Screening for Tuberculosis in Jail and Clinic Follow-Up after Release

ABSTRACT

Objectives. The purpose of this study was to describe tuberculosis (TB) screening and preventive therapy in the San Francisco County Jail and to measure the follow-up rate at the public health department TB clinic.

Methods. The records of male inmates screened for 6 months in 1994 were reviewed. Those prescribed isoniazid and released before therapy ended were matched with TB clinic records. Inmates were considered to have followed up if they came to the TB clinic within 1 month of release.

Results. Of 3352 inmates screened, 553 (16.5%) reported a prior positive skin test, and 330 (26.9%) of 1229 tests placed and read were positive. Of those with positive tests, 151 (45.8%) began isoniazid. Most of the inmates were foreign-born Hispanics (80.8%). Ninety-three (61.6%) inmates were released before completion, after an average of 68.5 days. Three (3.2%) went to the TB clinic within a month.

Conclusions. Jail represents an important screening site for TB, but care is not continued after release. Strategies are needed to enhance the continuity of isoniazid preventive care. *(Am J Public Health.* 1998;88: 223–226).

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Introduction

The number of incarcerated persons in the United States has risen dramatically in the last decade, and a third of prisoners are housed in county and municipal jails.[1] Jails differ from prisons in that persons in jail usually have shorter stays than those in prison. Every person who is arrested comes through a local jail system, regardless of the arrest outcome. Unless the person is released through a pretrial mechanism, he or she remains in jail before and during trial and, if convicted, may serve the sentence in jail.[2]

The jailed population and those at highest risk for tuberculosis (TB) infection and active disease overlap significantly (i.e., poor urban men of color with high rates of drug use and human immunodeficiency virus [HIV] infection).[3] While prisons have been identified as having high TB infection prevalences[4–6] and high transmission risks[7] along with their identification as proposed intervention sites,[8] less is known about risks and programs in jails.

The purpose of this study was twofold. First, the TB screening program and characteristics of inmates begun on isoniazid were examined. Second, the follow-up rate at the county TB clinic among inmates released prior to isoniazid completion was documented.

Methods

Setting

The setting for the study was the San Francisco County Jail, with follow-up at the San Francisco Department of Public Health TB Clinic. Jail medical personnel question every person entering the jail for symptoms of TB during the jail booking process, in accordance with guidelines of the Centers for Disease Control and Prevention (CDC).[3,9] Those with symptoms of TB are evaluated at the local county hospital and returned to the jail if there is no evidence of active TB.

There is a systematic effort to screen all persons in custody within 24 to 72 hours of arrest. Those who are missed in this initial process are tested within 7 days. All eligible persons are offered testing by the Mantoux method with 0.1 mL of 5 TU partial protein derivative (PPD). Those providing a reliable history of a positive skin test are not retested. At the time of the study, anyone reporting a negative test in the previous 6 months was not retested. No one is forced to have a skin test, and about 3% refuse; they are scheduled to be asked again about a skin test at a future date.

The skin test is read 48 to 72 hours after placement. Induration of 10 mm or

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TABLE 1—Ethnicity among Male San Francisco County Jail Inmates Screened for TB, Reporting a Positive PPD History, and Having PPD-Positive Skin Tests: March and September 1993

Ethnicity	Inmates Screened for TB (n = 1319), %	Inmates with Hhistory of Positive PPD (n = 167), %	Inmates Found PPD Positive on Skin Test (n = 172), %
African American	38.9	39.5	15.1
Hispanic	35.9	31.7	69.8
Non-Hispanic White	19.4	24.6	7.6
Asian, Native American, other, unknown	5.8	4.2	7.6

Note. Percentages do not sum to 100 as a result of rounding. PPD = partial protein derivatives.

more represents a positive test. If the person is known to be HIV positive, 5 mm or more is read as positive.[10] Those with a prior positive skin test who have not received a chest x-ray and those reporting a skin test conversion within 2 years are referred for x-ray. A history of bacille Calmette-Guérin (BCG) is taken into account in the evaluation of the skin test, in accord with CDC guidelines.[9] Voluntary testing for HIV is also offered.

After the chest x-ray, inmates are seen by jail medical providers who determine whether the inmate should be recommended for isoniazid; CDC criteria[10] specify that isoniazid should be offered to all individuals less than 35 years of age with TB infection. In addition, persons who are known to be HIV positive and those with recent PPD conversion, contact with a TB patient, high-risk behavior (e.g., intravenous drug use), or chronic conditions (e.g., diabetes, renal failure, silicosis) associated with developing TB are offered isoniazid regardless of age.[10] Those who agree to preventive care are prescribed 6 to 12 months of isoniazid as needed, via directly observed preventive therapy.

When isoniazid is begun, inmates are educated and counseled about the course of therapy and are advised to go to the San Francisco TB clinic for continuation of free preventive treatment if they are released prior to completion. During the study period, inmates on isoniazid were not given medication or counseling about follow-up at release.

Design and Sample

The study used a historical cohort design and record review methodology. Because data were not consistently available for women, the study was limited to men. The TB screening process for male inmates jailed for more than 24 hours from January 1 through June 30, 1994, was documented, and data were gathered on those begun on isoniazid preventive care. Those released to the community before completing therapy comprised the sample for follow-up (i.e., determination of whether they went to the San Francisco TB clinic within 1 month of release). The follow-up sample excluded those who remained in jail for the duration of isoniazid therapy, were sent to prison, or were rearrested within 1 month of release.

Data Collection and Analysis

Data on the jail screening process came from summary statistics regularly generated by one of the authors (Thomas M. Hoynes) and available for 1993. For the 1994 cohort of men taking isoniazid, data included name, date of birth, ethnicity, country of origin and year of immigration, date of PPD test, and date of and destination after release. Records at the TB clinic were searched for matches on given names or known aliases and dates of birth to determine the date of the clinic visit following release. Descriptive statistics were tabulated with SAS software (SAS Institute Inc, Cary, NC).

Results

TB Screening Process and Characteristics of Inmates on Isoniazid

Jail screening statistics for 1993 showed that 25.7% of persons screened had a positive PPD by history or by skin test. By ethnicity, 36.6% of Hispanics; 26.0% of Asians, Native Americans, and those of other or unknown ethnicities; 21.1% of non-Hispanic Whites; and 17.9% of African Americans were positive in terms of PPD status. Hispanics represented 35.9% of persons screened but 69.8% of those who were positive by skin testing (Table 1).

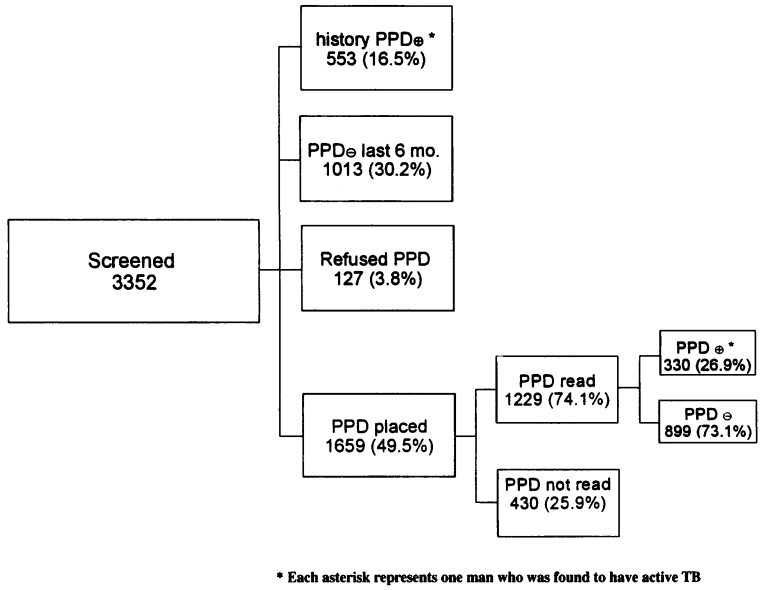
In the 6-month study period in 1994, 3352 men were screened within 24 to 72 hours of arrest, and of those who had a skin test placed and read, 330 (26.9%) were positive (Figure 1). As a result of screening, 2 men were found to have active TB disease, 1 following report of a positive skin test history and 1 following skin testing in the jail. Isoniazid was begun on 151 (45.9%) of the 329 individuals whose PPD tests were read as positive.

The ethnic distribution for those started on isoniazid was as follows: Hispanic, 80.8%; African American, 11.3%; non-Hispanic White, 5.3%; and all others, 2.6%. The mean age was 26.5 years (range = 18 to 43). Most (n = 124; 84.7%) were foreign born and from Latin American countries; 111 (73.5%) reported their country of origin as Mexico, Honduras, or El Salvador. For those from Latin America, the mean time since immigration was 4.9 years (median = 3).

Follow-Up of Those Released to the Community

Of the 151 men on isoniazid, 58 (38.4%) were not eligible for follow-up: 48 went to prison, 5 were rearrested within 1 month of release, and 5 remained in jail long enough to complete preventive care. Men released to the community before completing isoniazid treatment (n = 93; 61.6%) did not differ significantly in terms of age, ethnicity, or country of origin from the initial cohort of 151. On average, they received 68.5 days of isoniazid before release.

Three (3.2%) of the 93 eligible men went to the TB clinic for follow-up within 1 month of release. Numbers were too small to analyze statistically. The interval between release and TB clinic visit was 10 to 18 days. A fourth man went to the clinic 69 days after release; he may well have had another skin test or additional counseling in the nearly 2.5 months after his release.



Note. PPD = partial protein derivative.

FIGURE 1—Flowchart indicating TB screening in 3352 male inmates within 72 hours of arrest in the San Francisco County Jail during January through June 1994.

Discussion

In this study, 2 of 3352 men screened over a 6-month period were found to have active TB, a point prevalence rate of 59.7 per 100 000. Of those screened, 26.3% had a positive PPD status by reported history or skin test, a rate nearly identical to the 26% reported in a Texas county jail.[11] The high rates of positivity found in Hispanics could be due in part to BCG. However, history of BCG is not a contraindication to skin testing, and there is no clear way to distinguish between reactions caused by BCG and those caused by TB infection.[3] The jail population met the criteria in current recommendations for preventive therapy in BCG-vaccinated persons.[3] Nearly half of those who had a positive PPD skin test in the jail were begun on isoniazid. Two thirds were released to the community before isoniazid completion, but very few went to the TB clinic to obtain free medication so as to complete preventive care.

We are aware that this study had certain limitations. For one, it was limited to men, and TB screening and preventive therapy should also be characterized among women. Second, the lack of information on HIV infection status and the insensitivity of the PPD skin test among intravenous drug users[12] might have resulted in an underestimate of the prevalence of TB infection. Third, we were unable to determine whether individuals went to other sources of care for isoniazid continuation;. TB infection care is free, however, at the San Francisco TB clinic, which should encourage individuals to obtain care there, and we believe it unlikely that, among individuals who moved, a large proportion would have found another source of TB preventive care within a month. Finally, a first contact with the TB clinic after release does not indicate completion of preventive care. A more complete study is warranted.

Jails are effective sites for screening to detect active TB. Persons who are jailed include those in high-risk groups for developing active TB (e.g., individuals who use illicit drugs, who have been in shelters and other congregate living sites, and who are at high risk of being HIV positive).[9] A high proportion of TB infection in this study occurred among foreign-born individuals with less than 5 years' median time since immigrating from areas of high prevalence; this group has also been identified as at risk for developing active TB.[13] Two active TB cases were found as a result of screening in the 6-month period. This, combined with crowding and other reports of TB transmission within jails,[14–16] lends further evidence that screening for active disease is a productive strategy.[17]

Screening for TB infection is also critical in jails. Because inmates represent such a high-risk group for developing active TB, the Advisory Council for the Elimination of Tuberculosis recommends that long-term inmates, defined as those who are in jail for at least 14 days, be screened for infection and offered preventive therapy.[3] Strategies to find and treat persons with TB infection in order to prevent activation must also be part of an overall plan to control TB.

Reasons that TB control should include screening for infection may be explained by TB epidemiology. Blower and colleagues have shown that the transmission dynamics of TB epidemics are very slow and operate on long time scales.[18] They suggest that a young epidemic, demonstrated by the rising incidence rates of TB in the mid-1980s, was superimposed on a mature epidemic characterized by declining rates in the United States for several decades preceding the 1980s. The control of TB, viewed as a series of time-lagged subepidemics, should be accomplished by strategies for each subepidemic, not only the detection and treatment of active cases.[18] In a 1992 US survey, however, 48% of 31 large jail systems did not record TB infection rates.[19] The demographic characteristics and the rate of TB infection in this study population show the potential yield in screening for infection in jails as a strategy to control TB in future decades.

There is a public health obligation that preventive therapy begun in the jail should be completed in the community. A system is currently being implemented in San Francisco whereby inmates will be given a month's supply of isoniazid at release. There are 2 issues of concern for every jail: (1) whether preventive TB treatment should be started in a facility where the length of stay is short, and (2) whose responsibility it is to ensure that preventive therapy is completed in the community. Stead has suggested that, in short-term facilities such as jails and shelters, the focus should be on preventing spread from an unsuspected case of active TB.[8] In our study, male inmates who were released on isoniazid had an average stay of 68.5 days, more than a third of the time needed for a usual course of therapy[10] and long enough to allow repeated opportunities for education, counseling, and integration of the therapeutic regimen into a daily routine.[20] It may be inappropriate, in considering strategies for TB control, to group jails with shelters as short-term facilities.

The second issue is more difficult in an era of diminishing health care resources. The responsibility for ensuring that preventive therapy is completed rests in liaisons between correctional health services and the public health system,[21] not only for the safety of the community but also because no effective public health planning will be done until those who are incarcerated are viewed as part of the community.[22,23] Jailed individuals disproportionately represent those at high risk of TB acquisition and activation of latent disease. Although most would agree with aggressive jail programs to detect active TB, we equally believe that jails represent both a venue of care for individuals who may have few other sources of health care and an important point of contact to identify persons who could benefit from TB preventive care. □

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