

**CONTROL OF TUBERCULOSIS IN  
CONNECTICUT**

**WITH SPECIAL REFERENCE TO  
HIV INFECTION**

*Recommendations of the  
Connecticut Tuberculosis Elimination  
Advisory Committee*

*June, 1994*

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### **FORWARD**

In October 1992, the Commissioner of the Department of Public Health and Addiction Services established the Connecticut Tuberculosis Elimination Advisory Committee (TEAC)\*. At her request, the TEAC reviewed current efforts in Connecticut to control HIV-related tuberculosis (TB).

The purpose of the following recommendations is to set forth a consensus policy for control of HIV-related TB in Connecticut to be used to stimulate necessary surveillance, case-finding, tuberculin screening and case management activities. These recommendations do not cover issues of occupational exposure (e.g., employee screening in high risk settings) or environmental controls.

These recommendations are particularly directed to medical and administrative personnel in sites where HIV-related TB either already is, or has the potential to become, a particular problem: HIV specialty clinics, drug treatment programs, correctional facilities, hospitals, jails, AIDS residences, homeless shelters, community health centers and hospital-based primary care centers, psychiatric institutions and residences.

### **INTRODUCTION**

#### **Background**

The epidemiology of TB has been changing both nationally and in Connecticut. A major feature of this change has been a gradually increasing incidence of tuberculosis since 1985 in urban areas, among race-ethnic minorities and among persons aged 20-50 years. Most of the increase in these groups is due to development of TB among persons with HIV infection (1).

A second major feature of the changing TB epidemiology has been the recent recognition of acute outbreaks of TB identified in institutional settings including: hospitals (2-9), correctional facilities (10), drug treatment programs (11), and AIDS residences (12). These outbreaks have predominantly occurred as a result of transmission to and among HIV-infected persons.

Underlying HIV infection is the strongest predictor of who with latent TB infection will get TB disease. Persons with TB and HIV coinfection have an annual risk of developing tuberculosis of 7-10% (13).

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\* The Advisory Committee membership who participated in the development and review of this document is as follows: Commissioner Susan Addiss, Dr. John Brackett, Dr. Richard Castriotta, Chairman, Dr. Brian Cooper, Dr. Lloyd Friedman, Ms. Rita Grygus, Dr. Walter Hierholzer, Ms. Catherine Ligi, Dr. Richard Melchreit, Ms. Pamela Morse, Ms. Debra Rosen, Dr. Peter Selwyn, Ms. Carolyn Suchecki, Dr. Ulder Tillman, Dr. Stephen Updegrove; Staff: Dr. James Hadler, Ms. Ann Levison, Mr. Joseph Marino

Because control of HIV-related TB is critical to efforts to first limit its spread and to eventually eliminate TB, the Connecticut TB Elimination Advisory Committee reviewed statewide efforts and makes the following recommendations directed at the identification and treatment of persons at particular risk for HIV-related TB.

### Definitions

Tuberculosis - the state of disease caused by *Mycobacterium tuberculosis*. Persons with tuberculosis have actively multiplying TB bacilli, symptoms, and, if the lungs are involved and effective therapy has not been started or is not being taken, have the potential to infect others. For purposes of these recommendations, "active" tuberculosis and "case" of tuberculosis are synonyms for tuberculosis.

Tuberculous infection - the state of being infected with *M. tuberculosis*. Tuberculous infection is usually manifest by a positive tuberculin skin test. A person with tuberculous infection can either have tuberculosis or latent tuberculous infection.

Latent tuberculous infection - the state of infection with *M. tuberculosis* in which TB bacilli are dormant, the infected person has no symptoms and infection is not contagious. Persons with latent infection, however, are at lifetime risk of developing active tuberculosis from their latent infection unless appropriate preventive therapy is taken.

HIV infection - the state of being infected with *human immunodeficiency virus type 1*. This is usually manifest by a positive HIV antibody test and/or a diagnosis of AIDS.

TB/HIV coinfection - the state of having simultaneous infection with both *M. tuberculosis* and HIV. A person with coinfection can have either tuberculosis or latent tuberculous infection. Those with latent tuberculous infection have a 7-10% risk per year of developing active tuberculosis.

### State Reporting Requirements

The following statutory requirements apply to reporting tuberculosis and tuberculous infection in Connecticut<sup>1</sup>:

1. Tuberculosis is both physician and laboratory reportable within 12 and 48 hours of diagnosis respectively to the State Department of Public Health and Addiction Services and to the local health department of the town of the patient's residence. Suspect cases are similarly reportable. Suspect cases include anyone on whom anti-tuberculosis therapy is empirically started pending confirmatory diagnosis and anyone on whom a positive smear for acid fast bacilli (AFB) is obtained.
2. TB/HIV coinfection is physician reportable within 48 hours of diagnosis. This includes HIV infection in cases of tuberculosis and persons with both latent tuberculous infection and HIV infection.

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1 Connecticut General Statutes Sections 19a-5 and 19a-215, Public Health Code Section 19a-36. Penalty for not reporting a given case is up to \$500.

## **RECOMMENDATIONS**

### **MANAGEMENT OF PERSONS WITH ACTIVE TUBERCULOSIS**

Management of persons with HIV-related TB is somewhat different than for those not HIV-infected because they have a faster potential to relapse to an infectious state if not on continuous or appropriate therapy and they may have more HIV-infected contacts.

The Connecticut TB Elimination Advisory Committee recommends that:

1. Each case of TB should have an HIV antibody test. Tests for HIV infection must be offered according to the laws of the State of Connecticut. In CT, tests for HIV infection must be performed with the written consent of the person being tested after pre-test counseling<sup>2</sup>.
2. Each case of TB must be reported **immediately** to the local and state health departments so that a contact investigation centered on identification and tuberculin testing of contacts can be initiated without delay. Immediate reporting and follow-up are especially critical if either the index case or contacts may be HIV-infected.
3. All persons with underlying HIV coinfection should be strongly considered for initial directly observed therapy (DOT) because of concern that they, like other immunosuppressed individuals, may have a high potential to rapidly relapse to an infectious state if therapy is not continuous and because their disease tends to be particularly aggressive. At the time therapy is started or before a patient is to be discharged from the hospital or other institutional setting, a **treatment planning team** should be formed to decide whether the patient should be discharged on DOT. The treatment planning team should minimally include an outreach worker from the local or state health department, a TB control expert, the health care providers who are currently and who will be responsible for follow-up care, and the social worker if there is one assigned to the case.

As part of the assessment of whether a patient may need DOT and where it can be delivered, it is essential to consider the patient's concrete service needs, especially patients with HIV coinfection and patients who have substance abuse problems and/or are homeless. These needs may include substance abuse treatment services, social services, housing and transportation. Without attention to these needs, even DOT may not be successful.

4. Known HIV infection in any TB case must be reported to the state TB Program at the time of report of tuberculosis to enable immediate state involvement in ensuring follow-up.

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2. Connecticut General Statutes, Section 19a-584.

## **EARLY DIAGNOSIS OF TUBERCULOSIS AND SCREENING FOR LATENT TB AND HIV COINFECTION**

### Early Diagnosis of Tuberculosis Among the HIV-infected

***Early detection of potentially infectious tuberculosis is critical to limiting spread of TB in settings where HIV-infected persons reside in relatively high concentrations.*** Such settings include: prisons, jails, drug treatment programs, hospitals (both acute and long term care facilities), AIDS residences, homeless shelters, and psychiatric hospitals.

The CT TEAC recommends in each of these settings that:

- . Administrators and medical personnel work together to develop procedures to promptly detect persons with prolonged coughing (lasting at least 2 weeks) and to ensure that medical evaluation is made to rule out active tuberculosis. Minimal medical evaluation includes a chest x-ray and at least 3 sputum smears and cultures for *M. tuberculosis*. If spontaneous sputum cannot be produced, sputum induction should be done.
- . Persons being medically evaluated for active TB should be isolated according to CDC recommendations<sup>3</sup> until infectious tuberculosis has been excluded clinically and radiographically, or referred to a facility capable of isolating them.

### Screening for Latent TB Infection and HIV Coinfection

***A major strategy in prevention of HIV-related TB is to identify as many persons with latent TB infection and HIV coinfection as possible and start them on preventive therapy.***

Cost of services should not be a barrier to implementing this strategy. The state TB Program has resources and outreach workers to ensure that all persons identified with TB-HIV coinfection have an opportunity to receive a full 12-month course of preventive therapy. This includes resources to start most persons identified with coinfection on directly observed preventive therapy (DOPT). In addition, anti-tuberculosis drugs are freely available from the state TB Program.

Given the above, the CT TEAC recommends that:

- . Health administrators and medical personnel in settings in which the prevalence of HIV infection is likely to be substantially higher than in the adult community as a whole should review their current tuberculin skin testing policies and practices and implement the setting-specific screening recommendations that follow, if not already in place.

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<sup>3</sup> CDC recommendations for the isolation of persons with known or suspected infectious TB include placing the patient in a private room with appropriate ventilation and keeping the door closed. Appropriate ventilation includes that the room be negative pressure with respect to the immediate hallway and that room air be exhausted to the outside (14).

***Prisons***

- . All admissions not already documented to be tuberculin positive should be tuberculin skin tested as part of their entry screening medical examination. Those found to be positive by CDC criteria (15) should be offered HIV antibody testing.
- . All coinfecting persons for whom active tuberculosis has been ruled out should be started on DOPT while incarcerated. Just as for those with active TB, persons with latent TB-HIV coinfection should be reported to the state TB Program by the Department of Corrections Central Medical Unit as required by law.
- . Discharge planning is a fundamental component of preventive therapy. Arrangements should be made with the relevant local health department for continuation of DOPT before discharge from the correctional setting.
- . Repeat tuberculin skin testing should be done at least every 12 months on all whose skin test was negative.

***Jails***

Jails, unlike prisons, often do not have sufficient length of contact with inmates to fully evaluate those with tuberculous infection for HIV coinfection or to initiate preventive therapy in those for whom it is indicated. Nonetheless, they do represent a setting in which persons at particular risk for TB-HIV coinfection who are otherwise hard to reach are often admitted multiple times and can at least be tuberculin skin tested on entry.

- . All admissions to jails not already documented to be tuberculin positive should be tuberculin skin tested at entry. Those found to be positive by CDC criteria should be offered HIV antibody testing.
- . Just as for prisons, all coinfecting persons for whom active tuberculosis has been ruled out should be started on DOPT while incarcerated and reported to the state TB Program. Arrangements should be made before discharge with the relevant local health department for continuation of DOPT from the correctional setting. Repeat tuberculin skin testing should be done at least every 12 months on all whose initial skin test was negative.

***Drug Treatment Programs***

- . All admissions to methadone and residential programs who are not already documented to be tuberculin positive should be tuberculin skin tested at or just prior to entry. Those found to be positive should be offered HIV antibody testing.
- . All coinfecting persons for whom active tuberculosis has been ruled out should be started on preventive therapy. They must be reported immediately to the state TB Program as required by state law. Reporting should be done in accordance with federal regulations regarding confidentiality of information in substance abuse treatment clients. In treatment modalities in which client contact is expected to occur at least twice a week, DOPT should be administered or at least observed by the program.

- . Follow-up of coinfecting persons on preventive therapy should be arranged with the local health department before discharge from the drug treatment program. Coinfecting clients who stop coming to drug treatment before completion of preventive therapy should be reported immediately to the local health department for outreach and follow-up. Communication with the local health department also should be done within the framework of federal confidentiality regulations.
- . Repeat tuberculin skin testing should be done at least every 12 months on those remaining in the program whose initial skin test was negative.
- . Admissions to any other treatment modality (e.g., some detoxification programs) in which the client remains under medical observation for at least one week should be similarly tuberculin skin tested and, if length of stay permits and tuberculin reactivity is  $\geq 5$  mm induration, be offered HIV antibody testing. These settings provide an ideal opportunity to administer and read the skin test and to potentially initiate additional evaluation of those found to have tuberculin reactions  $\geq 5$  mm induration. Persons with coinfection should be immediately referred to the local health department for follow-up. Referral, as with reporting, should be done in accordance with federal regulations regarding confidentiality of information in substance abuse treatment clients.

#### ***HIV Specialty Clinics***

- . All new referrals who are not documented to be tuberculin positive should be tuberculin skin tested routinely, regardless of CD4 count status. Testing should be repeated at least every 12 months.
- . Coinfecting persons should be reported first to the state as required by law and then, once active TB has been ruled out, started on preventive therapy. Decisions should be made jointly with the state or local health department as to whether to initially start DOPT or self-administered therapy. Discussion should include how to manage possible future non-compliance with therapy.

#### ***Hospital Admissions***

- . All admissions, especially those who are residents of the high AIDS incidence towns<sup>4</sup>, should be screened for possible risk factors for HIV infection. At a minimum, persons with risk factors should be offered HIV antibody testing and receive a tuberculin skin test.
- . Coinfecting persons should be reported immediately to the state as required by law and then, once active TB has been ruled out, started on preventive therapy.
- . Discharge planning for persons with coinfection should take into account the importance of keeping persons with TB-HIV coinfection on a continuous course of preventive therapy and the availability of support from the state TB Program. Before discharge the following decisions should be made jointly with the state or local health department: whether to initially start DOPT; who will be in charge of outpatient follow-up; and how to manage possible future non-adherence to therapy.

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4 Annual number of new cases  $\geq 10$  and rate  $\geq 20$  cases per 100,000 population. As of 1993 includes: Bridgeport, Danbury, Hartford, New Britain, New Haven, New London, Norwalk, Stamford, Waterbury and West Haven.

### ***AIDS Residences***

- . All persons living in residential settings devoted to the care of persons with AIDS should be tuberculin skin tested at least every 12 months if they are not known to be tuberculin positive. Those found to be tuberculin positive and in whom active TB has been ruled out, should receive preventive therapy.
- . Those with TB-HIV coinfection should be reported to the state TB Program as required by law. Before preventive therapy is initiated, a decision should be made jointly with the local health department and/or state TB Program as to whether to use DOPT and how to manage possible future non-adherence to therapy.

### ***Community Health Centers***

Community health centers, including hospital-based primary care centers in high AIDS and TB incidence areas of the state, serve patients at particular risk for HIV infection and for tuberculous infection.

The CT TB Elimination Advisory Committee recommends that:

- . Center administrators and medical personnel together should develop procedures to ensure that each patient receiving general medical or adolescent pediatric care be tuberculin skin tested at the first visit and evaluated for HIV risk on a regular basis. The tuberculin skin test should be repeated in each person with an initially negative test at least once every 5 years and more often as warranted. Information on tuberculin status should be recorded in the general medical record in a standard place that is easily located by other providers.
- . Persons found to have HIV infection should be tuberculin skin tested at least every 12 months. Persons found to be tuberculin positive should, conversely, be offered HIV antibody testing at least once, more often if they are at continuing risk.
- . All persons found to have latent TB infection and HIV coinfection should be reported to the state TB Program, as for those with active TB. Decisions about the initial use of DOPT and how to manage possible future non-adherence to therapy should be jointly made with the state TB Program and local health department before the patient is started on preventive therapy.

### ***Psychiatric Institutions/Mental Health Residences***

- . Psychiatric institutions often have clientele at risk of both TB and HIV infection. The nature of the inpatient or residential setting often is conducive to TB transmission should a person develop active tuberculosis.
- . As part of their admission physical examination, all persons entering psychiatric institutions who are not known to be tuberculin positive should be tuberculin skin tested. Persons with a positive skin test should be evaluated for HIV infection. Persons with latent TB and HIV coinfection should be reported to the state TB Program. Once active TB has been ruled out, they should be started on DOPT administered by nursing or other responsible personnel in the institution. Arrangements should be made in advance with the local health department to continue DOPT for those who will be discharged before their preventive therapy is complete.

### ***Homeless Shelters***

- . Homeless shelters represent potentially important sites for identifying persons with TB-HIV coinfection. Unfortunately, the very transient contact with clientele, the lack of readily available medical personnel and the inability to provide medical evaluation and preventive therapy limit their role in this area. Nonetheless, under some conditions it may be possible to set up useful screening programs.
- . When contact with clientele can be assured for at least a week and relevant medical evaluation can be accomplished during this time, all residents of homeless shelters who are not known to be tuberculin positive should be screened with tuberculin. Those found to be tuberculin positive should be evaluated for HIV infection either on-site or by referral to an HIV counseling and testing site or medical facility. Persons with coinfection should be reported immediately to the state TB Program and arrangements made for those in whom active TB has been ruled out to be started on DOPT administered by the local health department. Each shelter should develop procedures for both initially reporting coinfections and for constantly sharing information on each patient's adherence to DOPT with the relevant health care providers and TB outreach workers.
- . Persons found to have a positive tuberculin skin test who are HIV negative or of unknown HIV status should be referred to their health care providers or local TB clinic to determine whether preventive therapy is indicated or possible.

## **SKIN TESTING METHODS AND INTERPRETATION**

### **Tuberculin Testing**

- . The Mantoux intradermal injection technique should be used at all times. Multiple puncture test techniques are not acceptable substitutes for tuberculin testing in any of the above groups or settings. A video and a wall chart which review skin testing technique and interpretation are available from the American Lung Association of Connecticut (1-800-332-LUNG).
- . Use of a two-step technique to limit the potential for false skin test conversions ("boosting") is cumbersome in many of these settings and is *not* necessary. Boosting is of particular concern when the main purpose of skin testing is to determine new infection (conversion) rates in institutional settings (e.g., among staff in hospitals). The main purpose of these screening recommendations is to identify persons who are at particular risk for tuberculosis, not to precisely determine the extent to which skin test conversions are occurring.

### **Interpretation**

An induration of  $\geq 5$ mm should be considered indicative of TB infection in any person: a) who is known to be HIV positive, b) who is a close contact to an infectious case of TB, or c) who has a chest x-ray which shows upper lobe fibrotic lesions. Because these screening guidelines are for screening of people in high risk groups for tuberculous infection, an induration of  $\geq 10$  mm should be considered positive in any person whose HIV status is negative or whose HIV status is likely to remain unknown and who has no symptoms or signs of immunosuppression.

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5 See footnote 1, page 2.

### **Anergy Testing in HIV-infected Patients**

All persons with suspected or proven HIV infection should be tested for anergy at the time they are tuberculin skin tested. The results of the anergy tests should be recorded with the tuberculin results. In the presence of anergy a negative tuberculin skin test is not readily interpretable and these persons should be evaluated for active TB disease. They should be considered for preventive therapy after individual clinical and epidemiological assessment of the likelihood of TB infection. Anergic HIV-infected persons should be offered INH prophylaxis if the underlying probability of latent infection is  $\geq 10\%$ . To date there are two groups in which this has been documented in Connecticut: close contacts to active TB cases and state prison inmates.

Anergy testing should be done using the Mantoux intradermal technique using at least two skin test antigens other than tuberculin. These antigens should include mumps, and either *Candida* or tetanus toxoid (16). Any amount of induration to these antigens should be considered evidence of delayed type hypersensitivity responsiveness. *Inability to obtain antigens for anergy testing is not a contraindication to proceeding with tuberculin testing.*

### **PREVENTIVE THERAPY CONSIDERATIONS**

Before beginning a person on preventive therapy, particular care should be taken to rule out active pulmonary tuberculosis. Standard recommended preventive therapy for all persons with HIV and latent tuberculous infection who have not previously completed treatment for TB disease or latent infection consists of 12 months of INH (17).

In order to maximize the potential for a person with TB-HIV coinfection to complete an effective course of preventive therapy, the CT TEAC recommends:

- . Prompt reporting to and consultation with the relevant local health department and the state TB Program before beginning a person found to have latent TB-HIV coinfection on preventive therapy. Consideration should be given to use of DOPT at this time.
- . Persons begun on self-administered therapy should be given no more than a 1-month supply of INH at a time throughout the course of therapy. They should be monitored monthly by appropriately trained personnel for signs and symptoms of toxicity and adherence to treatment.

### **SURVEILLANCE**

In order to limit the public health and personal consequences of tuberculous and HIV coinfection, it is essential for public health authorities to know who with active TB or latent tuberculous infection also has HIV coinfection. It also is critical to assessment of progress in control of HIV-related TB to know the extent to which persons with both infections are being detected and adequately treated and in what settings effective screening is occurring.

Therefore, the CT TEAC recommends that:

The CT DPHAS continue to mandate reporting of HIV positivity in persons with active tuberculosis and reporting of persons with latent TB infection and HIV coinfection. As part of reporting, there should be immediate public health follow-up to include offering of state and local health resources to assist with management of therapy (DOT, DOPT), participation as necessary in individual case management decisions, and TB contact investigation.

Efforts be made to make surveillance for latent TB with HIV coinfection more active in order to limit the potential for under-reporting and the possibilities that persons will not be started on therapy, will not be given appropriate therapy, or will not complete therapy.

The Committee considered the issue of whether reporting of all persons with laboratory evidence of HIV infection would help TB control efforts in Connecticut. It was felt that if the state TB Program could identify all persons known to have HIV infection, then more extensive HIV-related TB control efforts could be initiated. These include assurance of tuberculin skin testing of each person known to have HIV infection and the resulting ability to attempt to ensure initiation and completion of preventive therapy on all known to have coinfection in the state. In addition, a complete assessment of HIV-related TB control efforts would be possible. Currently, it is believed that not all persons with HIV infection get tuberculin skin tested, and not all persons known to have coinfection are reported to the state.

However, the Committee also felt that additional resources would be necessary to ensure tuberculin testing and follow-up of all persons with HIV infection in order to facilitate the provision of adequate comprehensive health care for all those found to have HIV infection with or without current TB coinfection.

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