Government of Sudan

Federal Ministry of Health

National Malaria Control Programme

Sudan Malaria Program Performance Review

Aide Memoire

December 2013

I. Purpose

Malaria Program-performance review (MPR) is a program development process subdivided into two steps: assessment of performance of country malaria control programs; and refining or redefining the strategic direction and focus. The current Sudan malaria control strategic plan (2011-2015) is envisaged as a malaria control plan towards achieving universal coverage with appropriate and affordable services. Taking into consideration the strategy is midway in its implementation; the MPR was considered a useful midterm evaluation tool. In addition to this there has been a perceived reduction in malaria burden between 2001 and 2012 and very low parasite prevalence in some states, Khartoum, River Nile, Red Sea and Northern states necessitated a programme reorientation from control to the consolidation of gains including pre-elimination as part of the malaria control-elimination continuum, hence the need for an MPR to facilitate a targeted epidemiological approach to malaria.

II. Background

Commissioned by the Federal Ministry of Health (FMoH) in consultation with key stakeholders; the review was coordinated and managed by the Public Health Institute (PHI) in conjunction with the National Malaria Control Programme(NMCP). The MPR objectives were to: review malaria epidemiology in the country (endemicity, seasonality, parasite prevalence, vector distribution); review the policy and programming framework within the context of the health system and the national development agenda (programme organization, structure and management); review the current programme service delivery systems, their performance and challenges; including opportunities for integration of services for FMoH ; assess progress towards achievement of targets and document achievements such as the Khartoum Malaria Free Initiative(MFI) as well as others; define the next steps for improving programme performance and/or redefine the strategic direction and focus; including revision of the strategic plan and operational plans.

The MPR consisted of four phases: phase I: partnership and planning; phase II: internal thematic desk review; phase III: joint programme field validation; phase IV: final report, follow-up of recommendations; updating policies, strategic plans and re-designing the programme.

This aide memoire summarizes the major findings and critical actions emerging from the Sudan MPR.

III. Key Findings

The MPR documented findings along eight thematic areas: epidemiology; diagnosis and case management; vector control; surveillance, monitoring and evaluation (M&E) and research; epidemics and emergency preparedness and response; programme management; advocacy, information, education, communication and community mobilization and procurement and supply management.

1. Malaria Epidemiology in Sudan

The objective of the National Malaria Control Strategy (NMCS) 2011-2015 is to reduce the morbidity and mortality of malaria by 50% by 2015 all over Sudan (compared to reported cases in 2009). There is a general consensus among stakeholders that the malaria burden is decreasing and malaria programme is on track to reach the main objective of the national strategy; however it is difficult to conclude the exact magnitude of the reduction particularly at subnational level from the available data, mainly from Health Management Information System (HMIS), due to its incompleteness and inaccuracy. In 2011, in comparison with 2009,

incidence of reported confirmed cases has decreased by 36%, and reported number of deaths by 46%. Reported total (probable and confirmed) malaria incidence has decreased by 71% in 2011 in comparison to 2000. The incidence of inpatient cases decreased by 25% in 2011 in comparison with 2000 and the proportion of inpatient malaria cases to all cause cases decreased from 26% to 9%. Parasite prevalence at national level was 1.8% in 2009 and 3.3% in 2012. Gedarif and south and west Darfur states were the main contributors to the rise in the parasite prevalence. The objective of the national strategy in areas targeting for malaria free status is to have reported malaria incidence, with 100% laboratory confirmation and reduction of confirmed incidence by at least 80% as compared to 2009 and will reach the level of 10 cases per 1000 in Northern, Red Sea, River Nile, Gezira and White Nile sates. The confirmation rate and incidence rate in these states cannot be verified with available data.

Plasmodium falciparum is responsible for more than 95% of malaria cases in Sudan. However, an increase in *P. vivax* cases has been noticed in the last years. The primary vector is *Anopheles arabiensis* and is widely distributed in Sudan although *An. funestus* has been reported in southern parts of Sudan (White Nile state).

Action points

- Conduct risk mapping and burden estimation of malaria for stratification at the lowest possible administrative level using all available data including 2005, 2009 and 2012 Malaria Indicator Surveys (MIS)and routine data for strategy development
- Determine the distribution of malaria parasite by species by introduction of RDTs that detect other species than *P.falciparum* particularly in areas that there is enough evidence of transmission of *P. vivax* and include differentiation of species in reporting formats
- Conduct further investigations to find reasons that may have contributed to the rise in parasite prevalence rate in MIS 2012

2. Diagnosis and case management

Based on the target of NMCS 95% of malaria patients in Sudan will receive prompt and effective treatment as per the national treatment policy by 2015. The use of AS+SP has: increased from 44% in 2009 to 47.7% in 2012. A functioning national technical advisory committee for malaria case management exists. Diagnosis and treatment are based on updated national treatment guidelines developed in 2004 including diagnosis, case management of severe malaria and malaria in pregnancy. It was distributed widely all over the country to cover public, NGOs treatment centers and health facilities and some private health facilities. In addition, there are training manuals and job aids for different care providers (medical doctors, medical assistants, and nurses) in English and Arabic languages. The compliance of physicians with treatment guidelines is poor and use of injectable artmether unnecessarily for uncomplicated malaria is wide spread in public and private sectors. Technical advisory committee recommended restricting procurement and distribution of injectable artmether. The coverage of health facilities with malaria diagnosis in 2012 was more than 80% for RDTs among basic health units. Microscopy diagnosis with varying quality is available in health centers and hospitals but there is no recent data to estimate the proportion of functional facilities. In 2012, 78% of health facilities were providing ACTs according to national treatment policy. The NMCP had stock out of ACT in the last quarter of 2012 and the first quarter of 2013. The Home Management of Malaria (HMM) has expanded to reach 1,131 communities with coverage of 48% of the total targeted communities. This achievement is on track with 65% target of national strategy. However, weak supervision and high drop out of volunteers are the main challenges of the HMM services. As for other diseases, there is a weak referral system and hence poor compliance to protocols. National policy is still not clearly

indicating that malaria diagnosis and treatment must be free for communicable diseases to stop public transmission. ACT and RDT are free in public health facilities but not microscopy.

Action points

- Increase rapidly coverage of RDT and ACT up to 100% in all primary health care facilities. Quality of malaria microscopy requires more attention with enforcement of the SOPs.
- Continuous re-orientation of all health workers as guidelines are updated
- Strengthen the health personnel capacity on diagnosis, treatment, recording, referral, and community mobilization for both *P. falciparum* and *P. vivax*.
- Rapidly expand the access to HMM volunteers in villages and reduce their attrition rate through appropriate incentives and revision of selection criteria to include female volunteer wherever is possible while going for community health assistant in line with the national health policy
- Establish a compulsory QA mechanism of all imported and locally manufactured equipment and reagents for lab.
- Enforce regulation for accreditation of private sector regarding laboratory and case management.

3. Malaria vector control

There is a strong national network of entomological surveillance, which comprises of 64 sentinel sites in17 States this is supported by two entomological reference research and training centres at Sennar and Blue Nile National Institute for Communicable Diseases. A national inter-sectoral committee (ISC) has guided the process of integrated vector management (IVM) at the national level, consequently an IVM department exists as a component of the environmental health department, which is under the Directorate General of Primary Health Care. Steady progress, with 54% operational coverage in ten states in 2013 in comparison with 17.6% in 2012, has been made in up-scaling Long-lasting Insecticide-treated Nets (LLINs), with maximum coverage achieved in a few selected States (Blue Nile and West Darfur) whereas similar progress in other states has not been made. Based on the results of household surveys, household ownership of ITNs increased from about 41% in 2009 to 51% in 2012 and proportion of households with at least one LLIN per 2 persons in household was 16.5% in 2012. Proportion of household members who slept under LLIN did not change (10.8 % in 2009 and 10.5% in 2012) which is far from the 90% target of national strategic plan. The proportion of household members who had LLINs and slept was 25% in 2009. In one study conducted by the programme in 2012 in three states, 85% of household members who had LLINs slept under the net. Annual Indoor Residual Spraying (IRS) operational coverage has remained above 90% in 2 States (Gezira and Sennar), which exceeds the targeted coverage (85%) by 2015. However operational challenges due, to insufficient insecticide stocks, inadequate logistical support and operational cost have delayed the expansion of IRS operations to other targeted localities. Insecticide susceptibility surveys conducted between 2007 and 2013 in 10 states revealed resistance to 3 insecticide classes (organochlorine, organophosphate and pyrethroid), further investigations are underway to identify the resistance mechanisms involved, geographical scope and incrimination of the vector. Larval source management has been an important component of the Malaria Free Initiative (MFI) launched in Khartoum in 2002 and contributed to a significant decline in malaria prevalence from 29.2% in 2002 to 0.35% in 2008. Coverage of LSM, aside from Khartoum, is 33.7%. The target of national strategy is 85% by 2015.

Action points:

- Expedite up-scaling of LLINs and IRS to the targeted States/localities in order for the agreed targets to be achieved by 2015
- Conduct routine LLIN utilization and tracking surveys so to assess behavioral impact of IEC (Information, Education and Communication) campaigns and make the necessary revisions needed to ensure high LLIN utilization
- Consolidate and expand larval source management to urban settings with emphasis on supervision to prepare for pre-elimination phase and sustain the gains made through the Malaria Free Initiative (MFI) in Khartoum.
- Enhance entomological surveillance system to incorporate all vector borne diseases at the state and locality level by further capacity building and upgrading infrastructure
- Develop a mapping system for insecticide resistance and vector distribution so as to guide the National technical advisory committee in developing a comprehensive, pre-emptive and context specific insecticide resistance management strategy, which centres on the judicious use of insecticides
- Develop an updated integrated vector management strategy and implementation plan, which is guided by evidence, based decision making and is based on strong inter-sectoral and intra-sectoral participation
- Extend inter-country and cross border collaboration to other countries (Ethiopia and Eritrea, Central Africa, Chad, South Sudan) – focusing on vector surveillance, insecticide resistance monitoring and vector control interventions
- Develop and implement insecticide resistance management tactics where emerging resistance is reported.
- Conduct routine monitoring of LLIN durability for appropriate replacement
- Monitor new agricultural projects, and assess its effect on malaria burden and ensure protection of affected population.

4. Surveillance, M&E and research

Target of the NMCS for implementation of national malaria database at the states level is not implemented yet. States have M&E units and M&E plan. Planned MIS was conducted in 2012 and draft report is available. Malaria surveillance in Sudan consists of multiple and fragmented systems. Malaria weekly reporting system consisted from 154 sentinel sites, that are reporting total number of cases, number of tested, confirmed cases, deaths, inpatients and all causes of outpatient and inpatient cases, all by age group. The system potentially provides needed information for detection of epidemics and an overall picture of trends of diseases at national and subnational level in the absence of reliable monthly data from HMIS. However this system is facing challenges such as: shortage of enough trained staff mainly due to high turnover, low coverage of sentinel sites in some states, low quality of microscopy and its quality control in some sentinel sites, weak data management, analysis, usage and feedback particularly at the sentinel site and locality level and in some cases even at the states level. Department of epidemiology and surveillance has its more than1500 sentinel sites in the whole country and malaria is one of the diseases covered by this system. The report in this system is weekly and includes number of cases treated as malaria; however, confirmed cases are not reported. There is a plan for strengthening Integrated Disease Surveillance (IDS) system by department of epidemiology and surveillance. The epidemiology department informs malaria programme if they detect increase in the number of cases but data are not shared with malaria programme in all states. Routine health information system collecting monthly data on total reported cases, confirmed cases and all causes by age group but there is no data on the number of tested. Reports shows that almost all public hospitals are reporting health services utilization data, while only around 30-40% of PHC facilities are reporting. Ministry of health is planning

for implementation of health information system reform strategy for strengthening routine information including malaria in an integrated approach.

Sudan has a strong history and capacity for basic and operational research in different aspects of malaria at the national and subnational malaria programmes, universities and research institutions. Malaria control programme has established some collaboration with research institutions however this link is not dynamic and does not include all institutions involved in malaria research. Programme has a research focal point and is involved in operational research. There is no comprehensive database of the conducted researches in the country that potentially are sources for valuable evidences for strategy development and updates.

Action points:

- NMCP to ensure active participation and coordination with HMIS for implementation of health information system reform strategy and Integrated disease surveillance for strengthening IDS
- Reassess malaria sentinel surveillance for decision on distribution number of sites and modality of work of this system particularly in view of integration approach in FMoH in coordination with epidemiology department
- Compile and analyze all RDTs and Artemisinin-based Combination Therapies (ACTs) reports to Central Medical Supplies (CMS) by health facility starting from the year that is available and triangulate with HMIS, malaria sentinel sites data and health facility and household surveys
- Establish a malaria data management system including a robust and user friendly database, at the first stage, for state level then to expand to the localities
- Ensure documentation, information sharing and reporting on periodic basis and publishing comprehensive annual malaria report
- Introduce and strengthen a supportive supervision, on job training and coaching approach to strengthen capacity of staff to use generated data for programme planning and management
- Establish a steering committee for research for leading the malaria research agenda

5. Epidemic and emergency preparedness and response

Target of NMCS is to detect and properly respond to 80 % of malaria epidemics within 2 weeks of onset. This is on track with more than 80% being detected. Sudan has a history of frequent and devastating malaria epidemics in the low and unstable seasonal transmission areas in the Northern, River Nile, Khartoum, White Nile, Geziera, Kassala, Gedarif, Red Sea and North Kordofan, especially in urban areas. The major risk factor for epidemics has been increased rainfall, spread of irrigated agriculture within city limits, construction of new urban colonies without proper facilities for drainage, influx of refugees and IDPs. There has been an overall reduction of major epidemics reported in the last decade. The last epidemic reported has been in 2009 in Shabasha area, El duweim locality in White Nile State. There is collaboration with the Metrological services but this needs to be more structured to be able to provide short and medium term malaria forecast for early warning in relation to annual seasonal rainfall forecast and in relation to expected cyclical post drought forecasts. For early detection and response to outbreaks there is 154 malaria specific sentinel sites and more than 1500 sentinel sites in epidemiological weekly surveillance system with the use of malaria thresholds in some states such as Khartoum, Gezira, Sennar. There is a need to establish standard a malaria threshold in all states. The epidemic response is through state malaria control programs which prepare annual preparedness plans with estimated emergency stocks of commodities. There are also general epidemic response teams under the epidemiology section at state level.

Since 2003 there has been a gradual increase in emergency situation in some states has become a major barrier to universal access and coverage with service delivery. However the program has continued to access remote and hard to reach areas through its state and locality malaria teams supplemented by use of HMM volunteers at village level. The program has also been able to directly deliver vector control services to all IDP and refugee camps and has built

a unique partnership with national (Roufeda, Sudan Red Crescent) and international NGOs (MSF, Plan , World Vision etc.) and UN agencies (UNICEF, WHO, UNHCR) to compliment supplies and deliver RDT and ACT though IDP health centers.

Action points

- To standardize the use of simple malaria thresholds in all weekly epidemiological reports in all states to be used at health facility and locality levels
- To ensure epidemic contingency commodity stocks and emergency funds are not only planned but pre-positioned annually before the raining season.
- Malaria program to jointly prepare annual preparedness plans with states, national and international NGOs for IDPs and refugee camps and localities for capacity building and increasing access through HMM volunteers and community leaders and primary health care facilities
- Build capacity to acquire and use needed information for short and long term epidemic forecasting in collaboration with meteorological department

6. Malaria Programme Management

The target of NMCS is that all malaria programs at locality level will have at least 4 trained staff on different aspects of malaria control. It is reported that in 2013, 90% of locality malaria programs out of target of 107 have at least 2 trained staff on different aspects of malaria programs. The Sudan NMCP is a division at level three in the FMOH organogram under the Directorate of Communicable and Non- communicable Disease Control and General Directorate of Primary Health Care. Following the FMOH policy of integration in early 2013 the program has now downsized from three well-structured departments to one, consisting of monitoring and evaluation department with a support of administration unit headed by the director of National Malaria Control programme. The state malaria control programme (SMCP) in each of the 17 states are well structured with adequate capacity in four departments; monitoring and evaluation, case management, Integrated vector control and advocacy, IEC and partnership supported by an administration unit. The program has a strong human resource technical capacity built on a core of public health officers. This is supported by a positive strategy for on-going in-service training and postgraduate training in entomology and public health but continues to struggle to fill gaps and retain well trained staff especially at the locality level and deploy adequate field workers at administrative and village levels. NMCP has been experiencing changes in offices that resulted in disorientation of staff, efficiency decrease and sometimes loss of vital documents.

The Sudan RBM initiative launched in 1998, the first strategic plan was from 2001 to 2010.The current malaria strategic plan if from 2011 to 2015 and is not aligned to the national health planning cycle 2012 to 2016. The states strategic plans and annual plans are aligned to the federal strategic and annual malaria operational work plans. The program has overtime developed a strong network of national and international partners and stakeholders but there is no updated annual mapping of stakeholders and their contributions with scheduled quarterly and bi-annual consultative meetings. There is lack of support by a functioning and broad based malaria technical committees and thematic area sub-groups from other health departments, universities and research institutions except malaria case management. Malaria policies in prevention (LLIN, IRS and IVM) and diagnosis and treatment (Microscopy, RDT and ACT) are aligned with WHO recommendations. There has been increasing malaria financing since 2000 from the government at federal, state and locality level and by many local partners. Malaria control programme is being supported by the Government of Egypt, Islamic Development Bank and the Global Fund, WHO and UNICEF. Gap analysis has not been updated annually. The program conducts joint review and planning meeting three times a

year supported by production of quarterly and annual reports at state level. However, NMCP is not being producing quarterly and annual reports.

Action Points

- Update malaria policies, strategic and M&E plans in line with the national health strategy based on a broad based consultation with the states and all partners and stakeholders.
- Strengthen the institutional and managerial capacity of the NMCP and establish a new coordination focal point in NMCP to ensure malaria program success is sustained and to effectively support primary health care service delivery integration and decentralization with other health departments, partners, private sector and other sectors at all levels of the national health and development system.
- Conduct annual assessment of the malaria human resource gaps at locality and state level and ensure incentives and sustain capacity building for all malaria workers in line with the FMOH guidelines.
- Annual assessment of the malaria financing gaps at locality and state level to increase and sustain domestic funds with monthly, quarterly and annual malaria financial reporting at all levels with capacity building of the malaria administration units
- Establish technical malaria committee and thematic sub-committees and allocate funding for their scheduled meetings and for coordination with existing and potential partners and stakeholders
- Improve timely production of quarterly and annual malaria program reports at state and federal level with appropriate indicators and presentation templates to support effective decision making for timely action on status of delivery, accountability and performance

7. Advocacy, information, education, communication and community mobilization

In 2012, only 30% of the surveyed household had knowledge of the essential package for malaria. Proportion of individual with fever who took medical advice within 24 hours increased from 16% in 2009 to 35% in 2012. The advocacy campaigns for malaria in Sudan have resulted in a very good understanding among politicians and decision makers. Malaria is a priority in national health sector planning and national development planning. This is reflected in strong presidential political commitment and national ownership reflected through increase domestic financing, removal of taxes and tariffs on malaria commodities and incentives for malaria workers. Annual World Malaria Day events continue to sustain advocacy and social investment. The IEC strengths include the availability of health promotion staff, introduction of Communication for Behavioral Impact (COMBI) strategy and the Government commitment to support the malaria prevention. Advocacy, IEC and partnership health promotion officers are present in all states and in some localities and administrative units in some states. However to reach universal coverage there are not enough health promotion officers and there is need to extend this community sensitization and mobilization capacity at field and household level through training of community leaders and youth groups, HMM volunteers, Mosquito control field workers, Red Crescent volunteers, school sensitization and by revitalizing of the national community health worker program.

Malaria IEC materials are widely available but there is need to conduct more focussed research and update the key malaria messages to target populations and produce relevant materials in adequate quantities to use in house visits. The use of malaria metallic bill boards along the roads and other strategic travel points could help to address the issue of malaria associated with movement of people between high and low or malaria free areas.

Malaria indicator survey and other house hold health surveys continue to provide an opportunity to review progress of KABP on malaria at household level.Focus of IEC and even the whole malaria program is centred on mosquitoes and not on parasites.

Action points

- Conduct focused research in different states to update and prepare more state and target population specific malaria messages and IEC materials
- Build capacity all malaria staff and partners with different approach to adopt the COMBI approach to malaria behavior change communication.
- Establish health promotion technical working group with clear roles and responsibilities.
- Use KABP survey results to adapt IEC material and campaigns supported by a network with research institutions in order to build in-country research capacity on KAP surveys
- Increase and sustain funding commitment to IEC, BCC and social mobilization in order to produce quality results with robust evidence

8. Procurement and Supply Management

The Central Medical Supplies with its revolving fund for subsidized medical supplies has been integrated with GF-Malaria free RDT and ACT supply system since 2012. The storage and logistics support (107 sites) for delivery of Malaria RDT and ACT has been strengthened from locality to state and central level. However some localities have not been covered. There is a monthly reporting system on RDT and ACT and malaria cases treated from all health units to CMS at state level. The locality and state malaria programs do not jointly track monthly stock levels with CMS. This central and state system does not include procurement and supply of LLIN, IRS and LSM chemical and equipment. The storage for LLINs, vector control equipment and chemicals at locality level appears inadequate and has not received specific attention. The quantification and forecasting of IRS and LSM chemicals, pumps, LLINs, RDTs and ACTs is in place in joint collaboration by CMS and NMCP but remains a challenge due to variation in use and demand by health facilities and malaria workers. There have been reports in the late 2012 and early 2013 of RDT and ACT stock outs and delay in scaling up of IRS campaign due to delay in financing and procurement. There is local production of ACT but all other malaria commodities are imported.

Action points

- CMS should routinely share monthly reports with Malaria Control Programmes at locality, state and federal level and track stock levels on RDT and ACT and buffer stocks availability
- Federal Ministry of Health should use WHO recommendations for standard specification and quality of all malaria commodities
- Federal Ministry of Health to review and address need for vector control commodities storage and logistics at all level
- Federal Ministry of Health to explore with local private sector and bilateral collaboration for local production of LLIN, RDT, LSM and IRS chemicals

IV. CONCLUSION

Through a highly consultative process involving a number of partners and policy makers, the Malaria Programme Performance Review has highlighted achievements, articulated challenges, and proposed strategic orientation and action points for malaria programming and pre-elimination in Sudan.

The program has shown high level performance and success over the past decade and needs to renew and strengthen political commitment, policy and strategic direction and management capacity to move to rapidly intensify control towards universal access and coverage and in targeted states and localities to consolidate control and move to pre-elimination in others to reach MDG goals and targets by 2015.

Recommended priorities from the review for the next five years towards consolidation of gains and pre-elimination are as follows:

- Develop a comprehensive Strategic Plan for malaria in Sudan including sustained control as well as and pre elimination in selected states and localities, wherever feasible, based on global guidance, new epidemiological realities and local micro-stratification by lowest administrative level possible and integrated approaches.
- Advocate for government to sustain political commitment and increase domestic financial resources to malaria control.
- Active participation and coordination with HMIS for implementation of health information system reform strategy and Integrated disease surveillance
- Provide NMCP with a functional malaria database and strengthen capacity of programme staff for analysis of existing epidemiological data for programme planning and management
- Improve the framework for partner coordination, inter-sectoral collaboration and strong involvement of private sector and community at all levels

V. COMMITMENT

We, Government of Sudan and Partners, re-commit ourselves to the implementation of the programme review actions points with the ultimate goal of malaria pre elimination in the country.

This "Aide Memoire" does not in any way constitute a contractual document between the government and its partners and has no legal implications. It is a statement of intent between signatories to jointly support efforts to achieve the objectives of malaria control in Sudan by 2016.

Signed on behalf of the Government of Sudan and Partners

Minister of Health
Mr. Bahar Idris Abu Gardah

Undersecretary of the Ministry of Information

Undersecretary of the Ministry of Finance & National Economy

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UNICEF Country Director

Undersecretary of the Ministry of Agriculture & Irrigation

Director of the Sudanese Red Crescent Society

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Director of Financial Investment Bank

Undersecretary of the Ministry of Public Education

MSF Spain Country Director

In Khartoum, Sudan on Monday 30th Dec.2013