

**Islamic Republic of Afghanistan
Ministry of Public Health
General Directorate of Health Service Provision
*Directorate of Communicable Disease Control
National Tuberculosis Control Program***

**NATIONAL GUIDELINES FOR TUBERCULOSIS CONTROL PROGRAM
IN AFGHANISTAN**

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ACRONYMS AND ABBREVIATIONS

ACSM	Advocacy, Communications, and Social Mobilization strategy [WHO]
AIDS	acquired immunodeficiency syndrome
ANDS	Afghanistan National Development Strategy
BCG	bacillus Calmette-Guérin
BHC	basic health center
BPHS	Basic Package of Health Services
CBD	Community-Based DOTS
CHC	comprehensive health center
CHS	Community health supervisor
CHW	Community health worker
DH	District Hospital
DOT	Direct Observation of Treatment
DOTS	The internationally recommended strategy for TB control
DST	drug susceptibility test
E	ethambutol
EPI	Expanded Program on Immunization
EPHS	Essential Package of Hospital Services
EQA	External Quality Assurance
FDC	fixed-dose combination
GP	general practitioner
H	isoniazid
HCW	health care worker
HIV	human immunodeficiency virus
HF	Health Facility
HRD	Human Resource Development
IC	Infection Control
IDU	injecting drug User
IEC	information, education, and communications
IPT	isoniazid preventive therapy
JICA	Japan International Cooperation Agency
MDG	Millennium Development Goal
MDR	multidrug-resistant
MoPH	Ministry of Public Health
MSH	Management Sciences for Health
M&E	Monitoring and evaluation
NDRS	National Drug Resistant Survey
NRL	National Reference Laboratory
NTP	National Tuberculosis Control Program
PH	Provincial Hospital
PHD	Provincial Health Director
PLHA	People Living with HIV/AIDS
PPD	purified protein derivatives
PPM	Public-Private Mix

PTC	Provincial Tuberculosis Coordinator
QA	quality assurance
R	Rifampicin
RH	Regional Hospital
RLS	Regional Laboratory Supervisor
RRL	Regional Reference Laboratory
RTC	Regional TB Coordinator
S	streptomycin
SCC	short-course chemotherapy
SHC	sub-health center
SS+	sputum smear positive
SS-	sputum smear negative
SOP	standard operating procedure
TAI	treatment after interruption
TB	Tuberculosis
TB CAP	TB Control Assistance Program
TBH	tuberculosis hospital
TBIS	Tuberculosis Information System
TB PK	Tuberculosis Patients Kit
TBS	tuberculosis suspect
TST	tuberculin skin test
TU	tuberculin units
USAID	U. S. Agency for International Development
WHO	World Health Organization
XDR	Extensively drug-resistant
Z	pyrazinamide

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INTRODUCTION

The purpose of these guidelines is to enable readers to understand the role of the National Tuberculosis Control Program (NTP), and provide the protocols to be followed for diagnosing and successfully treating tuberculosis (TB) patients, to make use of the standardized NTP recording and reporting tools to evaluate the performance, and to help create greater awareness about the disease in an effort to bring all stakeholders on board in the fight against this major public health problem. The guidelines are also intended to be a reference document for all who are involved in TB control activities.

Tuberculosis remains a major cause of morbidity and mortality and a significant public health issue worldwide. The global incidence of TB is 136/100,000 population at an average. This represents a total of 8.8 million new patients and 1.6 millions deaths due to TB every year. Eighty percent of new TB patients come from 22 high burden countries which represent 63 percent of the world's population. Also, the HIV epidemic and emergence of the multidrug-resistant (MDR) TB have affected the natural history of the TB. According to the World Health Organization (WHO) estimates, one infectious source would transmit infection by *Mycobacterium tuberculosis* to 20 others during an average of two years before death or self cure. Thus, it is very important to find TB patients as early as possible and treat properly.

In many developing countries, the Stop TB strategy has been adopted within Ministries of Health (MoHs), as the most cost-effective and efficient approach to the prevention and control of TB. Nevertheless, a weak link in implementing and expanding a quality DOTS strategy through the NTPs in many countries is the organization and management of the systems and services provided by the primary health centers and hospitals for TB control.

Afghanistan is the second highest TB-burdened country in the Eastern Mediterranean Region and one of the 22 highest TB-burdened countries in the world, with an estimated incidence of new sputum smear positive (SS+) pulmonary tuberculosis, 76 per 100,000 population per year and all TB cases at 168/100,000 population per year. This means an annual incidence of 46,000 for all TB cases and 21,000 for TB SS+ (WHO, 2009). An unusual predominance of TB in women persists. In the past for many years, women comprised 68 percent of TB SS+ cases in Afghanistan. These data clearly indicate that TB control is one of major public health problems in Afghanistan and needs to be solved urgently. Thus, NTP strongly urges all health care providers to be engaged in TB control by referencing this guideline.

The National TB Control Guideline was developed in 2005, but since that time, many things have changed. Thus, the NTP recognizes the strong need for revision of the current guideline. Through TB taskforce meetings, a working group led by NTP was assigned to this purpose. The group consisted of NTP staff, national and international staff from the NTP partners, and a specific international consultant for this activity. The document was revised through successive meetings and group members' workshops and shared with the field staff including Regional TB Coordinators (RTCs) and Provincial TB Coordinators (PTCs).

This guideline was rigorously reviewed by the assigned group and the points to be revised were identified. In addition, the issues which were not incorporated in the previous guideline were identified and discussed among the group to reach the final agreement to be addressed in the revised guideline. This comprehensive revision was applied based on the internationally accepted strategies for TB control and adaptation with the field reality and health system in Afghanistan. All the previous chapters were updated and revised extensively, and new chapters were added. Following is a synopsis of the major changes.

Chapter 1. The Stop TB strategy addressed.

Chapter 2. The role of TB hospitals, the Essential Package of Hospital Services (EPHS), and the Basic Package of Hospital Services (BPHS) entities and tiers described according to TB care. The NTP organogram is redefined.

Chapter 3. The diagnosis of pediatric TB has been intensively revised and new diagnostic algorithm introduced.

Chapter 4. The quality assurance activities updated based on the initiating new methods for quality assurance (QA) including external quality assessment, on-site evaluation, panel testing, blinded rechecking, and culture drug susceptibility test (DST).

Chapter 5. The treatment categories have been reduced from three (categories I, II, and III) to two (categories I and II). Category I treatment regimen duration has changed from eight months to six months. In addition, TB treatment in children had been comprehensively described and fixed-dose combination (FDC) and MDR treatment are addressed.

Chapter 6. The general concept, strategy, awareness, definition used in contact screening, treatment for pediatric and special circumstances for TB prevention was incorporated in previous issues and the procedure of contact management for childhood cases has been defined.

Chapter 7. New TB reporting and recording forms have been introduced.

Chapter 8. "Monitoring and Evaluation," a new chapter, describes monitoring, evaluation, and supervision

Chapter 9. "Human Resource Development (HRD)," a new chapter, addresses human resources and TB management

Chapter 10. Principles of community-based DOTS (internationally recommended strategy for TB control), case finding, and community-supported treatment are presented.

Chapter 11. This recently added chapter looks at TB/HIV, public-private mixture (PPM)-DOTS, MDR-TB, and TB in prisons, refugees, and displaced populations, and other special groups or situations.

Chapter 12. TB infection control is a new chapter.

1. TUBERCULOSIS CONTROL

Target Audience

The *Guidelines for Tuberculosis Control in Afghanistan* are to be used and followed by government authorities; all categories of health care providers; BPHS, EPHS, non-BPHS; and EPHS; other ministries' health facilities, the private sector, implementing partners, TB control personnel, the community; and all donor agencies.

Overall TB Control Policy Package

Overall Objectives

To dramatically reduce the country's burden of TB by 2013, in line with the Millennium Development Goal (MDG) and Stop TB Partnership targets.

Strategy

The Stop TB Partnership Strategy is the backbone of TB control in Afghanistan.

Global Targets

The MDG target 6 is to combat HIV/AIDS, malaria and other diseases including TB, and target 8 is to halt and begin to reverse the incidence of these diseases by 2013. Epidemiological targets linked to MDGs are to—

- Maintain detection of 70 percent of infectious TB cases and cure at least 85 percent of those cases by 2013.
- Reduce the prevalence of and deaths due to TB by 50 percent by 2013.

An effective NTP has a high treatment success rate, a low level of acquired drug resistance, and ultimately, a high case detection rate.

Stop TB Strategy

Pursue high-quality DOTS expansion and enhancement through—

- Political commitment with increased and sustained financing
- Case detection through quality-assured bacteriology
- Standardized treatment, with supervision and patient support
- An effective drug supply and management system
- Monitoring and evaluation (M&E) system, and impact measurement

Address TB/HIV, MDR-TB, and other challenges—

- Implement collaborative TB/HIV activities
- Prevent and control MDR-TB
- Address prisoners, refugees, and other high-risk groups and situations

Contribute to health system strengthening—

- Actively participate in efforts to improve system-wide policy, human resources, financing, management, service delivery, and information systems
- Share innovations that strengthen systems, such as WHO's Practical Approach to Lung Health
- Adapt innovations from other fields

Engage all care providers—

- Public–public mix and PPM approaches
- International Standards for Tuberculosis Care (ISTC)

Empower people with TB and communities—

- Advocacy, communication, and social mobilization
- Community participation in TB care
- Patients' charter for TB care that outlines patients' and health care workers' rights and responsibilities

Enable and promote research—

- Program-based operational research
- Research to develop new diagnostics, medicines, and vaccines

Aims of TB Control

For individual patients—

- To cure their disease
- To preserve or quickly restore their working capacity
- To allow patients to remain within their families, ethnic groups and communities, thus enabling them to retain their socioeconomic position
- To reduce stigma

For the community—

- To decrease the risk of TB transmission and, consequently, its incidence in the community
- To lessen the TB disease burden and thus improve the community's economic and social condition

2. NATIONAL TUBERCULOSIS CONTROL PROGRAM

NTP Mission

Afghanistan's NTP is a technical department of the Ministry of Public Health (MoPH) staffed by qualified and motivated health professionals who lead and carry out TB prevention, detection, diagnosis, and treatment of TB patients to reduce the impact of TB as a public health problem in the country.

NTP Vision

A TB-free country—to eliminate the disease as a public health problem by 2050.

NTP Values

In line with the MoPH values, the NTP should have the following values—

- Right to healthy life
- Compassion
- Honesty and competency
- Equity

NTP Objectives

To establish effective measures for TB control through the implementation and expansion of the DOTS strategy in Afghanistan by applying a comprehensive approach. The major objectives of the program are to reduce the risk of infection, morbidity, and mortality due to tuberculosis by—

- Having 100 percent coverage of the DOTS population by the end of year 2015
- Ensuring the cure rate of diagnosed new sputum smear-positive pulmonary cases to over 85 percent
- Ensuring a case detection rate of over 70 percent of the estimated SS+ cases

Strategy

- To achieve the above objectives, the program has the following main strategies through providing DOTS package
- Promote early detection of SS+ pulmonary cases through sputum smear examination
- Organize treatment delivery to ensure effective, standardized chemotherapy for the recommended duration (six months) for all diagnosed patients
- Provide supervision of program activities at various levels of the system

- Introduce a standardized system of registration and reporting
- Monitor treatment results and evaluate program progress by quarterly cohort analysis
- Provide continuous training for all program staff at various system levels
- Strengthen cooperation and coordination between governmental and nongovernmental organizations involved in the tuberculosis control program
- Integrate tuberculosis control activities into all health care provider activities being carried out in the country.
- Providing DOTS package

Roles of NTP

The NTP is the leader and steward of all TB control activities; however, the political and operational support of various stakeholders in all program levels is essential for an effective fight against TB in the country.

General Characteristics of a Good NTP

- Countrywide coverage including both rural and urban areas
- Sustainable since TB is a long lasting problem that will only be improved gradually
- Efficiency and access that allows the NTP to meet the needs of the concerned population
- Integration of TB care into existing health facilities (BPHS, EPHS), and involving other health care providers

Specific Operational Features of a Successful NTP

- An established NTP central unit connected with regional and provincial levels
- An operational plan that includes targets, activities, indicators, budget details, funding sources, and allocated responsibilities
- NTP guidelines and standard operating procedures (SOPs) available at all levels of the program
- A nationwide network of microscopy services in close contact with the BPHS, EPHS, and other health care providers, and subject to regular quality control
- Treatment services within the BPHS and EPHS system with adequate facilities for DOTS
- Guaranteed regular supply of high-quality drugs and diagnostic materials
- An established M&E and supervision plan
- A recording and reporting system using a standardized registration system
- A training program covering all aspects of the policy package

Indicators to Measure NTP Progress

Existence of NTP guidelines and SOPs (this reflects government commitment)

- Existence of a national strategic plan
- Existence of an operational plan that includes all activities outlined above

- The number of districts in the country that are implementing the new tuberculosis control strategy
- The number of health facilities in the country that are implementing the new tuberculosis control strategy
- The treatment success rate
- The case notification rate

National TB Policy

The NTP policy is in line with Afghanistan National Development Strategy. TB has been prioritized in the Health and Nutrition Sector Strategy in the component of disease control program. All the policies incorporated in this document had been adopted from the Stop TB strategy.

Structure of a National TB Program

The NTP organizes its activities in four levels, as described in figure 1.

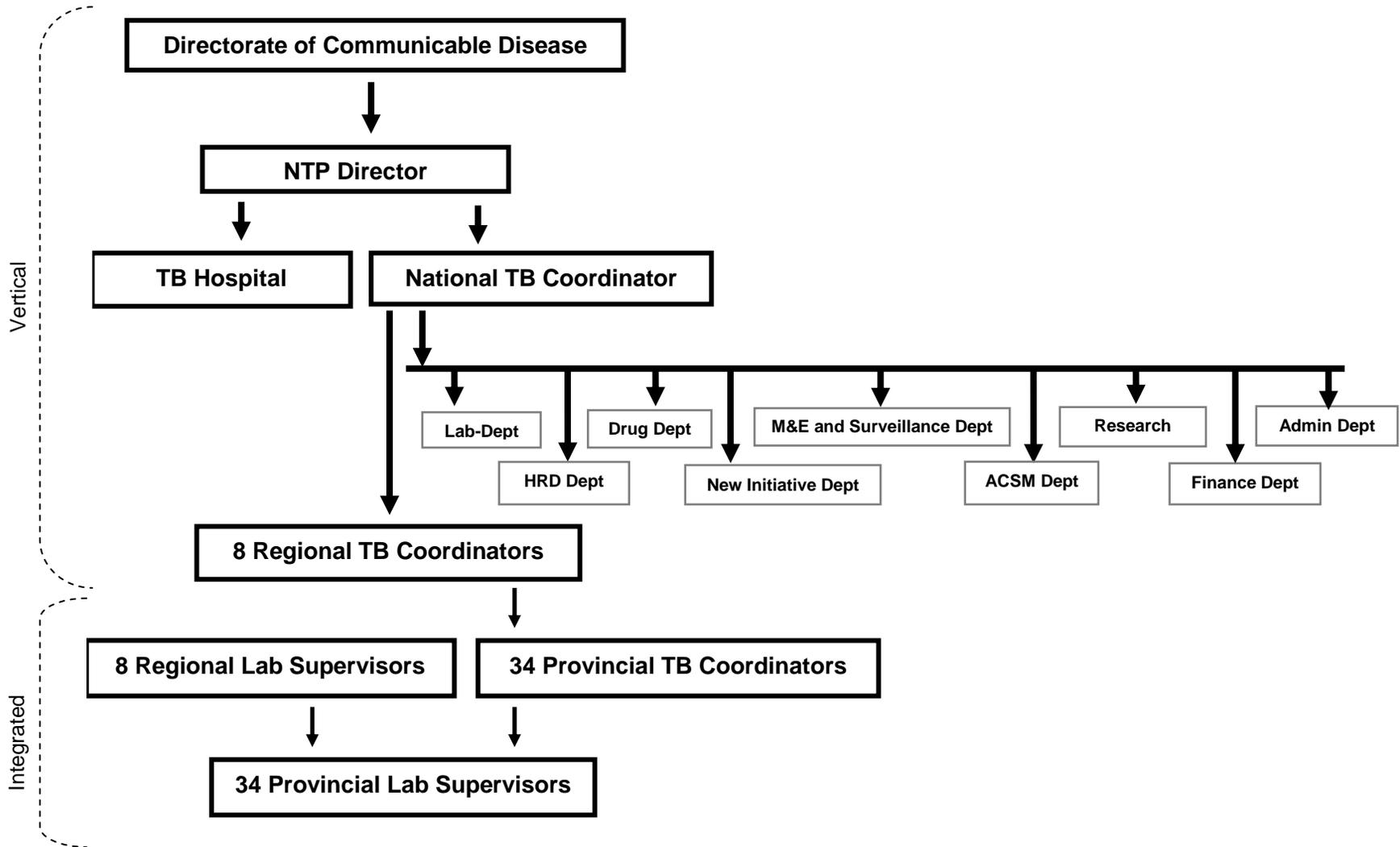


Figure 1. The NTP organogram

Central Unit

As the central TB control unit, the NTP is responsible for TB control countrywide. Supported by technical departments, the NTP Director is in charge of the entire TB program. The main responsibilities at the central level are as follows—

- To develop and update the policy, strategy, norms, and procedures for TB control based the Stop TB strategy in Afghanistan
- To secure funding for the NTP
- To develop activities in concert with other departments and public health programs of the MoPH
- To establish coordination with other national public and private institutions related to TB control, such as the Ministries of Higher Education and Interior (prisons)
- To develop and update a strategic plan and annual operational plans
- To organize a functional referral network for TB patients
- To establish guidelines for the care of TB patients at health facilities through the BPHS, EPHS, and all health care providers.
- To guarantee the operation of a recording and reporting system that will provide useful operational and epidemiological information for TB control
- To ensure that required quarterly reports (e.g., on case detection) are completed at each main provincial level; to collect, check, and analyze these reports and provide feedback
- To ensure that all regions and provinces submit electronic copies of quarterly reports on the Tuberculosis Information System (TBIS) database formats
- To update the situation of TB control at the national level
- To plan and support, through the use of regional and provincial TB teams, the training of health personnel assigned to executing the activities of the NTP at health facilities
- To supervise and monitor the execution of NTP activities by regional and provincial TB teams and to advise them quarterly
- To evaluate the NTP semiannually at the national level, in coordination with the technical TB teams in the regions and provinces
- To organize the regular supply of TB medicines, laboratory reagents, and other laboratory supplies, including their annual selection, quantification, procurement, and distribution
- To organize a lab network to carry out TB bacteriology, to establish a functional National Reference Laboratory (NRL), and to perform quality assurance
- To formulate biosafety SOPs for use in TB laboratories and in the care of TB patients
- To support operational, epidemiological, and social science studies for TB control
- To conduct and design research on various aspects of TB
- To execute operations research, including national surveys, in coordination with other programs under NTP guidance
- To develop WHO's Advocacy, Communications, and Social Mobilization (ACSM) strategy for TB control
- To improve community mobilization for TB control, including stronger participation by community health workers (CHWs)
- To develop policies and strategy for infection control, MDR-TB control, and human resource development (HRD)

- To train provincial laboratory specialists and health personnel on managing complicated cases and in quality assurance for DOTS expansion
- To organize and conduct training under the guidance of NTP
- To develop a TB information system procedure manual

Tuberculosis Hospital

The tuberculosis hospital (TBH), a specialized unit working under the direct supervision of the NTP Director, has the following responsibilities—

- To function as a referral center for the treatment of complicated cases
- To implement models of TB control in detection, diagnosis, and treatment of TB cases
- To manage the treatment of MDR cases
- To train postgraduate medical doctors as TB specialists
- To assist in the implementation of TB-related research
- To provide practical orientation in TB for medical students
- To consult with other chest disease specialists in other health facilities
- To screen newly hired government employees and students who will study outside of the country
- To detect, diagnose, and treat TB cases

Regional Level

Eight regions are designated to implement TB control and each has a regional TB coordinator responsible for implementing NTP in his/her designated region, and a regional lab supervisor (RLS). The regional TB coordinator is administratively responsible for provincial TB control coordinators and follows the technical instructions of the NTP. The main responsibilities at this level are—

- To work closely with BPHS, EPHS, and all health care providers in the performance of his or her duties
- To disseminate and implement the NTP guidelines in the designated province
- To establish coordination with national and international stakeholders at the regional level
- To develop activities in concert with MoPH public health programs and other departments at the regional level
- To consolidate annual programming for the designated provinces
- To update the situation of the TB control in the designated provinces
- To guarantee the operation of a recording and reporting system in the designated provinces
- To ensure that required quarterly reports (e.g., on case detection) are completed in each province and receive electronic copies of reports in the TBIS database formats; also to collect, check and analyze these reports, provide feedback to the provinces, and submit the reports to the central unit.

- To supervise and monitor all TB activities, and advise provincial TB team quarterly on the execution of NTP activities according to the national policy and guidelines
- To evaluate the NTP semiannually at the regional level, in coordination with the central unit and the technical TB teams of the designated provinces
- To organize a functional referral network for TB patients in the designated provinces
- To plan, and through provincial TB teams, support the training of health personnel assigned to executing the NTP activities at health facilities
- In coordination with the NTP central unit, to guarantee appropriate distribution of TB medicines, lab reagents, and other supplies in the designated provinces
- To implement quality assurance in TB labs in the designated provinces
- To implement biosafety SOPs formulated for use in TB laboratories and for the care of TB patients
- To implement an ACSM strategy for TB control in the designated provinces
- To organize health education for TB patients and other clients at the health facilities in the designated provinces
- To improve community mobilization for TB control, including stronger participation by CHWs in the designated provinces
- To establish coordination with other national public and private institutions related to TB control at the regional level
- To implement an infection control strategy for TB control in the designated provinces
- To implement MDR strategy in the designated provinces

The RLS works under direct supervision of RTC and his or her main responsibilities at this level are—

- To implement external quality assurance (EQA) system in the region
- To facilitate standardized TB sputum smear microscopy trainings in the region
- To facilitate other trainings courses about TB bacteriological examinations.
- To assist the NTP Lab in charge to establish the laboratory network among all levels of laboratories in the country.
- To perform higher level testing if required.
- To establish quality controls for sputum smear microscopy, including reagent preparations
- To biosafety procedure and techniques for maintaining of lab equipment
- To establish and implement an effective TB laboratory supervisory system in the region which will be jointly supervised by the NTP Central Team, RTC, and PTC
- To collect regional laboratory data and report to NTP Lab section.
- To share and coordinate all laboratory-related activities with RTC and PTC in the region.

Provincial Level

At the provincial level, responsibility for carrying out the NTP lies with the Provincial Health Director (PHD). The PHD appoints a medical officer as the Provincial Tuberculosis Coordinator (PTC).

Responsibilities at the provincial level are—

- Disseminate and implement NTP guidelines in the designated districts and health facilities
- Establish coordination with national and international stakeholders at the provincial level
- Develop activities in concert with MoPH public health programs at the provincial levels and with programs of other departments
- Consolidate annual programming for the designated districts and health facilities
- Update the situation of TB control in the designated districts and health facilities
- Plan and, through district TB teams, support the training of health personnel assigned to the activities of the NTP at health facilities
- Guarantee the operation of a recording and reporting system in the designated districts and health facilities
- Ensure that health facilities prepare and submit the monthly reports (e.g., on case detection) to PTCCs for data entry in TBIS database
- Ensure completion of required quarterly reports (e.g., on case detection) in each district; to collect, check, and analyze these reports; provide feedback to the districts and health facilities; and submit the reports to the regional level
- Supervise and monitor all TB activities, and advise district and health facility TB teams quarterly on the execution of NTP activities according to the national policy and guidelines
- Evaluate the NTP semiannually at the district level, in coordination with the main provincial level and technical TB teams of the designated districts and health facilities
- Organize a functional referral network for TB patients in the designated districts
- Coordinate with the PTC to guarantee appropriate distribution of TB medicines, lab reagents, and other supplies from NTP in the designated districts and health facilities
- Implement QA in the TB labs in the designated districts
- Implement biosafety SOPs formulated for use in TB laboratories and in the care of TB patients
- Implement an ACSM strategy for TB control in the designated districts.
- Organize health education for TB patients and other clients at the health facilities in the designated districts
- Establish coordination with other national public and private institutions related to TB control at the provincial level
- Implement an infection control strategy for TB control in the designated districts
- Improve community mobilization for TB control, including stronger participation by CHWs in the designated districts and health facilities
- Serve as a BPHS referral center for complicated TB cases
- Coordinate and facilitate MDR activities in designated health facilities

The provincial laboratory supervisor works under direct supervision of PTC. His or her main responsibilities at this level are—

- Implement EQA system in the province
- Facilitate standardized TB sputum smear microscopy trainings in the province
- Facilitate other trainings courses about TB bacteriological examinations
- Assist NTP lab in-charge to establish the laboratory network throughout all levels of laboratories in the country
- Perform higher level testing, if required
- Ensure quality control for sputum smear microscopy including reagent preparations.
- Ensure biosafety procedure and techniques for maintenance of lab equipments.
- Perform routine TB microscopy, except during the supervisory visits.
- Establish and implement effective TB laboratory supervisory system in the province and do joint supervision with NTP Central Team, RTC, and PTC
- Collect all provincial laboratory data and report it to NTP laboratory section.
- Share and coordinate all laboratory-related activities with RTC and PTC in the province
- Coordinate and facilitate MDR-related activities

The Role of Hospitals and Health Facilities in the Health System

Each level of hospitals play a role in providing a continuum of care from the health post to regional and specialty hospitals. This section defines the purpose and role of each level of hospital and summarizes its services.

Regional Hospitals

A regional hospital serves several provinces and will have from 200 to 400 beds. The purpose of regional hospital is primarily a referral hospital with a number of specialties for assessing, diagnosing, stabilizing and treating, or referring back to a lower-level hospital. The regional hospital provides professional inpatient and emergency services at a higher level than is available at district or provincial hospitals, yet the overall objective remains reduction of the high maternal mortality ratio, infant mortality rate, and under age five mortality rate, and of other diseases and conditions responsible for Afghanistan's high mortality and morbidity rates. In addition to diagnosis and treatment of TB cases, the hospitals also use culture and sensitivity testing, sputum examinations, and chest X-rays as laboratory diagnostic tools.

The regional hospital is an important part of the referral system, having many of the specialists that are not present at other levels of the hospital system.

Provincial Hospitals

A provincial hospital (PH) serves a province and has 100 to 200 beds. It is the referral hospital for the provincial health system. In essence, it is not very different from a district hospital as it offers the same clinical services and possibly a few additional specialties. In most cases, the PH is the last referral point for patients referred from the districts. In some instances, the PH can refer patients to higher levels of care—to the regional hospital or to a specialty hospital in Kabul.

The PH brings professional inpatient and emergency services closer to the population in rural areas. In their supplementary role to the basic and comprehensive health centers and the district hospital, PHs aim to reduce mortality rate of the diseases, including TB. Diagnosis and treatment of TB cases are one of the PH's health services components.

The role of PH is an important part of the referral system: it is the first point of entry for referrals from the district hospital or comprehensive health center, and for self-referrals for emergencies. The PH is supplementary to the BPHS and functions as a triage station where patients are assessed, diagnosed, stabilized, and treated, or referred to a regional hospital. The health system promotes a two-way referral system in which patients who no longer need PH care are referred back to the health centers. The PH outpatient department functions as the entry point to the health system when no basic health centers (BHCs) or comprehensive health centers (CHCs) are available.

District Level

The district level plays an important role in managing the BPHS, which provides a comprehensive list of services to be offered at the four standard levels of health facility within the health system: the health post, basic health center, comprehensive health center, and district hospital. DOTS is one of the key elements in the BPHS. At the district level, the district hospitals support the NTP in implementing TB control activities at all four health facility levels.

District Hospitals (First Referral Hospital)

The first referral or district hospital (DH), which serves up to four districts, will handle all services in the BPHS, including the most complicated cases. The hospital will be staffed with doctors such as female obstetricians/gynecologists; a surgeon, an anesthetist, and a pediatrician; midwives; lab and X-ray technicians; a pharmacist; a dentist and a dental technician.

A district hospital has from 30 to 75 beds and serves a population of 100,000 to 300,000, covering from one to four districts. The hospital brings professional inpatient and emergency services closer to the population in rural areas—in particular, it provides diagnosis and treatment for TB cases, especially childhood TB cases for which X-ray examinations and tuberculin skin tests are crucial for adequate diagnosis. The DH is mainly an emergency hospital where patients are triaged—assessed, diagnosed, stabilized, and either treated or referred to another level of health facility.

The role of DH is an important part of the referral system. It is the first point of entry for referrals from the comprehensive health center and for self-referrals in case of an emergency. DH is part of the BPHS. The DH outpatient department functions as the entry point to the health system where no BHCs or CHCs are available. The health system promotes a two-way referral system in which patients who no longer need DH care are referred back to the health centers.

Comprehensive Health Center

A CHC offers a wider range of services than a BHC provides and covers a catchment area of 30,000 to 60,000 people. The staff of a CHC is also larger than that of a BHC and is composed

of both male and female doctors and nurses as well as midwives and pharmacy and laboratory technicians. With a laboratory staff capable of doing sputum smears, the CHC is the first health facility level at which TB diagnosis can be made. At CHCs, doctors will be able to both diagnose and treat uncomplicated cases of tuberculosis; other staff will ensure adequate follow-up of DOTS patients through other levels of the health system.

Basic Health Center

A basic health center is a small facility offering the same services as a health post, but with more complex outpatient care. Staffed by a nurse, a midwife, or auxiliary midwife, and vaccinators, a BHC covers a population of 15,000 to 30,000 people. No diagnosis of TB will be made at this level, but the BHC staff will be responsible for follow-up of patients on DOTS.

Sub-Health Center

A sub-health center (SHC) is a small facility offering the same services as a health post, but with simple outpatient care. Staffed by a nurse, a midwife, or auxiliary midwife, and vaccinators, a SHC covers a population of 5,000–10,000 people. No TB diagnosis will be made at this level, but the SHC staff will be responsible for increasing awareness, referring suspected TB cases, and follow-up of patients on DOTS.

Health Post

At the community level, CHWs and traditional birth attendants will deliver basic health services out of their own homes, which will function as community health posts. A health post staffed by one female or male CHW and one birth attendant will cover a catchment area of 1,000 to 1,500 people, equivalent to 100 to 150 families. CHWs will be involved in community-level follow-up of TB patients on DOTS.

Community Involvement

Community involvement in a tuberculosis control program is essential. The community can play an important role in improving case-finding activities and can participate by encouraging suspected TB cases to go to the nearest health center to be examined and encouraging regularity of treatment.

TB services provided by different type of health facilities within the health system (BPHS and EPHS) is summarized in table 1.

Table 1. TB Services Provided at Different Health Facilities

Type of health service	Information, education, and communication on TB	Detection	Microscopic diagnosis	Treatment	Referral for complicated cases	Management of MDR cases	Management TB/HIV cases
TB hospital	X	X	X	X	X	X	X
National hospital	X	X	X	X	X	X	X
Regional hospital	X	X	X	X	X		
Provincial hospital	X	X	X	X	X		
District hospital	X	X	X	X	X		
CHC	X	X	X	X			
BHC	X	X	X	X			
Sub-health center	X	X		X			
Health post	X	X		X			

3. CASE DETECTION AND DIAGNOSIS OF TB CASES

What is Tuberculosis?

Tuberculosis is a chronic infectious disease caused, in the vast majority of cases, by *Mycobacterium tuberculosis*, a type of bacteria.

Route of Infection

Infection occurs almost exclusively through the respiratory system by inhalation of tubercle bacilli. TB spreads from the primary lung lesion to other parts of the body via the blood stream, lymphatic and bronchial systems, or by direct extension; in this way, it may affect any organ.

- TB is most commonly transmitted to other people by someone suffering from infectious pulmonary tuberculosis who coughs or sneezes and discharges infected droplet nuclei .Tiny droplets dry rapidly and attach themselves to fine dust particles. The very smallest particles may remain suspended in the air for several hours, and only those particles less than 10 micrometers in diameter can reach the alveoli. The larger particles will settle in the upper respiratory tract, where they are removed by the mucociliary stream and usually swallowed.
- Except in the event of close contact with smear-positive index cases, a comparatively small proportion of contacts develop the disease. When the tubercle bacillus is inhaled by an individual, that person may not become infected because either the number of viable organisms received is too few to cause infection or because the organisms do not reach the respiratory system with a potentially infective dose. Even if the bacillus succeeds in infecting a person, an infection results in active disease in only 10 percent of individuals who have acquired primary infection.

Classification according to Localization of Disease

Pulmonary TB: Tuberculosis affects the lungs in more than 80 percent of cases. Pulmonary tuberculosis in adults is often SS+ and therefore highly infectious.

Pulmonary TB patients positive on direct smear examination are 7 to 10 times more infectious than those who are negative on microscopic examination and positive on culture.

Extrapulmonary TB: This is defined as a tuberculous illness of organs other than the lungs. The most common sites of extrapulmonary TB are, in order of frequency, the lymph nodes, pleura, genitourinary tract, bones and joints, peritoneum, and the meninges, but all organs may be affected.

Classification according to Bacteriology

Pulmonary TB SS+: Defined as any TB suspect in whom pulmonary TB has been bacteriologically confirmed as follows:

- Two sputum smear examinations positive for acid-fast bacilli by microscopy.

Pulmonary TB SS-: Defined as any TB suspect in whom pulmonary TB has not been bacteriologically confirmed but for whom a physician has started TB treatment after applying diagnostic follow-up in which all the following conditions were found—

- At least two sputum smears negative for acid-fast bacilli
- Chest radiographic abnormalities consistent with active pulmonary TB
- Clinical suspect
- No response to a full course of broad-spectrum antibiotics

Case Detection

Rationale

To have an epidemiological impact on the control of the disease and the expansion of quality DOTS, the detection of TB cases must be integrated into normal health care activities and be carefully organized, supervised, monitored, and evaluated. Therefore, TB case detection will be done in two phases that are complementary and successive. Both phases are based on the use of bacteriology and sputum smear examination.

The first phase is carried out according to public health criteria and should be applied in all health facilities. It begins with an identification and sputum smear exam of TB suspect (TBS) cases. It is not necessary for physicians to perform this procedure. It can be done by nurses, lab technicians, and trained CHWs. This phase is an absolute priority in countries with moderate or high incidences of TB, such as Afghanistan.

The second phase is a diagnostic follow-up of individuals with negative sputum smear examination results but whose respiratory symptoms persist. This phase either eliminates or confirms TB or other respiratory pathology by means of a differential diagnostic process that is supported by culture, radiography, and other auxiliary examinations, in addition to observation and clinical follow-up.

To successfully diagnose TB cases, it is important that the health facilities project an image of quality care and a professional structure. Some features of good-quality care include offering frequent exams and providing appropriate information, good treatment, privacy, and so forth.

TB Auxiliary Examinations

X-ray diagnosis of TB is unreliable because other chest diseases can look like tuberculosis on an X-ray, and pulmonary tuberculosis may show many forms of radiographic abnormality. It must

be stressed that the determination of clinical activity of tuberculosis by X-ray is totally unreliable. Moreover, the cost of X-ray examination is relatively high in relation to case-finding results. Treatment will usually not be started in the absence of a positive laboratory report unless such treatment is prescribed by a medical officer on the basis of clinical examination, a chest X-ray film suggesting TB, and at least three negative smear results.

In spite of this, X-ray examination can undoubtedly be very helpful in clinical work when investigating TB among patients with symptoms suggestive of tuberculosis, such as children, young adult contacts of infectious cases, and patient suffering from miliary or extrapulmonary TB. Diagnosis of tuberculosis based on X-ray examination in SS- patients should always be made by a medical officer.

The Mantoux tuberculin skin test has a limited value in the diagnosis of TB, especially among adults in high prevalence countries. A “positive” tuberculin test is infrequently followed by a disease and a “negative” tuberculin test does not exclude active tuberculosis (albeit only in a minority of cases). Moreover, a “positive” tuberculin test may be due to infection with *Mycobacteria* other than *M. tuberculosis* or *M. bovis*. However, the tuberculin test is important in children under five years of age, where a positive test is more likely to reflect recent infection with tuberculosis and a much higher risk of developing active disease. Determination of erythrocyte sedimentation rate, total white cells count, differential leukocyte count, and hemoglobin levels does not have any role in TB diagnosis.

Definition of Case Detection

Case detection is defined as a public health activity that addresses early identification of TB patients, **with special emphasis on those with pulmonary tuberculosis SS+**. It will be carried out through the identification and sputum smear examination of individuals with respiratory symptoms (productive cough for more than two weeks) who have visited health facilities or have been contacted at their household for any reason.

Objectives of Case Detection

- To identify early SS+ patients
- To decrease TB transmission in the community
- To alleviate human suffering and prevent disability and death due to TB

When Should Pulmonary Tuberculosis Be Suspected?

The following are the most important symptoms suggestive of pulmonary tuberculosis in adults:

- A cough lasting two weeks or more

Other common, but less suggestive, symptoms are—

- Hemoptysis—coughing up blood or blood stained sputum
- Significant weight loss

- Fever/night sweats
- Fatigue
- Chest pain
- Loss of appetite
- Breathlessness

Operational Procedures to Organize Case Detection of Pulmonary TB

Case detection should be a permanent service offered to individuals who visit a health facility, such as a health post, sub center, mobile clinic, BHC, CHC, or hospital for any reason. Case detection should be carried out as a part of a regular physical examination, with priority given to those in the waiting room, those having external consultations at outpatient department, or those being hospitalized or receiving emergency services.

The trained TB staff (doctors, nurses, lab technicians, etc.) responsible for case detection activities should do the following—

- Sensitize the health personnel CHS and CHW to the importance of TB case detection
- Sensitize the community to the importance of TB case detection by providing health education through the CHW
- Implement a flowchart and job aids for case detection at the health facility
- Implement information, education, and communication activities at the health facility.
- Carry out the case-detection reporting and recording system: TB laboratory register, request for sputum examination, and register of TB suspects (annexes 6, 7, and 10)
- Identify and prioritize the areas with the greatest number attendees (usually the waiting room and the outpatient department)
- Establish an area for the collection of sputum samples, always keeping in mind the privacy of the patients
- Identify the TB suspect among those within the health facility
- Give the suspect a container for sputum
- Collect three sputum samples from each TBS over a period of 24 hours
- Always store the sputum samples away from sunlight and excessive heat

The area for collection of sputum samples should have the following—

- An open area outside the building but near the stations of the health personnel who take the sputum samples
- An area away from restrooms and corridors
- An area that is cleaned every day
- An area that is clearly identified as the location where sputum samples are collected so it will be clear to patients

Activities for Case Detection

The goal is to identify and examine 100 percent of the TBS and to obtain three sputum samples in less than 24 hours, using the method of “spot-morning-spot.” The following are the methods to achieve these goals:

- The TB trained health personnel should organize the workload and disseminate educational information in patient waiting areas. A nurse or a technician should routinely ask those present whether they have had a productive cough for more than two weeks.

Box 1. Important questions for suspected TB cases

The health personnel should ask the following questions:

- Do you have a cough today?

If the answer is affirmative, then ask:

- How long have you been coughing?

If the answer is “more than two weeks,” then ask:

- Do you have a productive cough? Do you have phlegm? Do you have mucus?

Three affirmative answers indicate that the person is suspected of having TB (TBS).

- Once identified, the TBS should be referred to the place selected for registration.
- Record the individual’s personal information (name, address, etc.) in the register of TB suspects (annex 10). Note: Use one line for every TBS, and fill out the request for sputum form (annex 7).
- After registration, TBS should be informed about TB disease and the importance of sputum collection.
- Label all three containers for sputum with the TBS’s first name, last name, TB suspect number, and the date, and give the patient the container for the sputum collection.
- Have someone from the staff accompany the patient to the collection area for sputum samples to collect the first sample of sputum.

Box 2. Obtaining a good sputum sample

The trained health person should explain to the patient with simple words why a good sputum sample needs to be obtained, and demonstrate how to give the sample according to the following instructions.

- Take in a lot of air (inhale) deeply.
 - Retain the air in the lungs for a few seconds and then exhale.
 - Repeat this procedure three times.
 - After the third time, try to cough to produce some phlegm.
 - Spit the phlegm into the container.
 - Cover the sputum container.
 - Give the sputum container to the health worker.
 - Repeat the same actions for the second and third samples.
-
- During this process, one of the health personnel (usually a nurse) should observe and help the TBS.
 - To obtain a better result, the sputum sample should be mucus-purulent and of sufficient quantity (3–5 mL). If the sample looks like saliva, however, it should not be used.
 - Immediately after receiving the first sample, the nurse should verify that the amount and quality of the sputum collected is acceptable and verify the name of the patient.
 - After receiving the first sample, the nurse should give the TBS a previously labeled container and explain that the TBS should obtain a second sample the following day at home immediately after waking up in the morning and without washing his or her mouth. This is to obtain a better sample that will be the product of accumulated bronchial secretions during the night that are voluntarily eliminated when the TBS wakes up.
 - The TBS should return to the health facility on the second day to give this second sample to the nurse.
 - When the TBS turns in the second sample, he or she should be provided with a third labeled sputum sample container to use for the third sputum sample obtained in the same way.
 - Immediately after receiving the second and third samples, the nurse should fill out the Request for Sputum form.
 - In cases where a TBS does not return with the second sample, a staff member should make a house call and try to obtain the samples.
 - The nurse/health worker who is designated to identify the TBS and collect the sputum samples should deliver the collected samples to the laboratory. The TBS should not deliver his/her own sputum sample to the laboratory.

- If the laboratory is not in the same health facility where the sample was obtained, the sputum samples should be stored in metal boxes in a cool place and protected from the light until they can be shipped to the laboratory. A qualified health worker or CHW should deliver the samples to the nearest local laboratory no later than three days after the sample was taken.
- If it is difficult to deliver the containers on time because the laboratory is far away, it is recommended that the fixed smear slide samples should be prepared and sent to the local laboratory instead of the containers.

Basic Standard Operational Procedures for Biosafety in the Collection and Shipment of the Sputum Smear

The health personnel should adopt the following biosafety measures—

- Once the samples are obtained, the sputum containers, which are sealed and labeled, should be stored in metal boxes in a cool place that is out of the sun until they can be shipped to the laboratory.
- The Request for Sputum form should be sent separately, such as in an envelope. It should not be in contact with the container or be used to wrap the specimen container.
- To verify the quality and quantity of the sample, health personnel should look at it through the clear sides of the container. Do not open the container.
- If it is necessary to handle the sample, always wear disposable gloves.
- Both health personnel and patients should wash their hands with running water and germicidal soap after the collection of each sample, every time they handle the containers holding the samples, and at the end of every working day.
- The metal box used to ship the containers holding the sputum should be disinfected for 30 minutes using a 5 percent phenol solution; after being disinfected, the box should be washed every single day.

Results of the Sputum Smear Microscopy

- After the lab technician stains and reads the slide, he or she should register the result on the Request for Sputum form received from the TB coordinator and on the Tuberculosis Laboratory Register (annex 6). Note: Use one line for every sputum sample.
- These results should then be given to the nurse or other assigned health worker no later than 24 hours after receiving the sputum sample in the laboratory.
- In the case of samples from other health facilities, the lab technician should coordinate with the designated health worker of the health facility to make sure that the results are shipped no later than 48 hours after receiving the samples.

- The Request for Sputum form with the results of the sputum smear microscopy recorded should be filed in the TBS register.

Operational Procedures to Organize the Diagnostic Follow-Up

A diagnostic follow-up should be carried out by qualified medical doctors for any TBS with one SS+ or at least two SS-, plus radiographic abnormalities and the highest level of clinical suspicion but whose respiratory symptoms persist. Physicians should conduct the follow-up using the flowchart for the management of TB suspects (figure 2). If the health facility does not have a qualified medical doctor, the patient should be referred to the nearest health facility with a TB-trained doctor.

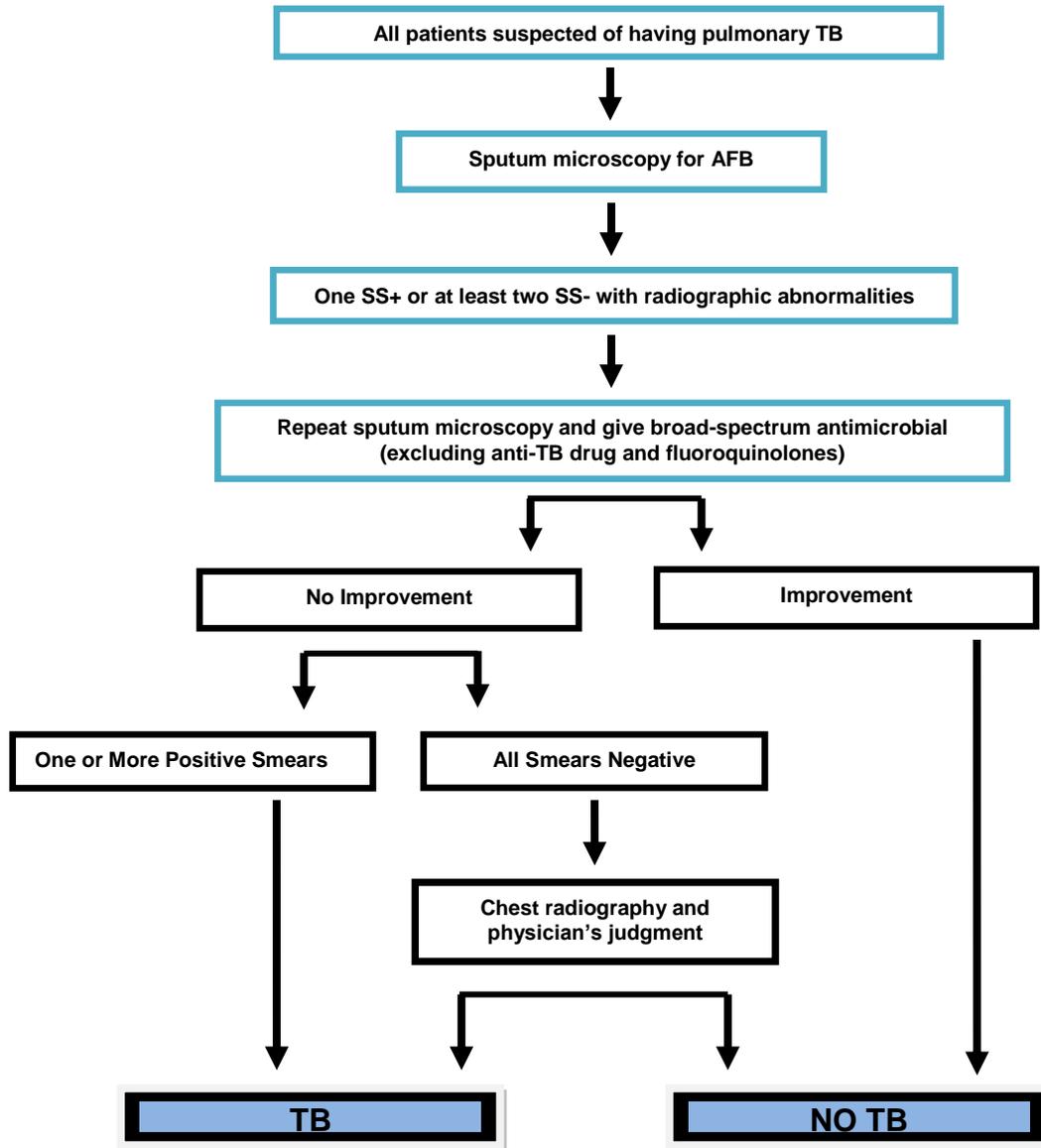


Figure 2. Management of TB Suspects

Case Detection for Extrapulmonary TB

Symptoms suggestive of extrapulmonary TB depend on the organ involved.

Tuberculosis lymphadenitis—

- Swelling of lymph nodes, usually in the neck (cervical and supraclavicle sites)
- Fistulae (drainage of fluid from swollen lymph nodes out through the skin)

Pleural TB—

- Fever
- Pleuritic chest pain
- Dyspnea

Renal TB

- Backache
- Frequent urination
- Dysuria
- Painless hematuria

Vertebral TB (Pott's Disease)

- Kyphosis (collapse of vertebral bodies forms an outward angle in the vertebral spine)
- Back pain, swelling adjacent to the spine, and/or tenderness over a vertebral body
- Paravertebral “cold” abscess
- Weakness or paralysis of the lower extremities

Gastrointestinal TB—the most common form is tuberculosis peritonitis.

- Abdominal pain
- Fever
- Night sweats
- Weight loss
- Abdominal swelling
- Diarrhea
- Palpable mass in the abdomen
- Anal fistulae
- Ascites

Tuberculous meningitis

- Headache
- Mental changes and confusion
- Fever
- Neck stiffness
- Somnolence or lethargy

Diagnosis of Extrapulmonary TB

Diagnosis of extrapulmonary TB should be established by a qualified physician using the following criteria—

- Clinical features
- Smear microscopy or culture (if available) for *M. tuberculosis* must be done in all specimens obtained from the site of infection, such as pleural fluid, ascitic fluid, urine; however, there is little likelihood that *M. tuberculosis* will be found in all specimens.
- Pathological examination can be made of all fluids and through biopsy (e.g., biopsy of lymph node). Definitive diagnosis can be made if a pathological study of affected tissue shows caseating granuloma
- Radiographic studies (e.g., chest radiography in pleural tuberculosis, intravenous pyelogram in renal tuberculosis)
- Other laboratory exams and biochemical studies such as cerebrospinal fluid, pleural fluid

Definition of TB Cases

A TB case is defined as any person in whom TB has been bacteriologically confirmed (SS+) or a person diagnosed by a physician with TB SS– or with extrapulmonary TB.

Objectives of the Definition

The definition of TB has the following objectives—

- To define a case of TB correctly.
- To improve the opportunity for diagnosis
- To guarantee the appropriate case report and record notification, and to carry out the cohort analysis.

TB cases are differentiated by the following—

- Localization of disease—pulmonary or extrapulmonary
- Bacteriology: SS+ or SS-
- History of previous TB treatment

Classification According to the History of Previous TB Treatment

This form of classification has the following important objectives—

- To prescribe the appropriate TB treatment
- To identify TB patients at risk for acquired drug resistance
- To monitor the TB situation

On diagnosis, every TB patient is to be registered in the TB register under one of the following six types—

1. New (smear-positive, smear-negative, and extrapulmonary)
2. Relapse
3. Failure
4. Treatment after interruption (default)
5. Transfer in (from another district)
6. Other (e.g., chronic cases)

The following operational definitions should be used.

New Case: A patient who has never had treatment for TB or who has taken anti-TB medicines for less than four weeks (one month).

Relapse: A patient previously treated for TB who has been declared cured or treatment completed and is diagnosed with bacteriologically positive TB (at least one smear or culture).

Treatment after Default (Recovered Abandonment): A patient who returns to treatment with positive bacteriology following interruption of treatment for one month (28 doses) or more. (*Note: A patient who is returning to the health facility with SS- should be considered as having completed the first TB treatment and should not register as “treatment after default.”*)

Treatment after Failure: A patient who is started on a category II treatment (retreatment) regime after previous treatment has failed (usually category I).

The operational definitions of *failure* are as follows—

- A patient under treatment who remained SS+ or became SS+ five months or more after commencing category I treatment.
- A patient who was initially SS- before starting treatment and became SS+ after the second month of treatment.

There is no failure without SS+.

Transfer In: A patient already registered in one health facility who transfers to another health facility to continue his/her treatment.

Chronic Case: A patient who remained SS+ or again became SS+ after completing a full category II treatment.

Others: Although TB SS- cases and extrapulmonary cases may also be treatment failures, relapses, or chronic cases, these are rare and must be supported by pathological or bacteriological evidence.

Classification According to Severity of TB Disease

To determine the severity of the illness and the appropriate treatment, the following features of the illness should be considered and used as criteria: bacillary load, extent of the disease, and the anatomical localization.

Severe forms of TB include tuberculous meningitis, miliary, disseminated, renal, vertebral (Pott's disease), pericardial, gastrointestinal, and bilateral or extensive pleural tuberculosis. To be classified as severe, the disease must present a significant acute threat to life or pose the risk of subsequent severe handicap, or both.

Less severe forms are classified as tuberculous lymphadenitis, unilateral pleural, bone (excluding Pott's disease), peripheral joint, and skin tuberculosis.

Complications of Tuberculosis

Pulmonary TB

- Hemoptysis (coughing up of blood): All patients with moderate or serious hemoptysis (defined as a patient who produces more than 50 cubic centimeters of blood in 24 hours must to be referred to the hospital), should be prescribed rest, sedatives, and antitussives; and be referred to the nearest hospital.
- Spontaneous pneumothorax: the collapse of the lung when air collects in the pleural cavity due to damage caused by lung tuberculosis. The patient must be referred to the nearest hospital for further management.
- Pleural effusion: If the amount of fluid is not massive (if pleural fluid is two-thirds or more of lung height), the clinical condition will improve with chemotherapy alone; however, if there is too much fluid in the thorax, aspiration may be necessary for relief of symptoms, necessitating referral of the patient to the nearest hospital for further management.
- Cardiopulmonary insufficiency: A heart and lung disease resulting in cor pulmonale (failure of the right side of the heart). A medical officer should be consulted concerning therapy.
- Bronchiectasis: Fibrosis of the lungs with multiple bronchial dilations as a consequence of extensive, long-standing TB. In most cases, only symptomatic therapy is possible; however, surgical intervention is possible in cases with confined lung alterations. Such patients must be referred to the nearest hospital for further management.

Extrapulmonary TB

In extrapulmonary TB, the nature of the complications depends on the organs involved, such as—

- Glandular TB—chronic fistulas
- TB meningitis—permanent neurological impairments
- Joint TB—loss of joint movement
- Spinal TB—deformity of the spine and paralysis of the lower limbs and the urethral and anal sphincters
- In peritoneal TB—ascites

TB in Children

Definition

Any child up to the age of 14 in whom TB has been bacteriologically confirmed (SS+) or who has been diagnosed by a physician with TB SS- or extrapulmonary TB.

Diagnostic Procedures

Sick children should have prompt diagnosis and treatment of TB, especially when child is younger than five years of age; the possibility of having TB should be always considered.

Signs and Symptoms

Less than half of the children with TB have symptoms. Malnourished children in particular may have no symptoms suggesting TB. The most common symptoms are—

- Lassitude and/or anorexia
- Fever (rarely over 38°C)
- A cough lasting more than two weeks
- Weight loss and failure to thrive

Clinical Examination

There are no specific features on clinical examination that can confirm that the presenting illness is due to pulmonary TB. Some signs, although uncommon, are highly suggestive of extrapulmonary TB (i.e., TB of organs other than the lungs). Other signs are common and should prompt an investigation into the possibility of childhood TB.

Physical Signs Highly Suggestive of Extrapulmonary TB

- Non-painful enlarged lymph nodes
- Non-painful enlarged joint
- Angle deforming of spine/gibbous
- Distended abdomen with ascites
- Central nervous symptoms such as stiff neck or loss of consciousness

Growth assessment and nutritional assessment should be performed by weight check. Less than 70 percent of standard weight-for-age should be considered as severe malnutrition.

Tuberculin Skin Test

A positive tuberculin skin test (TST) occurs when a person is infected with *M. tuberculosis*, but it does not necessarily indicate disease. The TST should be used after detection of positive signs and symptoms and close contact history for all children up to five years of age. TST should be used in conjunction with X-ray diagnosis. The Mantoux TST should be used.

The TST should be standardized and performed using either five tuberculin units (TU) of tuberculin purified protein derivative (PPD)-S or two TU of tuberculin PPD RT23. Health care workers must be trained in performing and reading a TST.

Sputum Smears Examination

Sputum should always be obtained for children 10 years of age or older who are pulmonary TB suspects. In children up to age five, collection of sputum is impossible. For children 6 to 10 years old, sputum is difficult to obtain and most children are SS-. However, in children who are able to produce a specimen, it is worth sending it for smear microscopy. As with adult TB suspects, three sputum specimens should be obtained: an on-the-spot specimen (at first evaluation), an early morning specimen, and a second on-the-spot specimen (at a follow-up visit).

X-ray Diagnosis

X-ray diagnosis of TB in children, especially for intra-thoracic TB, is generally difficult. The most common chest X-ray features of primary TB is hilar lymphadenopathy with or without parenchymal abnormalities. Also, there are other characteristics such as segmental collapse. Thus, accurate diagnosis should be made with comprehensive understanding about X-ray findings for TB in children.

Diagnostic Algorithm

Children with leading TB signs and symptoms (children who only have with contact history and are otherwise well) should be followed using the guidelines for contact management (figure 3):

- Children with signs and symptoms for extrapulmonary TB should be directly sent to DH, regardless of ages.
- For children aged 11 years and older, adult TB symptoms should be considered, such as general fatigue and night sweats

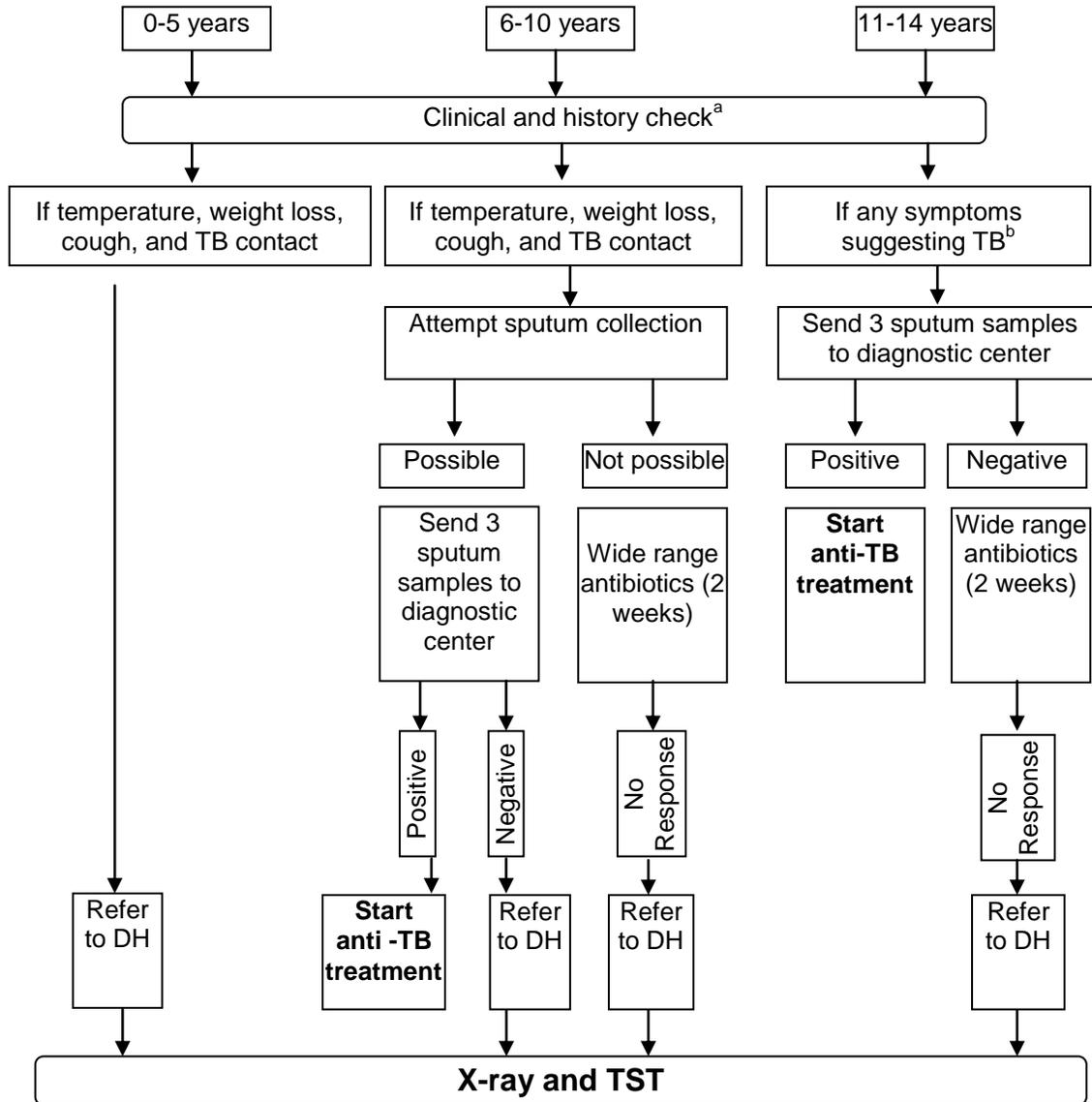


Figure 3. Diagnostic algorithm for children with leading signs of TB

Note:

- a. Cases with sign and symptoms for extra-pulmonary TB should be directly sent to DH, regardless of ages.
 b. For children older than 11, adult TB symptoms such as fatigue, sweating at night, etc., should also be considered.

Diagnostic Criteria at DH for Child TB Suspects without Microbiological Confirmation

- If there is typical X-ray findings for TB as same as adult cases, start TB treatment.
- If there is following X-ray findings which are typical to childhood TB, start TB treatment regardless of results of TST—
 - Mediastinal lymphadenopathy
 - Findings compatible with miliary TB
- If TST is positive (diameter of induration of ≥ 5 mm is considered positive) and there is at least one of the following findings, start TB treatment
- Close contact with person who is known pulmonary SS+ case
- Sign and symptoms which are highly compatible with TB (unexplained cough for more than two weeks, recent weight loss based on parent assessment)
- Suspected X-ray findings other than unexplained cough for more than two weeks

If TST is negative and there are more than two of the following findings, start TB treatment.

- Close contact with known of pulmonary SS+ case
- Symptoms which are highly compatible with TB (unexplained cough for more than two weeks, recent weight loss based on parent assessment)
- Suspected X-ray findings other unexplained cough for more than two weeks

Determination of the Initial Seriousness, Risk of Dying, and Complications

The main risk of dying occurs when the TB patient has not been diagnosed and treated. Around 50 percent of TB patients who are not treated die two to four years after contracting the disease and around 75 percent die after five years, making late TB diagnosis and treatment the main cause of death. However, when the TB patient has been diagnosed early and treated, the main cause of death is not attributed to the same illness, but to associated conditions.

Main risk factors of dying from TB are—

Related to the patient

- Severe malnutrition
- Serious comorbid disease and immunodeficiency (such as HIV/AIDS, late-stage diabetes mellitus, hepatic insufficiency, renal insufficiency)
- Serious associated infections
- Refusal to receive treatment
- Iterative abandonment to the treatment

Related to the health facilities

- Late TB diagnosis and TB treatment
- Inadequate TB treatment
- Inadequate determination of the initial seriousness, risk of dying of TB, and not enough attention paid to complications

- Not implementing DOTS strategy
- No supervised TB treatment
- Lack of infrastructure and equipment
- Discrimination against TB patient in the hospital's emergency services and intensive care departments

The following medical conditions, signs, and symptoms should also cause providers to refer patients to the hospital, given that they are risk factors which make a diagnosis of TB much more serious and require that this TB patient being hospitalized for treatment—

- Severe malnutrition
- Serious comorbid disease, and immunodeficiency (such as HIV/AIDS or late-stage diabetes)
- Respiratory insufficiency
- Serious or moderate hemoptysis
- Serious adverse effects to anti-TB medicines
- Strong suspicion of serious extrapulmonary TB (miliary TB, meningitis TB multisystemic TB)

4. THE LABORATORY IN TB CONTROL

Introduction

The TB laboratory network participates in the management of the NTP to assure the coverage and opportunity for quality TB diagnosis conducted with reliable bacteriological examinations, QA, and biosafety.

The MoPH Central Laboratory is responsible for organizing a Public Health Laboratory Network throughout the country. Consequently, the TB laboratory network is a functional component of the public health network.

Functional Organization of the TB Laboratory Network

Laboratory technicians in health services must be able to carry out sputum smear microscopy; therefore they must be trained, motivated, and properly supervised. The laboratory network is organized on three levels—peripheral, intermediate, and central, according to the level of technical and administrative complexity.

Peripheral Level: Local TB Laboratory

Those responsible at the provincial and district hospitals are—

- Chief/head or equivalent who works as provincial laboratory coordinator
- Technical team—at least one lab technician who has been trained in initial microscopy

Their main responsibilities at this level are—

- Technical
 - To prepare and stain smear by the Ziehl-Neelsen method
 - To perform microscopy and to implement a recording and reporting in accordance with NTP guidelines.
 - To implement internal quality control according to SOPs
 - To participate EQA for sputum smear microscopy according to SOPs
- Administrative
 - To receive specimens (sputum, fixed smear slides, etc.) and dispatch results to correct places
 - To clean and maintain laboratory equipment
 - To maintain laboratory register
 - To manage reagents and laboratory supplies
 - To coordinate with regional reference laboratory in the derivation of sputum samples that require further examination such as TB culture examination and DST for *M. Tuberculosis*

Intermediate Level: Regional Reference Laboratory

Required staff in the regional TB laboratory—

- Regional TB laboratory coordinator technical team—One reviewer for blinded rechecking, at least one lab technician who has been trained in initial microscopy, and two senior lab technicians for TB culture examination and DST

The staff responsibilities at intermediate level are all the functions of the peripheral level, plus the following additional tasks—

- Technical
 - Perform pretreatment of specimens according to type of them (depending on resources)
 - Perform TB culture examination including identification of MTB and to keep the isolated strains (depending on resources)
 - Provide for sputum smear microscopy and TB culture examinations according to SOPs
 - Prepare and distribute of reagents for microscopy in peripheral laboratories
- Managerial
 - Train peripheral lab staff for direct smear examination
 - Monitor and evaluate the activities in peripheral TB laboratories
 - Improve the quality and proficiency of microscopy at local laboratories
 - Coordinate with the NRL in the derivation of sputum samples requiring susceptibility tests for *M. tuberculosis*
 - Guarantee the operation of a recording and reporting system throughout the designated local TB lab network in compliance with NTP guidelines
 - Consolidate and analyze the information obtained

Central Level: NRL

In coordination with the MoPH Central Laboratory, NTP works to conduct and organize the NRL. The NRL is the most technically complex TB laboratory in terms of infrastructure, equipment, and qualified human resources.

Staff members required for the NRL include national TB laboratory coordinator and a technical team of six senior lab technicians including two staff for TB culture examination and DST.

The responsibilities at central level are all the functions of the intermediate level, plus—

- Technical
 - To perform DST of *M. tuberculosis*
- Administrative
 - To set up an annual plan of activities in TB laboratory in terms of staffing, budget, procurement, and QA.

- To collaborate with the NTP central level in defining the technical specifications of equipment, reagents, and other materials used in TB laboratory
- To develop, disseminate, and update guidelines, SOPs, manuals, training materials for TB laboratory services including direct smear examination, TB culture examination, and DST
- To develop and disseminate biosafety guideline used in TB laboratory
- **Managerial**
 - To train lab staff for bacteriological techniques required in TB laboratory services and to train the persons in charge of QA activities such as supervisors, cross-checkers and assessors
 - To implement QA for all TB laboratory services
 - To monitor and evaluate the activities of the intermediate and peripheral TB laboratories.
- **Research and surveillance**
- To involve research activities of NTP and/or other institute/organization conducted

Aims of the Bacteriological Examinations

The first aim of the bacteriological examinations is to diagnose smear-positive cases and the second is to monitor their treatment. It is essential that TB culture is used as a preliminary to DST. DST is used for epidemiological monitoring and evaluation of NTP performance, as well as for identifying patients carrying resistant strains. (IUATLD, 2005)

Sputum Smear Examination

The Ziehl-Neelsen method is recommended for sputum smear examinations to detect acid-fast bacilli. This method is also a simple, inexpensive, appropriate technology that is relatively easy to perform and to interpret. It yields timely results with affordable sensitivity to detect the cases which are sources of infection to the community and provides most of the essential laboratory-epidemiological indicators needed for the evaluation of the NTP.

(A practical description of all procedures related to sputum examination by direct microscopy is given in *A Technical Guide for Sputum Examination for Tuberculosis by Direct Microscopy* developed by NTP. See references.

QA in Sputum Smear Microscopy

QA is a system set up by the NTP to continuously improve and maintain the efficiency and reliability of TB laboratory services at all levels of the microscopy network. QA encompasses the

whole process of sputum collection, smear preparation, smear staining, microscopy, recording and reporting. A QA program has three main components.

1. **Quality control**—Quality control is a process of effective and systematic internal monitoring to detect the frequency of errors and compare it against established limits of acceptable test performance. Using this mechanism, tuberculosis laboratories can validate the competency of their diagnostic services.
2. **Proficiency testing**—A proficiency testing program allows participating laboratories to assess their capabilities by comparing their results with those obtained by other laboratories in the network for the same specimens.
3. **Quality improvement**—The quality improvement process involves analyzing the components of smear microscopy diagnostic services to find ways to permanently remove obstacles to success. Data collection, data analysis, identification of problems, and creative problem solving are key components of this process. Following continued monitoring and identification of defects, remedial action is taken to prevent recurrence of problems.

QA Activities

Quality assurance activities take many forms, some of which are common to all pathology laboratories, regardless of the tests performed. They include—

- Validation of samples submitted for testing
- Regular checking of reagents used in test procedures (including expiry dates)
- Inclusion of standards (or samples of known positivity) in routine test runs
- Periodic review and updating of procedure manuals
- Regular maintenance and calibration of equipment
- Data collection and analysis
- Regular meetings with the laboratory's clients

External Quality Assessment

EQA, a process to assess laboratory performance, includes on-site assessments (supervisory visits), panel testing, and slide rechecking. All laboratories which implement sputum smear examinations for TB diagnosis must receive this assessment regularly. For details to practice, refer to “EQA guideline.”

On-site Evaluation

A major advantage of an on-site evaluation is that it involves direct contact between peripheral technicians and supervisory staff from the intermediate or central level. Furthermore, assessing the laboratory under actual working conditions allows corrections to be made without delay.

Panel Testing

Panel testing refers to the process by which the peripheral laboratory (known as the “test laboratory”) performs acid-fast microscopy on a set of prepared slides received from the central laboratory (the “reference laboratory”). This exercise checks both the laboratory’s staining procedure and the ability of the technician to recognize and quantitate any acid-fast bacillus present.

Blinded Rechecking

Blinded rechecking refers to the process of collecting a random selection of slides from the routine workload at a peripheral laboratory (the “test” laboratory) and reexamining them at an intermediate or reference laboratory (the “controlling” laboratory). This is to allow a statistically valid assessment of the peripheral laboratory’s proficiency. Each round of slide checking must be followed by feedback in the form of a written report, showing details of incorrect scorings and offering suggestions for quality improvement (corrective actions).

Culture

Direct smear examination has the highest priority in the NTP. Examination by mycobacterial culture provides the only definitive diagnosis of tuberculosis. However, culture on classical media (egg-enriched media) does not yield results in a timely fashion, and physician often disregard the results when they arrive long after the patient has been started on treatment. Moreover, culture is much more costly than microscopy, requiring facilities for media preparation as well as skilled staff. Therefore, culture should be used selectively and in the following order of priority—

1. Surveillance of tuberculosis drug resistance as an integral part of the evaluation of control program performance
2. Diagnosis of cases with clinical and radiological signs of pulmonary tuberculosis where smears are repeatedly negative
3. Diagnosis of extrapulmonary and childhood tuberculosis
4. Follow-up of tuberculosis patients who fail a standardized course of treatment and who may be at risk of harboring drug-resistant organisms
5. Investigation of high-risk individuals who are symptomatic, e.g., laboratory workers, health care workers looking after MDR patients

Drug Susceptibility Test (DST)

A DST of *M. tuberculosis* isolates is of considerable value for epidemiological purposes. The prevalence of resistance in new tuberculosis patients (primary resistance) is a good measure of the efficiency of treatment services and guides the choice of regimens in treatment programs. Trends in resistance among previously-treated patients (acquired resistance) point to failures in control program management. Susceptibility tests may also be of value for individual patients if there is a failure during chemotherapy or a relapse after successful treatment. However, routine susceptibility testing of cultures from new patients imposes an unrealistic burden on laboratory services, and with the documented success of four-drug treatment regimens (even in the presence of single-drug resistance), its benefit cannot be justified.

Test of individual patients should be limited to—

- Patients who fail standardized treatment regimens
- High-risk individuals who are found to have positive cultures, e.g. ,laboratory workers, health care workers looking after MDR patients
- Close contacts of MDR patients who have signs and symptoms of TB

A practical description of all procedures related to TB culture examination and DST that is given in *Guideline of TB Culture and DST on TB Control in Afghanistan*. See references at end of document.

5. TB TREATMENT

Rationale

TB can be treated successfully in almost all cases. Effective drugs are available, and the correct regimens and durations of treatment are well established. The efficacy of the standard treatment of six months in new pulmonary TB SS+ should be 99 percent. Treatment regimens for extrapulmonary TB generally are the same as for pulmonary TB.

Principles of Chemotherapy

The basis of TB treatment is chemotherapy; it is also one of the most efficient means of preventing the spread, relapse, and resistance of TB.

The main objectives of TB treatment are to—

- Cure/complete the patient of TB (by rapidly eliminating most of the bacilli)
- Prevent death from active TB or its late effects
- Prevent relapse/failure of TB (by eliminating the dormant bacilli)
- Prevent the development of drug resistance (by using a combination of drugs)
- Decrease TB transmission to others

General Aspects of Chemotherapy

The objective of chemotherapy is to cure at least 85 percent of all new TB SS+ cases.

The most important requirements for an adequate chemotherapy are—

- An appropriate prescription (correct combination, correct dosages) of anti-TB drugs.
- Regularity of drug administration.
- Sufficient period of treatment.
- Adequate supervision to ensure the achievement of the above requirements
- Drugs should be available free of charge to every patient.

To avoid the emergence of resistance, treatment should take place in two phases: first, an intensive phase in which at least three drugs are used for new TB SS- patients and in which four drugs are used for new TB SS+ cases, and second, a continuation phase in which at least two effective drugs are used.

Regularity of Chemotherapy

With a few exceptions, the regimens will cure tuberculosis patients provided that—

- Medicines are administered for the required six-month period (6 months)
- Medicines are taken regularly
- The patient is not in critically ill at the start of treatment (as the patient may die before the medicines take effect)
- The bacilli are not resistant to both isoniazid and rifampicin

Direct Observation of Treatment (DOT)

DOT means that an observer watches the patient swallow his or her anti-TB medicines. This observation ensures that the patient takes the right anti-TB medicines in the intended doses at the scheduled times. DOT should be applied for all days of week except Fridays. The observer must be a health worker or a trained and supervised CHW. Direct observation must be maintained during both the initial and continuation phases of treatment.

DOT is the standard method of TB treatment and is recommended by WHO in both developing and industrialized countries.

It is well known that without adequate supervision of treatment, TB patients are more likely to either not take their medicines regularly or to completely stop taking them, thus increasing the risk of developing drug resistant bacilli. For this reason, DOT is essential to ensure the regularity of taking medicine, especially in the intensive phase of short-course chemotherapy.

Daily supervision of treatment is necessary to ensure that the patient actually takes all prescribed anti-TB drugs under the care of a trained health worker (i.e., nurses), for entire period of the treatment with rifampicin. In rare circumstances in which direct treatment supervision by a health worker is not feasible, a trained and motivated volunteer can provide treatment supervision. Respected individuals in the community, such as imams of mosques, teachers, or other community leaders, can supervise the treatment. Details are described in “SOPs of Community Participation on the National Tuberculosis Control Program in Afghanistan.”

Duration of Chemotherapy

Provided the patient has taken the regimen without interruption, prolonging chemotherapy for more than the recommended periods is of minor benefit. Chemotherapy should be stopped or temporarily interrupted only if severe drug intolerance or toxicity occurs (see 5.16 for side effects of anti-tuberculosis medicines).

Treatment Follow-up

To follow the progress of short-course chemotherapy in pulmonary smear-positive patients, sputum should be examined as below (table 2)—

- Sputum smears should be performed at the end of the second month, at the beginning of fifth month, and at the end of the sixth month
- If sputum smears are positive at the end of the second month, the initial phase of treatment with four drugs should be extended for a third month, and sputum smear examination should be performed again at the end of the third month. The continuation phase should then be started regardless of sputum smear examination results.
- If smears are still positive at the beginning of fifth month, the patient should be classified as a treatment failure and changed to a full course of the re-treatment regimen and re-register as a patient.

For TB SS- cases when the patient completes two months of the intensive initial phase of treatment, a sputum smear should be collected for smear examination. If the smear is negative, the continuation phase of treatment will begin. If the smear is positive, reconfirm the result with a second smear examination, and then begin the re-treatment regimen.

Table 2. Treatment Follow-up Regimens

Perform sputum smear examination	Treatment regimens	
	Category I = 6 months	Category II = 8 months
At the end of the initial phase	The end of second month	The end of the third month
During the continuation phase	The start of the fifth month	The end of the fifth month
At the end of treatment	The end of the sixth month	The end of the eighth month

Inpatient versus Outpatient Treatment

Hospitalization in itself has little or no effect on the outcome of treatment: a patient who takes the drugs correctly will do equally well whether treated in or out of hospital. If daily supervision by a health worker is not possible, inpatient treatment is indicated for re-treatment cases (treatment category II) for at least the first two months of treatment, if possible. Inpatient treatment of only a few weeks is indicated for the severely ill, for those with complications of tuberculosis (e.g., hemoptysis, spontaneous pneumothorax), and for those with serious accompanying diseases that require hospitalization.

Drug Resistance

Tubercle bacilli have three types of resistance to anti-TB medicines: acquired (or secondary) resistance, initial (or primary) resistance, and natural resistance.

Acquired or Secondary Resistance

This is caused by incorrect chemotherapy, which may include incorrect dosage and duration, inappropriate combination, irregular intake, and low quality drugs. For instance, such resistance may result because of monotherapy with a potent drug (e.g., isoniazid, streptomycin, or rifampicin) in patients with smear-positive tuberculosis, or the administration of potent drugs (e.g., isoniazid, rifampicin, and streptomycin) to a patient harboring tubercle bacilli resistant to all but one of the administered drugs.

Initial or Primary Resistance

If a patient with acquired resistance to one or more anti-tuberculosis drug infects a healthy individual, that individual can also develop drug-resistant TB. Even if the new patient has never taken anti-TB drugs in the past, the tubercle bacilli in the newly infected person are resistant to the same drugs as those in the person who was the source of the infection.

A Naturally Occurring Drug-Resistant Strain

This is a wild strain resistant to a particular drug without ever having been in contact with it. The probability that drug-resistant bacilli (mutants) are present depends mainly on the total number of tubercle bacilli. In smear-positive cases of pulmonary tuberculosis, resistant mutants are always present, since there are several millions of tubercle bacilli inside an average cavity. Mutant bacilli resistant to two drugs are rare.

Dealing with Resistance

The most common cases of resistance are due to inadequate chemotherapy, and are therefore the acquired or secondary type. Thus it is essential that new smear-positive patients start chemotherapy with four drugs and continue with two drugs after the initial two-month phase of treatment. Before treatment is started, all patients must be questioned closely and carefully to determine whether or not they have previously taken anti-tuberculosis drugs. A re-treatment regimen must be administered to any sputum-positive patients who have previously taken anti-TB drugs for one month or more.

Initiating TB Treatment

Do not start tuberculosis treatment until a firm diagnosis has been made. Priority is to be given to treatment of TB SS + cases.

Anti-TB Drugs and Treatment Categories

The most important drugs used to treat TB are isoniazid (H), rifampicin (R), pyrazinamide (Z), streptomycin (S), and ethambutol (E). Some drugs are available in FDCs, such as HR (isoniazid

and rifampicin); RHZE rifampicin, isoniazid, pyrazinamide and ethambutol); and RHE (rifampicin, isoniazid, and ethambutol).

Provided that drugs have been stored under proper conditions (i.e., protected from direct sunlight, high temperature and high humidity), they may safely be used for the following lengths of time after their manufacturing date—

- Isoniazid—5 years
- Rifampicin—3 years
- Pyrazinamide—3 years
- Streptomycin—3 years
- Ethambutol—5 years

The use of R or S for diseases other than microbacterial diseases should be avoided or limited to very carefully considered indications.

Treatment regimen categories that NTP currently uses are categories I, II, and III. For more effective treatment and for shifting from three to two treatment categories, NTP should follow only category I and II treatment plans. The transition period from three categories to two categories will be applied according to the operational plan in 2010.

FDCs of Anti-TB Medicines and Patients' Kits

In line with WHO's and Standard 8 of the International Standards for TB Care, the NTP in Afghanistan should use FDCs and TB patients' kits (TB PK) for all treatment categories I and II. FDCs are thought to prevent acquisition of drug resistance due to monotherapy since patients cannot be selective in their choice of drugs. Prescription errors are likely to be less frequent because dosage recommendations are more straightforward, and adjustment of dosage according to patient weight is easier. The number of tablets to ingest is smaller which may encourage patient adherence. The following are additional advantages to using FDCs and TB PK—

- FDCs simplify dose calculations and procurement.
- A patient kit contains a full course of treatment for TB (all medicines needed through treatment completion, be it six months for category I treatment or eight months for category II).

A TB PK contains the full course of treatment for a single patient. There are two variations depending on where packs are constituted—packs constituted in health facilities and pre-packed TB PK (by manufacturers or suppliers).

The same basic principles are behind the constitution of a TB PK system: a complete course of treatment should be assured for each patient, and furthermore, treatment should not be started if there is no assurance that it will be completed.

From the provider point of view, the TB PK allows health workers to use a container that has all required medicines in proper strengths and quantities. This limits confusion and waste, making it easier to monitor the regularity of treatment and preventing supply breakdowns for individual patients.

The TB PK also increases patient adherence. Since medicine stock-outs cause patients to lose confidence in the health system, the TB PK assures the TB patient that his or her medicines will be available from start to finish of the treatment. In addition, the patient may feel ownership of the patient kit and is more likely to complete the full course of treatment since he or she can see the quantity of medicines needed to be taken to achieve cure during visits to the health center or dispensary. However, the TB PK does not eliminate the need for DOT.

Constitution of TB PK in Health Facilities

All medicines for a six-month (category I) or eight-month (category II) treatment should be included in one plastic container

All packs should be labeled with the name of the patient, treatment category, and the date the treatment was initiated. The security stock is usually kept as loose medicines.

The constitution of TB patient packs in health facilities has some significant features—

- Assurance that the treatment is being followed since the health worker does not have to select which drug to use.
- Less preparation time by the health worker at the time of dose administration to the patient
- Improves patients' adherence.
- Easier to monitor the treatment when comparing the treatment card with the number of doses remaining in the container.

Treatment Category I: 2RHZE/4RH

Treatment category I applies to all new TB cases including children (pulmonary, extrapulmonary, SS +, and SS-). DOT is mandatory for both phases.

Priority: **highest** for patients with smear-positive pulmonary tuberculosis; treatment is also vital for patients with the other forms of disease because of their disease severity and high mortality risks.

Treatment Phases

Initial/intensive phase: 2RHZE, rifampicin, isoniazid, pyrazinamide, and ethambutol administered under direct observation daily for two months (56 doses). (table 3)

When the patient has completed the initial two-month intensive phase of treatment and the sputum smear is negative, the continuation phase of treatment will be started. If a sputum smear

is positive at the end of the second month, the initial intensive phase drugs will be continued daily for another one month (28 doses), the continuation phase of four months should then be started regardless of sputum smear examination results.

During the whole duration of treatment, the drugs should be given under direct observation (DOT). Preferably, the patient should receive treatment daily at the health facility nearest to his/her home. Under no circumstances should regimens containing rifampicin be self-administered at home.

Continuation phase: 4RH, i.e., rifampicin and isoniazid administered daily for four months (112 doses). The drug should be given under direct observation for the whole duration of treatment.

Anti-TB Medicines Doses

Standard medicine doses are based on body weight. The full dose of each drug should be taken at one time on the assigned day from Saturday to Thursday, except Friday and holidays (table 3).

Table 3. Category I Treatment

Patient Body weight (Kg)	Initial Phase	Continuation Phase
	2 months—56 doses (Saturday to Thursday)*	4 months—112 doses (Saturday to Thursday)*
	Daily	Daily
	RHZE 150 mg+ 75 mg+ 400 mg+ 275 mg	RH 150 mg + 75 mg
30-39	2	2
40- 54	3	3
55- 70	4	4
71 and more	5	5

* Doses are not taken on Fridays and holidays

Treatment Category II: 2SRHZE/1RHZE/5RHE

DOT is mandatory for both phases of treatments. The duration of treatment is 8 months (224 doses). This applied to all re-treatment cases (relapses, treatment after interruption bacteriological positive, failure of category I treatment, and others).

Priority: **Highest** because these patients are suspected of having isoniazid-resistant or MDR-TB. A sample of pretreatment sputum should be obtained to be cultured, tested for susceptibility to isoniazid, rifampicin, ethambutol, and streptomycin; and sent to the central TB reference laboratory, if possible.

These patients are at increased risk of developing multidrug-resistant TB (MDR-TB) and should receive fully supervised treatment throughout the entire course of treatment, with hospitalization, where facilities are available, for at least the first three months. Those whose sputum remains positive at three months should continue to receive supervised therapy for an additional one month. (For details of treatment after interruption, see table 8)

Treatment Phases

Initial/intensive phase: 2SRHZE/1RHZE—rifampicin, isoniazid, pyrazinamide, and ethambutol, supplemented with streptomycin for the first two months (56 doses), and followed thereafter by the same drugs—without streptomycin—administered daily under supervision (DOT) for another month (28 doses) (table 3).

If the sputum smear is negative at the end of the third month, the continuation phase of treatment will be started. If the sputum smear is positive, the four oral drugs will be continued daily for another one month. If the patient still shows smear positive at the end of the fourth month, all drugs should be stopped for 2-3 days, and a sputum specimen should be sent to the reference laboratory for culture and susceptibility testing. The continuation phase of treatment should then begin.

Continuation phase: 5RHE: five months of rifampicin, isoniazid, and ethambutol administered daily under direct observation. Patients remaining smear positive after completing the treatment continuation phase of are no longer eligible for the re-treatment regimen. Some oral drugs are available in FDCs, which reduces the number of pills that a patient must take and ensure that full doses of all drugs are taken (tables 3 and 4).

Table 4. Category II

Patient body weight (Kg)	Initial Phase (3 months)		Continuation Phase (5 months)	
	3 months— 84 doses	2 months— 56 doses	5 months—140 doses	
	Daily (Saturday to Thursday)*	Daily (Saturday to Thursday)*	Daily (Saturday to Thursday)*	
	RHZE 150 mg+ 75 mg+ 400 mg+ 275 mg+	S injection (1,000 mg)	RH (FDC) (150 mg + 75 mg)	E (400 mg)
30-39	2	500	2	1 + 1/2
40-54	3	750	3	2
55-70	4	1 g *	4	3
71 and more	5	1 g *	5	3

* 750 mg for patient aged 60 and over

TB Treatment in Children

Children usually have low bacillary load and develop extrapulmonary TB more often than adults do. Severe and disseminated TB (e.g., TB meningitis and miliary TB) occur especially in young children (less than 3 years old). Treatment outcomes in children are generally good and children tolerate therapy better than adults.

Treatment Regimens

Anti-TB treatment is divided into two phases: an intensive phase and a continuation phase. The purpose of the intensive phase is to rapidly eliminate the majority of TB bacilli and to prevent the emergence of drug resistance. This phase uses a greater number of drugs than the continuation phase. The purpose of the continuation phase is to eradicate the dormant organisms. In either phase, treatment can be given daily.

Table 5 shows the first-line (or essential) anti-TB drugs and their recommended doses.

Table 5. Doses of First-Line Anti-TB Drugs for Children

Drug	Recommended dose	
	Daily	
	Dose and range (mg/kg body weight)	Maximum (mg)
Isoniazid	5 (4–6)	300
Rifampicin	10 (8–12)	600
Pyrazinamide	25 (20–30)	–
Ethambutol ^a	20 (15–25)	–
Streptomycin	15 (12–18)	–

^aLiterature review indicates that ethambutol is safe in children at a dose of 20 mg/kg (range 15–25 mg/kg) daily.

The treatment regimens for each TB diagnostic category are seen in table 6.

Category I—All forms of TB except previously treated patients included in category II and MDR/XDR cases.

Category II—Previously treated TB cases, relapsed patients, treatment after failure, and treatment after interruption.

Cases which do not fit the above definitions, including—

- A patient has previously treated and completed his/her treatment as TB cases outside of NTP.
- Smear-negative pulmonary/extrapulmonary cases may also be treatment failures, relapses, or defaulter. Such cases rarely occur but need to be re-treated.

Table 6. Treatment Regimens for Children in each TB Diagnostic Category

TB Diagnostic Category	TB cases	Regimen	
		Intensive phase	Continuation phase
I	All forms of tuberculosis except previously treated TB patients included in category II and MDR/XDR cases	2(RHZ)E	4(RH)
	TB meningitis	2(RHZ)S	4(RH)
II	Previously treated TB cases (e.g. relapse, treatment after failure, treatment after interruption)	2(RHZ)ES/1(RHZ)E	5(RH)E

Note: Direct observation of drug administration is required during the intensive phase and continuation phase

Corticosteroids

Corticosteroids may be used for the management of some complicated forms of tuberculosis, such as—

- TB meningitis
- Complications of airway obstruction by TB lymph glands
- Pericardial TB

In cases of advanced TB meningitis, corticosteroids have been shown to improve survival and decrease morbidity, and thus are recommended in all cases of TB meningitis. The drug most frequently used is prednisone in a dosage of 1mg/kg daily, increased up to 2 mg/kg daily in the case of the most seriously ill children, with a maximum dosage of 60 mg/day for 4 weeks. The dose should then be gradually reduced (tapered off) over 1–2 weeks before stopping.

Administering Treatment and Ensuring Adherence

Patient's compliance is the cornerstone of successful therapy and cure in children and adults. Patients and their relatives should be reminded about the importance of taking drugs consistently and regularly, including DOT. Children, their parents, family members, or other caregivers should be educated about TB and the importance of completing treatment. The support of the child's parents and immediate family is vital to ensure a satisfactory treatment outcome. Health workers should observe the treatment, but if this arrangement is not convenient for the family, a trained community member (preferably someone other than the child's parent or immediate family), e.g., Imam, school teacher, or community leader can undertake this responsibility. FDCs of drugs should be used whenever possible to improve simplicity and adherence. Patient treatment cards should be used for documenting treatment adherence.

Children with severe forms of TB should be hospitalized for intensive phase of treatment. Conditions that merit hospitalization include—

- TB meningitis and miliary TB, preferably for at least the first two months
- Respiratory distress
- Spinal TB
- Severe malnutrition
- Severe adverse events, such as clinical signs of hepatotoxicity (e.g., jaundice)
- If it is not possible to ensure good adherence and treatment outcome on an outpatient basis, some children may require hospitalization for social or logistic reasons

Treatment should be administrated considering the body wieght of the child, see table 7 below.

Table 7. Anti-TB Drug Dosage Based on Body Weight

Body weight (kg)	Initial Phase			Continuation Phase	
	RHZ (60/30/150 mg)	E (100 mg)	S* (1,000 mg)	RH (60/30 mg)	E (100 mg)
<4	½	½	50 mg (0.25 mL)	½	1/2
4-6	1	1	100 mg (0.5 mL)	1	1
7-9	1+1/2	2	150 mg (0.75 mL)	1+1/2	2
10-12	2	2+1/2	200 mg (1 mL)	2	2+1/2
13-18	3	3+1/2	275 mg (1.4mL)	3	3+1/2
19-24	4	5	350 mg (1.75 mL)	4	5
25-29	5	6	450 mg (2.3 mL)	5	6

*One vial of streptomycin should be dissolved by 5 mL water for injection (and should not be used one hour after it has dissolved)

Follow-up

Each child should be assessed by the responsible doctor at least at the following intervals—

- Two weeks after treatment initiation
- Four weeks after treatment initiation
- At the end of the intensive phase
- Every months until treatment completion

The assessment should include—

- Symptom assessment
- Assessment of treatment adherence
- Enquiry about any adverse events
- Weight measurement
- Medication dosages adjustment to account for any weight gain
- Adherence assessment by reviewing the treatment card.

A follow-up sputum sample for smear microscopy at the end of two and five months and end of the treatment should be obtained for any child who was smear-positive at diagnosis. Follow-up chest X-rays are not routinely required in children, particularly as many children will have a slow radiological response to treatment. A child who is not responding to anti-TB treatment should be referred for further assessment and management to the nearest hospital. These children may have drug-resistant TB, an unusual complication of pulmonary TB, other causes of lung disease or problems with treatment adherence.

Side Effects of Anti-TB Drugs

Children may experience the same side-effects of anti-TB drugs that adults experience. These side effects are two types—

- Major side-effects are those giving rise to serious health hazards and requiring discontinuation of the drug.
- Minor side-effects cause relatively little discomfort; they often respond to symptomatic or simple treatment but occasionally persist for the duration of drug treatment.

Children with TB Who Are Co-Infected with HIV

In HIV-infected children with confirmed or presumptive TB disease, a six-month regime of anti-TB treatment should be started

Treatment of MDR-TB

Beginning MDR-TB management or DOTS-plus is a priority area for NTP in the coming years. This activity is going to start in 2010. Prior to this, NTP has planned to conduct a national drug resistance survey to understand the MDR-TB situation. The treatment regimen will be determined based on the policy and strategy, which will be developed specifically for MDR-TB in Afghanistan.

Availability of Anti-TB Drugs in BPHS Outlets

Proper distribution of anti-TB drugs is an essential element of drug management system. To avoid under-utilization and ensure availability of anti-TB drugs in all BPHS outlets, drugs should be distributed according to table 8.

Table 8. Treatment after Interruption and Drug Distribution

	New List		Health Post ^b	SHC ^b	BHC ^c	CHC	DH
	Anti-TB Drugs	Strength					
Adult Regimen	RHZE	150/75/400/275 mg				X	X
	RHE	150/75/275 mg				X	X
	EH	400/150 mg				X	X
	RH	150/75 mg				X	X
	Z	400 mg				X	X
	S	1000 mg				X	X
	H	100 mg				X	X
Child Regimen	RHZ	60/30/150 mg				X	X
	RH	60/30 mg				X	X

^a According to last revision of BPHS guideline

^b Anti-TB drugs should be available in HP,SHC, and BHC based on TB patients under DOT

Treatment Regimens in Special Situations

TB Treatment during Pregnancy and Breast-feeding

Active tuberculosis presents a special problem in pregnant women or in mothers who have small children. Women with active tuberculosis who become pregnant should start treatment or continue their treatment. Streptomycin administration must be avoided in pregnant women for the fear of ototoxicity for the fetus.

Situations in which tuberculosis is diagnosed in the mother only after delivery are most likely to occur in populations where environmental conditions are generally very poor and health risks to the infant are greatest. Under these conditions, breast feeding is even more important.

Treatment for Women Taking Oral Contraceptives

Rifampicin interacts with the oral contraceptive pill, increasing the risk of decreased protection against pregnancy. A woman who usually takes the oral contraceptive pill may choose between the following two options while being treated with rifampicin: after consultation with a physician, taking an oral contraceptive pill containing a higher dose of estrogens (50 mcg) or, alternatively, using another form of contraception.

Treatment for Patients with Liver Disorders

Provided no clinical evidence exists of chronic liver disease, hepatitis virus carriage, a past history of acute hepatitis, or excessive alcohol consumption, patients with the following conditions can receive the usual short-course chemotherapy regimens:

For patients with established chronic liver disease, isoniazid plus rifampicin plus one or two non-hepatotoxic drugs, such as streptomycin and ethambutol, can be used for a total treatment duration of eight months. An alternative regimen is streptomycin plus isoniazid plus ethambutol in the initial treatment phase followed by isoniazid and ethambutol in the continuation phase for a total treatment duration of 12 months. Patients with liver disease should not receive pyrazinamide; therefore, recommended regimens are as follows: 2SHRE/6HR or 2SHE/10HE.

Patients rarely have TB and acute hepatitis unrelated to TB or anti-TB treatment at the same time. Determining the course to follow requires clinical judgment; in some cases, TB treatment can be deferred until the acute hepatitis has been resolved. In cases in which TB must be treated during acute hepatitis, the safest treatment option is a combination of streptomycin and ethambutol for up to a maximum duration of three months, until the hepatitis has been resolved. The patient can then receive a continuation treatment phase of six months of isoniazid and rifampicin (6H: 3SE/6HR).

Patients with renal failure can take normal dosages of isoniazid, rifampicin, and pyrazinamide as these drugs are either eliminated almost entirely by biliary excretion or metabolized into nontoxic compounds. Patients in severe renal failure should receive pyridoxine with isoniazid to prevent peripheral neuropathy.

Box 3. Normal daily recommended intake for pyridoxine is generally defined as below (MayoClinic.Com).

Age (year)	Recommended dose, mg
0-3	0.3-1
4-6	1.1
7-10	1.4
Adolescent (male)	1.7-2
Adolescent (female)	1.4-1.6
Pregnant female	2.2
Breast-feeding female	2.1

Streptomycin and ethambutol are excreted by the kidney. Where facilities are available to monitor renal function closely, it may be sensible to give streptomycin and ethambutol in reduced doses. Thiacetazone is partially excreted in the urine, but since the difference between a therapeutic and a toxic dose is marginal, patients in renal failure should not receive this drug. So 2HRZ/6HR is the safest regimen for patients with renal failure.

The primary responsibility of the health provider is to recognize the possibility of serious reaction, diagnose the most likely cause, and follow-up closely with the patient.

Side Effects of Anti-TB Drugs

There are two types of side effects caused by anti-TB drugs—

1. Major side effects are those giving rise to serious health hazards and requiring discontinuation of the drug.
2. Minor side effects cause relatively little discomfort; they often respond to symptomatic or simple treatment but occasionally persist for the duration of drug treatment.

Explanations on adverse effects of each individual medicine are given in table 9.

Table 9. Minor to Moderate Adverse Effects of TB Medicines

Medicine	Adverse Reaction	Management
Rifampicin	Stomach pains, nausea	Symptomatic treatment, try reducing dose for 7 days and then increase to normal dose
	Flu-like symptoms	Change to daily dose
Isoniazid	Euphoria, insomnia Gastritis Neuropathy	Decrease dose and add pyridoxine 100 mg/day Try antihistamine drugs such as ranitidine. Give the minimum dose and add pyridoxine 50–100 mg/day
	Nausea, anorexia	Decrease dose
Pyrazinamide	Joint aches	Temporarily stop medicine and give trial of aspirin
Ethambutol	Nausea	Temporarily stop medicine and treat symptomatically
Streptomycin	Vertigo	Decrease or stop dose
	Hearing loss	Decrease or stop dose, audiometric evaluation
Serious Adverse Effects		
Medicine	Adverse Reaction	Management
Any TB medicine	Hypersensitivity, Stevens-Johnson Syndrome	1. Stop all medicines 2. Refer to DH/ PH
Ethambutol	Optical neuritis	1. Stop all medicines 2. Refer to DH/ PH
Rifampicin	Purpura, hemolysis, and renal Insufficiency	1. Stop all medicines 2. Refer to DH/ PH
Isoniazid Rifampicin Pyrazinamide Ethambutol	Jaundice	1. Stop all medicines 2. Refer to DH/PH
Isoniazid	Epilepsy and psychiatric symptoms	1. Stop all medicines 2. Refer to DH/PH

Re-introduction of Anti-TB drugs Following a Drug Reaction

Drug challenges can identify the drug responsible for a reaction. Drug challenges begin by using the anti-TB drugs least likely to be responsible for the reaction (for example, isoniazid). A small challenge dose is used so that any reaction that occurs will be weaker than one that would result from a full dose. The dose is then gradually increased over a period of three days. The procedure is repeated, adding in one drug at a time. A reaction that occurs after the addition of a particular drug identifies that drug as responsible for the reaction. No evidence exists that the challenge process can cause drug resistance (table 10).

Table 10. Re-Introducing Anti-TB Drugs Following Drug Reaction

Drugs	Likelihood of causing a reaction	Challenge doses		
		Day 1	Day 2	Day 3
Isoniazid	Least likely  Most likely	50 mg	300 mg	300 mg
Rifampicin		75 mg	300 mg	Full dose
Pyrazinamide		250 mg	800 mg	Full dose
Ethambutol		100 mg	800 mg	Full dose
Streptomycin		125 mg	400 mg	Full dose

Procedures for Retrieving Patients

Any patient on ambulatory supervised treatment who misses treatment on more than two consecutive occasions during the initial intensive phase or the continuation phase of treatment must be traced by health workers from the treating/supervising health facility until he or she is located and brought back into treatment. Every effort should be made to educate the patients on the importance of adhering to their treatment schedule.

Tables 11 and 12 describe the procedures to be followed in treating patients whose treatment has been interrupted.

Table 11. Treatment for New TB SS + cases (Category 1) Who Interrupt Treatment

Length of Treatment	Length of interruption	Do a smear?	Result of smear	Register again?	Treatment Modification
Less than one month (28 doses)	Less than 2 weeks	No		No, use the same treatment card	Continue regimen I ^a
			Positive	No, open a new treatment card	Start again ^b on regimen I
	2 weeks or more	Yes	Negative	No, use the same treatment card.	Continue regimen I
1 to 2 months (28–56 doses)	Less than 2 weeks	No		No, use the same treatment card	Continue regimen I
			Positive	No, use the same treatment card	Complete the remaining intensive phase, add one extra month of intensive phase.
	2 to 8 weeks	Yes	Negative	No, use the same treatment card	Continue regimen I

^a A patient must complete all 56 doses of the initial intensive phase. For example, a patient who took one month of treatment (28 doses) before the treatment was interrupted and now will continue treatment, will first have to finish one more month (28 doses) of intensive phase treatment before starting the continuation phase of treatment.

^b A patient who must “start again” will restart treatment from the beginning.

Table 12. Treatment for Relapse and Failure Cases (Category II) Who Interrupted treatment

Length of treatment	Length of interruption	Do a smear?	Result of smear	Register again?	Treatment Modification
Less than 1 month (28 doses)	Less than 2 weeks	No		No, use the same treatment card.	Continue regimen II
	2 weeks or more	Yes	Positive	No, use the same treatment card.	Start again on regimen II
			Negative	No, use the same treatment card.	Continue regimen II
1 to 2 months (28–56 doses)	Less than 2 weeks	No		No, use the same treatment card.	Continue regimen II
	2 to 8 weeks	Yes	Positive	No, use the same treatment card.	Complete the remaining intensive phase, add one extra month of intensive phase
			Negative	No, use the same treatment card.	Continue regimen II
	More than 8 weeks	Yes	Positive	Close the previous registration as “defaulter,” then re-register as “treatment after defaulting (TAD),” and open a new treatment card.	Start again on regimen II
			Negative	Close the previous registration as “defaulter” then re-register as “other,” but use the same treatment card.	Continue regimen II
More than 2 months (> 56 doses)	Less than 2 weeks	No		No, use the same treatment card.	Continue regimen II
	2 to 8 weeks	Yes	Positive	Close the previous registration as “defaulter,” then re-register as “TAD” and open a new treatment card.	Start again on regimen II
			Negative	No, use the same treatment card.	Continue regimen II
	More than 8 weeks	Yes	Positive	Close the previous registration as “defaulter,” then re-register as “TAD,” open a new treatment card.	Start again on regimen II
			Negative	Close the previous registration as “defaulter” then re-register as “other,” open a new treatment card.	Start again on regimen II

*A patient must complete all 84 doses of the initial intensive phase.

Role of the Health Cadre in TB Program

Below are suggested specific roles and responsibilities for the TB team.

Physicians

- Establish an appropriate physician-patient relationship
- Educate and advise the TB patient
- Determine the treatment according to the standardized NTP guidelines
- Calculate the dose of anti-TB medicines according to the weight and the patient's age
- Follow up TB cases in treatment through consultation
- Carry out a minimum of three medical consultations regarding the TB patient
 - At the beginning of the treatment
 - At the end of the initial phase
 - When concluding the treatment
- Carry out the control of contacts to ensure that contacts of TB patients are screened
- Prescribe chemoprophylaxis to the TB SS+ patient's contacts of under age five
- Check the condition of the patient's treatment outcome
- Manage adverse effects of the anti-TB medicines
- Determine the initial seriousness, risk of dying of TB, and assess and manage complications
- Refer complicated TB patients to the hospital
- Send timely reports to PTCs
- Organize tracing of defaulters

Nurses

- Organize the treatment to be administered
- Establish a M&E system for treatment
- Educate and advise the TB patient and treatment supporter
- Carry out the reporting and recording system of treatment
- Administer the treatment according to the medical indication and standardized treatment outlines
- Guarantee the supervised treatment (DOT) through work with treatment supporter and coordinated care with CHS
- Use the TB treatment card
- Weigh the patient monthly
- If patient misses appointments for two days or more, inform the health facility in charge, CHS, and the CHWs who should then visit patient at home
- Guarantee the appropriate use and conservation of anti-TB medicines and TB kits
- In coordination with the physician, request the control sputum smear exam under NTP guidelines
- In the event of received transfers, inform the facility where the patient came from on the outcome of the patient's treatment

- For patients in hard to reach locations or in cases where the patient has physical limitations that hinder keeping health facility appointments, their treatment will be administered by visiting a CHS/CHW with oversight from health supervisors
- During the treatment, the nurse will conduct a minimum of three interviews with the patient—
 - At the beginning of the treatment (using flipchart)
 - At the end of the first phase
 - When concluding the treatment
- Investigate treatment antecedents
- Contribute an appropriate study of contacts
- Identify patient's risky behavior to avoid the abandonment
- Organize domiciliary visits
- Organize the TB treatment card box
 - Insert dividers for first phase and second phase, and inside each one of them per day.
 - The cards will be placed in the space corresponding to the day of administration.
 - Place dividers for the patients considered as absent, hospitalized, and according to the outcome conditions.
 - Keeping in mind the cohort study, the cards will be kept for a period of up to two years.
- Organize the referral/transfer system of TB patients

Laboratory Technicians

- Coordinate with physician and nurse for receiving sputum samples for follow-up of TB patients in treatment.
- Carry out the necessary sputum smear exam for follow-up of TB patients in treatment
- Inform the nurse about the result of the sputum smear exam using the designated part of sputum examination request form (T05) set up for bacteriological exam results
- Coordinate with the intermediate laboratory the derivation of samples of sputum that require culture (*if available*)
- In the event of samples that were sent from another health facility, results will be reported back within 48 hours
- Handle reporting and recording duties for TB lab

CHS

- Can be a treatment supporter if living close to patient. If so, he or she will follow treatment supporter terms of reference
- Gives instructions to CHW and other treatment supporter during supervisory visit monthly and reviews how patient is doing and discuss any problems
- Before initial supplied of drugs are finished, resupply them on a monthly basis to other treatment supporter and CHW (if CHW doesn't get drugs at the monthly meeting at health facility).
- Update original treatment card monthly referred from copied treatment card which other treatment supporter keep. After updating original treatment card, return it to health facility.

CHW

- Monitor treatment under the supervision of the CHS and nurse
- Notified each case of active TB in the community and set up a schedule of regular visits to the home to provide medications and observe the patient taking them
- Keep TB treatment cards, under the supervision of the nurse
- Participate in the domiciliary visits to the TB patients and families; and provide health education to sensitize the community about the importance of supervised treatment

Good Practices for the Medical Attention to TB Patients

Frequently, health facilities have a general form for recording a patient's clinical history; however, under operational conditions, it is often incomplete. For this reason and to improve the quality of DOTS, it is important that physicians should include the following specific information, at a minimum, on the usual clinical history form focusing in the first medical consultation (annex 1).

A practical description of all procedures related to case detection is given in SOPs on case detection and diagnosis of an adult TB cases in Afghanistan (see references)

6. TB PREVENTION

Introduction

Prevention is the group of interventions that health workers undertake with the purpose of avoiding TB infection and, in the case that infection does take place, to avoid that this infection progresses to TB illness. There are four main preventive measures (1) early detection, diagnosis and treatment, (2) BCG vaccination, (3) awareness and health education, and (4) Contact screening and preventive therapy.

Early Detection, Diagnosis, and Treatment

TB is spread through the air. The main source of infection is a person with TB of the lungs (pulmonary TB), who, when untreated, coughs, sneezes, or spits and spreads infectious droplets containing the *M. tuberculosis* in the air. An untreated person with active TB will, on average, infect 10 to 15 persons a year. The infectiousness of such persons usually increases during the time they remain untreated; however, when a TB patient receives treatment, the risk of transmission is 50 times less than an untreated TB patient, and the “transmission chain” is cut within 2 to 3 weeks. Therefore, early diagnosis and treatment of TB in adults is a key step in controlling its spread within the community and it is the most effective preventive measure available.

BCG Vaccination

BCG vaccine (bacillus Calmette-Guérin) is made from a live, weakened strain of *M. bovis*, (a cousin of *M. tuberculosis*). It is used because it is effective in preventing development of severe forms of TB (meningitis and miliary tuberculosis) in infants and young children under five years of age. For this reason it should be given to infants at the time of birth. It is responsibility of the Expanded Program of Immunizations (EPI) to provide BCG.

Awareness and Health Education

Health education is a dialogue-information-reflection-action process addressing TB patients, their family, and the community. The goal of health education is the adoption of individual and community-level behaviors that diminish TB transmission and TB infection. Health education ensures that people know how to protect themselves from tuberculosis and act accordingly. Awareness about transmission of tuberculosis, the fact that children are more susceptible to this illness than adults, importance of prevention, and TB signs and symptoms helps the family and community prevent their children from getting tuberculosis and facilitates detecting active tuberculosis in community. For conducting proper health education, refer to pediatric SOPs.

Contact Screening and Preventive Therapy

General Concept and Strategy

Household contacts of TB SS+ adults must be actively traced to identify newly infected children less than five years of age. If these children are symptom-free and active TB is excluded, they should receive preventive therapy with isoniazid 5 mg/kg daily for 6 months. This is to prevent the risk of developing TB illness among those infected. The indication of preventive therapy should be carried out by the health facility medical doctor. Organization and follow-up on this activity should be the responsibility of nurses or assigned health workers. The procedures for the contact screening and administration of preventive therapy are—

1. When TB SS+ case is detected, assigned health worker has to visit the TB patient’s household or ask him or her to bring household members to health center.
2. The health worker will screen all family members for TB symptoms.
3. Special attention has to be paid to the children during visit.
4. All suspects will be referred to clinic for further assessment and registration

The main purposes of child contact screening are to—

- Identify symptomatic children (i.e., children of any age with undiagnosed TB disease)
- Provide preventive therapy for susceptible individuals (i.e., asymptomatic children under five years of age in close contact with a smear-positive pulmonary TB case)

Definitions Used in Contact Screening

Source case	A case of pulmonary ss+ tb that results in infection or disease among contacts
Contacts for screening	All children under 5 years of age (whether sick or well) and children five years or older, if symptomatic, who are in close contact with a source case
Close contact	Living in the same household as a source case (e.g., the child’s caregiver) or in frequent contact with a source case frequent contact with a source case

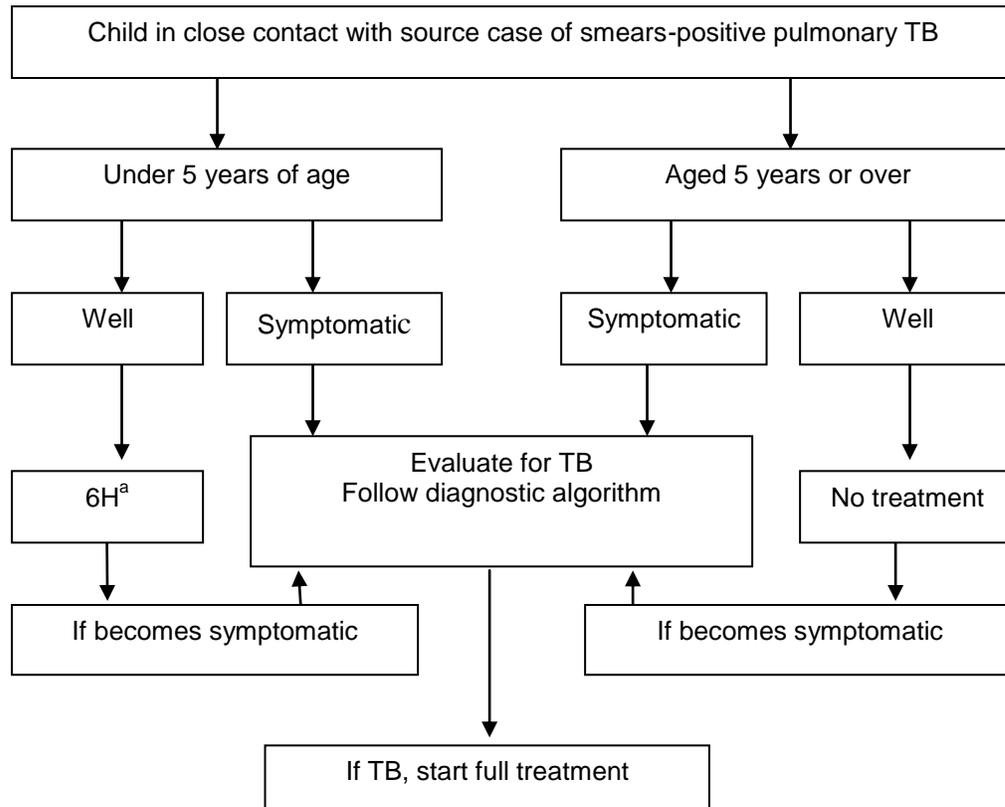
Assessment and Management

Clinical assessment alone is sufficient to decide whether the contact is well or symptomatic. Routine assessment of exposed contacts does not require CXR or TST (Figure 4). This approach applies to contacts of smear-positive pulmonary TB cases. If the contact of a source case with smear-negative pulmonary TB is symptomatic, then the diagnosis of TB needs to be investigated, whatever the contact’s age.

For healthy children under the age of five who are contacts, preventive therapy of isoniazid 5 mg/kg daily for 6 months must be started. Follow-up should be carried out at least every month until treatment is completed. If TB is suspected at initial assessment or at subsequent follow-up, immediately refer to nearby health facility. Referral to district or tertiary hospital may be

necessary when there are uncertainties of diagnosis. Contacts with TB disease should be registered and treated.

DOT is not mandatory for isoniazid preventive therapy, but treatment supporters (health workers or family members) should be designated to make sure that the child takes the therapy. Adherence to treatment is necessary for preventing the child to develop the disease.



^a Isoniazid 5 mg/kg daily for 6 months.

Figure 4. Approach to contact management when chest X-ray and tuberculin skin test are not readily available

Special Circumstances

Child in Contact with Infectious MDR-TB Cases

Children who have close contact with MDR-TB patients should receive careful clinical follow-up without any preventive therapy, including second-line drugs, for a period of at least two years. If active disease develops, treatment should be started promptly with a regimen designed to treat MDR-TB.

Child in Contact with Person Who has HIV

If the child contact is HIV-infected and asymptomatic, then isoniazid preventive therapy should be considered regardless the age of the contact. As with other contacts, active disease should be ruled out before providing HIV-infected children with isoniazid preventive therapy. HIV-infected children who have symptoms should be carefully evaluated for TB and, if found to have TB, should be registered and treatment initiated.

Management of a Baby Born to a Mother with Infectious Pulmonary TB

The breast-feeding infant of a SS+ mother is given 6 months of isoniazid preventive therapy, followed by BCG immunization (if not given the BCG vaccine before). Breast-feeding can be safely continued during this period.

7. RECORDING AND REPORTING SYSTEM IN TB CONTROL

Introduction

A standardized TB recording and reporting system is one of the key components of the DOTS strategy to collect useful clinical information not only on each individual patient, but also on program implementation, including monitoring the drug procurement plan. Currently, MoPH has developed a health management information system for data collection, but data collected in this system is not enough for program-specific monitoring for TB. Thus, additional vertical data collection by the TB control program is crucial and so NTP developed following data recording and reporting formats.

Recording

The following formats are to be used in the Afghanistan NTP.

TB Treatment Card (TB 01)

A TB treatment card will be filled in as soon as the diagnosis of TB is made. The card will be kept at the health facility where the patient receives his or her treatment. Information on the administration of drugs, as supervised by the health worker, during both the initial, intensive phase of treatment and the continuation phase is to be entered on this card (annex 3).

TB Patient Identity Card (TB 02)

As soon as the diagnosis is made, the doctor or nurse must fill out a TB patient identity card that the patient must keep. The first page of the card is most important; it contains the date treatment started, the treatment regimen used, and the names of the drugs to be taken under a health worker's observation during the intensive and continuation phases of treatment (annex 4).

TB Register (TB 03)

A Tuberculosis Register kept at the health facility will contain information on all TB patients registered in that unit. The columns in the register are labeled and are generally self-explanatory (annex 5). The following information should be highlighted—

- Number and date of registration
- Patient's name and father's name
- Patient's age, gender, and nationality
- Symptom and date symptom first appeared
- Patient's full address
- Referred by
- Name of treatment facility and treatment supporter
- Treatment category and site of tuberculosis

- Result of sputum smear microscopy and other examinations
- Treatment outcome and TB /HIV activities
- Date treatment started

Note: Sputum smear-positive patients who are identified in the sputum Laboratory Register but have never appeared for registration or treatment must be registered in the health facility TB Register and classified as “default before starting treatment.” Patients wrongly diagnosed as having TB should be taken off the health facility TB Register and not included in treatment outcome analysis. For treatment outcome analysis, see table 13.

Table 13. Treatment outcome definition

Cured	A patient who was initially culture or sputum smear microscopy at the beginning of the treatment but who was smear-negative in the last month on treatment and on at least one previous occasion
Treatment completed	Patient who has completed treatment but without proof of cure
Treatment failure	<ul style="list-style-type: none"> • Patient who is sputum smear-positive at 5 months or later during treatment • Also sputum smear-negative patients who become sputum smear-positive at 2 months ^a
Died	Patient who dies for any reason during the course of treatment
Default	Patient whose treatment was interrupted for one months or more
Transfer out	Patient who has been transferred to another reporting unit and for whom the treatment outcome is not known

a. WHO,2005, Management of Tuberculosis Training.

Laboratory Register (TB 04)

This register is kept in laboratory section performing sputum smear examinations for acid-fast bacilli at all health facilities. The most important information is contained in the columns titled "Reason for Examination" and "Results of Specimen." The laboratory technician should indicate with a tick whether sputum was collected for diagnosis or for follow-up during treatment (for category I at 2, 5, and 6 months; and for category II at 3, 5, and 8 months). For diagnosis, three sputum specimens are required—one sputum specimen is required for follow-up of patients at 2, 5, 6, and 8 months. All the results of diagnostic examination should be entered on the same line (annex 6).

Request Form for Sputum Examination (TB 05)

It is essential to indicate on the form whether the sputum is being sent for diagnosis or for follow-up by the Medical Officer. In the former case, a detailed address should be given for the patient so that if the patient does not return to the health facility and the smear is found to be positive, the patient can be traced (annex 7).

TB Culture/Susceptibility Test Request Form (TB 06)

If a patient fails to respond to short-course chemotherapy, a Medical Officer will send a request for culture/susceptibility tests to the Central Reference Laboratory. This request must be sent before commencing a re-treatment regimen (annex 8).

TB Referral/Transfer Form (TB 07)

This form will be used when transferring patients from one treatment unit to another or when referring patients to a referral center. It will be filled out in triplicate. One copy will be given to the patient for submission at the health facility to which he or she is being transferred. The second copy will be sent directly to the health facility directly or to the PTC responsible. The third copy will be retained at the referring unit and kept as a record. As soon as the patient arrives at the receiving health facility, the receiving health facility will fill out the bottom half of the form and return it to the referring or transferring institution (annex 9).

Register of TB Suspects

This register book should be used at all the health facilities where TB suspects are identified and recommended for more clinical and laboratory investigation (annex 10).

Register of TB Contacts

This register should be kept and used in all diagnostic facilities. All relevant contacts of the index case should be investigated, then listed consecutively under the name of the index case (annex 11).

Register of Chronic Respiratory Patients (TB Suspects) for non-NTP Provider

This register is only for chronic respiratory patients (TB suspects) visiting the selected non-NTP facilities (annex 12).

Reporting

A built-in evaluation system is an integral component of any tuberculosis program. Information must be collected regularly on detection of smear-positive cases and on the results of chemotherapy. (Newly reported cases must be separated from other smear-positive cases, including relapses, failures, defaulters returning to treatment, etc.). All TB coordinators must submit quarterly reports on case-findings and the treatment results to the NTP surveillance M&E department.

The four quarters of the year at which these reports must be made are—

First quarter: January 1 to March 31

Second quarter: April 1 to June 30

Third quarter: July 1 to September 30

Fourth quarter: October 1 to December 31

The forms to be used are—

- TB 08—Quarterly report on lab activities
- TB 09—Quarterly report on new cases and relapses
- TB 10—Quarterly report on sputum conversion at 2 to 3 months of new smear-positive pulmonary patients registered 3 to 6 months earlier
- TB 11—Quarterly report on the results of treatment of smear-positive pulmonary tuberculosis patients registered 9 to 12 months earlier

These forms are to be completed in duplicate by each TB Coordinator. One copy will be sent to the higher level of Tuberculosis Control Program and the TB Coordinator will retain one copy for his or her records.

The quarterly reports TB09, TB10, and TB11 are designed to permit cohort analysis. A cohort refers to a group of individuals with a common characteristic; in this case, the cohort includes all patients registered in a district during a quarter. The Tuberculosis Register is used to prepare these reports. To make sure that reports are reliable, the register must be kept up to date (annexes 14, 15, 16).

Quarterly Report on TB Laboratory Activities (TB 08)

This shows data on sputum smear microscopy at the laboratory and stock of laboratory materials and reagents (annex13).

Quarterly Report on New TB Cases and Relapses (TB 09)

- Block 1 in the TB 09 quarterly report provides information on all patients registered during the quarter by gender and disease classification (smear-positive, smear-negative, and extrapulmonary).
- Block 2 in the TB 09 quarterly report refers to smear-positive new cases only by age groups and gender.
- Block 3 in the TB 09 quarterly report refers to laboratory activities and suspect management.
- Block 4 in the TB 09 quarterly report refers to TB/HIV activities.

The TB coordinator should analyze the results of case-finding and provide explanatory remarks concerning all districts and facilities, indicating in particular the percentage of the total number of detected cases that were smear-positive, the proportion of smear-positive relapses to all smear-positive cases, and the percentage of smear-negative and extrapulmonary TB cases. In the report covering all four quarters, rates (per 100,000) by age and gender should be calculated. The figure per district will be compared with the figure from the previous year. The reports should be distributed to all districts and facilities as feedback on case-finding activities and should provide important background information for supervisory visits (annex 14).

Quarterly Report of Sputum Conversion (TB 10)

The quarterly report TB10 shows results of sputum smear conversion at two or three months for SS+ new cases and re-treatment cases (annex 15).

Quarterly Report of Treatment Outcome (TB 11)

Quarterly report TB 11 shows results of treatment of new TB SS+ cases in each diagnostic health facilities. The most important index is the cure-rate (and the treatment completion rate) in new TB SS+ cases and, if available separately, the rate of smear-positive relapses (annex 16).

Requisition for Anti-TB Drugs and Laboratory Supplies (TB 12a, 12b, 12c)

There are three forms for requisition—

- TB 12a—Form to request TB drug supply for a specified period
- TB 12b—Request for laboratory supplies at the regional level for a specified period
- TB 12c—Requisition for laboratory supplies at the laboratory level

Prior to sending a requisition of drugs, reagents, or other laboratory material to the higher level of NTP, the person in charge of the DOTS unit should calculate the actual needs (including reserve stock) and subtract the amount of material available in stock. To perform this task, he or she should use the appropriate tables on logistics. TB form 12a is designed for the requisition of anti-TB drugs. TB forms 12b and TB 12c are designed for requisition of laboratory materials.

The need for drugs, reagents, or other laboratory material for any given quarter of the year (or for any other specified period of time) is based on the number of patients registered during the previous quarter (or during any other specified previous period of time) and the amount of reserve stock. The amount of a particular item to be ordered equals the actual need (including reserve stock of the item) minus the supply of the item currently available in stock. The TB forms 12 a, b, and c will be completed every quarter by all health facilities treating TB patients to request anti-TB drugs, etc., for their institution. The TB coordinator is responsible for completing this form for his or her health institution and sending it to the higher level of TB control program (annexes 17, 18, 19).

Quarterly Report on Suspect and Contact Management

The quarterly report on suspect management (annex 20A) shows the number of suspects registered, number of suspects examined, number and percentage with positive results, number of positive cases registered for treatment, and who referred the cases.

The quarterly report on contact management (annex 20B) refers to type of index cases and address relevant indicators about general contact management and contact policy, result of household contact investigations, and preventive therapy.

Yearly Report on Program Management

The yearly report is a new program management tool that allows monitoring of components 3, 4, and 5 of Stop TB strategy.

- Engages all care providers: subcomponent of public–public and public–private mix (blocks 1, 2 in annex 20C).

- Empowers people with TB and communities: subcomponent community participation in TB care (block 3 in annex 20C).
- Contributes to health system strengthening: subcomponent improves human resources (block 4 in annex 20C).

Table 14. Main Operational and Epidemiological Indicators

Indicator	Nominator and Denominator
TB case detectionrate	<i>Numerator:</i> Number of new TB cases detected <i>Denominator:</i> Estimated number of new TB cases countrywide x 100
	<i>Numerator:</i> Number of new smear-positive TB cases detected <i>Denominator:</i> Estimated number of new smear-positive TB cases countrywide x 100
DOTS coverage	<i>Numerator:</i> Population living in the area of basic management units implementing the DOTS strategy <i>Denominator:</i> Total population x 100
	<i>Numerator:</i> Number of health facilities implementing DOTS <i>Denominator:</i> Total number of health facilities) x 100
DOTS with community participation	<i>Numerator:</i> Number of health facilities applying DOTS with community participation <i>Denominator:</i> Total number of health facilities) x 100
	<i>Numerator:</i> Number of CHWs trained on DOTS <i>Denominator:</i> Total number of CHWs) x 100
	<i>Numerator:</i> Number of CHWs working for DOTS <i>Denominator:</i> Total number of CHWs) x 100
Case notification rate	<i>Numerator:</i> Number of TB cases reported <i>Denominator:</i> Total population in the specified areas x 100,000
Case notification rate—new smear positive pulmonary TB cases	<i>Numerator:</i> Number of new smear-positive pulmonary TB cases reported <i>Denominator:</i> Total population in the specified area x 100,000
Sputum conversion rate at the end of the initial phase of treatment	<i>Numerator:</i> Number of new smear-positive pulmonary TB cases registered in a specified period that were smear negative at the end of the initial phase of treatment <i>Denominator:</i> Total number of new smear-positive pulmonary TB cases registered for treatment in the same period x 100
Cure rate	<i>Numerator:</i> Number of new smear-positive pulmonary TB cases registered in a specified period that were cured <i>Denominator:</i> Total number of new smear-positive pulmonary TB cases registered in the same period x 100
Treatment completion rate	<i>Numerator:</i> Number of new smear-positive pulmonary TB cases registered in a specified period that completed treatment and did not meet the criteria for cure or failure <i>Denominator:</i> Total number of new smear-positive pulmonary TB cases registered in the same period x 100

Recording and Reporting System in TB Control

Indicator	Nominator and Denominator
Success rate	<i>Numerator:</i> Number of new smear-positive pulmonary TB cases registered in a specified period that was cured and plus who completed treatment <i>Denominator:</i> Total number of new smear-positive pulmonary TB cases registered in the same period x 100
Death rate	<i>Numerator:</i> Number of new smear-positive pulmonary TB cases registered in a specified period that died during treatment, irrespective of cause <i>Denominator:</i> Total number of new smear-positive pulmonary TB cases registered in the same period x 100
Treatment failure rate	<i>Numerator:</i> Number of new smear-positive pulmonary TB cases registered in a specified period that are smear positive 5 months or later after initiating treatment <i>Denominator:</i> Total number of new smear-positive pulmonary TB cases registered in the same period x 100
Default rate	<i>Numerator:</i> Number of new smear-positive pulmonary TB cases registered in a specified period that interrupted treatment for more than 1 consecutive month <i>Denominator:</i> Total number of new smear-positive pulmonary TB cases registered in the same period x 100
Transfer-out rate	<i>Numerator:</i> Number of new smear-positive pulmonary TB cases registered in a specified period that were transferred to another basic management unit and for which there is no treatment outcome information <i>Denominator:</i> Total number of new smear-positive pulmonary TB cases registered during the same period x 100
TB microscopy units submitting slides for rechecking	<i>Numerator:</i> Number of TB microscopy units for which slide rechecking results are available during a specified period <i>Denominator:</i> Total number of units performing TB smear microscopy during the same period x 100
Proportion of outpatients aged 15 years and over who were identified as TB suspects	<i>Numerator:</i> Number of TB suspect aged 15 years and over, identified. <i>Denominator:</i> Total outpatients aged 15 years and over x 100
Proportion of TB suspects whose sputum was tested for TB	<i>Numerator:</i> Number of TB suspect whose sputum was tested <i>Denominator:</i> Number of TB suspect indentified x 100
Proportion of TB suspects tested who were sputum smear-positive	<i>Numerator:</i> Number of smear positive case detected <i>Denominator:</i> Number of TB suspect whose sputum was tested x 100
Epidemiological indicators	Incidence of TB cases (all forms) per 100,000 population (Number of all new TB cases reported/Total population) x 100,000
	Incidence of new TB SS+ cases per 100,000 population (Number of new TB SS+ cases reported/total population) x 100,000
	Morbidity rate of TB cases (new + previously treatment) per 100,000 pop: (Number of all TB cases reported – new + previously treatment /total population) x 100,000
	Mortality of TB cases per 100,000 pop (Number of all people classified as “death by TB” /total population) x 100,000

8. MONITORING AND EVALUATION

Introduction

Monitoring and evaluation (M&E) is the collective use of social science and epidemiological information to assess, and eventually improve, the implementation of programs or components of programs. The overall purpose of M&E is to measure program effectiveness, identify problem areas, gather lessons learned, and improve overall performance. M&E activities are used to assess progress towards specific objectives and address weaknesses in program design.

Monitoring

What is Monitoring?

Monitoring is the routine tracking of programs by collecting input, process, and outcome data on a regular, ongoing basis. Monitoring can be used to assess whether or not planned activities are being carried out according to schedule and to reveal the extent to which a program is progressing towards identified targets and the extent to which services are being utilized. An abrupt or unexpected change in monitoring data may trigger the need for a more formal evaluation of the activities.

Monitoring also involves continuous observation of activities to verify the quantity and quality of the work implemented. Progress is monitored to determine whether achievements are adequate for reaching targets within a planned period of time and whether activities are being performed in accordance with technically approved methods in line with National TB Control Policy.

Monitoring of Program Activities

- Central level monitors the regional-level program activities
- Regional level monitors the provincial-level TB program activities
- Provincial level monitors the district-level TB control activities

To be effective, the monitoring activity must be systematic and structured in a way that will ensure close interplay among the four different levels—central, regional, provincial, and district. Adequate supervision is important for monitoring and taking timely corrective measures, when necessary, as well as for the overall evaluation of the effectiveness of the TB program. (One technical evaluation is to be held every six months at regional/provincial levels focusing on expanding quality DOTS. Workshops should take place each twice per year to evaluate the program performance at national level. All stakeholders should participate in the evaluation.)

Evaluation

What is Evaluation?

The evaluation process measures the quality and integrity of NTP implementation and assesses coverage. It may also measure the extent to which the intended target population used services (BPHS and hospitals). Results of process evaluation should be used to implement mid-course corrections in the NTP to improve program effectiveness.

Evaluation also measures how well the program activities have met expected objectives and the extent to which changes in outcomes can be attributed to the program or intervention. The difference in the outcome of interest between having and not having the program or intervention is known as its "impact" and is commonly referred to as "impact evaluation."

Evaluation Objectives in NTP

- To analyze operational and epidemiological information at national, provincial, district, and local levels for the period being evaluated
- To evaluate the impact of the NTP and to define its perspectives
- To discuss feasible and appropriate strategies for TB control
- To improve the capacity of the health personnel in charge of the TB control activities at all levels
- To build consensus on the TB control goals and targets for a given year

What Is Supervision?

Supervision is key to monitoring any good program that has components operative in the fields. Supervision is a direct observation technique to see how the supervisee is handling program activities and to observe all activities related to the quality of service.

Objectives of Supervision in NTP

- To identify weaknesses in implementation of DOTS strategy so as to take corrective measures where and when necessary.
- To reinforce and promote good diagnostic and treatment practices in line with the national guidelines.
- To identify problems and issues faced by the health workers that may be solved on spot or reported to the higher authorities for necessary corrective measures.
- To get TB patients' opinions to assess the quality of service delivery
- To improve the technical efficiency of the NTP

Supervision of the Different NTP Levels

TB control activity supervision countrywide is organized in a cascade manner, with each level supervising the level below and reporting to the higher level. Therefore, the central level (NTP) monitors the regional level activities and reports to the MoPH; the regional TB coordinator

supervises provincial-level activities and reports to the NTP; and the provincial level supervises the district-level activities and reports to the provincial level.

Supervision should be carried out at regular intervals, not less than once every quarter. Recently opened units may require more frequent visits (e.g., monthly).

Health facility supervision should ideally be conducted by a regional/provincial team including TB coordinators, laboratory supervisors, and pharmacists. All efforts should be made to integrate supervisory activities with other programs. Joint supervision of TB, with other staff including malaria program officer, communicable disease officer, or immunization program officer is highly recommended, as it entails close collaboration between programs and a more rational use of resources.

Checklist for Supervision

For supervision to be an effective, efficient, and practical monitoring tool, it must be carried out in a standardized way. A checklist is the instrument most commonly adopted to assure the required standardization. A checklist helps the supervisor(s) assess the performance of a unit in a way that is not influenced by interaction between supervisors and supervised staff. In other words, a checklist should yield the same findings regardless of who the supervisors are.

A supervisory checklist should concentrate on key performance indicators and allow comparison between the performances of several similar institutions as well as as changes over time in the performance of the same unit.

Finally, a checklist should be structured in a way that it becomes a tool for providing relevant information to the higher managerial level and constructive feedback to those who were supervised. To fulfill all these functions, the checklist includes a “closed question” section to be filled with figures taken from register books, cards, and reports; and a “qualitative” section to describe the main problems faced, the obstacles preventing improvement to services, and the recommended actions.

The supervisory checklist is not a static document; it will be updated and changed, based on contributions from the final users in the field. It is also anticipated that, if needed, different checklists may be used in diverse settings.

9. HUMAN RESOURCE DEVELOPMENT

Introduction

HRD is the key component in overall health systems development as stated as follows in the National Health Policy HRD Policy Statements—

“The Ministry of Public Health is committed as a top priority to using a comprehensive approach to human resources development in addressing the issues of how to produce, deploy and retain an appropriately trained health workforce possessing the variety of skills needed to deliver affordable and equitable packages of health services as the basis for health care.”

The strength and sustainability of the NTP depends on availability of and management of all NTP staffs and all health care providers to ensure that the Stop TB strategy is implemented in the context of national guidelines.

Objectives

HRD objectives are—

- To develop NTP staff capacity (central, regional, and provincial levels) to manage and monitor the program
- To develop NTP staff capacity (central, regional, and provincial levels) to handle innovative approaches and new technical skills in the field of TB control
- To develop the managerial capacity of all health care providers at all levels to provide TB control service according to the national guidelines and SOPs

HRD Strategy

- Developing and implementing plans to enhance NTP staff capacity in leadership and management skills through attending trainings inside and outside of the country. Developing decentralized system for conducting trainings for all health care providers at all levels
- Developing/revising DOTS training module and other necessary materials on demand
- Developing and implementing plans for initial and refresher trainings for all health care providers according to MoPH training registration database to cope with turnover appropriately
- Improving the quality of trainings through developing an evaluation system of trainings and conducting trainings of trainers
- Conducting an assessment of HRD capacity to identify new training needs

Training Modules and Methods for Health Care Providers

The contents of all training plans for all health care providers, including medical doctors, nurses, laboratory technicians, CHWs, and pharmacists, should be based on the National Guideline for Tuberculosis Control in Afghanistan and SOPs (see references). For this purpose, the following training modules have been developed—

- DOTS training modules (for medical doctors and nurses)
- TB microscopy for lab technicians
- Management of tuberculosis training module for CHWs (draft)
- DOTS training modules for private practitioners (in process)
- TB/HIV training module (in process)

It is required that these modules, in addition to the National Guideline and SOPs, should be used in any kinds of trainings regarding TB control. Table 15 shows standard training courses and their length.

Table 15. Standard TB Training Courses

Targets	Type of trainings	Duration (days)
Medical Doctors (DOTS center)	Initial	5
	Refresher	3
Private practitioners	Initial	3
	Refresher	1
Nurses (DOTS center)	Initial	5
	Refresher	3
Laboratory technician	Initial	6
	Refresher	5
Pharmacists	Initial	1
	Refresher	1
CHW master trainer	Initial	3
CHS	Initial	2
CHW	Initial	1

10. COMMUNITY INVOLVEMENT

Rational for Community Involvement in TB Control Program

Community involvement in a tuberculosis control program is essential. The community can play an important role in improving case-finding activities by encouraging suspected TB cases to go to the nearest health center to be examined. The community, especially the relatives of TB patients, can also contribute to the regularity of treatment. However, community participation in tuberculosis control activities does not stop with these. Where official resources are scarce, a properly motivated community can offer the local TB facilities both manpower and material contributions free of charge.

TB awareness within the community is important. Health education can heighten TB awareness to ensure that the community knows that TB is curable when properly treated, recognizes the signs and symptoms of TB, and motivates suspected TB patients to go to a health center. TB awareness within the community can—

- Increase the case detection and cure rate,
- Decrease the risk of transmission when the patient receives treatment,
- Decrease the defaulter rate
- Ensure that community supports the patient.

Health Education to Increase Community Awareness

The general public should be taught how important it is for people to visit a health facility in the early stage of illness, where chest symptoms can be adequately examined, especially cough persisting two weeks or more. Patients with these symptoms should come to the nearest health facility or hospital outpatient department for a sputum examination. In addition, people must learn that tuberculosis is curable with adequate treatment, but that if not treated properly, it may be transmitted to other people or result in disability and death.

Health education messages delivered to patients, relatives, and the community-at-large must emphasize how important it is to strictly adhere to treatment rules—taking medicines daily in the correct doses and for the proper length of time.

Although largely preventable and completely curable with adequate treatment, in Afghanistan, tuberculosis is still a major cause of death and disability. Health workers must therefore continually remind public policy makers of the importance of fighting this disease and of the need to make a political commitment by allocating adequate financial resources for health education messages to patients, relatives and the community.

Specific Tuberculosis Health Education Messages and Audiences

To TB Patients

- When you take your prescribed drugs daily and regularly, TB is a curable and preventable disease.
- Diagnosis and treatment of TB is free
- Supervised treatment equals cure
- If you are prescribed anti-TB drugs, follow the treatment instructions exactly
- DOT can help cure you of tuberculosis
- Cover your mouth and nose when you cough or sneeze to avoid spreading the disease to others. Do not spit on the ground. Spit in a container and either bury or burn collected saliva and sputum.
- Anti-TB treatment sometimes produces side effects. If you develop jaundice, skin disease, hearing disturbances, or vision impairment, immediately inform the health center where you receive treatment.
- If you move to a different location during your TB treatment, please inform this health center. The doctor will provide you with a **transfer sheet** that you will give to the new health center so your TB treatment can be continued.

To Relatives and Close Contacts of TB patients

- Tuberculosis is a preventable disease. If your sick relative receives proper treatment, he or she will be cured and will not spread the disease to you or to anyone else. As long as your relative receives treatment, you do not need to worry about TB.
- Please help TB patients emotionally and materially as much as you can.
- Please make sure that TB patients take the anti-TB drugs on a regular daily basis; if they do not, you should take them back to the health center.
- If TB patients move to a different location and must transfer to another health center, they should contact the doctor at the health facility where they have been treated before moving. The doctor will provide a transfer sheet so that the TB treatment can be continued at the new health facility.
- If you suspect that you are suffering from TB, go immediately to a health center for examination and treatment if diagnosed with TB.

To the Community at Large

- TB is a curable and preventable disease.
- A person who has been coughing more than two weeks may have TB
- The diagnosis and treatment of TB is free.
- Supervised treatment equals cure.
- If you suspect that someone in your community has TB, take action. Be good enough to help that person go to the nearest health center for examination.
- An adequate diet, proper hygiene in the household, and air and sunlight in the bedrooms are all good ways to prevent TB

- People receiving TB treatment must take anti-TB drugs regularly and for as long as prescribed, without any interruption.
- Please give all possible moral, material, and financial support to your local TB control center. The center is there for you and your community. You may need it.
- Be aware that fighting TB is not the responsibility of the government alone. Your community also has an important role to play in fighting TB.

Methods of Delivering Health Education Messages

Health education messages reach important audiences when given—

- Through mass media (radio, television, newspapers)
- In schools
- In mosques

In addition, health education will be provided by health center staff and by CHWs.

Case Findings

Not all people with TB come to health facility for diagnosis and treatment. Case finding in the community helps to increase case detection. Community-based activities are sustainable, because CHW knows the people in assigned community well and CHW is easy to involve referring right TB suspects in the community to health facilities for diagnosis. However, it is important to clearly define the role of the CHW for case finding. Diagnosis and prescription of treatment should remain the responsibility of the health staff.

Principles of Community-Based DOTS

Rationale

Community-based DOTS is a way of treating TB patients through the community. It brings the treatment to patients who are not able to come to the health center. Community-based DOTS has many benefits—

- The percentage of patients undergoing DOTS treatment will increase
- Treatment will be more accessible to the patient
- Treatment is more cost effective
- Case-finding and cure rates will increase
- The defaulter rate will decrease

Who Can Receive Community-Based DOTS?

TB patients who have difficulty coming to the nearest health facility for treatment every day, such as—

- Patients who are unable to reach the health facility
- Disabled patients
- Elderly patients
- Patients who are bedridden
- Children

Community-based DOTS is applied to all above mentioned patients with following category/period—

- Whole treatment course for category I (smear positive and negative pulmonary, and extrapulmonary) TB patients
- Only continuation phase for category II TB patients

Who Can Be the Treatment Supporter?

If a patient needs a treatment supporter, the first choice would be health staff from the nearest health facility. If this is not possible or suitable, a TB treatment supporter should be a person who fits the following description—an individual in the patient’s community who desires to help, is willing and able to serve patients, and is accepted and respected by patient. The support person must be willing to do the following during whole treatment—

- Be instructed by the health facility in-charge to perform the tasks of a TB treatment supporter
- Attend every appointment with patient for the duration of treatment (initial and continuation phase)
- Be kind to the patient and interested in the patient’s welfare
- Be careful in administering drugs and writing on the TB Treatment Card
- Respect the patient’s confidentiality
- Able to follow up if any problems occur or if the patient does not come for an appointment
- Able to come to the health facility (or meet CHS) for monitoring and to obtain a re-supply of drugs on at least monthly basis

Before TB patients are registered to District TB Register Book, the doctor or DOTS in-charge (health professional) should asks the patient about—

- The patient’s situation such as what the patient does during the day and whether he or she will be able to come to health facility for treatment
- If unable to come to health facility, whom the patient should visit every day to receive DOT.
- Whether the family is supportive or disapproving
- Does the patient know any possible community TB treatment supporters who would be convenient and acceptable?

When selecting possible community TB treatment supporters, the candidates to consider are those persons who are reliable and responsible and who can be supervised by the health facility medical staff or CHS. Some individuals already have an established relationship with the health services. These individuals are most likely to carry out all the responsibilities as a community TB treatment supporter. It is also important to let them know that getting the TB medicines will not be a problem.

Treatment supporters in order of preference are—

1. Health facility staff who lives close to the patient house (before or after work)
2. Trained CHWs
3. Community leaders or people well known in the community, i.e., mullah, teacher, elder.
4. Community or workplace volunteers, such as a former TB patient, living in the same community who has successfully completed treatment.
5. Family members are not usually recommended to be treatment supporters because they lack the required authority over the patient. However, family members are suitable in selected cases such as for a bedridden patient or a very young child.

Role of Each Player

CHW

- Identify TB suspect in a community
- Refer TB suspect to nearest health facility with referral sheet
- Educate suspect and his or her family about TB
- If a suspect doesn't go to health facility, encourage him or her to go
- Provide health education to community
- Follow the referral of contact case to health facility

CHW as Treatment Supporter—

- Attend orientation by health facility staff with TB patient about treatment support. After the orientation, receive first two months of anti-TB medicines and copied treatment card of supporting TB patient.
- Agree on a time and place to meet with the TB patient, keep appointment and be on time; do not make the patient wait.
- Give the patient the TB medicines at each appointment according to the schedule and prescription.
- Look at the drugs to be sure that they are correct. Watch the patient swallow the required daily dose of the drugs.
- Never leave drugs with the patient.
- Record on the copied TB Treatment Card each time the patient takes the drugs.
- Be aware of possible side effects. Encourage the patient to take the medicines with food if

needed to reduce nausea. If side effects continue, refer the patient to the health facility.

- Encourage the patient to continue coming for TB treatment.
- Respond quickly if the patient misses a scheduled treatment. When a dose is missed for more than 24 hours, mark on Treatment Card, and visit the patient's home. Find out about the problem that caused the interruption. Give the treatment. If you cannot find the patient or persuade the patient to continue the treatment, contact the health center the next day.
- Go to the health facility each month to collect the next supply of TB drugs. Show the patient's TB Treatment Card to DOTS in-charge at the monthly meeting. Review how the patient is doing and discuss any problems with DOTS in-charge.
- If you or the patient will be away for a few days, make alternative arrangements. Give the patient enough TB medicines for a maximum of one week or refer the patient to the health facility to work out how to best continue treatment. If absence is long, someone else may be asked to help during this time. If someone else gives the patient some TB drug doses, record on Treatment Card and write date and amount of doses given in remarks section.
- Be sure the patient goes to the health facility when a follow-up sputum exam is due.
- After treatment is completed, return the TB Treatment Card to health facility.
- If anti-TB drugs are left over for any reason, return those to health facility.
- Receive regular supervision by CHS and BPHS implementer supervisor and by PTC occasionally.

Other Treatment Supporter

- Receive with TB patient the DOTS treatment supporter orientation from health facility staff. After the orientation, receive first two months of anti-TB drugs and Copied Treatment Card of supporting TB patient.
- Agree on a time and place to meet with the TB patient. Keep appointment and be on time; do not make the patient wait.
- Give the patient the TB drugs at each appointment according to the schedule and prescription.
- Look at the drugs to be sure that they are correct. Watch the patient swallow all the drugs.
- Never leave drugs with the patient
- Record each time the patient takes the drugs on the Copied TB Treatment Card.
- Be aware of possible side effects. Encourage the patient to take the medicines with food if needed to reduce nausea. If side effects continue, refer the patient to the health facility.
- Encourage the patient to continue coming for TB treatment.
- Respond quickly if the patient misses a scheduled treatment. When a dose is missed for more than 24 hours, mark on Treatment Card, and visit the patient's home. Find out about the problem that caused the interruption and give the treatment. If you cannot find the patient or

persuade the patient to continue the treatment, contact the health center in next day.

- Get a new supply of TB drugs each month from CHS. Show the patient's TB Treatment Card to CHS. Review how the patient is doing and discuss any problems with CHS.
- If you or the patient will be away for a few days, make suitable arrangements. Give the patient enough TB drugs for a maximum of one week or refer the patient to the health facility to decide what need to be done. Or someone else may be asked to help during this time. If some doses of drug are given, record on Treatment Card and write date and amount of doses given in area for remarks.
- Be sure the patient goes to the health facility when a follow-up sputum exam is due.
- After treatment completed, return the TB Treatment Card to health facility.
- If anti-TB drugs are left over for any reason, return those to health facility.
- Receive regular supervision by CHS and by PTC occasionally.

CHS

- Can be a treatment supporter if living close to patient. If so, he or she will follow treatment supporter terms of reference.
- Give instructions to CHW and other treatment supporter during monthly supervisory visits and review how the patient is doing and discuss any problems
- Before each monthly supply of medicine is finished, re-supply anti-TB drugs to all treatment supporter and CHW (if CHW doesn't get drugs at the monthly meeting at health facility).
- Update original Treatment Card monthly according to the copy of Treatment Card which is kept by treatment supporter. After updating original Treatment Card, return it to health facility.

Health Facility (treatment center)

- Patient will be referred from diagnostic center along with drugs and original Treatment Card
- Select treatment supporter for TB patient if patient needs community-based DOTS.
- Give initial orientation to TB patient and treatment supporter using the Instruction Book of Community-Based DOTS and give instruction about drug supply to treatment supporter.
- Transfer information from original Treatment Card (filled in at diagnostic center) to copied Treatment Card. Write (-) in all cells for Fridays on daily supply calendar on Treatment Card. Give copied Treatment Card to treatment supporter.
- Ensure that treatment supporter knows how to fill out Treatment Card.
- After initial orientation, give first two months anti-TB drugs to treatment supporter and record on on Stock Card and copied Treatment Card. Drugs should not be given to patient.
- Before finishing first two months of treatment, re-supply anti-TB drugs to CHW or CHS on a monthly basis
- File original Treatment Card, lab reports, and any other health documents related to patient.

Update treatment records on original Treatment Card monthly (update at monthly meeting with CHW or ask CHS to do).

- Send TB patient for treatment follow-up examinations to nearby CHC or DH (diagnostic center).
- Update the results of follow up sputum microscopy and regimen if it is changed by a diagnostic center on original Treatment Card.
- Send original and copied Treatment Card to the health facility where the patient is registered when treatment is completed.
- Trace defaulter cases
- Manage contact cases
- Manage side effects and refer severe cases to nearest DH or PH.
- Give incentive to treatment supporters when their TB patients have completed a full course of treatment.

Health Facility (diagnostic center)

- All above mentioned roles for treatment center
- Give training on community-based DOTS to CHSs and CHWs working in own area.
- When TB patient is detected, register in District Register Book, then fill in information on original Treatment Card and TB Identification Card.
- Give TB Identification Card to the patient.
- Arrange to transfer TB patient, TB drugs, and original Treatment Card to treatment center (responsibility of BPHS implementer)
- Update results of follow up outcomes on District TB Register Book.
- If regimen is changed, arrange transferring anti-TB drugs to treatment center (responsibility of BPHS implementer)
- Manage side effects and refer severe cases to DH or PH.
- Receive original and copied Treatment Cards from a treatment center when treatment completed. Record treatment outcomes in district TB Register Book.

District Health Officer, BPHS Implementer

- Get approval from NTP, RTC, and PTC before community-based DOTS is launched in own areas.
- Supervise health facility and CHS, and discuss any problem related to community-based DOTS.
- Check patients' TB records in health facility
- Coordinate community based DOTS activities at district level
- Visit TB patients and treatment observers occasionally

PTC

- Get approval from NTP and RTC before community-based DOTS is launched in own province.
- Secure drug supplies to BPHS implementer based on their needs and TB data.
- Follow up of BPHS implementer NGOs for timely supplies of anti-TB drugs to diagnostic centers and treatment centers (when they need).
- Supervise health facilities and discuss any problems related to community-based DOTS in own province.
- Coordinate community-based DOTS activities in provincial or district level—if any problems exist, discuss with RTC, CDC officer, or PHD.
- Give training for community-based DOTS to health facility in charge, CDC and district health officer at provincial review meeting and BPHS implementer CHW in charge/health educator or BPHS trainers. Also conduct training course for community-based DOTS for CHS.
- Collect data related to community-based DOTS and make quarterly report.
- Secure incentive for treatment supporters when their TB patients complete a full course of treatment.

RTC

- Secure anti-TB drugs supply for own region.
- Supervise poor performance health facilities and discuss problems related community-based DOTS during regular supervision
- Coordinate community-based DOTS activities in regional level; if any problems exist, discuss with the NTP
- Give training about community-based DOTS to PTCs, PHDs, and CDCs at regional review meeting
- Collect quarterly reports from PTCs and send them to NTP.

NTP

- Develop community-based DOTS training materials and curriculum.
- Secure enough health education materials for CHW and other treatment supporters.
- Give training on community-based DOTS to RTCs at national review meeting. After launching community-based DOTS in health facilities; if any problems occur, discuss with RTC and give solutions.
- Ensure that anti-TB drugs are supplied to all regions.
- Supervise health facilities and monitor the current community-based DOTS program
- Collect quarterly data related to community-based DOTS program and analyze it.
- Update BPHS implementer representatives about community DOTS concept.
- Organize community-based DOTS workshop and training course for BPHS implementers
- Secure incentive for treatment supporters when their TB patients complete a full course of treatment.
- Propose and conduct research on evaluations of community-based DOTS program.

11. NEW INITIATIVES

Currently, most of the components of the Stop TB strategy endorsed by Stop TB Partnership and WHO have been applied by the NTP. The initiation of remaining components of the Stop TB strategy and some local innovative approaches should be adopted and implemented gradually, based on NTP national strategic plan and program priorities. Any new initiative interventions for TB control in the country need to be implemented on the NTP strategy and policy and local settings. After adaptating new strategies and designing new interventions, implementation should be closely monitored.

TB-HIV

HIV Infection and TB

Afghanistan has a low prevalence of HIV-infected people but a high prevalence of risk behaviors among certain high risk groups, like intravenous drug users (ANASF, 2006). The current epidemiological situation in Afghanistan is not completely described, but there is evidence of HIV prevalence among an undefined number of most-at-risk persons and TB patients. One study of intravenous drug users in Kabul indicates HIV prevalence of 3 percent (Todd, 2007). A study among TB patients indicates HIV prevalence of 0.2 percent (NTP, MOPH, 2006). HIV is transmitted mainly through unsafe sexual activity and through unsafe sharing of drug injecting equipment. It can also be transmitted through unsafe blood transfusions and by mothers with HIV to their newborn babies through delivery. People Living with HIV/AIDS (PLHA) live with stigma and discrimination which contributes to limitations on their access to quality health care services for HIV and TB (NTP, NACP, WFP, 2006).

From all available observations, the HIV epidemic in Afghanistan follows the pattern of the Asian HIV Epidemic Model (T. Brown, 2004) where a national HIV epidemic begins with increased transmission among most-at-risk groups then bridging to the general population, where the speed and severity of the epidemic is related to numbers of most-at-risk groups and extent of prevention, including use of condoms and safe injecting equipment. The National AIDS Control Program aims to maintain less than 0.5 percent HIV prevalence among the general population and less than 5.0 percent in any group at risk

Goals of the National TB-HIV Collaboration Policy

- Decrease the burden of TB in PLHA by intensified TB case finding, introducing of isoniazid preventive therapy, providing TB treatment, care, and support under DOTS, wherever HIV-infected people and most-at-risk groups, such as IDU, are concentrated, and in congested or contained settings, such as prisons.
- Decrease the burden of HIV in TB patients by providing HIV testing and counseling, improved knowledge of HIV prevention methods among TB medical workers, and introduction of co-trimoxazole preventive therapy.

Objectives

This chapter briefly sets out the epidemiology of the TB-HIV co-epidemic and describes the implications of the epidemic for the treatment of TB.

Targets for TB/HIV Services for 2008-2013

- Establish the mechanisms for collaboration of health, police, and prison authorities at national and provincial levels
- Conduct TB-HIV surveillance in Level 1 TB provinces, and decrease the burden of TB in most-at-risk groups and PLHA by establishing intensified case finding, isoniazid preventive therapy, and ensure TB infection control in health care and any group settings such as prisons in those same provinces.

Patterns of HIV-related TB

As HIV infection progresses, CD4 lymphocytes decline in number and function. The immune system is less able to prevent the growth and local spread of *M. tuberculosis*. Disseminated and extrapulmonary TB disease is more commonly found in HIV patients.

Pulmonary TB

Even in HIV-infected patients, pulmonary TB is still the commonest form of TB. The presentation depends on the degree of immunosuppression. Table 16 below shows the differences in the clinical picture, sputum smear result, and chest X-ray appearance of early and late HIV infection.

Table 16. How Pulmonary TB Differs in Early and Late HIV Infection

	Stage of HIV infection	
	Early	Late
Clinical picture	Often resembles post-primary pulmonary TB	Often resembles primary pulmonary TB
Sputum smear result	Often positive	Often negative
Chest X-ray appearance	Often cavities	Often with no cavities

Reported case rates of smear-negative pulmonary TB have increased in association with the TB/HIV co-epidemic. However, the lack of a widely available "gold standard" diagnostic test for smear-negative pulmonary TB often makes it difficult to distinguish other HIV-related pulmonary diseases from pulmonary TB. The extent of over-diagnosis of smear-negative pulmonary TB is, therefore, uncertain. Recommended diagnostic guidelines must be followed as closely as possible in order to accurately diagnose smear-negative pulmonary TB.

Extrapulmonary TB

The commonest forms of extrapulmonary TB in HIV patients are lymphadenopathy, pleural effusion, pericardial disease, miliary disease, and meningitis.

HIV-related TB in Children

As in adults, the natural history of TB in an HIV-infected child depends on the stage of HIV infection. Early in HIV infection when immunity is good, the signs of TB are similar to those in a child without HIV infection. As HIV infection progresses and immunity declines, dissemination of TB becomes more common. Tuberculous meningitis, miliary TB, and widespread tuberculous lymphadenopathy occur.

Anti-TB Treatment in HIV-infected TB Patients

The criteria used to determine treatment categories for TB patients are the same irrespective of a patient's HIV status. Generally, anti-TB chemotherapy is the same for HIV-infected TB patients as for non-HIV-infected TB patients. Streptomycin remains useful in treating HIV-infected TB patients in countries with the capability of ensuring sterilization of needles and syringes. However, in countries with a high HIV prevalence but without the ability to ensure sterilization of needles and syringes, streptomycin should not be used.

Response of HIV-infected TB Patients to Anti-TB Treatment

Case Fatality

The case fatality of TB/HIV co-infected patients one year after starting TB treatment is about 20 percent. This case fatality is greater than that in HIV-negative TB patients. The excess deaths in TB/HIV patients during and after treatment are partly due to the TB itself and partly due to other HIV-related problems. Case fatality is less in TB/HIV patients treated with short-course chemotherapy (SCC) than in those treated with the old standard regimen (2 SH thioethazone [T] or SHE/10 HT or HE), partly because SCC is a more effective anti-TB treatment. Also, rifampicin has broad-spectrum antimicrobial activity as well as anti-TB activity, which may decrease deaths due to HIV-related bacterial infections during anti-TB treatment.

Response in Survivors

Several studies have assessed the clinical, radiological, and microbiological response to SCC in HIV-positive and HIV-negative TB patients. Excluding patients who died, response rates were similar in HIV-positive and HIV-negative TB patients.

Recurrence of TB after Completing Anti-TB Treatment

The recurrence rate is similar in HIV-positive and HIV-negative TB patients who complete SCC. The recurrence rate is higher in HIV-positive than HIV-negative TB patients treated with the old standard treatment regimens.

Consequences of HIV for TB Control

The consequences of HIV for TB control include—

- Overdiagnosis of SS- pulmonary tuberculosis
- Underdiagnosis of SS+ sputum smear-positive pulmonary tuberculosis
- Inadequate supervision of anti-TB chemotherapy
- Low cure rates
- High case fatality rates during treatment
- High default rates because of adverse drug reactions
- High rates of TB recurrence
- Increased emergence of drug resistance

Response of National TB Programs to the TB/HIV Epidemic

The impact of HIV exposes any weaknesses in NTPs. The HIV epidemic heightens the need to focus on the identification and cure of infectious TB patients. The principles of TB control are the same even when there are many TB/HIV patients. However, in populations where TB/HIV is common, health services struggle to cope with the large and rising numbers of TB patients. The TB/HIV epidemic necessitates the following responses—

- Strengthening NTP structures and activities and the decentralization of treatment activities
- Strengthening coordination and collaboration among the NTP, services for HIV/AIDS and other sexually transmitted disease , and general health services
- Reinforcing diagnostic criteria for pulmonary and extrapulmonary TB
- Finding local solutions in places with the biggest increase in TB burden, e.g., large cities.

Prevention of HIV Transmission in Health Care Settings

Because TB patients in many countries have become the group with the highest prevalence of HIV infection, high standards of safety for health care workers and strict adherence to sterilization and high level disinfection procedures must be maintained. When needles and syringes are used to treat TB (e.g., streptomycin injection), every health care worker must be trained to strictly adhere to using a single sterile needle and a single sterile syringe only once for each injection given. Always use sterile syringes and needles that cannot be used again.

Public-Private Mix DOTS

Private health providers are the largest part of the health care providers in Afghanistan. This sector is often the first point of contact for a significant number of TB suspects and patients. Because of their flexibility and easy accessibility, these service providers have gained credibility and are popular among patients.

Experiences from pilot projects in other countries show that partnerships between public and private health care sectors can increase TB case detection rates and improve patient adherence. Such partnerships reduce diagnostic delays and cost to the patients who get quality NTP services from the provider of their choice. The strengths of these sectors can be utilized to supplement the government's efforts to control TB.

Public-Private Mix DOTS Strategy

Public-private mix (PPM) has been defined by WHO as strategies that link all health care entities within the private and public sectors (including health providers in other governmental ministries) to national tuberculosis programs for expansion of DOTS activities. The national approach to PPM DOTS in Afghanistan is based on the optimum contribution of health care providers out of NTP/MoPH and NTP strategy regarding PPM activities over the next five years. This is aimed to increase case detection and improve quality of care for those TB patients who are seeking private and public (out of NTP/MoPH) health services. The PPM-Mix DOTs policy, strategy, and operational guidelines to be used for the scaling up the engagement of public and private sector in TB control activities have been developed.

Aim of PPM-DOTS

- To increase case detection by enhancing the ability of private health providers to identify and diagnose pulmonary TB cases.
- To increase treatment success rate by improving the quality of TB care received by patients attending private facilities.

Objectives of PPM-DOTS

1. To build the capacity of non NTP health care providers in TB case management
2. To improve accessibility of the population to the TB quality
3. Services with involving of non-NTP health care providers in TB case managements.
4. To decrease diagnostic delays of TB suspect patients seeking health care in non-NTP health care providers.
5. To improve TB suspect cases recording and reporting system in non NTP health care providers.
6. To reduce TB patients' direct and indirect costs.

Indicative DOTS Task Mix for Different Provider Categories

PPM local implementers should first map (identify location) of health providers and investigate their current roles in TB diagnosis, treatment, their capacity, and their willingness to participate. Table 17 lists main tasks of DOTS implementation and indicates how these tasks may be distributed.

Table 17. Indicative DOTS Task Mix for Different Health Provider Categories

Tasks		National TB program ^a	Public health provider out of NTP/MoPH ^a	Private hospitals ^a	Individual private provider, GPs ^a	Private labs ^a	Private pharmacy, non-qualified providers ^a
Tasks ^a	Identify and register TB suspect						
	Refer TB suspects						
	Collect sputum samples						
	Do smear microscopy						
	Diagnose TB				SS+ ^b		
	Notify/record cases				TBS ^c		TBS ^c
	Prescribe treatment						
	Inform patients about TB						
	DOT						
	Reporting						
	Supervise treatment supporters						
	Follow up on defaulters						
	Training of care providers ^d						
	Supervision						
	Quality assurance for laboratories						
	Monitoring						
	Evaluation	With third party					
	Drugs and supplies management						
Provide stewardship financing and regulation							

^a Shaded cells correspond to tasks that could be taken up by respective provider type.

^b Only SS+ cases can be diagnosed and should be referred to core health facility for treatment management

^c TB suspects should be registered only

^d Relevant association with potential capacity can train care providers on DOTS.

Monitoring and Supervision

All private practitioners, private hospitals, and non-MoPH public health providers who provide DOTS should be supervised regularly by responsible NTP staff in the same manner of supervision used for NTP/MoPH health facilities. All private practitioners, private hospitals, and public health providers out of NTP/MoPH who do not provide DOTS should attend Provincial Public-Private Partnership coordination committees quarterly and their suspect register should be checked.

Private laboratories which are involved into public-private mix should receive EQA by NTP. Provincial lab supervisors should collect slides for cross-checking from private laboratories and give them feedback on their performance during the quarterly review meetings of laboratory network. Necessary consumables and chemicals should be distributed through these meetings upon request by private laboratories.

Special Groups and Situations

TB in Prisons

The term 'prison' is used to mean any place of detention. The term includes pre-trial or remand centers, labor colonies, reformatories, prisoners of war camps, immigration centers, police stations, and other sites where people are deprived of their liberty. Despite efforts for penal reform and the use of alternative punishment systems, prison populations continue to rise throughout the world. It is estimated that on any given day the number of people in prison in the world is 8 to 10 million. As many people are detained only for short periods and the rates of admissions and releases are almost equivalent, the actual numbers passing through prisons each year is potentially 4-6 times higher.

Prisons have often been cited as possible reservoirs of TB, although in fact there is limited concrete data. There are many reasons for this lack of data, but they often reflect the low priority attached to the problem and to data collection. However, where data are available, much higher levels of active TB disease are reported from prisoner populations compared to that reported from the civilian population.

NTP has recognized TB as a serious problem within the country's prisons. TB services should be provided for prisoners to control TB in an integrated and comprehensive manner. The health care providers responsible for TB control should be granted access to all places of detention. The most effective strategy to achieve the goal of NTP is to provide prisons with—

- Early diagnosis of TB (case-finding)
- Effective treatment of TB until cure

TB Control in Refugee and Displaced Populations

More than 85 percent of refugees originate from, and remain within, countries with a high incidence of TB. Refugees and displaced populations are at particularly high risk of developing TB. Crowded living conditions facilitate the transmission of TB infection, and susceptibility to TB diseases is increased by coexistent illness, particularly HIV, and by poor nutritional status. TB is an increasingly cause of morbidity and mortality among refugee and displaced populations. Control activities should be implemented effectively and produce good treatment outcomes in appropriately chosen refugee and displaced settings, and in post-conflict situations.

Other Special Groups

Several vulnerable minority population groups pose special challenges for TB control because of difficulty of access to health services. Barriers to access may be the result of economic, political, social, geographic, or ethnic factors, and often more than one of these factors is involved. TB controls programs need to pay special attention to certain population groups and special situations that are associated with a higher TB risk. In health care and congregate settings, where people with TB and HIV are frequently crowded together, the risk of contracting TB increases. In addition to prison and refugee populations, other risk groups include displaced people, migratory workers, illegal immigrants, cross-border populations, the orphaned and homeless, ethnic minorities, other marginalized groups, alcohol abusers, and injecting drug users. People with diabetes and smokers are other examples of risk groups. Special situations requiring extra attention include unexpected population movements such as when there is political unrest, war, or natural disaster. Among risk groups and in special situations, social networks may be disrupted, and this breakdown of social support adds to the effects of poverty, alters health-seeking behavior, and limits access to services. TB services need to adapt to address the specific needs that arise in these circumstances.

Addressing Risk Groups and Special Situations

The first step in addressing the needs of risk groups is recognition and acknowledgment of their existence and their special requirements. NTP must first define the special situations and vulnerable groups that need attention. Identification of risk groups and their locations, assessing the problems they face in accessing care and what services are currently available to them, and defining strategies to ensure access to high-quality TB care should be the logical next steps. These steps should be undertaken in collaboration with all the stakeholders and should also involve representatives of the beneficiaries themselves. Each health care and congregate setting should have a TB infection control plan that includes administrative, environmental, and personal protection measures to minimize the risk of TB transmission. Implementation of the TB infection control plan should be undertaken in a phased manner with the support of, and in coordination with, relevant partners and care providers.

MDR-TB

The emergence of resistance to anti-TB drugs, and particularly of MDR-TB, has become a major public health problem in a number of countries and an obstacle to effective global TB control.

Unfortunately, the NTP does not have any scientific evidence for the prevalence of MDR-TB in the country, but based on WHO estimation, the rate of MDR-TB among the new TB cases is 3.3 percent, and among the previously treated TB cases, 36 percent.

MDR-TB is defined as TB caused by *M. tuberculosis* resistant in vitro to the effects of isoniazid and rifampicin, with or without resistance to any other drugs. Detection and treatment of all forms of TB, including drug-resistant forms, should be integrated within BPHS and EPHS. NTP should deliver rational treatment to patients with MDR-TB.

The framework for MDR-TB is organized around the five components of the DOTS strategy because the underlying principles are the same.

The most essential component for initiating DOTS-plus is the establishing of reference laboratories in central and regional level. The reference laboratory is in a pilot stage for performing culture at central level at present. The actual launch is going to be for culture and drug susceptibility testing (DST) in 2010. Thus, the NTP should develop policies as a foundation for any subsequent legal, administrative, and technical support necessary for the initiation, implementation and monitoring of the program at national and regional level before embarking on a MDR-TB control program.

Program management of MDR-TB is a complex health intervention, and no one strategy will fit all situations. The NTP should consider the epidemiological, financial, and operational factors when deciding which strategy to use.

Kochi Nomads

Nomad "Kochi" refers to tribal Afghans who do not have permanent residences in Afghanistan. According to the Afghanistan Central Statistic Office, the total population of Kochis are has been estimated to be about 1.5 million (out of 26.1 million Afghans), of which almost about 60 percent still following the traditional nomadic Kochi life, i.e., moving from place to place seasonally by walking hundreds of kilometers in search of pastures locally called Vershu or Helband for their livestock. Using tents for their shelters. The Kochis are primarily sheep raisers whose main shelters are tents which they use to protect themselves from heat and cold. They travel in caravans with baggage animals (camels, horses, and donkeys) that can move the people and household goods long distances over fixed migration routes. Kochis are defined as—

- Members of an Afghan tribe who don't have a permanent residence
- Keep moving from one place to another place seasonally (generally every six months)
- Protect themselves from summer heat and winter cold by using tents for their shelters

Kochis have a distinct culture, habitation, and economy that set them apart from sedentary dwellers. Although most Kochis are engaged in sheep herding, some are seasonal grain harvesters and others are traders.. In Afghanistan, Kochis have exclusive access to specific seasonal pastures and move between lower elevation winter pastures to higher elevation summer pastures as part of a regular pattern of migration.

Nomads in Afghanistan have been neglected in the planning for the country's development. Reasons for this include the difficulty in dealing with mobile populations. The nomadic life style and animal keeping is now considered as their culture.

Settlement areas of Kochi people are not restricted to few provinces, but are in all 34 Afghanistan provinces. However, the number of Kochis varies from province to province, with the majority living in the provinces of Kabul, Maidan Wardak, Paktika, Ghazni, Logar, Baghlan, and Khost in summer season. During winter season, most of them move to Nangarhar, Kandahar, Hilmand, Zabul, Farah, Sari Pul, Badghis, Balkh, and Hirat. All of these provinces count as provinces with a large Kochis population. In each settlement area, Kochis' communities are led by one person locally called Sarkhil with consultation of the elders of the community.

Because of the physically hard nomadic lifestyle that Kochis face in their settlement areas, health services are generally inaccessible for them. Their lifestyle puts them in high risk of getting infectious diseases. Kochi tents do not have ventilation, so during winter, if one of member of family gets TB, the infection can be easily transmitted to other family members. In addition, Kochis are generally undernourished, so if infected, their nutritional status accelerates the development of disease in their bodies. In addition to the inaccessibility to health services, Kochis don't have access to education, clean drinking water, and grazing land.

To control TB in the country, it is essential to provide TB care services to vulnerable population groups. Thus NTP will initiate this intervention through specific strategies and approaches for this population.

12. TB INFECTION CONTROL

Rationale

Recent increases in rates of TB among HCWs have led to greater concern about the risk of *M. tuberculosis* transmission in health care settings (nosocomial transmission). Nosocomial transmission is of obvious concern because it affects not only other patients but also the personal health of HCWs and may result in either temporary or permanent loss of HCWs from the workforce.

The risk of patients and HCWs acquiring TB could be significantly reduced if governments, health authorities, and HCWs themselves make infection control (IC) a high priority. HCWs are a valuable and often scarce resource, and their expertise cannot be easily replaced. Commitment to reducing the risk of nosocomial *M. tuberculosis* transmission to HCWs is necessary to protect them from undue exposure, infection, disease, disability, and death.

Strategy

TB infection control programs are based on a three-level hierarchy of controls: administrative, environmental, and personal protection.

1. Administrative controls are policies and practices to reduce risk of exposing uninfected persons to persons who have infectious TB. These measures include—
 - a. Developing and implementing effective written policies and protocols to ensure the rapid identification, isolation, diagnostic evaluation, and treatment of persons likely to have TB
 - b. Implementing effective work practices among health care workers in the health-care facility (e.g., correctly wearing respiratory protection and keeping doors to isolation rooms closed)
 - c. Educating, training, and counseling health care workers about TB
 - d. Screening health care workers for TB infection and disease
2. Environmental controls prevent the spread and reduce the concentration of droplet nuclei in ambient air. Environmental controls include measures such as—
 - a. Natural ventilation to reduce the number of organisms in the air
 - b. Natural, mechanical, or mixed ventilation to control the direction of airflow to prevent the contamination of air in areas adjacent to the infectious source
 - c. Diluting and removing contaminated air via general ventilation
 - d. Cleaning the air via air filtration or ultraviolet germicidal irradiation
 - e. Positioning furniture such as exam tables and desks to reduce the exposure of HCWs to infectious patients
 - f. Locating exam rooms used for infectious patients apart from areas used by non-infected individuals

It is important to recognize that if work practice or administrative controls are inadequate, the impact of environmental control will not be maximized.

3. Personal respiratory protection (the selection, training, and use of respirators and surgical masks) is not a priority intervention in health care facilities. Respirators can protect health care workers from inhaling *M. tuberculosis* only if standard work practices and environmental controls are in place. In addition, they are expensive to purchase and not readily available in resource-limited settings. Their use should be restricted to specific high risk areas in hospitals and referral centers such as rooms where sputum induction spirometry or bronchoscopy are performed or for specialized treatment centers for persons with MDR.

The specific details of a health facility TB infection control program will differ, depending on whether patients with suspected or confirmed active TB disease (1) might be encountered in the setting, or (2) will be transferred to another healthcare setting, but many of the interventions will be the same regardless of whether it is a TB referral facility or an EPHS or BPHS facility.

The TB infection control SOPs focus on the inexpensive administrative (managerial) measures (e.g., patient identification, diagnosis, and the initiation of prompt treatment for TB).

Measures for IC

Assessment of Settings at Risk for *M. tuberculosis* Transmission

Regardless of the size of the health care facility, an assessment of HCWs' risk of *M. tuberculosis* infection should be conducted as the first step in improving TB IC. The transmission risk should be evaluated for the facility and for areas within the facility where TB patients might receive care (e.g., examination rooms, laboratory, pharmacy, waiting areas).

This risk assessment should consider—

- The number of infectious TB patients seen per year
 - In entire facility
 - In each specific area
- The amount of time that infectious TB patients spend in the area
- Whether special procedures (e.g., sputum collection) that increase the number of infectious particles are performed in the area

The results of this risk assessment will guide the development of the IC plan, since interventions should focus initially on those areas that pose the highest risk.

Infection Control Plan

The next step is to write an IC plan and obtain the approval of appropriate authorities. The IC plan should then be implemented and adherence to its recommendations should be monitored. Together, the district TB control officer and the health post HCW or clinic director should assume the responsibility for writing and obtaining approval as well as implementing and monitoring the IC plan. For larger facilities (e.g., district hospitals), a small committee can be formed and given the responsibility to write and implement the IC plan. In certain settings, having an IC plan for TB alone might be not feasible. Thus, if the facility already has an IC committee, measures appropriate for the control of TB could also be part of the more general IC measures. In general, the IC plan should include—

- Identification of risk areas
- Assessment of TB among HCWs (where feasible)
- Assessment of HCW training needs
- Area-specific infection control recommendations
- Time line and budget (e.g., material and personnel costs)

HCW Training

Infection control is effective only if each person working in a facility understands the importance of IC policies and his/her role in implementing them. As part of the training, each HCW should receive instruction appropriate for his/her job category. Ideally, training should be conducted before initial assignment, and continuing education should be provided to all employees. All HCWs working at the district level should receive ongoing education at least once a year regarding—

- The basic concepts of *M. tuberculosis* transmission and pathogenesis
- The signs and symptoms of TB
- The increased risk of TB disease in persons with HIV infection, and other immunosuppressive conditions who also are infected with *M. tuberculosis*
- The importance of the IC plan and the responsibility that each HCW has to implement and maintain IC practices to reduce the risk of *M. Tuberculosis* transmission
- Which settings pose an increased risk of *M. tuberculosis* transmission (e.g., closed examination rooms)
- Specific IC measures and work practices that reduce the likelihood of transmitting *M. tuberculosis*

Early Identification and Diagnosis

Prompt identification of patients with suspected TB is critical to initiate TB treatment, thus reducing the exposure of HCWs to infectious TB patients. A patient who makes several visits to a health facility without being correctly diagnosed with TB or spends time on a hospital ward for several days or weeks before the diagnosis of TB is suspected can pose a risk for HCWs and patients alike. For details regarding case detection, and sputum collection, see Case Detection and Diagnosis of TB.

Patient Education

Patients should be educated about *M. tuberculosis* transmission and the importance of **cough etiquette**, i.e., to minimize the generation of infectious droplet nuclei, coughing patients should be instructed to turn their heads and cover their mouth and nose with their hands and preferably with a cloth or tissue when coughing. If patients do not have a cloth or tissue, these should be provided by the institution. Posters emphasizing cough etiquette should be placed in the waiting areas.

Triage and Evaluation of Suspect TB patients in Outpatient Settings

The outpatient evaluation and management of potentially infectious TB patients is an important TB control measure because it can reduce the exposure of HCWs and hospitalized patients to infectious TB patients. Health posts, clinics, and hospital-based clinics may serve an important role in the outpatient management of these patients. In the outpatient setting—

- Patient waiting areas should be open and well-ventilated; where weather permits, open-air shelters with a roof to protect patients from sun and rain are recommended
- Separate clinics or waiting areas should be set up for those patients who may have infectious TB
- Avoid putting potentially infectious TB patients in waiting areas with non-TB patients, especially pediatric patients or patients who are immunocompromised (e.g., AIDS)

If a separate waiting area cannot be established for infectious patients, providing expedited **priority service** to decrease the risk of exposure for other patients and HCWs should be considered. In other words, these patients should be moved to the front of the line and seen only one at a time in the examination room to quickly provide care and reduce the time that others are exposed to them.

Reducing Exposure in the Laboratory

Health facilities that perform sputum smear microscopy should —

- Strictly limit access to the laboratory to essential HCWs
- Not collect sputum in the laboratory area
- Use a pass-through window to deliver sputum samples

Handling sample containers and producing smears pose low risk to CHWs (barring breakage which could possibly release bacilli into the air).

Evaluating Infection Control Interventions

At a health post or district hospital, it may be difficult to detect a change in TB rates among HCWs after implementing TB IC measures because of (1) the long-time intervals that often occur between infection and disease, and (2) the small number of HCWs working at the facility.

However, it is usually possible to monitor implementation through periodic supervision of the measures outlined in the IC plan. Establishing surveillance of active TB rates among HCWs may nonetheless provide a useful means of evaluation, although the complex relationship between infection and development of disease and other factors such as high HIV rates or high TB rates in the community may complicate the interpretation of trends.

One way to assess the impact of implemented IC practices is to research why there are delays in identifying and treating TB. Unnecessary delays in any of clinical procedures such as time interval from suspicion of TB to start of treatment can lead to increased nosocomial transmission of *M. tuberculosis*.

A practical description of all procedures related to case detection is given in “SOPs for TB IC in Afghanistan”

REFERENCES

Afghanistan Ministry of Public Health (MoPH). *Health and Nutrition Sector Strategy (2007/08-2012/13)*. Kabul, Afghanistan: Islamic Republic of Afghanistan.

Afghanistan MoPH, National TB Control Program. 2009. *National Guideline of Quality Assurance of Sputum Smear Microscopy in Afghanistan*. Kabul, Afghanistan: Islamic Republic of Afghanistan.

Afghanistan MoPH, National TB Control Program. *National Strategic Plan for Tuberculosis Control, 2009-2013*. Kabul, Afghanistan: Islamic Republic of Afghanistan.

Afghanistan MoPH, National TB Control Program. *Standard Operational Procedures (SOPs) on Case Detection and Diagnosis of Adult TB Cases in Afghanistan, 2009*. Kabul, Afghanistan: Islamic Republic of Afghanistan.

Afghanistan MoPH, National TB Control Program. 2009. *Standard Operational Procedures (SOPs) to Improve the Quality of Care for TB Patients in Treatment*. Kabul, Afghanistan: Islamic Republic of Afghanistan.

Afghanistan MoPH, National TB Control Program. 2009. *Standard Operational Procedures for TB Infection Control*. Kabul, Afghanistan: Islamic Republic of Afghanistan.

Afghanistan MoPH, National TB Control Program. 2009. *Standard Operational Procedure for Management of Tuberculosis in Children, 2009*. Kabul, Afghanistan: Islamic Republic of Afghanistan.

Afghanistan MoPH, National TB control Program, 2009, *Engaging All Health Care Providers in TB Control in Afghanistan, Operational Guideline for PPM-DOTS in Private Sectors, 2009*. Kabul, Afghanistan: Islamic Republic of Afghanistan,

Afghanistan MoPH, National TB control Program, 2009, *Guideline of Community Participation on the National Tuberculosis Control Program in Afghanistan (Community Based DOTS) 2009*. Kabul Afghanistan: Islamic Republic of Afghanistan

Afghanistan MoPH, National TB control Program, 2009, *Guideline, Policy and Operational Strategies for TB & HIV Collaboration in Afghanistan, 2009*. Kabul Afghanistan: Islamic Republic of Afghanistan

Brown, T., and W. Peerapatanapokin. 2004. The Asian Epidemic Model: a process model for exploring HIV policy and programme alternatives in Asia. *British Medical Journal* 80 (Supplement 1) i19-i24.

International Union Against Tuberculosis and Lung Disease (IUATLD). 2005. Tuberculosis bacteriology—priorities and indications in high prevalence countries: position of the

technical staff of the Tuberculosis Division of the IUATLD. *International Journal of Tuberculosis and Lung Disease* 9(4):355–361.

Islamic Republic of Afghanistan. 2008. *Afghanistan National Development Strategy (2009-2013)*. Kabul, Afghanistan: Islamic Republic of Afghanistan.
http://www.ands.gov.af/ands/final_ands/src/final/Afghanistan%20National%20Development%20Strategy_eng.pdf

Swedish Committee for Afghanistan. 2006. *HIV/AIDS Prevention and Control Project*.
<http://www.swedishcommittee.org/programmes/health/hivaids/index.html>

World Health Organization (WHO). 2009. *Global Tuberculosis Control-epidemiology, strategy, finance*. 2009 http://www.who.int/tb/publications/global_report/en/

WHO .. 2008. Implementing the WHO Stop TB Strategy, a hand bood for national tuberculosis control programs, WHO/HTM/TB/2008.401

WHO. 2005, Management of Tuberculosis Training for District TB Coordinator, Geneva, WHO/HTM/TB/2005.347a

WHO. 2006. *The Stop TB Strategy*. Geneva: WHO.
http://www.stoptb.org/resource_center/assets/documents/The_Stop_TB_Strategy_Final.pdf

WHO Regional Office for Eastern Mediterranean. 2006. *TB Situation in the Region*.
<http://www.emro.who.int/STB/TBSituation-RegionalProfile-hiv.htm> (accessed 11/03/2009)

ANNEX 1. PATIENT HISTORY AND CHECKUP FORM

Personal Social History

Name: _____ Age: _____ Sex: _____

Address: _____

Educational level: _____ Employment: _____

Medical History

Drug addiction and tobacco use:

Family and personal medical antecedents: diabetes renal insufficiency
chronic liver disease others

Current medications: _____

Allergies to drugs: _____

Last menstrual period and method of contraception: _____

TB History

Family medical antecedents including TB:

Sputum smear exam and culture results: Positive Negative

Localization of the TB: pulmonary TB extrapulmonary TB or both (if extrapulmonary, indicate site) _____.

Severity of TB: _____

Treatment antecedents: new relapse failure treatment after interruption transfer in or other:

Date of initial diagnosis: / /

Start and end date of all previous treatments: _____

compliance with treatment regimens: _____

outcomes: _____

History of adverse effects to anti-TB medicines

Complications—pneumothorax hemoptysis others : _____

History of household contacts:

Review of Symptoms

Cough: _____

Expectoration: _____

Fever night sweats: _____

Weight loss: _____

Dyspnea: _____

Appetite loss: _____

Others: _____

Physical Examination

Height: (cm) weight: (kg)

Vital signs:

BP: (mmHg) PR: (/min) RR:(/min) HR: (/min)

Physical examination of systems and organs:

Skin: _____

Head: _____

Neck: _____

Oropharynx _____

Cardiovascular system: _____

Pulmonary system: _____

Abdominal organs: _____

Extremities: _____

Nervous system: _____

Tentative Diagnosis

TB and other diseases:

Treatment

Category 1 2 other: _____

Date: / /1387 **Signature:** _____

ANNEX 2. SUGGESTED CONTENTS OF TRAINING FOR HEALTH PERSONNEL

1. The multidisciplinary team, with emphasis on nurses

- General information about TB
- Detect TB cases
- Treat SS+ TB cases
- Inform patients about TB
- Community-based DOTS
- Drug management
- Monitor TB cases detection and treatment
- Recording and reporting
- Management of anti-TB drugs side effects
- Contact management
- Components of Stop TB strategy
- NTP management and organization: Roles and functions for levels and occupational groups (medical doctors, nurses, laboratory technicians, and technical personnel)
- Organization of case detection and TB diagnostics
- Organization of TB treatment, study of contacts and chemoprophylaxis
- Organization of the NTP information system (operational and epidemiological)
- Correct use of NTP registration tools
- Correct use of operational information and cohort studies
- Analysis of operational and epidemiological indicators
- Programming and logistics in the NTP
- Organization of training, supervision and evaluation in the NTP
- TB Infection control: Strategy and measures

2. Medical doctors

- General information about TB
- Detect TB cases
- Treat TB patients
- Inform patients about TB
- Community-based DOTS
- Drug management
- Monitor TB cases detection and treatment
- Recording and reporting
- Reading of chest X-ray
- Treat complicated TB cases
- Management of anti-TB drugs side effects
- TB Infection control: Strategy and measures

3. Laboratory technicians

- Organization of the network labs
- Sputum collection, smear preparation, slide reading

- Recording and reporting
- Quality controls for sputum smear microscopy
- Method for quantifying laboratory supplies to facilitate procurement at the national level
- Bio-safety procedures and techniques for maintenance of lab equipment

ANNEX 4. TUBERCULOSIS IDENTITY CARD (TB 02)

Name F/N TBMU Register No. _____

Address (tel) _____

Date of registration (dd/mm/yy) _____

Sex: M F Age _____ Date treatment start _____

Name of Health facility: _____

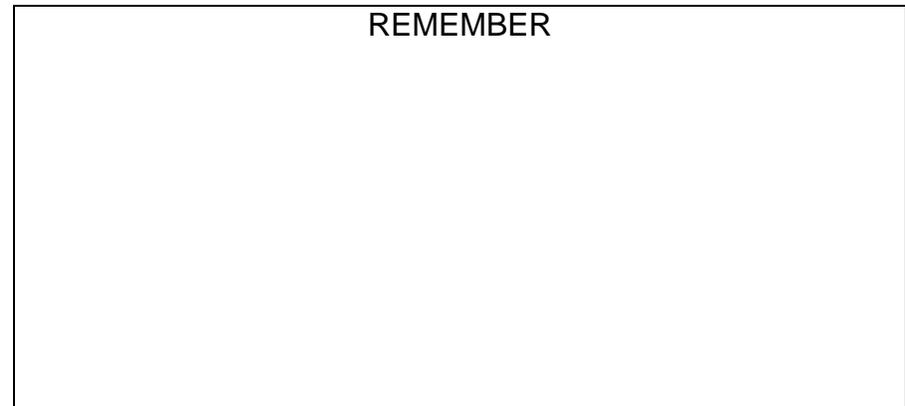
Treatment Supporter (name and address) _____

Appointment dates:



Sputum smear microscopy				Weight (kg)
Month	Date	Lab No.	Result	
0				
2				
3				
5				
end				

Disease site (check one)	
<input type="checkbox"/> Pulmonary	<input type="checkbox"/> Extrapulmonary, specify _____
Type of patient (check one)	
<input type="checkbox"/> New	<input type="checkbox"/> Treatment after default
<input type="checkbox"/> Relapse	<input type="checkbox"/> Treatment after failure
<input type="checkbox"/> Transfer in	<input type="checkbox"/> Other, specify _____



I. INITIAL PHASE

CAT	[]	(RHZE)	(RHZ)	Other
Drugs and dosage:	[][][][]	[][]	[][]	

II. CONTINUATION PHASE

	(RH)	(EH)	(RHE)	Other
Drugs and dosage:				

ANNEX 5. TUBERCULOSIS REGISTER (TB 03)

Basic Management Unit TB Register – Left Side of the Register Book

Registration Date	Registration No	Name	Father Name	Age	Gender	Referred by	Complete Address and phone	Symptoms	Date of onset of symptoms	Treatment Health facility ¹	Name Treatment supporter or CHW	Date treatment started	Treatment category ²	Site P / EP	Type of patient ³						
															New	Relapse	Treatment after Failure	Treatment after Default	Transfer in	other	

New: A patient who has never has treatment for TB or who has taken Anti-TB medicine for less than four weeks (one month)

Relapse: A patient previously treated for TB who has been declared cured or whose treatment has been completed after one full course of chemotherapy but who is diagnosed with SS+ or culture positive. There is no relapse without SS+.

Treatment after failure

- A patient under treatment who remained SS+ or became SS+ five months or more after commencing category I treatment. or
- A patient who was initially SS- before starting treatment and became SS+ after the second month of treatment.

Treatment after default: A patient who interrupts TB treatment for two months or more and returns to the health facility with SS+, where he then begins treatment with the first dose.

Transfer in: A patient already registered in one health facility who transfers to another health facility to continue his/her treatment.

Others: Although TB SS- cases and extra-pulmonary cases may also be treatment failures, relapses, or chronic cases, this should be a rare event and must be supported by pathological or bacteriological evidence.

ANNEX 6. LABORATORY REGISTER (TB 04)

Lab. serial No.	Date specimen received	Name	Father's name	TBSR No Or TBMU No	Age	Gender	Complete address (all patients) and Phone	Referred by	Name of referring facility ¹	Reason for sputum smear microscopy		Results of sputum smear microscopy ²			TBMU No. (after reg) ³	Remarks
										Diagnosis	Follow-up (month)	1	2	3		

Footnotes appearing on first page of the register only

- 1 Facility that referred (sent) the patient (or specimen or slides) for sputum smear microscopy examination. Use standardized type of referring facility according to block 2 of the *Yearly Report on Programme Management in TBMU*. Referring facility is defined as any health care providers formally engaged in any of the following TB control functions (DOTS): referring TB suspects/cases, laboratory diagnosis, TB treatment, and patient support during treatment.
- 2 Indicate the result for each specimen: (NEG): 0 AFB/100 fields; (1-9 bac) exact number if 1 to 9 AFB/100 fields; (pos1): 10-99 AFB/100 fields; (pos2): 1-10 AFB/ field; (pos3): > 10 AFB/ field
- 3 Only for newly diagnosed sputum smear microscopy positive TB cases. Determine and write the name of the TBMU and the *TB Register No.* of the patient. The aim is to regularly crosscheck whether all sputum smear microscopy positive patients are entered into a *TBMU TB Register* and are receiving treatment.

ANNEX 7. REQUEST FOR SPUTUM SMEAR MICROSCOPE EXAMINATION (TB 05)

The completed form with results should be sent promptly by laboratory to the referring facility

Referring facility¹ _____ Date: _____

Name of patient: _____

Father's Name: _____

Age: _____ Sex: M F

Address: _____

Tel: _____

Reason for sputum-smear microscopy examination:

Diagnosis—TB suspect register No. _____

OR TB contact register No. _____

Follow-up—Number of month of treatment _____

TBMU Register No. _____

- Referred by: Self-referral
 Community member\CHW
 Treatment supporter
 Public facility
 Private facility/provider
 Other, specify

Name and signature of person requesting examination

RESULTS (to be completed in the laboratory)

Laboratory Serial No. _____

Date collected	Sputum Specimen	Visual appearance	RESULTS				
			NEG	SCANTY (1-9)	(1+)	(2+)	(3+)
	1						
	2						
	3						

Examined by _____

Date _____ Signature _____

¹ Write name of Health Facility where patients is referring to

ANNEX 8. TUBERCULOSIS CULTURE/SUSCEPTIBILITY TEST REQUEST/REPORT FORM (TB 06)

(1) District TB No./Hospital No: _____ District: _____

Name of Patient: _____ Hospital: _____

(2) Patient for Short-Course Regimen
 Pre-treatment Regimen (PLEASE TICK)
 6-month Regimen

Chemotherapy Given	From Date	To Date
Isoniazid	_____	_____
Rifampicin	_____	_____
Ethambutol	_____	_____
Streptomycin	_____	_____
Pyrazinamide	_____	_____

Date: _____ Medical Officer's Name: _____

Send Results to (Address): _____

(3) Specimen (s) of Sputum at 0 Month Patient Starts/Started Treatment, Other Specimen Specify
 on 2 Months
 End of treatment Date _____
 Date (s) of Collection _____

(4) FOR LAB USE ONLY

	Specimen	*Results	Positive (grading)			
			+++	++	+	Scanty (1-9)
Lab. Serial No:	1		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Direct Smear:	2		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	3		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

* Write Neg. or Pos.

(5) Susceptibility Tests

Drug	Sensitive	Resistant
Isoniazid		
Rifampicin		
Ethambutol		
Streptomycin		
Pyrazinamide		

Comments:

Date: _____ Lab. Signature: _____

ANNEX 9. TUBERCULOSIS TREATMENT REFERRAL/TRANSFER (TB 07)

(Complete top part in triplicate)

Tick for this referral or transfer: Referral¹ or Transfer² Date of referral/ transfer _____
 Name/address of referring/transferring facility _____
 From sending facility (Province/ District): _____ Sending TBMU _____
 To receiving facility (Province/ District): _____ Receiving TBMU _____
 Name of patient _____ F/N _____ Age _____ Sex: M F
 Address of patient including telephone (if moving, future address): _____

Diagnosis: _____

(For Transfer) TBMU TB Register No. _____ Date TB treatment started: _____

*CAT

Other (CPT, ART etc) :

Drugs patient is receiving

Treatment Regimen	Total Number of Doses Given	Weeks Completed
Initial Intensive Phase		
Continuation Phase		
REMARKS: (e.g., side effects observed)		

Remarks (e.g., side effects observed): _____

Name / signature of person sending the patient _____

Documented evidence of HIV tests (and results) during or before TB treatment should be reported.



For use by facility receiving referred / transferred patient

Sending Facility _____ Receiving Facility _____

BMU TB Register No. _____ Name of patient _____ F/N _____

Date above patient reported to this facility on _____

Name /signature of person receiving the patient _____ Date _____

¹ **Referral** is the process of moving a TB patient **prior to registration in a BMU TB Register** for the purpose of start of treatment (treatment closer to patient's home). The BMU receiving a "referred" patient is responsible to inform the facility sending the patient about the care provided.

² **Transfer** is the process of moving between 2 BMU a **TB patient registered in a BMU TB Register** to continue his treatment in another area with a different **BMU TB Register**. The BMU "transferring-out" a patient is responsible to report the treatment outcome, after getting the information from the BMU completing the treatment. The BMU receiving a patient "transferred-in" is responsible for informing the BMU sending the patient (1) of the arrival of the patient and (2) at the end of the treatment, of the treatment outcome.

Note: A facility referring or transferring large numbers of patients such as large hospitals may use separate forms for referral and transfer and may have a specific register for referrals.

ANNEX 10. REGISTER OF TB SUSPECTS

Year: _____ Facility: _____

Date	TB Suspect Number	Name of TB Suspect	Father's Name	Age		Complete Address	Referred by	Date Sputum Sent to Lab	Date Result Received	Results of Sputum Examinations			TB Treatment Card Opened? (date)	Observations/ Clinician's diagnosis
				M	F					1	2	3		

Referred by: [1] Self ; [2] Community: treatment supporter, etc.; [3] Public provider; [4] Private provider; [5] Traditional healer, informal practitioner; [6] Drug store/pharmacies ; [7] Other

ANNEX 12. REGISTER OF CHRONIC RESPIRATORY PATIENTS (TB SUSPECTS)

Type of non-NTP provider = _____

Date	Serial No.	Referred by (1)	Name of TB Suspect	Age (years)	Gender (M/F)	Nationality (N/NN)	Date of onset of symptoms	Complete Address (and telephone)	Action taken 1=referred 2=diagnosed and referred for treatment 3=treated	Place of referral (2)	Reason of referral (3) 1=PSN/EP (diagnosis) 2= treatment 3=Registration in TB Register book 4=others	Final Diagnosis 1=ss+ PTB 2=ss- PTB 3=EP 4=others	Treatment regimen given (in case of treatment)	To be completed at the NTP	
														Notification status at the TBMU register (NTP) Y=Yes; N=No	Date of initiation of Anti-TB treatment at the NTP (record date)

Note: Old suspect register should be used for NTP provider just by adding one column for (Referred by) and this new register should be used by non NTP providers. Referred by: [1] Self [2] community: treatment supporter, etc.; [3] Public provider; [4] Private provider; [5] Traditional healer, Informal practitioner; [6] drug store/pharmacies; [7] Others.

This register is confined to the chronic respiratory patients (TB suspects) visiting the selected non-NTP facilities during the period 1 October-31 December 2007.

ANNEX 13. QUARTERLY REPORT ON TB LABORATORY ACTIVITIES (TB 08)

Name of Health Facility: _____ Facility ID _____	Patients registered during¹ _____ quarter of year _____ Date of completion of this form: _____
Name of Province: _____ Name of district: _____	
Name of responsible person: _____ Signature: _____	

1. TB Sputum Smear Microscopy

# of suspects		# of exams for diagnosis				# of follow up exams				total # of examination
total # of Suspect	all negative	# of positive exams	# of negative exams	total # of exams	positive rate (%)	(+)	(-)	total # of follow up exams	positive rate of follow up exams	
a	b	c	d	e	f	g	h	i	j	k
				e=c+d	f=c/e*100			i=g+h	j=g/i*100	k=e+i

2. Reagent and Equipment

Item	Fuchsin solution (ml)	Methylene blue solution (ml)	25% Sulfuric Acid (ml)	Spirit (ml)	Xylene (ml)	Immersion oil (ml)	Filter paper (piece)	Glass slides (box)	Sputum container (piece)
Stock at present									
Receive in reviewed quarter									

3. Request/ comments from Laboratory

ANNEX 14. QUARTERLY REPORT ON TB CASE REGISTRATION IN TB MANAGEMENT UNIT (TB 09)

Name of Health Facility: _____ Facility ID _____ Name of Province: _____ Name of district: _____ Name of responsible person: _____ Signature: _____	Patients registered during ¹ _____ quarter of year _____ Date of completion of this form: _____
---	--

Block 1: All TB cases registered ² to add here column by referral

Gender	Pulmonary sputum smear microscopy positive				New pulmonary sputum smear microscopy negative			New Pulmonary sputum smear microscopy not done / not available			New extra-pulmonary	Other previously treated ³	TOTAL All cases
	New cases	Previously treated			0-4 yrs	5-14 yrs	≥ 15 yrs	0-4 yrs	5-14 yrs	≥ 15 yrs			
		Relapses	After failure	After default									
M													
F													

Block 2. New pulmonary sputum smears microscopy positive cases – Age group

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

Block 3: Laboratory activity - sputum smear microscopy and suspect management⁴ **Block 4: TB/HIV activities**²

No. of Total outpatients aged 15 years and over	No. of TB suspects identified	No. of TB suspects examined for diagnosis by sputum smear microscopy	No. of TB suspects with positive sputum smear microscopy result		No. patients tested for HIV before or during TB treatment ⁵	No. patients HIV positive ⁵
				New sputum smear microscopy positive TB		
				All TB cases		

ANNEX 15. QUARTERLY REPORT ON SPUTUM SMEAR MICROSCOPY CONVERSION (TB 10)

Name of Health Facility: _____ Facility ID: _____ Name of Province: _____ Name of district _____ Name and signature: _____	Quarter ____ of year _____ Date of completion of this form: _____
--	--

Cases Type	Number of sputum smear positive cases registered in quarter recorded above ^b	Sputum smear microscopy not done at either 2 or 3 months because			Sputum smear microscopy conversion at:			Total
		Died	Defaulter	Transfer Out	2 months	3 months	Still Positive	
New Cases								
Relapse								
Failure								
Re-treatment After Default								
Other								
Total converted at 2 or 3 months:								

^a Quarter: This form applies to patients registered (recorded in the *TBMU Register*) in the quarter that ended 3 months ago. For example, if completing this form at the beginning of the third quarter, record data on patients registered in the first quarter.

^b This number should match the number of new sputum smear microscopy positive cases in block 1, column 1, first row of the *Quarterly Report on TB Case Registration* previously completed for patients registered in this quarter.

ANNEX 16. QUARTERLY REPORT ON TB TREATMENT OUTCOMES AND TB/HIV ACTIVITIES IN TB MANAGEMENT UNIT (TB 11)

Name of Health Facility: _____ Facility ID _____	Patients registered during ¹ _____
Province: _____ District: _____	_____ quarter of year _____
Name of responsible person: _____ Signature: _____	Date of completion of this form: _____

Block 1: TB treatment outcomes

Type of case	Total number of patients registered during quarter *	Treatment outcomes						Total number evaluated for outcomes: (sum of 1 to 6)
		Cure (1)	Treatment completed (2)	Died (3)	Treatment failure ² (4)	Default (5)	Transfer out (6)	
New sputum smear microscopy positive								
New sputum smear microscopy negative								
New sputum smear microscopy not done								
New extra-pulmonary								
Relapse								
Treatment after failure								
Treatment after default								
Other previously treated ³								

* These numbers are transferred from the *Quarterly Report on TB Case Registration* for the above quarter. Specify any exclusion.

Block 2: TB treatment outcomes of HIV-positive patients

Type of case	Total number of HIV-positive TB patients Block 3, Column (a)*	Treatment outcomes						Total number evaluated for outcomes: (sum of 1 to 6)
		Cure (1)	Treatment completed (2)	Died (3)	Treatment failure ² (4)	Default (5)	Transfer out (6)	
All TB cases								
New sputum smear microscopy pos. TB								

* Block 3: TB/HIV activities (same quarter analysed as Block 1)

	No. patients on CPT ⁵	No. patients on ART ⁶
All TB cases		
New sputum smear microscopy positive TB		

ANNEX 17. TABLE TO REQUEST TB DRUG SUPPLY (12a)

Organization:	_____	Date:	_____	Category	No. of patients
Prepared by:	_____	Signature:	_____	III	

No. of patients: _____ **Duration: for months ()till ()** _____

Type of drug	Category of treatment	Average no. of tabs/vials per patient (a)	No. of patients in each category (b)	No. of tabs/vials needed (c=axb)	Total no. of tabs/vials needed (c)	Stock balance (d)	Total amount of tabs/vials requested (e=c-d)
RHZE Tab (150+75+400+275 mg)	I	196					
	II	294					
RHE Tab (150+75+275 mg)	II	490					
RH Tab (150+75 mg)	III	196					
HE Tab (150+400 mg)	I	420					
	III	420					
Z Tab (400 mg)	III	196					
E Tab (400 mg)	II	350					
S Vial (1 mg)	II	56					
INH Tab (100 mg)	Prev. therapy	180					
Water for Injection	II	56					
Syringe Disposable + Needles	II	56					

NOTE: The above mentioned list is included the Buffer Stock and 20 % Increasement of TB Patients.

ANNEX 18. NATIONAL TB CONTROL PROGRAM REQUISITION FOR LABORATORY SUPPLIES (12b)

Name of the requesting Province/Region: _____

Date: _____

Name of the person filling the form: _____

Signature: _____

		A	B	C	D	D	E	
				A x B=C	C=D	E	C+D-E=F	Remarks
ITEM		Total # of examined slides	need for 1 slide	3-month running requirement (C = A x B)	3-month reserve requirement (D = C)	Currently in stock (E)	Total order (F = C + D - E)	
Basic fuchsin	gr		0.015			g	g	
Phenol	gr		0.25			g	g	
Ethanol	ml		0.5			ml	ml	
Methylene blue	g		0.015			ml	ml	
Sulphoric acid	ml		2.5			ml	g	
Slid	piece		1			box	box	
Sprit	ml		2			ml	ml	
Sputum container	piece		1			unit	unit	
Xylen*								
Immersion oil**								
Gloves ***								
Demineralized water	ml		20			ml	ml	

* NTP supply this item annually (250ml/TB Laboratory/Year)

** NTP supply this item annually (250ml/TB Laboratory/Year)

** NTP supply this item based on need

ANNEX 19. NATIONAL TB CONTROL PROGRAM REQUISITION FOR LABORATORY SUPPLIES (12c)

Name of the requesting Province/Region: _____

Date: _____

Name of the person filling the form: _____

Signature: _____

		A	B	C	D	D	E	
ITEM		Total # of examined slides	need for 1 slide	A x B=C 3-month running requirement (C = A x B)	C=D 3-month reserve requirement (D = C)	E Currently in stock (E)	C+D-E=F Total order (F = C + D - E)	Remarks
Basic fuchsin	gr		0.015			g	g	
Phenol	gr		0.25			g	g	
Ethanol	ml		0.5			ml	ml	
Methylene blue	g		0.015			ml	ml	
Sulphoric acid	ml		2.5			ml	g	
Slid	piece		1			box	box	
Sprit	ml		2			ml	ml	
Sputum container	piece		1			unit	unit	
Xylen*								
Immersion oil**								
Gloves ***								
Deminerlized water	ml		20			ml	ml	

- * NTP supply this item annually (250ml/TB Laboratory/Year)
- ** NTP supply this item annually (250ml/TB Laboratory/Year)
- ** NTP supply this item based on need

ANNEX 20A: QUARTERLY REPORT ON SUSPECT MANAGEMENT

Referred by	Number of respiratory symptomatic individuals registered (a)	Number of respiratory symptomatic individuals examined (b)	Number with positive results (c)	% with positive results (d)	Average slide per suspect	Number of Positive registered for treatment (e)	Primary defaulter rate (c)- (e)/ (c) X 100
Self							
Community							
Public *							
Private **							
HH contacts							
Others							
CHW							

* **Public** includes Public sector institutions (not under NTP)

- Primary health clinics / dispensaries / general hospitals / speciality hospitals
- Academic institution (medical college) / non-academic
- Catering to lay public / insured people / employees / special populations (such as prisons)
- Free / paid services
- Accountability to which ministry / department of local / municipal / provincial / central administration

** **Private includes:**

- Institutions / Individual practitioners
- Hospitals / Clinics / Sanatoria / Laboratories / Pharmacies
- Primary / secondary / tertiary
- For profit / not for profit
- Formal / Informal / Traditional
- Systems of Medicine
- Specialist / generalist

ANNEX 20B. QUARTERLY REPORT ON CONTACT MANAGEMENT

Indicators	Type of index case				
	General	TBP Pos	TBP Nag	EP	All cases
Total number of household contacts					
Total number of household contacts registered					
Chest symptomatic individuals among registered household contacts					
Number of household contacts tested among registered					
Percentage of HH contacts tested among registered					
Average number of contacts tested per index case					
Number of TBP pos diagnosed among household contacts tested					
Incidence of TBP pos among household contacts/100,000					
Number of TB (All forms) diagnosed among household contacts tested					
Incidence of TB (All forms) among household contacts/100,000					
Contact Management policy					
Number (and percentage) of contacts tested by Tuberculin skin test					
Number (and percentage) of contacts tested by x-ray					
Number (and percentage) of contacts tested by DSM					
Number (and percentage) of contacts tested by TST and x-ray					
Number (and percentage) of contacts tested by x-ray and DSM					
Number (and percentage) of contacts tested by TST, DSM, and x-ray					
Results of HH contact investigations					
Percentage of pos Tub test among contacts examined					
Percentage of TB results among contacts examined by x-ray					
Percentage of DSM pos among contacts examined by DSM					
Preventive Therapy					
Number of household contacts eligible to preventive therapy (2 quarters ago)					
Number of household contacts on preventive therapy (2 quarters ago)					
Completion rate of preventive therapy at the end of the "current quarter"					

ANNEX 20C. YEARLY REPORT ON PROGRAM MANAGEMENT IN TB MANAGEMENT UNIT

Name of Health Facility: _____	Year: _____	Date form completed: _____	Signature: _____
--------------------------------	-------------	----------------------------	------------------

Block 1: Health care facilities/providers involved in TB control

Facility/provider type ¹	Total number of facilities in the BMU ² (a)	Facilities providing any TB control services ³		Facilities with laboratory facilities					Facilities providing HIV services	
		Target cumulative number to involve ³ (b)	Cumulative number actually involved (c)	Target cumulative No. to involve in sputum smear microscopy ⁴ (d)	Cumulative No. involved in sputum smear microscopy (e)	Out of (e), No. involved in Lab. Quality Assurance (f)	Out of (e), No. providing culture services (g)	Out of (e) No. providing DST services (h)	Out of (c), No. providing HIV testing & counsel. to all TB patients (i)	Out of (c) No. providing ART to TB patients (j)
Public facility										
Private facility/provider										
Others ⁵										

Block 2: Contribution by health care facilities/providers in TB control

	No. of new sputum smear microscopy positive cases diagnosed in a year		No. of new sputum smear microscopy positive cases started on treatment in year
TOTAL ^{6,7}			
Facility /provider type ¹	Referred by ⁸	Diagnosed by ⁹	Treated by ¹⁰
Self-referral			
Public facility			
Private facility /provider			
Others			

Block 3: Contribution by trained and supervised community in TB control¹¹

No. new sputum smear microscopy positive cases referred by the CHW	No. new sputum smear microscopy positive cases receiving treatment support by the CHW

Block 4: Staff position and training¹

Category of staff involved in NTP	Number of positions established/sanctioned ³	Of these established positions, number filled	Of these filled positions, number trained in NTP in the past 12 months ⁴	Total trained in NTP
ALL HEALTH FACILITIES				
Medical Doctor				
Nurse				
Provincial TB Coordinator				
Provincial Laboratory Supervisor				

Health facility is defined as any health institution with health care providers formally engaged in any of the following TB control functions (DOTS): referring TB suspects/cases, laboratory diagnosis, TB treatment, and patient support during treatment.

1. Facility types are indicative, consistent with the referral box of the *TB Treatment Card* and should be adapted to local context.
2. Known number of existing facilities (provider) in the TBMU. The table may be adapted with more rows to incorporate facilities that are relevant for the country.
3. Facilities (providers) formally engaged in any of the following TB control functions (DOTS): referring TB suspects/cases, laboratory diagnosis, TB treatment and patient support during treatment.
4. The cumulative number of facilities (providers) that was planned to be involved in the year of the report.
5. Other categories may include PHC facility, medical college, private NGO hospital, private NGO clinic, private practitioners, corporate health facilities, prison health service, army health facilities, pharmacies, traditional healers, etc.
6. Total number of new smear positive patients diagnosed and recorded in the *TB Laboratory Register* for the year.
7. Total number of new smear positive patients recorded in the *TBMU Register* for the year.
8. New smear positive cases referred for diagnosis by each facility/provider category, as recorded in the column for "name of referring health facility" in the *TB Laboratory Register*.
9. New smear positive cases diagnosed by each facility/provider category recorded in the *TB Laboratory Register* of the facility/provider of microscopy service.
10. New sputum smear positive cases treated by respective provider category, as recorded in the column "health facility" in the *TBMU Register*.
11. This block is filled based on the individual *TB Treatment Card* (referral box, name of treatment supporter) or from the *TB Register* (form D of the additional TB data -part 3). **Community** is defined as trained and regularly supervised informal practitioners, community worker/volunteer, family members, friends providing services outside a facility (health institution).

Note: This form could be filled only for selected period of time and for selected TBMU.