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Characteristics of Foreign-Born Hispanic Patients  
with Tuberculosis--Eight US Counties Bordering  
Mexico, 1995

# Characteristics of Foreign-Born Hispanic Patients with Tuberculosis -- Eight U.S. Counties Bordering Mexico, 1995

During 1986-1995, the number of tuberculosis (TB) cases among foreign-born persons in the United States increased 61%, from 4925 cases (22% of the national total) to 7930 cases (35% of the national total). This increase probably reflected, in part, the immigration of persons from regions of the world that have a high incidence of TB (1). In 1995, 22% of all foreign-born persons with TB (8% of the national total) were born in Mexico; of these, 81% were reported by the four U.S. states bordering Mexico -- Arizona, California, New Mexico, and Texas (2). In 1995, local health departments in these states conducted an epidemiologic study to characterize patterns of immigration and migration among foreign-born Hispanic patients with TB and their behaviors in seeking health care. This report summarizes the findings of the analysis, which indicate that collaborative efforts for controlling TB should include and extend beyond border areas and that drug-susceptibility testing should be conducted for all TB isolates.

Participants included all consenting foreign-born self-identified Hispanic patients listed on public health department TB clinical registries (n=181) under treatment for TB during October 1, 1995-January 5, 1996, in eight U.S. counties bordering Mexico: Yuma County, Arizona; Imperial and San Diego counties, California; Dona Ana County, New Mexico; and Cameron, El Paso, Hidalgo, and Webb counties, Texas. These counties were selected because they include urban areas in close proximity to urban areas in Mexico. A standardized questionnaire available in both Spanish and English was administered to each patient by bilingual staff from

the health departments in these counties. Clinical and microbiologic data were obtained from clinic charts, laboratory records, and data reported to CDC's national TB surveillance system. Drug susceptibility data were analyzed for the 169 patients who were interviewed in this study and for all other patients self-identified as Hispanic or non-Hispanic in the eight counties during 1995.

Overall, 169 (93%) of the 181 patients or an adult family member were interviewed. Of the 169, a total of 100 (59%) were male; the mean age was 42 years (range: 2-97 years), and the median length of residency in the United States at the time of diagnosis was 15 years (range: 4 months-82 years). Most (158 {94%}) of the 169 patients had been born in Mexico, and 11 (7%) were from Costa Rica, Guatemala, or Honduras.

Of the 125 patients aged 18-65 years, 36 (29%) were employed at the time of TB diagnosis. The usual employment of the 125 patients was construction or factory-related jobs (34 {27%}), homemaking and child care (28 {22%}), service-related jobs (e.g., clerical, custodial, or restaurant-related) (25 {20%}), and agriculture-related jobs (19 {15%}); 19 (15%) reported multiple occupations or no occupation.

Complete information about immigration history was available for 164 (97%) of the 169 patients. All 10 patients born in Central America reported immigrating directly to the United States (i.e., did not reside in another country before arriving in the United States) from their countries of birth. Of the 154 patients born in Mexico, 78 (51%) reported being born in one of the six states of Mexico bordering the United States (Baja California Norte, Chihuahua, Coahuila, Nuevo Leon, Sonora, and Tamaulipas). Of these 78 patients, 42 (54%) were born in towns within 31 miles (50 km) of the U.S.-Mexico border (e.g., Ciudad Juarez, Matamoros, and Tijuana) and immigrated directly to the United States from those towns; 18 (23%) moved from their town of birth to one of the border towns before immigrating to the United States; and 18 (23%) immigrated directly from their town of birth. Of the 76 (49%) patients who had been born in non-border states, 43 (57%) immigrated directly from their respective state of birth, and 33 (43%) moved to a border town and then immigrated to the United States. Overall, 93 (60%) of the 154 patients born in Mexico had been living in a border town in Mexico before immigrating to the United States; of these, 42 (45%) had been born in these towns. Most (44 {86%}) of the 51 patients who were not born in border towns but who immigrated to the United States from a border town had lived in that town for greater than or equal to 2 years before immigration.

Of the 169 total participants, 138 (82%) reported ever returning to their country of

origin. Of these, 101 (73%) had returned during the year preceding TB diagnosis: 36 reported returning at least weekly (21% of all patients); 23, weekly to monthly (14% of all patients); and 42, monthly to yearly (25% of all patients). The primary reasons for returning included visiting family and friends (75%), shopping (20%), and seeking health care (7%).

Most (146 {86%}) patients had pulmonary TB. The median duration of symptoms at diagnosis was 4 months (range: 2 weeks-11 years). Of the 48 (28%) patients who reported receiving either previous treatment or preventive therapy for TB, 30 (63%) reported previously having taken multiple TB medications (18% of all patients); the remaining 18 (38%) reported having taken only isoniazid (INH). Of the 25 patients for whom information was available on where they had obtained prior treatment, 13 had received treatment outside the United States and 12 had received treatment in the United States. One of the 13 patients treated outside the United States had received treatment from a curandero (i.e., traditional healer).

Prevalences of single-drug resistance among foreign-born Hispanic patients were compared with prevalences in U.S.-born non-Hispanic patients and U.S.-born Hispanic patients residing in the eight counties during 1995. Prevalences among U.S.-born Hispanic patients tended to be 1.6-3.2 times higher than those among U.S.-born non-Hispanic patients residing in the same counties (Table 1), although some differences were not statistically significant. Prevalences among foreign-born Hispanic patients were 1.7-5.0 times higher than those among U.S.-born non-Hispanic patients. The prevalence of multidrug resistance (resistance to INH plus rifampin) was 6.8 times higher among foreign-born Hispanic patients than among U.S.-born non-Hispanic patients (95% confidence interval=1.4-32.7). Prevalences among U.S.-born and foreign-born Hispanic patients were similar.

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## Editorial Note

Editorial Note: Based on current worldwide trends in the epidemiology of TB, approximately 90 million new TB cases and 30 million deaths from TB will occur during the 1990s (3,4). To emphasize prevention and control of TB, the World Health Organization has designated TB a global emergency and has encouraged

developed countries to assist developing countries in improving their TB-control programs (5). Such efforts also are likely to improve TB control in developed countries, especially those with immigrants arriving from countries with a high prevalence of TB (6).

CDC supports five binational projects involving the collaboration of paired cities on both sides of the U.S.-Mexico border. These projects are designed to direct resources to areas of need and to develop cooperative working relations between health professionals managing TB-control and -prevention programs in communities along both sides of the U.S.-Mexico border. Although these border projects are an essential part of cooperative TB-control efforts with the local health departments in the six states in Mexico on the U.S. border and the Ministry of Health in Mexico, the finding that 40% of foreign-born Hispanic patients had immigrated to the United States from nonborder communities suggests that efforts should be intensified in nonborder regions of Mexico.

Collaborative efforts involving the United States and Mexico could include assistance to pilot projects being planned by the government of Mexico for instituting directly observed therapy (DOT) to treat active TB cases. DOT requires a health-care worker or other designated person to observe a patient ingesting each dose of TB medication for the duration of treatment. This approach helps to ensure completion of therapy, which is important for reducing continued transmission, relapse rates, and drug-resistance levels (7). Because the findings in this report indicate higher prevalences of drug resistance among foreign-born Hispanic patients, many of whom reported having previously received TB treatment in Mexico, DOT may improve TB control and reduce the prevalence of drug resistance in both Mexico and the United States. In addition, an ongoing study of resistance to TB drugs (being conducted in eight states and the federal district {Mexico City} in Mexico through a partnership between CDC and Mexico's Ministry of Health) may provide information for selecting treatment regimens that further decrease the prevalence of drug resistance.

Expanded TB-control efforts (e.g., ensuring completion of anti-TB therapy) with Mexico also should assist in reducing drug resistance among U.S.-born Hispanic patients by reducing the risk for transmission of drug-resistant strains. In this study, the prevalence of INH and streptomycin resistance was higher among U.S.-born Hispanic patients than among U.S.-born non-Hispanic patients. This finding may reflect the interruption of TB therapy resulting from frequent movement of persons across the U.S.-Mexico border; possible self-medication with TB drugs, which can be purchased without a prescription in Mexico; inadequate treatment or supervision by private providers in either the United States or Mexico; and exposure to

drug-resistant TB during visits with family and friends in Mexico and in the United States. Because levels of INH resistance approach 4% in U.S.-born non-Hispanic patients and are substantially higher than 4% in Hispanic patients, an initial four-drug regimen is indicated for TB treatment in all patients in these border areas (8).

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### Table\_1

**Note:** To print large tables and graphs users may have to change their printer settings to landscape and use a small font size.

TABLE 1. Drug-resistance prevalences among U.S.-born non-Hispanics \* and U.S.-born + and foreign-born Hispanics & with tuberculosis, by drug -- eight U.S. counties, @ 1995

Drug/ Patient group	Resistance prevalence	Risk ratio	(95% CI **)
<b>Isoniazid (INH)</b>			
U.S.-born non-Hispanic	3.9%	referent	
U.S.-born Hispanic	7.2%	1.9	(1.0- 3.3)
Foreign-born Hispanic	6.6%	1.7	(1.0- 3.0)
<b>Rifampin (RIF)</b>			
U.S.-born non-Hispanic	0.3%	referent	
U.S.-born Hispanic	1.1%	3.2	(0.5-19.1)
Foreign-born Hispanic	1.6%	5.0	(1.0-25.0)
<b>Ethambutol</b>			
U.S.-born non-Hispanic	1.3%	referent	
U.S.-born Hispanic	2.2%	1.6	(0.6- 4.6)
Foreign-born Hispanic	3.3%	2.4	(1.0- 6.1)
<b>Streptomycin</b>			
U.S.-born non-Hispanic	3.4%	referent	
U.S.-born Hispanic	8.3%	2.5	(1.4- 4.4)
Foreign-born Hispanic	8.9%	2.6	(1.5- 4.6)
<b>INH and RIF</b>			
U.S.-born non-Hispanic	0.3%	referent	
U.S.-born Hispanic	1.1%	3.2	(0.4-38.9)
Foreign-born Hispanic	2.3%	6.8	(1.4-32.7)

\* n=595.

+ n=278.

& n=305.

@ Yuma County, Arizona; Imperial and San Diego counties, California; Dona Ana County, New Mexico; and Cameron, El Paso, Hidalgo, and Webb counties, Texas.

\*\* Confidence interval.

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