All over	All Over	All Over