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# TUBERCULOSIS AND MIGRANT FARM WORKERS

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## Tuberculosis and Migrant Farm Workers

Tuberculosis morbidity and mortality continue to occur in the United States despite the fact that modern medicine has considered the disease curable and preventable for over 30 years. Progress is being made toward the elimination of this disease and in 1984 for the third year in a row, the annual decline in cases exceeded 6 percent. However, over 22,000 new cases were reported in 1984 and tuberculosis remains a public health problem in many geographical areas and population groups. Although information is not available to precisely pinpoint the incidence of tuberculosis among migrants, it is known that higher rates of tuberculosis occur among the population groups that are heavily represented among the migrants. For instance, 12.5 percent of reported cases in the U.S. occurred among Hispanics. Many migrants enter this country from areas of the world where tuberculosis rates are much higher than in the U.S. (S.E. Asia, Latin America, Haiti, etc.). Tuberculosis in migrants presents special problems because of: the need for long-term treatment or preventive treatment, contact examinations, population mobility, fear of deportation, cost of treatment, etc.

In response to concern about tuberculosis in migrants, a meeting was held in October, 1984, at the National Association of Community Health Centers office, Washington, D.C. Attendees at the meeting included representatives from the Migrant Health Program, the Centers for Disease Control, and state health department and migrant health centers in Delaware, Maryland, Pennsylvania, New York, Virginia, and West Virginia. The group discussed problems related to the chemotherapy and preventive treatment of migrants in the states. To assist state and local health departments and migrant health workers in the control of tuberculosis, the group made the following recommendations:

- Tuberculosis screening is important for migrant farm workers. Emphasis should be placed on screening and preventive therapy at the home base sites such as California, Texas, Puerto Rico, and Florida. The Public Health Service will further explore this with the health departments in the home base states.
- Although emphasis should be on screening in home base states, it was agreed that tuberculosis screening should continue in states where such programs are productive. For instance, in Virginia almost 40 percent of migrants screened were found infected; 1.6 percent were found to have current disease.
- Migrants who are placed on tuberculosis treatment or preventive therapy should be given special records that they can take with them to indicate their current tuberculosis treatment and care status.
- Out-of-state communications regarding tuberculosis care should be routed through the state health departments to insure that the information is transmitted appropriately and that necessary followup is initiated.
- When necessary, state health departments should encourage local health department public health nurses to teach nurses in the migrant health centers how to perform intracutaneous Mantoux tuberculin tests.
- Normally, migrants with a significant tuberculin reaction should be placed on preventive therapy only if it seems likely they will be able to complete at least

six months of preventive therapy. Migrants with a significant tuberculin reaction who are not placed on preventive therapy should be counseled about the significance of the skin test reaction and instructed to seek medical attention should they develop symptoms suggesting tuberculosis.

- Whenever possible, physicians and/or nurses from the migrant health centers should be invited to state and local health department tuberculosis control staff training programs.
- Whenever possible, directly observed intermittent therapy should be used for migrant tuberculosis patients. Optimal regimens (normally isoniazid, rifampin, and ethambutol-containing regimens) should be utilized initially for migrant tuberculosis patients.
- Different states may have different protocols for the treatment of tuberculosis and for the preventive treatment of infected individuals. However, once a patient is started on a treatment or preventive treatment regimen, the same treatment regimen should be continued to the next state when the migrant moves on (unless medically contraindicated). Furthermore, once a commitment is made to treat or preventively treat, and the patient starts taking the drugs, it is inappropriate to discontinue the drugs unless medical contraindications exist.
- In cases where a migrant farm worker is moving and requires treatment or other special followup, health providers at migrant health centers should contact their state health department tuberculosis control officers to apprise them of the need for followup and possible next State destination of the farm worker.
- Meetings similar to the one held in Washington in October are being considered for other areas of the country.

Migrant health care providers can significantly contribute to the elimination of tuberculosis among migrants. It is very important to maintain a high index of suspicion for tuberculosis and to insure effective surveillance and containment.

The following are some important factors for migrant health care providers to know and understand about tuberculosis.

### **Transmission and Infection**

- The tuberculosis organism is transmitted primarily through the air on droplet nuclei (small airborne particles of moisture) which are produced when persons with tuberculosis of the lung or larynx sneeze, cough, speak, or sing. Tuberculosis is usually not as infectious as some other communicable diseases such as measles, but infectiousness varies considerably from case to case. When persons repeatedly share the same air with an infectious patient, they can be infected with the tuberculosis organism. Normally, the persons at highest risk of acquiring infection are those persons living in the same household with the infectious person.
- The tuberculin test is used to identify persons who have been infected with the tuberculosis organism. The Centers for Disease Control/American Thoracic Society (CDC/ATS) recommend that the intracutaneous Mantoux test (not multiple puncture tests) be used to determine tuberculosis infection. Persons with

a tuberculin reaction greater than 10mm in duration are considered infected; persons who are close contacts of infectious cases are considered infected if their tuberculin reactions are 5mm or greater.

- Most persons who become infected with the tuberculosis organism do not get tuberculosis disease. However, as many as one in ten infected persons may develop tuberculosis at some time in their life. The risk is greatest in the first year after infection but disease can also occur many years after the infection occurred.
- All close contacts of infectious or potentially infectious tuberculosis cases should receive tuberculin tests. Those with reactions at or greater than 5mm should receive chest radiographic examinations ("chest x-rays") and be evaluated by a physician to determine if they should be given isoniazid preventive therapy (see below).

## Diagnosis

- Pulmonary tuberculosis should be suspected in persons with prolonged cough (longer than two weeks in duration) which progressively becomes more frequent. Other common symptoms of tuberculosis include fever, chills, night sweats, loss of appetite, weight loss, and hemoptysis (coughing up blood).
- Persons with suspected tuberculosis should be referred for examination which should normally include: a Mantoux tuberculin test, a chest x-ray, sputum smears and cultures (at least three), and a physical examination.
- If the examiner confirms or suspects tuberculosis as a result of this examination, the local health department should be notified so that contact examination can be initiated. Most health departments provide tuberculosis medical consultation for clinicians and nurses, medication and laboratory services at no charge. When requested, most health departments will also provide examination and treatment services for tuberculosis patients, contacts, and suspects.

## Treatment

- CDC/ATS recommend that patients with uncomplicated, pulmonary tuberculosis be treated with 9 months of isoniazid and rifampin with ethambutol added, at least during the first two months, if there is reason to suspect the patients' organisms may be resistant to isoniazid. (Higher rates of resistance to isoniazid and streptomycin are known to occur in patients: with a history of treatment with antituberculosis drugs; in contacts to drug-resistant cases; among Hispanics and Asians; and among persons who have immigrated from Asia, Africa, and Central and South America.)
- Persons with positive smears or cultures should be monitored at least bi-weekly until they become smear and culture negative. It is important to obtain frequent smears and cultures **early** in treatment, since this is the most reliable means to detect treatment failure. Treatment failure is often due to patient non-compliance with therapy but may be due to an ineffective regimen (e.g., when the organisms are resistant to the drugs).

- Patients receiving antituberculosis therapy should be monitored monthly for response to therapy, adverse reactions, and compliance to the drugs. The following excerpts are from the CDC/ATS statement "Control of Tuberculosis," which was published in the *American Review of Respiratory Disease*, Vol. 128, No. 2, August 1983, p.340:

**Monitoring treatment response.** A persistently positive sputum culture is the only sure sign of treatment failure or relapse. Chest radiographs, symptoms, weight loss, and microscopic evaluation of the sputum correlate poorly. Over 90 percent of patients taking isoniazid (INH) and rifampin (RMP) should become sputum negative within three months of starting treatment. Sputum that remains culture-positive beyond this period should suggest possibility of drug-resistant organisms or failure to take prescribed drugs.

**Monitoring drug toxicity.** Routinely monitoring laboratory tests of hepatic function (serum glutamic oxaloacetic transaminase (SGOT), serum bilirubin, and alkaline phosphatase) does not necessarily predict drug-related hepatic disease in INH recipients. Monthly determination of the SGOT is suggested by some, but there are few data to support this practice. If an SGOT is obtained as a routine screen, in conjunction with symptoms suggesting hepatitis, or for a separate reason, and it exceeds three times the normal laboratory value, the decision to continue INH or RMP must be reevaluated. Patients receiving INH should be instructed to report symptoms suggesting hepatitis (fever, anorexia, myalgias, headache, malaise, nausea, or jaundice). Patients receiving twice-weekly RMP should be regularly monitored by history for possible manifestations of thrombocytopenia (purpura, petechiae, hematuria), or a "flu-like syndrome." Optic neuritis has occurred with the use of ethambutol but appears to be dose-related and is rare at the commonly used dose of 15 mg/kg/day dose. If streptomycin is being used, vertigo, giddiness, and ataxia should be sought, as they will occur and require discontinuation of SM in up to 10 percent of patients. In summary, decisions on monitoring must be individualized and based upon the drugs used in a given regimen and the other factors relating to toxicity (e.g., increased incidence of hepatotoxicity in alcoholics treated with isoniazid containing regimens).

**Monitoring compliance...**A number of techniques have been developed to assist in identifying the noncompliant patient. Under most program conditions, most noncompliant patients are discovered by their failure to return for follow-up clinic visits. Having an accurate record system is thus of paramount importance. An effective communication system is also needed to assure that the discovery of missed appointments comes to the attention of the responsible public health officials. These other measures include urine tests to check for the presence of various medications, serum drug levels, and pill counts. Health workers need to be aware that some patients will take medication only when they anticipate that they will be tested. Unless these are performed on a surprise basis, they may be unreliable.

For further information on treatment and monitoring, please refer to the complete statement referenced above and to the CDC/ATS statement "Treatment of Tuberculosis and Other Mycobacterial Diseases," which was published in the *American Review of Respiratory Disease*, Vol. 127, No. 6, June 1983, pp. 790-796.

- Health departments should be consulted regarding monitoring and/or treatment of cases with complications (e.g., drug resistance, pregnancy, nonpulmonary disease, etc.).
- For uncomplicated pulmonary tuberculosis patients who may not be willing or able to complete nine months of therapy, a six month regimen of four drugs (isoniazid, rifampin, pyrazinamide, and streptomycin or ethambutol) may be given for two months followed by an additional four months of isoniazid and rifampin, when all the drugs can be given under direct observation. (*Note: regimens of less than six months duration are not recommended because of decreased efficacy.*) Staff who are not physicians or nurses may be used to encourage and observe patients to take medication outside of the clinic setting.

### Preventive Therapy

- Contacts of infectious tuberculosis cases should be considered for isoniazid preventive therapy, especially if their tuberculin test is significant.
- Other persons for whom preventive therapy may be considered include: documented tuberculin converters; persons with significant tuberculin reactions whose chest x-rays are consistent with past (formerly called "inactive") tuberculosis; recent skin test converters; and persons with significant tuberculin reactions who have medical conditions or treatment which predispose to tuberculosis, such as diabetes, prolonged adrenocorticosteroid therapy, chronic hemodialysis or gastrectomy. Persons under 35 years of age with no other medical risk factor may be considered for preventive therapy if their tuberculin test is reactive.

### BCG Vaccine

- Vaccination with the bacillus Calmetta-Guerin (BCG) is not widely used in the United States because of the very low risk of acquiring infection and because the protective effects of various BCG vaccines in 8 major trials has ranged from 0 to 76 percent. The variable effectiveness of BCG has not been adequately explained.
- Many countries still use BCG as part of their tuberculosis control activities. The degree of sensitivity to tuberculin which is acquired after BCG vaccination is highly variable, depending upon the strain of BCG used and the population vaccinated. There is no reliable method of distinguishing tuberculin reactions caused by previous BCG vaccination from those caused by natural mycobacterial infections. It is usually prudent, therefore, to consider significant reactions in BCG vaccinated persons as indicating infection with **M. tuberculosis**.