VIRGINIA
EPIDEMIOLOGY BULLETIN

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April, 1994 Volume 94, Number 4

Ten Basics on the Diagnosis, Treatment, and Prevention of Tuberculosis (TB)*

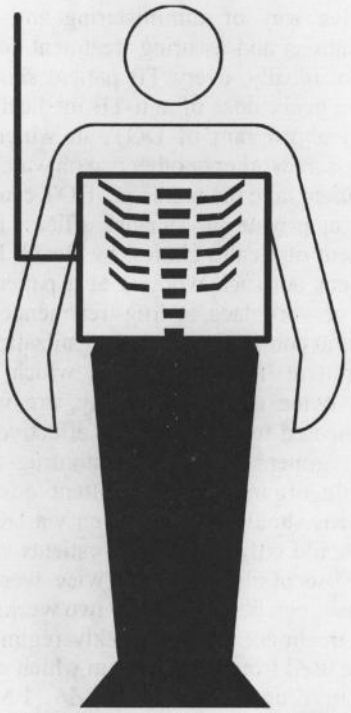
1. Think TB!

Consider the diagnosis of active tuberculosis in any patient with chronic cough (with or without fever, weight loss and night sweats), especially if the person has a risk factor for HIV infection or other immunosuppression. Others at increased risk for TB disease include:

- persons with documented PPD skin test conversion within the past two years;
- persons with medical risk factors known to increase the risk of active disease if TB infection has occurred;
- foreign-born persons from countries where TB is common;
- medically underserved low-income populations;
- alcoholics and injection drug users;
- residents of long-term-care facilities, including correctional and psychiatric institutions, shelters for the homeless, and nursing homes.

2. Report suspected or confirmed cases of active TB to the Health Department

To report a case you should contact your local health department. To get information about drug susceptibility results on isolates submitted to the State lab, physicians can call (804) 786-5144. Doctors who report cases, as is required by law, are assured that their reports are treated confidentially. The Health Department maintains a record of patients with active TB, their treatment histories, and the results of their drug susceptibility tests. To report cases, use the Epi-1 Form (the form used for reporting any communicable disease)



available from the Office of Epidemiology at (804) 786-6261.

3. Always take a careful TB treatment history and obtain drug susceptibility studies on all initial TB isolates

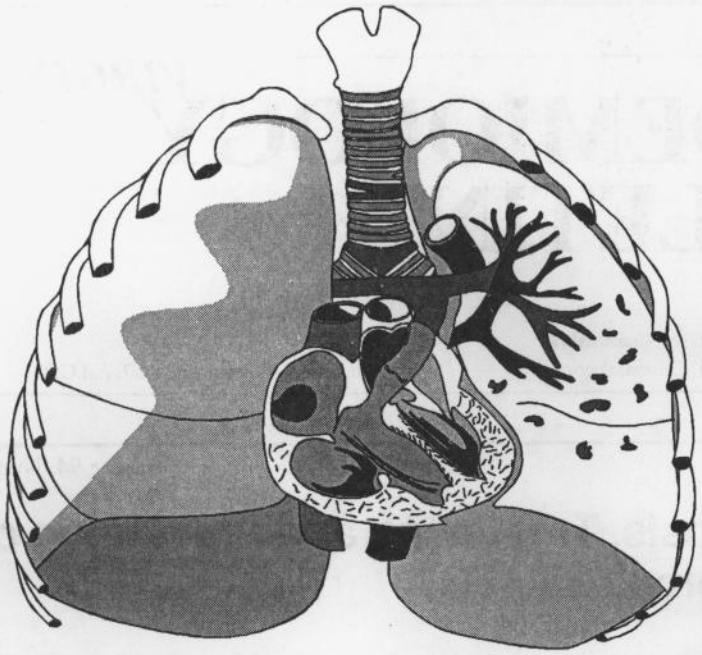
Take a complete history of prior anti-TB treatment. For example, has the patient ever taken a medicine (rifampin) that turned their urine and tears orange-red, or received injections (streptomycin) for weeks or months? If the history is questionable, call the TB Control Division at (804) 786-6251 to see if the patient was previously treated for TB, and to find out the results of previous drug-susceptibility studies. Because of the possibility of drug resistance, all initial isolates of *M. tuberculosis* should be tested for drug susceptibility.

4. Initially treat all active disease patients who have never been treated for TB with at least four anti-TB drugs if they are from an area known to be at higher risk for drug resistance

In Virginia, all previously untreated TB patients from the City of Alexandria, Arlington County, City of Fairfax, Fairfax County, City of Falls Church, City of Richmond, Henrico County, Chesterfield County, and the Cities of Virginia Beach, Norfolk, and Portsmouth should be started on isoniazid (INH), rifampin (RIF), pyrazinamide (PZA), and ethambutol (EMB). Previously treated patients should receive at least two, and preferably three medications they have not received before and to which their isolate has documented susceptibility in the laboratory, if these results are available. Do not use INH and RIF alone unless susceptibility to both has been documented, and NEVER ADD A SINGLE DRUG TO A FAILING REGIMEN. To do so may promote the development of further drug resistance.

5. Ongoing care is a complex art

Patients should be thoroughly evaluated at the first visit, and monitored at least monthly. Because immune status is a critical factor in treatment, counseling and vol-



untary, confidential HIV testing should be offered. The patient with pulmonary TB should give a sputum sample at every doctor's visit to document smear and culture conversion to negative, and to assure that the culture remains negative during treatment. Generally, this means obtaining cultures twice monthly until negative, then monthly thereafter to detect possible treatment failure. Patients with drug-susceptible isolates who are 100% compliant with directly observed therapy may need sputum obtained monthly only until cultures become negative. Culture conversion is critical to monitoring treatment efficacy, and in patients with HIV infection or drug-resistant isolates, will help determine length of treatment (in HIV-seropositive patients with drug-susceptible isolates, six months after conversion to negative). Suspect drug resistance, non-compliance or malabsorption if a patient remains smear positive after two months or culture positive after three months of treatment.

6. Focus top priority on complete treatment of all patients with active TB disease

If every patient with active TB were promptly identified, appropriately treated, and completed a full course of therapy, the spread of TB would stop. *The time to plan for completion is immediately on diagnosis*. Studies demonstrate that adherence to medical regimens is invariably far lower than physicians suspect. Non-adherence to an anti-TB regimen can have major ramifications, not only for the patient, who may develop progressive, drug-resistant disease, but also for the patient's family and other intimate contacts. Directly observed therapy (DOT) is the most reliable and effective way of administering anti-TB medications and assuring treatment completion. Ideally, every TB patient should receive every dose of anti-TB medication within a program of DOT, in which a health-care worker or other person watches the patient take the medicine. DOT can be given at private physicians' offices, Department of Health clinics, by Health Department outreach workers at a patient's home or workplace, at drug-treatment centers, or at community-based organizations. Intermittent dosing regimens, which are given twice or thrice weekly, are well documented to be at least as effective as daily regimens for patients with drug-susceptible organisms. Intermittent dosing regimens should only be given via DOT, and should only be used for patients with drug-susceptible isolates. Twice weekly regimens can be started after two weeks of daily treatment. Thrice weekly regimens can be used from the outset, in which case all four drugs (INH, RIF, PZA, EMB) should ideally be continued for the duration of treatment. (Many authorities would stop PZA and EMB after two months if isolate is susceptible.) Some authorities prefer to wait until drug-susceptibility studies are available before beginning intermittent therapy, particularly if multidrug resistance is suspected. For help arranging DOT for your patients, call your local health department. Physicians can support compliance by structuring all clinical services to be "patient-friendly," and by assuring that the patient's social service needs are met early in treatment, including HIV-related services (for specifics, call the AIDS Hotline 1-800-533-4148), treatment for alcohol and drug addiction, housing, and referral for Medicaid eligibility services.

7. Never treat multidrug-resistant tuberculosis (MDR-TB) without expert consultation

The treatment of MDR-TB can be as complex as cancer chemotherapy and should not be attempted without the consultation of a specialist (physicians in the TB Control Division are available to help you [804/786-6251]).

- Always use at least two, and preferably three drugs to which the patient's organism is susceptible (or, if susceptibility results are pending, is likely to be susceptible).
- Continue treatment for 18 to 24 months after culture conversion to negative.
- Monitor closely for adverse drug reactions and drug interactions.
- Assess drug absorption by monitoring serum drug levels, if possible.

8. Isolate hospitalized patients as soon as active TB disease is suspected or confirmed

Prompt diagnosis, effective isolation, appropriate treatment, and realistic plans for treatment completion after hospital discharge are all essential to reducing risk of nosocomial spread of TB. The Centers for

Disease Control and Prevention and the New York State Department of Health have published guidelines for preventing transmission in health-care settings (see References 2 and 6).

9. Give preventive therapy when appropriate

The purpose of preventive treatment is to stop latent, asymptomatic infection from progressing to clinical disease and to prevent the recurrence of past disease. The following are the more important candidates for preventive therapy:

- PPD-positive (≥5mm) persons infected with HIV or those at risk for HIV infection who decline HIV testing;
- close contacts (≥5mm) of persons with newly-diagnosed infectious TB;
- recent converters, as indicated by a Mantoux test with a ≥10mm increase within a two-year period;
- persons with abnormal chest X-rays that show fibrotic lesions likely to represent old healed tuberculosis (≥5mm);
- intravenous drug users known to be HIV-seronegative (≥10mm);
- persons with medical conditions known to increase the risk of active TB if infection has occurred (≥10mm), and;
- all PPD-positive (≥10mm) persons <35 years of age.

The usual preventive therapy regimen is isoniazid, 10 mg/kg daily for children, up to a maximum adult dose of 300 mg daily. The recommended duration of INH preventive treatment is 6 to 12 months; 12 months is recommended for persons with HIV infection or other immunosuppression and those with abnormal chest X-rays consistent with old healed tuberculosis, and six months for all others. Follow-up chest X-rays after an initial negative film are not indicated, unless symptoms of active TB develop.

10. Preventive therapy for contacts of MDR-TB cases is complicated

In deciding how to treat patients who may have been infected with MDR-TB, four questions must be answered.

- First, *how likely is it that a patient is newly TB-infected?* A patient with a documented positive prior PPD skin test is less likely to be newly infected.
- Second, *how likely is it that the patient is MDR-TB-infected?* A PPD-positive infant of a mother with untreated MDR-TB is highly likely to be MDR-TB-infected. In contrast, a health-care worker with a positive PPD and no known source case has a low probability of being MDR-TB infected.
- Third, *how likely is the patient to develop active TB?* Those at highest risk include infants and persons who are HIV-seropositive or otherwise immunosuppressed.
- Fourth, *what is the drug-susceptibility pattern of the source patient's isolate?* The Centers for Disease Control recently published guidelines for the treatment of people exposed to MDR-TB (Reference 3).

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**This article was written by Thomas R. Frieden, MD, MPH, Director, and Paula I. Fujiwara, MD, MPH., Director, MDR-TB Control, Bureau of Tuberculosis Control, New York City Department of Health.* *Reprinted with minor adaptation by permission of the New York City Department of Health.*

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Cases of Selected Notifiable Diseases, Virginia, March 1 through March 31, 1994.*

Disease	Total Cases Reported This Month						Total Cases Reported to Date in Virginia		
		Regions							
	State	NW	N	SW	C	E	This Yr	Last Yr	5 Yr Avg
AIDS	131	5	37	7	29	53	347	564	229
Campylobacteriosis	60	9	20	9	13	9	107	71	88
Gonorrhea†	978	-	-	-	-	-	3223	1511	3876
Hepatitis A	15	1	9	2	0	3	33	41	42
Hepatitis B	11	0	3	5	0	3	26	34	56
Hepatitis NANB	7	0	2	0	3	2	13	10	9
Influenza	26	0	1	18	0	7	718	950	825
Kawasaki Syndrome	3	0	2	0	0	1	4	5	6
Legionellosis	0	0	0	0	0	0	2	0	3
Lyme Disease	3	0	1	0	0	2	11	5	7
Measles	0	0	0	0	0	0	1	1	8
Meningitis, Aseptic	23	3	4	2	2	12	37	48	49
Meningitis, Bacterial‡	9	0	2	1	0	6	17	17	40
Meningococcal Infections	8	1	0	1	3	3	19	10	15
Mumps	7	1	1	0	2	3	11	10	19
Pertussis	4	0	2	0	1	1	13	3	4
Rabies in Animals	34	8	6	10	8	2	85	72	57
Reye Syndrome	1	1	0	0	0	0	1	0	0
Rocky Mountain Spotted Fever	0	0	0	0	0	0	0	0	0
Rubella	0	0	0	0	0	0	0	0	0
Salmonellosis	53	9	12	6	18	8	162	169	199
Shigellosis	49	0	6	0	25	18	133	68	72
Syphilis (1° & 2°)†	76	0	0	6	5	65	176	145	190
Tuberculosis	36	3	10	5	2	16	88	115	81

Localities Reporting Animal Rabies: Accomack 2 raccoons; Amelia 2 raccoons; Arlington 1 raccoon; Bedford 1 raccoon; Campbell 2 raccoons, 1 skunk; Charlotte 1 skunk; Clarke 1 raccoon; Cumberland 1 raccoon; Fairfax 1 raccoon, 1 skunk; Giles 1 raccoon; Halifax 1 fox, 1 raccoon; Loudoun 2 raccoons; Louisa 1 raccoon, 1 skunk; Montgomery 1 skunk; Page 1 raccoon, 1 skunk; Patrick 3 raccoons; Powhatan 1 raccoon; Prince Edward 1 horse; Prince William 1 skunk; Rockingham 2 skunks; Warren 1 raccoon; Washington 1 skunk.

Occupational Illnesses: Asbestosis 14; Carpal Tunnel Syndrome 112; Coal Workers' Pneumoconiosis 30; Lead Poisoning 2; Loss of Hearing 21; Mesothelioma 1; Repetitive Motion Disorder 2.

*Data for 1994 are provisional. †Total now includes military cases to make the data consistent with reports of the other diseases. ‡Other than meningococcal.

Published monthly by the
VIRGINIA HEALTH DEPARTMENT
Office of Epidemiology
P.O. Box 2448
Richmond, Virginia 23218

Telephone: (804) 786-6261

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