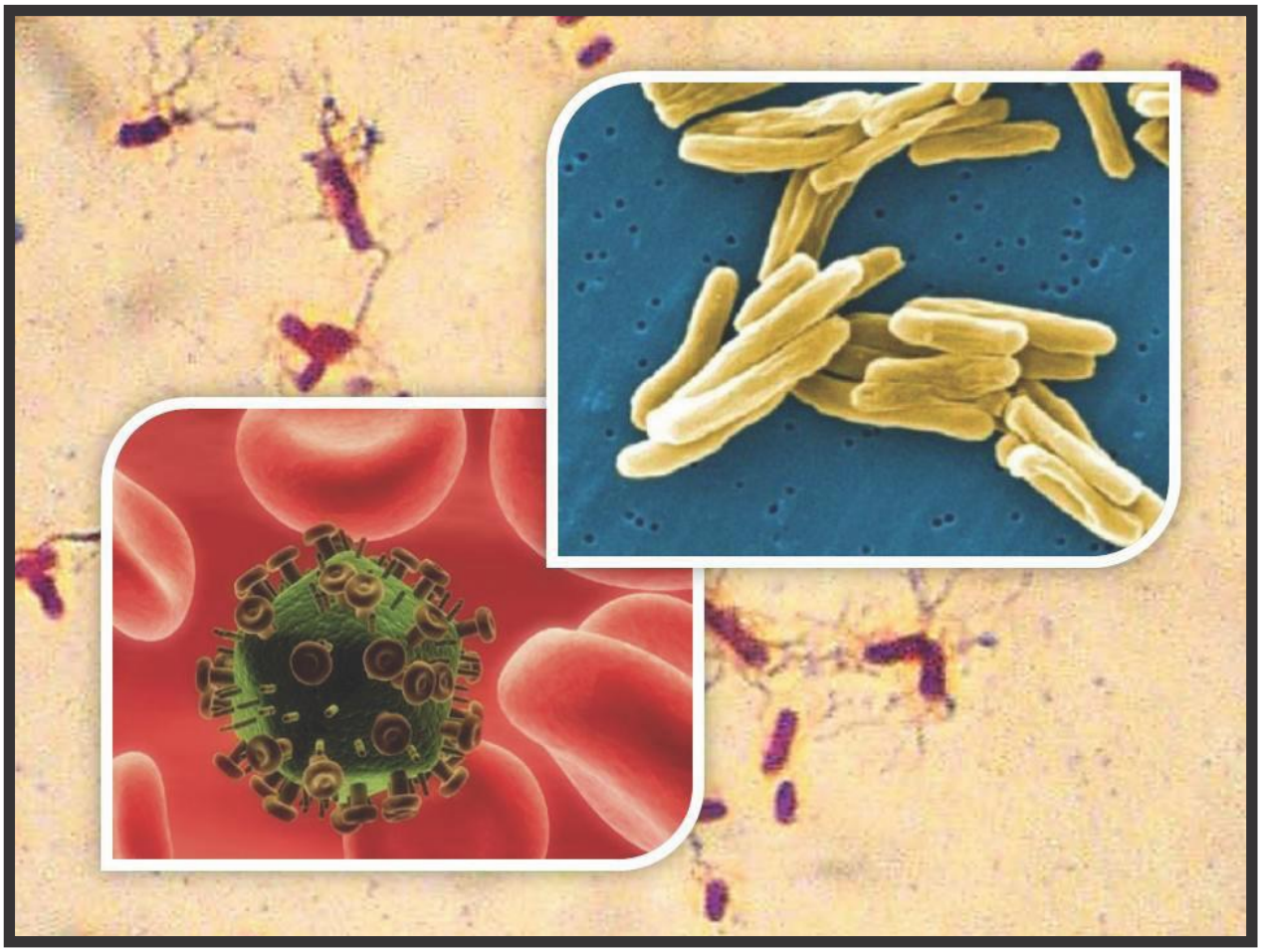
Management Guidelines of TB/HIV Co-infection in Sri Lanka



National Programme for Tuberculosis Control & Chest Diseases

National STD/AIDS Control Programme

Ministry of Health Sri Lanka

2011

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Publication of this manual was funded by the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM).

ISBN 978-955-0742-01-1

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Foreward

I am sincerely happy that the NPTCCD has made another contribution to the health system in Sri Lanka by formulating policy and management guidelines on TB-HIV co-morbidity. I personally aware that this valuable product is a result of many years of experience and evidence in both institutional and field levels of the both programmes. I would like to congratulate the Director NPTCCD and his staff for their commitment in coordinating this effort constantly for more than two years.

Many technical experts and programme implementers of the NPTCCD and the NSACP with hands on clinical and managerial experience have contributed substantially to formulate this valuable document. The World Health Organization also has been a constant source of guidance and encouragement in this process.

I hope this document will enable us to continue our efforts in TB-HIV co-morbidity more strongly, in locally appropriate ways based on international standards. It is my pleasure to mention that many innovative approaches are taking place for TB control activities in recent years.

It is also been observed by me that the NPTCCD is making many efforts on identifying service gaps in TB control in Sri Lanka and attempting to address these issues seriously.

I sincerely hope that this document will be useful to managers and clinicians of both programme to deliver an evidence-based standard care for TB-HIV patients in the country.

Dr. U. A. Mendis
Director General of Health Services

Preface

The worldwide epidemic of human immunodeficiency virus (HIV) in the last decades of 20th Century had considerably contributed toward resurgence of tuberculosis in many parts of the world, particularly in Africa and South-East Asia. Devastating impact of HIV on human immune system, made people more vulnerable towards infections such as tuberculosis, as it appears as one of the earliest and serious clinical manifestations of AIDS

In this context, the National Programme for Tuberculosis Control and Chest Diseases has paid a serious attention towards formulating some policy and clinical guidelines for management of patients with TB and HIV co-morbidity. Sri Lanka is still considered as a low prevalent country for both of these diseases. Nevertheless, it is more rational for a country with a strong health system to have these managerial guidelines considering our future challenges.

This document is also a strong evidence for successful cooperation and academic interaction of two leading public health programmes of Sri Lanka. Obviously, due to practical difficulties, diverse academic and scientific opinions, schools of thoughts and due to dynamic development of scientific knowledge of this subject, it took considerable duration to finalize this document. Nevertheless, from the very beginning of this exercise specialists and managers of two programmes have agreed upon a very important point, that these guidelines should be, practical, simple, applicable and appropriate in the context of Sri Lanka and I am happy to say that this target has been achieved with remarkable success.

I do highly appreciate the contributions made by Director NSACP, Consultants and Medical Officers of the NPTCCD and NSACP. I am also thankful to Dr Mrs Surpiya Warusavithana of WHO Sri Lanka, for her continuous support towards this strenuous academic endeavour. It is pleasure as well as honour to be a member of such team of committed intellectuals.

The guidance rendered by Dr Ravindra Ruberu, the Secretary, Dr Athula Kahandaliyanage, former Secretary, Dr Palitha Mahipala, Additional Secretary and former Deputy Director General (PHS), Dr Ajith Mendis, Director General of Health Services of Ministry of Health and WHO/SEARO is also highly appreciable.

This document specifically addresses the clinical as well as programmatic aspects of TB-HIV co-infection and therefore it shall be one of the most reliable sources of scientific information on this major public health issue. I sincerely hope that this is a landmark event for control of TB and HIV in Sri Lanka.

Dr Sunil De Alwis
Director NPTCCD

Abbreviations

3TC	lamivudine
ADA	adenosine deaminase
AFB	acid-fast bacilli
AIDS	acquired immunodeficiency syndrome
ALT	alanine transaminase
ART	antiretroviral therapy
ATT	anti-TB treatment
AZT	zidovudine
BCG	Bacilli Calmette and Guerin
CBO	community based organization
CT	computed tomography
CXR	chest X-ray
DOTS	direct observed treatment short course
DTCO	District Tuberculosis Control Officer
E	ethambutol
EFV	efavirenz
EIA	enzyme immunoassay
ELISA	enzyme linked immunosorbent assay
EPI	Expanded Programme on Immunization
EPTB	extrapulmonary tuberculosis
FDC	fixed dose combination
FTC	emtricitabine
H	isoniazid
HIV	human immunodeficiency virus
INAH	isoniazid
INSTI	integrase strand transfer inhibitor
IPT	isoniazid prophylactic treatment
IRIS	immune reconstitution inflammatory syndrome
ISTC	international standards for tuberculosis care
MDR-TB	multi drug-resistant tuberculosis
MTB	Mycobacterium tuberculosis
NGO	non-governmental organization
NNRTI	non-nucleoside reverse transcriptase inhibitor
NPTCCD	National Programme for Tuberculosis Control & Chest Diseases
NRTI	nucleoside reverse transcriptase inhibitor
NSACP	National STD/AIDS Control Programme
NSAID	non-steroidal anti-inflammatory drug
NVP	nevirapine
PI	protease inhibitor
PLWHA	people living with HIV and AIDS
PTB	pulmonary tuberculosis
R	rifampicin
S	streptomycin
STD	sexually transmitted diseases
STI	sexually transmitted infections
TB	tuberculosis
TDF	tenofovir disoproxil fumarate
VCT	voluntary counseling and testing
WHO	World Health Organization
Z	pyrazinamide

Chapter 01

Introduction to TB/HIV Co-infection

Human Immunodeficiency Virus (HIV) is driving the Tuberculosis (TB) epidemic in many countries. Therefore TB and HIV/AIDS control programmes share mutual concerns. Prevention of HIV should be a priority for TB control and TB control and prevention should be a priority concern of HIV/AIDS prevention programmes. Hence collaboration between these two programmes is important for provision of effective and efficient lifelong care for HIV infected people.

Tuberculosis is a bacterial disease caused by *Mycobacterium tuberculosis* (MTB). TB infected person carries the tubercle bacilli inside the body, but the bacteria are in small numbers and are dormant. These dormant bacteria are kept under control by the body's defences, hence do not cause the disease. symptoms and signs. This is because the tubercle bacilli in the body have started to multiply and become numerous enough to overcome the body's defences.

World Health Organization (WHO) declared TB as a global emergency in 1993, because the spread of TB was out of control in many parts of the world. The diagnosis, and effective treatment of all TB patients following accurate diagnosis, with the full implementation of the DOTS strategy remains the priority.

Since the first description of AIDS in 1981, researchers have identified HIV as the cause of AIDS. Throughout the world, the most common route of HIV transmission is through unprotected sexual intercourse. In most low income countries roughly equal numbers of men and women are HIV infected.

The critical abnormality resulting from HIV infection is a progressive decline in the number of CD4+ T lymphocytes. They are the most important cells in the cell-mediated immune response. In addition, the serving CD4+ T lymphocytes show impaired functional performances when compared to the performances they did before the HIV infection. Progressive HIV infection therefore, causes progressive decline in immunity even during the long variable latent period of HIV infection.

TB and HIV can cause overlapping epidemics. HIV fuels the TB epidemics in populations where there is an overlap between those infected with HIV and those infected with *Mycobacterium tuberculosis.* Intense transmission of TB increases the pool of HIV infected people exposed to and subsequently infected with *Mycobacterium tuberculosis.*

TB is one of the commonest infections among HIV infected patients with compromised immune system. The disease can occur at any point in the course of progression of HIV infection and may be the first manifestation of underlying HIV infection. HIV increases not only the risk of infection but also the rate of progression of recent or latent TB infection to the disease. Compared to an individual who is not infected with HIV, a person infected with HIV has a ten times increased risk of developing TB. The modern treatment of TB in HIV infected patients reduces the spread of TB to families and the community.

In an individual infected with HIV, the presence of other infections including TB, may allow the virus to multiply more quickly. This may result in rapid progression of HIV disease. Provider initiated HIV testing is offered to all patients diagnosed with TB.

Current estimates reveal that the global rates of new HIV infections are declining in many countries and treatment access is expanding. By the end of 2009, there were an estimated 33.3 million adults and children with HIV/AIDS in the world. Of them 68% (22.5 million) were living in Sub Saharan Africa and 12% (4.1 million) in South and South East Asia. Daily, 7,000 persons get the new HIV infection; of them more than 90% are in the developing countries. In 2009, an estimated 2.6 million adults and children became infected with HIV and an estimated 1.8 million adults and children died from HIV/AIDS; the commonest cause of death being TB.

Chapter 02

Diagnosis of TB in Adults and Children

The highest priority for TB control is the identification and cure of the infectious cases of tuberculosis. Pulmonary TB constitutes 75% of all TB cases. The remaining is extrapulmonary tuberculosis (EPTB) which could affect almost any organ of the body. Diagnosis of pulmonary tuberculosis relies mainly on sputum microscopy. It is done on symptomatic patients who are seeking medical care. Chest radiography is useful but is not diagnostic of pulmonary TB. Tuberculin skin test is helpful when the reading is interpreted in the context of clinical scenario

2.1 When to suspect pulmonary tuberculosis

Any patient presenting to a health facility with cough for two weeks or more should be designated as a "tuberculosis suspect."

Persistent cough for two weeks or more may be accompanied by one or more of the following symptoms:

1. Weight loss
2. Fever particularly in the night
3. Loss of appetite
4. Night sweats
5. Shortness of breath
6. Sputum production
7. Haemoptysis
8. Chest pain
9. Tiredness

2.2 When to suspect extrapulmonary tuberculosis

The symptoms depend on the organ involved. Patients may present with constitutional features of the disease , fever, night sweats, loss of weight, loss of appetite and tiredness.

2.3 Diagnosis of tuberculosis in children

Diagnosis of TB in children is often difficult. Only a small proportion of children have sputum smear positive tuberculosis, and many children cannot produce sputum for examination.

Diagnosis of TB in children should be considered in the following situations:

Respiratory symptoms more than two weeks not responding to broad-spectrum antibiotics which does not include quouolone and aminoglycoside amikacin and kanamycin.
Undiagnosed illness continuing for more than 2-4 weeks.
Unexplained fever.
History of contact with an infectious pulmonary TB case, particularly in the same household.
An abnormal chest X-ray.
A positive Tuberculin test.

Unexplained weight loss or failure to gain weight in spite of adequate nutrition

Failure to thrive in an infant.
Focal lesions such as enlarged lymph nodes, abdominal masses, ascites, central nervous system signs.

2.4 Diagnostic sputum smear microscopy

All patients who present with symptoms suggestive of pulmonary TB should have 3 sputum samples examined for acid fast bacilli.

2.4.1 Sample collection

In an outpatient setting the samples are collected as follows:

Day 1	Sample 1	On the spot sample, collected under supervision.
Day 2	Sample 2	The patient brings sample collected in early morning in the sputum container which was provided during the previous day visit.
	Sample 3	On the spot sample collected under supervision.

From hospitalized patients all 3 samples should be obtained as early morning samples.

2.4.2 Sputum microscopy

Sputum smear slides are stained with Ziehl- Neilsen stain and examined under the oil immersion lens using binocular microscopy for acid and alcohol fast bacilli.

2.4.3 Sensitivity of sputum smear microscopy

Sputum smear microscopy for tuberculosis bacilli is positive when at least 10,000 organisms present per 1 ml of sputum. Examination of three sputum samples increases the rate of detection over 90%.

2.4.4 Slide reporting

The number of bacilli seen in a smear reflects disease severity and the patient's infectivity. Therefore, it is important to record the number of bacilli seen on each smear. The Table 1 below shows the standard method of reporting.

Table 1: Method of reporting of sputum microscopy for tuberculosis bacilli

No of AFB		Results reported
No AFB	per 100 oil Immersion fields	0
1-9	per 100 oil Immersion fields	Scanty
10-99	per 100 oil Immersion fields	+ (1+)
1-10	per oil Immersion field	++ (2+)
> 10	per oil Immersion field	+++ (3+)

The laboratory technician must examine all 3 sputum samples from each TB suspect. The result of each sputum sample with the laboratory reference number must be recorded in the laboratory register and on the sputum request form.

2.4.5 Sputum microscopy in HIV infection

Sputum examination is mandatory in all HIV infected patients at the time of diagnosis and should be repeated whenever TB is suspected.

Sputum smear positivity rates in TB/HIV patients depend on the degree of immunosuppression as shown below.

Table 2: Relationship between degree of immunosuppression and likelihood of positive sputum smear

Degree of Immunosuppression	Likelihood of positive sputum smear
M dl	Similar to HIV negative patients
Severe	Decreased (decrease Inflammation In lungs)

2.5 Sputum culture

In all HIV positive individuals with TB, whether they are direct smear positive or negative, sputum culture and drug sensitivity for MTB should be done before the commencement of anti-TB treatment (ATT). Culture examination of sputum for AFB is more sensitive and specific than direct smear microscopy and may be useful in detecting cases where the number of organisms are fewer than that can be detected by direct smear microscopy. Sputum culture is more expensive and takes at least 6-8 weeks for results when done on solid medium.

Under ideal circumstances pre-treatment sputum cultures for AFB should be performed on all PTB patients. However due to limited facilities available, sputum cultures are recommended only in the following situations:

a) Pre-treatment cultures in category I patients[1] who have a high risk of drug resistance like healthcare workers, prisoners, HIV positive patients, drug addicts and contacts of known drug resistant TB patients.

b) Pre treatment cultures in all categoryII (re treatment) patients[1]

c) Pre treatment cultures in sputum smear negative PTB patients.

d) Patients who fail to convert at the end of the intensive phase of category I treatment.

2.6 Chest radiography in diagnosis of PTB

There are no pathognomonic radiographic features of PTB. Pulmonary infiltrates, consolidation, cavitation, and fibrosis occur in PTB. In post primary TB, the commonest findings of CXR could be upper lobe infiltrates and cavities. Other common sites are the apical segments of the lower lobes. Other chest X ray changes include miliary mottling, hilar and mediastinal lymphadenopathy and pleural effusion/s due to progression of primary infection.

1. For details of category I and II refer to chapter 06

2.6.1 CXR findings in HIV/ TB

Normal chest radiograph would not exclude PTB. At early stage of HIV disease the chest X-ray changes resemble that of post primary TB. In late stage HIV disease the radiographic findings are non specific.

2.7 Tuberculin skin test

A positive tuberculin skin test indicates *M. tuberculosis* infection. It does not distinguish TB disease from past or present infection. Therefore, the interpretation of the test should always be in the context of clinical scenario. The Tuberculin skin test carried out in Sri Lanka is the Mantoux test. An induration of 10 mm or more is considered as positive in HIV negative individuals. In HIV infected individuals an induration of 5 mm or more is considered as positive.

2.8 Diagnosis of extrapulmonary tuberculosis (EPTB)

Up to 25% of TB cases may present as EPTB. It can occur at any age particularly in young children and HIV positive individuals. Children of less than 2 years of age are at risk of disseminated disease causing miliary TB or TB meningitis. The common forms of extrapulmonary TB associated with HIV are the following:

- Lymphadenopathy
- Pleural effusion
- Pericardial disease
- Miliary TB
- Meningitis

2.8.1 Diagnostic approach to EPTB

Definitive diagnosis of extrapulmonary TB is often difficult. Diagnosis may be presumptive, provided you can exclude other conditions. Patients usually present with constitutional features (fever, night sweats, weight loss) and local features related to the site of the disease. These local features are similar in adults and children.

Attempts should be made to obtain biopsy samples for histology and mycobacterial culture where possible as histological features typical of TB and positive culture for MTB will confirm the diagnosis of TB. CT and ultra sound scanning can be used to guide biopsy procedures. Positive Mantoux, increased lymphocyte count in pleural fluids and cerebrospinal fluids (CSF) and elevated adenosine deaminase (ADA) level in pleural fluid are suggestive of TB aetiology in suspected neuro - TB and TB pleural effusion.

Chapter 03

Standard Case Definitions and Treatment Categories of TB Patients

It is important to classify the cases of TB in order to determine the correct treatment regimen and the duration of treatment and for recording and reporting purposes, which will facilitate cohort analysis of treatment outcome.

Who is a TB suspect?

A TB suspect is a person who presents with symptoms or signs suggestive of TB, particularly cough for two weeks or more.

Who is considered as a 'case' of tuberculosis?

A case of tuberculosis is a patient in whom TB has been bacteriologically confirmed or diagnosed by a clinician.

Definite case of TB

A patient is diagnosed as a definite case of TB when there is a positive culture for the *Mycobacterium tuberculosis* complex OR at least two sputum smears are positive for acid-fast bacilli (AFB).

Classification of tuberculosis is based on:

- Site of TB disease
- Results of sputum smear
- History of previous TB treatment

3.1 Classification by site of disease and result of sputum smear

Pulmonary tuberculosis (PTB)

Pulmonary tuberculosis refers to disease involving the lung parenchyma.

Smear positive pulmonary tuberculosis

- A patient with at least two sputum smears positive for AFB by direct smear microscopy

OR

- A patient with at least one sputum smear positive for AFB by microscopy and Chest X-Ray abnormalities consistent with active pulmonary TB as Determined by a children

OR

- A patient with at least one sputum smear positive for AFB by microscopy and sputum culture positive for *M. Tuberculosis*

Smear-negative pulmonary TB

- A patient with at least three sputum smears negative for AFB by microscopy and chest X - Ray abnormalities consistent with active pulmonary tuberculosis and no response to a course of board - spectrum antibiotics (which does not include anti TB drugs, fluoroquinolones and aminoglycosiders) and a decision by a clinician to treat the patient with a full course of anti-tuberculosis therapy (Any patient given anti-TB treatment should be recorded as a case. Incomplete trials of anti-tuberculosis treatment should not be considered a method of diagnosis).

OR

- A patient whose initial sputum smears were negative for AFB, but whose sputum culture is positive for *M. Tuberculosis.*

  Pulmonary TB cases without smear results are no longer classified as smear-negative; instead, they are labeled "smear not done" on the TB register and on the annual WHO survey of countries. This may occur in exceptional situations in adults but are relatively more frequent in children, because children may be unable to produce a sputum samples. However, every effort should be done to obtain a sputum sample from children since evidence suggest that with proper instructions, many children above 5 years of age are able to cough and produce sputum.

Extrapulmonary tuberculosis (EPTB)

This refers to tuberculosis of any organ of the body other than the lung parenchyma. Diagnosis should be based on smear/culture positive specimen, or histology suggestive of TB or strong clinical evidence consistent with active extrapulmonary tuberculosis, followed by a decision by a clinician to treat with a full course of anti-tuberculosis chemotherapy.

> A patient with both pulmonary and extrapulmonary tuberculosis should be classified as a case of pulmonary TB.

Cases of pleural effusion and intrathoracic lymphadenopathy (mediastinal and hilar) without X-ray abnormalities in the lung parenchyma are also classified as extrapulmonary TB.

3.2 Classification by previous treatment

In order to identify those patients at increased risk of acquired drug resistance and to prescribe appropriate treatment, a case should be defined according to whether or not the patient has previously received TB treatment.

The following definitions are used:

New

A patient who has never taken treatment for TB

OR

Who has taken anti-tuberculosis drugs for less than one month.

Relapse

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

Treatment after failure

A pulmonary TB patient on treatment with the appropriate regimen who remains smear positive at the end of 5 months or later during the course of treatment.

Treatment after default

A patient who returns to treatment, with positive bacteriology, following interruption of treatment for two months or more.

Transfer in

A patient already registered in one district and transferred to another district for continuation of treatment.

Other

A patient who does not fit the above definitions. E.g.:

- It is not known whether they have been previously treated
- Previously treated but with unknown outcome of that previous treatment
- Returned for treatment with smear-negative PTB or bacteriologically negative EPTB

3.3 Standard treatment categories

Treatment category is decided depending on whether a patient is a new patient or a previously treated patient.

New patients

Have never had treatment for TB,

OR

Have taken anti-TB drugs for less than 1 month.

New patients may be positive or negative bacteriologically and may have disease at any anatomical site.

Previously treated patients

Have received 1 month or more of anti -TB drugs in the past.

They may be positive or negative bacteriologically and may have disease at any anatomical site. They are further classified by the outcome of their most recent course of treatment as shown in Table 03 below.

Patients whose sputum is smear-positive at the end of (or returning from) a second or subsequent course of treatment are no longer defined as "chronic." Instead, they should be classified by the outcome of their most recent retreatment course: relapsed, defaulted or failed.

Table 3 : Registration group by outcome of most recent TB treatment

Registration group (any site of disease)		Bacteriology[a]	Outcome of most recent prior treatment
New		+ or -	Not relevant
Previously treated	Relapse	+	Cured
			Treatment completed
	Failure	+	Treatment failed
	Default	+	Defaulted
Transfer in: A patient who has been transferred from another TB register to continue treatment		+ or -	Still on treatment
Other		+ or -	All cases that do not fit the above definitions, such as patients: • for whom it is not known whether they have been previously treated • who were previously treated but with unknown outcome of that previous treatment • who have returned to treatment with smear-negative PTB or bacteriologically negative EPTB

[a] + indicates positive smear, culture or other newer means of identifying *M. tuberculosis*
– indicates that any specimens tested were negative.

New patients should receive category I treatment which consists of six months of rifampicin and isoniazid supplemented with pyrazinamide and ethambutol during the first two months (intensive phase). Ethambutol is replaced with streptomycin when there is neurological involvement or when ethambutol cannot be given as in the case of children below the age of six years. When there is neurological involvement the duration of treatment is extended up to 9 - 12 months.

Previously treated patients should receive category II treatment which consists of eight months of rifampicin, isoniazid and ethambutol supplemented with streptomycin during the first two months and pyrazinamide during the first three months (intensive phase)

Chapter 04

Diagnosis of HIV Infection in Adults with TB

Immediately after the infection with HIV, most people do not know that they have become infected, because they do not feel ill. But some people at the time of sero-conversion, develop 'Acute retroviral syndrome' which is a glandular fever like illness with fever, rash, joint pains and enlarged lymph nodes. Sero-conversion refers to the development of antibodies to HIV. An HIV infected person is highly infectious during the initial period and can transmit the virus to another person. This infectivity has no relation to whether or not HIV infection causes initial symptoms.

The progressive deterioration of the immune system due to HIV infection itself and the opportunistic and other infections that result, may lead to symptoms. The HIV staging of the WHO is based on certain signs, symptoms, infections and malignancies associated with HIV infection.

The WHO clinical staging of HIV/AIDS for adults and adolescents is as follows[2]:

4.1 Primary HIV infection

Asymptomatic

Acute retroviral syndrome

Clinical stage 1

Asymptomatic

Persistent generalized lymphadenopathy (involve mainly cervical, axillary and inguinal changes, sparing para-ortic lymph nodes)

Clinical stage 2

Moderate unexplained weight loss (<10% of presumed or measured body weight)

Recurrent respiratory infections (sinusitis, tonsillitis, otitis media, and pharyngitis)

Herpes zoster

Angular cheilitis

Recurrent oral ulceration

Papular pruritic eruptions

Seborrheic dermatitis

Fungal nail infections

2. For who clinical staging of HIV/ AIDS children see Annex 4.

Clinical stage 3

Unexplained severe weight loss (>10% of presumed or measured body weight)

Unexplained chronic diarrhoea for >1 month

Unexplained persistent fever for >1 month (>37.6°C, intermittent or constant)

Persistent oral candidiasis (thrush)

Oral hairy leukoplakia

Pulmonary tuberculosis (current)

Severe presumed bacterial infections (eg, pneumonia, empyema, pyomyositis, bone or joint infection, meningitis, bacteremia)

Acute necrotizing ulcerative stomatitis, gingivitis, or periodontitis

Unexplained anaemia (haemoglobin <8 g/dL)

Neutropenia (neutrophils <500 cells/μL)

Chronic thrombocytopenia (platelets <50,000 μL)

Clinical stage 4

HIV wasting syndrome

Pneumocystis pneumonia

Recurrent severe bacterial pneumonia

Chronic herpes simplex infection (oro-labial, genital, or ano-rectal site for >1 month or Visceral Herpes at any site)

Esophageal candidiasis (or candidiasis of trachea, bronchi, or lungs)

Extrapulmonary tuberculosis

Kaposi sarcoma

Cytomegalovirus infection (retinitis or infection of other organs)

Central nervous system toxoplasmosis

HIV encephalopathy

Cryptococcosis, extrapulmonary (including meningitis)

Disseminated non tuberculosis *Mycobacteria* infection

Progressive multifocal leuko-encephalopathy

Candida of the trachea, bronchi, or lungs

Chronic cryptosporidiosis (with diarrhoea)

Chronic isosporiasis

Disseminated mycosis (eg, histoplasmosis, coccidioidomycosis, penicilliosis)

Recurrent non-typhoidal *Salmonella* bacteraemia

Lymphoma (cerebral or B-cell non-Hodgkin)

Invasive cervical carcinoma

Atypical disseminated leishmaniasis

Symptomatic HIV-associated nephropathy

Symptomatic HIV-associated cardiomyopathy

Reactivation of American trypanosomiasis (meningoencephalitis or myocarditis)

4.2 When to suspect HIV infection in a patient with tuberculosis:

TB is one of the commonest infections which can affect HIV positive individuals early in the course of HIV infection when the CD 4+ counts are still high. Therefore, patients with tuberculosis should be closely evaluated for possible HIV co-infection. Below are the clinical signs and symptoms that should be looked for to identify HIV infection.

Past history

- Sexually transmitted infection (STI)
- Herpes zoster (shingles), recurrent/ multi dermatomal/ severe
- Recent or recurrent pneumonia
- Severe or recurrent bacterial infections
- Early relapse of TB

Symptoms

- Weight loss (>10 kg or > 20% of original weight)
- Diarrhoea (>1 month)
- Pain or difficulty in swallowing (suggests oesophageal or oro-pharyngeal candidiasis)
- Burning sensation of feet (peripheral sensory neuropathy)

Signs

- Evidence of herpes zoster
- Pruritic p apular skin rash
- Kaposi sarcoma
- Symmetrical generalized lymphadenopathy
- Oral candidiasis
- Angular cheilitis
- Oral hairy leukoplakia
- Necrotizing gingivitis
- Giant aphthous ulceration
- Persistent painful genital ulceration

Investigations

- Unexplained anaemia, leucopoenia or thrombocytopenia
- Atypical chest X-ray

4.3 HIV testing

The definitive diagnosis of HIV infection rests on a positive confirmatory test. The issues related to HIV testing such as confidentiality, counselling and informed consent are discussed elsewhere in this manual (See page xx). HIV infection is usually diagnosed through detection of antibodies to the virus. Production of these antibodies usually begins 3-8 weeks after infection. The period between the acquisition of the HIV infection and development of detectable levels of antibodies is known as the

"window period." Blood samples for antibody testing should be collected preferably in a vacuumed tube. Five to six ml of whole blood should be collected and kept at room temperature for half an hour until the clot is formed. Until dispatched the sample should be kept refrigerated at 4-8^0 C and sent to the laboratory within 2-3 days. If the screening test is positive the patient is referred to the STD clinic for confirmatory test and further management.

HIV antibody tests

The most widely available method of identifying HIV-infected individuals is the detection of HIV antibodies in serum or plasma samples. Two-step approach is used to detect antibodies to diagnose HIV infection in Sri Lanka. They are the screening test which is followed by the confirmatory test. In this two step approach when a sample becomes positive in the screening test, a second sample is taken for confirmatory test and HIV infection is diagnosed only when the confirmatory test becomes positive.

Screening tests

- ELISA (EIA)
- Particle agglutination
- Rapid test

Confirmatory tests

- Western blot
- Line immuno-assay

The reliability of test results depends on proper sample collection and testing. The staff collecting the sample must also label the specimen bottle and complete the request form accurately.

4.4 Procedure of HIV testing

In general healthcare setting HIV testing starts with counselling of individuals to enable them to make an informed choice about HIV testing. This decision is entirely the choice of the individual, who must be assured that the process will be confidential. HIV antibody screening test will be offered to the patients who have features suggestive of HIV/TB co-infection with informed consent. In the event of screening test becoming positive, patient will be referred to the STD clinic for detailed counselling, confirmatory testing and further management.

4.5 Screening of patients with tuberculosis for HIV

Objectives of HIV antibody testing in TB patients :

There are three possible main objectives in performing HIV antibody tests in TB patients:

a) Individual patient management (HIV testing in individual TB patients).
b) Surveillance (anonymous testing to monitor epidemiological trends).
c) Research (voluntary testing or epidemiological, clinical or virological studies).

Benefits of diagnosis of HIV infection in individual TB patients:

a) Better diagnosis and management of other HIV-related illnesses.
b) Early initiation of antiretrorial theropy (ART) irrespective of CD4 + count.
c) Avoidance of drugs associated with a high risk of side effects.
d) Increased safer sexual practices and decreased HIV transmission.
e) Possible use of chemoprophylaxis with cotrimoxazole to prevent opportunistic infections And reduce mortality.
f) The opportunity to counsel patients and relatives about HIV infection and about the prognosis.
g) The opportunity to advise patients about measures to prevent further HIV transmission.

In many countries, all patients with TB, regardless of their perceived risk of HIV infection are offered screening for HIV. However, serious concerns have been expressed on adopting this practice in Sri Lanka based on epidemiological factors, knowledge and attitudes of people regarding these two diseases. They were taken into account when the recommendations were made.

4.6 Recommendations:

1. It is recommended that all the patients who are diagnosed as having TB should be offered Screening for HIV.
2. Provider initiated HIV screening can be employed if the patient has features suggestive of HIV infection or the patient is found to be having risk behaviours or patient belongs to high-risk group.
3. During the screening process the patient is counselled.
4. If the screening test is positive, the patient should be counselled by the TB care providers and a blood samples should be sent to the NSACP (National STD / AIDS Control Programme) Laboratory for the confirmatory test.
5. All Confirmed HIV patients should be referred to the STD clinic.

Chapter 05

Treatment of TB/ HIV Co-infection

5.1 Antiretroviral drugs

ARV drugs are belonged to the following classes:

a) Nucleoside reverse transcriptase inhibitors (NRTIs);
b) Non-nucleoside reverse transcriptase inhibitors (NNRTIs)
c) Protease inhibitors (PIs):
d) Integrase strand transfer inhibitors (INSTIs)

See Table 4 for individual drugs under each class and their doses.

5.2 Principles of antiretroviral treatment (ART)

Antiretroviral drugs act by blocking the action of enzymes that are important for replication and functioning of the virus. The drugs must be used in standardized combinations (usually three or more drugs together). Monotherapy is not recommended because of the inevitable development of drug resistance. However, for the specific indication of prevention of mother to-child transmission of HIV infection, short course monotherapy is still recommended. Dual nucleoside therapy is also not

5.3 Principles of a public health approach to ART

Similar to standardized approach to overall TB control and TB treatment regimens, in the case of HIV, WHO recommends a standardized approach to care, which includes effective ART regimens. Standardization and simplification of ART regimens facilitate the effective implementation of HIV treatment programmes. Effective implementation means maximized benefit for individual patients with minimised risk of drug resistance.

The same public health principles underpin the approaches to TB treatment and to ART. In both cases, success requires the following:

Political commitment; standardized diagnosis and registration of patients; standardized drug treatment regimens under proper case management conditions; uninterrupted drug supply; programme monitoring and evaluation through recording and reporting of patients registered and their outcomes.

5.4 Challenges in treating TB/HIV co-infection

- Rifampicin induce cytochrome P450 liver enzyme system that metabolizes PIs and NNRTIs which result in reduced blood levels of PIs and NNRTIs. PIs and NNRTIs can also enhance or inhibit the same enzyme system leading to altered blood levels of rifampicin.
- Immune Reconstitution Inflammatory Syndrome (IRIS) - Paradoxical exacerbation of symptoms signs and radiographic manifestations of TB which is thought to be a result of immune restitution due to simultaneous administration of anti TB drugs and anti retroviral drugs (see below).
- NRTIs may also produce peripheral neuropathy which can enhance isoniazid induced peripheral neuropathy.
- Increased case fatality either due to other HIV related infections or TB itself.

5.5 Starting ART in patients who are on anti-tuberculosis treatment

Combination of anti-TB drugs and ART may cause increased incidence of drug toxicities, side effects, paradoxical reactions and drug interactions. Therefore, management of patients with TB/HIV co-infection should be a collective decision by treating Venereologist and Chest Physician. Antiretroviral therapy improves survival in HIV-positive patients. In addition, antiretroviral therapy reduces TB rates by up to 90% at an individual level, by 60% at a population level and it reduces TB recurrence rates by 50%. Delaying ART cause progression of HIV and lead to increased risk of other opportunistic infections. ART should be initiated for all people living with HIV and active TB disease irrespective of CD4+ cell count. TB treatment should be started first, followed by ART as soon as possible and within the first 8 weeks of starting TB treatment.

5.5.1 What ART regimens to start?

WHO recommends that the first-line ART regimen contain two nucleoside reverse transcriptase inhibitors (NRTIs) plus one non-nucleoside reverse transcriptase inhibitor (NNRTI). These are efficacious, relatively less expensive, have generic and fixed dose combination (FDC) formulations, do not require a cold chain, and preserve a potent new class of agents (protease inhibitors) for second-line regimens.
(TDF), combined with either lamivudine (3TC) or emtricitabine (FTC). For the NNRTI, WHO recommends either efavirenz (EFV) or nevirapine (NVP).

The recommended first-line ART regimens for TB patients are those that contain EFV, since interaction with anti-TB drugs is minimal. In several cohort studies, ART with standard-dose EFV and two nucleosides was well tolerated and highly efficacious in achieving complete viral suppression among patients receiving concomitant rifampicin-based TB treatment.

Because of concerns related to teratogenicity, EFV should not be used in women of childbearing potential without adequate contraception, nor should it be used in women who are in the first trimester of pregnancy. Alternatives are also needed for patients who are intolerant to EFV or are infected with a strain of HIV that is resistant to NNRTIs. For those who are unable to tolerate EFV or who have contraindications to an EFV-based regimen, NVP in a combination with two NRTIS (AZT

5.5.2 When to start ART?

While the optimal time to start ART in relation to the start of TB therapy is not yet clear, there is some evidence for early initiation of antiretroviral therapy in terms of reduced all-cause mortality, improved TB outcomes and reduced incidence of immune reconstitution inflammatory syndrome (IRIS). The recommendations of WHO are that TB treatment should be commenced first and ART subsequently commenced, as soon as possible and within the first 8 weeks of starting TB treatment.

The rationale for starting ART soon after TB diagnosis is that case-fatality among patients with TB/HIV co-infection occurs mainly in the first 2 months of TB treatment. However, early initiation of ART (within a few weeks of starting TB treatment) means a large number of tablets to ingest, which may discourage treatment adherence; there may also be complications such as adverse effects, drug interactions and IRIS.

5.5.3 Immune Reactivation Inflammatory Syndrome

Mild to moderate IRIS is relatively common in patients with TB started on ART; it has been reported in up to one-third of patients in some studies. However, it is relatively rare in its severe forms. The syndrome can present as fever, enlarging lymph nodes, worsening pulmonary infiltrates, or exacerbation of inflammatory changes at other sites. It generally presents within 3 months of the start of ART and is more common when CD4+ cell count is low (<50 cells/mm^3). Most cases resolve without intervention and ART can be safely continued.

IRIS is a diagnosis of exclusion. Patients with advanced AIDS may show clinical deterioration for a number of other reasons. New opportunistic infections can occur or previously subclinical infections may progress and cause clinical worsening. IRIS can also be confused with TB treatment failure. In addition, HIV-positive TB patients may be demonstrating progression of TB disease due to TB drug-regimen may need to be adjusted to ensure compatibility with the TB treatment.

5.6 Other recommendations relevant in treating TB/HIV co-infection

1. Patients should be managed by a multi-disciplinary team which include physicians who have expertise in the treatment of both TB and HIV.
2. Optimal regimen should be used in the treatment of TB. This should include rifampicin and INAH unless they are contraindicated. Anti TB therapy should be modified only if the patient develops toxicity or intolerance to a drug in the regimen, and not because they develop reactions to a drug in the ART regimen. Flexibility should be practiced in selecting anti-retroviral drugs.

3. NRTI do not cause major interactions with rifampicin and therefore can be used with anti TB therapy.

4. Efavirenz can be used with rifampicin. But dose needs to be increased to 800 mg once daily if the body weight of the patient is more than 50kg. Standard dose of 600 mg can be used if the body weight is less than 50kg. Where EFV cannot be given NVP is an alternative.

5. Pyridoxine 10-25 mg daily should be given to all HIV patients receiving isoniazd (INAH).

6. All HIV infected patients who are started on anti TB therapy should be followed up closely for the development of side effects and drug toxicity, especially drug-induced hepatitis. Before commencing anti TB therapy for HIV patients, baseline serum bilirubin and alanine transminase (ALT) tests should be performed and repeated every two weeks for the first two months of treatment.

5.7 Recommended doses of ARV drugs

The field of ARV drug treatment is rapidly evolving. Clinicians need to keep up to date with the latest guidance on drug doses and treatment. The WHO website is a useful source of such guidance (www.who.int/hiv/pub/guidelines/en).

5.7.1 Adults and adolescents

For drugs dosage recommended for adults see the Table 4 below.

Table 4: Anti retroviral drugs and dosages In adults

Drug	Dose[1]
Nucleoside RTIs (NRTIs)	
Z dovud ne (ZDV/AZT)	250 - 300 mg twice daily
Stavudine (d4T)	40 mg twice daily (30 mg twice daily if <60 kg)
Lamivudine (3TC)	150 mg twice daily Or 300mg once daily
Dldanoslne (ddl)	400 mg once daily if >60kg (250 mg once daily if <60 kg)
Abacavir (ABC)	300 mg twice daily or 6oomg once daily
Emtrlcltablne (FTC)	200mg once daily
Nucleotide RTI (NtRTIs)	
Tenofov r (TDF)i[2]	300 mg once daily
Non-nucleoside RTIs (NNRTIs)	
Efav renz (EFZ)	600 mg once daily
Nev rap ne (lNVR)	200 mg once daily for 14 days followed by 200 mg twice daily[3]
Etrav r ne (ETV)	200mg twice daily
Protease inhibitors (PIs)	
Ne f nav r (NFV)i	1250 mg twice daily
Indinavir/ritonavir (IDV/r)	800 mg/100mg twice daily
Lopinavir/ritonavir(LPV/r)	F xed dose comb nat on tab ets (LPV200mg/RTV 50mg)[4] two tablets twice daily For individuals on TB therapy with rifampicin use ritinovir super boosting (LPV400mg+RTV 400mg tw ce da y or LPV 800mg + RTV 200mg twice daily) with c ose c n ca and verl enzyme mbn torling i i

Saquinavir + ritonavir (SQV/r)	1000 mg + 100 mg twice daily for individuals on TB therapy with rifampicin use ritonavir super boostIng (SQV 400 mg + RTV 400 mg tw ce da y) w th c ose clinicaI andIhepaitic enzyme monItorIng
Atazanavir + ritonavir (ATV/r)	300 mg + 100 mg once daily
Darunavir + ritonavir (DRV/r)	600 mg + 100 mg twice daily
Fos-amprenavir + ritonavir (FPV/r)	700 mg + 100 mg twice daily
Integrase strand transfer inhibitors (INSTIs)	
Raltegravir (RAL)	400 mg twice daily

1 These dosages are In common clInIcaI use. The dosages in this table have been selected on the bas s of the best ava ab e c n cal evidence, and dosages that can be g ven on a once or twIce da y bas s are preferredIn orderIr to enhance adherence to therapy. The doses sted are those for nd v dua s w th normal renaI iandIhepatIc functIon. Product- specIfIc InformatIon should be consulted for dose adjustments that may be indicated with rena or hepat c dysfunct onI or for poIent a drugI nteract ons w thI other H V and non - H V med cat ons. I I i i

2 TDF dosage adjustment for nd v dua w th a tered creatInIne clearahce can be consIdered (us ng Cockcroft-Gau t formu a). Creat n ne c earance ≥ 50 m /m n, 300 mg once da y, Creat n ne c earance 30-49 m /m n, 300 mg every 48 hours. Creat n ne c earance ≥ 10-29m /m n (or dialysis), 300 mg once every 72-96 hours. Cockcroft-Gauit formu a: GFR = (140 - age) x (Wt n kg) x (0.85 if female) / (72 x Cr)

3 In the presence of rifampicin, or when pat ents sw tch from EFV to NVP, no need for ead- n dose of NVP. I i

4 LPV/r can be adm n stered as 4 tab ets once da y (.e. LPV 800 mg + RTV 200 mg once da y) n pat ents w th ess than three LPV res stance-associated mutations on genotyp c test ng. Once-da y dos ng s not recommended n pregnant women or pat ents w th more than three LPV resistance-associated mutatIons i i

5.7.2 Children

Refer the Table 5 below for the recommended anti retroviral drugs and dosages for children.

Table 5: Anti retroviral drugs and dosages In chIldren

Name of the drug	Formulatlons	Pharmacokinetic data available	Age (weight), dose* and dose frequency	Other comments
Nucleoside reverse transcriptase inhibitors (NRTIs)				
iZ dovud ne (AZT)	Syrup: 10 mg/ml Capsule: 100 mg; 250 mg Tablet: 300 mg	ll A ages	<4 weeks: 4 mg/kg twice daily 4 weeks to 13 years: 180 mg/m² twice daily Maximum dose: > 13 yrs: 300 mg twice daily	Largle vlo ume of syrup noll we to erated n o der ch dren. Needs storage in glass jars and is light-sensitive. Can be given with food. Dloses dlf 600 mg/m² tw ce da y requ red for HIV encepha opathy. Do not use wi th d4T (antagon st c ant retrov ra effect).
Lamivudine (3TC)	Oral solution: 10 mg/ml Tablet: 150 mg	ll A ages	<30 days: 2 mg/kg twice daily >30 days and <60 kg: 4 mg/kg twice daily Maximum dose: >60 kg: 150 mg twice daily	Well tolerated. Can be given with food. Store so ut on at roomi temperature (use w th n one month of openlng). Tab et cdh be d sso ved n sma amount of water or mixed with food and taken immediately.
Fixed-dose comblnatlon of AZT plus 3TC	No liquid available Tablet: 300 mg AZT plus 150 mg 3TC	Adolescents and adults	Maximum dose: >13 years or >60 kg: 1 tablet twice daily	***Tablet should not be splited*** Tab et cdh be d sso ved n sma amount of water or mixed with food and taken immediately. For ch dren <30kg, AZT+3TC cannot be dosed accurately in tablet form.
Dldanosine (ddl, dideoxyinosine)	Oral suspenslon paedlatrlc powder/ water: 10 mg/ml. In many countries needs to be made up with additional antacld Chewable tablets: 25 mg; 50 mg; 200 mg Enterlc-coated beadlets In capsules: 125 mg; 200 mg; 250 mg; 400 mg	ll A ages	<3 months: 50 mg/m² twice daily 3 months to 13 years: 90 mg/m² twice daily or 240 mg/m² once daily Maximum dose: >13 years or 60 kg: 200 mg twice daily or 400 mg once daily	Keep suspension refrigerated; stable for 30 days; must shake well. Shou d be taken on an empty stomach, at east 30 mlnutes before or 2 hours after meals. Enterlc-coated beadlets In capsules can be opened and sprinkled on small amount of food.

Table 5 : continued

Name of the drug	Formulations	Pharmacokinetic data available	Age (weight), dose* and dose frequency	Other comments
Stavudine (d4T)	Oral solution: 1 mg/ml Capsules: 15 mg, 20 mg, 30 mg, 40 mg	All ages	<30 kg: 1 mg/kg twice daily 30 to 60 kg: 30 mg twice daily Maximum dose: >60 kg; 40 mg twice daily	Large volume of solution. Keep solution refrigerated; stable for 30 days; must shake well. Need to be stored in glass bottles. Capsules opened up and mixed with small amount of food are well tolerated (stable in solution of 24 hours if keep refrigerated). Do not use with AZT (antagonistic antiretroviral effect).
Abacavir (ABC)	Oral solution: 20 mg/ml Tablet: 300 mg	Over 3 months of age	<16 years or <37.5 kg: 8 mg/kg twice daily Maximum dose: >16 years or >37.5 kg: 300 mg twice daily	Syrup is well tolerated or crushed tablet can be given with food. MUST WARN PARENTS ABOUT HYPERSENSITIVITY REACTIONS. ABC should be stopped permanently if hypersensitivity reaction Developed.
Fixed-dose combination of AZT plus 3TC plus ABC (trizavir)	No liquid available Tablet: AZT 300 mg plus 3TC 150 mg plus ABC 300 mg	Adolescents and adults	Maximum dose: >40 kg: 1 tablet twice daily	***Tablet cannot be splitted.*** MUST WARN PARENTS ABOUT HYPERSENSITIVITY REACTION. Trizavir should be stopped permanently if hypersensitivity reactions developed. For children <30 kg, trizavir cannot be dosed accurately in tablet form.
Non-nucleoside reverse transcriptase inhibitors (NNRTIs)				
Nevirapine (NVP)	Oral suspension: 10 mg/ml Tablet: 200 mg	All ages	15 to 30 days: 5 mg/kg once daily for 2 weeks, then 120 mg/m^2 twice daily for 2 weeks, then 200 mg/m^2 twice daily >30 days to 13 years: 120 mg/m^2 once daily for 2 weeks, then 120-200 mg/m^2 twice daily Maximum dose: >13 years: 200 mg once daily for first 2 weeks, then 200 mg twice daily	Avoid co-administration with rifampicin. Store suspension at room temperature; must shake well. Can be given with food. MUST WARN PARENTS ABOUT RASH. Do not escalate dose if rash occurs (if mild/moderate rash, hold drug; when rash cleared, restart dosing from beginning of dose escalation; if severe rash, discontinue drug). Drug Interactions.

Table 5 : continued

Name of the drug	Formulations	Pharmacokinetic data available	Age (weight), dose* and dose frequency	Other comments
Efavirenz (EFZ)	Syrup: 30 mg/ml (note: syrup requires higher doses than capsules, see dosing chart) Capsules: 50 mg, 100 mg, 200 mg	Only for children over 3 years	Capsule / syrup dose for >3 years:10 to 15 kg: 200 mg in capsule form /9 ml(270 mg) in syrup form once daily 15 to 20 kg: 250 mg incapsule form / 10 ml (300 mg) in syrup form once daily 20 to 25 kg: 300 mg in capsule form /12 ml (360 mg) in syrup form once daily 25 to 33 kg: 350 mg in capsule form / 15 ml (450 mg) in syrup form once daily 33 to 40 kg: 400 mg in capsule form / 17 ml (510 mg) in syrup form once daily Maximum dose: > 40 kg: 600 mg once daily	Capsules may be opened and added to food but has very peppery taste; however, can be mixed with sweet foods or jam to disguise taste. Can be given with food (but avoid after high-fat meals which increase absorption by 50%). Best if given at bedtime, especially during first 2 weeks, (to reduce central nervous system side-effects). Drug interactions.
Protease inhibitors (PIs)				
Lopinavir/ritonavir (LPV/r)	Oral solution: 80 mg/ml lopinavir plus 20 mg/ml ritonavir Capsules: 133.3 mg lopinavir plus 33.3 mg ritonavir	6 months of age or older	>6 months to 13 years: 225 mg/m^2 LPV/ 57.5 mg/m^2 ritonavir twice daily Or weight-based dosing: 7-15 kg: 12 mg/kg LPV 3 mg/kg ritonavir twice daily 15-40 kg: 10 mg/kg lopinavir 2-5 mg/kg ritonavir twice daily Maximum dose: >40 kg: 400 mg LPV/ 100 mg ritonavir (3 capsules or 5 ml twice daily)	Preferably oral solution and capsules should be refrigerated; however, can store at room temperature up to 25^0 C (77^{0}F) for 2 months. Liquid formulation has low volume but tastes bitter. Capsules large. Should be taken with food. Drug interactions.

* Body surface area calculation (m^2): square root of (height in cm multiplied by weight in kg divided by 3600)

5.8 Co-trimoxazole preventive therapy

In all HIV-positive TB patients, co-trimoxazole preventive therapy should be initiated as soon as possible and is given throughout the TB treatment. (See also Standard 15 of the ISTC)[3]. Co-trimoxazole preventive therapy substantially reduces mortality in HIV-positive TB patients. The exact mode of activity is not clear but co-trimoxazole is known to prevent *Pneumocystis jirovecii* infection and malaria and is likely to have an impact on a range of bacterial infections in HIV-positive TB patients.

A system for providing co-trimoxazole preventive therapy to all people living with HIV who have active TB should be established by TB and HIV programmes. Continuation after TB treatment is completed should be considered in accordance with national guidelines.

For anti retroviral drug related adverse effects and recommendations see annex 1.

3. International Standards for Tuberculosis Care (ISTC) Available at: http://www.stopb.org/assets/documents/resources/publications/acsm/istc_report.pdf.

Chapter 06

Management of TB

The Table 6 below shows the standard (essential) anti TB drugs, their mode of action and the doses.

Table 6: Anti-TB drugs

First line anti TB drug	Mode of action	Potency	Dose: mg/kg/day
Isoniazid (H)	Bactericidal	High	5
Rifampicin (R)	Bactericidal	High	10
Pyrazinamide (Z)	Bactericidal	Low	25
Streptomycin (S)	Bactericidal	Low	15
Ethambutol (E)	Bacteriostatic	Low	15

Isoniazid and rifampicin kills metabolically active bacilli. In addition, rifampicin can kill extracellular semidomant bacilli. Pyrazinamide kill intracellular dormant bacilli. A population of TB bacilli that has never got exposed to anti TB drugs still may have a few bacilli with naturally occurring resistance to anti TB drugs. These resistant mutants can grow and replace the sensitive strains if treatment is inadequate and inappropriate.

6.1 Intensive phase

HRZE is given for 2 months for new cases and SHREZ for 2 months followed by HRZE for 1 month is given for retreatment cases. Rapid bacterial killing occurs in this phase. Because of heavy bacillary load, risk of development of resistance is high during this period.

6.2 Continuation phase

HR for 4 months and HRE for 5 months are given for new patients and retreatment cases respectively. Because of the low bacillary load emergence of drug resistance is rare, but the duration is prolonged for killing of persistents to prevent relapses.

During the intensive phase, treatment should be given under direct observation (DOT). Ideally, the treatment during continuation phase also should be with DOT but self administration with close supervision could be acceptable.

Table 7: Summary of Anti TB treatment

TB treatment category	Type of patient	Intensive phase	Continuation phase
I	New smear +ve or -ve pulmonary/extra pulmonary	**2HRZE**	**4HR**
II	Previously treated cases : smear + ve relapses, treatment after default, treatment after failure	**2SHRZE / 1HRZE**	**5HRE**

HRZE, HRE, HR are now available as fixed dose combination pills. This improves compliance and prevents development of resistance.

6.3 Use of anti-TB drugs in children

None of the standard anti TB drugs is contraindicated in children. They usually tolerate treatment. Ethambutol is safe in young children who cannot complain of visual disturbances provided that the recommended dose is not exceeded.

6.4 Notable points about anti-TB therapy

1. 4-drug therapy regimen is needed to prevent drug resistance, relapse and treatment failure.
2. Pyrazinamide has its maximum sterilization effect during first 2 months.
3. Isoniazid and Rifampicin is given throughout the whole period because they are the most potent bactericidal drugs.
4. Resistance to isoniazid and rifampicin should be avoided at any cost as resistance to both these drugs means multi-drug resistant TB (MDR-TB) which is difficult to treat. Second line drugs which are used to treat MDR-TB are more expensive, more toxic and less effective.
5. FDC dosage recommendations are straight forward and adjusting the dose according to the body weight is easier. It prevents patient from selecting drugs to be ingested. Therefore, monotherapy becomes impossible.

Table 8: Number of FDC tablets used in TB treatment in adults according to the body weight

Treatment regimen	Body weight				Duration of treatment
	<35	35-54	55-70	>70	
For New Patients: Category I treatment					
Intensive phase-daily RHZE tablet (FDC 4) 150+75+400+275mg	2	3	4	5	2 months
Continuation phase-daily RH tablet (FDC 2) 150+75	2	3	4	5	4 months
For Previously Treated patients: Category II treatment					
Intensive phase-daily Streptomycin* im	0.5g	0.75g	1g	1g	
RHZE tablet (FDC 4) 150+75+400+275mg	2	3	4	5	1 month
Continuation phase-daily RHE tablet (FDC 3) 150+75+275mg	2	3	4	5	5 months

* Patients over 60 years, the dose of streptomycin 0.5 g, irrespective of the weight

Table 9. Recommended doses of first-line anti-TB drugs for children

Drug	Daily dose and range	Remarks
Isoniazid	5(4-6) mg/kg body weight	Maximum daily dose 300mg
Rifampicin	10(8-12) mg/kg body weigh	Maximum daily dose 600mg
Pyrazinamide	25(20-30) mg/kg body weight	
Ethambutol	20(15-20) mg/kg body weight	Should be avoided in children below 6 years
Streptomycin	15(12-18) mg/kg body weight	

6.5 Monitoring TB patients during treatment

Monitoring is mainly with sputum examinations to look for bacteriological clearance. Clinical evaluation is done in case of sputum negative and extrapulmonary cases.

Table 10: Monitoring with sputum examination of patients on anti TB drugs

When to monitor (sputum smear)	Category I	Category II
At diagnosis	Pre-treatment	Pre-treatment
End of intensive phase	End of 2 months	End of 3 months
In continuation phase	End of 5 and 6 months	End of 5 and 8 months

If smear is + ve at the end of the intensive phase, HRZE is continued for further 1 month and at the end of that month, irrespective of the smear results, the continuation phase should be commenced.

Any patient who is sputum + ve beyond 5 months is categorized as treatment failure. They are commenced with Category II treatment.

6.6 Treatment outcome

Table 11: Categories of treatment outcome of TB patients

Cured	:	initially sputum +ve patient converting to -ve at the end of 5th month and on completion of treatment
Treatment completed	:	patient has successfully completed treatment but do not fulfil criteria for cure or failure
Treatment failure	:	patient having sputum smear +ve at the end of 5th month of treatment
Died	:	who dies for any reason while on TB treatment
Defaulted	:	treatment was interrupted for 2 consecutive months or more
Transferred out	:	patient was transferred out to another district and the treatment outcome was not known

For side effects of anti-TB drugs see annex 2 and 3.

For management of adverse drug reactions to anti TB drugs, refer to General Manual for TB Control.

Chapter 07

Prevention of TB in HIV infected patients

HIV infected individuals are particularly susceptible to infection with MTB and those individuals who are already infected with *M. tuberculosis* have a high risk of developing active TB. From the public health point of view, the best way to prevent TB is to provide effective treatment to people with infectious TB. This interrupts the chain of transmission. Good TB treatment programmes are the best TB prevention programmes to protect HIV infected as well as non-infected people from getting TB.

In the implementation of effective control activities, training of health care workers on the importance of infection control measures should be a prioritized strategy. Then prompt diagnosis and treatment of patients with sputum smear positive pulmonary TB helps to reduce the exposure to TB.

7.1 Protection of HIV positive persons against exposure to TB

The following measures should be practiced to minimize exposure to TB in Health Care settings.

a. Environmental control:

Good ventilation and sunlight help to reduce the indoor TB transmission. Hence health care settings should have large windows and they should be kept open.

b. Face masks:

A TB suspect or a TB patient, if possible should wear a face mask as it reduces the risk of transmitting infection to the uninfected people. When a health care worker is supervising a cough inducing procedure (eg. Bronchoscopy) or attending to a MDR-TB patient, they should wear N95 face masks to protect themselves.

c. Health Education:

Health care workers should educate TB suspects and diagnosed TB patients on the importance of practicing simple measures, to reduce the risk of transmitting *Mycobacterium tuberculosis.*

These measures include:

- Covering mouth with the hand when coughing
- Using sputum pots with lids
- Refraining of spitting outdoors

d. Early diagnosis and proper treatment of TB patients.

TB suspects with possible pulmonary infection should be promptly diagnosed and treatment should be commenced. If it is necessary to admit them to a hospital, try to admit to a ward separate from other patients. Staff should encourage the pulmonary TB suspects to spend the daytime outside the ward provided the weather is good.

e. Prompt treatment for sputum smear positive pulmonary TB patients:

Ideally sputum smear positive pulmonary TB patients should start anti-TB treatment as soon as the smear results are known.

> Do not adm t a HIV pos t ve pat ent to the TB wardi iunt thie d agnos s of TB silmade ibecause HIV nfected person has i a h gh succept b ty to TB nfect on. Therefore, HIV nfectiedi pat ents shioiil d bie avoided from expo$ure to TB by adm tt ng them to TB wards, as they may turn out not to have TBi. i

f. Specialized Management for patients with MDR-TB:

Patients with known MDR-TB require special management at a referral centre. They may have prolonged periods of infectiousness. Therefore it is essential to minimize the possibility of contamination with other patients who do not have either TB or MDR-TB. Patients with MDR-TB should ideally be managed in a well ventilated individual room.

g. HIV patients can get TB easily from general medical wards or from TB wards. To prevent this:

- TB patients are diagnosed in outpatient departments by effective lab services Preventing unnecessary admissions.
- Most of the time an attempt is made to manage HIV patient as an outpatient.
- Immediately after the diagnosis of TB is made, anti TB treatment is started as therapy will reduce excretion of infective bacilli in sputum.
- Known HIV positive health worker should avoid working in medical wards
- Patients with MDR-TB must be separated from patients with HIV infection to prevent Outbreaks of MDR TB among hospitalized HIV positive patients.

7.2 Role of BCG in preventing TB among HIV positive persons

BCG (Bacille Calmette and Guerin) is a live attenuated vaccine. In communities with high prevalence of TB, WHO recommends routine BCG immunization for all neonates at birth. It prevents severe forms of TB such as TB meningitis and miliary TB in young children but not adult pulmonary TB.

There have been a few reported cases of disseminated BCG infection after vaccination of HIV children but prospective studies comparing BCG immunization in HIV infected and uninfected infants showed no difference in risk of complications. Therefore in most instance of cases, BCG immunization is safe.

As per WHO recommendation, all EPI vaccines including BCG should be given according to the national schedule to known or suspected asymptomatic HIV infected infants. However, children with symptomatic HIV infection/AIDS should not be vaccinated with BCG.

7.3 Preventive TB treatment – isoniazid prophylactic treatment (IPT)

Preventive TB treatment is aimed at reducing the risk of developing TB disease in people who are at a risk of developing TB like those who are primarily infected with MTB. Isoniazid is used in prophylactic treatment.

The national policy of Sri Lanka is to provide IPT for all children under 5 years who are household contacts of smear + TB patients. The most important pre requisite for IPT is to exclude active TB. In the case of HIV infection, the IPT is recommended in the following conditions.

- All HIV infected adults and children who are close contacts of smear + ve TB patients.
- HIV infected adults and children with a Tuberculin test > 5mm.

Isoniazid 5mg/kg with a maximum of 300mg per day for 6 months is recommended for preventive TB treatment. This should be commenced after excluding the active disease.

Post-TB treatment prophylaxis with isoniazid can reduce the risk of TB recurrences in HIV infected individuals. However, still there is uncertainty as to whether post- TB treatment of IPT is beneficial or not in HIV patients. Therefore it is currently not recommended in Sri Lanka.

7.4 WHO recommendations on preventive therapy against TB in HIV positive Individuals

A. Services needed prior to establish a preventive therapy service:

1. Adequate capacity for HIV counselling, which should include information, education and communication (IEC) on TB.
2. Sufficiently trained health care staff.
3. Linkage between HIV care and TB control services.
4. Good TB control programme with high cure rates and combined default/failure rates at the end of treatment less than 10%.

B. Recommendations for a preventive therapy service:

1. Preventive therapy against TB should be a part of the package of care for people living with HIV/AIDS.
2. Preventive therapy should be used only in settings where it is possible to exclude active TB and to ensure appropriate monitoring and follow- up.
3. Preventive therapy should be provided from the settings that include voluntary counselling and testing services for HIV.
4. The priority for TB control programme continues to be the detection and cure of infectious TB cases.
5. Procurement and supply of anti-TB drugs must be regulated by national authorities in order to prevent the development of drug resistance.

7.5 Steps in the delivery of preventive therapy

Those who have a positive HIV test should receive,

1. Screening for active TB (sputum smear for TB, sputum culture, chest X-ray).
2. Preventive therapy is recommended for Tuberculin positive and HIV positive persons who do not have active TB.
3. Provision of preventive therapy. Isoniazid is the recommended drug: 5mg/kg (maximum 300mg daily) is given as a daily self - administered therapy for six months.

4. Individuals are seen monthly to monitor them for adherence and toxicity.
5. Stop isoniazid in those who develop symptoms and signs of active TB or hepatitis.
6. Regularly assess the attendance, adherence, toxicity, withdrawals and completion of therapy to Determine the effectiveness of the preventive therapy.

7.6 Conclusions

Isoniazid preventive therapy (IPT) is not an alternative to the DOTS strategy for controlling TB. However, there are many opportunities for providing IPT to people living with HIV which could prevent many cases of active TB. An effective and efficient mechanism should be established to increase the accessibility of preventive therapy to people living with HIV in settings of high TB prevalence.

Chapter 08

Coordination of Care in Different Settings

TB/HIV patients may receive care in different settings. These settings include the patient's home, local health centre, district hospital, and tertiary referral hospital. Coordination of care in different settings promotes continuity of care for the patient. Both National Programme for TB Control and Chest Diseases (NPTCCD) staff and general health service staff need to be aware that many HIV-positive TB patients develop other HIV-related illnesses during anti-TB treatment. Delivering interventions to reduce the frequency of opportunistic infections (e.g. cotrimoxazole prophylaxis,) requires effective collaboration with National STD/AIDS Control Programme (NSACP).

8.1 The scope of a new approach to decrease the burden of TB/HIV

Since HIV fuels the TB epidemic, HIV programmes and TB programmes share mutual concerns. Prevention of HIV should be a priority for TB control; TB care and prevention should be a priority concerns of HIV/AIDS programmes. Until recently, the efforts to control TB in HIV infected people have mainly focused on implementing the DOTS strategy for TB control, through the identification and cure of infectious TB cases, this strategy aims at interrupting the transmission of *M. tuberculosis* infection.

The expanded scope of a new approach to TB control in populations with high HIV prevalence comprises interventions against TB and interventions against HIV (and therefore indirectly against TB). Interventions against TB include intensified case-finding, cure and TB preventive therapy. Interventions against HIV (and therefore indirectly against TB) include condom promotion, treatment or prophylaxis, for sexually transmitted infections (STI) and ART. Previously, TB programmes and HIV/AIDS programmes largely pursued separate courses. However, they need to collaborate in areas of mutual concern in their support to general health service providers. An integrated system of HIV/AIDS and TB care, uses available health service providers to ensure continuity of care for TB/HIV

8.2 Referral to local HIV/AIDS care services

One of the important features of a successful national tuberculosis programme is integration of TB control activities with the general health services. General health service staff and national TB control programme staff need to know what local HIV/AIDS services are available for HIV-positive patients. The NSACP provides services to HIV/AIDS patients through district and provincial STD clinics. At this level the existing coordination between NPTCCD and NSACP has to be further strengthened. Local NGOs, community based organizations (CBO), and organizations of people living with HIV/AIDS (PLWHA) will liaise with NPTCCD and NSACP in the provision of care for TB/HIV patients.

Some TB/HIV patients choose not to accept referral to local HIV/AIDS services. It is important to respect patient's preference and confidentiality. In such situations NPTCCD staff should refer these patients to a preferred HIV clinic, to the centre or to a Consultant Venereologist.

8.3 A framework for HIV/AIDS care that incorporate interventions to address TB

Close collaboration is necessary between different health service providers at different levels of the health care system. This will facilitate the referral of patients for "continuum of care".

8.3.1 Home and community care

Local responses involve people in their homes, neighbourhoods, and community organizations. They take responsibility for addressing HIV/AIDS as a shared community concern. Community interventions to support PLWHA should include supporting TB patients to complete treatment. Some PLWHA regard TB as an ominous sign of AIDS. The prospect is of an increase healthy life expectancy. Targeted information, education, and communication interventions can encourage the more optimistic view. The above scenario does not exist at present in Sri Lanka. But in a situation where increased number of TB/HIV patients being managed such arrangements should be in place.

General health services staff can refer patients directly to HIV/AIDS care services. Community care means providing the patient with access to care as close to home as possible. Some HIV/AIDS care services provide home care for AIDS patients. The home care provider may be a health care worker or community volunteer.

Home care alone is not enough for a TB/HIV patient. The TB patients need to continue to receive their anti-TB treatment, directly observed by a trained and supervised home care provider. This training and supervision requires collaboration between the HIV/AIDS home care scheme and the NPTCCD. Also, the HIV/AIDS home care provider can recognize problems with anti-TB treatment and refer patients as necessary to the NPTCCD (District Chest Clinics).

8.3.2 Provincial and district level care

At the district level care, measures for detecting and treating common HIV-related diseases should include diagnosis and treatment of infectious TB (sputum smear-positive pulmonary TB). The district level care staff needs to detect TB cases among persons presenting with, or found through screening to have, symptoms of TB. The most important symptom is prolonged cough. Detection of infectious TB cases requires access to quality-assured TB sputum microscopy. Special attention to case detection is necessary in congregate settings (e.g. prisons, health care facilities) and among people attending STD clinics.

Health care workers and HIV-infected patients are often exposed to the risk of TB in health facilities. Health services have a responsibility to implement measures to decrease nosocomial risk of TB in health facilities. They also need to protect health care workers from occupational exposure to HIV.

Information for communicable disease surveillance passes from primary care level to those responsible at district level. This includes reporting of TB cases and recording of TB treatment outcomes. Systems of surveillance of HIV-related diseases other than TB are currently lacking or poorly developed at all levels of care. TB surveillance can be a starting-point for the development of these systems.

Due to the small number of cases, at present, care for PLWHA in Sri Lanka is possible to carry out through STD clinics of NSACP and through Consultant Venereologists. However, in a situation where the case load is high, general health service providers should be able to provide HIV care also. In such settings, measures for detecting and treating HIV related diseases should include diagnosis and treatment of sputum smear negative pulmonary TB and extrapulmonary TB. Diagnosis usually requires investigation facilities including sputum smear, X-ray and biopsy. In settings where such facilities are not available, they need to be referred to the closest healthcare facility where such services are available or to the District Chest Clinic. After the necessary investigations and diagnosis, for the continuation of management, patients can refer back to the primary care or community care. Good channels of communication promote continuum of care.

There are two preventive treatments that should normally be available at primary care level for the prevention of common HIV related diseases. Isoniazid is effective as preventive treatment of TB. Cotrimoxazole may prevent common bacterial infections. However, in Sri Lankan setting, the decision on these preventive therapies should be taken at chest clinic/STD clinic or by the treating consultants.

8.3.3 Central level care

Measures applicable at tertiary care level are additional to those applicable at the provincial care level. They include diagnosis and treatment of complications of common HIV-related diseases.

Specialist management of complicated forms of TB (e.g. peritoneal and pericardial TB) is sometimes available only at the central level. District level staff sometimes is faced with difficult problems of diagnosis or treatment. The patient may benefit from transfer to a central level care setting. It is usually advisable to obtain instructions over the telephone before transferring the patient. This is to ensure that the specialist agrees that the patient is likely to benefit from the referral.

8.4 The private sector

Ideally there should be close collaboration between private practitioners and the NPTCCD. This can result in improved management of TB patients according to NPTCCD guidelines. Private practitioners serve the community and can guarantee good care for their TB patients by following NPTCCD guidelines. Private practitioners can register TB patients with the NPTCCD and share continued management. Private practitioners do not have to give up their patients entirely to the NPTCCD. Some TB/HIV patients prefer to go to a private practitioner for reasons of confidentiality.

8.5 Indigenous practitioners

Indigenous practitioners such as ayurvedic physicians are a valuable source for identification of TB cases. If symptoms are chronic in nature there is the tendency the patient to seek indigenous treatment. Keeping those practitioners informed on the symptomatology of pulmonary and extrapulmonary TB will ensure referring them for further investigations. In indigenous healthcare settings where there is a high turnover, establishment of sputum collection centres or microscopic centres is a possibility. Being DOT "providers also they can collaborate with NPTCCD. Furthermore, in supporting PLWHA when they are ill", they often have an important role.

8.6 Operational research aimed at improving integrated TB and HIV/AIDS prevention and care

TB and HIV programmes need to collaborate in implementing the interventions set out in the above framework. They comprise HIV interventions relevant to TB control and TB interventions relevant to HIV/AIDS care. TB and HIV programmes need to mainstream these interventions as part of their routine activities. Operational research is necessary to improve the delivery of integrated TB and HIV/AIDS prevention and care.

8.7 Promotion of voluntary counselling & testing (VCT) for HIV as an entry point to better TB care

There are several benefits of promoting VCT for HIV. One potential benefit is improved access to various HIV prevention and care activities, including TB interventions. The "ProTEST" initiative of the WHO, is one of several operational research initiatives on integrated HIV/AIDS and TB care. This initiative aims to promote HIV voluntary testing as a key to a more coherent response to TB in settings with high HIV prevalence. The name "ProTEST" reflects the promotion of voluntary HIV testing, as an entry point for access to HIV and TB prevention and care. The initiative supports district level experience in several field sites. These sites are combining efforts against HIV and TB prevention and care. The initiative supports district-level experience in several field sites. These sites are combining efforts against HIV and TB to reduce combined TB/HIV burden. Local experience will contribute to the development of district-based models for the integrated delivery of health care services. Integrated delivery involves all service providers, e.g. government, NGOs, community and the private sector. The results from the field sites will inform the development of policy guidelines for scaling up the model, if is it shown to be effective and affordable.

Annex 1: ARV related adverse effects and recommendations

Adverse events	Major first line ARVs	Recommendations
Acute pancreatitis	d4T	D scont nue ART. G ve suppo rt ve treatment with aboratory monitoring. Resume ART w th an NRTI w th ow pancreat c tox city risk, such as AZT or TDF.
Drug eruptions (mild to severe, including Stevens-Johnson syndrome or toxic epidermal necrolysis	NVP, EFV (ess common y)	In m d cases, symptomat c care. EFV rash often reso ves spontaneously after 3-5 days and need not to change ART. If moderate rash, non-progress ng and w thout mucosa nvo vement or system c s gns, cons der a s ng e NNRTI substitution (i.e. from NVP to EFV). In moderate and severe cases, d scont nue ART and give supportive treatment. After resolution, resume ART with a bPI-based reg men or tr p e NRTI f nc other cho ce.
Dyslipidaemia	All NRTIs (particularly d4T) EFV	Consider replacing the suspected ARV
Anaemia and neutropaenia	AZT	If severe (Hb <7.0 g/dl and/or ANC <750 cells/mm^3), replace with an ARV w th m n ma or no bone marrow tox city (e.g. d4T or TDF) and consider blood transfusion.
Hepatitis	All ARVs (particularly NVP)	If ALT s at more than f ve t mes the basa eve , d scont nue ART and monitor. After reso ut on, restart ART, rep ac ng the causat ve drug (e.g. EFV replaces NVP).
Lactic acidosis	All NRTIs (particularly d4T)	D scont nue ART and g ve suppo rt ve treatment. After resolution, resume ART with TDF.
Lipoatrophy and lipodystrophy	All NRTIs (particularly d4T)	Ear y rep acement of the suspected ARV drug (e.g. d4T for TDF or AZT)
Neuropsychiatric changes	EFV	Usua y self- m ted, w thout the need to d scont nue ART. If nto erab e to the pat ent, rep ace NVP w th EFV or boosted PI. Single subst tut on recommended without cessat on of ARTi
Renal toxicity (renal tubular dysfunction)	TDF	Consider substitution with AZT
Peripheral neuropathy	d4T	Replacement of d4T with AZT, TDF. B6). Symptomat c treatment (am tr pty ine, v tam ne

Annex 2 : Adverse effects of first line anti-TB drugs

Drug	Common side-effects	Rare side-effects
Isoniazid	• Nausea, vomitting • Peripheral neuropathy • Hepatitis • Histamine reaction after ingestion of red fish e.g., balaya, kelawalla • Skin rashes	• Convulsions, pellagra. • Psychos s i • Optic neuritis • Haematological abnormalities (agranulocytois, haemolitic anaemia, aplastic anemia) • SLE like syndrome
Rifampicin	• Gastro-Intestinal-nausea, anorexia, abdominal pain • Hepatitis • Reduced effect of oral contraceptives, antiepileptic drugs, oral hypoglyceamic drugs and theophyllines • Skin rashes • Reddish discoloration of body secretions and urine	• Acute renal failure, shock, thrombocytopenia, • Haemolytic anemia • 'Flu like syndrome' (with Intermittent doses) pseudo membranous colitis, pseudo adrenal crisis
Pyrazinamide	• Nausea, vomiting • Skin rashes • Joint pains • Hepatitis	• sideroblastic aneamia
Streptomycin	• Auditory and vestibular damage (also to the foetus) • Renal damage • Sk n rash	• Impairment of neuromuscular transmission
Ethambutol	• Optic neuritis • Color blindness	• Sk n rash • joint pains • peripheral neuropathy

Annex 3: Symptom based management of side-effects of anti-TB drugs

Side-effects	Drug(s) responsible	Management
MINOR		**CONTINUE DRUGS**
1.Anorexia, nausea, abdomlnal paln	Rifampicin, INAH, Pyrazinamide	G ve drugs w th sma mèa s or ast th ng atlh ght l l i i (If persIstent stop treatment and refer for further Evaluation)
2.Jolnt paln	Pyrazinamide	Give Asprin/NSAIDs
3.Burnlng sensatlon In feet	Ison az d i	Pyridoxine 100 mg daily
4.Orange/red urine	R famp c n i i	Reassurance
5.HIstamlne reactlon	Ison az d i	Advice not to eat 'Red' fish
MAJOR		**STOP DRUGS RESPONSIBLE REFER FOR EVALUATION**
1. Itching of skin, skin rash	Any drug	Stop antl-TB drugs
2. Deafness	Streptomycin	Stop Streptomycin
3. Dizziness, vertigo, nystagmus	Streptomycin	Stop Streptomycin
4. Vomiting/Jaundice	INAH, Rifampicin and Pyrazinamide	Stop antl-TB drugs
5. Visual impairment	Ethambutol	Stop Ethambutol
6. Shock, purpura, acute renal failure, haemolytic anaemia	R famp c n i i	Stop Rifampicin (Never give again)

Annex 4: Who Clinical Staging of HIV for Infants and Children with Established HIV Infection

Clinical Stage 1

Asymptomatic

Persistent generalized lymphadenopathy

Clinical stage 2

Unexplained persistent hepatosplenomegaly

Papular pruritic eruptions

Extensive wart virus infection

Extensive molluscum contagiosum

Recurrent oral ulcerations

Unexplained persistent parotid enlargement

Lineal gingival erythema

Herpes zoster

Recurrent or chronic upper respiratory tract infections (otitis media, otorrhoea, sinusitis, tonsillitis)

Fungal nail infections

Clinical stage 3

Unexplained moderate malnutrition not adequately responding to standard therapy

Unexplained persistent diarrhoea (14 days or more)

Unexplained persistent fever (above 37.5^{o}C, intermittent or constant, for longer than one month)

Persistent oral Candidiasis (after first 6 weeks of life)

Oral hairy leukoplakia

Acute necrotizing ulcerative gingivitis/periodontitis

Lymph node TB

Pulmonary TB

Severe recurrent bacterial pneumonia

Symptomatic lymphoid interstitial pneumonitis

Chronic HIV-associated lung disease including bronchiectasis

Unexplained anaemia (<8.0 g/dl), neutropenia (<0.5xl0^{9}/L^{3}) or chronic thrombocytopenia (<50 x 10^{9}/L^{3})

Annex 5: Formats for recording and reporting of TB/HIV Co-infection

For an efficient patient management, proper record keeping and data transmission the following formats have been newly introduced to the NPTCCD and NSACP.

1. **TB/HIV 1: Referral Form of the NPTCCD**. Whenever a patient is referred from the chest clinic or by the Consultant Respiratory Physician to the STD clinic/ Consultant Venereologist for confirmatory or screening test of HIV or a known HIV infected patient is referred, this format should be used.

2. **TB/HIV 1a: Back Referral Form of the NSACP**. When a patient referred from the chest clinic or by the Consultant Respiratory Physician, is referred back, this format should be used. This format also should be used to inform the outcome of the referred patient to the clinic or the consultant from where the reference is originated.

3. **TB/HIV 2: Referral Form of the NSACP**. Whenever a patient was referred from the STD clinic or by the Consultant Venereologist for tuberculosis screening, this format should be used.

4. **TB/HIV 2a: Back Referral Form of the NPTCCD**. When a person referred from the STD clinic or by the Consultant Venereologist, is referred back, this format should be used.

5. **TB/HIV 3: Register of TB/HIV co-infection**. This register should be maintained at each District Chest Clinic. Details of people with HIV infection referred for tuberculosis screening should be entered into this register. Due to the nature of the information, this register should be kept safely with restricted access to DTCO and other relevant officials

6. **TB/HIV 4: HIV Clinic Register- Screening for Tuberculosis.** This register should be maintained at all STD clinics where people with HIV infection are treated.

7. **TB/HIV 5: National STD/AIDS Control Programme. Quarterly Report of TB Status among PLWHA.** This should be completed quarterly in quadruplicate by the Consultant Venereologist or the Medical Officer of all STD Clinics before the 15th of the next month. One copy should be sent to the Director, NSACP and the second copy to the Director, NPTCCD and the third copy to the DTCO or the District Chest Clinic. The remaining copy should be filed and kept in the STD clinic.

National Programme for TB Control & Chest Diseases

Referral Form

Name of the Chest Clinic	
Name of the Patient:	District TB registration No:
Referred by (Name of the clinic/ Clinician and designation):	
Referred to (Name of the clinic/ Clinician and designation):	

Reason for referral:

☐ For HIV screening ☐ For HIV confirmation ☐ Known HIV infected

☐ Other: .....

TB status:

☐ No evidence of PTB or EPTB

☐ Latent TB infection

☐ Active TB disease:

- ☐ PTB SS+
- ☐ PTB SS-
- ☐ EPTB (site):

.....

Chest X-ray

HIV screening test results:

Mantoux Test: ..... mm (Date: .....)

Culture: Date:

[positive/ Negative/ Not done/ Pending results]

DST results:

.....

Date treatment started:

Category: ☐ I ☐ II

Drug regimen and prescribed drugs

[RHZE] / [RHZ]	S

R	H	Z	E

(RHZE): FDC of Rifampicin(R), Isoniazid(H), Pyrazinamide(Z), Ethambutol(E); (RHZ): FDC that may be used in children; S: Streptomycin; H, R, Z, E are for patients given individual drugs

Remarks

.....

.....

.....

Date: .....

.....

Signature

National STD/AIDS Control Programme **TB/HIV 1a**

Back-referral Form

Clinic Registration No:

Name of the Patient:	District TB Registration No:
Referred back to (Name of clinic/ Clinician and designation):	
Referred back by (Name of the clinic/ Clinician and designation):	

HIV Screening Test: ☐ Positive ☐ Negative ☐ Not done

Confirmatory Test: ☐ Positive ☐ Negative ☐ Not done

CD 4 count and the date of the test:

Co-trimoxazole started? ☐ Yes ☐ No If yes, the date:.....

ARV treatments prescribed

.....

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.....

.....

Other medications currently on (except anti-TB drugs):

.....

.....

.....

.....

.....

.....

Remarks

.....

.....

.....

.....

Date: .....

.....

Signature

National STD/AIDS Control Programme

TB/HIV 2

Referral Form to Chest Clinic

Name of the Patient:	Registration No:
Referred by (Name of the clinic/ Clinician and designation):	
Referred to (Name of the clinic/ Clinician and designation):	

Reason for referral:

- ☐ For TB screening
- ☐ Previous history of TB
- ☐ Other:

Previous screening for TB

- ☐ Previously screened for TB in -

(month & year).....

- ☐ Previously not screened for TB

Date confirmed HIV positive

.....

CD 4 count and the date of the test:

.....

Cotrimoxazole prophylaxis started?

☐ Yes ☐ No

If yes, the date:.....

ARV treatments prescribed

.....

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Current medical history:

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.....

Other medications currently on:

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.....

.....

Remarks

.....

.....

.....

Date: .....

.....

Signature

National Programme for TB Control & Chest Diseases

TB/HIV 2a

District TB Registration No:

Back-referral Form

Name of the Patient:	HIV referral registration No:
Referred back by (Name of the clinic/ clinician and designation):	
Referred back to (Name of the clinic/ Clinician and designation):	

☐ Past history of TB (site): .....

Treatment outcome:

Current TB status:

☐ No evidence of PTB or EPTB

☐ Latent TB infection

☐ Active TB disease:

☐ PTB SS+ ☐ PTB SS-

☐ EPTB (site):

.....

Mantoux Test: ..... mm (Date: .....)

Culture: Date:

[positive/ Negative/ Not done/ Pending results]

DST results:

Chest X-ray

Treatment given

☐ Category 1 ☐ Category 2

☐ Primary prophylaxis

☐ Secondary prophylaxis

☐ None

Date treatment started:

Drug regimen and prescribed drugs

[RHZE] / [RHZ]	S

R	H	Z	E

(RHZE): FDC of Rifampicin(R), Isoniazid(H), Pyrazinamide(Z), Ethambutol(E); (RHZ): FDC that may be used in children; S: Streptomycin; H, R, Z, E are for patients given individual drugs

Remarks

.....

.....

Date: .....

.....

Signature

Name of Clinic:

Confidential **TB/HIV 3**

Register of HIV-TB Co infection

Serial No.	Date	District TB Registration Number	Name with initials	Sex [M/F]	Age	Date confirmed for HIV	CD4 Count and Date	ARV treatment commenced? [Y/N] & date	Remarks

Name of the Clinic:

HIV Clinic Register – Screening for Tuberculosis

Confidential **TB/HIV 4**

No.	File No Date Registered	Name	Sex [M/F] Age	ARV Regimen Date commenced	Other opportunistic infections	Date Referred for TB screening	Results of TB Screening*	Anti-TB treatment given Date treatment commenced	Remarks

*Results of TB Screening: **Neg**- Negative; **LTB**-Latent TB; **PTB (SS+)**-Pulmonary TB (Smear +ve); **PTB (SS-)** Pulmonary TB (Smear –ve); **EPTB** -Extra Pulmonary TB- *Mention the site.*

National STD/AIDS Control Programme

Quarterly Report of TB Status among PLWHA

Name of the STD Clinic	Year		I January –March III July –September IV October

No of HIV positive patients currently under care* (If no patients under care need not to complete rest of the return and send as a NIL return)	
No of HIV positives registered in the quarter	

Of them,

No. on anti-TB treatment at the time of diagnosis

No. having past history of TB

Details on referral for TB screening

		New the quarter	Previously diagnosed PLWHA
screened for TB			
Of them diagnosed as having TB infection/disease			
in each Diagnostic category	Latent TB infection		
	Pulmonary TB (Sputum Smear + ve)		
	Pulmonary TB (Sputum Smear – ve)		
	Extra Pulmonary TB		
on DOTS treatment			
No on INAH prophylaxis			

Name of the Reporting Officer .....

Designation

Date:..... Signature

Annex 6 : Facilities for tuberculosis care in Sri Lanka

National Programme for TB Control & Chest Diseases

Public Health Complex, 555/5, Elvitigala Mawatha, Colombo 5
Tel: 0112368276; 0112368386

Chest Hospital

We sarb
Tel: 0112958271; 0112956702

National Tuberculosis Reference Laboratory

Premises of Chest Hospital, Welisara
Tel: 0112960509

Central Drug Stores (NPTCCD)

Premises of Chest Hospital, Welisara
Tel: 0115741936

Ampara District Chest Clinic *(Near the General Hospital)*
Tel: 0635672323

Branch Clinics	
BH Dehiattakandiya	Every Monday & Friday

Microscopy Centres	
BH Dehiattakandiya	DH Mahaoya

Anuradhapura District Chest Clinic *(Near St. Joseph's College)*
Tel: 0253852155

Branch Clinics	
BH Thambuttegama	3rd week Saturday
DH Kekirawa	1st week Thursday
DH Medawachchiya	2nd week Thursday
DH Nochchiyagama	1st week Thursday
Military Hospital Anuradhapura	Every Wednesday
Prison Hospital Anuradhapura	3rd week Wednesday

Microscopy Centres	
BH Thambuttegama	MilH Anuradhapura
DH Kekirawa	DH Padaviya
DH Medawachchiya	DH Kahatagasdigiliya
DH Nochchiyagama	RH Eppawala

Badulla District Chest Clinic,
General Hospital Badulla
Tel: 0552222483

Branch Clinics	
BH Mahiyanganaya	3rd week Friday
DH Girandurukotte	3rd week Friday
BH Diyatalawa	3rd week Wednesday
DH Bandarawela	3rd week Wednesday
DH Haldummulla	4th week Friday
DH Haputhale	4th week Friday
DH Passara	3rd week Thursday
BH We madalı	1st week Friday

Microscopy Centres	
BH Mahiyanganaya	DH Uva Paranagama
DH Girandurukotte	DH Dambana
BH Diyatalawa	DH Uraniya
DH Bandarawela	RH Ekiriyankumbura
DH Haldummulla	DH Kandaketiya
DH Haputhale	DH Meegahakiula
DH Passara	DH Koslanda
BH Welimada	

Batticaloa District Chest Clinic,
Hospital Road, Batticaloa *(In front of the Teaching Hospital)*
Tel: 0652222678

No branch clinics	

Microcopy Centres	
BH Kalawanchikudi	BH Chenkalady
RH Ka ar ll	TH Battlcaloa
DH Erawur	DH Kattankud ı
BH Valachchenei	

Colombo Central Chest Clinic,
Baseline Road, Colombo 8
0112675274

Branch Clinics	
BH Avissawella	Every Fr day ı
BH Homagama	Every Saturday
Prison of Welikada	Every Tuesday morning
TH Colombo South	Every Tuesday evening
BH Angoda	Every Monday
IDH Angoda	Every Monday
BH Mulleriyawa	Every Tuesday

Microscopy Centres	
BH Avissawella	CD Sedawatta
BH Homagama	RH Padukka
TH Colombo South	IDH Angoda
DH Wetara	BH Angoda
DH Moratuwa	BH Mulleriyawa
RH Piliyandala	PriH Welikada

Galle District Chest Clinic,
Thaseem Clinic, Wakwella Road, Galle
Tel: 0912234196

Branch Clinics	
BH E p t ya ı ı	Every Monday
BH Balapitiya	Every Friday
BH Udugama	Every Wednesday

Microscopy Centres	
BH E p t ya ı ı	DH Ambalangoda
BH Balapitiya	DH Habaraduwa
BH Udugama	Prison- Galle
DH Hiniduma	

Gampaha District Chest Clinic,
Premises of Chest Hospital Welisara
Tel: 0112960155

Branch Clinics	
DGH Gampaha	Every Tuesday
BH Negambo	Every Saturday
BH Wathupitiwala	Every other Wednesday

Microscopy Centres	
BH Gampaha	DH D vu ap tıya l ı ı
BH Negambo	DH Meerigama
BH Wathupitiwala	DH Kiribathgoda
DH Minuwangoda	

Hambantota District Chest Clinic,
Base Hospital, Hambantota
Tel: 0472220261

Branch Clinics	
Prison- Weerawila	Every Saturday

Microscopy Centres	
BH Tangalla	RH Sooriyaweva
BH Tissamaharamaya	RH Angunakolapelessa
DH Ambalantota	RH Walasmulla

Jaffna District Chest Clinic,
16, Clock Tower Road, Jaffna
Tel: 0212222494

Branch Clinics	
BH Telippilai	1st week Thursday
BH Point Pedro	4th week Friday
DH Wellani	2nd week Friday
BH Chawakachcheri	3rd week Friday

Microscopy Centres	
BH Point Pedro	BH Chawakachcheri

Kalmunai District Chest Clinic,
Base Hospital Samanturei
Tel: 0672260261

Branch Clinics	
BH Ka munal ı	Every Tuesday & Thursday
Ashroff Memorial Hospital	Every Wednesday
BH Akkaraipattu	Every Monday
BH Pottuvil	1st week Saturday

Microscopy Centres	
Ashroff Memorial Hospital	BH Ka murla ı
BH Akkaraipattu	BH Sawalei
BH Pottuvil	BH Palamunai

Kalutara District Chest Clinic,
Teaching Hospital, Nagoda
Tel: 0342222677

Branch Clinics	
BH Horana	1st week Wednesday
Prison- Kalutara	4th week Wednesday

Microscopy Centres	
BH Horana	DH Matugama
BH Panadura	DH Ing r ya ı ı
DH Beruwala	

Kandy District Chest Clinic, Bogambara
Tel: 0812222071

Branch Clinics

DH Nawalapitiya	1st & 2nd week Friday
BH Gampola	2nd& 4th week Friday
DH Hasalaka	3rd week Monday
DH Akurana	1st week Monday
Prison- Bogambara	2nd & 4th week Wednesday
DH Madolkele	4th week Monday

Microscopy Centres

DH Nawalapitiya	DH Galagedara
BH Gampola	DH Kadugannawa
DH Hasalaka	DH Talatuoya
DH Akurana	DH Wattegama
Prison- Bogambara	DH Pussellawa

Kegalle District Chest Clinic,
Welimannatota Road, Kegalle
Tel: 0352232431

Branch Clinics

BH Karawanella	2nd week Thursday
BH Warakapola	3rd week Friday
DH Rambukkana	1st week Friday
DH Aranayake	4th week Thursday

Microscopy Centres

BH Karawanella	BH Mawane a ll
BH Warakapola	DH Deraniyagala
DH Rambukkana	DH Kitulgala
DH Aranayake	

Killinochchi District Chest Clinic,
District General Hospital Killinochchi
Tel: 0212285327

No branch clinics

No microscopy centres

B h C ı ı

BH Nikaweratiya	2nd week Tuesday
DH G lg m w	1 week Tuesday
DH Rideegama	3 week Tuesday
DH Polpıthıg m	4 week Tuesday
DH Mawathagama	2nd week Thursday
Prison Wariyapola	Every Thursday

Microscopy Centres

BH Nikaweratiya	DH Bingiriya
DH G lg m w	DH Polg h w l
DH Rideegama	DH Dambadeniya
DH Polpıthıg m	DH Sandalankawa
DH Mawathagama	RH Dunakadeniya
DH Wariyapola	DH Gokarella
DH Maho	BH Kuliyapitiya
DH H ttıpol	DH Hiripitiya

Mannar District Chest Clinic,
District General Hospital, Mannar
Tel: 0232232916

Branch Clinics

DH Murunkan	Every Wednesday
DH Adampan	Every other Monday
DH Talaimannar	Every other Tuesday
DH Chilawatura	Every Friday
DH Pesalai	Every other Saturday

No microscopy centres

Matale District Chest Clinic,
District General Hospital, Matale
Tel: 0662224888

Branch Clinics

BH Dambulla

Microscopy Centres

DGH Mata e l	DH Rattota
BH Dambulla	DH Laggala Pallegama
DH Galewela	DG Hettipola
DH Yatawatta	

Matara District Chest Clinic,
Ramya Mohotti Chest Clinic, Hakmana Road, Matara
Tel: 0415621509

No branch clinics

Microscopy Centres

BH Den yaya ı	DH Morawaka
DH Akuressa	DH Deiyandara
DH Dikwella	BH Weligama
DH Kamburupitiya	

Moneragala District Chest Clinic,
Base Hospital, Moneragala
Tel: 0552277354

Branch Clinics

DH Bibila	2nd week Tuesday
DH Medagama	2nd week Tuesday
DH Buttala	4th week Tuesday
DH Wellawaya	4th week Tuesday
DH Tanamalwila	1st week Monday
DH Sewanagala	1st week Monday
DH Kataragama	1st week Monday

Microscopy Centres

DH Bibila	BH Siyambalanduwa
DH Medagama	BH Badalkumbura
DH Buttala	BH Hambegamuwa
DH Wellawaya	BH Ethimale
DH Tanamalwila	

Mullaitivu District Chest Clinic,
Base Hospital, Mullaitivu
Tel: 0243248131

No branch clinics

No microscopy centres

Nuwara Eliya District Chest Clinic,
Base Hospital, Nuwara Eliya
Tel: 0523535855

Branch Clinics

DH D koyaı	1st & 2nd week Wednesday
BH Rikillagaskada	2nd & 4th week Tuesday
BH Walapane	2nd & 4th week Wednesday
DH Nawalapitiya	1st & 3rd week Friday

Microscopy Centres

DH D koyaı	DH Maske ya ll
BH Rikillagaskada	DH Poondaluoya
BH Walapane	DH Udapussellawa
DH Nawalapitiya	DH Lindula

Polonnaruwa District Chest Clinic,
General Hospital, Polonnaruwa
Tel: 0272225570

Branch Clinics

RH We kandaı	1st week Wednesday
RH Pulasthigama	2nd week Wednesday
H Aralaganwila	2nd week Friday
RH Bakamoona	3rd week Wednesday
Central Medical Clinic Nuwaragala	3rd week Friday
BH Medirigiriya	4th week Wednesday
Prison- Polonnaruwa	1st week Saturday

Microscopy Centres

RH We kandaı	BH Med r g r yaı ı ı ı
RH Aralaganwila	DH Galamuna
RH Bakamoona	BH Hingurkgoda

Puttalam District Chest Clinic,
Colombo Road, Puttalam
Tel: 0322265361

Branch Clinics

DGH Chilaw	Every other Thursday

Microscopy Centres

DGH Chilaw	DH Ka p t yal ı ı
DH Dankotuwa	DH Anamaduwa
BH Marawila	Central Medical Clinic Wanatawilluwa
DH Munda l	

Ratnapura District Chest Clinic,
Hospital Road, Ratnapura
Tel: 0452222268

Branch Clinics

DH Kahawatta	1st week Tuesday
DH Embilipitiya	2nd week Tuesday
DH Balangoda	3rd week Tuesday
DH Eheliyagoda	3rd week Wednesday
BH Kalawana	4th week Wednesday

Microscopy Centres

DH Kahawatta	BH Kalawana
DH Embilipitiya	DH Pallebadda
DH Balangoda	RH Kiriella
DH Eheliyagoda	DH Kalthota

Trincomalee District Chest Clinic,
General Hospital, Trincomalee
Tel: 026221026

Branch Clinics

BH K nn ya ı	Every other Tuesday
BH Kantale	Every other Friday
Central Medical Clinic Mullipothana	Every other Monday
BH Muttur	Every other Monday
RH Gomarankadawala	Every other Wednesday
RH Pu mudal ı	Every other Thursday
RH Tambalagamuwa	Every other Tuesday

Microscopy Centres

BH K nn ya ı	BH Muttur
BH Kanta e l	RH Gomarankadawala

Vavuniya District Chest Clinic,
General Hospital, Vavuniya
Tel: 0242221421

No branch clinics

Microscopy Centres

BH Cheddikulam	BH Nedunkerney
BH Mamaduwa	BH Poovarasenkulam
BH Sdambarapuram	

Annex 7 : Facilities for HIV/AIDS care in Sri Lanka

National STD/AIDS Control Programme

29, De Saram Place, Colombo 10
Tel: 0112667163

Ampara District

STD Clinic, General Hospital Ampara
Tel: 063636301

Anuradhapura District

STD Clinic, GH Anuradhapura
Tel: 0252236461

Badulla District

STD Clinic, Provincial General Hospital Badulla
Tel: 0552222578

STD Clinic, Base Hospital, Mahiyanganaya
Tel: 0552257261

Batticaloa District

STD Clinic, Teaching Hospital, Batticaloa
Tel: 0652222261

Colombo District

Central STD Clinic, Room 33, National STD/AIDS Control Programme, 29, De Saram Place Colombo 10
Tel: 0112667163

STD Clinic, Room 43, Teaching Hospital, Kalubowila
Tel: 0114891055

Galle District

STD Clinic, Teaching Hospital, Mahamodara
Tel: 0912245998

STD Clinic, Base Hospital, Balapitiya
Tel: 0912255447

Gampaha District

STD Clinic, District General Hospital, Gampaha
Tel: 0332234383

STD Clinic, Teaching Hospital Ragama
Tel: 0112960224

STD Clinic, Base Hospital, Negambo
Tel: 0312224153

Hambantota District

STD Clinic, General Hospital, Hambantota
Tel: 0472222247

Jaffna District

STD Clinic, Teaching Hospital, Jaffna
Tel: 0212222261

Kalmunai District

STD Clinic, Base Hospital A, Kalmunai
Tel: 0672223660

Kalutara District

STD Clinic, District General Hospital, Kalutara
Tel: 0342236937

STD Clinic, Base Hospital, Panadura (Branch Clinic)
Every Wednesday 8.30 am– 12.00 pm

STD Clinic, District General Hospital, Horana
Every Friday 8.30 am – 12.00 pm

Kandy District

STD Clinic, Teaching Hospital, Kandy
Tel: 0812203622

STD Clinic, District General Hospital, Nawalapitiya
1st and 2nd Wednesday (Branch Clinic)

STD Clinic, Prison Hospital, Bogambara
1st and 3rd Tuesday (Branch Clinic)

STD Clinic, Open Prison, Pallekele
(Branch Clinic)

Kegalle District

STD Clinic, District General Hospital, Kegalle
Tel: 0352231222

Kilinochchi District

STD Clinic, District General Hospital, Kilinochchi (Branch Clinic)
Tel: 0242224575 *(DGH, Vavuniya)*

Kurunegala District

STD Clinic, Teaching Hospital, Kurunegala
Tel: 0372224339

STD Clinic, Base Hospital, Kuliyapitiya
Every Monday (Branch Clinic)

STD Clinic, Base Hospital, Nikaweratiya
Every Tuesday (Branch Clinic)

Mannar District

STD Clinic, District General Hospital, Mannar
Tel: 0232250573

Matale District

STD Clinic, District General Hospital, Matale
Tel: 0663664387

Matara District

STD Clinic, District General Hospital, Matara
Tel: 0412232302

Moneragala District

STD Clinic, District General Hospital, Moneragala
Tel: 0552276261

Mullaitivu District

STD Clinic, District General Hospital, Mullaitivu (Branch Clinic)
Tel: 0242224575 *(DGH Vavuniya)*

Nuwara Eliya District

STD Clinic, District General Hospital, Nuwara Eliya
Tel: 0522222261

Polonnaruwa District

STD Clinic, District General Hospital, Polonnaruwa
Tel: 0272225787

STD Clinic, Peripheral Unit, Bakamoona
Every 1st Friday

STD Clinic, Base Hospital, Welikanda
Every 2nd Friday

STD Clinic, Peripheral Unit, Aralaganwila
Every 3rd Friday

STD Clinic, Base Hospital, Medirigiriya
Every 4th Friday

STD Clinic, District Hospital, Hingurakgoda
Every 2nd Monday

STD Clinic, Rural Hospital, Pulasthigama
Every 4th Monday

Puttalam District

STD Clinic, District General Hospital, Chilaw
Tel: 0322220750

STD Clinic, Base Hospital, Puttalam (Branch Clinic)
Every Tuesday 10 am – 2 pm

STD Clinic, District Hospital, Dankotuwa (Branch Clinic)
2nd and 4th Thursday

STD Clinic, District Hospital, Kalpitiya (Branch Clinic)
1st and 3rd Wednesday

Ratnapura District

STD Clinic, Provincial General Hospital Ratnapura
Tel: 0452226561

STD Clinic, Base Hospital, Embilipitiya (Branch Clinic)
Tel: 0452226561 *(PGH, Ratnapura)*

Trincomalee District

STD Clinic, District General Hospital, Trincomalee
Tel: 0262222261

Vavuniya District

STD Clinic, District General Hospital, Vavuniya
Tel: 0242224575

Tuberculosis (TB) is responsible for more than a quarter of deaths in people living with HIV. Intensified tuberculosis Case-Finding is one of the key public health interventions that significantly reduce the morbidity and mortality from TB in people living with HIV. Screening of TB patients particularly at a higher risk of acquiring HIV infection complements such an exercise. The objective of these guidelines is to provide guidance to all healthcare providers to promote standard management of patients with TB and HIV co-morbidity.

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ISBN 978-955-0742-01-1

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Printed by Sisara Printway (Pvt) Ltd., 110, Pagoda Road, Pitakotte.