

Directly Observed Therapy in Tuberculosis Treatment: Success in Texas

Since tuberculosis (TB) drug treatment was first undertaken in the 1940s, assuring treatment completion has been among the most challenging problems in case management. Noncompliance with the drug regimen is the most important factor leading to failure of therapy, relapse of illness, and development of drug resistance.^{1,2} In 1993 the Texas Department of Health Tuberculosis Elimination Division (TBED) initiated an aggressive case management plan designed to ensure completion of TB drug therapy. The key element of this strategy is directly observed therapy (DOT).

Compliance is impossible to foresee and is not predicted by age, sex, religion, education, race, or socioeconomic status.² The only way to guarantee that a TB patient ingests all of the prescribed medication is DOT, whereby a health professional observes the patient ingest every dose of the medication until completion of therapy. The patient and the health professional mutually agree on a designated place and time where DOT is to be accomplished.

The standard drug regimens, which must be prescribed by a physician, are DOT daily, twice weekly, or thrice weekly. Multiple-drug-resistant or other complicated TB cases may require DOT up to 10 times a week. Essential components of a DOT program include dedicated staff who are culturally sensitive to the patients they serve, provision of DOT at times and locations that are mutually agreed upon, confidentiality, and a program that emphasizes accurate record keeping and quality assurance.

A Fort Worth physician was one of the DOT pioneers when he instituted universal DOT in Tarrant County in 1986 for patients with confirmed and suspected TB.² His followup records indicated that administration of therapy for *M. tuberculosis* disease under direct observation led to significant reductions in the frequency of primary drug resistance, acquired drug resistance, and relapse. These improvements occurred despite higher rates of intravenous drug use, homelessness, and seroprevalence for the HIV virus. This study

found that when the reduction in rates of relapse and drug resistance were considered, DOT was cost effective.

Assuring that TB patients take all their medications is not only the most important step in the cure, it also helps prevent relapses and the development of drug-resistant TB. TBED has continued an aggressive campaign to educate medical and health professionals on the advantages of DOT as well as to support, promote, and monitor DOT usage statewide. Since August 28, 1997, the TBED policy has been that **all** patients with confirmed and suspected TB are to be on DOT. In 1992 the TB case rate for Texas was 14.2 cases per 100,000 population, with 19% of the patients receiving their medications by DOT.³ At the end of 1998, 93% of TB patients in Texas were reported to be on DOT, and the TB rate declined to 9.3 cases per 100,000.⁴ Figure 1 illustrates the TB incidence rates from 1988 to 1997.

The DOT strategy in Texas has been successful. Although it is labor intensive, DOT increases the likelihood that effective treatment will be completed, thus benefitting both the individual with TB and the health status of the community. DOT also results in a shorter infectious period and less likelihood of disease recurrence, thereby decreasing the risk of TB transmission.

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DOT IS...

- Provided only by an **outreach worker or health professional** who is trained in observing, recognizing, and documenting compliance and who reports medication side effects to a supervisor
- Done properly only when an outreach worker or health professional **observes** the patient swallowing **every dose of antituberculosis medication** until completion of therapy
- Done properly only when the outreach worker or health professional and the patient **cosign** that the medication was ingested and that toxicity was denied by the patient
- Completed each day only when the outreach worker or health professional **reports daily** to the supervisor the DOT doses that were successfully administered as well as those that were missed

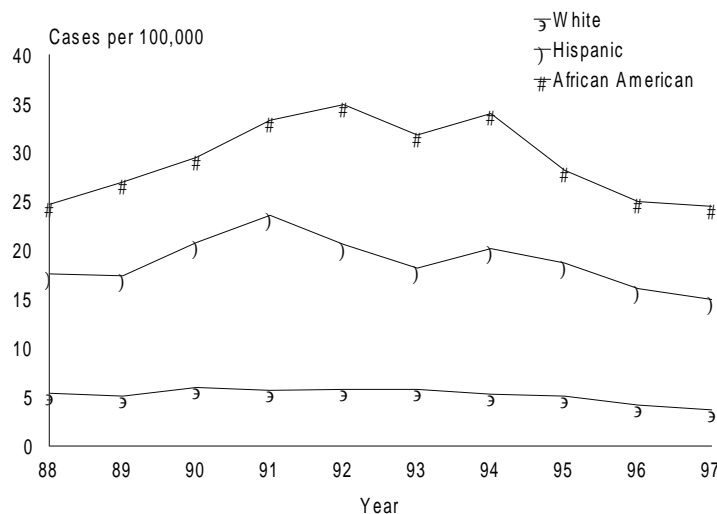
DOT IS NOT...

- Allowing a family member or friend to supervise and observe a patient taking the prescribed medication without the DOT worker present
- Allowing a parent or guardian to administer medication to a child or adolescent without the DOT worker present
- Allowing an inmate in a correctional institution to swallow a dose of medication without observation
- Leaving the medication at the patient's bedside in a hospital, nursing home, or other medical facility
- Dispensing medication to the patient and "verifying" ingestion by performing a weekly pill count
- Permitting medical professionals (physicians and nurses) to self-administer their medication

Adapted from the CPIDC brochure, *Directly Observed Therapy & Directly Observed Preventive Therapy*



Figure 1. Tuberculosis Incidence Rates by Race/Ethnicity, 1988-1997



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References

1. Sbarbaro, J. Public health aspects of tuberculosis: supervision of therapy. *Clin Chest Med* 1980; 1:253-263.
2. Weis S, Slocum P, Blais F, et al. The effect of directly observed therapy on the rates of drug resistance relapse in Tuberculosis. *N Eng J Med* 1994; 330: 1179-1184.
3. Texas Department of Health. Tuberculosis in Texas, Annual Statistical Report. Austin: TDH, 1994.
4. Texas Department of Health. Tuberculosis in Texas, Annual Statistical Report. Austin: TDH, 1997.

Conference Commemorates World TB Day: March 24

Strategies for Successful DOT is sponsored by the Tuberculosis Education Center, a program of the TDH TB Elimination Division. This conference for nurses and outreach workers will be held at the Texas Center for Infectious Disease in San Antonio, Texas, on March 24, 1999, 8:25AM to 5:00PM. The goal is to promote directly observed therapy (DOT) as the standard of care and enable participants to implement a successful DOT program. CEU credits will be awarded. Highlights include presentations by Dr. Peter Pendergrass and Dr. Stephen Weis. For more information contact Stephanie Ott: phone, (210) 534-8857x2227; e-mail, Stephanie.Ott@tdh.state.tx.us.

Tuberculosis Information Resources in Texas

Reporting Hotline (800) 705-8868

TDH Tuberculosis Elimination Division (512) 458-7447

Tuberculosis Education Center (800) TEX-LUNG, (210) 534-8857
Barbara Seaworth, MD, Director

Part of the Texas Center for Infectious Disease in San Antonio, the Tuberculosis Education Center is a program of the TDH TB Elimination Division. TB education and consultation services include

- Training programs for health professionals
- A resource center for tuberculosis reference materials, slides, and videos
- Clinical consultation services

Clinical consultation services include advice on tuberculosis treatment regimens—especially for drug resistant TB, medical complications, slow conversion, therapy failure, or illness relapse. Physicians can also receive guidance regarding infection control measures, diagnostic dilemmas, quarantine issues, and laboratory results that involve possible contamination or cross-contamination.

Upcoming Tuberculosis Education Center Courses for 1999

Strategies for Successful DOT March 24, San Antonio

This one-day conference for health professionals involved in TB care commemorates World TB Day.

Managing Tuberculosis April 30, Uvalde

Enhancing Provider Capacity is the topic of this one-day conference for nurses and physicians in the Winter Garden area. A separate half-day workshop, **TB Skin Testing**, targets nurses statewide.

HIV/TB June 10 or 11, Dallas

This one-day conference for physicians reviews the latest information on diagnosis, prevention, control, and treatment of HIV and TB. It also addresses the ethical issues related to HIV/TB coinfection.

TB Outreach Workers September 8, (Site to be announced)

This one-day workshop teaches hands-on skills in DOT and contact investigation.

Nurses Conference VIII September 30-October 1, Corpus Christi

Current trends in the identification and control of tuberculosis are addressed in this two-day conference.

TB Skin Testing November 4, Lubbock

This half-day hands-on workshop is for nurses involved in screening for tuberculosis.

TB Control in the Community November 5, Lubbock

This one-day coregional conference targets nurses and physicians actively involved with at-risk patients.

Center for Pulmonary and Infectious Disease Control (800) 428-7432

David E. Griffith, MD, FACP, FCCP, Director

The Center for Pulmonary and Infectious Disease Control (CPIDC), a division of the UT Health Center at Tyler, has recently expanded its information resources for health care professionals in Texas. Three infectious disease specialists and a pulmonologist are available Monday—Friday, 8AM—5PM to provide health professionals with any of the following services:

- Current recommendations on case management and isolation procedures
- A signed summary of the consultant's verbal recommendations
- Reference materials regarding the topic of concern

CPIDC information services cover any infectious disease, but the Center has focused primarily on tuberculosis since 1993. E-mail consultation is also available at pbarnes@uthct.edu or mreed@uthct.edu. The CPIDC website is <http://research.uthct.edu/cpidc/>.



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The electronic versions of *Disease Prevention News* are available at the following locations:
<http://www.tdh.state.tx.us/phpep/dpnhome.htm>
TDH Healthy Texans BBS: (800) 858-5833

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Drug Resistant Tuberculosis

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Unique Influenza Case in Austin This Season

On February 11, 1999, an Austin physician obtained a pharyngeal swab from a 9-year-old boy. The TDH Laboratory reported the culture as influenza A (H1N1). This is the first H1N1 virus subtyped in Texas for the 1998-1999 influenza season and 1 of only 9 such viruses identified in the United States. The isolate will be sent to CDC for strain analysis. Two of the other H1N1 specimens CDC examined this season yielded viruses that were different from the A (H1N1) component used in this year's influenza vaccine (A//Beijing/262/95-like[H1N1]).