viruses in the serum of hemophiliacs receiving factor VIII concentrate. *Blood* 1985;65:492-495.
12. Schorr JB, Berkowitz A, Cumming PD, Katz AJ, Sandler SG: Prevalence of HTLV-III antibody in American blood donors (Letter). *N Engl J Med* 1985;313:384-385.
13. US Bureau of the Census. Table 49: general characteristics of persons by Spanish origin and race: 1980. In: *1980 Census of Population.* Vol 1: *Characteristics of the Population.* Washington, DC: US Department of Commerce, 1980:1-52 (General population characteristics, [PC 80-1-B1] United States summary).
14. CDC. Provisional Public Health Service interagency recommendations for screening donated blood and plasma for antibody to the virus causing acquired immunodeficiency syndrome. *MMWR* 1985;35:1-5.

Tuberculosis Among Migrant Farm Workers—Virginia

THE COMMONWEALTH of Virginia annually experiences an influx of migrant farm workers to its eastern shore and northwestern regions. Tuberculosis is an important health problem among these migrant workers, but organized efforts to detect, treat, and prevent disease in this group are difficult to establish and maintain. Workers start arriving in early May, peak in number in mid-July, and move on to other states or return to their winter quarters (usually Florida or Texas) by late October or early November. The transient nature of their occupation and the long duration of tuberculosis treatment make it difficult for state and local health departments to assure patient compliance with screening programs, preventive therapy, and chemotherapy for disease.

The absence of an interstate tracking system and the difficulties associated with ascertaining workers' itineraries in advance further complicate the attempts of migrant crews, migrant organizations, and public health workers to ensure appropriate follow-up.

To address these problems, healthcare providers in eastern and northwestern Virginia collaborated in a project to identify migrant farm workers who (1) have tuberculosis and need treatment, (2) are infected and need evaluation for preventive treatment, or (3) have been exposed to an infectious person and need to be examined for infection and disease. In addition, the program was designed to unify and intensify follow-up efforts.

During the summers of 1984 and 1985, tuberculin-testing clinics were established in migrant camps throughout the eastern shore and, in 1985, northwestern Virginia. Services were provided during nonwork hours. Participation was voluntary, and considerable effort was made to obtain reliable follow-up information (travel itineraries, winter addresses, relatives' addresses). Clinics were staffed by physicians, field epidemiologists, and x-ray technicians from the Virginia Department of Health Tuberculosis Control Program and by local public health nurses. Local and state migrant-advocacy groups supplied some transportation and interpretive services. Participants received a Mantoux tuberculin skin test, which was interpreted after 48 hours. On the night of the reading, workers with significant reactions (10-mm induration or greater) were given a chest radiograph and examined by a clinician. If indicated, a bacteriologic specimen was also obtained.

On the eastern shore, 496 (13%) of the estimated 3962 migrant farm workers were screened in 1984, and 632 (21%) of the estimated 3000 workers were screened in 1985. Twelve persons with culture-proven tuberculosis were identified and had treatment initiated in the two years of this program, compared with nine cases in the previous two years. None of the 12 patients had come to the clinics seeking medical care.

In addition to the 12 verified cases, 486 other workers had reactive tuberculin tests. The prevalence of tuberculous infection was highest among Haitian workers and lowest among non-Hispanic whites (Table on page 981). An analysis of age-specific infection rates for the two-year period revealed a prevalence of infection of 2% for the 204 children under 15 years old, 49% for the 517 workers 15 to 34 years old, and 59% for the 408 persons 35 years of age or older.

The screening program in northwestern Virginia in 1985 reached 135 (5%) of the estimated 3000 migrant farm workers and yielded no cases of tuberculosis. It did, however, reveal a similar rate of infection (41%). Approximately 400 of the 555 tuberculin reactors identified in the two screening programs were started on preventive therapy with isoniazid. The results of tuberculin testing and treatment schedules were recorded on the individual worker's health card. Similiar information was forwarded to local health departments of the areas on the worker's itinerary at his/her winter quarters to assure completion of treatment. Workers were urged to report to any state health clinic, show the health card, and request follow-up evaluation and/or additional medication.

This program is being expanded in

continued on page 981

continued from page 977

1986 in an attempt to serve larger numbers of persons in this high-risk population.

Reported by CF Wingo, MD, Tuberculosis Control Program, B Borgstrom, Eastern Shore Health District, GB Miller, Jr, MD, State Epidemiologist, Virginia State Dept of Health; Div of Tuberculosis Control, Center for Prevention Svcs, CDC.

CDC Editorial Note. The national prevalence of tuberculosis and tuberculous infection of migrant farm workers is not known, and additional surveys should be conducted in other areas. In the Virginia screening program, Hispanics, persons from Haiti, and other blacks accounted for 83% of the group that was screened represented a prevalence rate of 202/100 000 population for 1984 and 133/100 000 population for 1985. These rates were calculated with the use of the estimated migrant population as the denominator and assume that all cases of tuberculosis in this target group were discovered through the screening program. The actual rates of disease may, in fact, have been higher. Although the numerators are small, prevalence rates among these workers are ten to 20 times greater than the national incidence rate of 9.4/100 000 for 1985.[4] (The incidence and prevalence of tuberculosis are approximately equivalent in the United States.)

Table.—Results of tuberculin skin testing among migrant farm workers, by race/ethnic group—eastern shore, Virginia, 1984-1985

Race/ethnic group	1984			1985		
	No. tested and read	Tuberculin reactors (%)	Verified cases	No. tested and read	Tuberculin reactors (%)	Verified cases
Black, non-Hispanic/ non-Haitian	222	93 (41.9)	6	265	117 (44.2)	2
Haitian	107	74 (69.2)	2	242	157 (64.9)	1
Hispanic	101	25 (24.8)	0	113	29 (25.7)	0
White non-Hispanic	66	1 (1.5)	0	13	2 (15.4)	1
Total	496	193 (38.9)	8	633	305 (48.2)	4

migrant farm workers, and these population groups are known to have high rates of tuberculosis nationally. For example, in 1980, the case rate per 100 000 population for non-Hispanic blacks was 32.3, and for Hispanics, 22.7, compared with 7.8 for non-Hispanic whites.[1] A survey among persons of Haitian origin in Florida in 1980 and 1981 revealed a prevalence rate of 650/100 000 population.[2]

Foreign-born persons in this screening program were primarily from Haiti. Previous recommendations have emphasized the importance of screening persons from all countries with high rates of tuberculosis.[3]

The 12 cases of tuberculosis identified on the eastern shore in the small

The prevalence of tuberculous infection indicated by significant skin-test reactions is remarkably higher among these migrant farm workers than among other groups known to have a very high risk of acquiring tuberculous infection. Among close contacts of infectious persons with tuberculosis in the United States, the infection rate for 1984 was 25%; in a screening program of 11 746 Southeast Asian refugees who were tuberculin skin-tested between 1979 and 1982, the prevalence of significant reactions was 35%.[5] The occurrence of tuberculous infection among migrant children under 15 years of age indicates that transmission is continuing to occur in the community. The much higher prevalence of infection among adults suggests the possibility that transmission may be associated with the crowded living conditions shared only by the adult migrant farm workers.

The results of this screening program demonstrate the value of identifying high-risk populations that may benefit from tuberculin screening. Moreover, it illustrates two purposes of screening persons with the Mantoux tuberculin skin test. The first is to identify patients with tuberculosis who are potentially infectious and require multiple-drug therapy. However, because of the possibility of false-negative skin tests in persons with extensive disease, further tests, such as a sputum smear and culture and a chest radiograph, should be performed on any person in whom pulmonary tuberculosis is suspected. The second purpose is to identify asymptomatic persons who are infected with the tubercule bacillus. Such persons constitute a reservoir of persons at high risk of developing clinical disease and should be evaluated for preventive therapy. The main purpose of identifying persons with significant skin-test reactions who are not yet clinically ill is to evaluate such persons for preventive therapy. Previous recommendations have suggested that migrant farm workers should be screened and placed on preventive therapy only in areas where follow-up can be assured.[6]

References

1. CDC. *1980 Tuberculosis in the United States.* Atlanta: Department of Health and Human Services, 1983. HHS publication no. (CDC) 83-8322.
2. Pitchenik AE, Russell BW, Cleary T, et al. The prevalence of tuberculosis and drug resistance among Haitians. *N Engl J Med* 1982;307:162-165.
3. American Thoracic Society/CDC. Control of tuberculosis. *Am Rev Respir Dis* 1983;128:336-342.
4. CDC. *1984 Tuberculosis statistics—states and cities.* Atlanta: Department of Health and Human Services, 1985. HHS publication no. (CDC) 85-8249.
5. Nolan CM, Aitken ML, Elarth AM, et al. Active tuberculosis after isoniazid chemoprophylaxis of Southeast Asian refugees. *Am Rev Respir Dis* 1986;133:431-436.
6. CDC and Bureau of Health Care Delivery and Assistance. *Tuberculosis and migrant farm workers.* Austin, Texas: National Migrant Referral Project, Inc, 1985.