Programmatic Management of Multi-drug Resistant Tuberculosis

Report of the Regional Workshop
Kathmandu, Nepal, 27 September- 1 October 2010

World Health Organization
Regional Office for South-East Asia

SEA-TB-330
Distribution: General

Programmatic Management of Multi-drug Resistant Tuberculosis

Report of the Regional Workshop
Kathmandu, Nepal, 27 September- 1 October 2010

World Health Organization
Regional Office for South-East Asia

Printed in India

Contents

Page

Abbreviations v

1. Introduction 1

2. Inaugural session 2

3. Overview of MDR-TB in the South-East Asia Region and response to DR-TB 2

4. The framework for effective control of DR-TB 4

   4.1 Country presentations 4

   4.2 Case-finding strategies 4

   4.3 Organization of laboratory network and minimal mycobacterial culture and DST requirement 5

   4.4 Treatment strategies for DR-TB 6

   4.5 Treatment delivery and community-based DR-TB support 6

   4.6 Infection control and protection of health care workers 7

   4.7 Management of secondline drugs (SLDs) 7

   4.8 Planning for national DR-TB control 7

   4.9 Recording and reporting for DR-TB 8

5. Conclusions and recommendations 9

Annexes

1. Country Presentations 12

2. Technical assistance requirements 17

3. Agenda 18

4. List of participants 19

Abbreviations

ACSM	advocacy, communication and social mobilization
DOTS	internationally recommended strategy for tuberculosis control
DR-TB	drug resistant tuberculosis
DRS	drug resistance surveillance
DST	drug susceptibility testing
FEFO	first expiry first out
HIV	human immune deficiency
HR	human resources
IC	Infection control
ISTC	international standards of TB care
MDR-TB	multi-drug resistant tuberculosis
MRS	medical recording system
NATA	Nepal anti-tuberculosis association
PMDT	programmatic management of drug-resistant tuberculosis
SLC	secondline drugs
SNRL	supranational reference laboratory
WHA	World Health Assembly
XDR-TB	extensively drug-resistant tuberculosis

1. Introduction

The sustained progress made by national TB programmes in the Region has contributed to preventing, and in some countries, reversing the emergence of significant rates of anti-TB drug resistance in the community. Relatively low levels of multi drug-resistance (range: 1.2-4.2) are reported among newly detected cases but higher rates (range: 10.0-34.2%) are reported among previously treated cases in the Region. However, given the large numbers of TB cases, over a third (34%) or nearly 180 000 of the world's MDR-TB cases are estimated to occur annually in the SEA Region. Extensively drug resistant TB (XDR-TB) has also been reported from six countries in the Region. In areas of high HIV prevalence, the potential for increased transmission of MDR-TB is high. While the first priority in addressing MDR-TB remains prevention of acquired drug resistance through ensuring higher case detection and cure rates through high quality of DOTS services, National TB programmes recognized the need to simultaneously address the existing pool of MDR-TB cases in line with internationally recommended protocols, including good infection control measures. With the introduction of diagnosis and case management of multidrug resistant tuberculosis (MDR-TB) at health facilities up to the district and sub-district level in countries from 2008 onwards, the need for updating guidelines for the programmatic management of drug-resistant TB, and designing better recording and reporting systems to monitor outcomes, has become a felt need for national TB control programmes in the Region. In this context, a regional workshop on Programmatic Management of Multi-Drug Resistant Tuberculosis was held during 27 September- 1 October 2010 in Kathmandu, Nepal with the following objectives:

- Review the status, challenges and experiences in managing MDR-TB in countries of the Region;
- Provide updates on the revised technical and programmatic guidelines for the management of MDR-TB under national programmes, and
- Review existing national plans in order to include any additional measures required to effectively scale-up MDR-TB management in countries.

2. Inaugural session

The workshop was inaugurated by Dr Lin Aung, WHO Representative to Nepal who delivered the keynote address on behalf of Dr Samlee Plianbangchang, WHO Regional Director for South-East Asia. The Regional Director emphasised the need to implement quality DOTS ensuring increased case detection and cure rates in the first place to prevent the emergence of DR-TB, adopt infection control measures to prevent the spread, and manage the existing pool of DR-TB cases in line with the international recommendations. He reiterated the resolution of the Sixtieth World Health Assembly (WHA) in 2007 and urged Member States to develop and implement long-term plans for tuberculosis including M/XDR-TB prevention and control, in line with the global Plan to Stop TB 2006-2015, the Beijing Ministerial Call for Action on tuberculosis control and patient care in April 2009 and the resolution on "Prevention and control of Multidrug-resistant tuberculosis and extensively Drug-resistant Tuberculosis" endorsed at the Sixty-second World Health Assembly (WHA).

Dr Praveen Mishra, Secretary, Ministry of Health and Population, Nepal in his address emphasized financial, human resources and political constraints and poverty as the main constraints for TB control. He stressed the need for countries to develop an action plan for DR-TB and TB-HIV integration.

Dr Md Khurshid Alam Hyder, Medical Officer TB, WHO-SEARO briefed participants from Member States, regional experts and staff from WHO headquarters, the Regional Office and country offices on the objectives of the workshop. The inaugural session concluded with the introduction of all participants.

3. Overview of MDR-TB in the South-East Asia Region and response to DR-TB

Relatively low levels of multi drug-resistance (2.8%) are reported among newly detected cases but higher rates (18%) are reported among previously treated cases in the Region. However, given the large numbers of TB cases, over a third (34%) or nearly 180 000 of the world's multidrug-resistant tuberculosis cases are estimated to occur annually in the South-East Asia

Region. Though the extent of extensively drug resistant TB (XDR-TB) is not known in the Region, six countries have reported XDR-TB. All except DPR Korea, Maldives and Timor-Leste have established culture DST facilities, though they need to be scaled up with more quality assured laboratories especially in larger countries. Being a high-burden Region for DR-TB there are only two supranational reference laboratories in the Region which find it difficult to meet the mandated functions. The national reference laboratories in India and Thailand are currently undertaking DST for second-line anti-TB drugs to determine the extent of XDR-TB. Reference laboratories in India, Indonesia, Myanmar and Nepal are also engaged in rapid surveys for XDR-TB among mycobacterial isolates from patients who have failed re-treatment regimens, through linking with the SNRLs in the global network. All countries are linked to a supranational reference laboratory for either quality assurance or assistance in performing culture/DST.

In order to achieve the TB-related Millennium Development Goals (MDGs), the regional action plan for managing M/XDR-TB seeks to:

- Strengthen basic DOTS;
- Scale-up programmatic management of MDR-TB and XDR-TB;
- Build laboratory services for timely diagnosis of MDR-TB and XDR-TB;
- Expand drug resistance surveillance to better understand the magnitude and trends of drug resistance to first and second-line anti-TB drugs;
- Foster sound infection control measures to avoid MDR-TB and XDR-TB transmission, especially in high HIV prevalence settings;
- Pursue resource mobilization at global, regional and country levels, and
- Promote research of new diagnostics and drugs, and field testing under programmatic conditions.

4. The framework for effective control of DR-TB

While introducing of the framework for effective control of drug-resistant TB, the essential frame work remains the same as DOTS. Since the management of MDR-TB is more complex, there is a need for sustained political commitment, ensuring availability of quality assured microbiological diagnosis which would require setting up laboratories with facilities for culture, drug susceptibility testing with linkage to SNRL, monitoring of response to treatment, a patient-centered approach for direct observation of treatment on out-patient or hospitalized basis and quality assured second-line anti-TB drugs for the entire duration of treatment.

4.1 Country presentations

During the workshop, Member states displayed posters on their activities for DR-TB management with challenges and plans of action for the future (Annex 1).The main issues discussed were the limited laboratory facilities for culture and DST in many countries and expanding the same to have 100% access across the country. Shortage of WHO pre-qualified second-line drugs was another major problem. Countries also presented their requirements for technical assistance during 2011-2012. (Annex 2).

4.2 Case-finding strategies

The strategies for case-finding and diagnosis of patients with either suspected or confirmed DR-TB were presented and discussed during the workshop, taking into consideration that such programmes may have limited technical and financial capacity. The strategies range from testing all patients with TB to testing only a selected group of patients. The session reviewed case-finding of patients with DR-TB with respect to:

- The risk factors for drug resistance;
- Strategies for case-finding in programmes with minimal access to DST and limited resources;
- Information on sample collection and the use of rapid DST methods to identify drug resistance;
- Important issues in case-finding of drug resistance in the HIV-infected patient.

Depending on the facilities available, each country should establish priority for screening. In the order of priority, category II failures (chronic cases), close contacts to DR-TB cases and category I failures should be subjected to screening. In HIV-infected persons, DST should be performed at the start of anti-TB therapy to avoid mortality. The rapid DST methods should be used when possible for the initial screening of DR-TB. Patients at risk of XDR-TB should be screened for resistance with DST of isoniazid, rifampicin, second-line injectable agents and a fluoroquinolone. This was followed by a group work where participants discussed choosing a case-finding strategy given different situations.

4.3 Organization of laboratory network and minimal mycobacterial culture and DST requirement

The country should first assess the burden of MDR-TB either by using available data on drug resistance or make an educated best guess of the burden. It should also make an assessment of the existing laboratory network including sputum transport mechanisms, hierarchy, number of culture and DST facilities. Based on the number of patients planned to be screened, diagnosed and treated, the laboratory expansion plan needs to be developed to include all aspects of diagnostic mycobacteriology from smear microscopy services to the use of newer tools for the rapid identification and effective follow-up of patients put on PMDT.

The need for quality assured laboratory services for diagnosis of DR-TB was highlighted along with the need for training staff at different levels. Availability and advantages of newer molecular methods was discussed while highlighting the need to maintain conventional culture techniques. New approaches for risk assessment for workers based on a risk assessment for each TB diagnostic procedure for generation of infectious aerosols and the concentration of bacilli and use of bio-safety measures according to the risk were also discussed. Among the laboratory procedures, the high risk of generating infectious aerosols during manipulation of liquid suspensions and the appropriate bio-safety measures to be adopted such as the need for a containment lab which has restricted access and a double-door entry, Impermeable surfaces for easy cleaning, air flows into lab without re-circulation to non-lab areas (directional airflow), and availability of an autoclave on site was highlighted.

Field Visits: The participants were divided into two groups for field visits. One team visited the laboratory (GENETUP) and the NATA hospital facilities for treating TB and the other team visited the National TB Centre. Teams presented their main observations. The main issue was the infection control practices adopted, the size and the opacity of the sputum cups supplied which makes it difficult to assess the quantity and quality of the sputum samples, availability of second-line, ambulatory treatment as well as supervision and monitoring.

4.4 Treatment strategies for DR-TB

Any patient with chronic or DR-TB requiring treatment with second-line drugs falls under WHO diagnostic category IV and will require specialized regimens termed Category IV regimens according to PMDT guidelines. This session provided guidance on the strategy options, including standardized, empirical and individualized approaches, to treat MDR-TB as well as the more highly resistant strains such as XDR-TB.

The principles of choosing an appropriate regimen for managing M/XDR-TB and poly-drug resistant TB were presented and discussed. The rationale for use of group 1 to group 5 drugs, selection of drugs, formulation of regimens, justification for the same in different scenarios of M/XDR and poly-drug resistant TB were outlined. Management of DR-TB under special situations such as pregnancy, diabetes, convulsive disorders, renal impairment, concomitant HIV etc. were also discussed stressing that DR-TB treatment can be started with minor modifications under all situations. The need for close monitoring of patients while on treatment with clinical, bacteriological and bio-chemical evaluations and the need to identify and manage adverse drug reactions promptly to ascertain compliance from patients for the prolonged duration of treatment was stressed.

This was followed by participants' group work to identify suitable DR-TB regimens under different situations.

4.5 Treatment delivery and community-based DR-TB support

Though ambulatory treatment for DR-TB is being recommended, hospital beds are still required for management of clinical and sociological problems. DR-TB patients need to be involved in the management and be

provided with the necessary health education and counseling. Management under congregate settings could be considered if sufficient beds and resources are not available. The need to mobilize community support for successful treatment was stressed.

The role play that followed brought out the community willingness to participate and the need for the Ministry of Health to involve them.

4.6 Infection control and protection of health care workers

The need to integrate infection control procedures with the general health services was emphasized. There is also a need to develop human resource capacity, develop appropriate advocacy, communication and social mobilization strategy for spreading the message to ensure follow-up of infection control policies. The need for surveillance among health care workers, and proper use of personal protection equipments were detailed.

4.7 Management of secondline drugs (SLDs)

The session highlighted the need for accurate drug forecasting, considering the long lead time and short shelf life of SLDs. The need to maintain a proper inventory system to avoid stock-outs was stressed. Whenever required, the cold-chain management system needs to be in place. Once the drug reaches the country level, the country is responsible for maintaining the quality ensuring prompt clearance, proper storage and adhering to the First Ended, First Out (FEFO) principle.

The electronic drug ordering form was demonstrated and participants familiarized to use the same.

4.8 Planning for national DR-TB control

Participants were given a country scenario and they prepared a plan for case detection and enrolment for DR-TB treatment and discussed the expected public health impact of the plan.

Introduction to WHO planning and budgeting tool

Participants were introduced to the planning and budgeting tools evolved by WHO. Using the form to forecast the drug requirement for the country with budget readily made available by the software was demonstrated.

4.9 Recording and reporting for DR-TB

Participants were introduced to the new recording and reporting requirements for DR-TB. The need for drug resistant survey and surveillance (DRS) was stressed. Lack of adequate information on DST from many countries makes it difficult for planning and implementing DR-TB control activities. Routine monitoring from the data collected, using a standardized methodology and periodicity, will be a very useful tool.

Minimum requirements for drug resistance surveillance activities would include regularly spaced surveys among new cases and continuous surveillance among previously treated cases. Need for representativeness of the data, quality assured laboratory services, and well documented histories of previous anti-TB treatment by individual patients are necessary for useful interpretation of the findings. The methodology for planning a DRS survey was discussed and the participants worked out an example of including the budget considerations.

The revised forms for recording and reporting including the definitions were discussed. Sample forms were shown and procedures for filling in were also discussed.

Recording and reporting using open MRS

Facilitators from Indus hospital, Pakistan, demonstrated a web-based system for recording and reporting of DR-TB used in their setting. Open MRS system which stands for Open Medical Record system is a free, open source and highly customizable electronic medical record system that has been deployed in at least 49 countries around the world. The web-based application supports the HL7 standard, allows the creation of custom forms and reports, and also allows easy extensions to support additional functionality. The research centre in Indus Hospital has modified an existing mobile phone-based application based on the openXdata platform to allow mobile phones to connect to Open MRS. While this system is currently

being piloted as a tool for electronic mobile DOT for MDR-TB patients in Karachi; it can be extended to support additional functionality as well. Other tools like e- Manager (electronic Manager), which could be used was also demonstrated. Nepal and Myanmar plan to introduce open MRS for recording and reporting and Bangladesh has already introduced the e-Manager system.

Pharmacovigilance

The need to undertake pharmacovigilance of anti-TB drugs were presented and discussed. The aims of which are:

- improving patient care and safety in relation to the use of medicines and all medical and paramedical interventions,
- encouraging their safe, rational and more effective (including cost-effective) use and promoting understanding, education and clinical training in pharmacovigilance.

The need to stay alert when new drugs are being used for prolonged duration was stressed.

5. Conclusions and recommendations

Conclusion

All Member states had initiated management of DR-TB with the exception of DPR Korea. Eight of the 11 Member States have developed national guidelines, established quality assured laboratories for culture and DST, while smaller countries such as DPR Korea, Maldives and Timor-Leste are availing services of the SNRL for culture/DST. Bangladesh, India, Indonesia and Myanmar are in the process of expanding laboratory services and plan to achieve coverage by 2012.

Data on DRS profile is inadequate from the Region though based on estimates the Region carries 34% of the global DR-TB burden. Constraints faced for scaling up of DR-TB services to attain the global target of universal access to quality diagnosis and treatment by 2015, are due to inadequate laboratory capacity in terms of infrastructure and HR, availability of SLD,

limited capacity for second-line drug management and inadequate hospital facilities.

The other issues that were raised were: availability of quality assured drugs for rapid expansion, organization and monitoring of treatment, problems in decentralizing beyond the health facility level for management, making the ancillary drugs available for managing adverse drug reactions and concomitant illnesses. The need to have a guideline for patient counseling and implement infection control measures as part of general health services were highlighted.

Recommendations

Recommendations for WHO and partners:

- Assist Member States in scaling up services and provide technical assistance for PMDT as requested by the country to strengthen laboratory capacity in terms of infrastructure and HR and drug management of SLD;
- Assist countries to procure sufficient SLD for scaling up of PMDT;
- Assist in mobilization of resources for social support for patients on DR-TB treatment considering the prolonged duration of treatment;
- Assist in developing guidelines/curriculum for systematic counseling for patient and family, and provide technical assistance to develop and implement the infection control plan;
- Support countries to train staff on electronic data management to analyze their own data and improve the programme and to have a more realistic evidence-based approach.

Recommendations for national TB control programmes:

- Adhere to DOTS strategy to prevent emergence of DR-TB and ensure dissemination of ISTC among stakeholders;
- Prioritize DST for MDR-TB suspects in the order of risk as per the country capacity;

- Plan realistic scaling up of services to achieve the global target of universal access;
- Ensure availability of HR, laboratory services and second-line drugs;
- Identify funding gaps and take appropriate actions;
- Ensure maximum cooperation and coordination with the public and private sectors partners and organize training for all stake-holders;
- Mobilize necessary assistance from the technical partners; and
- Introduce electronic data management system.

Annex 1

Country Presentations

Country	National guidelines for PMDT	Central DR-TB committee	QA lab established	Initiated PMDT	Estimated no. of MDR cases	Pts on MDR-TB treatment	Plan by 2015	Plan for expansion	Challenges
Bangladesh	Developed in 2007	Established in 2007	Lab functional, awaiting accreditation from SNRL, Antwerp, Belgium	Implementing with GLC support from August 2008	9,800	430	4,155	Scale up MDR-TB management facilities country wide (diagnostic, hospital facilities, drug management and patient support mechanism). Funding from GFATM R8 (2011-2014) for management of additional 2500 patients. Establishment of MDR annex at NIDCH for capacity building and management of MDR-TB. Introduce rapid diagnostic method for MDR-TB diagnosis. Country-wide implementation of TB-IC.	Human resource crisis to manage MDR-TB patients. Limited access to DST and culture in parts of the country. Limited MDR-TB management capacity and coverage. Recording and reporting for MDR-TB. Uninterrupted supply of GLC approved SLD. Limited linkage with private laboratories with capacity for culture and DST. Involvement of the private sector. Inadequate infection control measures. Secure continuation of funds.
Bhutan	Developed in 2009		Two laboratories for culture/DST for first line drugs.	Initiated in 2007	33	38	50	Plan to expand culture facilities – in 3 Regions. Second-line DST – PHL sends samples to reference lab in Bangkok. PHL has planned to do a few second-line DST in the near future.	Human resources. HIV/TB co-infections. DOT implementation. Hard-to-reach groups (students and monks).
DPR Korea	PMDT not yet initiated				76,366			Development, print and distribution of national guideline for MDR-TB. Strengthening of laboratory capacity for diagnosis of MDR-TB. Nationwide survey for MDR-TB; Starting of treatment for MDR-TB patients wtih support from GF.	Diagnostic technology not yet accredited. To submit the proposal for procurement of second-line drugs to GLC.
India	National guidelines developed in	Established in 2005	Initiated in 2 states in 2007, expanded to	14 labs established	99,000	1,415	30,000	Sustained high-quality DOTS implementation.	Most States need to develop an action plan.

Country	National guidelines for PMDT	Central DR-TB committee	QA lab established	Initiated PMDT	Estimated no. of MDR cases	Pts on MDR-TB treatment	Plan by 2015	Plan for expansion	Challenges
	2006		10 states in 2009					Promote rational use of anti-TB drugs. Improve laboratory capacity in diagnosing MDR-TB. Effective treatment of MDR-TB patients. Initiation and rapid scale-up of MDR-TB services. Evaluate the extent of the threat of second-line anti-TB drug resistance and management of XDR-TB. Implement infection control measures. By 2010, RNTCP Category IV services will be introduced in all states with complete geographical coverage by 2012. By 2012, access to laboratory based quality assured MDR-TB diagnosis and treatment for all smear positive re-treatment TB cases. New cases who have failed an initial first-line drug treatment. By 2015, access to MDR-TB diagnosis and treatment for *all smear positive TB* (new and re-treatment) cases registered under RNTCP.	Delay in establishment of accredited state-level laboratories due to administrative reasons. Sub-optimal functioning of the accredited labs. Non-availability of trained manpower. Dedicated regular staff in addition to the contractual posts. Uninterrupted power supply. Diagnostic delay with conventional method (3-4 months turnaround time). Special requirements for introduction of newer rapid diagnostics- lab infrastructure and training. Long duration, toxic, expensive treatment. Uninterrupted supply of drugs from GLC. Daily ambulatory DOT and ensuring treatment adherence. Availability of DOTS-Plus sites (1 per 10 million population). Training, supervision and monitoring at all levels. Ensuring timely follow-up.
Indonesia	Available	Established	5 QA labs established for first line drugs, three for second- line drugs	Yes	9,300	100	5,100	The first 5 years of PMDT implementation will be focussing on public health services. Dissemination of Information will be conducted to local NTP partners, including NGOs, professional NGOs, medical schools. The referral hospital for PMDT	Convincing related sectors, units and medical specialists that: • Commitment of decision makers and related sectors for un-interrupted funding and to ensure the continuation of PMDT activities. • PMDT IS "DOTS" for MDR TB patients. • Expansion of laboratory for culture & DST has to be in line with

Country	National guidelines for PMDT	Central DR-TB committee	QA lab established	Initiated PMDT	Estimated no. of MDR cases	Pts on MDR-TB treatment	Plan by 2015	Plan for expansion	Challenges
								in the two pilot sites are teaching hospitals for two major medical schools in the country. Plan for stepwise expansion to cover 5,100 patients by 2015.	the PMDT expansion. • MDR TB Surveillance is important to guide the steps to be taken in the expansion plan. • SLD abused.
Maldives	Under preparation	No	No	Yes	3	3		Develop National guidelines on treatment of MDR-TB. Conduct training workshop for rehabilitation and penitentiary workers on transmission and prevention of TB. Training workshop for community health workers on TB case management. Conduct awareness programme on TB/HIV co infection and active case finding on World TB Day 2011. Conduct awareness programme for expatriates recruiting agents on TB prevention and control. International training for TB laboratory workers on culture sensitivity. Develop, print and disseminate IEC information package on transmission and prevention of TB for school children.	Lack of skilled manpower at all levels of the programme; Lack of trained staff for DOTS centre. Inadequate availability of capacity on DST, no official links have been established with and reliable external TB laboratory for DST for diagnosis as well as for follow up for X/MDR patients. Inadequate X/MDR TB management (including diagnosis and treatment).
Myanmar	Established in 2006	Established in 2006	Established in 2010	2009	9,300	121	400	Strengthen the basic DOTS. Conduct operational research. Strengthen the MDR-TB surveillance. Gaining experience in MDR-TB management and care under the DOTS-plus pilot project in Yangon and Mandalay. Further broaden	Work burden in TB hospital and laboratories; Adverse event management; Linkages for rapid diagnosis of DR/MDR-TB – scale-up plan; Geographic scale-up; 3DF/WHO funding mechanism is a great barrier for project implementation.

Country	National guidelines for PMDT	Central DR-TB committee	QA lab established	Initiated PMDT	Estimated no. of MDR cases	Pts on MDR-TB treatment	Plan by 2015	Plan for expansion	Challenges
								the partnership to fight MDR-TB in order to mobilize additional resources (including Global Fund). Develop the national guideline for MDR-TB management.	
Nepal	2004	2004	Yes	2005	1,700	841	1,500	Expand MDR TB programme sites (from 54 to 80). Provision of hostel accommodation (10 hostels). Upgrade Central NTP Laboratory to NRL; Establish culture facilities at Regional level (3) and DST (1 Region). Continue to expand collaboration with public and private sector partners.	Culture facilities at regional level. Provision of hospital beds or hostel for MDR-TB patients. Inadequate supervision. Lack of infection control in health care setting. Upgradation of NTP Central Laboratory as National Reference laboratory. Lack of electronic data management.
Sri Lanka	Developed in 2009	Established in 2009	One national level lab and one regional level lab established	To be initiated	63	36 since 2006	40	Upgrading of NRL. Introduction of new technology for culture and drug resistance identification. Expansion of culture facilities with four Regional culture laboratories. DRS in 2011/12 and 2014/15. Adoption of MDR-TB Programmatic Management Guidelines (Draft available).	Global Fund Round 6 – DRS survey planned in 2010 not done due to 'no go' status for PR2 (it was budgeted under PR2).
Thailand					2,900		Target not set	To increase the number. of treatment sites to 100 hospitals. Private sector to refer MDR suspects and confirmed MDR to the government hospitals. To develop a plan to involve medical schools. Human resource development in terms of > training, supervision, guideline revision and development.	Encouraging MDR patients to accept daily DOT. Managing side effects. Delaying in reporting DST results. Delaying in submitting reports (also incorrect reports).

Country	National guidelines for PMDT	Central DR-TB committee	QA lab established	Initiated PMDT	Estimated no. of MDR cases	Pts on MDR-TB treatment	Plan by 2015	Plan for expansion	Challenges
								Strengthening of recording and reporting system. Expansion of number of hospitals approved by GLC.	
Timor Leste	In place	In place	No, DST being done by SNRL	2008	130	5		Establishment of a link with supra-national laboratory in Australia-Adelaide for culture and DST. Collection and transportation of MDR-TB samples to supranational laboratory. Training for MDR-TB staff by International expert. Hiring MDR-TB clinical doctor. Extension of MDR-TB rooms in NGO Klibur Domin and National Hospital.	Limited capacity for MDR-TB management. Low community awareness for MDR-TB and treatment. Medical doctors not following TB guideline in public facilities. Promoting rational use of second-line drugs (particularly quinolones) by private practitioners.

Annex 2

Technical assistance requirements

TA Requirements for 2011-2012

COUNTRIES	National guidelines for MDRTB	PMDT training	Clinical MDR-TB training	Expansion plan/ scale up of MDR-TB	DRS protocol development	DRS implementation plan	R&R/electronic systems	Laboratory for culture and DST / expansion plan	Infection control	GLC monitoring mission	Visit MDR-TB Existing Programme/on job training	Second-line anti-TB drug management & forecasting
Bangladesh		■	■					■	■	■		■
Bhutan			■				■					■
DPR Korea	■	■	■	■	■	■	■	■	■	■	■	■
India							■			■		■
Indonesia	■	■	■	■	■	■	■	■	■	■	■	■
Maldives			■				■		■			
Myanmar		■		■			■	■	■	■	■	■
Nepal		■	■		■		■	■	■	■		
Sri Lanka		■	■		■	■	■		■	■		
Thailand			■				■				■	■
Timor-Leste		■	■				■	■				

Annex 3

Agenda

(1) Overview of MDR-TB in the South-East Asia Region and response to DR-TB

(2) The framework for effective control of DR-TB

(3) Case finding strategies and prioritization of risk groups

(4) Organization of laboratory network and minimal mycobacterial culture and DST requirement

(5) Treatment strategies for DR-TB

(6) Treatment delivery and community-based DR-TB support

(7) Infection control and protection of health care workers

(8) Management of second-line drugs

(9) Planning for national DR-TB control

(10) Introduction to WHO planning and budgeting tool

(11) Recording and reporting for DR-TB

(12) Conclusions and recommendations

Annex 4

List of participants

Country Participants

Bangladesh

Dr Sk. Abdul Kadir
Junior Consultant
Chest Disease Clinic
Khulna
Email: kadirkhulna56@gmail.com

Dr Md Wahiduzzaman Akhanda
Asst. Professor (Respiratory Medicine)
Department of Respiratory Medicine
NIDCH
Dhaka
Email: drakhanda1957@gmail.com

Mr Mohammed Mafizul Hoque
Statistical Assistant
NTP
Dhaka
Email: mmhoque23@gmail.com

Bhutan

Mr Chewang Rinzin
Sr Progamme Officer
TB Programme
Department of Public Health
Ministry of Health
Thimphu
Email: crinzin@health.gov.bt

Mr Ugyen Wangdi
Dy Chief Medical Record Officer
Eastern Regional Referral Hospital
Mongar
Email: ugyenwangdi60@hotmail.com

DPR Korea

Dr Ri Hyon Chol
Director
Department of TB Prevention and Control
Ministry of Public Health
Pyongyang

Dr Choe Kum Song
National TB Preventive Institute
Ministry of Public Health
Pyongyang

Mr Ri Su Nam
Interpreter
Ministry of Public Health
Pyongyang

India

Dr M.S. Srinivas Rao
Joint Director (TB) and
State TB Officer
Hyderabad
Andhra Pradesh
Email: staop@rntcp.org

Dr Kuldeep Singh Sachdeva
CMO (TB)
528-C,
Dte. GHS,
Nirman Bhawan
New Delhi
Email: sachdevak@rntcp.org;
sachdevak@rntcp.org

Indonesia

Dr Dyah Erti Mustikawati
NTP Manager
Jl Pereetakan Negara No 29
Jakarta Pusat 10560
Email: dmustika_2007@yahoo.co.id

Dr Purwantyastuti
Chair TWG MDR-TB
Jl Pereetakan Negara No 29
Jakarta Pusat 10560
Email: purwanty2703@yahoo.com

Dr Widyastuti
Head of CDC
Jakarta Health Office
Jl Pereetakan Negara No 29
Jakarta Pusat 10560
Email: widyendro@gmail.com

Maldives

Ms Fathmath Reeza
Assistant Programme Officer
Centre for Community Health and Disease Control
Male
Email: reeza.ntp@live.com

Ms Aminath Niusha
Assistant Community Health Officer
L. Gan Regional Hospital
Male
Email: a.niusha@live.com

Myanmar

Dr Moe Zaw
Assistant Director (TB)
Department of Health
Naypyitaw
Email: moezaw07@gmail.com

Dr Thandar Thwin
Divisional TB Officer
Mandalay Division
Mandalay
Email: ntp01@baganmail.net.mm

Nepal

Mr Sitaram Ghimire
Statistical Officer
National Tuberculosis Centre
Thimi, Bhaktapur
Email: sitaram5@hotmail.com

Dr Menu Acharya
MDR Coordinator
National Tuberculosis Centre
Thimi
Bhaktapur
Email:safal_menu@yahoo.com;
mdr_pmu@mail.com.n

Sri Lanka

Dr Wijitha Senaratne
Chest Physician
Chest Hospital
Welisara
Email: wichitra5861@yahoo.com

Dr Bandu Gunasena
Chest Physician
Chest Hospital
Welisara
Email: bandugunasena@yahoo.com

Thailand

Ms Sonjit Pongpanit
Registered Nurse, Sr Professional Level
Bureau of Tuberculosis
Department of Disease Control
Ministry of Public Health
Nonthaburi
Email: sonjit33@hotmail.com

Ms Auyporn Petborisuit
Public Health Technical Officer
Sr Professional Level
Office of Disease Prevention and Control 12
Songkhla Province
Department of Disease Control
Ministry of Public Health
Nonthaburi
Email: auyporn_p@yahoo.com;
auyporn10@gmail.com

Dr Sirinapha Jittimanee
Public Health Technical Officer
Sr Professional Level
Bureau of Tuberculosis
Department of Disease Control
Ministry of Public Health
Nonthaburi
Email: sxj47@yahoo.com

Timor-Leste

Mr Domingos Pereira
Regional Supervisor
National TB Control Programme
Dili
Email: gosodomy@yahoo.com

Mr Laurindo da Silva
District TB Coordinator
District Liquica
Email: alausilva@yahoo.com.au

Temporary Advisers/Resource Persons

Dr Kashi Kant Jha
Director
National Tuberculosis Centre
Thimi
Bhaktapur
Nepal
Email: drkkjha@hotmail.com;
director_ntp@mail.com.np

Dr T. Santha Devi
11-A, Kilpauk Garden Colony
Western Extension
Kilpauk
Chennai – 600 010
Tamil Nadu
India
Email: santhasethu@gmail.com ;
santha_sethu@yahoo.com

Dr Bhabana Shrestha
Chief Medical Officer
GENETUP
Nepal Anti TB Association
Kalimati, Kathmandu
Nepal
Email: genegup@wlink.com.np;
bhabp@hotmail.com

Observers

Dr Zakia Sultana Siddique
Technical Officer
BRAC Health Programme
75 Mohakhali
Dhaka
Bangladesh
Email: zs_siddiqui@yahoo.com

WHO Country Offices

Dr Chawalit Natpratan
TIP-TB
WCO Indonesia
Email: natpratanc@searo.who.int

Dr Muhammad Akhtar
Medical Officer-TB
WCO Nepal
Email: akhtarm@searo.who.int

Dr Supriya Warusavithana
NPO-CDS
WCO Sri Lanka
Email: warusavithanas@searo.who.int

Dr Vikarunnessa Begum
TNP (TBCAP)
WCO Bangladesh
Email: begumv@searo.who.int

WHO-HQ

Dr Dennis Falzon
Medical Officer
STOP TB Dept
Email: falzond@who.int

Dr Mohamed Guled Farah
Consultant
WHO EMRO
Email: m.g.farah@medisin.uio.no;
mohamed_guled_fa@hotmail.com

Dr A.B.M. Tauhidul Islam
Technical Officer
TB Operations and Coordination (TBC)
Email: islamt@who.int

Ms Saira Khowaja
Director, TB Control Program
Indus Hospital
4th Floor, Main Korangi Crossing
Karachi
Pakistan
Email: saira.khowaja@irdresearch.org

Dr Hamidah Hussain
Adviser, MDR-TB Programme
Indus Hospital
Main Korangi Crossing
Karachi
Pakistan
Email: hamidah.hussain@irdresearch.org

Mr Ali Habib
Manager, IT Development
Interactive Research and Development (IRD)
Email: ali.habib@irdresearch.org

WHO-SEARO

Dr Md Khurshid Alam Hyder
Medical Officer-TB
Email: hyderk@searo.who.int

Ms Nigorsulton Muzafarova
Technical Officer-GDF
Email: muzafarovan@searo.who.int

Mr Ankur Tanwar
Secretary
Email: tanwara@searo.who.int

The World Health Organization's South-East Asia (SEA) Region has the highest burden of tuberculosis in the world. Appreciable progress has been made with TB control using the DOTS strategy, and several countries in the Region have reached the global targets. Renewed emphasis has been placed on reaching universal case detection and treatment of all forms of TB through improving diagnosis and management of all forms and, in particular, better managing multi- and extensively drug-resistant tuberculosis, as well as HIV-associated TB. The specific objectives of this meeting were to review progress and constraints in implementing the Stop TB strategy in Member States of the SEA Region; and provide guidance on adopting and applying the revised WHO policies and guidelines to more comprehensively address TB control in the specific context of Member States of the Region.

The overall recommendations for WHO and technical partners were to collaborate with countries to improve the estimates for the TB burden in the countries; gather evidence that can guide countries in more accurately defining case suspects based on symptoms other than cough (>2 weeks) in order to improve case detection; evaluate the performance of diagnostic algorithms in the context of smear-negative EPTB and childhood TB, and consider appropriate revisions; assist countries in deploying new tools, developing operational research on new diagnostic tools, and elaborating guidelines on the basis of the outcomes.

World Health Organization

Regional Office for South-East Asia

World Health House
Indraprastha Estate,
Mahatma Gandhi Marg,
New Delhi-110002, India

SEA-TB-330