

Draft 26.2.2009

In-depth review of the Tuberculosis program of Sudan November 2008

**Part II: Annexes:**

1. Terms of reference
2. Draft report presented at the end of the visit
3. Itinerary
4. List of persons met
5. List of references consulted
6. Follow-up of in-depth review 2004
7. Laboratory annex I
8. Laboratory annex II
9. Laboratory annex III
10. Forms: Quarterly report on case finding and TB register, showing the new variable of DOT monitoring
11. Subnational analysis
12. Main feedback issues in Gedarif
13. Visit to Sinnar state

REPUBLIC OF SUDAN  
FEDERAL MINISTRY OF HEALTH  
NATIONAL TUBERCULOSIS CONTROL PROGRAM



NORWEGIAN HEART & LUNG PATIENT ORGANISATION

WORLD HEALTH ORGANISATION

3rd IN-DEPTH REVIEW MISSION FOR NTP

NOVEMBER 2008

**TERMS OF REFERENCE - TOR**  
**3<sup>RD</sup> IN-DEPTH REVIEW OF SUDAN NTP**  
**11<sup>TH</sup> TO 24<sup>TH</sup> NOVEMBER 2008**

***1. Introduction:***

For the last four years of the Sudanese battle against tuberculosis, Federal Ministry of Health (FMOH), through its National Tuberculosis Programme (NTP) has made important progress in the fight against tuberculosis in the country. The last In-depth Review, was carried out by The World Health Organisation (WHO), the International Union Against Tuberculosis and Lung Disease (IUATLD) and the Norwegian Heart and Lung Patient Organisation (LHL) during 18/01 – 31/01- 2004, another four years has passed and it is time for a new review.

Regular evaluation is the keystone for the NTP progress. In accordance with the World Health Organisation (WHO), the International Union Against Tuberculosis and Lung Disease (IUATLD) and the Norwegian Heart and Lung Patient Organisation (LHL), there will be conducted an In-Depth Review in order to evaluate NTP progress in adopting the DOTS strategy policies and procedures. The programme review will include analysis of all levels of health services, including the National, State, District and Community levels. Sudan is a large country; therefore, the review will only cover part of the country, and will only relate to the fifteen northern states – being the same states which are covered by the Global Fund round 5 application.

***2. Overall Objectives of the Review:***

The overall objective of the in-depth review of the NTP of Sudan is to assess progress according to plans since the last review and assess strengths and weaknesses in the NTP to prepare for its development towards quality services and sustainability. More specifically these objectives are:

- To assess the progress in the policies and planes in the NTPs five year plan.
- To assess the progress in implementing the recommendations from the last In-depth review in 2004.
- To evaluate the progress made in the strengthening of the NTP, particularly in terms of DOTS expansion and management structure.
- To assess the integration of the NTP in the general health system of Sudan and co-operation with other programmes.
- To critically evaluate the implementation of the agreement between the Federal Ministry of Health (FMOH) and the Norwegian Association of Heart and Lung Patients (LHL) signed in January 2005.
- To assess the technical support given to the NTP.
- To review the NTP plans for sustainability and focus on quality of services.

***3. Process of Review:***

The review mission members are expected to actively participate throughout the review exercise and contribute to the successful implementation of the following six main tasks of the review:

- Briefing of the review team
- Field visits
- Presentation of field visit report
- Preparation of the review reports
- Development of summary findings, recommendation and plans
- Debriefing to disseminate review finding and recommendations

#### ***4. In-depth review team members***

The In-depth review is composed by five external members + internal members as follows:

##### External members:

Dr. Einar Heldal (EH) – Independent TB consultant, Team leader/ TB consultant.

Dr. S Bertel Squire (BS) - Liverpool School of Tropical Medicine, TB and TB/HIV consultant.

Dr. Eliud Wandwalo (EW) - National TB Control Programme Tanzania, TB, health communication and community involvement and TB/HIV expert.

Dr Sabira Tahseen (ST), laboratory specialist (NTP Pakistan).

Dr Noura Maalaoui (NM), GDF consultant, MSH

##### Internal members:

- Dr. Hashim Suleiman Elwagie, Manager of the National Tuberculosis Program, Sudan
- Other internal members of the mission to be confirmed by Dr. Elwagie.

##### Potential Sudanese members of the team (awaiting confirmation):

- Dr Elfatih Malik Director of Preventive Medicine
- Dr Najeeb Suleiman Director of the national Laboratory
- Dr Abdel latif Gismallah Senior Chest Physician
- Dr. Hamad Alturabe Chest Physician
- Dr Alzeen Alfahal Director
- Prof Elsadig Mahgoub
- Prof Mustapha Nemiri

##### Facilitators:

- Rasmus Malmberg, LHL
- Dr Imad Alamin, WHO Sudan, national TB adviser?
- Dr Aayid Munim, WHO Sudan, international TB adviser?

#### ***5. Specific terms of reference for the In-depth review team***

##### Team leader

- To be the leader of the external In-depth Review Team during their stay in Sudan
- To provide, as the leader of the evaluation team, necessary technical and administrative assistance to the mission members in close collaboration with the director of the NTP.
- Executive summary (Disease burden and prediction, main recommendations)

- To present the draft executive summary, recommendations and ways forward in the debriefing meeting, to the Ministry of Health and other high-profile decision makers

In addition to the above general terms of reference for the mission members (section 2 and 3 above), the following more specific themes will be focused on during the review, the team members will be informed which themes they are expected to contribute to prior to arrival, should the team leader find it convenient to redistribute team members this can be done during the review.

### **Management of the NTP and collaboration with other programs and partners**

- Prepare a draft for the following sections of the final review report utilising the findings from the field visit, briefing information.
  1. Structure and management of the NTP
  2. Review plans used for the GF round 8 application
  3. Collaboration between NTP and the Global Fund; communication and collaboration
  4. Collaboration between NTP and LHL/IUATLD; provision of technical, medical and administrative advises
  5. TB/HIV issues (collaboration between the NTP and SNAP - centrally and at the local level, TB/HIV activities in the field).

### **Epidemiology and statistics**

- Prepare a draft for the following sections of the final review report utilising the findings from the field visit, briefing information.
  1. Epidemiology of TB
  2. Treatment and monitoring of treatment
  3. Case-finding
  4. Recording and reporting

### **Drug management, training and supervision**

- Prepare a draft for the following sections of the final review report utilising the findings from the field visit, briefing information.
  1. TB drug management, with emphasis on the distribution system
  2. Training
  3. Supervision

### **Community involvement and health communication**

- Specific focus areas linked to community involvement and health communication:
- Prepare a draft for the following sections of the final review report utilising the findings from the field visit and briefing information.
  1. Community involvement
  2. An assessment of IEC materials
  3. Examples of patients' views on the current written information material on TB which is handed out by the NTP
  4. DOTS committees, effectiveness, link to local TB services and to the communities

## **Bacteriology/ laboratory**

- Specific terms of reference linked to this theme:
  1. To conduct extensive review of the policies, procedures and activities of TB reference laboratories at the national, intermediate and peripheral laboratories
  2. Special emphasis should be put on the assessment of the quality control system for sputum smear examination in the NTP
  3. Evaluation of the quality and functioning of the National TB Reference laboratory including an assessment of the ability to detect MDR TB
- Based on the above review findings, prepare a draft for the section of diagnosis and laboratory network and related recommendations and action plan for the final review report.

## ***6. Planned meetings and field visits:***

### Ministry of Health

- Federal Minister of health
- State Minister at FMOH
- Under-secretary of FMOH
- Assistant undersecretary for PHC & Preventive Medicine, Assistant undersecretary for Planning
- Assistant undersecretary for Curative Medicine ,
- Directors General of preventive medicine , International Health , Head of Chest department
- AIDS Programme
- EPI Programme
- IEC and Advocacy

### Federal Ministry of finance

- Director of Planning

### Central Medical Store :

- Director General of CMS
- Site seeing of NTP drug

### National Reference Laboratory:

- Director of NRL
- NTP Lab. co-ordinator
- Site seeing of NT- RL
- Main TB Hospital Abu Anja
- Director of the Hospital
- Visit the hospital
- Meeting with the Unit Different states (Khartoum):
- State Minister of health
- Director General of SMOH
- Director of preventive Medicine SMOH
- NTP state co-ordinator
- NTP state laboratory co-ordinator
- State Drug store
- TBMUS
- DOTS Centres

### Organizations & INGOs

- UNDP GF
- WHO
- GLRA

NTP collaborators:

- Meeting with collaborating NGOs
- Epidemiological Laboratory – EpiLab,
- Meeting with collaborating Universities and research institutes
- Meeting with TB patients association.
- Chest Physician Association
- Paediatric Association

### **7. Report-writing**

Each In-depth review team member is expected to prepare a draft for the following sections of the final review report in close collaboration with other mission members as mentioned in the attached tables (please also refer to pages 24-26 of the Guidelines). Team members should write in accordance with their responsible areas. However, if team-leader together with the team finds it necessary to shift topics between team members, it can be done. The draft report should be submitted to NTP-Sudan, LHL and IUATLD, no later than 2<sup>nd</sup> of January 2009. Final report should be submitted before 1<sup>st</sup> of February 2009.

### 8. Timetable for the In-depth Review

<b>Day</b>	<b><u>Team</u></b>	<b><u>Broad Activity</u></b>	<b><u>Rationale</u></b>	<b>Planned date</b>
<b>Planning for the review</b>				
		Preliminary arrangements of the review. Distribution of program & documents	1. Appoint review co-ordinators 2. Appoint program review task force 3. Preparatory meeting of review co-ordinators 4. Define the purpose and set objectives 5. Set review date 6. Plan for wide dissemination of the findings 7. Select members of review team and define responsibilities 8. Select sites for field visits 9. Plan logistics 10. Prepare budget 11. Prepare data collection tools 12. Prepare introduction materials 13. Purchase of Sudanese mobil SIM cards for the four LHL funded participants.	<b>1- September – 30 September 2008</b>
<b>Tentative conduction of the review:</b>				
1		Arrival of the LHL funded members of the review team	<ul style="list-style-type: none"> <li>• International review team members arrive</li> <li>• Meeting of the Sudanese review co-ordinators to finalise arrangements for the review and to plan the briefing meeting.</li> </ul>	<b>10/11/2008</b>
		Final arrangement of the review (the NTP team members)		
2-3	LHL funded team members and Sudanese team members – Rasmus is available for questions.	Arrival of the WHO team members.  LHL funded members and Sudanese members	<ul style="list-style-type: none"> <li>• Briefing of the review team members</li> <li>• Introduction of review team members</li> <li>• Practical arrangements (per diem, confirmation of return air tickets etc)</li> <li>• Objective of review</li> <li>• Planned programme of activities for the review</li> <li>• Identification of small teams and discussion of responsibilities for field visits and report writing</li> <li>• Presentation and discussion of introductory materials</li> </ul>	<b>11-12/11/2008</b>

	The full team is in Khartoum – Rasmus is present until and including the opening session of the review.	Short introduction and update of the previous days work for the WHO team members.  Opening session of review.  Meeting with the officials, NGOs and collaborators	prepared by NTP • Presentation of draft epidemiology report • Courtesy visits to senior officials in Ministry of Health and WHO	
4 - 9	Smaller teams do the specified field work.	Field visits	• Field visits a)One team visits officials at the central level of the Ministry of Health, other policy makers, institutions and organisations in the capital and surrounding area b)Other teams visits institutions and organisations in the other parts of the country	<b>13-19/11/2008</b>
	Smaller teams do the specified field work.	Meeting with states officials		
10	The full team is present in Khartoum.	Finalising field reports	• Return to capital • Preparation of field visit report•	<b>20/11/2008</b>
11-12	The full team is present in Khartoum.	Field findings and recommendations	• Presentation of field visit reports by different teams • Preparation of sections of review report by different teams • Preparation of executive summary and recommendations • Informal briefing of draft executive summary and recommendations with Director General of Health Services and WHO Representative	<b>21-22/11/2008</b>
13	The full team and Rasmus is present in Khartoum	Discussion of recommendations	• Debriefing meeting for dissemination of main findings and recommendations to officials in Ministry of Health, donors(current and potential), NGOs and other organisations involved in TB control • Press conference	<b>23/11/2008</b>
14	The full team is present in Khartoum.	Social program and departure of the team	• Departure of international review team	<b>24- 25/11/2008</b>

## ***In-depth Review of the Sudan National Tuberculosis Control Programme Main Findings and Recommendations – January 2009***

The last in-depth review of the Sudan National Tuberculosis Control Programme (SNTP) was carried out in 2004 by the World Health Organisation (WHO), the International Union Against Tuberculosis and Lung Disease (The Union) and the Norwegian Heart and Lung Patient Organisation (LHL). For the last four years the Federal Ministry of Health (FMOH), through the SNTP has made important progress in the fight against tuberculosis in the country. Regular evaluation is the keystone for the NTP progress. In a collaboration between SNTP, WHO, the Union and LHL, a new in-depth review was therefore carried out between 10<sup>th</sup> and 24<sup>th</sup> November 2008.

The overall objective was to assess progress according to plans since the last review and assess strengths and weaknesses in the SNTP to prepare for its development towards quality services and sustainability.

### **A. Main findings according to specific objectives**

#### **Main findings**

- a) Progress against indicators in the SNTPs strategic plans.
  - i. Case notification rate has not increased as planned, but declined.
  - ii. Treatment success rate has remained stable between 81% and 84%.
  - iii. Cure rate has been stable around 61% against the planned increase of 5% per year
  - iv. Although planned, there has been no increase in number of Tuberculosis Management Units (TBMUs) established.
  - v. According to the national report 2007 58% of diagnostic centres participated in External Quality Assurance (EQA) against a target of 55%.
  - vi. The proportion of TBMUs reporting to SNTP at Federal level increased from 77% in 2003 to 92% in 2007.
- b) Progress in implementing the recommendations from the last in-depth review in 2004. (See Appendix ...)
- c) Progress made in the strengthening of the SNTP, particularly in terms of DOTS expansion and management structure.
  - i. TBMUs were already established by 2004 (1 per 100,000 population).
  - ii. Since 2007 the staff complement at State and TBMU level has been strengthened by the addition of a statistician to the pre-existing team of 2.
  - iii. There have been 4 SNTP managers since 2004..
  - iv. The SNTP at Federal level is well staffed and there are plans to re-organise the team into units.
- d) Integration of the NTP in the general health system of Sudan and co-operation with other programmes.
  - i. The general health system in Sudan faces considerable challenges. The TB programme therefore retains some functional elements under its own control. However TBMUs are situated within primary care facilities and some staff have responsibilities in health fields outside TB (eg lab staff and some statisticians)
  - ii. Dialogue and cooperation between SNTP and some relevant programmes has commenced (eg Sudan National AIDS Programme [SNAP] and Sudan

Tuberculosis Patient Association [STPA]), but has not started with others (eg The Community Based Initiative [CBI] within the Federal Ministry of Health [FMOH]).

- e) Evaluation of the implementation of the agreement between the FMOH and LHL.
- f) SNTP plans for sustainability and focus on quality of services.
  - i. The Global Fund for AIDS Tuberculosis and Malaria (GFATM) Round 5 application funds financial incentives which are being paid to staff to encourage them to work in TB control. At present these are not linked to quality of service provision.
  - ii. The GFATM Round 8 application will provide substantial funding, including different results-based financial incentive payments to different cadres in the private and public sectors. This raises concerns about distortion of reporting in the future and long-term sustainability.

### **Recommendations for main findings**

1. *SNTP Manager should proceed with plans to re-organise the Central Team into Units, each with delegated responsibilities, to facilitate the development of a more effective team.*
2. *SNTP at Federal level should develop a competence-based human resource development plan for Federal and State level and draw on recognised national, regional and international courses and expertise for relevant elements of the STOP-TB Strategy.*
3. *The SNTP, with existing Partners, should make a plan and timetable for external TA in the future and should co-ordinate this carefully and in line with the training requirements identified in the human resource development plan. Issues to consider in this plan include:*
  - i. *Detailed, topic-specific technical assistance over the course of the next planning period.*
  - ii. *A further multi-disciplinary in-depth review towards the end of the planning period (approx 4 years from now).*
4. *FMOH should consider a long term strategy to take over incentive payments as top-ups to staff working within the Primary Health Care (PHC) system.*
5. *SNTP should consider how the payment of financial incentives can result, over time, in strengthening the health system.*

## **B. Pursue high quality DOTS Expansion and Enhancement**

### ***B.1 Political commitment and sustainable financing***

#### **Strengths**

- a) Large number of health staff (doctors, specialists, medical assistants, statisticians and laboratory cadres) at all levels with few vacant positions.
- b) GFATM Round 5 has provided considerable support to TB control since June 2007 while GFATM Round 8 is expected to start during 2009. In addition, support has been received from from LHL, German Leprosy Relief Association (GLRA), World Health Organisation (WHO) etc.
- c) Government financial contribution in 2007 amounted to 1 million US\$ out of 3 million. US\$ spent by the SNTP
- d) Presence of a Public Health Act for notification and control of infectious diseases.

#### **Weaknesses**

- a) High staff turnover at all levels – including 3 different SNTP Managers since 2004.

- b) Coordination between SNTP and National Reference Laboratory not optimal. NRL not contributing much to the NTP in terms of routine services and routine EQA. Lack of clear linkage between NRL and hospitals.
- c) States provide variable amount of financial support to TB control, relatively high in Khartoum, much less in Sennar and Gedaref, making supervision to TBMs difficult.
- d) SNTP Offices located far from other key linkages (eg SNAP, NRL) since May 2008 and now co-located with 2 programmes with which SNTP has no joint activities.

### **Recommendations for enhanced political commitment and sustainable financing**

6. *FMOH should Strengthen co-ordination between SNTP and NRL.*
  - i. *Re-visiting the Memorandum of Understanding (MoU) between SNTP and NRL.*
  - ii. *Establishing regular interaction between SNTP and NRL.*
  - iii. *Post one person within SNTP who will be clearly responsible for all activities between SNTP and NRL, including co-ordination with States.*
7. *FMOH should look for opportunities for co-location of Federal level offices of SNAP, NRL, SNTP in order to maximise co-ordination and co-operation between these organisations.*
8. *FMOH should increase its financial contribution to SNTP to ensure long-term sustainability of the programme.*
9. *SNTP should further develop its strategies for securing increased financial support from FMOH including*
  - i. *Using evidence for effectiveness of TB control from good quality programme data*
  - ii. *Encouraging FMOH to announce TB as a national emergency*
10. *Authorities at State and Locality level should ensure funding and implementation of activities including supervision, training, and community involvement – especially DOTS Committee.s*

## **B.2 TB Case Finding through quality assured bacteriology**

### **B.2.1 Case finding**

#### **Strengths**

- a) Diagnostic facilities are located within PHC facilities and case finding activities are integrated with general out-patient facilities.

#### **Weaknesses**

- a) Low case notification rate of new smear pos cases in most localities (below 35/100.000) – access to general health services is approximately 50%.
- b) In Out Patient Departments (OPDs) a considerable number of TB suspects (patients with cough > 2 weeks) are not being identified, nor correctly recorded in the OPD registers.
- c) The diagnosis of TB is being made on clinical (and often radiological) criteria rather than by smear microscopy. In 8 of 12 TBMU's visited, the number of TB suspects was identical to the number of TB cases in the treatment registers indicating that smear microscopy is being used for classification of cases, rather than for case finding.
- d) Most clinicians are not aware of the National Guidelines for identifying and investigating TB suspects.
- e) Many patients experience extended pathways to TB diagnosis, visiting different providers for a variety of reasons, including costs of travel, distance, stigma, and other socio-economic factors.
- f) Only a minority of facilities and staff within the primary care network are involved in TB case-finding.

## **Recommendations for enhanced TB Case Finding**

11. *SNTP at Federal and State levels should inform and continually educate all health providers about the National Guideline for TB suspect management including development and distribution of posters with the approved diagnostic algorithm (linked to the revised TB manual) in all OPD's.*
12. *SNTP at State Level should strengthen the capacity to assess notification rate by locality and TBMU, identify areas with low rates and discuss how to increase case finding through activities in the following areas: access to health services, referral of TB suspects to the smear microscopy network, quality of smear microscopy, etc.*
13. *SNTP should engage all parts of the primary care network (hospitals, health centers, health posts, community health workers, Expanded Programme on Immunisation [EPI]staff ) in detection and referral of TB suspects to TBMUs.*

## **B.2.2 Quality Assured smear microscopy and bacteriology**

### **Strengths**

- a) An MoU defines the co-ordination between National reference Laboratory (NRL) and the NTP
- b) Adequate numbers of staff are available in central, intermediate and most peripheral level facilities
- c) Good quality microscopes are available in most laboratories.
- d) Good quality lab reagents are available without frequent stock-outs.
- e) Posters on Direct sputum Smear Microscopy (DSM) for peripheral level have been developed and were seen in most laboratories.
- f) EQA by blinded rechecking has been introduced in 12 states.
- g) State lab coordinators have been identified for 15 states and one motor cycle is available for supervision in each of these states.

### **Weaknesses**

#### **National reference laboratory (NRL):**

- a) The planning for strengthening of the microscopy network for quality assured diagnosis by smear microscopy is weak.
- b) There are no clear linkages with any hospital, and there is no clear policy for referral of patients or specimens to NRL for microscopy/culture and Drug Sensitivity Testing (DST).
- c) There is very limited reporting and no evaluation of
  - i. routine services (microscopy, EQA by blinded rechecking, culture and DST)
  - ii. training activities
  - iii. research activities
- d) There is no system for regular maintenance of infrastructure, equipment and the supply chain.
- e) There is no standardized agenda for training activities (State, TBMU staff).
- f) NRL is routinely doing TB culture and First line DST using solid media. NRL is linked with the Supra Regional National Reference Laboratory (SNRL) in Belgium for EQA of DST by Panel testing. However results are not yet stable for first line DST. Serious technical issues exist with regard to quality control (QC) of routine culture and DST activity.
- g) NRL is ready to move to new premises without proper plans for :
  - i. Logical flow of work in technical area.
  - ii. Ventilation and infection control in culture and DST area.

- h) The plans to introduce liquid culture (MGIT) in NRL are not linked either to a clear policy on its use or to defined roles and responsibilities of key stakeholders (NTP,NHL) regarding its maintenance and running costs, including the flow of supplies.
- i) Piloting of a Drug Resistance Survey (DRS) is ongoing in Khartoum state, despite the fact that a written, approved protocol is not available. No report on culture recovery on the 500 specimens processed in 2007 and 2008 is available.

**State level :**

- a) EQA by blinded rechecking is inefficient in Khartoum, good in Sinnar, and only just started in Gedarif. Even after 5 years of EQA implementation, Khartoum state has failed to improve sensitivity of microscopy services: 28/45 centres checked in 2008 are reporting “high false negative” .
- b) Weak technical capacity of state lab coordinators to identify and solve problems leading to persistent High False Negative and High False Positive reports.
- c) Standard Operating Procedures in the National manual are either not available or not followed .
- d) State laboratory infrastructure is weak with
  - i. inadequate space and furnishings (including microscopes), especially for training of TBMU staff
  - ii. lack of equipment for stain preparation (water distillers, twin beam balances and glass ware not provided)
  - iii. lack of training modules for the training of TBMU laboratory staff

**TBMU level:**

- a) Internal Quality Control is not widely practiced (2 of the 3 States visited).
- b) Low utilization of laboratories in case finding (only 2-3 smears/week in the laboratories visited).
- c) Opportunities to diagnose infective cases are being missed at laboratory level because of low sensitivity of microscopy. Significant number of High False Negatives are being reported (141/4616 negative slides rechecked in 3 Quarters of 2008).
- d) Although most of the consumable items (Stains, immersion oil , sputum cups, glass slides) are generally available, there is no standardization regarding supply of non-consumables (reagent bottles, sand alcohol jars, slide storage boxes, wire loops, staining bridges ,wash bottles, funnels).
- e) Weak infrastructure: 10 out of 12 laboratories lacked either water supply or power or both and the size and quality of buildings and furnishings was inadequate.

**Recommendations for quality assured bacteriology (including smear microscopy)**

- 14. *National Health Laboratory and SNTP to revisit the MoU to clarify and, if necessary, re-define the role of the NRL in relation to NTP and develop mechanisms for managing this relationship.*
- 15. *NRL to play an active role with SNTP in planning and implementation of all activities related to quality assurance in the microscopy network through the following activities:*
  - i. *NRL and SNTP to organize regular structured meetings with all State Laboratory Co-ordinators (SLC) at NRL with well defined agenda, regular data collection from peripheral labs, review of supervision plans, feed back and discussion on problem solving and clear documentation.*

- ii. *NRL to prepare a standardized list of non consumable items for peripheral laboratory use, to be supplied in the form of a package / kit by SNTP and the Procurement, Supply and Management Unit (PSM).*
  - iii. *NRL to develop a standardized training programme for use by State Lab Coordinators for training of TBMU staff.*
  - iv. *SNTP to discuss with Malaria Control Programme the possibility of establishing or using joint training facilities at State Level for microscopy staff.*
  - v. *Review the criteria for location of microscopy centers to include factors in addition to population, such as population density and geographical accessibility.*
16. *SNTP to assist NRL in enhancing NRL capacity for recording, reporting, data management and data analysis.*
17. *NRL to develop and implement internal QC system for all its activities (microscopy, culture, and DST).*
18. *NRL to move to the newly built premises only after proper planning and preparation of TB culture and DST facilities by NHL/NTP. NTP to explore possibility of assistance from WHO in securing technical assistance (eg through Global Laboratory Initiative) for these preparations including expertise on engineering installations for negative pressure systems consistent with Biosafety Level 3.*
19. *Strengthening of state labs (infrastructure, equipment , HR) for supporting QA sputum smear microscopy should remain the priority agenda of NTP/NRL. The fact that state laboratories have not yet been strengthened enough to effectively support QA activities needs serious consideration. Establishment of 5 zonal culture facilities level thus needs very cautious planning in order to guarantee that there is no shift of priorities, finances, equipment or human resources from microscopy to culture.*
20. *NRL to define clear policy on use of liquid culture (Bactec) taking into consideration the following options and carefully estimate the required budget accordingly:*
- i. *Purpose: conduct of the Drug Resistance Survey (DRS) or individual patient management?*
  - ii. *Scope: first line drug sensitivity (FLD) or second line drug sensitivity (SLD) or both, and at what biosafety level.*
21. *NRL should continue with LJ media for culture and introduce liquid culture only after the policy has been defined and budget (including biosafety level, maintenance and supplies) has been secured.*

### ***B.3 Standardized treatment, DOT and patient support***

#### **Strengths**

- a) Treatment is standardized according to NTP guidelines in all the visited TBMUs. The treatment regimen for CAT I, CATIII and children is the 8 month regimen: 2HRZS/6HE, and for CAT II: 2HRZES/1HRZE/5HRE. The 6 month regimen is followed in some facilities for HIV co-infected TB patients. No errors were found in the categorization of patients for treatment;
- b) Low death and failure rates;
- c) Community health workers are present in remote areas and in 2 centres out of 12 visited were found to be acting as treatment supporters;
- d) Natural and mechanical ventilation were generally adequate in the visited centres.

#### **Weaknesses**

- a) DOT and/or treatment support by health workers is not in place in the majority of the visited TBMUs. Drug collection during the intensive phase varied; in one State it was every 10 days, in others it was variable between every 7 and 28 days. There are no

treatment supporters in the majority of TBMUs. Patients have to go the nearest health facility or health worker (sometimes a volunteer) to receive the streptomycin injection but there are no specific treatment supporters for the other anti-TB drugs;

- b) Defaulter tracing is rarely being undertaken. Where it was reported, it was haphazard - by telephone or home visits in a few TBMUs. This contributes to the relatively high default rate and the failure to evaluate all cases for treatment;
- c) The use of streptomycin injection instead of ethambutol in CAT I and CAT III raises concerns about injection safety; and safe sharps disposal.
- d) Contact tracing was not in place in most of the visited facilities except in Khartoum state. When done, it was limited to informing the patient to ask symptomatic family members to visit the centre to be evaluated for TB. The use of isoniazid prophylaxis for children under 5 years of age as per the national guidelines was not being followed.
- e) TB infection control measures have not formally been addressed in the visited facilities.

### **Recommendations for standardized treatment, DOT and treatment support**

22. *SNTP at Federal and State levels to strengthen and monitor DOT and treatment support by developing clear guidelines and training for each of the following hierarchy of organized and documented treatment support options:*

- i. *Providing DOT and treatment support through all health facilities of the primary health care network (hospitals, health centres, health posts, community health workers, extended programme on immunization [EPI] staff.*
- ii. *Providing DOT and treatment support through community structures such as volunteers and patient organizations.*
- iii. *Providing DOT and treatment support through guardians or family members.*

*Given the importance of this recommendation, SNTP should seek external technical support for developing these activities in an organized, evaluable and sustainable manner.*

23. *While DOT and treatment support are being strengthened, SNTP should develop a plan for a carefully phased implementation of the 6 month regimen (2RHZE/4RH) in such a way that the new regimen is phased in where DOT has been well strengthened. Streptomycin will be phased out as part of this process.*

24. *FMOH to support SNTP to work with the Drug Regulatory Authority to regulate TB drugs in the private sector as recommended in the section on drug management.*

25. *SNTP to strengthen the mechanisms for defaulter tracing and contact management.*

26. *SNTP should develop guidelines on infection control as part of the new guidelines, and increase the awareness among health workers on infection control guidelines.*

### **B.3 Monitoring and evaluation**

#### **Strengths**

- a) Presence of a system for monitoring and evaluation (M&E) with recording, reporting and supervisory visits;
- b) Improved report completeness to 93% in 2008 compared to around 70-80% in 2006-2007.
- c) Report completeness is used to monitor performance at the state level and SNTP at Federal level has established a system to follow-up on non-reporting centers;
- d) Presence of an electronic reporting system between the Federal and State levels;
- e) Coordination between Federal/state statistical coordinator and National/state preventive medicine department to ensure the consistency of data in both system;
- f) Presence of human resources for TB at all levels.

## **Weaknesses**

- a) The WHO revised recording and reporting (R&R) system has not been fully introduced. The TB register lacks some important information (such as the source of referral of patients) which is needed to evaluate the Public-Private Mix (PPM) indicators and there are some serious errors in translation.
- b) The quality of data is suboptimal:
  - i. Reports from TBMs are not checked systematically by the State Statistician and State TB Coordinator
  - ii. Sometimes there is incomplete completion of forms, and several errors were identified, including discrepancies between registers and reports and summation errors. This resulted in underreporting of cases recorded in the TB register and contributed to the low case finding in the country;
- b) Supervisory visits are in place but they are not effective: there is no on-job training of the health workers, and no feedback reports with corrective measures or problem solving in most of the centres;
- c) There is delayed submission of reports from the majority of centres;

## **Recommendations for monitoring and evaluation**

27. *SNTP should monitor, on a quarterly basis, the proportion of patients receiving DOT and treatment support from the TBMU register with an emphasis on capturing the quality of treatment support provided.*
28. *SNTP should implement the core WHO-recommended R&R materials. Those that are already printed should be distributed and used as soon as possible.*
29. *The SNTP should consider the best way to use the OPD register to record TB suspects so that referral for smear microscopy can be strengthened and assessed. This should be considered as an alternative to introducing the TB suspect register at this stage.*
30. *SNTP to strengthen the supervisory system with quarterly meetings, standardized reports, on job training and feedback mechanisms for corrective measures and joint problem-solving with a focus on data quality.*
31. *SNTP to strengthen the capacity of the TB Co-ordinators and Statisticians at Federal, State, and, where possible, at Locality levels through training in data management and analysis and in TB epidemiology. The quarterly meetings provide an opportunity for this training to take place.*
32. *SNTP should work with International Partners (WHO-LHL and Union) to revise the existing supervisory check-list to produce a check list or lists which can be used for effective supervision to all levels.*
33. *FMOH should reinforce the central unit with transportation facilities (vehicles) in order to increase the frequency of the supervisory visits to the state and peripheral levels.*

### **B.3.1 Impact measurement**

The estimated incidence of sputum smear positive TB in Sudan is 108/100,000. These estimates were mainly based on projections of the estimated incidence that was reported by the tuberculin survey conducted in 1987. In the 1990s there has been expansion in DOTS coverage until reaching 100% in 2002. The expanded Stop TB strategy has been adopted and implemented. The impact of these control measures on TB burden needs to be evaluated in order to measure the progress towards the Stop TB Strategy Targets and the MDG.

## **Recommendations for impact measurement**

34. *SNTP should work with WHO in revising the Sudan estimated TB incidence.*

35. *SNTP should carefully consider the planning, timing and implementation of the TB prevalence survey budgeted for in the GFATM Round 8 proposal in order to ensure that the international standard criteria for conducting such surveys are being met, including the presence of quality assured microscopy.*

### **B.3.2 Drug Management**

#### **Strengths:**

- a) The NTP has a full time position for drug management
- b) In a collaboration between SNTP, FMOH, GFATM programs, and the UNDP (Principal Recipient for GFATM funds) a Procurement and Supply Management (PSM) unit has been established which is run by a team of pharmacists and whose mission is to streamline efforts to improve drug management at different levels of the distribution chain of each program (TB, HIV, and Malaria).
- c) Three GFATM programs (TB, HIV, and Malaria) have benefited from the technical expertise of the Euro-Health group in the area of drug management.
- d) A draft TB manual including treatment guidelines is currently under revision.
- e) Quality of drugs is ensured through UNDP's procurement processes in line with GFATM and international norms of good procurement practices.
- f) Pharmacists and pharmacy technicians are present in adequate number at all levels. Personnel managing TB drugs at different levels including State and locality TB coordinators are motivated to support the drug management system.
- g) Few centres experienced stock-outs of only some drugs, for short periods of time. The drugs available have a long shelf life.
- h) GFATM funds are available to provide distribution logistics and build Central and State medical stores in accordance with good storage practices.

#### **Weaknesses**

- a) Roles and responsibilities between NTP, PSM team and UNDP PSM unit are not clear
- b) There has been some delay in finalizing the new treatment guidelines.
- c) Coordination and Communication between NTP, PSM team and UNDP PSM unit in drug procurement process is not optimal.
- d) The organizational structure for the drug distribution system for TB drugs is well established but not optimal.
- e) Inventory management is not optimal at all levels of the distribution chain of TB drugs and storage space at central and state medical stores is limited.
- f) Pharmacists at state level and pharmacy assistants at State and TBMU level are not fully involved in TB inventory management. TB state and locality coordinators are filling in this gap.
- g) Expertise at State level in quantification and at TBMU level in inventory management and good storage and dispensing practices is not optimal.
- h) The distribution plan for TB/HIV co-infection related commodities is not yet established
- i) Control of TB drug supply and distribution in the private sector is weak.
- j) Lab commodity management and good storage practices are weak at state and BUTM levels.

#### **Recommendations for drug management**

36. *SNTP, UNDP and PSM team should better define their roles and responsibilities and improve lines of communication.*

37. *SNTP with partners should secure external TA to strengthen the capacity of the SNTP and PSM teams in TB drug management*
38. *SNTP and partners should urgently finalise the National TB guidelines and provide a clear time table for issues, including:*
  - i. *Emphasis on using Fixed Dose Combination (FDC) formulations*
  - ii. *A clear distribution plan in order to fulfill GDF requirements in general and for the pediatric TB drug grant in particular and to strengthen the Green Light Committee (GLC) application for MDR TB management.*
39. *SNTP should formalise the existing team (SNTP, WHO, UNDP, PSM team, NRL and Central Medical Stores [CMS]) that works on quantification with a reflection on Terms of Reference and composition to include representation from the General Directorate of Pharmacy and the private sector, giving consideration to information on commodity consumption and specification that will be required for the activities in TB-HIV, MDR-TB, and Laboratories.*
40. *SNTP and the PSM team should review and improve the distribution plan of TB drugs ( levels, schedules, transport, Management Information Systems (MID), dispensing conditions for DOT, TB/HIV related commodities, etc.)*
41. *SNTP should, in collaboration with National Drug Regulatory Authority, identify ways to regulate TB drugs in the private sector. The principle of TB drugs only being available through the SNTP should be emphasized.*
42. *SNTP should include Lab commodity management expertise in the TA planned for lab quality assurance system strengthening.*

## **C. Addressing MDR-TB, TB-HIV and other challenges**

### **C.1 TB-HIV**

#### **Strengths**

- a) Presence of an active TB-HIV Collaborative Committee at Federal level with representation from SNTP, Sudan National AID-HIV Programme (SNAP), UNDP, and WHO.
- b) Presence of draft ToR's for a National TB-HIV body.
- c) Presence of draft National TB-HIV Action Plan.
- d) Presence of draft National TB-HIV treatment guidelines.
- e) Presence of GFATM funding for counseling and testing of TB patients (TB side R5) and treatment and care (HIV side R5).
- f) Existence of a TB-HIV team within SNTP consisting of a medical TB-HIV focal point, a counselling supervisor and a consultant physician external resource person.
- g) A body of practical and well-developed experience in TB-HIV activities in Omdurman Teaching Hospital VCT centre.

#### **Weaknesses**

- a) TB-HIV activities outside Khartoum proceeding even before National body and National plan have been articulated.
- b) Programmatic scale up of HIV treatment and care is being driven by SNAP drug distribution before development of competence and quality in HIV centres.
- c) Laboratory and Pharmacy support for HIV were established as separate units away from existing Laboratory and Pharmacy facilities in both HIV centres visited (Gedarif Hospital and Omdurman Teaching Hospital).
- d) Lack of a clear policy decision about which service (SNTP or SNAP) takes prime responsibility for HIV-infected TB patients and at what stages of treatment.

- e) Despite provision of training in Provider Initiated Testing & Counselling (PITC), a Voluntary Counselling & Testing (VCT) approach is being used in TB MUs leading to fewer TB cases being tested.
- f) Routines for safe disposal of sharps were inconsistent.
- g) Lack of attention to infection control policies for TB patients mixed with HIV infected patients in HIV centres.

### **Recommendations for TB-HIV**

43. *The TB-HIV Collaborative Committee should merge the parallel development of TB-HIV plans and documents between WHO and SNTP and finalise these as soon as possible so that the National Coordinating body can begin to function, advocate, plan and monitor.*
44. *The TB-HIV Co-ordinating Body (once established) should pay particular attention to the following key issues as described in the updated Interim TB-HIV Collaborative Framework:*
- i. *Strengthening a PITC approach rather than a VCT approach as the key entry point into TB-HIV services.*
  - ii. *Making the start of TB-HIV activities (including disbursement of materials, drugs and commodities) in new TB-HIV centres conditional on demonstration of competence assessed against pre-defined criteria.*
  - iii. *Developing clear policy on when HIV-infected TB patients are primarily cared for and monitored by HIV teams and when by TB teams – ensuring that the needs of both services (eg with respect to R&R) are met.*
  - iv. *Implementing infection control policies and activities in all TB-HIV activities, both aerosol and sharps related.*
45. *SNTP should engage specific, external TA from an individual who has been actively engaged in establishing successful TB-HIV activities in accordance with the updated Interim TB-HIV Collaborative Framework to assist with the activities outlined in recommendations 43 and 44.*

## **C.2 MDR-TB**

### **Strengths**

- a) SNTP, in collaboration with the Pharmaceutical Regulatory Body, succeeded in banning the availability of ofloxacin in private pharmacies.
- b) Presence of a draft plan for Programmatic Management of MDR-TB.
- c) Presence of some experience in MDR management at Abu Anja Hospital
- d) Commitment at FMOH level has led to allocation of FMOH funds for the procurement of second-line drugs.
- e) Funding in GFATM Round 8 application for MDR-TB programmatic management, including second-line drugs.
- f) A number of clinicians are already in training for management of MDR-TB.

### **Weaknesses**

- a) CMS have procured the FMOH-funded second-line drugs through their official processes, but some issues need further clarification:
  - i. Whether payment has been finalised.
  - ii. Whether the drugs have been secured from pre-qualified suppliers.
  - iii. Whether the drugs are more expensive than if procured through GDF.
- b) Not enough focus on prevention of MDR-TB compared to provision of second-line drugs
- c) No reliable baseline data on rates of MDR-TB in Sudan.

### **Recommendations for MDR-TB**

46. *SNTP to give urgent attention to the prevention of MDR-TB through the mechanisms described in Section on Treatment support and DOT.*
47. *SNTP to secure GLC approval for MDR-TB Management. This will require attention in the following areas*
  - i. *Finalization of the MDR-TB Treatment Guidelines.*
  - ii. *Quality of laboratory support for DST.*
  - iii. *Procurement of second line drugs through pre-qualified suppliers through the GDF.*
48. *SNTP, with support from partners, should engage practical TA from an MDR-Treatment centre that has already been established in the region in line with GLC practice in order to develop and secure the GLC application. The lead physician for MDR-TB management in Sudan should spend time in a functioning MDR-Treatment centre in the region.*

### **C.3 Refugees and displaced persons**

#### **Strengths**

- a) Presence of a focal person for TB control in refugees and displaced persons within the SNTP Central Unit.
- b) Signed MoU's between SNTP and some NGO's treating TB cases in Darfur and Eastern Sudan ensuring adherence with guidelines on case-finding and recording and reporting.
- c) Draft manual for management of TB in refugees.
- d) Funding for TB control activities in war-affected areas in GFATM Round 8 application.

#### **Weaknesses**

- a) NGO's with signed MoUs with SNTP are procuring their own TB drugs and using the 6 month regimen with unclear safeguards around treatment support and DOT.
- b) Very difficult for SNTP to have any oversight over some NGO's providing TB treatment semi-autonomously.

### **Recommendations for TB control in refugees and displaced persons**

49. *SNTP and WHO should encourage NGO's to align themselves with National guidelines for case-finding, reporting and recording to SNTP with an emphasis on treatment support and DOT.*
50. *The SNTP should continue to negotiate new MoU's with NGO's which should stipulate the need for treatment support and DOT when using the 6-month regimen in order to minimize the chances for generating rifampicin resistance.*

### **D. Engaging all care providers**

#### **Strengths**

- a) Presence of funding for public-public and public-private mix activities in both GFATM Rounds 5 and 8
- b) Presence of a draft PPM Operational Plan based on a situation analysis.
- c) Good links and relationships between SNTP and Sudanese Association of Chest Physicians (SACP).

#### **Weaknesses**

- a) Public institutions (eg Military and Police and Prisons and Health Insurance) not consistently engaged.
- b) Private for profit providers are not yet engaged.
- c) Lack of a clear statement that the preferred model for engaging the private sector will be for identifying, diagnosing and referring patients to the SNTP public system.
- d) An emphasis on payment of multiple financial incentives for engagement of the private sector in the pilot planned in the GFATM Round 8 application. The risks of this approach have not been adequately considered in terms of:
  - i. A projection of the likely costs (both infrastructure, and human resources) of administering these payments.
  - ii. Distortions to the system.

### **Recommendations for engaging all care providers**

- 51. *FMOH to activate the mechanisms for ensuring engagement of public health facilities outside of FMOH (military, police, prisons and health insurance) including*
  - i. *re-activation of the TB Board which is already enshrined in public health legislation.*
  - ii. *Reaching bilateral agreements at the appropriate levels between the different parts of the government involved.*
- 52. *SNTP to engage the private sector primarily as an arm of TB case-finding, emphasizing unified treatment with treatment support and DOT within the public system*
- 53. *SNTP should consider emphasizing the provision of incentives in-kind (provision of training, materials, microscopes, accreditation etc) more than the provision of financial incentives in engaging the private sector.*
- 54. *SNTP should build on its existing links with the SACP and seek formal and public SACP endorsement of the International Standards of Tuberculosis Care (ISTC).*

### ***E. Enable and promote operational research***

#### **Strengths**

- a) A research focal point has been recruited within SNTP at Federal level;
- b) Several operational research projects were conducted in 2007-2008 with support from different partners. The projects are in different stages of implementation: some are on-going, and others were finalized. The final reports of the finalized projects are under evaluation;
- c) National and international technical assistance has been provided to the researchers in order to promote the quality of the produced results;

#### **Weaknesses**

- a) Some State TB Co-ordinators do not have oversight over relevant research and findings in their State.
- b) Research reports have not been communicated to the state and peripheral levels;
- c) There is no system to evaluate the extent of transfer of research results into policy and practice of the SNTP.

### **Recommendations for promotion of operational research**

- 55. *SNTP Research Unit and Partners to revisit the operational research workplan at all levels, recognizing that with improved data quality within SNTP, the opportunities for identification of research questions and conducting research to solve problems will increase.*
- 56. *SNTP should strengthen the Research Unit within the SNTP through*

- i. *strengthening the research capacity of the research focal point in the CU.*
  - ii. *Increasing the number of Central Unit staff who are engaged in research within the research unit*
  - iii. *ensuring that State Co-ordinators participate in operational research training workshops.*
  - iv. *Emphasizing co-ordination with all research partners.*
57. *SNTP should request researchers to prepare Arabic summaries of the final reports and disseminate the summaries and reports of the projects to state and peripheral levels;*
58. *Partners should provide technical assistance in publishing the manuscripts originating from the final reports in indexed journals;*
59. *SNTP should actively promote the use of research results in guiding policy and improving programme performance. This process should be well documented;*

## ***F. Contribute to Health System Strengthening***

### **Strengths**

- a) Availability of human resources in all visited centres. A particular point of note was the presence of Statisticians supporting the Health information part of the Health System
- b) Presence of administrative and financial backbone for the program.
- c) Training plan was available at central and to some extent at state level.
- d) Practical Approach to Lung Health (PAL) situation analysis has been completed and steps for awareness-raising with key decision makers have been planned.
- e) Many different funders support SNTP (GFATM, LHL; GLRA, etc...).
- f) GFATM Round 8 includes an element on health system development.

### **Weaknesses**

- a) High turnover of staff at all levels.
- b) Staff performance is compromised for a number of reasons including:
  - i. low salary scales in the public service
  - ii. the need for most public staff to work in private practice as well
  - iii. weak supervision and feedback mechanisms – in some places these are interrupted by lack of security and difficult access.
  - iv. difficult working conditions in some places.

## **Recommendations for TB's contribution to health system strengthening**

60. *SNTP should develop a clear training plan for relevant health cadres at all levels on an annual basis.*
61. *SNTP to work with Partners to secure funding for PAL implementation according to the planned steps.*
62. *FMOH and SMOH to work through the human resource plan within the National health system plan to reduce the turnover of health staff at different levels.*

## ***G. Advocacy, Communication and Social Mobilisation (ACSM)***

### **Strengths**

- a) ACSM unit within SNTP at Federal level is well staffed with 6 full time staff (2 doctors, 2 health officers and 2 journalists).
- b) For the past 18 months SNTP has produced a quarterly newspaper which is distributed in all states.
- c) DOTS Committees have been established at State level in 8 out of 15 States. In 2 out of the 3 States visited they were also established at TBMU level.

- d) Political leaders have been sensitized and involved in World TB day events both at federal and state levels.
- e) There is a good network of Community based organizations with interest in TB (eg Sudan TB Patient Association, Sudanese Women Union, Red Crescent and Student Net)
- f) Some posters on TB were found in some of the TBMU visited.
- g) Some individual health education is provided to TB patients at TBMU's.

### **Weaknesses**

- a) For the past 4 years SNTP has been operating without a comprehensive strategic ACSM plan. The new ACSM plan developed by a consultant in August 2008 is not yet implemented.
- b) No engagement between SNTP and the Community Based Initiative Unit in FMOH.
- c) DOTS committees had no work plan and were not operational in all areas visited.
- d) There are no guidelines, schedules or topics organized for health education delivery to patients at TBMU's.
- e) Routine health education to the patients is one way (from health workers to patients), without sessions for sharing experiences among patients nor from other resource people in the community.
- f) Community based organization are present and eager to work on TB but not well oriented in TB.
- g) Most of TBMUs had run out of leaflets. Few leaflets were found in some TBMUs.
- h) Leaflets and posters development do not follow a health communication and education materials best practice (needs assessment/baseline study, user involvement, pretest, production, evaluation).
- i) Low knowledge among TB patients about TB and key aspects of TB control.
- j) Some stigma among patients and community around TB and severe stigma issues around HIV/AIDS.

### **Recommendations for Advocacy, Communication and Social Mobilisation**

- 63. *SNTP should implement the ACSM strategy, dealing with priority areas first. The immediate focus should be in building capacity for strengthening treatment support and DOT and follow-up.*
- 64. *SNTP should explore ways to collaborate with the Community Based Initiative – especially for community involvement in DOT and treatment support.*
- 65. *SNTP and SMOH should ensure that DOTS committees are operational and sustainable and consider harmonizing the work of these committees with activities of the Community Based Initiative.*
- 66. *SNTP at Federal level should develop clear guidelines on health education. TBMUs should develop schedules and outline topics and issues which patients need to know according to the needs identified in the locality.*
- 67. *SNTP at Federal and State levels should train health workers in TBMU and DOT centres in health communication skills and health education using existing training modules (eg from LHL) adapted for use in Sudan.*
- 68. *SNTP to work with LHL and other Partners with specific health communication expertise to develop health education materials including leaflets and posters based on standard health educational materials development techniques and best practice.*
- 69. *SNTP at Federal and State should develop a new framework of collaborating with community based organizations (including Sudanese TB Patient Association).*

*70. SNTP at State and Federal levels (including the National TB HIV Co-ordinating Body) should continuously sensitise and encourage community leaders, political and religious leaders including the public to speak openly about TB and HIV/AIDS to dispel stigma and misconceptions surrounding TB and HIV/AIDS.*



## Attachment 3: Itinerary

**3<sup>RD</sup> IN-DEPTH REVIEW OF SUDAN NTP  
11<sup>TH</sup> TO 24<sup>TH</sup> NOVEMBER 2008  
Overall Program timetable**

Date	Time	Activity	Team / Responsible	Avenue
Monday 10/11		Arrival of reviewers		Khrt Airport
Tuesday 11-11	9:00 -10:30	Meeting with NTP manger & approval of Indepth mission plan of action	A & B	
	11:00-13:00	Opening session	All teams	NTP buidling
	13:00 – 14:00	Break		
	14:00 – 16:30	CU presentation		
Wednesday 12/11	9:00 -10:00	Review of the previous indepth report	All teams	FMOH CMS NTP building
	10:00-11:00	Meeting with Khartoum state officials		
	11:00-12:00	Meeting with Undersecretary and FMOH official		
	Afternoon	Meeting with NTP partners incl UNDP		
Thursday 13/11	9:00-16:30	Field visits to Khartoum state centers		Khartoum state
Friday 14/11		TeamA filed visit to Sinnar		Both states for each tream are on the same route
		Team B filed visit to Geadrif state		
Saturday –Tuesday 15-18/11	9:00-16:30	Revision of NTP activities at Sinnar and Gedarf states and meeting the officials	Team A (Sinnar and Team B Gedarif)	
Wednesday 19/11	9:00	Teams trip back to Khartoum		Khartoum
Thursday 20/ 11	9:00 -16:30	Meeting with Federal Minister of health Meeting with CCM secretariat		
		Report drafting by team members		NTP Building

Friday 21/11		Report drafting, discussions with NTP CU		
Saturday 22/11	9:00-15:00	Discussion of recommodation	All teams	NTP Building
				NTP Building
Sunday 23/11	9:30 – 11:30	Parallell program: Drug management meeting/MDR hospital/HIV program		
		Discussion of recommendations		
Monday 24/11		Debriefing with NTP and partners Departure		

- Special program was made for PSM consultant (incl CMS) and Laboratory consultant (incl Natl ref lab)

- 

**3<sup>RD</sup> IN-DEPTH REVIEW OF SUDAN NTP  
11<sup>TH</sup> TO 24<sup>TH</sup> NOVEMBER 2008  
Program of Opening session**

11/11/2008 – NTP - CU

Time	Topic	Presenter
11:00 -11:10	Holy Quran	
11:10- 11:40	NTP manager presentation: Sudan NTP profile	
11:40-11:50	NTP partner speech	
11:50-12:00	Indepth review team leader speech	
12:00 -12:10	Dr. Fath Malik speech	
12:10-12:20	Dr. Alabassi speech	
12:20-12:30	LHL consultant speech	
12:30-12:40	WHO representative speech	
12:40-12:50	UNDP represwetative speech	
12:50 -13:00	Undersecretary speech	



## Attachment 3: Person met

<b>Name</b>	<b>Position</b>
	<b>FMOH</b>
Dr Tabita Butrus	Federal Minister of Health
Dr Fatih Malik	Dir general preventive medicine
Dr Ismail Busharah	Ass Undersecretary FMOH
Dr Isameldin Mohammed Abdalla	Director general International Health
Dr Tarik Abdalla Ahmed Abd Elghani	Director of bilateral relationship
Dr Nageeb Suleiman	Director of NHPL
Dr Asrar Abdelsalam	Director Ref lab
Nuha Ibrahim	D D Ref Lab
Dr Abdella M Hassan	Central medical store
Dr.Agallay	D of Pourcurment
Student Nrtwork.TB Patients Association ,Chest Physicians Association ,EPI Lab/Women Union /WHO/UNDP/GLRA	Persons participating in partners meeting in NTP-CU
Dr Mustafa Khidir El Nimeiri	Ass. Professor, National consultant of preventive medicine, Faculty of medicine, International Africa University
Dr Ammar Mohamed	UNDP
Dr Omer Nimeri	AIDS program
Dr Peter Attok	MDR Focal Point Abu Anja hospital
Dr Mohamed Kunah	Director of Abu Anja Hospital
	<b>Khartoum state</b>
Paramina	Minister of health
Dr.A Imuez Altaeab	DG of Health
Dr Tarig Abdallah Abdelraheem	DG Prventive Medicine
Dr.Hiba Kamal Hamadelneel	TB State Coordinator
	Health units
	<b>Akademia</b>
Dr moawia Alsaid	Director of preventive medicine in Khartoum locality
Layba Awad	Statistician
Dr Salah Aldeen Siddig	Medical doctor
Fath Alrahman Abdalkhalig	Med lab technician
Yagoub Yaseen Adam	Nurse
Hassan Mansour	Pharmaceutic
	<b>Abo Said</b>
Dr Amged Obeid SidAhmed	Director of preventive medicine in Omdurman locality
Afaf Abdala Awad	Statistician
Mohammed Ahmed Babiker	Medical assistant

Helda Fatima	Med lab technician
Amina Ali Mahadi	Nurse
Abobaker Abad Alkarim	Pharmaceutic
Ibrahim Ali Ibrahim	Volunteer, Sudan Red Crescent
	<b>Sinnar state</b>
Hassneen Elsheik Mahmed	Minister of health, Sinnar State
Dr Gazi Abdelguder	Deputy Director general .
	<b>Gadaref State</b>
Mr Eldaw Osman Ahmed	Wali (Governor) of Gadaref State
Mr Mustafa El Sayed	Minister of Health
ALI ABDELRAHMAN	DG State ministry of Health
Dr Mohamed El Tigani	Director of Preventive of Medicine
Dr Islah Ismail Mekki	TB State Coordinator
Dr Mohanad Abdel Rahaman Abdalla	Assistant TB State Coordinator
Mr Hassan El Gali	Lab. State Coordinator
Mr Hashim Mohamed Ahmed	Statistician
Mr Yasir Osman Mohamed	Director of Planning
Dr Abdel Azeem Omer El Sharef	SNAP Coordinator
Ms Nosaiba Hassan	Assitant statistician
Ms Amira El Tahir	Medical Assistant in Gadaref TBMU
Ms Husnia Ibrahim	Health Education and Nutrition
Dr Abdalla Abdel Wahab	PSM Manager
Dr. Mahmoud Awad Mahmoud	GF Manager
Ms Jawahir Mohamed Omer	Responsible for the drug in Gadaref TBMU
Dr Abdel Monim Ahmed Osman	Director general of Gadaref Teaching Hospital
Dr Mohammed El Haj	Director of El Showak Hospital
Dr Abdalla El Tayeb	Medical officer El Showak Hospital
Mr Fathallah El Shaek	Locality coordinator
Kafi Haran TUTU	Locality lab coordinator
Susan Mohammed Sultan	Statistician
Dr Eldaw Mohammed	Director Doka Hospital
Dr Abdalla Burhan	Obs&Gyn specialist
Mr Yakub Mukhtar	Med assistant
Mr Hassan	Med assistant
Dr Idris Ali Amir	Director Galaa Elnahal Hospital
Halima Abdallah	Medical Assistant Galaa Elnahal Hospital
Elsunosy Elfateh	Lab technician Galaa Elnahal Hospital
Dr Farag Allah Mohammed Ali	Director of Mafaza Hospital
Fatima Abbas	Statistician Mafaza Hospital
Mona Abdallah	Medical Assistant Mafaza Hospital
Dr Gamal Ahmed	Director of FAO Hospital
Rihab Abdallah	Social Psychologist FAO Hospital/TBMU
Fathiya Ibrahim	Social Psychologist FAO Hospital/TBMU
El Shebly Abdallah	Lab Technician FAO Hospital
Nahed Yakub	Lab Technician FAO Hospital

#### Attachment 5 References (documents consulted)

- In-depth review report 2004
- TAC reports 2005, 2006 and 2007
- WHO Sudan: Travel report Jan 2008 to 4 states in Sudan
- GFATM Round 5 application (from theglobalfund.org homepage)
- GFATM R8 proposal
- Draft NTP manual
- Strategic plan 2006-2010
- Strategic plan 2004-2008
- Annual report 2007 of the NTP
- Report 3 quarters 2008, NTP
- Revised forms for R&R WHO 2006
- WHO Global TB Report 2008
- UNAIDS (2006). Report on the global AIDS epidemic. Geneva.
- Sudan National AIDS programme. Report of Surveillance of HIV/AIDS 2001. Federal Ministry of Health. National AIDS Programme, Khartoum, Sudan (unpublished).
- Dye C, Espinal MA, Watt CJ, Mbiaga C and Williams BG. Worldwide incidence of multi-drug resistant tuberculosis, *Journal of Infectious Diseases* 2002; 185:1197-1202
- Jindani A, Nunn AJ, Enarson DA. Two 8-month regimens of chemotherapy for treatment of newly diagnosed pulmonary tuberculosis: international multicentre randomised trial. *Lancet*. 2004 Oct 2-8;364(9441):1244-51

Attachment 6: Follow-up of recommendations made in the in-depth review in 2004

Recommendations	Action taken	Review team's comment (done, partly done, not done/No data)
1. Political commitment should be increased to ensure sustainability of NTP	Improved through the FMOH support to NTP (personnel and funds for specific programs)(tables and reports about that Dr Hashim) attached as annexes	Partly Done
2. The partnership between National Health Laboratory and NTP should be strengthened and the role of the NTRL in training and quality assurance should be intensified	Done and collaboration is going on (MOU attached Dr Asrar)	Not done
3. Establishment and operation of the NTRL should be supported including recruitment of additional staff. Culture and susceptibility testing (in close collaboration with NTP according to memorandum of understanding) should be functioning within 3 months	Done (see lab. Section)	Partly done
4. Joint pilot projects between NTP and HIV/AIDS program should be encouraged	Done through GF support , joint plan is approved and implementation started	partly done. Joint activities but no formal pilots
5. The success of the NTP should be a model for strengthening public health services	PAL initiative; DOTS in Malaria and Leprosy	Not done

NTP Central Unit

Recommendation	Action taken	
6. Identification of states with deficient TB services should occur and corrective actions taken	Darfur states identified, through WHO support training g conducted but still low reporting in these states Other states are supported by GF and GF8 will mainly targeted post conflict states	Partly done
7. Improve utilisation of smear examination both for diagnosis and treatment follow-up	Being followed ( <b>partially implemented</b> )	Not done; evidence that smears are mainly being used for disease classification rather than case-finding

8. A long-term plan and a pilot project for integrating activities between TB/HIV and other related diseases should be developed and implemented	Partially done through he GF Working group formulated Guidelines drafted Implementation of GF activities is gong on	Partly done
9. TB services should be further extended to all sectors of the population, including prisoners, military personnel, and police	Done by Fidelis support and continued with the GF (Data )	Partly done, engagement with police, military etc not well sustained.

#### State ministry of health

Recommendation	Action taken	
10. Political commitment, advocacy, and social mobilisation should be strengthened	Partially done in some of the states but need more follow up (DATA Please)	Partly done
11. High proportion of staff turnover should be taken into consideration	Still represent huge challenge to the program, incentives from GF expected to improve the situation ( <b>Evidence</b> )	Not done
12. Additional staff should be trained to assist co-ordinator in training, supervision, and data analysis	On going (GF targeted training of all working staff ( <b>Data</b> )	Partly
13. Identification of deficient TBMs and labs should occur and corrective actions taken	Done during supervision ( <b>Example for recent three supervisory visits and what is the feedback</b> )	Partly done
14. Guideline implementation should be improved with workshops for private and hospital physicians	National guidelines planned to be revised and new manual to be published	Not done
15. The health education plan should be adopted and state health education officers empowered	Under processing	Not done
16. Accessibility and quality of primary health care should be improved	<b>-To Be Discussed with PHC DG</b>	<b>Not done</b>

#### WHO

Recommendation	Action taken	

17. TB estimates in Sudan should be revisited and revised	Study for revising estimates , protocol under-finalization and prevalence survey submitted for GFR8	Not done, tuberculin survey done but not applicable, activities on-going
---	---	--

#### LHL

Recommendation	Action taken	
18. Technical and financial support of the NTP should be maintained	Done	Done
19.LHL should support capacity building and research to strengthen public health services	Done	Done
20. LHL should expand collaboration with the TB patient association in Sudan	Done	Done

#### IUATLD

Recommendation	Action taken	
21. Technical assistance should be maintained with emphasis on lung health to improve the quality of public health services	Done for the research unit (international consultant from union hired )	Done

#### NTP-NACP

Recommendation	Action taken	
22. NTP should perform a surveillance of HIV in TB patients	Started with the GFR5 and around 1800 TB patients counseled and tested during the period of October 2007 – September 2008	Not done, HIV surveillance project, including TB, is on-going. Fewer than 80% of TB cases are undergoing HIV testing.
23. NTP should encourage a joint project between NTP and NACP	Done and working group established	Done

24. NTP should initiate collaborative projects on IEC (information, education and communication) and care for TB and HIV/AIDS	Not done	Not done
---	----------	----------

#### Program structure and clinical services

Recommendation	Action taken	
25. Improved accuracy of quarterly reports is essential to ensure appropriate information on case finding and treatment outcomes are available to the NTP	Still report delay is challenge	Partly done
26. Results of the quarterly reports/year end reports should be critically analysed by NTP and appropriate follow-up provided to state coordinators	An officer is hired for this task and state coordinators were trained	Partly done
27. An additional form should be provided for transfer from TBMU to TBMU that includes sputum smear results to ensure appropriate classification of smear positive and smear negative patients.	New R-R form were partially adopted , it includes this card	Partly done

#### Program extension

Recommendation	Action taken	
28. Implement the five year plan	New strategic plan was written to adopt the WHO stop TB strategy	Partly done
29. Ensure that DOTS is well-established and functioning well before expanding into additional populations	No further expansion done	Not done
30. Priority on operational research to provide guidance for future development of the NTP	Done through the technical assistant and formulation of the TRP	Done

#### Training and supervision

Recommendation	Action taken	

31. The plan for supervision should be prioritized according to the program performance in all levels	All states planned to be covered with two supervisory visits and priority is usually for low performing states	Partly done
32. Laboratory and Co-ordinator supervision should be strengthened with emphasis on corrective actions and remedial training should be provided to laboratory staffs that have poor performance.	Supervisory team almost include lab. Personnel	Not done
33. Additional staff should be identified and trained to assist with state co-ordinator in training and supervision	On going	Partly done

#### Drug supply – central level

Recommendation	Action taken	
34. Drug distribution system should be maintained at the same level.	Done	Done
35. Central store should be supported with one additional staff to be trained by the experienced storekeeper.	Done and two pharmacists were employed	Done
36. Transportation means should be provided in the States without RDF if needed.	Done through PSM, states cars, RDF no problem is transporting drugs	Done

#### Drug supply – state level

Recommendation	Action taken	
37. Special attention should be paid to expiry dates. Each TBMU should recheck buffer stock and return the excess with early expiry date for immediate re-distribution.	No routinely done	Not done
38. The drug inventories are generally kept well. A difference between shelf and record balance in one store was due to lack of entry of recently distributed drug. Reinforce the need to promptly enter amount of drug distributed.	Not routinely done at TBMU level	Not done (no stock cards) at TMBU level)

39. Private pharmacies stock RH (Rifampicin + Isoniazid) tablets and streptomycin. This practice should be discouraged.	-- no obvious achievement	Not done
40. All states should be included under the RDF system for drug distribution.	Now they are enrolled through the new PSM mechanism with collaboration with RDF( <b>EVIDENCE DR NAJY</b> )	Not applicable

#### Finance and planning

Recommendation	Action taken	
41. For the co-ordination, sustainability and transparency of TB control in Sudan it is preferable to obtain the total expenditure of TB activities in the country.	Expenditure is available ( <b>FIGURES</b> )	Done for GFATM Round 8
42. The CU should provide and over all budget for the CU activities	Available	Done (2008-2009)
43. Technical and financial support from LHL should be maintained	Done	Done
44. The FMoH should secure more input from the government to the CU. A budget line on this financial commitment should be identified	Improved and fund were received for many activities	Done

#### Lab services

45. Supervision should be strengthened with emphasis on corrective action.	No separate lab. Supervisory visits but usually done jointly with NTP-CU	Not done
46. Remedial training should be provided for laboratory staff showing a poor performance.	Done with GF support	Done but quality not known
47. Different means of increasing the motivation of the laboratory staff should be sought.	Staff at TBMUs receiving incentive from GF, recently started	Done
48. Slides should be correctly labelled and saved since this is a prerequisite for quality assurance.	Done	Partly done – not much improvement since 2005

49. Maintenance of record books should be improved.	Correction ongoing	Not done
50. Diagnostic centres should have enough work load ((at least 10-15 smears per week) to be able to maintain high proficiency.	<b>EDITING PLEASE AND RELEVANT ANSWER?</b>	Not done
51. Microscopes fitted with mirrors should be provided by the program	Electrical one are provided from program	Not done

#### TB control quality state level

Recommendation	Action taken	
52. The results of the quality assurance indicate major quality problems at some laboratories including state quality control laboratories. Action should be taken to analyse these problems.	Only five state are capable for the analysis	Not done
53. The supervision has to be strengthened and priority should be given to the peripheral laboratories with observed deficiencies. It is important to identify existing problems, give feed back, and take remedial actions.	Joint supervision	not done
54. Remedial training of selected lab. Assistants should be considered.	Started and Ongoing	Partly done
55. Means of increasing the motivation of the laboratory staff should be sought.	TBMUS staff started to receive the GF incentives	done
56. The State TB Coordinator should ensure that the quality assurance is blinded.	Done	Not done

#### National TB reference lab

Recommendation	Action taken	
57. It is essential that the partnership between the NHL and NTP be strengthened to ensure that the priority needs of the tuberculosis program are met.	MOU was signed and collaboration is going well	Not done
58. The administrative committee should become operational as soon as possible. The committee should assume the responsibilities as outlined in the Memorandum of Understanding.	Started last year and stop functioning	Not done
59. The staff needed in the NTRL as per Memorandum of	Done	done

Understanding should be recruited.		
60. A detailed timetable for the implementation of the culture and susceptibility testing should be presented as soon as possible. This will necessitate a strong commitment by the Ministry of Health to facilitate the establishment of the unit. The goal should be that the culture laboratory should be fully operating within three months. An external reviewer should review the progress after 6 months.	Done	Partly done (not <i>fully</i> operating)
61. The involvement of NTRL in training and quality assurance should be intensified. A plan of action should be developed and approved by the administrative committee.	Done	Not done

Recommendation	Action taken	
62. The protocol for national surveillance of drug resistance in tuberculosis should urgently be revised in collaboration with the NTP, IUATLD, University of Oslo, and WHO.	not done	Not done
63. Quality assurance of culture and susceptibility testing should be implemented as soon as the new laboratory is operating. Bio-safety should be strengthened: A safety manual should be developed. An accident and incident record book should be established. Policy for health check up of staff should be established. The air supply and exhaust facilities must be tested to ensure that a negative pressure is maintained under different operating conditions. Proper directional airflow into the culture room should be verified under different operating conditions.	Done	Partly done

Safety cabinets should be sited out of crosscurrents from ventilation system.		
64. Cabinets in the cold room should be replaced with open shelves.	Done	Not done – cold room closed

#### Quality ensurance (lab)

Recommendation	Action taken	
65. Any major error (high false positive or high false negative) should always be carefully investigated by the State Quality Coordinator to identify the reason.	Not retsrictly followed	Not done
66. Feedback on the results of quality assurance should be given since this is essential for the continuous motivation for good performance.	Problem was transportation , but recently solved and reports are sent	Not done – no written feedbak
67. Remedial training should be provided for lab. Assistants that have a poor performance.	Done through routine training	Partly done
68. State TB Coordinator should ensure that the quality assurance is blinded.	Done	Partly done

#### Case finding and treatment

Recommendation	Action taken	
69. World Health Organization should hold a workshop to revise the TB incidence estimate in Sudan.	Prevalence survey is planned and assessment of estimate is drafted	Not applicable

70. The ARI should be updated at national and state levels through tuberculin survey.	National Tuberculin survey done and results were not adopted	Not done (data not usable?)
---	--	-----------------------------

#### TB and HIV

Recommendation	Action taken	
71. TB incidence estimate should be revised in Sudan.	Not done	See above ? not applicable ? should be HIV incidence
72. Notification data should be validated to investigate the proportion notified from the war and conflict areas.	Not done	Not done
73. Improving the laboratory should increase smear positivity rate and applying the NTP guidelines of Case findings especially for “smear negative”.	NTP is following but still a challenge	Not done
74. The cure rate should be increased by improving follow-up sputum examinations (The last sputum test should be done at the end of 7th month of treatment).	Not much increased	Not done - No increase – cure rate static
75. Studies on TB/HIV co-infection should be conducted in Sudan and at the level of states.	Not Done	Partly done – study on-going

#### Health promotion

Recommendation	Action taken	
76. Federal Ministry of Health should increase political commitment to Health Awareness Issues and specifically TB/HIV/AIDS	Political commitment improved	Partly done

77. The SMOH should adopt the plan developed by state health education officers and empower them to carry it out.	<b>Not applicable as the education officer is responsible for all communicable disease</b>	Not applicable
78. Increased training of TBMU staff to deliver simple, consistent health promotion messages	Done	Not done
79. Continued technical and financial support of University Outreach Programs with priority to cover remote and inaccessible area	Done	Partly done
80. Partnership with University Outreach programs, School outreach, health club association, tuberculosis patients organizations should be sustained by encouraging fundraising from local- and international NGOs and private sector.	Done	Partly done
81. LHL's comparative advantage as a successful and experienced patient-based organisation can be further utilized. LHL should explore further collaboration with TB patient association to support and strengthen a participatory patient organisation in Sudan.	-Still there is room for more collaboration	Partly done

#### Recording and reporting

Recommendation	Action taken	
82. Data management should be handled with one source (Available Oracle Software).	<b>Advanced Oracle software has been established for easy entry and analysis of notified data and treatment outcome. Reports are produced from this software based on the indicators needed. It calculates the case finding rate, conversion rate and treatment outcome results by TBMU's, state and quarter. Some of the treatments data have been also utilized using excel formats</b>	<b>Not applicable – now recommending Excel</b>

83. Support should be primarily provided to the state coordinators to enable them to manage data electronically. Computers, printers and training should be provided.	<b>This support provided by the global fund. Computers, printers were distributed to the state recently one work shop done for the states statisticians for data management we manage for another course next month</b>	<b>done</b>
84. Staff at NTP and at state level should be trained on data management and analysis.	<b>There is no special training for the staff at NTP they attend the training with the state coordinator or state statistician Training at the state level done with the training schedule</b>	<b>Partly done</b>

#### Surveillance of drug resistance

Recommendation	Action taken	
85. A protocol for nation wide surveillance of drug resistance in tuberculosis should be developed.	Not done , pilot survey in Khartoum is ongoing	Not done

#### Surveillance of HIV

Recommendation	Action taken	
86. Sentinel sites should be chosen in different states to implement the above-mentioned protocol.	Done through the GF	Not done

#### Research

Recommendation	Action taken	
87. Epi-lab should be a focal point for research collaboration and technical integration of different health programs.	A research unit was established in 2007, and Dr. Asmaa Elsuni is a member in the TRP committee	Partly done, recommendation may be less applicable now that TRP has been established.
88. There is an urgent need to update the tuberculin survey at national and state levels.	A study to identify the case detection rate based on the extent of reporting/underreporting rate of non-NTP providers Is proposed .This rate will be used to estimate the total number of cases and TB incidence. And well be compared with	Not applicable

	incidence estimated based on projections of the latest tuberculin survey	
89. Nation wide surveillance for drug resistance in tuberculosis should be performed.	Going in Khartoum state	Not done – protocol not seen
90. Research and surveillance should be integrated components of the tuberculosis program.	Unit established	Partly done
91. Research should be further strengthened through internal and external collaboration.	TA mission was conducted during the establishment of the unit	Partly done
92. Additional external funding should be sought from international research grants and from donors.	Done through GF /WHO	Done
93. LHL should support capacity building and research to strengthen public health services.	-Done	Done

Comment: Many of the recommendations were not precise enough to assess accurately. Out of 93 recommendations, how many to SNTP?

Most of them partly done – impact not clear.



Annex 7 Lab I:

<b>General Information on Lab</b>												
<b>Date visit</b>												
<span style="margin-left: 100px;">16.11.08</span> <span style="margin-left: 50px;">16-11.08</span> <span style="margin-left: 50px;">17.11.08</span> <span style="margin-left: 50px;">17.11.08</span> <span style="margin-left: 50px;">18.11.08</span> <span style="margin-left: 50px;">18.11.08</span> <span style="margin-left: 50px;">19.11.08</span>												
Name of health facility	Abu saeed	Academia	GH	MH	Schwak RH	Doka RH	Galaa Nahal	Almufazza	Al fao	Singa Hosp	Sinnar	Abuhugar
	Khartoum		Gadarif						Sinnar			
Laboratory Type		TB lab	TB/Hiv	Multipurpose	Multipurpose	Multipurpose	Multipurpose	Multipurpose	Multipurpose			
# of staff		1	2	1	4	3	1	4	11	1	1	1
TB staff designation	L.T	L.T	L.T	L.T	LT	LT	LT	LT	LA	LA		LA
working in TB for		7	2years	2month	25years	4 years	4 years			2months		2Years
<b>TBMU information on Case finding</b>												
Period evaluated :	Q-3	Q1-3	Q-3	Q1-3	Q1-3	Q1-3	Q1-3	Q1-3	Q3	Q3	Q-3	Q-3
Patient registered	40	88	144	9	21	34	9	22	39	39	32	7
SSm +ve(Cat-1)	8	44	65	9	11	17	8	17	5	13	22	2
SSM +ve(Cat-11)	7	10	0	0	0	2	0	2	0	1	3	0
Total smear +ve	15	54	65	9	11	19	8	19	5	14	25	2
PTB SS-ve	19	21	33	0	6	13	1	2	19	17	2	5
PTB (smear not done)	3	2	0	0	0	0	0	0	7	3	2	0
ExPTB	3	11	46	0	4	2	0	1	8	5	3	0
<b>TBMU information on Treatment monitoring</b>												
:	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>Laboratory Information on workload and performance</b>												
Period evaluated :		Q-3	Q-3	Q1-3	Q1-3	20/8 to 7/11		jan-nov08	Jan-nov 08	Q-3	Q-3	Q-3
# patient	89	399	365		39	21	21	23	52	83	138	12
# of suspect	27	196	253		18	16	14	23	23	41	66	6
# of follow up pts	62	203	112		21	5	7	0	29	42	72	6
# of suspect reported positive	8	27	44		8	3	6	20	4	11	36	1

# of follow up reported positive	5	6	0		1	0	1	0	0	3	3	0
% of positive D. Patients	29.6	13.8	17.4		44.4	18.75	42.9	87.0	17.4	26.8	54	16.7
% of Folow up positive Patients	8.1	3.0	0		4.8	0	14.3	0	0	7.1	4.2	0
#of D.smear		575	759		52	31	52	69	53	122		18
#of F.up smear		203	112		21	5	7	0	24	42		1
# D. +ve smears		60	129		21	5	16	52	12	33	77	3
# F.up +ve smears		6	0		1	0	1	0	0	3	3	0
% of D +ve smears		10.4	17.0		40.4	16.13	30.8	75.4	22.6	27.0		16.7
% of F.up +ve smears		3.0	0		4.8	0	14.3	0	0	9.1		0
Total smears		778	871		73	31	59	69	77	164		19
work load (AFB sm/day)		13	14.5		0.4	0.6	0.3	0.345	0.4	2.73		0.32

On – SITE EVALUATION												
Name of HF/Lab	Abu saeed	Academia	GH	MH	Schwa k RH	Doka RH	Galaa Nahal	Almuf azza	Al fao	Singa Hosp	Sinnar	Abuh ugar
Infrastructure	Yes		NO	Yes	Yes	Yes	Yes	NO	Yes	NO	NO	Yes
Power supply	Yes	Yes	YES	Yes	Yes	Yes	NO	Yes	Yes	Yes	Yes	Yes
water supply	Yes	NO	NO	Yes	Yes	Yes	Yes	Yes	NO*	NO	NO	NO
TB Staff trained	Yes	Yes	YES	Yes	Yes	Yes	Yes	Yes	Yes	??	Yes	Yes
SOP Lab. Manual	No	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
SOP: (poster)	Yes	Yes	YES	YES	NO	NO	YES	NO	YES	NO	NO	
Lab Register , neat , uptodate	Yes	NC	NC		NC	NC	NC	NC	NC	NC	NC	Yes
Summary workload and performance	No	NO	NO		NO	NO	NO	NO	NO	NO	NO	NA
Microscope Brand	Olympu s	Leica	Olympus CH30		Leica +Olymp us CH20	Leica +Olymp us CH20	Olympus CX21	Leica + Olympus CX21	Olympus CX21+ Olympus CHT-20		Olympus	
M.Functioning	Yes	Yes	YES		YES	Yes	No	Yes	Yes	No	Yes	Yes
M. Maintained		NO	NO		Yes	NO	Yes	NO	NO			
St. reag & im. oil	Yes	Yes	YES		Yes	Yes	Yes	Yes	NO Im oil	Yes	Yes	Yes

Other consumable (Glass Slides,sp. cups,filter paper ,disinfectant)	YES* No Filter Paper	YES* No Filter Paper	YES* No Filter Paper		NO* Sp Cup	YES* No Filter Paper	YES* No Filter Paper	NO Slides FE	YES* No Filter Paper	YES* No Filter Paper	YES* No Filter Paper	YES* No Filter Paper
B burner, W.loop /sticks, G,funnel sand alcohol Jar ,staining bridge	Yes	NOT all	NOT all		NO	NO	NO	NO	NO	NOT All	NOT All	NOT All
Protective clothing, disinfectant, hand washing facility	Yes	No	NO		NO	NO	NO	NO	NO	NO	NO	NO
Safe Disposal of infective material	Yes	Yes	Yes		Yes	YES	YES	??	Yes	Yes	yes	yes
Sp. collection in ventilated area	outside	OA	OA		OA	OA	OA	OA	OA	OA	OA	OA
Specimen quality recorded			NO		NO	NO	NO	NO	NO	NO	NO	NO
+ve marked in Red	Yes	Yes	YES		Yes	NO	Yes	Yes	YES		NO	
+ve smears are graded	Yes	Yes	NO		Yes	NO	NO	NO	NO		YES	
All Examined stored serially	Yes	Yes	NO		NO	NO	NO	NO	NO			
Slides collected by SLC	Monthly	Yes	NO		NO	NO	NO	NO	NO			
<b>II - ON SITE RECHECKING</b>												
# +ve slides Checked	2	3	2		4	NA	NA	2	1		6	
# +ve Correc#	2	3	2		4			2	1		6	
AFB staining		2/3 Faint	½ Faint		1/4Faint			1/2Faint	Faint	Microscope Bulb broken		
Grading		Yes	Under		Under							
# -ve slides Checked (neg)			1		3	7	3		2			
# correct			1		2	7	3		2			
Quality of smears			thin		good	6/7 Thin	3/3 Thin		2/2 saliva			
Quality of specimen			saliva		sputum	6/7 saliva	3/3 saliva					



Annex 8 : Lab II

<b>Function</b>	<b>Technique</b>	<b>Workload /month</b>	<b>Staff responsible</b>	<b>Performance Indicators</b>
<b>AFB Smears</b>	ZN staining	80pts/month (79 suspect )	2-Lab technicians	Period evaluated Jan -oct 08  Avg. Diagnostic pos .rate: 11.6%*  Follow-up Positivity rate : 3/14 f-up smears in 10 months See Annex II-B
		200smears/month		
<b>AFB Culture</b>	Simple culture tech.Inoculation on 2 LJ slopes with glycerol and 1 with Pyruvate	28 cultures/month	3-Lab technologist,  1-lab technician ( for microscopy of culture smears)  2-lab technician ( for preparation of media)  6-Lab attendant (for washing ,sterilization and house keeping)	Period evaluated June-Aug 08  Recovery in diagnostic smear +ve specimens =58%*  Recovery in diagnostic smear -ve specimens =13.8% *  Contamination rate(slopes)=13.8% *See Annex II-B
<b>DST -FLD</b>	Proportion method(LJ media)	12-15/month	2 Lab Technologist.  1-lab technician	Linked with SNRL (Antwerp) See Annex II-C
<b>Identification</b>	PNB	Presently not done	2 Lab technologist	
	TCH			
<b>Supervision and monitoring of</b>	2 <sup>nd</sup> control reading	NO information /documentation	1 lab technologist .	NO information /documentation

<b>EQA activities</b>	Supervision		2 lab -technician	
-----------------------	-------------	--	-------------------	--

Annex lab IIB separate file (doc from excel)

Annex lab IIC

Table : Result of the WHO/IUATLD Rounds 11 , 12 and 13 quality assessment (Panel Testing ) of Drug susceptibility testing

	H					R					S	E
	11R	12R	13R	14R*	15R**	11R	12R	13R	14R*	15R**	13R	13R
TOTAL CORRECT RESULTS	23	17	28			20	18	28			29	27
TRUE RESISTANT	12	12	14			10	12	10			11	8
FALSE RESISTANT	1	2	0			0	1	0			0	1
TRUE SUSCEPTIBLE	11	5	14			10	6	18			18	19
FALSE SUSCEPTIBLE	0	1	0			2	1	0			0	0
SENSITIVITY	%100	%92	100%			%83	%92	100%			100%	100%
SPECIFICITY	%92	%71	100%			%100	%86	100%			100%	95%
PREDICTIVE VALUE RES.	%92	%86	100%			%100	%92	100%			100%	89%
PREDICTIVE VALUE SUSC.	%100	%83	100%			%83	%86	100%			100%	100%
EFFICIENCY	%96	%85	100%			%91	%90	100%			100%	96%
REPRODUCIBILITY	%100	%86	100%			%100	%100	100%			100%	100%

REPORTING DELAY	days 178	Days 178
-----------------	----------	----------

\* Result not yet completed

Annex 9: Lab III

**Summary: EQA activity Khartoum**

	Hospital#	Slide#	Health Centre #	Slide #	NGO#	Slide #	Total centres #	Slide #	Avg slide/centre
Q-1	12	580	26	1025	5	134	43	1605	37.3
Q-2	9	676	25	975	2	112	36	1763	49.0
Q-3	17	1011	24	921	2	54	43	1986	46.2

**Summary : EQA Results Khartoum**

	Slides			Errors		TBMU		
	Positive	Negative	Total	HFP	HFN	# TBMU under	# TBMU with	%TBMU error

						<b>EQA</b>	<b>Major error</b>		
Q-1	252	1487	1739	1	42	43	18	41.9	
Q-2	290	1473	1763	0	43	36	16	44.4	
Q-3 (State)	226	1269	1495	0	43	36	20	55.6	
Q-3 (Federal)	104	387	491	0	13	7	4	57.1	
<b>Total</b>	<b>872</b>	<b>4616</b>	<b>5488</b>	<b>1</b>	<b>141</b>	<b>45</b>	<b>28</b>	<b>62.2</b>	





وزارة الصحة الاتحادية  
المشروع القومي لمكافحة الدرن  
NATIONAL TUBERCULOSIS PROGRAMME – SUDAN  
Quarterly Report on TB Case Registration in Basic Management Unit (TBMUS)  
التقرير ربع السنوي عن الحالات المكتشفة ( الرئوي الموجب والسالب التفاف وخارج الرئة )

Name of TBMUS----- اسم المركز التشخيصي Facility:----- اسم المركز العلاجي	Patients registered during ----- المرضي المسجلين خلال الربع
Name of TB Coordinator----- اسم المنسق Signature----- الإمضاء	Date of completion of this from----- تاريخ ملئ الفورم
	السنة -----quarter of year-----الربع

**Block 1: All TB cases registered<sup>2</sup>**

Pulmonary sputum smear microscopy positive موجبه التفاف				New smear microscopy negative سالب التفاف			Pulmonary sputum smear microscopy not done /not available المرضي الذين لم يفحصوا			New extra pulmonary خارج الرئة			Other Previously Treated أخري	Total All cases المجموع الكلي
New cases positive الحالات الجديدة موجبه التفاف	Previously treated حالات اعاده العلاج			0-4 yrs	5-14 yrs	≥15 Yrs	0-4 yrs	5-14 yrs	>15 yrs	0-4 yrs	5-14 yrs	≥15 Yrs		
	Relapses انتكاسه	Failure فشل	Default انتقطاع بعد عوده											
M														
F														

**Block 2: New Pulmonary sputum smear microscopy positive cases – Age group** الحالات الجديدة بالأعمار

Sex النوع	0 – 4	5 -14	15 - 24	25 – 34	35 – 44	45 - 54	55 - 64	≥65	Total
M ذكر									
F أنثى									

**Block 3: Laboratory activity – sputum smear – microscopy<sup>4</sup>****Block4: TB/HIV activities<sup>2</sup>****Block5: DOT**

NO. of TB suspects Examined for diagnosis by sputum smear microscopy عدد المشتبهين الذين فحصوا التفاف	NO. of TB suspects with positive smear sputum microscopy result عدد المشتبهين موجبي التفاف		NO. patients tested for HIV before or during TB treatment عدد المرضي الذين فحصوا الإيدز	NO. patients HIV positive عدد المرضي ذو نتيجة موجبه	Total No. Of male using condoms العدد الكلي للذكور الذين يستخدمون للعوازل الذكورية	Type of treatment supporter نوع مراقب العلاج	No. of patients under DOT عدد المرضى تحت الإشراف المباشر
		New sputum smear microscopy positive TB				Health worker in health facility عامل صحي	

		المرضي الجدد موجبى التنفاف					Community عناصر المجتمع	
		All TB cases كل المرضى					Family member/guardian فرد من الأسرة	

### **Annex 11. Subnational analysis of case finding and treatment outcome**

<b>Blue Nile</b>	<b>% ss+/Pulm</b>	<b>%ss+/all</b>	<b>%EP/all</b>	<b>% retreat</b>	<b>TSR%</b>	<b>death</b>	<b>failure</b>	<b>default</b>
<b>2003</b>	<b>44</b>	<b>37</b>	<b>10</b>	<b>6</b>	<b>71</b>	<b>6</b>	<b>1</b>	<b>16</b>
<b>2004</b>	<b>48</b>	<b>39</b>	<b>15</b>	<b>3</b>	<b>67</b>	<b>7</b>	<b>1</b>	<b>22</b>
<b>2005</b>	<b>45</b>	<b>40</b>	<b>9</b>	<b>2</b>	<b>62</b>	<b>8</b>	<b>5</b>	<b>21</b>
<b>2006</b>	<b>46</b>	<b>39</b>	<b>8</b>	<b>6</b>	<b>78</b>	<b>1</b>	<b>3</b>	<b>16</b>
<b>2007</b>	<b>48</b>	<b>40</b>	<b>11</b>	<b>6</b>				

- proportions of ss+ out of all and out of pulmonary below acceptable rates
- re-treatment rate above 5% and increased during 2006-2007
- TSR of the evaluated (78%) in 2006
- high default rate (16% in 2006)
- proportion of ss+ out of all within acceptable level
- 100% report completeness between 2005-2007

<b>Gedaref</b>	<b>% ss+/Pulm</b>	<b>%ss+/all</b>	<b>%EP/all</b>	<b>% retreat</b>	<b>TSR%</b>	<b>death</b>	<b>failure</b>	<b>default</b>
<b>2003</b>	<b>54</b>	<b>37</b>	<b>24</b>	<b>8</b>	<b>83</b>	<b>3</b>	<b>1</b>	<b>11</b>
<b>2004</b>	<b>62</b>	<b>45</b>	<b>20</b>	<b>7</b>	<b>88</b>	<b>1</b>	<b>2</b>	<b>6</b>
<b>2005</b>	<b>68</b>	<b>53</b>	<b>18</b>	<b>4</b>	<b>88</b>	<b>1</b>	<b>0</b>	<b>7</b>
<b>2006</b>	<b>63</b>	<b>48</b>	<b>20</b>	<b>5</b>	<b>88</b>	<b>2</b>	<b>0</b>	<b>7</b>
<b>2007</b>	<b>60</b>	<b>41</b>	<b>27</b>	<b>4</b>				

- proportions of ss+ out of all and out of pulmonary below acceptable rates
- re-treatment rate 4%
- TSR of the evaluated (88%) for the 2006 cohort
- high default rate (7% in 2006)
- proportion of ss+ out of all within acceptable level
- 100% report completeness in 2007

<b>Gezira</b>	<b>% ss+/Pulm</b>	<b>%ss+/all</b>	<b>%EP/all</b>	<b>% retreat</b>	<b>TSR%</b>	<b>death</b>	<b>failure</b>	<b>default</b>
<b>2003</b>	<b>47</b>	<b>37</b>	<b>17</b>	<b>5</b>	<b>82</b>	<b>3</b>	<b>1</b>	<b>12</b>
<b>2004</b>	<b>54</b>	<b>41</b>	<b>18</b>	<b>6</b>	<b>87</b>	<b>2</b>	<b>1</b>	<b>9</b>
<b>2005</b>	<b>50</b>	<b>37</b>	<b>19</b>	<b>5</b>	<b>86</b>	<b>2</b>	<b>0</b>	<b>9</b>
<b>2006</b>	<b>53</b>	<b>40</b>	<b>20</b>	<b>5</b>	<b>90</b>	<b>2</b>	<b>1</b>	<b>6</b>
<b>2007</b>	<b>49</b>	<b>37</b>	<b>19</b>	<b>6</b>				

- decline in nss+ and all TB cases between 2006-2007
- proportion of ss+ out of all pulmonary below acceptable
- proportion of ss+ out of all below acceptable level

- retreatment rate above acceptable level and increasing
- report completeness declined from 97% to 95% in 2006 and 2007, resp. in spite of the increase in the number of reporting centres from 41 to 44
- high default rate, but declining from 12% in 2003 to 6% in 2006
- high success rate, low death and failure

Kassala	%							
	ss+/Pulm	%ss+/all	%EP/all	% retreat	TSR%	death	failure	default
2003	40	31	23	1	84	2	0	12
2004	35	28	18	3	84	5	2	7
2005	37	29	15	6	73	3	1	19
2006	37	30	16	2	80	2	0	14
2007	42	31	22	4				

- decline in nss+ and all T B forms
- ss+/all and ss+/pulmonary below acceptable levels
- low report completeness (78%)
- low TSR 80% in 2006
- very high default rate, 14% in 2006
- retreatment rate within acceptable level

Khartoum	%				TSR%	death	failure	default
	ss+/Pulm	%ss+/all	%EP/all	retreat				
2003	63	48	15	8	83.8	1.9	1.0	8.7
2004	62	49	14	7	87.6	2.7	0.6	6.8
2005	56	44	15	6	85.2	3.1	1.1	7.1
2006	53	41	14	7	87.2	2.1	0.7	7.2
2007	57	44	17	7				

- decline in report completeness from 95% in 2005 to 89% in 2007 in spite of the parallel increase in the number of reporting centres from 41 to 46 high default rate
- increase in nss+ and all TB cases between 2006-2007
- proportion of ss+ out of all within acceptable level
- high TSR, low death and failure

Kordofan	N	%			TSR%	death	failure	default	TO
	ss+/Pulm	%ss+/all	%EP/all	retreat					
2003	57	40	20	9	85	4	1	7	3
2004	60	44	18	8	91	3	0	5	1
2005	61	43	19	10	88	2	1	7	2
2006	59	41	18	12	89	1	0	7	3

2007	66	47	18	11
------	----	----	----	----

- retreatment rate above acceptable level
- declining report completeness (81% in 2007)
- high default rate
- increase in nss+ and all TB forms
- ss+/all and ss+/pulmonary within acceptable levels
- high TSR

N	%	%						
Darfour	ss+/Pulm	%ss+/all	%EP/all	retreatment	TSR%	death	failure	default
2003	72	56	11	12	88	3	0	7
2004	86	67	15	7	93	3	0	2
2005	71	48	22	11	86	6	2	6
2006	76	60	14	7	86	4	2	7
2007	78	65	8	9				

- significant decline in all TB forms between 2005 and 2007
- retreatment rate above acceptable level
- report completeness 47% in 2007
- high default rate (7% in 2006)
- ss+/all and ss+/pulmonary within acceptable levels
- good TSR

Naher	%	%						
EINile	ss+/Pulm	%ss+/all	%EP/all	retreat	TSR%	death	failure	default
2003	82	70	6	8	86	4	1	7
2004	79	65	7	11	84	2	1	10
2005	58	46	11	10	84	3	2	9
2006	53	42	11	11	90	3	1	5
2007	40	29	14	13				

- significant decline in nss+ (associated with increase in nss- and subsequently all TB forms)
- re-treatment rate above acceptable level
- ss+/all and ss+/pulmonary below acceptable levels
- report completeness 86% in 2007
- high TSR, low death, failure and default (5% but could be further reduced)

North	% ss+/Pulm	%ss+/all	%EP/all	% retreat	TSR%	death	failure	default	TO
2003	81	73	6	4	91	3	0	5	1
2004	74	68	5	3	92	0	0	6	2
2005	73	60	12	6	88	3	1	4	3
2006	88	76	11	3	86	3	0	9	2
2007	84	70	10	6					

- significant decline in nss+ and all TB forms
- re-treatment rate above acceptable level
- report completeness 91% in 2007
- high default rate (9%)
- ss+/all and ss+/pulmonary within acceptable levels
- good TSR, low death and failure

Red Sea	% ss+/Pulm	%ss+/all	%EP/all	% retreat	TSR%	death	failure	default	TO
2003	72	30	54	4	65	6	4	11	14
2004	69	32	49	5	74	5	2	9	9
2005	68	33	48	4	70	5	2	9	14
2006	59	29	45	5	78	4	1	10	6
2007	55	27	48	3					

- decline in nss+
- ss+/pulmonary below acceptable level
- report completeness 89% in 2007
- low TSR, high default rate (10%), high death rate (4%), high TO (6%)
- increase in all forms
- ss+/all within acceptable level
- re-treatment rate within acceptable level

S. Kordofan	% ss+/Pulm	%ss+/all	%EP/all	% retreat	TSR%	death	failure	default	TO
2003	67	57	11	3	79	2	1	15	3
2004	74	63	11	3	92	1	0	6	1
2005	71	57	16	3	89	0	0	11	0
2006	75	68	8	1	83	5	2	9	1
2007	71	64	4	5					

- weak notification, decline in ss+ and all between 2006-2007
- increase in retreatment

- low TSR, high default and death
- ss+/pulmonary and ss+/all within acceptable level
- increase in report completeness to 86% but still below acceptable

S. Darfour	% ss+/Pulm	%ss+/all	%EP/all	% retreat	TSR%	death	failure	default	TO
2003	84	77	0	8	86	5	0	8	0
2004	96	88	5	4	95	3	0	1	1
2005	92	82	10	1	86	5	2	7	0
2006	68	62	6	2	88	2	3	7	0
2007	66	60	6	4					

- Weak notification: drop in 2005
- very low report completeness 38% in 2007
- high default
- increased notification in ss+ and all
- ss+/pulmonary and ss+/all within acceptable levels
- high TSR

Sinnar	% ss+/Pulm	%ss+/all	%EP/all	% retreat	TSR%	death	failure	default	TO
2003	62	55	10	1.8	66	9	2	20	3
2004	53	45	13	2.4	74	5	2	16	4
2005	55	47	11	2.5	71	6	1	19	3
2006	50	40	15	4.2	84	1	3	8	4
2007	53	42	16	5.2					

- ss+/pulmonary below acceptable level
- retreatment rate increasing but still at 5%
- report completeness declined to 85% in 2007
- low TSR, high default and TO
- increased notification in ss+ and all
- ss+/all within acceptable levels

W. Kordfan	% ss+/Pulm	%ss+/all	%EP/all	% retreat	TSR%	death	failure	default	TO
2003	92	79	12	2	83	3	1	12	1

2004	75	60	17	3
2005	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2006	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2007	0	0	0	0

- very poor notification. Cannot measure indicators
- very low report completeness 25% in 2007

W. Darfour	% ss+/Pulm	%ss+/all	%EP/all	% retreat	TSR%	death	failure	default	TO
2003	62	47	17	7	85	15	0	0	0
2004	73	67	8	0					
2005	71	59	9	8	86	5	2	7	0
2006	76	63	14	3	93	5	0	2	0
2007	68	57	11	5					

- significant decline in notifications since 2005
- very weak without a homogenous trend over years
- low report completeness 58% in 2007
- high death
- retreatment 5% in 2007
- ss+/pulmonary and ss+/all within acceptable levels
- good TSR

White Nile	% ss+/Pulm	%ss+/all	%EP/all	% retreat	TSR%	death	failure	default	TO
2003	45	39	9	4	88	2	1	6	3
2004	44	39	5	7	91	1	1	5	3
2005	56	50	7	4	92	2	1	3	2
2006	52	43	8	8	91	2	1	5	1
2007	53	40	9	16					

- slight decline in notifications between 2006 and 2007
- ss+/pulmonary and ss+/all below acceptable levels
- increasing re-treatment to reach 16% in 2007
- report completeness 80% in 2007
- good TSR

## *Main issues, Gedarif*

### **Political commitment and sustainable financing**

*The mission appreciates the high level of commitment shown through our many meetings with high level officials, all of whom know about Tuberculosis and recognize it as a health priority in the State. For the future it would be helpful to see clear, written State Strategic planning with clear budgets outlining the State allocations for TB Control within the overall health allocations and at different levels. The State financial contribution remains crucial even with increasing funds from international sources.*

### **Standardized Treatment (DOT) and patient support, and drug management, contact management**

*We recognized good adherence to the national TB treatment guidelines. Free anti-TB drugs were available and with enough stock in all facilities visited.*

*We would like to highlight the current discussions at Federal level about a move from 8 month treatment regimens with injections to 6 month (FDC) combination, predominantly oral regimens. In preparation for any regimen change, treatment support needs a great deal of strengthening to prevent the development of drug resistance*

### **Case finding & Quality assured microscopy –**

*The mission recognized and appreciated the presence of the microscopy network facilities and human resources in the State for diagnosis of TB and monitoring of therapy. Key issues to address in the future include:*

- a) the identification and recording of TB suspects at OPD level and ensuring that they proceed to TB smear microscopy.*
- b) improvement of quality of smear microscopy throughout the State*

### **Monitoring and evaluation**

*We recognized the presence of a system for M&E: registers, supervisory visits, and human resources.*

*Emphasis in the future should be on strengthening the supervisory visits with standardized reports, feedback mechanisms for corrective measures and joint problem-solving with a focus on data quality.*

### **Addressing MDR-TB, TB/HIV, and other challenges**

*We recognized that there are informal and frequent communications between individuals in the TB and HIV Departments at State Level and at Gedarif Hospital. TB-HIV activities are also taking place with presence of records and registers.*

*For the future, the establishment of a formal TB-HIV co-ordinating body at State level with a State plan for TB-HIV activities to strengthen the referral and recording links between HIV/VCT facilities and TBMU in line with stated policy.*

### **Health system strengthening: HR,**

*Some training activities have taken place in the State for many different cadres of health personnel in the health facilities visited.*

*For the future a human resource development plan for TB at State level is needed. Key items in the plan will include evaluation of training effectiveness, evaluation of performance and an increased emphasis on in-service training.*

### **Public-public mix at public health facilities**

*The mission appreciates the involvement of the military hospital in TB control activities. However, more emphasis is required to engage other public and private providers.*

### **Advocacy, Communication, and Social Mobilization**

*The team recognized the presence of posters and information leaflets in some facilities. Further work through the DOTS Committees at State and locality level could promote further advocacy including work with the community health workers who are already acting as treatment supporters in many villages.*

*Responses from DG*

1. *Contribution of the State:*
2. *Eg: vehicle was provided by the State before the GDF vehicle came*
3. *Recognition of the need for TB-HIV activities*
4. *Need support at Federal level for the regimen change*
5. *Recognises the weaknesses of supervision – Dr Islah is a chest physician – therefore the State supports the GMO to assist the STC*
6. *In his two months his has not seen STC quarterly reports*
7. *Recognises the possibility*
8. *For health communication – printing is a Federal issue. Community Radio broadcasts will be strengthened now that diarrhoeal disease season is diminishing*
9. *Plan to open new hospital at Mofassar on 28<sup>th</sup> November 2008*

*Responses from Director of Preventive Medicine*

1. *Thank you for pointing out issues of quality – and for showing us our problems*
2. *For last 2 years we have concentrated on controlling watery diarrhea*
3. *Now we have a plan for integrated supervisory visits – recognize that we have neglected infectious diseases in recent years.*

## Annex 13: Sennar state visit

### **Visit to Sennar state**

The visiting team consisted of Eliud, Nora and Nagy (first two days), Einar, dr Hashim, lab expert.

### **Sennar state TB program in Singa**

Meeting in Singa with Minister of health (Hassneen Elsheik Mahmed) and deputy Director general (Dr Gazi Abdelguder). Promised commitment in the future. Has already organised seminar for parliamentarians, and the governor had participated in World TB day.

Meeting with State TB coordinator (since 5 years) and his team: state lab coordinator (more than 5 years), statistician (since 2007), health education specialist and pharmacist.

Followed by visit to TBMU Singa, including TMBU lab and state reference lab.

The state has a mixed population, including 17% nomads. There are IDPs especially in border areas, some living near TBMUs. It consists of 7 localities, 1,4 mill inhabitants. 13 TBMUs (gradually increasing from 9 over the last years), 39 DOTS centers. There are 23 hospitals. There is one TBMU per 100.000 population and one DOTS center per 33.000.

The state TB team is placed in the Ministry of health. The TB program previously used the car of the leprosy program but received in July 2008 a car from GF, including maintenance. Fuels and driver was covered by the state. GF also provided 4 motorbikes for localities, but the number of localities was recently increased to 7. The Jeddah islamic bank also provided a motorbike for the state lab coordinator (the same bank supported lab infrastructure strengthening). PPM included health insurance, private sector and police.

The largest prison in the state (in Silga) referred TB suspects to the hospital (neighbor) and arranged for treatment from the TB program when indicated. Some prisoners were hospitalized. Prison staff had been trained in TB. In Senar there is a smaller prison.

A health plan had been developed for the state 2008-201..? (paper copy provided to the team), including TB. Issues included: increase case finding and MDR-TB.

Funding for TB was coming from the MOH on an ad hoc basis (for concrete activities when needed), such as fuel and maintenance for supervisory visits (but not per diem), health education (such as renting tents). The GF has provided since 2. quarter 2007 support for: training, supervision, ACSM and incentives to staff, but paid every 6 months: state level, locality coordinator, TBMUs (4 persons).

Treatment is delivered mainly as family DOT, the patient bringing a family member to be trained and in some cases also inject Streptomycin. In the intensive phase they come every 10-15 days to collect drugs, in the continuation phase monthly. Some serious cases are hospitaliuzed and some come daily to the TBMU.

Default is a problem, partly because of nomad population . The program tries to collaborate with EPI to give treatment in these populations. Many nomads go first to traditional healers (faki?). There are plans to try to involve them in TB control..

Red Crescent has volunteers who are interested to work with TB. Motorbikes are primarily used for default tracing. The locality should provide fuel for motorbike, which they often do not do. The TB person may have to pay from his own pocket. The rainy season (July-October) makes some of the localities difficult to access by motorbike and car.

Infection control: State TB program advise staff to use mask (surgical?), but does not provide. There is strong stigma which also makes it difficult to do contact tracing.

Doctors in OPDs have been trained to refer TB suspects to the TB MUs. They do not request sputum but refers to TB MU. They may also refer to chest physician. X-ray costs 15 SDG, but may be paid by the hospital if the patient cannot. X-ray should only be requested if the patient has negative smear X-ray is done in 10/233 hospitals. 5/13 TB MUs have x-ray.

MDR-TB is suspected in failures of cat 2 who should have sputum sent for culture in Khartoum. The program does not know of any chronics.

TB/HIV. The TB program distributes condoms to TB patients, even if very few have a HIV test. Patients partly use condoms for family planning, partly for infection control.

Some patients are referred to the TB program with a HIV infection. Counselling and ARTs are found only in Singa and Sennar hospitals, provided by another doctor than TB. There are no data on the number of TB patients tested for HIV since the HIV doctor says that the information is confidential.

In general there is adequate health staff, but there is a problem with turn-over.

TB MUs have 3 staff who receive incentives from GF: TB assistant, lab and statistician. There may be a lab attendant who prepares the smears. Chest physicians are found in two hospitals. 30 health workers were trained in 2008, including 10 doctors.

Table: Sennar state: Case notification first half year 2008 by locality

Locality	Population	Notification	New SS+	NS-	Not examined	EP	Re-treatment	All cases
SINNAR	289122	Absolute no	46	34	0	7	10	97
		Rate	16	12	0	2	3	34
SINGA	163336	Absolute no	51	11	1	18	3	84
		Rate	31	7	1	11	2	51
DINDER	173984	Absolute no	29	11	3	8	2	53
		Rate	17	6	2	5	1	30
SHARG SINNAR	217983	Absolute no	3	12	0	1	0	16
		Rate	1	6	0	0	0	7
DALI & MAZMOUM	189989	Absolute no	2	2	0	0	1	5
		Rate	1	1	0	0	1	3
ABO HUGAR	130300	Absolute no	6	2	0	0	0	8
		Rate	5	2	0	0	0	0

ELSOKI	155431	Absolute no	32	9	0	3	0	44
		Rate	21	6	0	2	0	28
TOTAL	1320145	Absolute no	169	81	4	37	16	307
		Rate	13	6	0	3	1	23

State reference lab was situated beside the hospital, and visited at the end of the day where the team had the summing up meeting. (Lab questionnaire filled in)

State drug store was visited only by Nora (supposedly no stock outs but more drugs than should have, no management system in the state).

### **TBMU Silga (in Silga hospital)**

The TB program is placed in a rather small room beside the laboratory. The team met with the medical assistant who was locality TB coordinator and placed in the TBMU which was the only one in the locality. He had been there since the TBMU started in 1998. Also present was the chest physician in the hospital, the statistician (who started a few months ago) and the lab assistant (who started a month and a half ago). The motorcycle is used by the statistician who also does default tracing. The Medical assistant visits the DOTS centers on foot.

The poster with treatment regimens was on the wall. (Dr Hashim explained that posters could only be put up if they were framed and/or plastic/glass).

There were volunteers from Red Crescent and women's association. (Dr Hashim explained that at national level an MOU had been made since Women's association helped with education, income generation, contact tracing, reduction of stigma).

TB suspects sometimes were sent directly to the TBMU from other facilities, including private doctors. Otherwise they came to the OPD where they were either referred directly to the TBMU or to the chest physician. The recommendation is that 3 weeks of cough means that the person should be sent to the lab for 3 sputum smears. If positive, treatment is started. If negative the chest physician will do x-ray, other tests and perhaps give antibiotics. The consultation and sputum examination is free of charge but other investigations may cost. X-ray costs 12 SDGs (6USD), but if the patient cannot pay the cost may be covered by the hospital or the social fund of the local mosque. If the patient is admitted, he will pay file administration of 2USD.

When treatment is started, the medical assistant will find the nearest DOTS center to be treated. There are 3 DOTS centers in the locality, all health centers in or near the city (max 2 km away).

The TB register had some deficiencies. Some transfer out patients were marked as transfer in. Some patients had been deleted but it was not clearly marked. The number of cases found did not correspond well with the numbers published in the NTP report, and there was no clear explanation.

### **Case finding TBMU Silga 3 quarter 2008**

	New sm+	Relapse	Sm neg	EP	Sm not done*	Other	Total

TB register	13	1	17	5	3		39
In NTP report (3q 2008)	15	0	4	6	6	1	32

\*mainly pediatric

In addition there were 6 transfer in in the TB register

Treatment outcome

	Cured	Compl	Died	Fail	Default	Transfer out	Total
TB register: New s+: 3q 2007		2			2	1	5
Quarterly report Nsm+	4				1	1	6
TB register: New s+: 4q 2007	5	4			1	1	11
TB register: After default 4q 2007	1	1			3		5
Quarterly report Nsm+	9	2			5	1	17
Q report after default							0

Many patients marked as cured did not have smear control at 8 months, and should therefore be classified as completed. The q report 4.q.2007 had included retreatment cases among new sm+ cases by mistake.

TBMU lab: form was filled in

Summing up meeting with state and TBMU tema:

- low case finding, notification rate 48 cases in 9 months,  $\times 1,3=64$  estimated for the year, in 159.000 population, ca 40 per 100.000. Lab data shows high positivity rate (more than 25%) indicating too strict selection in OPD or that too few come to hospital
- X-ray is perhaps taken before smear, although supposedly not
- DOT by family member even if patients lived nearby – how to strengthen?
- Lab room was in terrible conditions, needed repair (on next year work plan) but few and falling number of TB suspects
- R&R some mistakes and inconsistent with q reports – cure/completed and transfers

#### ***TBMU Abu Hagur***

Half an hour south of Singa on paved road. The locality consist of two TBMUs, the other one further south is larger in population. In total ca 140.000.

Team (Eliud, EH, NRL, Hashim, state TB staff (Program, lab, statistics). Met with director of rural hospital (40 beds, 56 staff, only one doctor who had been there several years), medical

assistant resp for TB (supposedly locality TB coordinator), lab assistant, statistician was not present, person in pharmacy.

The Med assistant was taking care of TB patients in the large OPD room, with good ventilation. Very few TB patient came there because they all received treatment for 10 days at a time to take at home. There were no pediatric cases. Three staff received incentives. No motorbike (not among the 4 localities that received bike). At present there were 21 patients on treatment, 6 of them in intensive phase. 5 of them lived in the city, from 15 minutes walk to 10 minutes drive, cost 1-4 SDP per day in travel cost (rikshaw or car). One patient lived one hour and a half away by car (8 SDPs cost).

There were health centers where patients could receive drugs and have injection. The medical assistant prescribed drugs for 10-30 days, gave to the patient who received the drugs in the pharmacy. The patient could keep the drugs or give them to the DOTS center. According to NTP rules, drugs should not be sent to the DOTS center, only through the patient. ***This policy should be discussed.*** There were supposedly 4 rural hospitals and a number of health centers that could be more actively involved.

R&R: Med assistant fills in treatment card, statistician fills in TB register and q reports. Treatment cards were filled in fairly well. Dosage was missing in one patient. A line was entered for days of giving drugs to take at home. The dosage is supposedly written in the patient card (but no daily ticking off in the patient card?). Streptomycium is given in villages by nurse.

Lab – see form filled in.

Filter paper was missing in lab which was solved during the visit. Fuchsin had much sediment. Last round of EQA correct (3 pos and 12 neg). Very few TB suspects: 15 in all 2007, 16 so far in 2008. Only 2/10 patients during 3q 2008 were diagnosed in lab, the rest diagnosed in Silga and came to this TBMU for treatment. Reasons were stigma, shorter distance, more trust? (Eliud did patient interview).

There was no x-ray in the hospital, need to go to Silga. Chest physicians and private doctors use x-ray first. 7 leprosy centers, 13 TBMU – mainly the same centers, same staff.

There are 4 private doctors in town, incl medical assistant who can also work privately. Private pharmacies probably do not have TB drugs, except strepto. Some TB patients have been on treatment in private sector one month when come to TB program.

A new hospital is under construction (funded by locality) and will include better lab. Now one small room with ok ventilation. The lab assistant wants a separate tb lab.

All 3 TB suspects with pos smear in lab register were found in TB register. The lab number was entered but wrong in one, and the grading of positivity incorrect in one.

Pharmacy: Stocks were adequate, there had never been stockouts for years. Drugs are requested when needed by sending request to Silga (state program) or during visit by state TB coordinator. No drugs were near expiry. Some prescriptions were revised, put in cupboard, no register and no reports made. The prescriptions included RH and Z for one month, while S was already given. Others received drugs for 10 days, cont phase EH for one month. Drugs are in boxes of 1000 tabl and dispatched in plastic bags.

Summing up meeting:

- low case finding – look at the map how to include all health facilities in case finding and dot. 25.000 population in the town.
- Lab – minor problems solved during visit. Technician needed retraining, will be provided in state ref lab, wire loop, filter paper
- R&R need strengthening (general in state), inconsistencies between reports and Tb register
- Confusion regarding transfers. Some patients are diagnosed in Silga and get one week treatment there, but then go to Abu Hagur. Should they be registered in Silga and as transfer in in Abu Hagur? Or only as new cases in Abu Hagur. **Clarify with NTP/WHO!**
- DOT – see how strengten, coming to health facilities, volunteers, red crescent, vaccination person, etc

### **TBMU Sennar**

Met with director of hospital, chest physician, pediatrician, locality TB coordinator who is medical assistant in Sennar hospital. Also statistician, lab technician and doctors in VCT center and doctor in OPD.

The hospital has 400 beds, 20 specialists (incl one chest physician), 35 medical officers, 45 housemen. In the hospital director's office a discussion broke out between pediatrician and TB coordinator. The pediatrician complained that the Tb coordinator did not accept to give out drugs for 30 days for patients from other localities. The TB coordinator would rather give only 5 days. NTP and state managers explained that there were enough drugs, but that diagnostic criteria should be followed (NTP guidelines currently under revision with involvement of pediatric society). It is accepted that most children do not have sputum (supposedly smear not taken under 14 years of age?). 40 beds in pediatric ward. One child with abdominal TB were referred to another hospital two hours away. Rural children sometimes have no BCG scar. Diagnostic criteria are based on international recommendations such as Nelson's textbook in pediatrics.

In OPD consultation and sputum smear is free of charge. OPD can refer TB suspects directly to the TBMU, request smear examination or refer to chest physician (attends twice weekly). Patients can also come directly to the TBMU.

The locality consists of two TBMUs: Sennar and Sugar factory, 25km away. Each of them have separate TB registers and send separate quarterly reports. The locality TB coordinator visits the other TBMU by motorbike (the team saw him on his motorbike). There is one more hospital: Health insurance. There are 3 DOTS centers (all ealth centers) but no TB patients there at present. Also the Sugar factory TBMU have 3 DOTS centers.

The TBMU is placed in a separate building, old and worn, with a large room full of old files which the TB coordinator found the correct patients in very quickly. The neighboring room was consultation room for chest physician. At present there were 130 patients on traetment, 30 in the intensive phase. They all came every 10 days to pick up the drugs, and family members supposedly helped in drug intake. Some health staff were among them.

The treatment cards of the last 3 patients were revised. The first two (#129-130) lived 10 minutes walk from the hopsital. They did not have x-rays, were new cases and received correct drug combination and dosage. One came directly to the TBMU, the other referred

from OPD. Patient #128 lived 30 minutes away by car, cost ca 2 pounds return. Injection is done by medical assistant who works in a center near the patient. The continuation phase was provided monthly. Only severe cases are admitted, and at present there were supposedly no TB case in the hospital.

House visits only done if missing sputum control or missing drugs (bring medicines). Could do to verify diagnosis and to check contacts. In earlier years there were home visitors but do not exist anymore. How to be discrete when visiting?

Difficult to ensure DOT in police and students. Could do it for instance through students organisation.

In OPD patients first meet statistician who fills in a form with tentative diagnosis. Then patient sees the doctor who fills in another form with corrected diagnosis (or on the same form?). The data are not entered in a register, but collected by the statistician. The doctor in the OPD explained that adults with cough more than 2 weeks first had an x-ray (cost 12 SudaneseP) taken the following day, blood tests (ESR). The next day the patient took the x-ray (in the hospital) and came to the OPD again where the doctor assessed. If indicated also smear would be requested and other tests. Then the patient may be referred to the TBMU or chest physician . The doctor agreed that it would be cheaper for the patient to do smear first in TB suspects, and that those with positive smear did not need x-ray. He said that doctors needed more trainingf. ***There were no posters with diagnostic algorithm.*** In Khartoum gastric lavage is done but not in Sennar. No Mantoux available. There were approx 100 patients in the morning shift of the OPD (seen by 4 doctors), perhaps 40-50 in early afternoon and 50 more in the evening. It is doubtful that a suspect register would be helpful. Rather the staff in the OPD (statistician) should be trained to be more cautious in filling in tentative diagnosis, and the doctors should follow recommendations regarding diagnostic algorithm. The current paperwork could be used to assess improvements.

#### Case finding TBMU Sennar 3 quarter 2008

	New sm+	Relapse	Sm neg	EP	Sm not done*	After default	Total
TB register	22	1	1	3	2	3 (2pos and 1 neg)	32
In NTP report (3q 2008)	23	1	2	5	2	0	33

\*mainly pediatric

In addition there were 6 transfer in the TB register. There was no clear explanation for the differences in numbers.

#### Treatment outcome

	Cured	Compl	Died	Fail	Default	Transfer out	Total
TB register: New s+: 4q 2007	6	1			3	1	11
TB register: Other 4q 2007	1				1		2

Quarterly report Nsm+	9	0			4	1	14
-----------------------	---	---	--	--	---	---	----

In addition there was 1 relapse who died and 1 treatment after default who was cured. Revising the two "others" it turned out that both had defaulted twice, and should be classified as treatment after default. The reason for the different total is probably explained by the fact that 2 transfer ins were included in the q.report submitted (all came from Khartoum where treatment had been started).

TB drugs were kept in the TB program office. The hospital pharmacy was far away and it was found better to keep the drugs in the TB program since the pharmacy took a fee for all other drugs and TB patient therefore probably had to wait long in line.

#### Stocks

RH 150/75 2500 exp 9/10, Macleod

PZ 5000 exp 11/09 Svizzera

E400 2300 exp 9/10 (2000), 12/10 (ca 200) Svizzera

EH 400/150 2000 exp 1/10 (1000), 2/10 (1000)

S ca 1900 exp 5/10 Svizzera (19 boxes of 100 each? But box said 18400 on cover?)

#### Summing up meeting:

- case finding low, locality 62+12 in Sugar factory, total 74 in 9 months, estimated 98 for whole year 2008. Population 289.000, rate 34/100.000, which is close to national average. 62/106 cases reported during 3 quarters 2008 were new sm+, higher than other TBMUs visited.
- R&R some mistakes, need to be more accurate, and clarify confusion about transfers and some categories. Q report was corrected by telephone. **Better to have quarterly meetings with all TBMUs where they bring TB registers to correct them, verify q reports and solve transfers.** Patient card does not have boxes for daily administration.
- Case Finding algorithm should be clarified so that not x-ray is requested first but rather smear microscopy. Need to make poster, train doctors and ensure enforcement in OPDS etc.
- Pediatric cases (and others) may get drugs for 5-20 days when discharged depending on the situation. They should be registered in the TBMU where treatment is started. **DISCUSS!**
- Lab in new building funded by Islamic Bank, no water because of road construction outside last month. One lab technician worked since 1997, alone, also works emergencies for blood bank. Wants a nurse to make smears for him, otherwise too large work load. Ca 250 slides in quarter, 80 per month, 4 per day? Positivity rate 36/66=55% in 3.q 2008! Very high. Gets incentive from GF (343 pounds for 6 months) and supposedly 35 pounds from hospital but paid late. Lack filter paper, lens paper, no water. Otherwise well functioning. EQA correct.
- Pharmacy – in TBMU – **Good example – ensure that all doctors prescriptions are entered in the TB register.** One prescription came from hospital doctor for TB treatment without smear nor x-ray! (Dr Hashim explained that for 2.line drugs certain pharmacies could prescribe only and to certified doctors. Could do the same with 1.line drugs?) 3 doctors in MDR courses in Sondalo.
- DOT: family, every 10 days even if lived nearby. Discuss options, such as using all health facilities as DOTS centers, community, etc S given by nurse but other drugs by family. Safer to leave drugs with patient than health staff doing injections!

- TB/HIV 3 cases so far in children (vertical transmission, now 7-10 years old). Explained that pediatric regimen was 2SRH(Z)/4H, but medical assistant in TB program said that gave 2SRHZ/4RH. Two pediatric cases in 3.q.2008.

Supervision: out of 13 TBMUs, 11 were supervised in 1.q, 11 in 2q and 7 so far in 4.q. There was no supervision 3.q because of rainy season. Quarterly meetings with TBMUs was held only once in 2007, not in 2008 since no funds.

***Summing up meeting in Singa with DG and State TB coordinator***

- Strong point in TB program that many staff
- Lab generally also strong, EQA functioning, few discordancies. Need to improve infrastructure in some labs (such as Silga hospital).
- Few TB cases registered according to population. Many TB suspects do x-ray before smear microscopy. DG says that many patients wants x-ray.
- No stock outs or expired drugs found. Need strengthened drug management at TBMU level – to be discussed at central level.
- Recordind and reporting: statistician present . Some mistakes found in all centers when comparing TB register with quarterly report. Recommendation: organize quarterly meetings with all or groups of TBMUs at the beginning of each quarter to check the TB registers from the TBMUs and ensure quality of q-reports.
- ***General rec: Patient card should have space to note daily supervision!***
- Supervision: use check list from central level, do not send back to TBMU but to central level for checking? Plan to do monthly visits to TBMUs?
- DOT not implemented, poor defaulter tracing
- TB/HIV – ART available in 1-2 centers but very few TB patients tested, only VCT.
- Community involvement: Hashim: could also mobilize social fund (mosque)...

The team promised to send the recommendations to Hashim who would refer to the state, helpful when they tried to get more funds and political support from the state authorities.

Local funds could support:

- health education
- train health staff – could be jointly covered by federal/state
- locality TB coordinator training
- locality commissioner (political leader) could support fuel for motorbike to do supervision and default tracing/contacts
- vaccination persons could also support
- Local sugar factory may also give support to TB program?