Chapter Four: Treatment of Tuberculosis Disease

The standard of tuberculosis (TB) treatment in Los Angeles County (LAC) is to initiate an appropriate chemotherapeutic regimen along with Directly Observed Therapy (DOT). This chapter discusses appropriate TB regimens for individuals with regard to the patient's medical status and the susceptibility results. Treatment of persons with multidrug-resistant TB (MDR-TB) and certain medical conditions will also be discussed. In addition to DOT, incentives and enablers are highly effective tools that assist patients with completion of their TB therapy. Side effects and adverse toxic reactions to these medications are discussed in Chapter Five, Table 5-1, page 5-2.

A. General Principles of TB Therapy

An understanding of growth patterns of *M. tuberculosis*, the presence of naturally occurring resistant strains, and mechanisms of available drugs against TB have paved the way for current anti-TB drug therapy. Several subpopulations of *M. tuberculosis* exist in humans: a faster-growing extracellular population (e.g., as seen in pulmonary cavities), a slow-growing intracellular group, and a dormant population. While no existing drug treatment exists against the dormant group, isoniazid (INH) and rifampin (RIF) do have bactericidal activity against the growing populations. Pyrazinamide (PZA) is particularly effective within intracellular environments where the pH is more acidic. A small number of TB organisms naturally resistant to one particular TB drug exist in most previously – untreated patients, but generally one person does not contain a large enough bacillary load to harbor the existence of an organism resistant to two drugs.

The basic principles of treatment can be summed up as follows:

- Combination therapy with INH, RIF, and PZA is the mainstay of modern TB therapy. Multi-drug administration prevents the development of resistance. Administration of PZA allows treatment length to be shorter than the use of INH and RIF alone.

- Two phases of treatment are given: the first eradicates the many viable, rapidly-growing organisms and the second targets persistent, slower-growing organisms. Treatment length is related to the time it takes cultures to become negative.

- Successful treatment can only occur if a patient adheres to an appropriate course of medication. DOT and combination drugs are strategies to encourage adherence and prevent drug resistance.

- Never add one drug to a failing regimen. At least two drugs must be added to prevent the further development of drug resistance.

- Clinical trials have shown that administration of therapy two or three times a week (intermittent therapy) is effective.

B. Standard Treatment Regimens for Pulmonary TB

1. Induction Phase

The standard initial anti-TB regimen for class 3 or class 5 patients consists of a four-drug regimen of INH, RIF, PZA, and ethambutol (EMB), unless otherwise contraindicated. Streptomycin (SM) may be substituted for EMB, but because of greater toxicity and intramuscular administration, it should be used only when EMB is contraindicated. The length of treatment for this phase is two months (eight weeks) for most patients, but this phase **should be continued until the patient is culture-negative**. Tables 4-1 and 4-2a below, and table 4-2b on page 4-3, list specific drug regimens and dosages.

***Table 4-1**. TB treatment regimens for drug-susceptible and INH-resistant strains**

Dosing interval	Induction phase Minimum 2 months (8 weeks)	Continuation phase Minimum 4 months (16 weeks)	
		Drug-susceptible	INH-resistant
Daily	INH+RIF+PZA+EMB**	INH+RIF	RIF+PZA+EMB
Twice-weekly	INH+RIF+PZA+EMB** *daily* x 2 weeks, then twice-weekly x 6 weeks	INH+RIF	Not recommended
Thrice-weekly	INH+RIF+PZA+EMB	INH+RIF	RIF+PZA+EMB†

*It is very strongly recommended that all drug treatment be given by DOT
**EMB may be discontinued if the isolate is sensitive to INH and RIF. SM may be used as an alternative to EMB.
†Although 6-month intermittent regimens yielded good results in clinical trials despite resistance to INH, adding a fluoroquinolone and/or an injectable agent (e.g., SM, CM, AK, KM) should be strongly considered for patients with extensive disease.

***Table 4-2a**. TB drug treatment dosages in adults*

Drug	Dose, mg/kg (maximum)		
	Daily	Twice-weekly	Thrice-weekly
Isoniazid	5 (300 mg)	15 (900 mg)	15 (900 mg)
Rifampin	10 (600 mg)	10 (600 mg)	10 (600 mg)
Pyrazinamide	20-25 (2 g)	40-50 (4 g)	30-35 (3 g)
Ethambutol	15	40-50	25-30
Streptomycin	15 (1 g)	15 (1 g)	15 (1 g)

***Table 4-2b**. TB drug treatment dosages in children (under 12 years)*

Drug	Dose, mg/kg (maximum)		
	Daily	Twice-weekly	Thrice-weekly
Isoniazid	10-15 (300 mg)	20-30 (900 mg)	Not recommended
Rifampin	10-20 (600 mg)	10-20 (600 mg)	Not recommended
Pyrazinamide	15-30 (2 g)	50	Not recommended
Ethambutol	15 (2.5 g)	50	Not recommended
Streptomycin	20-40 (1 g)	20 (1 g)	Not recommended

Dosing intervals for adults and children may be given as daily or twice-weekly. Twice-weekly dosing requires initial *daily* administration of four drugs for at least two weeks, followed by twice-weekly administration until the end of treatment. Thrice-weekly dosing is an option for adults only and may begin at the start of therapy. All intermittent regimens must be given by DOT.

If drug susceptibility results show sensitivity to INH and RIF, EMB may be discontinued before the end of the induction phase, although continuation of EMB may be prudent in patients with a large burden of disease. PZA should be continued throughout the entire induction phase. Combination drugs such as Rifamate® (INH 150 mg + RIF 300 mg) or Rifater® (INH 50 mg + RIF 120 mg + PZA 300 mg) are recommended for all patients and are essential for patients who are on self-administered medications.

In a minority of cases, sputum smears and/or cultures may remain positive after three months despite appropriate treatment confirmed by drug susceptibility results. Repeating susceptibility tests and further evaluation will be necessary (see section "Treatment Failure" in Chapter Five, page 5-11).

2. Continuation Phase

This phase of treatment usually consists of INH and RIF for four months (16 to 18 weeks) to complete a total of six months of treatment, since most uncomplicated pulmonary TB patients become culture-negative within two weeks. If smears or cultures remain persistently positive, at least six months of therapy must be completed post culture conversion to negative, resulting in treatment duration of more than six months.

If drug susceptibility results are not yet available, four-drug therapy should continue until susceptibility results are available. If results show INH resistance, then INH may be discontinued. However, RIF, PZA, and EMB should be continued throughout the treatment course. The addition of a fluoroquinolone and/or an injectable agent should be strongly considered to strengthen the regimen in patients with extensive disease (see Table 4-1, page 4-2).

C. Alternative TB Treatment Regimens

Table 4-3 below lists alternative TB treatment regimens that may be considered for use in certain situations if it is not possible to employ the standard four-drug regimen, either because of drug intolerance, toxicity, or resistance to one primary drug. The efficacy of these regimens, however, is not as well documented as that of standard regimens. Consideration should be given to consulting LAC TB Control Program (TBC) when choosing an alternative TB treatment regimen.

***Table 4-3**. Alternative TB treatment regimens for patients with specific drug contraindications*

Drug regimen	Treatment length (months)*	Comments
INH+RIF+EMB	9	Use when PZA cannot be given
RIF+EMB	12	Use when INH and PZA cannot be given
INH+EMB+PZA	18	Use when RIF cannot be given

*Longer duration of therapy should be used when there is extensive disease, delay in sputum conversion, or relapse of disease

D. Regimens for Drug-Resistant TB Including MDR-TB

1. Principles of Therapy

Mono-drug resistance is defined as resistance to only one anti-TB drug. MDR-TB is defined as TB that is resistant to at least INH and RIF. TB patients infected with multidrug-resistant organisms are much more difficult to treat because they often require the use of second-line, more toxic drugs and they often require a more prolonged treatment course. In addition, good data are lacking on the efficacy of these drug regimens and the wide range of susceptibility patterns makes a standardized treatment protocol virtually impossible.

All drug-resistant TB originates in patients with drug-susceptible TB who were incompletely or inadequately treated (secondary or acquired drug resistance). Patients with acquired drug resistance can infect others who will then develop infection and disease that will have the same resistance pattern (primary resistance). Thus, the importance of completion of treatment with effective agents for drug-susceptible TB cannot be overemphasized. Due to differences in susceptibility patterns, reduced efficacy or longer duration of treatment, and higher toxicities of second-line anti-TB drugs, therapy for MDR-TB must be individualized and must involve consultation with TBC.

Knowledge of second-line TB drugs and potential toxicities is essential for managing patients on treatment for drug-resistant TB. Doses are outlined in Table 4-4, page 4-5, and adverse reactions are discussed in Chapter Five, Table 5-1, page 5-2.

***Table 4-4**. Dosages for second-line TB drugs in adults*

Second line drug	Daily dose (max)	Comments
Capreomycin Kanamycin Amikacin	15 mg/kg (1g) Intramuscular	After bacteriologic conversion, dosage may be reduced to 2-3 times per week
Ethionamide	15-20 mg/kg (1g)	May help to start at a lower dosage and increase as tolerated
Para-aminosalicylic acid	8-12 g (12g)	
Cycloserine	10-15 mg/kg (1g in divided doses; usual dose is 500-750 mg/d in two divided doses)	
Ciprofloxacin	750-1500 mg/day	Contraindicated for children; avoid with cationic agents (e.g., antacids, zinc, iron) or sucralfate
Levofloxacin	500-750 mg/day	
Clofazimine	100-300 mg/day	Consider dosing at mealtime

2. Treatment for Drug-Resistant TB and Non-MDR-TB

In situations where mono-resistance to a single primary drug or resistance to two primary drugs except both INH *and* RIF (e.g., RIF and SM or INH and EMB) is known, it may be possible to treat with a regimen listed in Table 4-1, page 4-2, (INH resistance) or Table 4-3, page 4-4. However, these regimens are not necessarily appropriate, especially if the patient has had previous therapy with those particular drugs. Other regimens, tailored to the patient's particular pattern of resistance and history of drug treatment are available, but require expert consultation from TBC.

3. Treatment Regimens for MDR-TB

The treatment of MDR-TB is based on individual susceptibility patterns and treatment histories. Furthermore, the efficacy or optimal length of such regimens has not been well studied. Each MDR-TB case requires an individualized approach to treatment and management. In addition to the general principles of therapy outlined in the beginning of this chapter, other well-established principles are to be noted:

- Use at least three drugs to which the organism is sensitive. Preferably, the patient should never have been treated with those drugs. Initially, one drug should be a bactericidal injectable agent.

- Duration of treatment must be 18 to 24 months post culture conversion to negative.

- In contrast to patients with drug-susceptible TB, patients with MDR-TB must not be treated with an intermittent therapy regimen.

4. Treatment Protocol for MDR-TB

The standard of treatment of MDR-TB patients in LAC requires an automatic consultation with TBC. The MDR-TB Surveillance Unit collects and reviews MDR-TB patient data, which are then presented to the TBC physician staff. A written treatment plan with drug dosages and follow-up recommendations will be provided. **The TB Control Program MDR-TB Surveillance Unit must approve any change in treatment. No changes are to be made prior to consultation with the MDR-TB Surveillance Unit except discontinuing medication because of serious drug side effects. Changes will be approved in writing only.**

With the exception of INH, RIF, EMB, PZA, and fixed-dose combinations of these drugs, all other TB drugs for patients must be requested through TBC using the *Special Drug Request Form for TB Drugs* (form H-3003). Special formulations of first-line drugs also require submission of an H-3003 form. Therapy should commence as soon as the drugs are available for use.

All patients with MDR-TB must be treated with daily DOT. Women of childbearing age with MDR-TB should generally not begin treatment until pregnancy is ruled out, and should be strongly encouraged to use birth control throughout the treatment course, as certain second-line drugs have a potential for teratogenicity during pregnancy.

E. Retreatment Regimens

Retreatment cases are defined as TB cases who have completed an adequate course of TB drug therapy and remained bacteriologically negative for at least one year but subsequently develop signs of relapse with positive bacteriology. This is in contrast to patients who are *treatment failures*; that is, those cases whose sputa have not converted to negative despite four or more months of therapy or who initially improve, but then worsen clinically or bacteriologically despite continuation of therapy. Management of treatment failure is discussed in Chapter Five.

In retreatment TB cases, the drug susceptibility patterns generally remain unchanged; thus the patient may be started on the same regimen that was previously effective. As with all TB class 3 or 5 patients, sputum susceptibility tests and cultures should be obtained, DOT should be instituted, and the regimen should be adjusted according to the susceptibility results.

F. Treatment Regimens for Extrapulmonary TB Disease

In general, extrapulmonary TB (see Table 3-2, page 3-2, for clinical manifestations of extrapulmonary TB) should be managed according to the principles and drug regimens outlined for pulmonary disease. In contrast to pulmonary TB, diagnosis of extrapulmonary TB is more often made on clinical grounds without culture confirmation; thus, response to treatment often must be judged on the basis of clinical improvement. In situations where culture confirmation has been made, clinical follow-up is critical because it may be difficult to obtain follow-up specimens.

Most extrapulmonary TB cases can be treated adequately with a six-month course of therapy as outlined in Table 4-1, page 4-2, with the following considerations:

- In children, miliary TB, bone and joint TB, or TB meningitis requires a minimum of 12 months of therapy.

- The use of corticosteroids may be beneficial for patients with TB meningitis and/or TB pericarditis.

G. Treatment Regimens in HIV-Infected Individuals

1. Introduction

The complexities of management of HIV-infected individuals with TB make it impossible to discuss treatment options for all situations. New developments in the field of HIV treatment make it necessary to continually update and revise specific guidelines relating to management of TB in HIV-infected persons. Thus, care for such individuals must be done by or in consultation with experts familiar in the management of both TB and HIV disease.

Clinicians who manage TB and HIV co-infection should understand the following concepts in addition to initial TB treatment principles:

- Side effect profiles of HIV antiretroviral (ARV) drugs

- Drug-drug interactions between anti-TB drugs, particularly the rifamycins, and ARV drugs

- Rifabutin dosing and toxicity

- Paradoxical reaction

This section discusses the treatment of drug-sensitive TB in HIV-infected patients who are either not receiving ARV therapy or are currently on an ARV regimen. In certain situations, it may be recommended that ARV therapy be started somewhat after initiation of TB therapy. It is therefore important that the TB clinician and the HIV specialist work to coordinate their efforts. Management of side effects, drug toxicities, and the paradoxical reaction are discussed in Chapter Five, page 5-5.

In all HIV-infected individuals with TB disease, prompt treatment of TB is critical, and the most effective treatment regimen should be used whenever possible. Because of serious potential consequences of not completing TB therapy, **DOT must be used with all HIV-infected patients with TB.** HIV-infected persons not currently on antiretroviral therapy should also be evaluated for ARV therapy in addition to anti-TB treatment. Intermittent anti-TB treatment regimens are not suitable for HIV-infected individuals, especially those with advanced immunosuppression. Expert consultation is recommended.

2. Initial Treatment Regimen for Persons not Receiving Antiretroviral Therapy

HIV-infected individuals who are not receiving and are not considered candidates for ARV therapy should receive standard four-drug therapy (see Table 4-1, page 4-2). A six-month regimen is considered adequate for treatment completion in most cases, although in some cases a longer treatment course may be necessary, depending upon clinical response to therapy.

3. Initial Treatment Regimen for Persons Currently Receiving Antiretroviral Therapy

Drug interactions between ARV regimens [notably the protease inhibitors (PIs) and non-nucleoside transcriptase inhibitors (NNRTIs)] and the rifamycins occur via the cytochrome P450-3A (CYP3A) pathway. Rifamycins induce the CYP3A pathway, which may decrease the serum concentrations of certain anti-HIV drugs. Rifabutin (RFB), however, is a less potent inducer of CYP3A, and thus may be used as a substitute for RIF when treating TB in patients on certain PIs or NNRTIs. Rifamycins may be used with nucleoside reverse transcriptase inhibitors (NRTIs). Six months of a rifabutin regimen is the standard treatment length (see Table 4-5 below), although in some cases a longer treatment course may be necessary. Pyridoxine (vitamin B_6) may decrease the risk of peripheral neuropathy in patients on both NRTIs and INH, and be added to all treatment regimens containing INH. Alternative regimens for patients who are unable to tolerate a rifamycin must be obtained through consultation with TBC. **Because changes in the field of HIV management occur so rapidly, it is strongly recommended that the treating physician not only consult with TBC, but also obtain up-to-date information from web sites of agencies that issue dosing information such as www.cdc.gov and www.fda.gov.**

***Table 4-5**. TB treatment regimens for drug-susceptible strains in HIV-infected persons with a six-month rifabutin regimen**

Dosing interval	Induction phase Min. two months (8 weeks)	Continuation phase Min. four months (16 weeks)
Daily	INH+RFB+PZA+EMB†	INH+RFB

*Pyridoxine should be administered for the entire treatment course; all individuals **must** be on DOT
†EMB should be continued throughout the entire induction phase

The recommended dose of rifabutin depends upon the specific ARV regimen administered (see Table 4-6 below). Note that a daily rifabutin regimen is not recommended for ritonavir-based regimens; consultation is recommended.

Table 4-6. *Recommended doses of rifabutin and antiretroviral drugs in combined therapy*

Class	Drug (in conjunction with two NRTI)	Daily RFB dose (mg)
PI	Saquinavir (hard-gel capsules)	NR
	Saquinavir (soft-gel capsules)	NR
	Nelfinavir *	150
	Indinavir *	150
	Amprenavir	150
	Ritonavir	NR
	Lopinavir/ritonavir	NR
NNRTI	Efavirenz	450
	Nevirapine	300
	Delavirdine	NR
Dual or triple NRTI		300

*Antiretroviral dose adjustment may be necessary with these drugs; consult with expert
Abbreviations: RFB=rifabutin, PI=protease inhibitor, NRTI=nucleoside reverse transcriptase inhibitor, NNRTI=non-nucleoside reverse transcriptase inhibitor, NR=not recommended

H. Treatment Regimens in Other Conditions

1. Infants and Children

The principles of treatment for TB disease in infants and children are the same as in adults, with dosages listed in Table 4-2b, page 4-3. In addition, the following points should be noted:

- Because of ocular toxicity, EMB should be used in young children with caution. SM may be used as an alternative.

- An infant born to a mother judged to have infectious TB disease should be separated until the mother has been placed on adequate treatment and the infant has been started on preventive therapy.

2. Pregnancy

The standard of treatment for TB disease in pregnancy is initiation with the same four-drug regimen (INH, RIF, PZA, EMB) as in non-pregnant women, with the following considerations:

- While PZA has not been recommended by the CDC for use in pregnancy due to lack of data, no adverse effects have been documented to the fetus so the advantage of a shorter regimen must be taken into consideration as compared to the unknown risk to the fetus. TBC recommends considering the use of PZA during pregnancy only after consultation with TBC.

- SM and other aminoglycosides are contraindicated due to toxic effects on the fetus.

- Anti-TB therapy can be administered to the breast-feeding mother; no known harm to the infant has been documented.

- Postpartum antituberculosis medications received by the mother do not produce adequate levels in the breast milk to protect the infant against TB infection if such protection is indicated.

- Breast-feeding is generally not contraindicated during treatment for TB, although mothers with infectious TB disease may still pose a risk of transmitting TB via the aerosol route.

- Pyridoxine (vitamin B_6) should be administered during the course of therapy unless the woman is taking a prenatal vitamin with equivalent amounts of pyridoxine.

- Suspected or known MDR-TB cases require immediate consultation with TBC because second-line drugs for TB may have teratogenic risks.

3. Chronic Renal Failure

Drug dosing regimens for patients with chronic renal failure, including those on hemodialysis, are complicated by altered pharmacokinetics of renal-metabolized drugs. The literature contains limited pharmacokinetic data regarding dialysis patients and data are almost non-existent in patients on chronic ambulatory peritoneal dialysis. Consultation with TBC is strongly recommended prior to initiation of a treatment regimen.

For patients with renal impairment, including those requiring hemodialysis, selection of the initial drug regimen is no different than in patients with normal renal function and consists of the standard four primary drugs listed in Table 4-1, page 4-2. However, dosing adjustments may be necessary because the clearance of anti-TB drugs and/or their metabolites may be impaired in patients with renal failure.

Dosing considerations for patients on hemodialysis (see Table 4-7 below):

- During the induction phase, INH and RIF are given daily and immediately after dialysis on dialysis days. PZA and EMB are given after each dialysis only.

- During the continuation phase for drug-sensitive TB, the frequency of INH administration may be decreased to dialysis days only without change in dose. RIF should continue on a daily basis.

- For drug-sensitive TB, INH and RIF should be continued until at least six months after culture conversion.

***Table 4-7**. Dosage recommendations for treatment of TB in adult patients on hemodialysis*

Drug	Recommended Dose on Dialysis*
Isoniazid**	300 mg
Rifampin**	600 mg
Pyrazinamide	20-25 mg/kg three times/week
Ethambutol†	15 mg/kg three times/week
Streptomycin§	15 mg/kg three times/week
Levofloxacin	500-750 mg three times/week
Ethionamide**	250-500 mg
Para-aminosalicylic acid **	4 gm b.i.d.

* Average for a 60 kg patient on dialysis; doses must be given after dialysis on dialysis days
**May be given daily
† Monitor serum drug concentrations to avoid toxicity
§ Route of administration is IM

I. Use of Pyridoxine in TB Regimens

Pyridoxine is indicated to prevent side effects of peripheral neuropathy in certain individuals (see Table 4-8, page 4-12).

***Table 4-8**. Indications and dosages for pyridoxine*

Drug	Dosage of Pyridoxine	Indications
Isoniazid	25 mg daily OR 50 mg twice weekly	Patients who are: • Breast-feeding • Malnourished • Diabetic • HIV-infected • Pregnant • Alcoholic • Immunosuppressed • Renally-impaired
Ethionamide	25 mg daily	Same as above
Cycloserine	50-100 mg for each 250 mg of cycloserine	All patients taking cycloserine

J. Surgery for Pulmonary TB

Surgery has a very limited role to play in treating TB. It may be helpful in a patient with MDR-TB for which there are limited drugs available for treatment, to stop hemoptysis, or to drain a persistent secondarily-infected space. If surgery is considered for a patient, it must be determined whether the disease is sufficiently localized to allow lobectomy or pneumonectomy, whether remaining lung tissue is free of disease, whether there are effective drugs to give after surgery, and whether the patient has an acceptable surgical risk. Consultation with TBC is necessary for patients in whom surgery is being considered.

K. Directly Observed Therapy (DOT)

DOT is crucial to the successful treatment of TB. DOT is defined as the delivery of every dose of medication by a health care worker who observes and documents that the patient actually ingests or is injected with the medication. DOT directs partial responsibility of treatment to the provider and helps ensure that patients complete an adequate course of TB treatment. All patients with TB class 3 and 5 should be started on DOT whether a clear indication exists or not (see Table 4-9 below). Delivery of medications alone to the patient without observation and documentation is not DOT. Patient circumstances determine whether DOT is administered at the TB clinic or at another location such as the patient's home. In LAC, DOT is provided by trained community workers, public health nurses (PHNs), and/ or clinic nurses. The TBC Standards for DOT are listed in Appendix G, *Directly Observed Therapy: Standards*.

Patients receiving DOT should be on intermittent therapy when clinically possible. Exceptions to this include daily therapy requirements during the initial treatment period and MDR-TB. If the patient is receiving daily DOT, oral medications should be supplied for the weekend and for a holiday for self-administered dosing.

***Table 4-9**. Indicators for Directly Observed Therapy*

Absolute Indicators
• HIV infection • History of previous TB disease • Homelessness • History of incarceration • Psychiatric disorder or cognitive dysfunction • History of or current substance abuse • History of non-adherence to medication regimens • Cultures showing resistance to one or more anti-TB drugs • Persistently positive specimen smears or cultures • Failure to respond to therapy
Relative Indicators*
• Congregate living • Age under 18 years or elderly with cognitive impairment • Recent immigration • Difficulty with accepting or understanding TB diagnosis

*Multiple relative indicators should be considered as an absolute indicator for DOT

L. Incentives and Enablers

The TB Control Program (TBC) provides incentives and enablers to homeless and other indigent TB class 3 and class 5 individuals in an effort to facilitate treatment completion. Housing, meals, transportation, and substance abuse rehabilitation are available. Incentives and enablers should be used in situations where adherence to the TB medication regimen may be difficult for the individual. The health center clinician and staff should determine which eligible individuals should receive these services. The Incentive and Enabler Project Procedure Manual details eligibility and provisions and is available from TBC (see Appendix J, *Incentives and Enablers Project Overview).*

Incentives and enablers are to be used as tools for increasing patient adherence. When adherence does not occur or improve as a result of the use of incentives and/or enablers, they should not be continued.

M. Government Programs

Eligibility for Medi-Cal should be determined for all patients as a means of facilitating care for related medical conditions during treatment for tuberculosis and to provide reimbursement to the County for the cost of care for outpatient services.

State disability is available for certain patients who are prohibited from working due to the evaluation and treatment of tuberculosis.