



THE REPUBLIC OF UGANDA

## **MINISTRY OF HEALTH**

# **IMPLEMENTATION OF TB/HIV COLLABORATIVE ACTIVITIES AT DISTRICT LEVEL.**

**AN ORIENTATION MANUAL FOR HEALTH WORKERS**

**1<sup>st</sup> Edition**

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## **CHAPTER 1**

### **1.0 INTRODUCTION TO TB/HIV COLLABORATIVE ACTIVITIES**

#### ***1.1 Purpose of the Course***

The training module on TB/HIV collaboration is designed to provide technical knowledge and skills essential for implementation of TB/HIV collaborative activities in the context of the health care delivery system in Uganda.

Education materials from Ministry of Health, World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) have been used to develop this training module.

The information presented in this course is based on experiences of the implementation of the TB treatment strategy known as directly observed treatment short-course together with existing experiences in the areas of HIV counseling and testing, HIV care and support.

## **1.2 Target Audience**

The target audience for this course is the health workers who manage TB and HIV patients at the district level as well as community health workers and volunteers involved in community based TB care and home based HIV care. Although the principal target audience is the health workers at the district level, the information in this course may also be used to sensitize the political and technical managers within the district.

## **1.3 Organization of the Course**

### **1.3.1 Course Materials To Be Used**

This module consists of six chapters, which serve as the main resource for the course.

The module reviews the technical knowledge and skills essential for implementing TB/HIV collaborative activities at the district level.

Each chapter is based on a major task required for TB/HIV collaboration to take place at the facility level.

**These major tasks are:**

**Chapter 1:** Introduction to TB/HIV collaboration.

**Chapter 2:** Diagnosis and Case Management of Tuberculosis.

**Chapter 3:** Routine Diagnostic HIV counseling and testing in TB clinical settings.

**Chapter 4:** Management of a TB, HIV or TB-HIV co-infected patient.

**Chapter 5:** Patient Education and Support for Adherence

**Chapter 6:** Management of TB-HIV collaborative activities.

### **1.3.2 The Role of a Facilitator**

Although the guide can be used on its own, the course is designed to be facilitated in a classroom setting by a course facilitator. The facilitator should be knowledgeable in both TB and HIV control strategies or facilitators with expertise in TB or HIV control strategies should be used to facilitate the course. The facilitator should give an overview of the content of each chapter. Discussion among participants is essential for some chapters as guided by the facilitator's manual. The participants should then read the chapter and ask questions for clarity. The facilitator should answer the participants' questions and summarize the chapter.

The facilitator should

- Introduce each chapter
- Answer questions whenever they arise, or find the appropriate answer
- Facilitate group discussions
- Summarize each chapter.

### **1.4 Course Goal and Objectives**

The goal of this course is to increase the technical knowledge and skills of staff at the district level and to improve their ability to implement TB/HIV collaborative activities.

The course provides the knowledge and skills needed to screen patients for TB or HIV, diagnose and manage patients with TB and HIV, appropriately refer patients for TB or HIV care and support services, monitor patients during treatment and monitor program

performance in the area of TB/HIV collaboration. This course provides an overview of the procedures for completing the necessary cards, forms, registers and reporting forms.

## **Course Objectives**

By the end of the course, participants should be able to perform the following objectives:

- Screen HIV patients for TB and offer HIV counselling and testing for TB patients.
- Ensure the proper prescription and administration of TB and ARV drugs during the entire course of treatment, and document patient adherence;
- Provide preventive therapy to TB-HIV patients
- Provide health education to patients and train health workers to do the same.
  - Register patients in the *TB, HCT, ART, Acute and Chronic care Registers*
  - Refer patients to appropriate TB and HIV services and follow up referrals.

## **1.5 *Epidemiology of TB and HIV***

### **1.5.1 TB and HIV Transmission**

#### **TB transmission**

TB is a contagious disease that is caused by the organism *Mycobacterium tuberculosis*. Like the common cold, it is spread mainly through the air. However, only people who are sick with pulmonary TB are infectious. When infectious people cough, sneeze, talk, or spit, they propel TB germs, known as bacilli, into the air. A person needs only to inhale a small number of bacilli to be infected.

Left untreated, each person with active TB will infect on average, between 10 and 15 people every year. But people infected with TB germs will not necessarily get sick with the disease. Only 5% -10% of people who are infected with TB become sick or infectious at some time during their life. The immune system stops and contains the TB bacilli, which can lie dormant for years. When someone's immune system is weakened, the chances of getting sick increase.

- Someone in the world is newly infected with TB every second.
- Nearly 1% of the world's population is newly infected with TB each year.
- Overall, one third of the world's population is currently infected with the TB bacillus.



## **HIV transmission**

Worldwide the most common route of HIV transmission is through sexual intercourse. Other sexually transmitted infections increase the risk of HIV transmission. Other routes of HIV transmission are through contaminated blood transfusion, injections with contaminated needles and syringes, use of non-sterile skin-piercing instruments and from mother to infant. About one-third of children born to HIV-infected mothers are also HIV infected, with infection occurring mainly around the time of birth. There is a smaller risk of HIV transmission through breastfeeding.

### **1.5.2 Burden of TB and HIV**

#### *Burden of Tuberculosis*

*Mycobacterium tuberculosis* infects a third of the world's population. In 2003 there were an estimated 8.8 million new cases of tuberculosis (TB) worldwide. The African region (24%), South-East Asia region (35%), and Western Pacific region (22%) together accounted for 82% of all notified cases and similar proportions of new smear positive cases. 95% of TB cases and 98% of TB deaths are in developing countries (WHO, 2005).

Uganda is one of the world's 22 high-burden countries with TB. The country has an estimated annual risk of infection (ARI) of 3% -equivalent to 150-165 new smear positive TB cases per 100,000 population per year or 300-330 total TB cases per 100,000 per year. Uganda is yet to attain the global case detection and treatment success targets of 70% and 85%, respectively. In 2003, the country detected 52% of

the expected new smear positive cases. Of these cases, 67.6% were successfully treated.

### ***Burden of HIV/AIDS.***

At the end of the year 2004, a total of 39.4 (35.9 – 44.3) million people were estimated to be living with HIV/AIDS worldwide, of whom 25.4 (23.4 – 28.4) million which is 64.5% were in sub-Saharan Africa and 7.1 million (18%) were in South East Asia, ( UNAIDS/WHO, 2004).

An estimated two million people have been infected with Human Immunodeficiency Virus (HIV) and 900,000 people have died in Uganda since the onset of the Acquired Immunodeficiency Syndrome (AIDS) epidemic. The national HIV sero-behavioural survey that was conducted in 2004/05 shows adult prevalence of 7% in the 15-59 age group. Currently, an estimated 120,000 - 150,000 people have AIDS in Uganda (MOH, HSSP-II). High mortality due to AIDS in Uganda has significantly contributed to the currently estimated 2.1 million orphans in the country, (MOH, HSSP-II).

### **1.5.3 Relationship between TB and HIV**

It is recognized that HIV increases the risk for TB infection following exposure and HIV promotes progression to active TB in people with both recently acquired and latent TB infection.

HIV fuels the tuberculosis epidemic in several other ways as stated below:

- HIV is the most powerful known risk factor for reactivation of latent tuberculosis infection to active disease.
- HIV infected people are more susceptible to be TB infected when they are exposed to M tuberculosis.
- The annual risk of developing TB in a PLHA who is co-infected with M tuberculosis ranges from 5 -15%.
- HIV increases the rate of recurrent TB, which may be due to either endogenous reactivation (true relapse) or exogenous infection.
- Increasing tuberculosis cases in PLHA pose an increased risk of TB transmission to the general community, whether or not HIV-infected.
- HIV alters the clinical course of TB disease, with increasing numbers of smear-negative pulmonary TB and extra-pulmonary TB cases.
- TB is more likely to be disseminated and more difficult to diagnose as immunosuppression progresses.

However, TB is one of the most common treatable infectious HIV-related disease of PLHAs in high TB burden countries. It is one of the leading causes of death among PLHAs. It accelerates the progression of HIV-related immunosuppression. Late TB diagnosis contributes to increased death rates in PLHAs.

#### **1.5.4 Burden of TB-HIV co-infection**

The human immunodeficiency virus (HIV) pandemic presents a massive challenge to the control of tuberculosis (TB) at all levels. Tuberculosis is also one of the most common causes of morbidity and one of the leading causes of mortality in people

living with HIV/AIDS (PLWHA). By the end of 2000, about 11.5 million HIV-infected people worldwide were co-infected with M.tuberculosis. 70% of co-infected people were in sub-Saharan Africa, 20% in South-East Asia and 4% in Latin America and the Caribbean, (WHO, 2004).

In Uganda, the interaction of TB and HIV is increasing the burden of both diseases. It is well established that HIV is the biggest risk factor for the development of active TB among individuals infected with M. tuberculosis. At present, an estimated 50% of TB patients are also co-infected with HIV, (MOH-NTLP, 2004). At the same time, TB remains a leading cause of morbidity and mortality for PLWHA. An estimated 30% of all deaths among PLWHA are attributed to TB (MOH-NACP, 2003).

## **1.6 STRATEGY FOR CONTROL OF TB AND HIV**

### **1.6.1 TB control strategy**

For more than 100 years, microscopes have been able to detect the bacterium that causes TB. For almost 50 years there have been effective anti-TB drugs.

Methods and tools exist for detecting and curing TB patients. However, the problem has been the lack of organized services that ensure widespread detection and treatment of TB patients, particularly the infectious ones. Today, however, there is proven, cost effective TB treatment strategy known as DOTS (directly observed treatment), which is recommended by the WHO and the International Union Against TB and Lung Disease

(IUATLD). This strategy has been adopted by Ministry of Health as a strategy to be used for control of TB in Uganda.

The DOTS (Directly Observed Therapy-Short Course) strategy for controlling TB is a combination of technical and managerial components. This strategy quickly makes the infectious cases noninfectious and breaks the cycle of transmission. The strategy prevents the development of drug-resistant TB, which is often fatal and always more expensive to cure. It is the most effective strategy available for controlling the TB epidemic today. It has five key components.

#### The Five Components of the DOTS Strategy for Controlling TB

1. Government commitment to sustained TB control activities.
2. Case detection by sputum smear microscopy among symptomatic patients self-reporting to health services.
3. Standardized treatment regimen of six to eight months for at least all confirmed sputum smear positive cases, with directly observed treatment (DOT).
4. A regular, uninterrupted supply of all essential anti-TB drugs.
5. A standardized recording and reporting system that allows assessment of treatment results for each patient and of the TB control program overall.

Once patients with TB have been identified using microscopy services, health and community workers and trained volunteers observe and record patients swallowing the

full course of the correct dosage of anti-TB medicines throughout the duration of treatment.

Sputum smear testing is repeated after 2 and 5 months to check progress, and again at the end of treatment to determine treatment outcome. A recording and reporting system documents patients' progress and the final outcome of treatment.

### **Community based model for control of TB in Uganda**

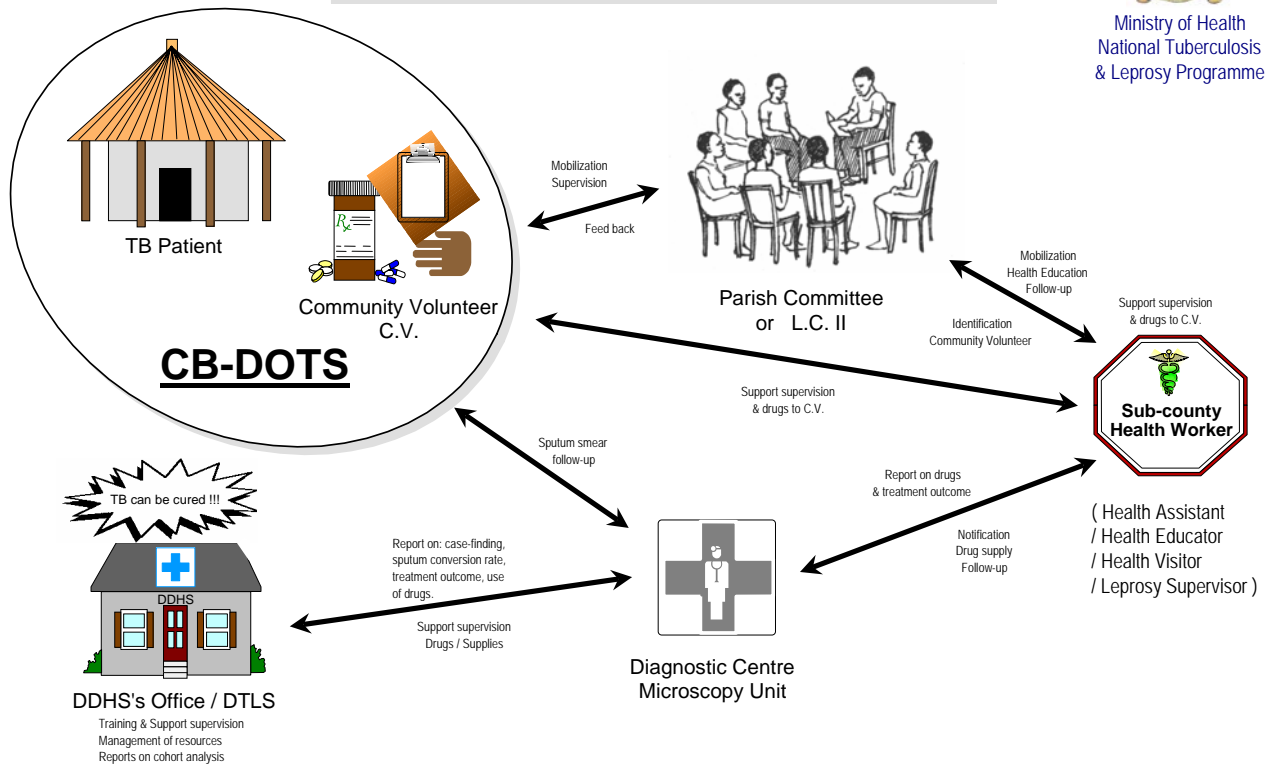
Community based TB care (CBTBC) with direct observed therapy (DOTS) was adopted by the MOH in Uganda as the best strategy for controlling TB. To date, this strategy has been expanded to all districts in the country although the sub-county and patient coverage is still wanting. In the CBTBC with DOTS model, a public health worker (referred to as a Sub-County Health Worker (SCHW) links the formal health system to communities in their respective sub-counties. SCHWs conduct community mobilization, facilitate communities through their leaders to select community volunteers (CVs) and train those selected. In addition they supervise CVs and replenish their TB drugs fortnightly. The CVs are responsible for administering and directly observing therapy. The CVs are also responsible for referring the TB patients to health centre for appropriate follow-up sputum testing. The following figure depicts the model of implementation of CBTBC with DOTS at the district level.

**Figure 1:**

**Implementation of CB-DOTS Referral System in Rural Settings**



Ministry of Health  
National Tuberculosis  
& Leprosy Programme



**1.6.2 HIV/AIDS control Strategy**

The current HIV/AIDS control strategy includes the following:

- 1 Prevention and health promotion
  - Broad-based programmes to educate the general population about HIV/AIDS and promote safe and responsible sexual behaviour and practices. Access to condoms.

- Youth sensitive programmes that specifically engage and respond to young people and their sexual and reproductive health needs. Also provide widely accessible voluntary counseling and testing (VCT).
- Promote harm reduction among injecting drug users, including offering a wide access to sterile injecting equipment.
- Provide guidance to traditional healers to support their role in HIV prevention and care.

## 2. Treatment and care

- Programmes to prevent mother-to-child HIV transmission.
- Wide access to services to diagnose and treat sexually transmitted infections (STIs) and increased access to antiretroviral therapy in line with accepted treatment guidelines.
- Diagnosis and treatment of HIV related opportunistic and concurrent infections
- Psychosocial support and palliative care to people with HIV/AIDS.
- Continuum of care established from the home through to health facility based care, supported by a sound system of client referral.

## 3. Health standards and systems

- Supply safe blood and blood products
- Review health systems and promote national policies and standards for public and private delivery of HIV/AIDS prevention, promotion, treatment and care programmes.



- Procurement plan for antiretrovirals and other essential HIV related drugs
  - Reduction of occupational HIV infection among health care workers and provision of post-exposure prophylaxis
  - Safe injection and surgical practices in health care settings provided.
4. Other essential interventions
- Counter discrimination and stigma of people with HIV/AIDS
  - HIV and STIs epidemiological and behavioral surveillance
  - Provide an enabling environment through policies, laws and regulations that assist HIV and STIs programmes to work, in collaboration with government and non-government sectors
  - Mobilize involvement of the community sector, NGOs, PLWAs, vulnerable groups and business sector
  - Establish an HIV/AIDS funding plan for the health sector, as part of the national strategic plan and strengthen accountability systems for use of human and financial resources.

### **1.7 RATIONALE FOR TB/HIV COLLABORATION**

The above background information demonstrates that HIV prevention and care should be a priority concern of TB programmes and TB care and prevention should be a priority concern of national HIV/AIDS control programmes. Whereas previously TB programmes and HIV/AIDS programmes have largely pursued separate courses, they need to exploit synergies in supporting health service providers to deliver collaborative interventions.

Some of the TB/HIV interventions described later clearly fall under the responsibility and expertise of the NTLP (such as sputum microscopy), while others fall under the responsibility and expertise of the NACP (such as HIV counseling and testing services). However, most activities fall in the middle of the spectrum with much potential overlap between the programmes e.g.:

- Increased community involvement can benefit both TB diagnosis and care, and HIV/AIDS care and prevention.
- IPT is a concern of both TB services (which are likely to supply and monitor the isoniazid) and of NACP services (whose clients will benefit).

At the service delivery level it can be seen that many potential reciprocal synergies exist between different service providers e.g.

- HIV-positive VCT clients have a high rate of TB (and therefore benefit from TB screening and treatment) and TB patients have a high rate of HIV (and therefore benefit from HCT and associated services).

This document will assist policy-makers and health managers at all levels of service delivery to understand what should be done to decrease the joint burden of tuberculosis and HIV. It is designed to be used in conjunction with other existing policies on community based TB care (CB-DOTS), HIV/AIDS Care, ART, Cotrimoxazole prophylaxis, and HIV counseling and testing.

## **1.8 RECOMMENDED TB/HIV COLLABORATIVE ACTIVITIES IN UGANDA**

### **1.8.1 GOALS & OBJECTIVES OF TB/HIV COLLABORATION**

The goal is to decrease the burden of tuberculosis and HIV in Uganda.

The objectives of collaborations TB/HIV activities are:

- (i) To establish the mechanisms of collaboration between TB and HIV/AIDS programmes.
- (ii) To decrease the burden of tuberculosis in people living with HIV/AIDS.
- (iii) To decrease the burden of HIV in TB patients.

### **1.8.2 RECOMMENDED COLLABORATIVE ACTIVITIES**

A Establish mechanisms of collaboration by;

1. Set up coordinating body for TB/HIV activities and focal persons at District & HSD levels.
2. Conduct surveillance of HIV prevalence among TB patients.
3. Carry out Joint TB/HIV planning.
4. Conduct monitoring & evaluation.
5. Coordinate research activities on HIV and TB.

B Decrease the burden of TB in people living with HIV/AIDS by:

1. Establish intensified TB case finding.
2. Introduce isoniazid preventive therapy, where feasible
3. Provide TB treatment to those with active TB
4. Ensure TB infection control in health care and congregate settings.

C. Decrease the burden of HIV in TB patients by:

1. Provide HIV testing & counseling.
2. Introduce HIV prevention methods.
3. Introduce Cotrimoxazole preventive therapy.
4. Ensure HIV/AIDS care & support.
5. Introduce antiretroviral therapy.

#### Summary

- The TB/HIV training modules entitled, implementing TB/HIV collaborative activities at district level are a series of educational modules designed to provide the technical knowledge and skills essential for implementing TB/HIV collaborative activities at the health facility level.
- The goal of the course is to increase the technical knowledge and skills of staff to implement TB/HIV collaborative activities within the policy guidelines.
- HIV epidemic is the biggest driving force for the TB epidemic.
- A TB patient co-infected with HIV should be managed as one patient with two diseases.
- It is therefore essential to offer a comprehensive package of care for both conditions to a TB patient co-infected with HIV.

## **CHAPTER 2**

### **2.0 DIAGNOSIS AND CASE MANAGEMENT OF TUBERCULOSIS**

#### **2.1 INTRODUCTION:**

HIV increases susceptibility to infection with *Mycobacterium tuberculosis*. HIV increases the risk of progression of *M.tuberculosis* infection to TB disease. This risk increases with increasing immunosuppression. TB can occur at any point in the course of progression of HIV infection . Compared with an individual who is not infected with HIV, a person infected with HIV has a 10 times increased risk of developing TB. In an individual infected with HIV, the presence of TB allows HIV to multiply more quickly. This may result in more rapid progression of HIV disease.

HIV does not only increase the number of TB cases, but also alters the clinical course of TB disease. As HIV- related immunosuppression increases, the clinical pattern of TB disease changes, with increasing numbers of smear negative PTB cases. TB is more likely to be disseminated and more difficult to diagnose.

It is very important that health workers identify suspects who have TB early in the course of the disease and ensure their proper examination and treatment. All HIV positive patients should be screened for TB and those found to have TB should be provided with treatment according to the national guidelines on TB control.

In this module, the role of a nurse or counselor in identifying TB suspects and helping TB patients to access, adhere and complete treatment shall be explained. The symptoms of TB disease, tasks involved in collection of sputum specimens will be reviewed.

This will enable the health workers involved in HIV/AIDS control at VCT centers, OPD, and STI/HIV clinics to properly identify the TB suspects.

### **Learning objectives.**

At the end of the course the health workers should be able to;

1. Identify the steps needed by health workers at the health facilities to identify TB suspects.
2. Describe how sputum specimens are collected properly.
3. Support TB suspects to access services for TB diagnosis and care.

## **2.2 *DIAGNOSIS OF TUBERCULOSIS AT HEALTH FACILITY LEVEL.***

### **2.2.1 Identifying a TB suspect**

It is important that Health workers at this level recognize the symptoms of TB and perform accurate and timely diagnostic tests. If TB is not suspected, the likelihood of diagnosis of TB may be delayed or even overlooked, and the patient will remain ill and possibly infectious.

Many health facilities have the capability of performing an initial diagnostic examination for tuberculosis, which often includes conducting a medical history, physical exam, sputum examination, and a chest radiograph.

### **2.2.1.1 Medical history.**

The medical history is part of the patients' life history and is important for diagnosing and treating patient's medical condition. It includes social, family, and occupational information about the patient.

The health worker should determine whether the patient

- Has been exposed to a person with infectious disease.
- Has symptoms of TB disease.
- Is part of a group at high risk for TB disease?

### **2.2.1.2 Symptoms of TB disease.**

The most common symptom of pulmonary tuberculosis is cough for three weeks or more, usually with expectoration. All people who have this symptom should have their sputum examined as soon as possible.

Cough for 3 weeks or more is usually accompanied by one or more of the following.

Weight loss, tiredness, fever, night sweats, chest pain, hotness of breath, loss of appetite, and coughing up blood.

A patient with extra pulmonary TB may have the following general symptoms;

Weight loss, fever, and night sweats. Other symptoms depend on the organs affected.

### **2.2.1.3 High-risk groups.**

It is important to find out if the patient belongs to one or more of the following groups at high risk of developing TB.

- Persons who are living with HIV.
- Contacts of TB patients

- Homeless persons.
- Refugees and migrants
- Prisoners and those released from prison.
- Persons who live in shelters and overnight stay homes.
- Persons who live in drug abuse and psychiatric facilities
- Immunosuppressed people with other medical conditions e.g., diabetes mellitus, peptic ulcer disease and persons receiving chemotherapy or corticosteroids.

#### **2.2.1.4 Determine the educational needs of a TB suspect.**

Once the nurse identifies a TB suspect, it is important to provide adequate information to the patient so as to encourage them to accept the diagnostic procedures or adhere to referral to a TB diagnostic unit. The nurse should provide information on cause, transmission, diagnosis and treatment on TB. Information on relationship between TB and HIV should be provided. The nurse should identify the patient's concerns and anxieties regarding diagnosis, and need for further education. The patient should be provided with enough information on where to access services for TB diagnosis.

### **2.2.2 Diagnostic tests for a TB suspect**

#### **2.2.2.1 Sputum examination.**

All patients suspected of having tuberculosis, even those with normal x-rays, three separate sputum specimens should be collected of acid-fast bacilli (AFB). When the units do not have the facilities to collect and transport sputum specimens, the patient should be referred to the nearest health unit the facilities or to a health unit with a laboratory.



### **Schedules for collection of sputum.**

For all patients suspected of having tuberculosis, three separate sputum specimens should be collected for microscopic examination. Whenever possible a health worker should collect 3 sputum specimens from a tuberculosis suspect, within two days.

The first specimen should be collected under the supervision of the health worker on day one. Before the patient leaves the health facility he or she should be given a sputum container to use in collecting the second sputum specimen. This should be collected early in the morning by the patient before returning to the clinic the next day.

When the patient returns to the clinic with the second specimen on the second day, the third specimen should be collected in the clinic under the supervision of the health worker.

### **Special consideration for sputum collection.**

Whenever possible the sputum collection schedule described above should be followed, in order to obtain the best sputum specimens for examination. Occasionally however there may be a need for alternative sputum collection procedures.

In many situations patients live far from the health units or have no means of transport the patient may be admitted to the hospital for two to three days to complete the tuberculosis screening. Alternatively if the patient is unable to reach the health unit, Health workers may go to the patients home to collect sputum specimens.

If any sputum specimen is positive by microscopy and the patient does not return to the clinic an immediate search must be done to find the patient to prevent dissemination of the infection in the community.

**Patient education and instructions on sputum collection.**

Health workers must explain the importance of sputum collection .In addition health workers should describe the sputum collection process so that the patient will know what to expect.

**Instructions for producing an adequate sputum specimen.**

The patient should follow the following steps to produce an adequate sputum sample.

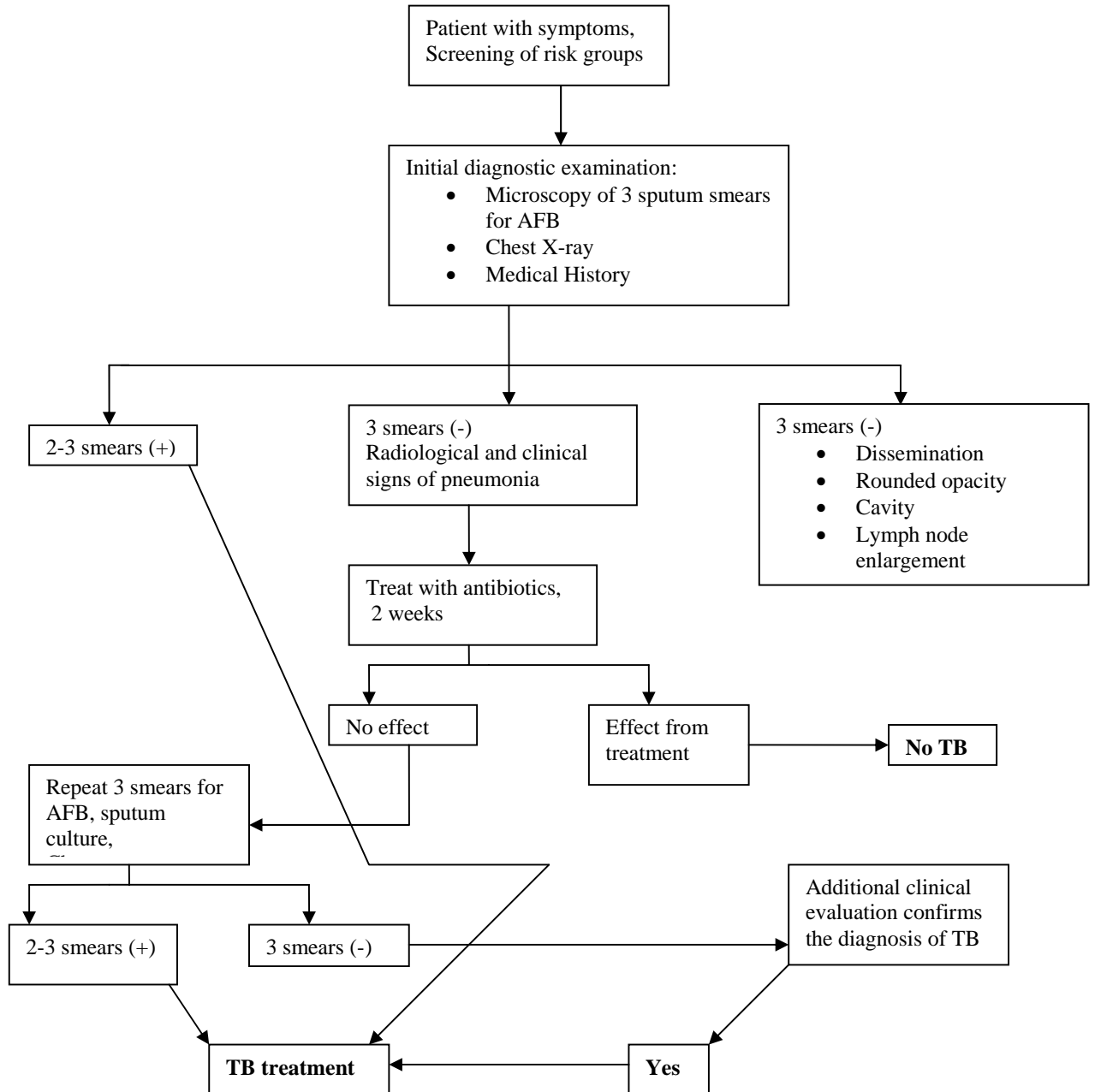
- Rinse his/her mouth with water before producing sputum. This will help remove food and any contaminating bacteria in the mouth.
- Take two deep breaths, holding the breaths for a few seconds after each inhalation and then exhaling slowly. Breathe third time and then forcefully blow the air out. Breathe in again and then cough from deep within the lungs.
- Hold the container close to his/her lips to spit into it gently after producing cough.
- Tightly secure the lid on the collection bottle.
- Wash his/her hands with soap and water.

If the patient is unsuccessful on the first attempt to produce sputum e.g., producing saliva or inadequate amount of sputum the patient should rest and repeat the sputum collection steps described above again. Finally, if appropriate the health worker should give the patient a new sputum container for a morning sputum sample.

#### **2.2.2.2 Chest x-ray.**

The chest x-ray is one examination that is used to assist in diagnosis of TB disease. When a person has pulmonary tuberculosis disease, the chest x-ray appears abnormal. However x-ray diagnosis alone is unreliable, because other chest diseases can resemble TB. Only a positive sputum examination result is an absolute confirmation of the diagnosis of TB.

**Figure 1** Algorithm for detecting and diagnosing respiratory TB.



### **2.3 *Diagnosis of Tuberculosis at a specialized medical service.***

Once patients are sent to a specialized TB facility from the general medical services, the diagnosis process continues.

The diagnostic procedures in the specialized medical unit include;

1. Medical history
2. Sputum examination
3. A chest x-ray
4. Culture examination
5. Drug sensitivity testing.

Examination by bacteriological culture provides a definitive diagnosis of tuberculosis.

Culture also provides an opportunity to do drug sensitivity testing.

### **2.4 *Supporting a TB patient during the course of treatment***

#### **2.4.1 Evaluate the patients' knowledge and beliefs about TB**

The nurse/counselor should assess TB knowledge by interviewing the patient regarding TB symptoms, transmission, diagnosis, duration of treatment, side effects to drugs etc. Patient education should be based on current knowledge and ability to comprehend written, visual and /or verbal information.

It is important to interview both the child and parent or guardian when assessing TB knowledge; however, adolescents should be given the opportunity to speak to

a health care provider alone. Keep in mind that parents who have misinformation or cultural bias about TB may affect their children's understanding of the disease.

*Provide the necessary/additional information to a patient using the desk guide on TB.*

#### **2.4.2 Monitor the TB medication.**

The nurse should ensure that medications and dosages are prescribed according to the national guidelines. In case of any discrepancy, the nurse should alert the clinician. The patient should be supported to complete the treatment through directly observed therapy. The patient's tolerance to TB medications should be determined. A TB patient on ART should be supported to take the ART as prescribed by the physician.

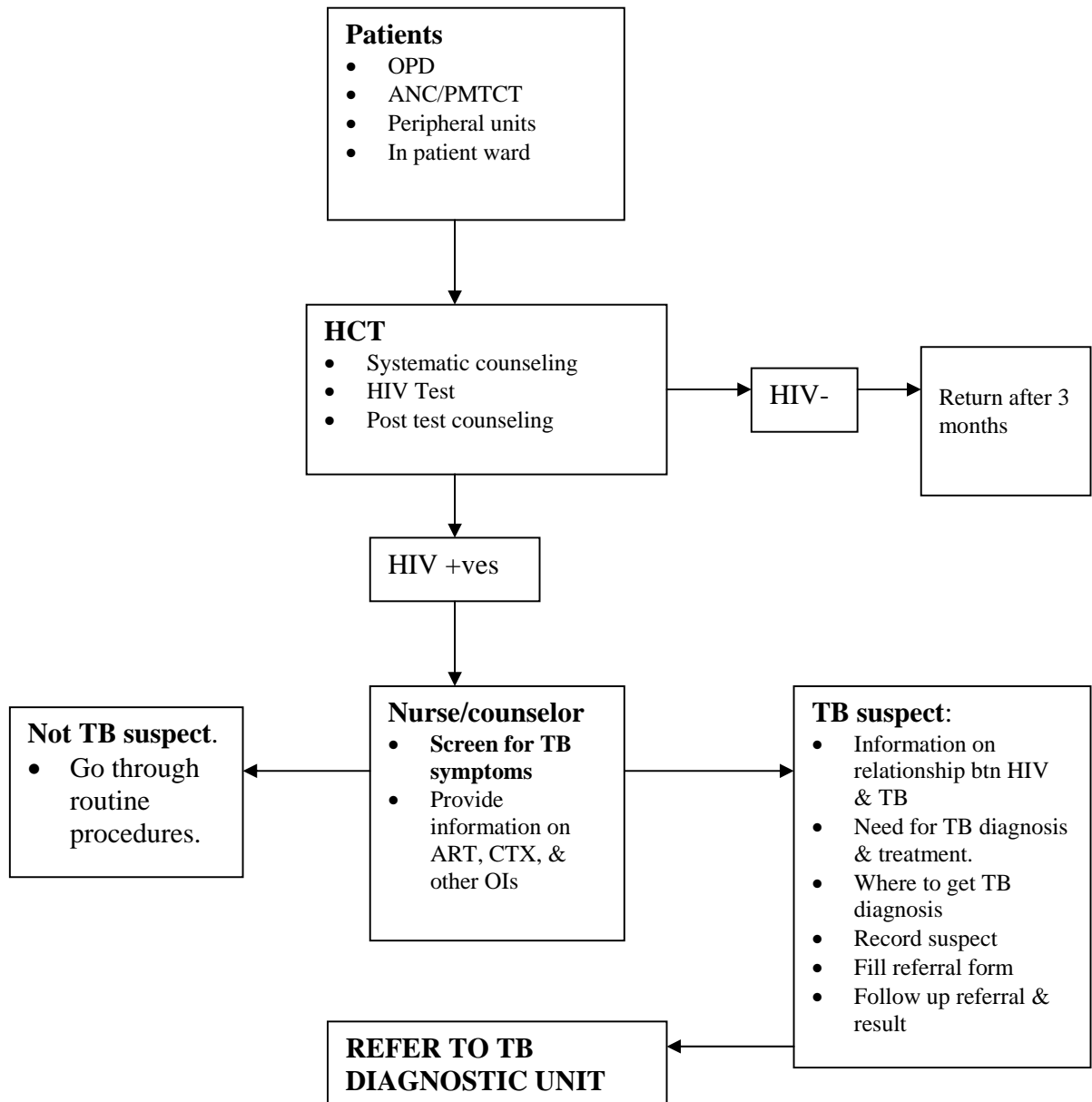
#### **Identify barriers or obstacles to adherence to treatment:**

Barriers or obstacles to adherence to TB medications or ART should be explored with the patient. This will include patient's preferences for place and time of directly observed therapy (DOT), and the ability to swallow pills. Many adolescents and adults who have difficulty swallowing pills are embarrassed to report this to the health care provider. It may be necessary to crush the pills and put them in juice or porridge. The nurse should discuss with the patient about the difficulties faced and give appropriate advice.

## **2.5 Referral of TB suspects to diagnostic unit**

Once a TB suspect is identified, it is important to refer them to the diagnostic unit where sputum will be examined for TB bacteria. The patient will then be started on treatment if found to have TB. The following chart will guide the nurse/counselor on how to guide a patient through an HIV counseling and testing unit to a TB diagnostic unit.

**Figure 2: Patient Flow Guideline: Active TB case finding among HIV positives/VCT clients**





## **CHAPTER 3**

### **3.0 ROUTINE DIAGNOSTIC HIV COUNSELING AND TESTING IN TB CLINICAL SETTINGS.**

#### **3.1 INTRODUCTION**

This training program offers a standardized approach to providing diagnostic HIV counseling and testing (DCT) in TB clinics. The protocol of service includes patient education, informing the patient of the importance of testing for HIV and the country's policy of recommending and offering testing for all TB patients, rapid testing, providing the patient's test results, and support and referral for care. DCT is recommended in Uganda because of the generalized HIV epidemic state with high rates of HIV and TB. TB is one of the commonest opportunistic infections in HIV-infected persons. It is advisable that patients undergo DCT during the first visit after they are diagnosed with TB.

#### **Objectives.**

The following objectives shall be achieved at the end of this module.

1. You will understand what needs to be done to incorporate HIV testing into clinical procedures.
2. You will understand that HIV diagnostic counseling and testing is different from traditional VCT, only takes a few minutes, and is vital to the care of TB patients.
3. You will learn to counsel patients both on the need for testing and on the results.
4. You get an overview of the clinical considerations related to treating patients who have TB and HIV infection.

### **3.2 Reasons for Performing HIV screening for TB patients**

The prevalence of HIV among TB patients is high. In Uganda it is estimated that about 50% of TB patients are co-infected with HIV. The immunosuppression caused by HIV infection makes a person with latent TB infection more likely to progress to active TB disease. HIV infected patients progress more quickly from latent TB infection to active disease than HIV uninfected patients. TB can be an indicator for HIV immunosuppression and the need for antiretroviral therapy in HIV-infected patients. Mortality rates are higher in HIV infected TB patients particularly in the first month of TB diagnosis than in those without HIV infection. In Uganda TB is the leading cause of mortality in people living with HIV/AIDS. Therefore it is important to diagnose and treat HIV in TB patients. Treatment for HIV is becoming more and more available. By diagnosing HIV and getting out patient into treatment, we can help them live longer.

It is also important to help patients understand how to protect themselves against other infections and to prevent transmitting the HIV virus to their sexual partners.

Some antiretroviral drugs (ARVS) and anti-TB drugs interact, which makes modifications of standard ARV therapy necessary for some patients. Clinicians need to be aware of patients on both treatments and know how to properly manage them.

In summary, the following are the reasons for performing HIV screening in TB patients;

- TB patients are very likely to have HIV infection. HIV infected TB patients need treatment for HIV/AIDS.
- HIV is a serious disease that requires care and treatment, prevention of transmission and other infections,

- TB and HIV drugs can interact, requiring modification of therapy.
- The Uganda policy on TB/HIV collaborations recommends that all TB patients be tested for HIV.

### **3.3 Differences between VCT and DCT**

The following table will help you understand the difference between the current model of HIV counseling and testing which is called voluntary counseling and testing (VCT) and diagnostic counseling and testing (DCT) which is recommended in TB settings.

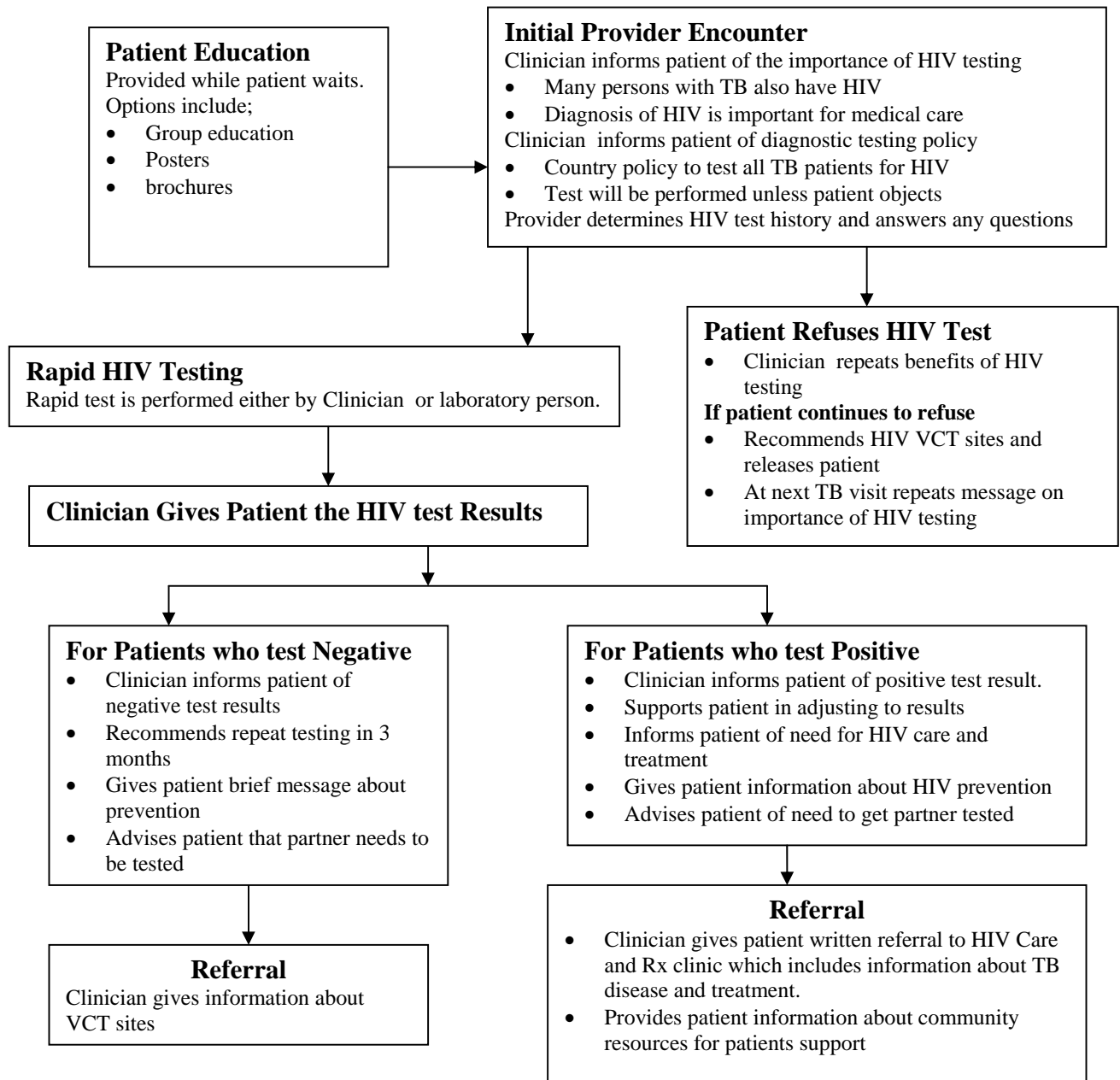
#### **Differences between VCT and DCT:**

	Voluntary Counseling and Testing (VCT)	Diagnostic Counseling and Testing (DCT)
Clients/Patients	<ul style="list-style-type: none"> <li>• Come to clinic specifically for HIV test</li> <li>• Expect to get tested</li> <li>• More likely to be asymptomatic</li> </ul>	<ul style="list-style-type: none"> <li>• Come to clinic because they have TB/suspected of having TB</li> <li>• Not necessarily expecting HIV test</li> </ul>
Providers	<ul style="list-style-type: none"> <li>• Usually trained counselors, not necessarily trained as health care providers</li> </ul>	<ul style="list-style-type: none"> <li>• Health care providers trained to provide counseling/education</li> </ul>
Purpose of HIV Counseling and Testing	<ul style="list-style-type: none"> <li>• Primary focus is on preventing HIV transmission through risk assessment, risk reduction and testing</li> </ul>	<ul style="list-style-type: none"> <li>• Primary focus is on diagnosing HIV for appropriate TB and HIV management, particularly by referral for HIV care</li> </ul>
Pre-test Encounter	<ul style="list-style-type: none"> <li>• Client-centered counseling</li> <li>• Usually a one-on-one encounter</li> <li>• As important to discuss results with negative as positives because of the focus on prevention</li> </ul>	<ul style="list-style-type: none"> <li>• Provider recommending test as routine for anyone coming to this clinic.</li> <li>• Limited discussion about need for HIV testing</li> <li>• Little time spent with those who test negative</li> <li>• Primary focus on those who test positive with emphasis on their medical care</li> </ul>
Follow-up	<ul style="list-style-type: none"> <li>• HIV positive clients referred to medical care services and other support services, some in community</li> </ul>	<ul style="list-style-type: none"> <li>• Care of HIV-positive patients coordinated between TB and HIV providers, referred for other support services, some in community.</li> </ul>

### 3.4 INTRODUCING HIV TESTING AMONG TB PATIENTS

This section begins with a protocol for introducing and offering HIV counseling and testing to a TB patient.

#### PROTOCOL: Routine Diagnostic HIV Counseling and Testing for TB patients



The following information provides in more detail how a health worker should handle the whole process of offering HIV counseling and testing to a TB patient.

### **3.4.1 Do HIV counseling and testing in all TB patients.**

All TB patients should undergo HIV test.

- Explain to patients that an HIV infected person is more likely to develop TB.
- Explain importance of knowing HIV status using the following information.

#### **3.4.1.1 If HIV status is unknown, advise to be tested for HIV infection.**

A. Provide key information about HIV and AIDS, including how HIV is transmitted.

This may be provided by health workers or lay providers performing HIV testing and counseling or in a group pre-testing counseling session.

#### **Explain about HIV counseling and testing:**

- HIV testing and counseling enables people to learn whether they are infected.
- Testing is voluntary. The patient has the right to refuse.
- The HIV test will help with clinical care, knowing status has many advantages.
- It provides an opportunity to learn and accept HIV status in a confidential environment
- It includes a blood test with before and after counseling
- Test result will be kept confidential within the medical team, and used for purposes of clinical care.

- Patient makes decision about any further disclosure.

B. Discuss advantages of knowing HIV status.

**Advantages of knowing HIV status.**

- Knowing HIV status is important.
  - If positive, knowing this will let the patient:
    1. Protect themselves from re-infection and their sexual partner(s)
    2. Gain early access to chronic HIV care and support including:
      - Co-trimoxazole prophylaxis
      - Regular follow-up and support.
      - ARV therapy. Explain availability and when it is used. (see chronic care module)
    3. Cope better with HIV infection.
    4. Make choices about future pregnancies
    5. Access interventions to prevent transmission from mothers to their infants (see PMTCT materials).
    6. Plan for the future.
- Explain the psychological and emotional consequences of HIV
- If negative, knowing this will help the patient explore ways to remain negative.

C Discuss how testing results will help in planning and management of the patient.

Encourage patients to share his/her results with you.

D Explain available treatments for HIV infection:

- Acute and chronic clinical care
- Cotrimoxazole prophylaxis.
- ARV therapy.

E Explain what follow-up and ongoing support is available.

### **3.4.1.2 Offer Rapid HIV testing**

The Health worker should explain to the patient how the test is performed including taking off blood and should obtain permission for the test to be done. The patient should be reassured that the test result shall be kept confidential within the medical team and will only be used for purposes of clinical care.

Patients are tested either by the clinician or by lab personnel using rapid testing methods that take only minutes to perform and analyze. If the test is performed in the lab, the results are returned to the clinician. In some clinics the clinician may be trained to do the lab testing, so patients do not have to go to the lab. When the results of the testing are available, the clinician calls the patient back into the office and gives the results to the patient. If HIV positive, the clinician will begin to assess the patient for HIV care. The patient should receive or be referred to home based programs for on-going support and counseling. It is also important to counsel on disclosure and benefits of involving the partner.

**3.4.1.3 If HIV counseling and testing are not available in your facility, explain:**

1. Where to go for in-clinic HIV testing and counseling- the health worker should have a referral directory with health facilities that provide HCT or stand-alone VCT sites within the catchment area.
2. How test is performed
3. How test results will be made available and kept confidential within the medical team
4. When and how results are given
5. Cost
6. Arrange to see patient after testing
7. Explain how the results will be used for clinical care, and the advantages of knowing HIV status.
8. Give pre-test counseling

**3.4.1.4 If patient wants anonymous testing or confidential testing from a separate HIV testing service, explain about VCT centers:**

Provide the address of VCT center in your area-----

Discuss confidentiality of the result from a VCT service:

1. Assure the patient that the test result is confidential and may even be anonymous.
2. the result will only be shared with the patient



3. The patient decides whom to disclose the result to.
4. The result will only be provided to another person with his/her written consent.

If the result is needed for clinical care, explain the advantages of sharing the result with the medical team.

**Note: In case of a negative or positive result follow the recommendations in the protocol.**

### **3.4.2 Discuss advantages and disadvantages of disclosure and involvement of partner.**

The health worker should discuss with the patient about the advantages and disadvantages of disclosure to a partner or family member. However, the patient makes the decision about disclosure.

#### **Advantages of disclosure:**

Involving partners or family members will;

- have greater impact on increasing acceptance of condom use and practicing safer sex to avoid infection or re-infection.
- Help avoid unwanted pregnancies.
- Help to decrease the risk of suspicion and violence.
- Help to increase support to their partners/family members.
- Motivate partners to get tested.

#### **Disadvantages of disclosure;**

- danger of blame
- violence
- abandonment
- Stigma

*Health workers should try to counsel couples together, when possible*

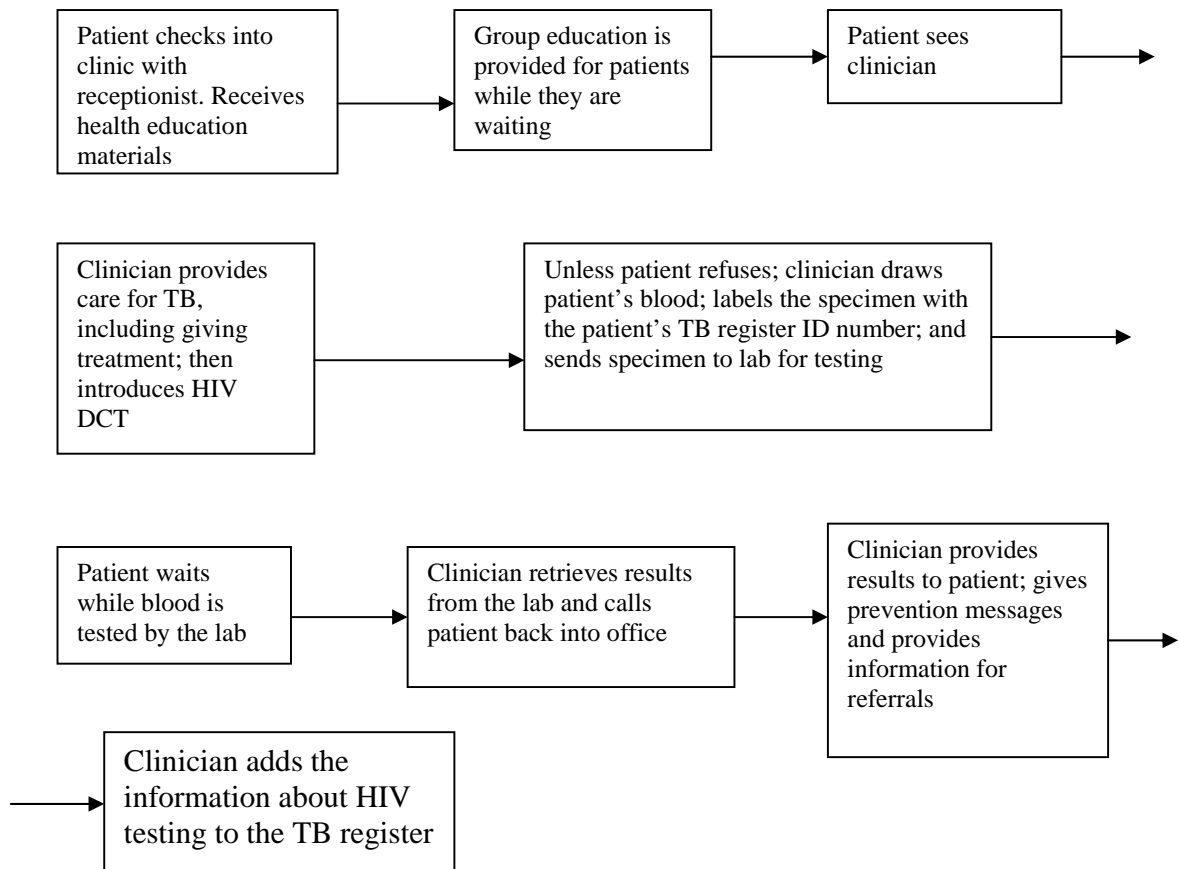
### 3.5 Recording HIV results in TB unit register:

After you complete the patient visit, the results of the HIV test should be recorded into the TB unit register according to the recommended coding system. Because information about HIV status is sensitive, patient confidentiality must be protected. Thus, it is important that these records containing HIV results be kept in a safe place, usually a locked cabinet. These records should only be made available to clinicians and others who need to know this information for patient care.

**TB/HIV data should be recorded under the TB/HIV column on the right hand side of the TB unit register:** This column is for recording information of HIV counselling and testing (HCT), cotrimoxazole preventive therapy (CPT) and antiretroviral therapy (ART); **C** for counselled, **CT** for counselled and tested, **CT<sub>1</sub>** for counselled, tested with positive result, **CT<sub>2</sub>** for counselled, tested with negative result. Report Yes or NO if patient is on cotrimoxazole and the date started on **CPT**. Record Yes or NO if patient is on ART and the date started on ART.

Date and results of sputum examination (Nos, indicate month of treatment)				Monthly issue of anti TB drugs												TB/HIV			Date t		
																HIV Test C/CT/CT <sub>1</sub> /CT <sub>2</sub> *	CPT** Y/N Start date	ARV Rx*** Y/N Start date	Treatment completed		Date t
PRE -Rx	2	5	8	1	2	3	4	5	6	7	8							Smear Negative	Smear result not available	Fail (Sm Posi	

### 3.6 CLINIC FLOW OF TB PATIENTS FOR HIV DIAGNOSTIC COUNSELING AND TESTING



#### Summary:

##### Key Points

- DCT is initiated by health worker as part of diagnostic work-up for the patient.
- It is intended to improve care and management of a TB-HIV patients
- DCT is provided as an opt-out method
- Patient has the right to refuse the HIV test
- The HIV test result is kept confidential with the medical team and only used for clinical care

## **CHAPTER 4**

### **4.0 MANAGEMENT OF A TB, HIV OR TB-HIV CO-INFECTED PATIENT.**

#### **4.1 PREVENTION OF TB OR HIV AMONG PATIENTS AND FAMILIES**

##### **4.1.1 Measures to reduce transmission of HIV in TB patients**

All TB patients should be counseled about their high likelihood of being HIV positive as well. All TB patients should be offered HIV counseling and testing. For those found negative, prevention messages should be given that emphasize the need to remain uninfected. Messages on ABC approach should be given. Condom use and early treatment of STIs should be emphasized even for those found to be HIV positive. It is important that HIV positives are given information on need to encourage their partners to get tested for HIV. The benefits of such a test should be clearly spelt out. They include when one is HIV positive, the protection of sexual partner by use of condoms, prophylaxis with co-trimoxazole, use of anti retroviral and in case of pregnant woman use of ARV to prevent transmission of infection to baby. Protection of partners/spouses through responsible sexual behavior should be emphasized.

The health worker should demonstrate to the patient/client how a condom is used and should explain how it should be stored and handled. It is important that the patient gets full information about condom use. The health worker should be able to provide condoms to the patient/client if he or she needs them.

#### **4.1.2 Measures to reduce TB in HIV patients**

Efforts should be made to prevent coming together of patients with active TB and patients known to be HIV positive. The TB patients should always be taught simple cough hygiene measures, like covering the mouth when coughing and turning the face away. Strict policy of isolation of MDR TB patients should be practiced.

#### **4.1.3 Bacille Calmette Guerin (BCG)**

BCG should be given to all children according to national expanded programme on Immunization in TB high prevalence areas except children with symptoms of HIV disease/AIDS.

#### **4.1.4 TB INFECTION CONTROL IN HEALTH CARE SETTINGS**

The best way to prevent nosocomial transmission of TB is to avoid the need for hospitalization. TB disease will heal equally well in an ambulatory or outpatient setting. Hospitalization should only be for the very sick. Since many outpatient departments are usually overcrowded with many patients of various conditions including TB and HIV, there should be a triage system to quickly identify TB suspects and those with TB disease, so that they are attended to as soon as possible. Hospitalized TB patients who are not yet on treatment or are on treatment within the first two weeks should be isolated from patients with other conditions since they are still infectious.

It is important to provide good room ventilation in areas with TB patients, allowing the air to circulate freely, and with exposure to natural UV light. Over 50% of potential

mycobacteria present in the environment can permeate the masks used in daily clinical practice. Such masks are most effective when worn by the patient, since they prevent formation of bacteria-laden aerosol droplets. However, this same function can be achieved with handkerchiefs or oral protectors.

## **4.2 TB-ART TREATMENT PLAN**

### **4.2.1 TB treatment:**

Treatment of TB in patients who are HIV infected is the same as in TB patients who are not HIV infected. TB can be cured in both groups of patients and relapse rates are higher in HIV positive patients when standard Short-course treatment regimens are used. However, TB patients with HIV infection have a higher mortality basically due to HIV related diseases/complications.

The following have to be considered in selection of a TB treatment regimen;

- The TB disease site.
- Type of TB patient.
- Results of smear examination
- Clinician's diagnosis of smear negative pulmonary TB or extra pulmonary TB.
- In HIV positive patient, decide on TB-ART treatment plan using the clinical stage, whether already on ART, and CD4 count if available.

*Note: Use the National TB control and community-based DOTS guidelines-2002 to classify and categorize TB patients so as to decide on the treatment.*

The recommended strategy for TB control is still the DOTS strategy. This is irrespective of whether the TB programme is operating in high or low HIV prevalence area. But the TB programme/services face additional problems of having to deal with TB patients who may fall sick from HIV related diseases either during the course of treatment of TB or even after completing the TB treatment.

### **Response of HIV/TB co-infected to TB treatment**

- Clinical response to SCC: Same, both in HIV +ve and HIV –ve TB patients.
- Average weight gain: less in HIV +ve TB patients
- Case Fatality Rate: Higher in HIV +ve TB patients.
- Recurrence rate: Higher in HIV +ve TB patients
- Side effects of drugs: common in HIV +ve TB patients

The treatment outcome of TB patients co-infected with HIV usually improves when the patient is provided with comprehensive HIV care including ART. Close monitoring for side-effects is very essential, so that appropriate action is taken as soon as a patient gets a problem or side effect to the drugs. It is important to reassure the patient as part of continued support as this would improve adherence to treatment and improve the treatment outcome for the patient.



#### **4.2.2 Anti-Retroviral Treatment (ART):**

A TB patients co-infected with HIV may be eligible for ART and should therefore be helped to access ART. The health worker will either need the CD4 cell count, lymphocyte count or clinical staging of HIV to determine whether the patient needs ART.

The decision on giving ART and TB drugs together needs to be made by the medical officer because;

- Drug interactions between TB drugs and ART can occur. These interactions occur mainly during the intensive phase of TB treatment, when the treatment contains rifampicin. The interactions can damage the liver or make some ARV drugs less effective.
- The number of pills the patient has to take if both TB and HIV are treated at the same time is very high.

The patients who need to be **referred for the medical officer** to make a decision on how and when to give TB and HIV treatment together are:

- Patients who are already on ART and develop TB.
- HIV patients who are on TB treatment for pulmonary TB and have any of the following;
  - losing weight on treatment
  - has or develops signs of clinical stage 4

- develops on treatment either thrush, pyomyositis, recurrent pneumonia, persistent diarrhea, or new prolonged fever.
- HIV patients with extra pulmonary TB.
- Any TB patient with CD4 less than 350.

**Patients who do not need to be referred are:**

- Pulmonary TB patients, who are doing well on treatment. This means that they are without any other signs or symptoms of clinical stage 3 or 4 and they gain weight on treatment. For these patients, complete the entire TB treatment and start ART after completing TB treatment if the patient is eligible. No referral is needed in this case. This is important because referral can be difficult for the patient and interfere with the support system for directly observed treatment (DOTS).
- Patients who have completed TB treatment for either pulmonary or extrapulmonary TB. These patients can be started on ART if they have no new symptoms and meet the requirement for ART.
- TB patients with a CD4 count more than 350.

***Note: Do not give ART and TB drugs together without consulting the doctor or medical officer for advice about interactions with the current regimen. A switch in ARV regimen might be necessary. In most cases you will need to treat TB before initiating ART.***

( For more details, follow the guidelines for ART in adults).

**ART for Children co-infected with TB and HIV.**

- Children with pulmonary tuberculosis who are doing well on anti-TB treatment should be allowed to complete the entire treatment. ART is initiated after the completion of TB treatment.
- Children who have completed TB treatment and have no new symptoms can be started on ART.
- Children with tuberculosis who have CD4 percentage  $> 15\%$  can wait until treatment for TB is completed before initiation of ART. However if CD4% is less than 15%, ART should be started after 2 months of TB treatment. Where CD4% is lower than 10%, both ART and TB treatment may need to be initiated together.

( For more details, refer to national guidelines for treatment of tuberculosis in children).

**In HIV positive patient, decide on TB-ART treatment plan using clinical stage, whether already on ART, and CD4 count (if available)**

- If patient is already on ART and is diagnosed with TB, refer to medical officer for treatment plan . Do not start TB treatment at first level facility

The following table provides a summary for ART for individuals with tuberculosis when CD4 is available;

<b>Antiretroviral Therapy for individuals with Tuberculosis Co-infection</b>	
<b>Situation</b>	<b>Recommendation</b>
Pulmonary TB and CD4 count <200/mm <sup>3</sup> or extrapulmonary TB or WHO stage IV	Start TB therapy and when tolerated (usually within 2 weeks and 2 months) ADD one these regimens: <ul style="list-style-type: none"> <li>• ZDV/3TC/EFZ</li> <li>• .d4T/3TC/EFZ</li> <li>• NVP used only if in rifampicin-free continuation phase</li> </ul>
Pulmonary TB and CD4 200-350/mm <sup>3</sup> or total lymphocyte count <1200/mm <sup>3</sup>	Start TB therapy for 2 months THEN start one of these regimens: <ul style="list-style-type: none"> <li>• ZDV/3TC/EFZ or NVP</li> <li>• d4T/3TC/EFZ or NVP</li> </ul>
Pulmonary TB and CD4 >350/mm <sup>3</sup> or total lymphocyte count >1200/mm <sup>3</sup>	Treat TB first. Monitor clinically or do CD4 counts if available. Start ART when indicated.

**If the patient is not on ART and CD4 is not available:**

<b>Patient clinical status</b>	<b>How to Manage</b>
1. Smear positive TB only (no other signs of clinical stage 3 or 4) [patient is gaining weight)	Start and complete TB treatment according to TB guidelines then start first line ART regimen.
2.Smear negative PTB only (no other signs of stage 3 or 4) gaining weight on treatment	Start or continue TB treatment and refer to medical officer for TB/ART treatment plan. N.B smear negative TB requires MO diagnosis.
3. PTB and patient develops signs of clinical stage 4 or thrush, pyomyositis, pneumonia, diarrhoea, recurrent fever losing weight on treatment	Start or cont TB treatment (and refer to MO for decision on co-treatment. If patient has already completed TB treatment start 1st line ART after managing OIs.
4. Extra pulmonary TB	If current extra pulmonary TB: start or continue TB treatment and refer to MO for decision on co-treatment.  If completed extra pulmonary TB treatment in last year and no new complications or signs start 1 <sup>st</sup> line ART

*The following section will help you do clinical staging for an HIV patient;*

**Clinical Staging of HIV**

WHO Clinical Staging designed to;

- Be used where HIV infection is confirmed with an antibody/virological test
- Help monitor patients and determine prognosis
- Help determine need for cotrimoxazole prophylaxis
- Provide guidance as to when to start or review ARV drug therapy
- Help assess clinical response to therapy in the absence of appropriate laboratory tests

**WHO Classification Clinical Staging for Adults and Adolescents: Stages I , II, III**

Clinical stage	Selected symptoms
<b>Stage I</b>	<ol style="list-style-type: none"> <li>1. Asymptomatic</li> <li>2. Persistent generalized lymphadenopathy</li> </ol>
<b>Stage II</b>	<ol style="list-style-type: none"> <li>1. Moderate weight loss &lt;10% of body weight</li> <li>2. Minor mucocutaneous manifestations (seborrheic dermatitis, prurigo, fungal infections, recurrent oral ulcerations, angular cheilitis)</li> <li>3. Herpes zoster in past 5 years</li> <li>4. Recurrent upper respiratory tract infections</li> </ol>
<b>Stage III</b>	<ol style="list-style-type: none"> <li>1. Severe weight loss (&gt;10% body weight)</li> <li>2. Unexplained chronic diarrhea, &gt;1 month</li> <li>3. Unexplained prolonged fever &gt;1 month</li> <li>4. Oral candidiasis (thrush)</li> <li>5. Oral hairy leucoplakia</li> <li>6. Pulmonary tuberculosis</li> </ol> <p>Severe bacterial infections (e.g. pneumonia, pyomyositis, empyema, bone or joint infection)</p>

### WHO Classification Clinical Staging for Adults and Adolescents: Stage IV

<b>Stage IV</b>	<ol style="list-style-type: none"> <li>1. Bacterial pneumonia, recurrent severe</li> <li>2. Candidiasis of esophagus</li> <li>3. Cervical carcinoma</li> <li>4. Cryptococcal meningitis</li> <li>5. Herpes simplex infection for &gt; 1 month, chronic orolabial, genital or anorectal</li> <li>6. HIV encephalopathy</li> <li>7. HIV wasting syndrome</li> <li>8. Kaposi's sarcoma (KS)</li> <li>9. Pneumocystis carinii pneumonia (PCP)</li> <li>10. Toxoplasmosis of the brain</li> <li>11. Tuberculosis, extrapulmonary</li> </ol>
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### WHO Clinical Staging for HIV Infected Children

<b>Stage I (mild)</b>	<ol style="list-style-type: none"> <li>1. Asymptomatic, or persistent generalized lymphadenopathy</li> </ol>
<b>Stage II (moderate)</b>	<ol style="list-style-type: none"> <li>1. <b>Unexplained, chronic diarrhea (&gt; 1 month)</b></li> <li>2. <b>Severe, persistent, or recurrent oral candidiasis outside the neonatal period</b></li> <li>3. <b>Weight loss or failure to thrive (FTT)</b></li> <li>4. <b>Persistent fever (&gt; 1 month)</b></li> <li>5. <b>Recurrent severe bacterial infections</b></li> </ol>
<b>Stage III (severe)</b>	<ol style="list-style-type: none"> <li>1. <b>AIDS defining opportunistic infections (PCP, TB, cryptococcal meningitis, cytomegalovirus etc)</b></li> <li>2. <b>Wasting syndrome (severe FTT)</b></li> <li>3. <b>Progressive encephalopathy</b></li> <li>4. <b>AIDS defining malignancy</b></li> <li>5. <b>Recurrent septicemia or meningitis</b></li> </ol>

### **4.3 PREVENTIVE THERAPY FOR TB-HIV.**

#### **4.3.1 Co-trimoxazole preventive therapy**

Co-trimoxazole (“Septrin”) is used to prevent opportunistic infections in HIV-infected persons and it is cheap, simple and effective.

All persons who have TB and are HIV positive are supposed to take co-trimoxazole preventive therapy. It is also indicated for children who are exposed to HIV (children born to HIV infected mothers from 4-7 weeks of age until infection has been ruled out and mother is no longer breast-feeding.

Pregnant mothers should start the therapy after the first trimester. These should not be eligible for Sp for malaria prophylaxis as co-trimoxazole is sufficient prevention against malaria.

#### **Co-trimoxazole Preventive Therapy Prevents**

- *Pneumocystis carinii* pneumonia
- Community-acquired bacterial pneumonia
- Non-typhoid salmonella
- Toxoplasmosis
- *Isospora* gastroenteritis

#### **Indications for CPT**

- All HIV positive people with WHO clinical stage 2, 3 and 4
- Any HIV patient with CD4 < 200
- Any HIV patient with active TB

**Contraindication to CPT:**

Co-trimoxazole is contra indicated among persons with known hypersensitivity to sulfur containing drugs or trimethoprim. Co-trimoxazole should be withdrawn in the event of several cutaneous reactions like fixed drug reaction or Steven Johnson syndrome.

**Drug regimen for CPT.**

Adults should take one double strength tablet or two single strength tablets.

Cotrimoxazole 480 mg, 2 tablets daily

OR

Cotrimoxazole 960 mg, I tablet daily

Children: The dosage is 4mg per kilogram trimethoprim and 20mg/kg sulfamethoxazole once daily.

**Duration of CPT**

If the patient has no access to ART, CPT should be taken for the rest of his/her life.

If the patient has access to ART, CPT can be stopped when the CD4 count has increased to 200 cells/mm<sup>3</sup>, and remains more than 200 cells/mm<sup>3</sup> for at least 6 months.

**Response to side effects.**

Nausea	Continue drug and take with food. If severe or persistent vomiting, consult or refer.
Rash	If generalized rash or fixed drug reaction or peeling or eye, or mouth involvement, stop the drug and refer urgently to hospital.
Pallor or Hemoglobin less than 8mg/dl or bleeding gums	Stop the drug. Call for advice or refer.
New jaundice	Stop the drug .Call for advice or refer.



### **4.3.2 Isoniazid preventive therapy;**

The use of Isoniazid to prevent the development of active TB disease in HIV positive patients who have latent TB infection appears attractive but is very difficult in real terms in TB high prevalence areas. The identification of all HIV positive individuals with latent TB infection within the population is not feasible. Even more difficult is the exclusion by chest radiography of possible active cases of TB in the individuals with supposed latent infection.

#### **Key points for IPT**

- HIV positive patients have a 50% lifetime risk of developing active TB
- HIV is biggest single risk factor for TB
- IPT has been shown to prevent reactivation of latent TB in HIV positive patients
- *Isoniazid 300mg is given daily for 6-9 months to HIV + patients with latent TB.*
- *Pyridoxine is added to the daily treatment to prevent peripheral neuropathy*

Preventative treatment for TB in HIV positive individuals should therefore be considered under guarded settings when certain conditions have been met. These conditions include; enough counseling capacity, active TB can be excluded (available staff and radiology facilities), clear and functional linkages between HIV care and TB control services and a high performing TB programme with default and failure of less than 10 percent.

### **Current IPT Recommendation**

The Policy on TB/HIV collaboration does not recommend use of IPT in Public facilities due to inadequate capacity to offer it. Organizations that may wish to provide IPT should do so with approval from the National TB/Leprosy Programme.

### **4.4 MEDICAL REFERRALS FOR A TB-HIV PATIENT**

The TB clinic will need to notify the HIV clinic of the intent to test all TB patients for HIV. Discussions with the HIV clinic will be necessary to be sure that referrals of HIV-positive TB patients will be handled properly by the HIV clinic. For TB patients who are referred, the HIV clinic will need to know that an HIV test has been performed and is positive. The HIV clinic will also need to know the patient's TB medications. There is need to discuss the referral note that the TB patient will give to the HIV provider.

Likewise the HCT clinics need to notify the TB clinic of the intent to screen all HIV patients/clients for TB and refer TB suspects to TB clinics for investigations and treatment. There is a need to discuss the referral note the HIV client/patient will give to the TB provider. TB providers need to know about HIV medications which should be included on the referral note.

However, it is important that each health facility keeps a referral directory with TB and HIV care and support services available within the health facility catchment area. Community health services for TB and HIV care should also be included in the directory.

The names and locations of health facilities, NGOs or CBOs offering TB and HIV services should be clear within the directory. These should be accompanied with the full range of services offered and the cost of each service. The referral directory will assist the health worker to offer full information to the patient so that the patient decides on where to go for a particular service.

The following TB/HIV referral form will assist health workers to provide relevant information to the clinician to whom they have referred the patient/client. Some information on referral e.g. reason for referral and facility referred to, should be included in the remarks section of the health unit register

## TB/HIV REFERRAL FORM

### **Section A: To be used by clinician referring a TB patient to HIV care clinic/health facility, HCT or PMTCT**

Referred to (name of clinic/facility) \_\_\_\_\_

Patient name \_\_\_\_\_ Date \_\_\_\_\_

Patient TB ID number \_\_\_\_\_

Referred from \_\_\_\_\_ (name of clinic/health facility)

Name of referring Clinician \_\_\_\_\_

Cotrimoxazole started: yes \_\_\_\_\_ no \_\_\_\_\_ Date started \_\_\_\_\_

Date TB treatment started: \_\_\_\_\_

Current TB medications: (Check the TB regime patient is taking)

\_\_\_\_ 2ERHZ/6EH                      \_\_\_\_ 2ERHZ/4RH                      \_\_\_\_ 2SRHZE/1RHZE/5RHE  
\_\_\_\_ 2RHZ/4RH                      \_\_\_\_ Other

### **Section B: To be used by clinician referring an HIV patient/client to TB clinic/health facility**

Referred to (name of clinic/facility) \_\_\_\_\_

Patient name \_\_\_\_\_ Date \_\_\_\_\_

Patient ID number \_\_\_\_\_

Referred from \_\_\_\_\_ (name of HIV care clinic/health facility, HCT, or PMTCT)

Name of referring Clinician \_\_\_\_\_

Cotrimoxazole started: yes \_\_\_\_\_ no \_\_\_\_\_ Date started: \_\_\_\_\_

Date ART started: \_\_\_\_\_

Antiretroviral medications prescribed:

\_\_\_\_ Zidovudine (AZT)                      \_\_\_\_ didanosine (ddI)                      \_\_\_\_ nelfinavir(NFV)  
\_\_\_\_ Stavudine (d4T)                      \_\_\_\_ abacavir (ABC)                      \_\_\_\_ saquinavir/ritonavir(SQV/r)  
\_\_\_\_ Lamivudine (3TC)                      \_\_\_\_ tenofovir(TDF)                      \_\_\_\_ nevirapine (NVP)  
\_\_\_\_ Indinavir/ritonavir (IDV/r)                      \_\_\_\_ efavirenz (EFV)                      \_\_\_\_ lopinavir/ritonavir (LPV/r)

Additional referral Notes: \_\_\_\_\_

Signed: \_\_\_\_\_

#### **4.5 MANAGEMENT OF OTHER HIV RELATED DISEASES IN TB/HIV PATIENTS**

During the course of their illness HIV/TB patients developed a wide range of illness due to the progressive drop in the immunity. General measures to reduce exposure and development of disease include avoidance of live bacterial or viral vaccines, primary and secondary chemoprophylaxis of specific diseases.

##### **Respiratory Diseases**

Many TB/HIV patient either do not improve, or develop new respiratory symptom during or after completion of TB treatment. Such patients need further investigation to confirm if the diagnosis of TB was correct. On the other hand these patients could have developed other respiratory symptoms. Usual causes of respiratory symptoms apart from TB are *Pneumocystis carinii*, Pyogenic bacterial infectious and Kaposi's sarcoma. Cotrimoxazole prophylaxis has been found useful in preventing respiratory infections in HIV infected patients. Such treatment should be given to any TB patient who is also found HIV positive. Treatment of these infections are either specific or syndromic/empirical with appropriate antimicrobial agent.

##### **Sexually Transmitted Infections**

In the majority of cases HIV is a sexually transmitted infection. It is therefore likely that a patient with TB and HIV could suffer other numerous sexually transmitted infections. Currently both Uganda and WHO recommend the syndromic approach in the treatment of sexually transmitted infections such as urethral discharge, genital ulcers and inguinal swellings.

## **Neurological Diseases**

There are many neurological problems which occur in HIV infection. The usual neurological problems are persistent headache, poor vision, difficulty in walking, acute confusion, chronic behaviour change and burning sensation of the feet. One or more of these complications can occur in a TB patient who is also HIV positive. When such complications occur they should be investigated since they may mark the beginning of a treatable illness.

## **Gastrointestinal Problems**

Two main gastrointestinal problems occur in HIV infection and thus are likely to occur in a TB patient with HIV infection. These are **dysphagial pain** on swallowing and **diarrhea**. Difficulty in swallowing, with/without pain is usually difficult to identify the specific cause. Fortunately, most of these problems are caused by **candida infection** of the esophagus. It is often useful to give antifungals in such situations.

Diarrhea is a very frequent complication of HIV infection. The usual causes are bacterial and protozoal infections. However, some viruses also contribute. Where facilities exist, send stool for microscopy and culture. If facilities do not exist, then the diarrhea can be treated syndromically with a combination of antibacterial and antiprotozoal. Supportive treatment with rehydration must always be given.

## **Tumours**

There are several malignancies that may present in TB patients who have HIV because these tumors occur with increased frequency in HIV positive patients. Kaposi's sarcoma is the one most relevant because it presents with cough difficulty in breathing and

pulmonary infiltrates on chest radiography. It can thus be confused with sputum smear negative pulmonary TB or other pulmonary infection.

### **Others**

There are many other diseases apart from the above-mentioned common ones. There can be skin, mouth, joint or heart problems occurring in TB patients as a result of co-infection with HIV.

### **Summary:**

#### **Key points:**

- TB treatment is the same for HIV positive and HIV negative patients.
- TB-HIV patients should be assessed for ART and referred appropriately.
- In most cases the clinician will need to treat TB before initiating ART.
- All TB-HIV patients should be given Cotrimoxazole preventive therapy (CPT).
- TB-HIV patients should be assessed for other HIV-related illnesses and managed appropriately.

## CHAPTER 5

### 5.0 PATIENT EDUCATION AND PATIENT SUPPORT

#### 5.1 INFORMATION FOR PATIENT, FAMILY AND TREATMENT SUPPORTERS ABOUT TB OR TB-HIV

##### 5.1.1 Guide for initial patient information about TB.

Use this guide to remind you of what to ask and say during an initial information session with a TB patient.

<b>Throughout the visit:</b> Demonstrate a caring, respectful attitude. Praise and encourage the patient. Speak clearly and simply. Encourage the patient to ask questions.	
<b>Ask the patient questions such as:</b>	<b>Then give relevant messages:</b>
What do you understand tuberculosis to be? What do you think may have caused your illness?	<u>What is TB?</u> TB is an illness caused by a germ that is breathed into the lungs. TB germs can settle in the body, but we most often hear about TB of the lungs. When the lungs are damaged by TB, a person coughs up sputum and cannot breathe easily. Without correct treatment, a person can die from TB.
Have you ever known anyone with TB? What happened to that person? Do you know that TB can be completely cured?	<u>TB can be cured</u> TB can be cured with the correct drug treatment. The patient must take all of the recommended drugs for the entire treatment time in order to be cured. Drugs for treatment of TB are provided free of charge. Treatment can be done without interrupting normal life and work.
How do you think that TB spreads?	<u>How TB spreads</u> TB spreads when an infected person coughs or sneezes, spraying TB germs into the air. Others may breathe in these germs and become infected.  It is easy to pass germs to family members when many people live closely together. Anyone can get TB. However, not everyone who is infected with TB will



	become sick
How can you avoid spreading TB?	<p><u>How to prevent TB from spreading</u></p> <ul style="list-style-type: none"> <li>- Take regular treatment to become cured.</li> <li>- Cover the mouth and nose when coughing or sneezing</li> <li>- Open windows and doors to allow fresh air through the home.</li> </ul> <p>There is no need to eat a special diet or to sterilize dishes or household items.</p>
<p>How many people live with you? What ages?</p> <p>Does anyone else in your household have cough?</p> <p>Who has cough?</p>	<p><u>Who else should be examined or tested for TB?</u></p> <p>All children aged under 5 years living in the household should be examined for TB symptoms. This is especially important because children aged under 5 years are at risk of severe forms of the disease. Young children may need preventive measures or referral to a clinician.</p> <p>Other household members should be tested for TB if they have cough</p>
<b>Explain the necessity of directly observed treatment</b>	<p>A health worker or community volunteer must watch you swallow all the drugs according to schedule. This will ensure that you take the correct drugs regularly for the required time. If injections are needed, they will be given properly. By seeing you regularly, the health worker/community volunteer will notice if you have side-effects or other problems.</p> <p>If you do not take all the drugs, you will continue to spread TB to others in the family or community, and the TB will not be cured. It is dangerous to stop or interrupt treatment, because then the disease may become incurable. With directly observed treatment, the health worker/ community volunteer will know if you miss a dose and will quickly investigate the problem.</p> <p>If you must travel, or if you plan to move, tell the health worker/ community</p>

	volunteer so that arrangements can be made to continue treatment without interruption
<b>Describe details of patient's treatment regimen</b>	Explain for the specific patient: -duration of treatment -frequency of visits for taking treatment -where to go for treatment.
<b>Explain what to expect and what to do next</b>	Urine may turn orange/red as a result of the drug (rifampicin). This is expected and not harmful. If you feel nauseous from the drugs, bring a bit of food to eat when taking the next dose.  Treatment should not interfere with normal life and work.  Remind patient to bring family and other close contacts for TB testing as needed.
<b>Review:</b> Ask checking questions (to ensure that the patient remembers important messages and knows what to do next). Reinforce earlier messages, or give more information as needed.	

### 5.1.2 Guide for informing patients about HIV and TB.

Use this guide for TB patients in areas where HIV is common. Note the special messages for pregnant women.

<b>At every visit:</b> Demonstrate a caring, respectful attitude. Praise and encourage the patient. Speak clearly and simply. Encourage the patient to ask questions.	
<b>Ask TB patients:</b>	<b>Then give relevant messages:</b>
Do you know your HIV status? If unknown  →	<ul style="list-style-type: none"> <li>• Explain benefits of knowing HIV status</li> <li>• Explain that an HIV-infected person is more likely to develop TB. TB can be cured in HIV infected persons, but the chance of relapse is greater.</li> <li>• Explain options available locally for HIV testing.</li> </ul>
If TB patient is a woman of childbearing	Explain benefits of knowing HIV status:



## **5.2 PREPARE FOR AND SUPPORT ADHERENCE:**

### **5.2.1 For patients with TB only who are HIV negative:**

- Educate patient:
- Determine where patient will receive directly observed treatment for TB. If needed, identify and prepare TB treatment supporter.
- Identify and supervise community TB treatment supporters.

Some TB patients live far away or do not find it convenient to come to a health facility for treatment. For these patients, a treatment supporter in the community is needed to directly observe treatment at a place and time more convenient for the TB patient.

The health facility will need to prepare the community TB treatment supporter to do the following essential tasks.

#### **Essential tasks of a community TB treatment supporter**

- Agree on a time and place to meet the TB patient. Do not make the patient wait.
- Give the patient the anti-TB drugs at each appointment according to the schedule. Check the drugs to be sure that they are correct. Watch the patient swallow all the drugs.
- Record on the TB treatment card each time the patient takes the drugs.
- Be aware of possible side-effects. Have the patient eat food with the tablets if needed to reduce nausea. Refer the patient to the health facility if the side effects continue.
- Encourage the patient to continue coming for TB treatment.
- Respond quickly if the patient misses a scheduled treatment. When a patient misses a dose for more than 24 hours, visit the patient's home. Find out what caused the interruption. Give the treatment. If you are unable to find the patient or convince the patient to continue the treatment, contact the health facility for help without delay.
- Make arrangements if you or the patient will be away for a few days. Give the patient enough drugs to self-administer for a maximum of 1 week or refer the patient to the health facility to decide what is to be done.

## Important information for a community TB treatment supporter

### About TB

- TB is a disease caused by germs. It spreads most easily when it is in a person's lungs.
- TB spreads to others when someone with TB coughs or sneezes.
- TB can be stopped from spreading by treating and curing persons who have it.
- People with TB have many different symptoms. The major symptom of TB in the lungs is coughing for more than 3 weeks.
- TB can be cured if the patient takes anti-TB drugs regularly, on schedule, for the full duration of treatment, that is until the patient has taken all doses needed.
- It is important for a TB patient to take all the anti-TB drugs for the entire treatment, or the disease may become incurable.
- A patient can prevent the spread by:
  - Taking regular treatment to become cured of TB
  - Covering the mouth and nose when coughing or sneezing
  - Opening windows and doors to allow fresh air to flow through the home.

### About giving treatment

- Give the patient the drug in a well-ventilated place. If the patient takes the drugs regularly, he or she will become non-infectious in about 2 weeks,
- Possible minor side effects are:
  - No desire to eat, nausea, abdominal pain-give drugs with food or gruel.
  - Joint pains- refer patient to health facility.

- Burning sensation in the feet- refer patient to health facility.
- Orange/red urine – reassure the patient that this is normal for the drug.
- Possible major side –effects are:
  - Itching of skin, skin rash, deafness, dizziness, jaundice, vomiting repeatedly, difficulty with vision. If any major side-effect occurs, stop anti-TB drugs immediately and inform the health facility worker. Refer the patient urgently to the health facility.
- If the patient misses a dose, give the missed dose on return. Do not give a double dose on any day. Then continue according to schedule. The duration of treatment will be extended to complete all doses in the regimen.
- Periodically , the patient will need to go the health facility for sputum collection for follow-up sputum smear examinations. Patients must go for follow-up sputum examination at the end of 2 months, after 5 months of treatment and at the end of treatment (8 months).

### **5.2.2 For patients currently on TB treatment and ART.**

Identify and supervise community TB-ART treatment supporters.

#### **A treatment supporter should;**

- Be chosen by the patient.
- Accept the patients HIV positive status.
- Be committed to support the patient with ART for a long time
- Have gained the patients trust over a long time.
- Be available to go preparatory visits and be educated on HIV and ART issues.

- Be available twice daily especially in the first months of therapy.
- Be someone who will treat all the information as confidential.

**Examples:** partner, parent, son/daughter, someone from support group, friend neighbor, teacher or spiritual guide.

**How to prepare a treatment supporter:**

- The following should be explained to the treatment supporter; commitment, confidentiality, HIV and ART and related needs and also emergency needs such as money, help with household, children, which can arise during the course of treatment.
- Educate on what “ being confidential means”
- Use patient treatment cards, patient education flip charts to educate the treatment supporter.
- Educate on how to remind the patient to take medicine, to keep appointments, to keep all important tests.
- Educate to prevent his or her burn out
- Prepare to provide psychosocial support
- Request his or her presence at three preparatory visits before ART initiation.

**In addition**

- Hold treatment supporter meetings at facilities every two weeks to deal with issues they might have.
- Establish a quick way of consultation if urgent problems arise.

- Organize a pool of treatment supporters for those who may not be able to disclose to someone they know.
- Mobilize communities to know who to contact for treatment support and to enlist people to be treatment supporters.



## **CHAPTER 6**

### **6.0 MANAGEMENT OF TB/HIV COLLABORATIVE ACTIVITIES**

#### **6.1 Introduction**

Considering that the two diseases occur frequently in one patient it has become necessary to establish collaborative TB and HIV programmes at district and health facility level. Effective coordination and planning for TB/HIV collaborative activities is essential for successful implementation.

#### **6.2 Coordination of TB/HIV collaborative activities**

##### **6.2.1 At the District Level**

The District Director of Health services will be responsible for the coordination of TB/HIV collaboration at district level. The DDHS can delegate this responsibility to one or two members of the district health management team. The focal person/persons for collaborative activities should preferably be Health Workers who are already working in TB and HIV areas. For example TB focal persons in the health unit, HIV/AIDS supports organizations, HCT etc. The focal person/persons should share information about TB/HIV collaboration during the regular DHT or DHMT meetings.

##### **6.2.2 At the Service Facility Level**

At the service level, the main areas of collaboration will be sensitizing the patients who have been initially diagnosed with TB or HIV, about the need to be aware of the possibility of the other. This will make referral of patients easy and rational. The referral of patients can be within the different services (e.g. TB Clinic and HCT) in the same

health unit or even between different health units if services are located in different health units.

Health workers dealing with TB and HIV should share information about TB/HIV collaboration. They should discuss problems in management and referral of TB/HIV patients. They should cross examine registers to ensure that referred patients actually reached the units they were referred to.



### **6.3 PLANNING FOR TB/HIV COLLABORATIVE ACTIVITIES**

Planning is very essential for successful implementation of TB/HIV collaborative activities at facility level. Introduction of TB/HIV collaborative activities will inevitably lead to higher consumption of commodities like HIV test kits and drugs like cotrimoxazole. Good planning is essential to ensure that the facility does not run out of essential commodities. It is important to have enough information which will assist you to make decisions during planning. Analysis of already existing data may be sufficient to give you the necessary information for planning. The already existing drug and logistics management systems will assist you to plan better for drugs, reagents, HIV test kits and other related commodities.

### **6.4 ROLES OF HEALTHWORKERS**

The Health Workers at various health facilities will either offer direct care for one disease or will need to have an established referral system to take care of other services they cannot offer. Below is an outline of the roles of health workers at health facility level.

#### **Health Worker at a TB Unit- should be able to:**

- Discuss HIV with TB patients as part of routine IEC
- Provide DCT or refer TB patients to HCT services after discussing HIV
- Provide guidance on HIV prevention, counselling on condom promotion and supply
- Provide clinical care for PLHA with TB
- Provide syndromic STI treatment for TB patients
- Referral of non-TB patients with STIs

- Referral of non-TB patients with HIV.
- Provide Cotrimoxazole preventive therapy for TB-HIV patients
- Clinical care for patients with HIV and TB
- Provide ARVs (or provide guidance) for eligible patients with HIV and TB

**Health Worker at STI Treatment Unit – should be able to:-**

- Provide client education about TB
- Provide referral of TB suspects for diagnosis

**Health Worker at stand alone HCT Unit – should be able to:-**

- Provide Client Education about TB (IEC)
- Provide Client Education about STIs
- Screen (or refer clients for screening) for TB
- Provide TB diagnosis (where appropriate)
- Provide TB treatment (where appropriate)
- Provide Isoniazid preventive treatment ( after authorization from NTLP)

**Summary**

**Key points**

- The DDHS should assign one or two focal persons to coordinate TB/HIV collaborative activities.
- TB/HIV collaborative activities should be planned for and included in the District and HSD plans.
- Implementation of collaborative activities at facility level should be well coordinated, ensuring effective referral and feedback should be received by the referring officer.

## References

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9. The AIDS/HIV Integrated Model District Programme Report on Strengthening and Initiating of TB/HIV Collaborative Activities. 23<sup>rd</sup> September – 8<sup>th</sup> October 2004.
10. Routine Diagnostic HIV Counseling and Testing in TB Clinical Settings; CDC, 2005.

## Annex A

### Glossary

**Basic (first –line) TB drugs;** Drugs that are most effective against the tubercle bacilli.

They include isoniazid (H), rifampicin (R), pirazinamide (P), ethambutol (E), and streptomycin (S).

**Chemotherapy of TB;** Use of an antituberculous drug combination able to kill mycobacteria in the patient's body and prevent the development of drug resistance.

**Cure (confirmed by smear or culture) *treatment outcome*** At the end of a course of treatment, a patient who meets the following criteria:

- was initially smear-or culture-positive,
- received all drug doses prescribed and
- has at least 2 negative smears or cultures at both month 5 and the end of treatment.

**Died (*treatment outcome*);** A patient who dies from TB or any other cause during the course of treatment for TB.

**Extrapulmonary TB;** TB involving any organ other than lung parenchyma.

According to WHO definitions, extrapulmonary TB also includes tuberculous pleuritis, upper respiratory TB, and intrathoracic lymph node TB. A combination of pulmonary and extrapulmonary TB is classified as pulmonary TB.

**Incidence;** Number of new cases of disease per 100,000 population per year.

**Multidrug-resistant tuberculosis (MDRTB);** Strains of *M. tuberculosis* resistant to at least isoniazid and rifampicin, considered the two most efficacious antituberculous drugs.

**New case (*patient type*);** A newly detected patient who has never had treatment for TB or who has taken anti-tuberculosis drugs for less than one month.

**Other (*patient type*);** All active TB cases, which start treatment in the WHO program and do not fit the definition for any type.

**Prevalence;** Total number of diseased persons per 100'000 population at a given time.

**Preventive chemotherapy;** The treatment of persons with a high risk of developing tuberculosis who have no signs or symptoms of bacteriologically, clinically or radiologically active tuberculosis, in order to prevent them from developing the disease.

**Pulmonary TB;** TB involving lung parenchyma. A combination of pulmonary and extrapulmonary TB is diagnosed as pulmonary TB.

**Relapse (*patient type*)** A patient previously treated for tuberculosis who has been declared cured or treatment completed, and is diagnosed again with bacteriologically positive (smear or culture) tuberculosis.

**Reserve stock** An extra supply of stock kept at the central, regional and district level to ensure that all patients under treatment in the entire country always receive the prescribed drugs during the treatment.

**Return after default (*patient type*);** A patient who returns to treatment after an interruption of treatment for 2 months or more.

**Sputum smear conversion;** Negative result of sputum smear microscopy at the end of the initial phase of treatment in patients with initially sputum smear positive TB



**Standard chemotherapy;** Chemotherapy for 6-8 months based on the combination of at least four major drugs (isoniazid, rifampicin, pyrazinamide and ethambutol [streptomycin]) given for 2 to 3 months during the initial intensive phase of treatment and followed by a combination of at least 2 drugs given for 4 to 6 months during the continuation phase of treatment.

**Sputum smear-negative pulmonary TB;**

A patient with

1. at least three sputum specimens negative for AFB1 **and**
2. radiographic abnormalities consistent with active pulmonary tuberculosis, **and**
3. no response to a course of broad spectrum antibiotics, **and**
4. there is a decision by a clinician to treat with a full course of anti-tuberculosis chemotherapy.

**Sputum smear positive pulmonary TB**

A patient with

1. at least 2 or more sputum examination specimens positive for AFB by microscopy, **or**
2. 1 sputum specimen positive for AFB and radiographic abnormalities consistent with active pulmonary tuberculosis determined by clinician, **or**
3. one sputum smear positive for AFB plus sputum culture positive for *M. tuberculosis*.

**Supervision;** The process of helping people improve their own workperformance.

**Transfer in (*patient type*);** A patient who has been transferred from another TB register (another Oblast or another agency, e.g., the Ministry of Justice) to continue treatment.

**Transfer out (*treatment outcome*);** A patient who was transferred to another administrative territory or to another agency (with a different TB register) and the final treatment outcome is not known.

Cases, which are sputum-negative by smear microscopy but sputum-positive by culture are registered as sputum smear-negative pulmonary TB.

**Treatment after failure (*patient type*)**

Patient who is started on retreatment regimen after having failed previous treatment.

**Treatment completed (*treatment outcome*)**

At the end of a course of treatment, a patient who meets the following criteria:

- Initial smear (or culture) negative
- Received all drugs prescribed
- Consistently sputum negative at all stages of treatment.
- Also, initially smear or culture-positive patients who have completed treatment but lack the necessary number of negative smears/cultures at 5 months or thereafter.

**Treatment Default (*treatment outcome*);** The patient interrupted treatment for two months or more.

**Treatment failure (confirmed by smear or culture) (*treatment outcome*);** A patient with persistently or newly positive sputum (by smear or culture) at 5 months of treatment or thereafter.

**Tuberculosis (TB);** Infectious disease caused by *M. tuberculosis*, which is transmitted