
Tuberculosis Control Among People in U.S. Immigration and Customs Enforcement Custody

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Background: People detained by United States Immigration and Customs Enforcement (ICE) are a high-risk population for tuberculosis (TB). Detainees are screened for TB upon intake, and TB patients are reported to the Division of Immigration Health Services (DIHS).

Methods: TB case reports were reviewed for ICE detainees reported to DIHS during 2004–2005. Case counts and frequency distributions are presented. Case counts are stratified by demographic characteristics, release status, laboratory and clinical findings, HIV/AIDS status, and drug resistance. Case rates were calculated for patients housed at facilities with DIHS staffing. Duration of treatment and of ICE custody is provided. Analyses were conducted in 2006.

Results: During 2004 and 2005, 76 and 142 TB patients were reported, respectively. The TB case rate was 82.6/100,000 in 2004 and 121.5/100,000 in 2005. The culture-confirmed case rate of 55.8/100,000 in 2005 was 2.5 times higher than the case rate in the U.S. foreign-born population. Of 218 patients, 127 (58.3%) had *Mycobacterium tuberculosis*-positive sputum cultures, 70 (32.1%) had acid-fast bacilli-positive sputum smears, and 36 (16.5%) were symptomatic at diagnosis. Patients from Mexico, Honduras, Guatemala, and El Salvador accounted for 184 cases (84.4%) and 184 patients (84.4%) were repatriated. TB patients spent an average 82.6 days in treatment before release or repatriation.

Conclusions: Screening at intake to ICE custody has helped DIHS staff in diagnosing TB and starting patients on treatment, but patients are usually deported before completing therapy. Because of deportation, and sometimes re-entry into the United States, unique collaborations are required to support completion of treatment.

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Introduction

In the United States, the epidemiology of tuberculosis (TB) has undergone a fundamental transformation: since 2002, the majority of TB patients are among foreign-born persons.¹ To improve TB prevention and control among the foreign-born, local and state TB programs are challenged to design appropriate and effective initiatives for detecting and managing their disease.^{2,3} TB control is also an important public health challenge for detention systems where TB rates are substantially higher than the rates in the general population.⁴ Screening for TB upon admission into detention facilities provides an opportunity for early detection of TB disease among undocumented people

whose social and legal status can make standard testing and treatment interventions inadequate.⁵

Among the foreign-born in the U.S., undocumented people are largely from countries with a moderate or high prevalence of TB. These individuals present unique challenges for the elimination of TB in the U.S.⁶ Of concern are reports from local TB control officials that have noted a pattern wherein TB patients undergoing treatment were deported before completion of therapy. Some later returned to the U.S., and in a few instances had developed drug-resistant TB.⁷

Detention and deportation of undocumented persons is under the authority of the U.S. Department of Homeland Security, Immigration and Customs Enforcement (ICE).^{8,9} In federal fiscal year 2005, ICE detained 237,667 foreign nationals.¹⁰ ICE detention comprises an administrative process to facilitate deportation; criminal charges are resolved before ICE custody. Undocumented people with criminal convictions serve their sentences with the appropriate local, state, or federal law enforcement agency before transfer to ICE custody. ICE detainees are held in ICE detention centers, in detention facilities managed under contract with the Department of Homeland Security, and in

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local jails nationwide through intergovernmental service agreements.

Upon admission to ICE custody, detainees are expected to be screened for TB disease in accordance with ICE detention standards.¹¹ Suspected TB patients are further evaluated and started or continued on treatment for TB disease if medically indicated. The purpose of this study is to provide a greater understanding of the prevalence of TB in this population. These data can be used to help target domestic and global TB control initiatives for this frequently mobile population.

Methods

This study covers TB case reporting for the ICE detainee population from January 1, 2004, through December 31, 2005, including case counts, prevalence rates, and selected clinical, demographic, and custody characteristics. During the reporting period, the Division of Immigration Health Services (DIHS) provided on-site health services in 15 locations. Health services provided in the detention facilities without DIHS staffing are operated by or under arrangements with the detention facility.

Table 1 lists the locations of the detention facilities where ICE detainees are housed, as well as staffing source and the type of TB screening used at the facility. In Florence AZ, a single health service unit provides intake screening and health services for the staging and detention facilities in the same location; these data are combined for presentation. Detainees screened at the Los Angeles CA Staging Facility are housed at the San Pedro CA Processing Center; these data are also combined for presentation.

Intake assessment by the DIHS includes vital signs, and asking the detainee regarding a cough for >3 weeks, cough with blood, breathing problems, night sweats, and unexplained weight loss. Detainees may also be assessed for symptoms during patient visits or physical examinations. DIHS staff records the presence of symptoms as yes or no on case reports. In 10 locations, DIHS screens for TB using digital radiography (DIANA Associates, Severna Park MD). A digital radiographic image is transmitted to the University of Maryland for interpretation; radiologists report results to DIHS providers within 4 hours of taking the images. In locations without digital radiography, DIHS performs TB screening using a tuberculin skin test (TST) followed by a chest radiograph if the TST or symptom screen is positive. Detainees with a chest radiograph result of "positive, TB suspect" are further evaluated for TB either on site or at a local hospital, depending on the airborne infection isolation capabilities of the facility. DIHS screens arriving detainees unless they arrive with reliable documentation of negative screening within the preceding 90 days; some facilities choose to screen all arriving detainees unless they arrive with documentation of ongoing TB treatment. Screening at facilities without DIHS staffing is not standardized, but symptom screening and TST followed by a chest radiograph if the symptom screen or TST is positive are generally used.

In DIHS facilities, staff members submit TB case reports to DIHS headquarters for all TB patients and suspected TB patients who are positive on the acid-fast bacilli (AFB) smear

Table 1. Detention facilities housing ICE detainees, by type, health services staffing, and tuberculosis screening method

Facility and location by screening method	Facility type	Health services staffing
Symptom screen and digital radiography		
El Centro CA	SPC	DIHS
El Paso TX	SPC	DIHS
Krome, Miami FL	SPC	DIHS
Port Isabel, Los Fresnos TX	SPC	DIHS
Florence AZ	SPC and staging	DIHS
Los Angeles CA	Staging	DIHS
Houston TX ^a	CDF	DIHS
Pearsall TX ^a	CDF	DIHS
San Diego CA	CDF	DIHS
Tacoma WA	CDF	DIHS
Symptom screen, TST; chest x-ray if TST positive		
Aguadilla PR	SPC	DIHS
Batavia NY	SPC	DIHS
San Pedro CA ^b	SPC	DIHS
Elizabeth NJ	CDF	DIHS
Queens NY ^c	CDF	DIHS
Denver CO	CDF	Contractor
Eloy AZ	CDF	Contractor
Laredo TX	CDF	Contractor
Albuquerque NM	IGSA	Contractor
Local jails, nationwide ^d	IGSA	Local jurisdiction or their contractor

^aHouston TX CDF opened in 2004; Pearsall TX CDF opened in 2005; Queens NY CDF closed in 2005.

^bDetainees screened at the Los Angeles CA staging facility are generally detained at the San Pedro CA SPC if they remain in ICE custody at least overnight.

^cQueens NY closed in 2005.

^dApproximately 300 jails nationwide are used to house ICE detainees through IGSA.

CDF, contract detention facility; DIHS, Division of Immigration Health Services; ICE, Immigration and Customs Enforcement; IGSA, intergovernmental service agreement; SPC, service processing center; TST, tuberculin skin test.

or for whom treatment was started, and data are entered into a database (MS Access). TB patients are classified by the treating physician using American Thoracic Society classification criteria.¹² For facilities without DIHS staffing, TB case reporting to DIHS headquarters is not required but is encouraged; case counts from these facilities are presumed to be incomplete. For patients for whom final reporting to DIHS was incomplete, final classifications and lab results were requested from local or state TB control programs. The patients presented in this study were classified as "M. TB infection, current disease" by the treating physician; however, the classification may not reflect verification performed by state and local TB programs for reporting to the Centers for Disease Control and Prevention (CDC) for national surveillance. DIHS captures the country of nationality from case reports or the ICE custody database; the ICE record of country of nationality reflects confirmation by consulate interviews before repatriation.

Year of diagnosis was assigned for each patient based on the treatment start date or date admitted to the facility. For patients detected after patient admission into ICE custody, the year was assigned based on the treatment start date. For patients detected before the patient's admission into ICE custody, the year was assigned based on the admission date. A detainee identified with TB while in ICE custody who later returned to ICE custody was counted again if ≥ 12 months had elapsed since the previous arrival into ICE custody for the same person; if < 12 months elapsed between instances of ICE custody, the case was analyzed in the initial time period and with the initial characteristics.¹ Detainees who transferred between facilities during a single period of custody were counted once and assigned to the facility initially reporting the patient. Rates per 100,000 intake screenings were calculated for TB patients identified in facilities with DIHS staffing. Denominators included the total number of intake screenings, which are routinely reported by DIHS staff. Data for individuals regarding admissions to ICE custody were not available; therefore, adjustment of denominators to account for repeat admissions was not possible. Denominator data were not available to calculate rates for facilities without DIHS staffing.

The DIHS collects at least three sputum specimens for detainees with a chest radiograph result of "positive, TB suspect" or with clinical symptoms. Resistance to at least one drug was defined as resistance to any one of the first-line drugs tested by the laboratory where specimens were processed (usually isoniazid, rifampin, pyrazinamide, and ethambutol). Laboratories used for AFB smear, culture, and drug susceptibilities included state or local public health laboratories, hospital laboratories, and commercial laboratories. DIHS offers HIV testing for all detainees with suspected TB. Release status was obtained from the ICE custody database. Release categories were classified for analysis as (1) removed (deported or voluntary departure), or (2) released in the U.S. (bond, order of supervision, order of recognizance, proceedings terminated, or transfer to U.S. Marshals custody). Detainees released in the U.S. often continue immigration proceedings and may be deported at a later date depending on the resolution of their legal case. Treatment duration was assessed based on the treatment start date, regardless of whether treatment was started before or during ICE custody. Duration in ICE custody was defined as the number of days in ICE custody since admission to the facility where the TB patient was initially reported. These custody periods may not reflect custody at previous facilities if the patient was not detected or reported to DIHS by previous facilities. Statistical Analysis Software, version 8.2 (SAS Institute Inc., Cary NC, 2001) was used for data analysis; analyses were conducted in 2006.

This study was defined as reflecting a surveillance activity, and thus did not constitute research; therefore, Institutional Review Board review was not required.

Results

Facilities reported 76 and 142 TB patients among ICE detainees in 2004 and 2005, respectively. Patients reported from facilities without DIHS staffing increased

Table 2. Tuberculosis among ICE detainees by mycobacterial culture results, AFB smear, and symptoms, 2004–2005

Culture results	AFB smear results	Cases <i>n</i> (%)	Symptomatic cases <i>n</i> (%)
Culture positive	Positive	53 (24.3)	12 (22.6)
	Negative	66 (30.3)	11 (16.7)
	Missing	8 (3.7)	0 (0.0)
Subtotal culture positive		127 (58.3)	23 (18.1)
Culture negative	Positive	11 (5.0)	2 (18.2)
	Negative	65 (29.8)	11 (16.9)
	Missing	1 (0.5)	0 (0.0)
Subtotal culture negative		77 (35.3)	13 (16.9)
Culture result missing	Positive	6 (2.8)	0 (0.0)
	Negative	3 (1.4)	0 (0.0)
	Missing	5 (2.3)	0 (0.0)
Subtotal culture result missing		14 (6.4)	0 (0.0)
Total		218 (100)	36 (16.5)

AFB, acid-fast bacilli; ICE, Immigration and Customs Enforcement.

from 8 in 2004 to 18 in 2005. Five patients were reported during two instances of custody for the same individual; three of these were reported > 12 months apart and were counted twice.

Tuberculosis patients by culture result, AFB smear, and presence of symptoms at diagnosis are presented in Table 2. Only 23 patients (18.1%) of 127 with a positive-culture result reported TB symptoms at diagnosis. The TB rate in facilities with DIHS staff was 82.6 and 121.5 per 100,000 initial screenings in 2004 and 2005, respectively. The frequency distribution and case rates in 2005 by facility are displayed in Table 3 for all reported patients and separately for culture-confirmed patients. Of the five patients who returned to custody during 2004–2005, one was initially sputum smear negative and culture positive and not started on treatment; he returned to custody 1.5 years later with positive sputum smears and cultures. The other four repeat patients were started on treatment while initially in custody. Two who returned to ICE custody > 2 years later had positive sputum smears initially and negative sputum smears upon return. One of these had positive cultures and no reported drug resistance upon return; the other was classified as culture negative TB upon return. One returned to ICE custody 10 days following repatriation and was sputum smear negative, culture positive, and sensitive to first-line medications upon return. One had isoniazid resistance and was transferred to U.S. Marshals custody; he returned to ICE custody 6 months later and had continued treatment during custody transfers.

Of the 218 TB patients in 2004–2005, 202 (92.7%) were male. Of 216 patients with pulmonary TB, 22 (10.2%) had cavitory lesions on chest radiograph, and

Table 3. TB cases and case rates^a among ICE detainees by facility, 2005

Facility	Total screenings	TB cases, <i>n</i>	Culture-confirmed TB cases, <i>n</i>	Overall TB case rate	Culture-confirmed TB case rate
Aguadilla PR	1,340	0	0	0.0	0.0
Buffalo NY	2,794	0	0	0.0	0.0
El Centro CA	5,622	3	3	53.4	53.4
El Paso TX	6,479	4	4	61.7	61.7
Elizabeth NJ	2,343	0	0	0.0	0.0
Florence AZ	18,897	8	8	42.3	42.3
Houston TX	4,799	3	3	62.5	62.5
Krome (Miami) FL	3,645	5	4	137.2	109.7
Pearsall TX	7,795	13	3	166.8	38.5
Port Isabel TX	14,277	66	15	462.3	105.1
Queens NY	245	0	0	0.0	0.0
San Diego CA	10,889	13	10	119.4	91.8
San Pedro	17,167	8	6	46.6	35.0
Tacoma WA	5,778	1	1	17.3	17.3
Division of Immigration Health Services total	102,070	124	57	121.5	55.8
Denver CO CDF	NA	2	2	—	—
Laredo TX CDF	NA	7	5	—	—
Other contract/IGSA ^b	NA	9	8	—	—
<i>Total</i>		142	72	—	—

^aRates are expressed per 100,000 initial intake screenings.

^bThese are local jails nationwide that house ICE detainees under agreement with ICE.

CDF, contract detention facility; ICE, Immigration and Customs Enforcement; IGSA, intergovernmental service agreement; TB, tuberculosis.

16 TB patients had HIV infection or AIDS reported (11.3% of 142 with HIV or AIDS results reported; 7.3% of all TB patients). Twelve (21.8%) of 55 patients in 2004 with cultures positive for *Mycobacterium tuberculosis* complex were reported with resistance to at least one drug, including one (1.8%) with multidrug-resistant TB (resistant to isoniazid and rifampin). Thirteen patients (18.1%) of 72 in 2005 were reported with resistance to at least one drug, including three (4.2%) with multidrug-resistant TB.

Table 4 presents reported TB patients by country of nationality and release status. Of the 218 patients with TB, 31 (14.2%) were released in the U.S. The top four countries accounted for 184 patients (84.4%). The greatest numbers of patients were among people from Central America (104, 47.7%) and Mexico (83, 38.1%). Patients with TB were in ICE custody for an average 75.4 days (median 61, range <1 to 430). The majority (190/218 [87.2%]) started treatment before they were released or removed. Of those started on treatment during or before ICE custody, an average of 82.6 days was spent in treatment before release or repatriation (median 68, range 1 to 460).

Discussion

These data document TB cases in a unique group for which no previous data have been reported. An opportunity exists for detecting infectious TB and initiating treatment when detainees are routinely screened for TB upon facility admission. The increase in case rates may be a result of improved reporting, increased use of digital radiography in new facilities, and higher facility throughput due to Secure Border Initiatives.^{9,13}

Approximately 45% of these patients had negative cultures in 2005 compared with approximately 21% of

Table 4. Tuberculosis cases among ICE detainees by country of nationality and initial release status, 2004–2005

Country	Release status ^a	No. of cases	%
Mexico	Removed	74	33.9
	Released in U.S.	6	2.8
	Missing	3	1.4
Honduras	Removed	60	27.2
	Released in U.S.	4	1.8
Guatemala	Removed	24	11.0
	Released in U.S.	1	0.5
El Salvador	Removed	10	4.6
	Released in U.S.	2	0.9
Other, Latin America ^b	Removed	12	5.5
Asia/Oceania ^c	Released in U.S.	8	3.7
	Removed	4	1.8
Africa ^d	Released in U.S.	6	2.8
	Removed	0	0.0
Subtotal	Removed	184	84.4
	Released in U.S.	31	14.2
Subtotal	Missing	3	1.4
Total		218	100

^aRemoved includes deported and voluntary departures. Released in the U.S. includes patients released on bond, order of recognizance, order of supervision, immigration proceedings terminated, and transferred to U.S. Marshals. Detainees released on bond, order of recognizance, order of supervision, or transferred to U.S. Marshals could be deported at a later date.

^bBrazil, Colombia, Ecuador, Nicaragua, Panama, Peru, Cuba, Dominican Republic, and Haiti.

^cChina, Indonesia, Philippines, South Korea, Taiwan, and Vietnam.

^dEritrea, Somalia, and Sudan.

ICE, Immigration and Customs Enforcement.

patients reported nationally.¹ Two facilities accounted for most patients with negative culture results. This might be a result of early detection of TB and possible over-diagnosis of culture-negative patients in these facilities. The proportion of symptomatic patients at diagnosis (18.1% of culture-confirmed patients) is low compared with 52% found in federal prisons,¹⁴ suggesting that patients in ICE custody are diagnosed earlier in their disease progression, or are not accurately reporting symptoms. Early detection with digital radiography helps minimize exposures and transmission, since patients are started on treatment early and are placed in airborne infection isolation before being housed in the general population.

The patients in this study were not evaluated vis-a-vis meeting the national case definition for reporting to the CDC by local jurisdictions. Assuming that not all of the culture-negative patients in the ICE cohort meet the CDC case definition, the true case rate in this population would fall somewhere between the reported culture-confirmed and overall rates. The culture-confirmed case rate for ICE detainees is 2.5 times higher than case rates in the U.S. foreign-born populations.¹ Higher rates among ICE detainees might be expected because undocumented immigrants do not undergo TB screening before entering the U.S. is required for legal immigrants, refugees, and status adjusters.¹⁵⁻¹⁷ ICE detainees also over-represent nations where TB case rates are higher.¹⁸ The majority of persons reported with TB were from Mexico and Central America, reflecting the fact that during fiscal year 2006, Mexicans and Central Americans accounted for 80% of admissions to ICE custody (unpublished data).

The ICE does not deport detainees with TB as long as they are known to be contagious. However, they are frequently released or repatriated before their final culture and drug susceptibility results are available. If not started on treatment, such cases represent missed opportunities to provide early treatment and prevent transmission. Those who do start treatment are usually repatriated before treatment completion. One approach to this continuing public health threat is to help countries with limited resources enhance TB prevention and control efforts to achieve decreased TB rates.¹⁹

Two national working groups have published reports that address the public health importance of the continuity of TB therapy for patients in ICE custody.^{7,20} A governmental ad-hoc working group was established in 2002 to address concerns regarding patients who interrupt TB therapy when deported. With guidance from this working group, ICE and DIHS have established policies and procedures for collaborating with TB control programs, foreign national TB programs, and programs that facilitate international TB referrals, continuity of care, and treatment completion. Through these collaborations, ICE detainees with confirmed or

suspected TB disease are routinely enrolled in CureTB (San Diego County Health Department, San Diego CA), and TBNNet (Migrant Clinicians Network, Austin TX); ICE detainees from Mexico are also referred using the Binational TB Card.²¹ The data in this study also demonstrate the importance of good communication and coordination with state and local health authorities domestically, since 14% of ICE patients were released in the U.S. Most patients were not in ICE custody long enough to complete treatment, suggesting that continuity of care efforts are extremely important.

This study presents information about people who are at risk for TB and are not captured as a unique group in national TB surveillance or published reports. Public health authorities must address case management needs of TB patients in ICE custody, including transfer of information among law enforcement systems.

Limitations include incomplete collection of TB data for ICE detainees who are housed at facilities without DIHS staffing. Some facilities use the TST rather than the chest x-ray, which may be superior for identifying TB disease cases.²² Denominators (total initial screenings) used to calculate rates were not available for facilities without DIHS staffing nor are they available by country of nationality. Denominators also include recidivist admissions to custody, whereas relatively few reported that TB patients had repeat admissions to ICE custody during the reporting period, which may artificially inflate the denominator and subsequently underestimate the true rate.

In conclusion, ICE detainees represent a group with high TB rates and case management complicated by frequent movement and deportation. Because of the rapidity with which this population moves, conventional public health measures to provide uninterrupted directly observed therapy often fail. Unique collaborations and a better understanding of the ICE detention system are required to support completion of treatment in this high-risk population.

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