



NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

**TB ANYWHERE IS TB EVERYWHERE: THE
INTERSECTION OF U.S. IMMIGRATION
ENFORCEMENT POLICY AND TB**

by

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September 2016

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IMMIGRATION ENFORCEMENT POLICY AND TB**

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ABSTRACT

Tuberculosis (TB) is a significant health issue to both the general public and the officers who enforce our nation's immigration laws. Current immigration enforcement policies increase the likelihood that immigration officers will encounter people with TB. Should the United States alter its immigration enforcement policies to address more directly the threat that tuberculosis poses to public health? This thesis reviews this question through the lens of the Advisory Council on Tuberculosis's recommendation that the priority is to identify and treat all cases of active TB. This thesis provides a policy options analysis examining the status quo and three options suggested in the literature on TB: cure TB before removal, increase international cooperation in treating TB, and increase TB testing. This policy analysis identifies gaps in the Department of Homeland Security's (DHS) ability to identify and treat active TB in the aliens encountered through the immigration enforcement process. Additionally, it recommends that the DHS require that all detained aliens be screened for active TB by use of a chest X-ray. It further recommends that the DHS completely cure all aliens found to have active TB, whether detained or released from detention, prior to their removal from the United States.

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LIST OF ACRONYMS AND ABBREVIATIONS

ACET	Advisory Council for the Elimination of Tuberculosis
AFB	acid fast bacilli
ATD	alternatives to detention
BCG	bacille Calmette-Guérin vaccine
BIA	Board of Immigration Appeals
CBP	U.S. Customs and Border Protection
CDC	Centers for Disease Control and Prevention
CDF	contract detention facility
CIS	U.S. Citizenship and Immigration Services
DHS	Department of Homeland Security
DIHS	Division of Immigration Health Services, now known as IHSC
DOT	directly observed therapy
DOTS	directly observed therapy short-course
EOIR	Executive Office for Immigration Review
FY	fiscal year
GAO	Government Accountability Office
GPS	Global Positioning System
HHS	U.S. Health and Human Services
ICE	U.S. Immigration and Customs Enforcement
IGRA	interferon-gamma release assay
IGSA	inter-governmental service agreement
IHSC	Immigration Health Services Corp, a part of ICE
INA	Immigration and Nationality Act
INS	Immigration and Naturalization Service
ISAP	Intensive Supervision Appearance Program
LTBI	latent tuberculosis infection
MDR-TB	multidrug-resistant tuberculosis
m-health	mobile health
NIOSH	National Institute for Occupational Safety and Health
OIG	Office of the Inspector General

PBNDs	Performance Based National Detention Standards
PHSP	Public Health, Safety, and Preparedness Unit
SPC	service processing center
TB	tuberculosis
TST	tuberculin skin test
U.S.C.	United States Code
XDR-TB	extensively drug-resistant tuberculosis

EXECUTIVE SUMMARY

A. PROBLEM STATEMENT

Tuberculosis (TB) is a significant health issue to both the general public and the officers who enforce our nation's immigration laws. According to the Centers for Disease Control and Prevention (CDC), in 2014 there were 9,241 cases of TB reported in the United States, and America spent \$435 million treating cases of TB.¹ In 2013, 555 people in the United States died from TB; however, the burden in the rest of the world is much higher. According to the World Health Organization (WHO), "About one third of the world's population is infected with tuberculosis (TB) bacteria."² The WHO also reported, "Globally, 5% of TB cases were estimated to have had multidrug-resistant TB (MDR-TB) in 2014."³

U.S. immigration officers encounter people infected with TB while enforcing the nation's immigration laws. The current immigration enforcement policies of the Department of Homeland Security (DHS) are laid out in *Policies for the Apprehension, Detention, and Removal of Undocumented Immigrants* (hereafter "the 2014 DHS policy"), issued on November 20, 2014 by DHS Secretary Jeh Johnson.⁴ The 2014 DHS policy made the apprehension of aliens attempting to cross the border illegally and aliens convicted of felony offenses some of DHS's top immigration enforcement priorities. The incidence of TB along the U.S. border with Mexico is higher than the general rate for either country, and incarcerated populations are at an enhanced risk for TB infection. Thus, while the 2014 DHS policy does not directly address infectious diseases, an unintended consequence of the policy is that the DHS enforcement priorities include categories of aliens known to be at increased risk for TB. Does the current policy make

¹ Centers for Disease Control and Prevention, "Take on TB Infographic," accessed July 13, 2016, <http://www.cdc.gov/tb/publications/infographic/pdf/take-on-tuberculosis-infographic.pdf>.

² Ibid.

³ World Health Organization, "10 Facts about Tuberculosis," accessed July 13, 2016, <http://www.who.int/features/factfiles/tuberculosis/en/>.

⁴ Department of Homeland Security, *Policies for the Apprehension, Detention, and Removal of Undocumented Immigrants* [memo] (Washington, DC: Department of Homeland Security, 2014).

TB less of a risk to public health or more of a risk? If the risk is greater due to the current policy, then how should that policy be changed?

B. RESEARCH QUESTION

Should the United States alter its immigration enforcement policies to address more directly the threat that tuberculosis poses to public health?

C. METHOD

This thesis uses policy options analysis to assess whether the U.S. should change its immigration enforcement policies to address more directly the threat that tuberculosis poses to public health. A review of the literature on immigration and tuberculosis suggested three policy options to augment the status quo. The first is to cure TB in unlawful immigrants prior to their removal. The second is to increase international cooperation between the United States and the receiving country to treat TB after the removal of TB infected aliens from the United States. The third is to increase the amount of TB testing that the DHS performs on migrants encountered by immigration officers. According to the Advisory Council for the Elimination of Tuberculosis (ACET), when creating a strategy to combat TB, “the first priority is identifying and completely treating all persons who have active TB.”⁵ The optimal policy solution will accomplish this objective.

This thesis does not review all immigration policies, but only immigration enforcement policies that directly pertain to addressing the threat of TB. For example, the thesis does not review whether or not to require additional TB testing for people legally entering the United States with a visitor’s visa, or whether to require additional TB testing as a part of the naturalization process.

⁵ Alan Bloch, “Screening for Tuberculosis and Tuberculosis Infection in High-Risk Populations: Recommendations of the Advisory Council for the Elimination of Tuberculosis,” *Morbidity and Mortality Weekly Report* 44, no. RR-11 (1995): 18–34.

E. FINDINGS AND RECOMMENDATIONS

The United States has one of the lowest incidences of TB in the world. The countries from which the United States receives the largest numbers of unlawful migrants and the countries to which the DHS deports the most people, all have much higher rates of TB. This indicates that a higher rate of TB is to be expected in the people encountered by DHS immigration officers, and also that the United States achieves more optimal TB treatment outcomes. Statistics from the DHS show that as many as one quarter of all aliens removed from the United States return. The United States maintains a clear public health interest in treating aliens with TB disease who are in the removal process until that disease is cured. It is also necessary to completely treat TB because improper or incomplete treatment of TB disease can result in a return to a contagious state, acquired drug resistance, transmission of the disease to others, and poor outcomes, including death.

The incidence of TB among the foreign-born in the United States is 12 times greater than that of the general population, and the incidence in U.S. Immigration and Customs Enforcement (ICE) custody is as much as 33 times greater. Current TB-related immigration enforcement policies address TB disease to control infection in a congregate living setting, such as detention centers. Aliens are tested for TB during the intake process at detention centers, and aliens with TB disease are treated until they are no longer contagious, but not necessarily cured, before removal from the United States. Detection and treatment of TB are complicated due to detention facilities operating under different detention standards.

Current policies neither detect all cases of active TB nor treat to completion all cases of active TB. It is, therefore, necessary to change U.S. immigration enforcement policies to achieve the TB control objective. No single policy change will achieve the optimal policy outcome. Instead, two of the options must be implemented at the same time: cure TB prior to removal and increase TB testing. While universal testing of all encountered aliens would be the most effective option, it would also be both expensive and difficult to implement. Instead, the recommended policy changes should be applied to aliens either in ICE detention or released from detention. ICE's Alternatives to

Detention (ATD) program should be used to help alleviate potential legal issues with continued detention of aliens so that they may receive treatment for TB disease. At the same time, the DHS must arm its employees against TB. Training on TB signs and symptoms should be delivered to DHS immigration officers, and officers should also be made aware that the CDC recommends periodic TB testing for certain professions, including correctional and healthcare workers.

There are many barriers to implementing these policy changes. Increased testing would require additional funding, equipment, personnel, and facilities. The DHS is only able to pay for and provide treatment case management for aliens in custody. Once released from custody the burden falls upon the public health system having jurisdiction over the alien's place of residence. Increased testing would result in an increase in the number of TB cases in the public health system, and additional research is necessary to determine if the public health system is able to cope with this increase. It is possible that both the public health system and the general public would not view this increase favorably. There would also be many logistical challenges to delivering healthcare to aliens not in detention even if they were enrolled in ATD. For example, the alien may reside in an area with limited public health resources.

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I. INTRODUCTION

A. PROBLEM STATEMENT

Tuberculosis (TB) is a significant health issue to both the public and the officers who enforce our nation's immigration laws. According to the Centers for Disease Control and Prevention (CDC), in 2014 there were 9,241 cases of TB reported in the United States, and America spent \$435 million treating cases of TB.¹ In 2013, 555 people in the United States died from TB.² The burden in the rest of the world is much higher. According to the World Health Organization (WHO), "About one third of the world's population is infected with tuberculosis (TB) bacteria."³ The WHO also reported, "Globally, 5% of TB cases were estimated to have had multidrug-resistant TB (MDR-TB) in 2014."⁴

U.S. immigration officers will encounter people infected with TB while enforcing the nation's immigration laws. The current immigration enforcement policies of the Department of Homeland Security (DHS) are laid out in *Policies for the Apprehension, Detention, and Removal of Undocumented Immigrants* (hereafter "the 2014 DHS policy"), issued on November 20, 2014 by DHS Secretary Jeh Johnson. The 2014 DHS policy made the apprehension of aliens attempting to cross the border illegally and aliens convicted of felony offenses some of DHS's top immigration enforcement priorities.⁵ The incidence of TB along the U.S. border with Mexico is higher than the general rate for

¹ Centers for Disease Control and Prevent, "Take on TB Infographic," accessed July 13, 2016, <http://www.cdc.gov/tb/publications/infographic/pdf/take-on-tuberculosis-infographic.pdf>.

² Ibid.

³ World Health Organization [WHO], "10 Facts about Tuberculosis," accessed July 13, 2016, <http://www.who.int/features/factfiles/tuberculosis/en/>.

⁴ World Health Organization, "Multidrug-Resistant Tuberculosis (MDR-TB): 2015 Update," accessed July 14, 2016, www.who.int/tb/challenges/mdr/mdr_tb_factsheet.pdf.

⁵ U.S. Department of Homeland Security [DHS], *Policies for the Apprehension, Detention, and Removal of Undocumented Immigrants* [memo] (Washington, DC: U.S. Department of Homeland Security, 2014).

either country, and incarcerated populations are at an enhanced risk for TB infection.⁶ Thus, while the 2014 DHS policy does not directly address infectious diseases, an unintended consequence of the policy is that the DHS enforcement priorities include categories of aliens known to be at increased risk for TB. Does the current policy make TB less of a risk to public health or more of a risk? If the risk is greater due to the current policy, then how should that policy be changed?

The U.S. Immigration and Customs Enforcement (ICE) detention standards govern the treatment of alien detained by ICE. The most recent standards covering the medical care requirements for aliens detained for more than 72 hours are the 2011 Performance Based National Detention Standards (2011 PBNDS).⁷ The Immigration Health Services Corps (IHSC), a division of ICE, follows the 2011 PBNDS at those facilities other than family residential centers, where it directly provides medical coverage. However, three other sets of standards are in effect at different detention facilities around the country: the 2000 National Detention Standards, the 2008 Performance Based Detention Standards, the Family Residential Standards.⁸ This multiplicity of care standards greatly complicates ICE's response to communicable diseases.

The 2011 PBNDS requires that an alien receive a TB screening following CDC guidelines within 12 hours of arriving at the detention facility. Either a medical professional or a specially trained detention officer may perform the screening. The detainee may only be placed in a housing unit once the screening is complete. Detention facilities are not required to screen detainees who were in the continuous custody of a law

⁶ Mark Lobato and J. Peter Cegielski, "Preventing and Controlling Tuberculosis along the US-Mexico Border," *Morbidity and Mortality Weekly Report* 50, no. RR1 (2001): 1–2, <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5001a1.htm>; Centers for Disease Control and Prevention [CDC], "TB in Correctional Facilities in the United States," last modified September 1, 2012, <http://www.cdc.gov/tb/topic/populations/correctional/default.htm>.

⁷ U.S. Immigration and Customs Enforcement [ICE], "2011 Operations Manual ICE Performance-Based National Detention Standards: Part 4.3—Medical Care," accessed July 13, 2016, www.ice.gov/detention-standards/2011/.

⁸ U.S. Immigration and Customs Enforcement [ICE], "ICE Detention Standards," last modified February 24, 2012, www.ice.gov/factsheets/facilities-pbnds; U.S. Immigration and Customs Enforcement [ICE], "Family Residential Standards," accessed July 19, 2016, <https://www.ice.gov/detention-standards/family-residential>.

enforcement agency and who had a documented TB screening less than six months old. Aliens who remain in detention for more than a year must receive annual or periodic TB tests. Detention facilities are also required to conduct a comprehensive health examination within 14 days of arrival. This comprehensive assessment includes both physical and mental health screenings and must be performed by a healthcare practitioner. However, detention facilities are not required to provide assessments to any detainee who has had a documented comprehensive health assessment within the last 90 days.

According to the CDC, the rate of TB infection for aliens detained by ICE is 12 times higher than the rate of infection in the general population.⁹ If detainees have TB symptoms or are believed to have active TB, then they are placed in isolation and tested for active TB disease. According to the standard, “Patients with suspected active TB shall remain in airborne infection isolation until determined by a qualified provider to be noncontagious in accordance with CDC guidelines.”¹⁰

The 2011 PBDNS includes numerous procedural safeguards for managing confirmed and suspected cases of active TB.¹¹ For instance, the detention facility must report all TB cases to state or local health departments within one day of meeting legally required reporting criteria which vary by jurisdiction. The facility must also notify the IHSC PHSP (recently re-named the Public Health, Safety, and Preparedness Unit or PHSP) and provide biographical information, a case summary report, and a treatment status and start date. The detention facility must notify the IHSC PHSP of any hospitalizations, facility transfers, releases, or removals of the person with TB. This notification helps to coordinate continuity of care if ICE releases the detainee from custody before removal and to enlist local health department assistance in arranging continuity of care if the alien is released or removed to another country. Multidrug-

⁹ C. Nolan et al., “Post-detention Completion of Tuberculosis Treatment for Persons Deported or Released from the Custody of the Immigration and Naturalization Service,” *Morbidity and Mortality Weekly Report* 52, no. 19 (2003): 438–441, <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5219a3.htm>.

¹⁰ ICE, “2011 Operations Manual,” 283.

¹¹ *Ibid.*, 283–284.

resistant and extensively drug-resistant TB cases must be coordinated with the state or local health department to create a customized treatment regimen.¹²

The final stage of the process is release from custody or removal from the United States. Aliens are educated about their TB treatment and provided with a 15-day supply of medications when transferred, released, or removed.¹³ It is important to note that *noncontagious* is not synonymous with *cured*. Improper or incomplete treatment of TB disease can result in a return to a contagious state, acquired drug resistance, transmission of the disease to others, and poor outcomes, including death.¹⁴ Deported persons are at risk for known factors leading to the creation of drug-resistant TB, factors such as failing to take all of their medication or residing in an area where drug-resistant TB is common.

The CDC recommends directly observed therapy (DOT) for all TB treatment.¹⁵ DOT is a protocol “in which patients are observed to ingest each dose of anti-tuberculosis medications, to maximize the likelihood of completion of therapy.”¹⁶ It is possible to refer a detainee with TB who is released from custody but remains in the community to local health officials for continuity of care including DOT.

Deported aliens encounter an entirely different situation. ICE policy is that deportees receive a 15-day supply of medication, but 15 days is a small fraction of the time necessary to cure TB.¹⁷ Treatment of TB disease can take between six and 24 months depending on drug resistance and other factors.¹⁸ Detention facilities are required to coordinate through the IHSC PHSP to help ensure continuity of care for TB positive aliens removed from the United States. This is normally done through a referral to the

¹² Ibid., 283.

¹³ Ibid., 283, 297.

¹⁴ Centers for Disease Control and Prevention [CDC], “Treatment for TB Disease,” last modified April 5, 2016, <http://www.cdc.gov/tb/topic/treatment/tbdisease.htm>.

¹⁵ American Thoracic Society, “Treatment of Tuberculosis,” *Morbidity and Mortality Weekly Report* 52, no. RR11 (2003): 1–77.

¹⁶ Ibid. The World Health Organization uses the term directly observed therapy, short-course (DOTS) instead of directly observed therapy (DOT). For consistency with the CDC, the term DOT is used throughout this thesis.

¹⁷ ICE, “2011 Operations Manual.”

¹⁸ CDC, “Treatment for TB Disease.”

health department in the receiving country. ICE has no authority to enforce this referral either on the part of the alien or the part of the foreign government or health department. Once in their country of origin aliens may travel to or reside in a location where they have limited access to healthcare, have limited funding to buy medication and pay for treatment, or cease treatment if they do not feel sick.

Removal from the United States, particularly for citizens of Central America and others who illegally cross the U.S. border with Mexico, however, does not mean that the alien will never again be a member of an American community. For example, in fiscal year (FY) 2014, the U.S. Customs and Border Protection (CBP) Office of Border Patrol removed 205,058 persons. Of those, 54,115, slightly more than one-quarter of aliens arrested, had been previously removed from the United States.¹⁹ According to one CDC report, “During January 2000–March 2001, CURE-TB reported that 25% of TB patients deported to Latin America with known follow-up returned to the United States (K. Moser, San Diego Health and Human Services Agency, personal communication, 2001).”²⁰ The United States maintains a clear public health interest in aliens with TB until the disease is cured regardless of whether they will be removed from the United States.

B. RESEARCH QUESTION

Should the United States alter its immigration enforcement policies to address more directly the threat that tuberculosis poses to public health?

C. RESEARCH DESIGN

This section reviews the objective and boundaries of the research used in this thesis. It also defines the optimal policy solution against which the policy options presented in this thesis are evaluated.

¹⁹ U.S. Immigration and Customs Enforcement [ICE], *ICE Enforcement and Removal Operations Report Fiscal Year 2014* (Washington, DC: Department of Homeland Security, 2014), 8.

²⁰ Nolan et al., “Post-detention Completion.”

1. Objective

This thesis uses policy options analysis to assess whether the United States should change its immigration enforcement policies to address more directly the threat that tuberculosis poses to public health. It is necessary to review policies about both immigration enforcement and tuberculosis to accomplish this objective. Laws and policies concerning immigration enforcement are the exclusive provinces of the federal government. The amended U.S. Immigration and Nationality Act (Title 8 of the U.S. Code) provides the specific set of laws applying to apprehension, detention, and removal of aliens from the United States. The policies of the U.S. Department of Homeland Security, and its agencies, U.S. Immigration and Customs Enforcement and U.S. Customs and Border Protection, direct the application of the law.

There are laws and policies concerning tuberculosis and infectious disease, in general, at all levels of government. Even though federal regulations, such as 42 U.S. Code § 264 Regulations to Control Communicable Diseases, normally take precedence over state statutes, there are instances where federal policy defers to local law. For example, the ICE 2011 Performance Based Detention Standards Part 4.3 Medical Care contains a requirement that detention facilities, “Manage infectious diseases and report them to local and/or state health departments in accordance with established guidelines and applicable laws.”²¹

Infectious diseases do not stop at borders. A review of some of the public health policies and practices of other countries is necessary to provide an accurate evaluation of the effects of U.S. policy options. For example, Mexico inoculates its citizens against TB while the United States does not. Mexico also uses a different population sample and method to test for drug-resistant TB than does the United States. Therefore, the two countries could experience very different results from the same policy change. Additional information on international TB is in Chapters II and VI.

²¹ ICE, “2011 Operations Manual.”

2. Boundaries of the Research

This thesis does not review all immigration policies, but only immigration enforcement policies that directly pertain to addressing the threat of TB. For example, the thesis does not review whether or not to require additional TB testing for people legally entering the United States with a visitor's visa or whether to require additional TB testing as a part of the naturalization process. However, there is overlap between legal and illegal immigration. If legal visitors stay in the United States longer than permitted by their visa, then they become subject to immigration enforcement. Legal migrants convicted of a crime might also be rendered deportable. Moreover, there are also more nuanced categories of people, such as those seeking political asylum in the United States. Asylum seekers are frequently detained for a least some period during the asylum process and thus are subject to ICE detention policies on healthcare.

It is not practical to study tuberculosis policies in every country in the world or even every American state. International consideration for this theses focuses on Mexico, El Salvador, Guatemala, Honduras, China, India, and Russia. Mexico is included due to its border with the United States and the importance of the border as an epidemiological region. El Salvador, Guatemala, and Honduras are included because they are among the top five sources of unauthorized immigrants in the United States, along with Mexico and India.²² Drug-resistant TB occurs all over the world, but the highest numbers of multi-drug resistant TB cases occur in China, India, and Russia.²³

3. Defining the Optimal Policy Solution

According to the Advisory Council for the Elimination of Tuberculosis (ACET), when creating a strategy to combat TB, "the first priority is identifying and completely

²² Jeffrey S. Passel and D'vera Cohn, *Unauthorized Immigrant Totals Rise in 7 States, Fall in 14* (Washington, DC: Pew Research Center, 2014), <http://www.pewhispanic.org/2014/11/18/chapter-2-birthplaces-of-u-s-unauthorized-immigrants/>.

²³ Steve Olson, Elizabeth English, and Anne Claiborne, *The New Profile of Drug-Resistant Tuberculosis in Russia: A Global and Local Perspective: Summary of a Joint Workshop* (Washington, DC: National Academies Press, 2011), 9.

treating all persons who have active TB.”²⁴ The optimal policy solution achieves this objective.

D. LITERATURE REVIEW

This policy options analysis of immigration enforcement and tuberculosis relies heavily on a review of the existing literature. The review begins with an overview of the disease tuberculosis, current trends with the disease, populations of special concern, and geographic areas of special concern. People in custody comprise one such population of concern, and this subject receives a section in the review. The border between the United States and Mexico is an area of particular geographic concern due to the frequency with which people cross the border both legally and illegally. The literature review presents an in-depth review of cross-border travel and social factors involved in tuberculosis treatment. Strategies to deal with TB form the backbone of the thesis and thus receive a detailed examination in the literature review. The literature review also includes a section on TB cases studies because individual cases illuminate particular points, such as the transmission of tuberculosis from person to person and the creation of drug-resistance due to improper treatment. Finally, the review covers gaps in the current literature on TB as it relates to immigration enforcement policy.

1. The State of Tuberculosis in 2016

There is universal consensus on the worldwide state of TB in 2016: TB is decreasing in developed countries, increasing in developing countries, and drug-resistant forms of TB are increasing worldwide. There is one definitive source on the subject: the World Health Organization (WHO). The world TB situation has changed drastically in the last two decades. In 1993, the WHO declared TB a “world health emergency.”²⁵ In 2006, the WHO released the Stop TB Strategy;²⁶ the goal of the strategy was to

²⁴ Alan Bloch, “Screening for Tuberculosis and Tuberculosis Infection in High-Risk Populations: Recommendations of the Advisory Council for the Elimination of Tuberculosis,” *Morbidity and Mortality Weekly Report* 44, no. RR-11 (1995): 18–34.

²⁵ John Grange and Alie Zumla, “The Global Emergency of Tuberculosis: What is the Cause?,” *The Journal of the Royal Society for the Promotion of Health* 122, no. 2 (2002): 78–81.

²⁶ World Health Organization, “Tuberculosis (TB): The End TB Strategy,” accessed July 13, 2016, <http://www.who.int/tb/strategy/en/>.

“drastically reduce the global burden of TB by 2015.”²⁷ In 2015, the WHO declared that this goal had been achieved.²⁸ Despite gains against the disease, the literature shows that TB is still one of the world’s primary public health concerns.

The *Global Tuberculosis Report* published by the WHO every year since 1997 is the definitive source for worldwide TB statistics. A frequently cited WHO statistic is that one-third of the world’s population has TB.²⁹ According to the *Global Tuberculosis Report 2014*, in 2013, nine million people developed TB, 1.5 million people died from the disease, and 480,000 developed multidrug-resistant TB.³⁰ A particularly alarming statistic is that the number of multidrug-resistant TB cases in 2013 was three times the number of 2009. Multiple sources have noted that although the worldwide incidence of TB is on the decline, the incidence of drug-resistant TB, multidrug-resistant TB, and extensively-drug resistant TB are on the increase.³¹ No region of the world is free from TB, but the greatest prevalence of TB cases are in southeast Asia and Africa.³²

The TB picture in the United States matches the pattern in the rest of the world in that TB is on the decline. The incidence of TB in the United States has been steadily falling since 1990, and in 2013 was 4.1 cases per 100,000 people.³³ According to the Centers for Disease Control and Prevention (CDC), there were 13,299 new cases of TB in

²⁷ Ibid.

²⁸ WHO, “10 Facts about Tuberculosis.”

²⁹ WHO, “10 Facts About Tuberculosis;” *Malaria and TB: Implementing Proven Treatment and Eradication Methods: Hearing before the Subcommittee on Africa, Global Human Rights, and International Operations: Hearing before the Committee on International Relations, House of Representatives*, 109th Cong. (2005), <https://www.gpo.gov/fdsys/pkg/CHRG-109hhrg20915/content-detail.html>.

³⁰ World Health Organization, *Global Tuberculosis Report 2014* (Geneva, Switzerland: World Health Organization, 2014), 14.

³¹ *Malaria and TB*; Jaqueline Achkar et al., “Differences in Clinical Presentation among Persons with Pulmonary Tuberculosis: A Comparison of Documented and Undocumented Foreign-Born to US-Born Persons,” *Clinical Infectious Diseases* 47, no. 10 (2008): 1277–1283.

³² Ibid.

³³ World Health Organization, “United States of America,” accessed July 13, 2016, https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FPROD%2FEXT%2FTBCountryProfile&ISO2=US&LAN=EN&outtype=html.

the United States in 2007, half of the number of new TB cases in 1993.³⁴ However, this does not mean that TB is no longer a public health concern in the United States.

Even as the national TB rate has decreased in the United States, the percentage of TB cases among the foreign-born population has increased. In 2008, a study of one public hospital in New York City found that almost 70 percent of people treated for TB were foreign-born, and more than half of those were undocumented migrants.³⁵ In 2009, the *Chicago Tribune* noted that in 2007, for the first time, the majority of TB cases in Chicago were among the foreign-born population.³⁶ In addition, a 2009 study found that the rate of newly diagnosed TB infections in the foreign-born population was nearly 10 times higher than in the native population.³⁷ According to the CDC, “In 2007, persons born in Mexico, Philippines, Vietnam, and India accounted for over half of the U.S. TB cases among foreign-born persons.”³⁸ By 2012, the percentage had increased to 63.³⁹ The Migrant Clinicians Network noted that in 2008 the rate of TB in the foreign-born population was ten times higher than that of the U.S. born population.⁴⁰

One region of special concern in the United States is the area along the border with Mexico. Tuberculosis rates in the border region are higher than the general rate in either country. For example, one article noted that TB rates in McAllen, Texas are three times higher than the national average.⁴¹ The same article noted that TB rates in the

³⁴ Oscar Avila and Margaret Ramirez, “Health Departments Fight Tuberculosis on both Sides of the U.S. Border with Mexico: Mexican Immigrants Often Contract the Disease before Entering US, Bringing It North to Cities Like Chicago, Officials Say,” *Chicago Tribune*, February 6, 2009, http://articles.chicagotribune.com/2009-02-16/news/0902150175_1_tb-tuberculosis-border.

³⁵ Achkar et al., “Differences in Clinical Presentation.”

³⁶ Avila and Ramirez, “Health Departments Fight Tuberculosis.”

³⁷ Yecai Liu et al., “Overseas Screening for Tuberculosis in US—Bound Immigrants and Refugees,” *New England Journal of Medicine* 360, no. 23 (2009): 2406–2415.

³⁸ R. Pratt et al., “Trends in Tuberculosis—United States, 2007,” *Morbidity and Mortality Weekly Report* 57, no. 11 (2008): 281–285, <http://www.cdc.gov/mmwr/R/preview/mmwrhtml/mm5711a2.htm>.

³⁹ Jamie Morano et al., “Latent Tuberculosis Infection Screening in Foreign-Born Populations: A Successful Mobile Clinic Outreach Model,” *American Journal of Public Health* 104, no. 8 (2014): 1508–1515.

⁴⁰ Joan Combellick, Ed Zuroweste, and Francesca M. Gany. “TBNNet: The Impact of an Innovative Public-Private Intervention on Tuberculosis Control among an Internationally Mobile Population,” *Journal of Immigrant & Refugee Studies* 9, no. 3 (2011): 229–241.

⁴¹ Avila and Ramirez, “Health Departments Fight Tuberculosis.”

border state of Tamaulipas, Mexico there was a 10 percent increase in TB cases between 2007 and 2009.⁴² Another study showed that in 2009, 77 percent of all TB cases in California were in the foreign-born population.⁴³

2. Tuberculosis in Custody

Incarcerated people are at a higher risk for TB infection than the non-incarcerated population.⁴⁴ This review identified a set of consistent factors for increased TB risk: congregate living conditions; frequent movement; cultural barriers, such as social stigma and native language; and foreign birth.⁴⁵ U.S. jails and prisons routinely screen detainees for TB during the admission process. A 2001 study by the Federal Bureau of Prisons (BOP), reviewing intake screening using both a tuberculin skin test (TST) and a chest X-ray, found that “foreign-born inmates were 5.9 times more likely to have a positive TST than U.S. born inmates, and accounted for 60% of recently diagnosed TB cases.”⁴⁶ The use of the chest X-ray in addition to the TST did not affect the incidence of TB but did result in inmates and staff being exposed to active TB for less time.

Detainees in ICE custody are also at a higher risk of TB infection.⁴⁷ In 2003 study, the Division of Immigration Health Services (DIHS), now a known as the ICE IHSC, estimated that “approximately 150 TB cases are identified annually among INS detainees in the INS service processing centers (SPCs) and contract detention

⁴² Ibid.

⁴³ Robert Deiss et al., “Influences of Cross-Border Mobility on Tuberculosis Diagnoses and Treatment Interruption among Injection Drug Users in Tijuana, Mexico,” *American Journal of Public Health* 99, no. 8 (2009): 1491–1495.

⁴⁴ Deiss et al., “Influences of Cross-Border Mobility,” CDC, “TB in Correctional Facilities.”

⁴⁵ CDC, “TB in Correctional Facilities in the United States,” Diana Schneider and Mark Lobato, “Tuberculosis Control among People in U.S. Immigration and Customs Enforcement Custody,” *American Journal of Preventive Medicine* 33, no. 1 (2007): 9–14; David Saunders et al., “Tuberculosis Screening in the Federal Prison System: An Opportunity to Treat and Prevent Tuberculosis in Foreign-Born Populations,” *Public Health Reports* 116, no. 3 (2001): 210–218.

⁴⁶ Ibid.

⁴⁷ A note on the names of immigration enforcement agencies: The Immigration and Naturalization Service, or INS, an agency of the Department of Justice, ceased to exist in 2003. It was replaced by three agencies in the U.S. Department of Homeland Security: U.S. Immigration and Customs Enforcement (ICE), U.S. Customs and Border Protection (CBP), and U.S. Citizenship and Immigration Services (CIS). The acronym INS will be used to refer to the immigration enforcement agency for all literature published up to 2003, and ICE or CBP will be used for literature published after 2003.

facilities.”⁴⁸ For clarity, ICE detains aliens in 251 jails and prisons (number as of August 2013); only 13 of those are SPCs or contract detention facilities.⁴⁹ The same study showed that the incidence of TB at the eight INS SPCs was 12 times higher than the rate of TB in the general U.S. population, and was 2.5 times higher than the rate of TB among the general foreign-born population in the United States. Another study reviewed TB rates for detainees in ICE custody between 2004 and 2005 and concluded the rate of TB was 2.5 times higher than that of the general foreign-born population.⁵⁰ However, this study was again limited as it reviewed only those 15 facilities where IHSC directly provided healthcare.

3. The Importance of Social Factors and Cross-Border Travel

The Migrant Clinicians Network has noted that the public health system was not designed to address the problems posed by a highly mobile population.⁵¹ Moreover, multiple sources noted that the border is one extended community, with patients frequently crossing both legally and illegally.⁵² In addition, several studies remarked on factors relating to immigrant status, both legal and illegal, and how it can provide barriers to TB identification and treatment. Inadequate access to healthcare for immigrants, whether in the United States or their home country, was a consistent theme. One study noted,

...despite the availability of free TB treatment in the United States and a 96% coverage rate by Directly Observed Treatment Short-Course (DOT) in Mexico, patients without long-term healthcare insurance will find the long treatment challenging, perhaps deal with drug resistance, and potentially return to or visit Mexico and transmit TB to their contacts.⁵³

⁴⁸ Nolan et al., “Post-detention Completion.”

⁴⁹ Rebecca Gambler, *Immigration Detention: Additional Actions Needed to Strengthen Management and Oversight of Facility Costs and Standards* (GAO-15-153) (Washington, DC: U.S. Government Accountability Office, 2014), www.gao.gov/assets/670/666467.pdf, 9.

⁵⁰ Schneider and Lobato, “Tuberculosis Control.”

⁵¹ Combellick, Zuroweste, and Gany, “TBNNet.”

⁵² Avila and Ramirez, “Health Departments Fight Tuberculosis;” Deiss et al., “Influences of Cross-Border Mobility;” Joseph Fitchett, Antonio Vallecillo, and Clara Espitia, “Tuberculosis Transmission across the United States-Mexico Border,” *Pan American Journal of Public Health* 29, no. 1 (2011): 57–60.

⁵³ Ibid.

Many facets of cross-border TB are explored in-depth in the literature. For instance, the University of California, San Diego conducted a study looking specifically at the population of injection drug users in Tijuana, Mexico.⁵⁴ While this is a very specific cohort, the results were consistent with the literature on the larger population of border region residents with TB. The study emphasized the repeated cross-border movement of TB patients, including those previously deported from the United States. One finding of the study was that injection drug users who reported travel to the United States at some point, and those previously deported from the United States showed much higher rates of latent TB infection than those who did not report cross-border travel. Although this study is only six years old, it cites many statistics pertaining to the high percentage of Mexican TB patients that may no longer be current due to the changing migration patterns in the United States.

A University of Arizona, Tucson study specifically examining social factors reviewed the cases of several female immigrants living on the U.S. border with Mexico. The study cited the difficulties in treating latent TB infection due to different cultural perceptions of the disease and the power imbalance between the United States and Mexico. Additionally, the study pointed out that Mexican children routinely receive a tuberculosis vaccine, and the women believed that anyone so inoculated should not be able to get TB.⁵⁵ A study of TB patients in Chiapas (a state in southern Mexico) also identified cultural perceptions, including those about traditional versus modern medicine, as a barrier to the completion of TB treatment.⁵⁶

The Yale School of Medicine published a study looking at using a mobile medical clinic to provide healthcare services, including TB screening, to impoverished neighborhoods, including a large population of undocumented migrants in New Haven,

⁵⁴ Ibid.

⁵⁵ Marylyn Morris and Joyceen Boyle, "Resistance, Health, and Latent Tuberculosis Infection: Mexican Immigrants at the US-Mexico Border," *Research and Theory for Nursing Practice: An International Journal* 32, no. 3 (2007): 185–197.

⁵⁶ Ivett Reyes-Guillen et al., "Anti-Tuberculosis Treatment Defaulting: An Analysis of Perceptions and Interactions in Chiapas, Mexico," *Salud Publica De Mexico* 50, no. 3 (2008): 251–257.

Connecticut.⁵⁷ This study was remarkable for two reasons: 1) the location was far from the U.S. border with Mexico and 2) the study reviewed the prevalence of latent TB infection (LTBI), not just active TB disease. The study identified many variables directly associated with higher incidence of LTBI, including country of birth (foreign-born people were more likely to have LTBI), sex (males were more likely to have LTBI), ethnicity (the Hispanic population had a higher incidence of LTBI), and undocumented status.⁵⁸

In 2003, the CDC reported on how various social and legal issues complicated TB treatment for aliens released from INS custody. The study specifically looked at difficulties created by the INS deporting detainees before the completion of their TB treatments.⁵⁹ Furthermore, the report noted, “Deportation before treatment completion allows for the export and re-import of TB into the United States, thus placing other detainees, law enforcement officials, and communities in the country of origin and in the United States at increased risk for exposure to persons with infectious TB.”⁶⁰ The report also noted from January 2000 to March 2001, CureTB (from the San Diego Health and Human Services Agency) reported 25 percent of Latin American deportees with known TB follow-up returned to the United States.⁶¹

4. Strategies for Addressing TB in the Immigrant Population

This literature review identified three strategies for addressing TB in the legal and illegal immigrant population. The first strategy is to increase TB testing of immigrants, and the second strategy is to increase international cooperation in managing TB treatment for deported persons. Finally, the third strategy is to cure aliens of TB before returning them to their country of origin.

The methodology for detecting TB in the immigrant population has changed as the worldwide TB situation has changed. From 1991 to 2007, CDC technical instructions

⁵⁷ Morano et al., “Latent Tuberculosis Infection Screening.”

⁵⁸ Ibid.

⁵⁹ Nolan et al., “Post-Detention Completion.”

⁶⁰ Ibid.

⁶¹ Ibid.

required chest X-rays for people migrating to the United States, with follow-up testing for those with positive X-ray diagnoses. Testing was limited as it was required only for people over 15 years of age. In 2007, the CDC began recommending that children between the two and 14 years of age receive TB skin tests if they were from countries with high rates of TB infection. It also changed the type of follow-up test administered for people with positive tests.⁶²

Several studies showed positive results from increased testing. This strategy applies equally to people applying for legal migration to the United States and undocumented migrants encountered through the criminal justice system or immigration enforcement. A 2001 study by the University of Colorado found that testing all immigrants to the United States for TB was both cost effective and efficient at reducing TB rates in the United States.⁶³ The Federal Bureau of Prisons (BOP) published a study in 2001 wherein the BOP screened every new prisoner admitted through a San Diego detention center for TB using a chest X-ray in addition to a skin test. The study concluded that the universal use of chest X-rays was not more effective at detecting TB, but it did reduce the amount of time that inmates were exposed to potentially contagious TB.⁶⁴

Australia is in a similar situation to the United States regarding the incidence of TB. Australia has one of the lowest TB rates in the world, and almost all TB cases come from its foreign-born population. A study by the Victorian Infectious Disease Service showed that testing all migrants for TB infection and then treating any positive cases was extremely effective but inefficient and costly. As an alternative, it suggested only testing

⁶² Drew Posey et al., "Implementation of New TB Screening Requirements for U.S. -Bound Immigrants and Refugees 2007–2014," *Morbidity and Mortality Weekly Report* 63, no. 11 (2014): 234–236.

⁶³ Michael Greenwood and Watson Warriner, "Immigrants and the Spread of Tuberculosis in the United States: A Hidden Cost of Immigration," *Population Research & Policy Review* 30, no. 6 (2011): 839–859.

⁶⁴ Saunders et al., "Tuberculosis Screening."

migrants from countries with a high incidence of TB. This strategy was less efficient but also far less costly.⁶⁵

There are many downsides to focusing on increasing testing. For instance, potential immigrants must pay for their health screening; this is a potential barrier to the economically disadvantaged.⁶⁶ The CDC works with the U.S. State Department to train physicians in countries with inadequate medical infrastructures and high incidences of TB to perform the necessary tests.⁶⁷ In many countries, facilities must be developed to both perform and evaluate the TB testing. In addition, drugs to treat TB must be available in sufficient supply to treat positive cases. However, testing programs will not include the millions of undocumented immigrants in the United States who are never encountered by the justice system or by immigration enforcement authorities. Aliens with latent TB infection are permitted to travel to the United States without restriction, although the literature shows that they are at an increased risk for developing active TB.⁶⁸ The United States does not test visitors for TB, nor does it test legal residents who return home after migrating.⁶⁹ Finally, there are many logistical difficulties to be overcome if the DHS were to test all aliens apprehended by CBP or ICE. Chapter VII discusses these challenges in depth. Mexican citizens apprehended at the U.S. border with Mexico are frequently returned to Mexico the same day, thus making testing impossible. Many others are arrested and placed in custody and a TB skin test is performed, but they are then released from detention before someone evaluates the results of the skin test.

There is not universal agreement on the efficacy of increased TB testing for migrants. One study showed that if the United States paid for Mexico to expand its Directly Observed Therapy Short-Course program, it would not only cost less than

⁶⁵ Justin T. Denholm, and Emma S. McBryde, "Can Australia Eliminate TB? Modeling Immigration Strategies for Reaching MDG Targets in a Low-Transmission Setting," *Australian & New Zealand Journal of Public Health* 38, no. 1 (2014): 78–82.

⁶⁶ Liu et al., "Overseas Screening for Tuberculosis."

⁶⁷ Nolan et al., "Post-detention Completion."

⁶⁸ Liu et al., "Overseas Screening for Tuberculosis."

⁶⁹ K. Schwartzman et al., "Domestic Returns from Investment in the Control of Tuberculosis in Other Countries," *New England Journal of Medicine* 2005, no. 353 (2005): 1008–1020.

treating Mexican migrants for TB in the United States, but it would also be more effective than increased testing.⁷⁰ The study points out that looking solely at Mexican immigrants is not the same as looking at the larger universe of immigrants due to the different rates of TB in different parts of the world.

The second strategy is through increased international cooperation. This strategy again applies primarily to illegal migration. In 2001, the CDC noted, “One of the most challenging tasks in managing TB among detainees is the coordination of care during the post-detention period in the United States or in the patients’ countries of origin.”⁷¹ In November 2002, the Advisory Council for the Elimination of Tuberculosis (ACET) recommended that a working group be formed to review problems with post-detention TB treatment of aliens released or removed by the INS.⁷² ACET suggested that removal should only occur after the “responsible state TB controller” approved a treatment plan, including verifying that necessary treatment is available at the destination. ACET also suggested referring cases to international TB referral programs such as TBNet and CureTB. In 2005, ICE began referring cases to TBNet and CureTB.⁷³

TBNet, created by the Migrant Clinicians Network in 1996, provides continuity of care through case management of highly mobile TB patients, such as deportees.⁷⁴ According to TBNet, most alien patients only receive eight weeks of therapy before departing the United States. Such deportees usually make at least three major moves: from the population to a detention center, from the detention center to their country of origin, and from their place of arrival to their home in their country of origin. TBNet uses a caseworker to keep in telephone contact with the deported patient and with their healthcare provider to ensure that the patient is continuing treatment. In a 2011 report, TBNet claimed an 85 percent rate of successful completion of treatment for all cases

⁷⁰ Ibid.

⁷¹ Saunders et al., “Tuberculosis Screening.”

⁷² Nolan et al., “Post-detention Completion.”

⁷³ Combellick, Zuroweste, and Gany, “TBNet;” Schneider and Lobato, “Tuberculosis Control.”

⁷⁴ Ibid.

referred to TBNNet between May 1, 2005 and February 28, 2008.⁷⁵ Five percent refused to continue treatment, and 10 percent were lost to follow-up. Referred deportees with multi-drug-resistant TB had a 50 percent treatment success rate. One limitation of the TBNNet study is that ICE refers “most but not all” TB cases of deportees before removal. This is because it is the detention facility that makes this referral. Facilities, where IHSC does directly provide medical care, may or may not use the referral services.⁷⁶ ICE referred Mexican nationals deported from states other than Texas and New Mexico to CureTB instead of TBNNet.

Results cited by CureTB are different than the figures reported by TBNNet. In 2009, a report by CureTB stated:

Our results are consistent with early assessments of outcomes among TB patients in ICE custody. We found that 80% of all TB patients were enrolled in an international TB referral program, with 58% completing treatment and 23% either lost to follow-up or with no reported outcome.⁷⁷

In addition to reporting different figures, TBNNet and CureTB also use different measures for case outcomes. For instance, TBNNet counts case completion using treatment outcome results reported by the national TB program in the alien’s home country. In contrast, CureTB verifies treatment completion by reviewing DOT records and counting doses administered.⁷⁸

The third strategy is to cure aliens’ TB in the United States before their removal. In 2002, ACET proposed that a working group look at curing aliens’ TB before release or removal.⁷⁹ There is no literature available concerning such a review. Instead, the literature shows the lengths to which the DHS is willing to go to avoid just such a scenario. For example, one case study reviewed a 2006 incident where Honduras was temporarily unable to acquire drugs to treat TB. ICE was prepared to deport 30

⁷⁵ Ibid.

⁷⁶ Diana Elson (Captain, ICE Health Services Corps: Public Health, Safety, and Preparedness), personal communication, July 17, 2016.

⁷⁷ Deiss et al., “Influences of Cross-Border Mobility.”

⁷⁸ Elson, personal communication.

⁷⁹ Nolan et al., “Post-detention Completion.”

Hondurans with active TB when the shortage happened. Rather than continuing to treat the Hondurans in the United States, ICE arranged for officials of the Honduran TB program to meet with the deportees on their arrival and directly provided the necessary drugs to the government of Honduras.⁸⁰

5. Case Studies in the TB Literature

There are many published papers containing case studies involving immigrants and TB. The case studies involve both legal and illegal migrants, and they demonstrate the additional risks created by international mobility. The Government Accountability Office (GAO) reviewed the DHS's response to a Mexican non-immigrant visitor to the United States who legally crossed the U.S. border with Mexico more than 20 times during a two-month period in 2007, despite CBP having been notified that the man had infectious TB and a history of non-compliance with treatment.⁸¹ The GAO concluded that the DHS's poor ability to coordinate with state and local health officials was a cause for concern.

The studies highlight one of the main reasons that TB is a public health concern: any person with infectious TB is at risk of transmitting the disease to any person who shares air space with the carrier. One study illustrating this problem concerned a man who was deported from the United States and referred to CureTB for continuity of care. The man, a Mexican citizen, both sold and used methamphetamines. He was lost to treatment for two years. By the time he was re-located, health officials had discovered that he had infected at least six people including his child.⁸²

An article in the *Wall Street Journal* demonstrated the difficulty in obtaining TB care on the Mexican side of the U.S. border with Mexico. The article concerned a man who frequently crossed the U.S. border with Mexico and had a dangerous form of TB:

⁸⁰ K. Rodriguez et al., "Deportation of Tuberculosis Patients Complicated by a Medication Shortage—Honduras, May–August 2006," *Morbidity and Mortality Weekly Report* 56, no. 26 (2007): 655–658.

⁸¹ Jared E. Levine, *Public Health and Border Security: HHS and DHS should further Strengthen their Ability to Respond to TB Incidents* (Washington, DC: Government Accountability Office, 2008).

⁸² Kiren Mitruka et al., "A Tuberculosis Outbreak Fueled by Cross-Border Travel and Illicit Substances: Nevada and Arizona," *Public Health Reports* 129, no. 1 (2014): 78–85.

multidrug-resistant TB. Even though the man sought medical care, it took more than a year for him to be diagnosed and begin treatment.⁸³

The literature also shows the difficulty of tracing the path of international travel. The most dangerous form of TB is extensively drug-resistant TB (XDR-TB). The *Wall Street Journal* ran an article on the one man, who is known to have XDR-TB, arrested by CBP.⁸⁴ Even though CBP arrested the man when he attempted to cross the U.S. border with Mexico, he was from Nepal. He is known to have traveled through 13 countries, including Brazil and Mexico. It is impossible to locate every person with whom he had contact, and this is particularly alarming because every one of them was at risk of contracting the deadly disease.

6. Gaps in the Literature on TB

There is very limited information available on the incidence of TB among America's immigration officers as a result of job-related TB exposure. A review of the topic revealed only a single published report, although it was published in multiple forms.⁸⁵ That report concerned two reviews of ICE processing facilities performed by the National Institute for Occupational Safety and Health (NIOSH), a division of the CDC. The study showed that ICE employees had received no training on TB and did not know that ICE recommends periodic TB testing. Employee participation in the study was poor, and it is not possible to draw wider conclusions on the prevalence of TB among ICE employees based on this study other than to recognize that ICE employees who encounter TB positive aliens are at risk of TB infection.

⁸³ Betsy McKay, "Risk of Deadly TB Exposure Grows Along US-Mexico Border," *Wall Street Journal*, March 9, 2013, <http://www.wsj.com/articles/SB10001424127887323293704578336283658347240>.

⁸⁴ Betsy McKay, "Dangerous TB Patient Detained on U.S. Border," *Wall Street Journal*, March 2, 2013, <http://www.wsj.com/articles/SB10001424127887323978104578332461533970412>.

⁸⁵ Marie De Perio, R. Todd Niemeier, and Maureen T. Neimeier, "TB Exposures among Immigration Employees," *American Jails* 27, no. 1 (2013): 24–28; Marie De Perio, R. Todd Niemeier, and Matthew Groenewold, "The Effectiveness of Using Interferon-gamma Release Assays in Screening Immigration Employees for Latent Tuberculosis Infection," *International Journal of Occupational and Environmental Health* 17, no. 4 (2011): 322–327.

Both immigration to the United States and the global picture on TB are changing rapidly. This requires review of the literature with particular attention paid to the date of publication and cognizance of what conditions have changed since that time. For example, a report issued in 2009 may be based on migration patterns that are no longer current. Similarly, a 2006 report on TB testing might refer to testing algorithms have been updated. In another example, a report on deportees and TB issued before 2005 may not take into account DHS's use of international TB referral services.

Much of the literature concerning the incidence of TB or treatment for TB among detained and deported aliens comes either from the Division of Immigration Health Services, now IHSC, or an organization such as TBNet, which provides service to the IHSC. These studies and reports universally concern the public health and medical aspects of TB. There is also information from the Congressional Research Service and other sources reviewing the laws relating to public health issues, public health detention authorities, and the exclusion of legal migrants.⁸⁶ There is no literature looking specifically at how U.S. immigration enforcement policies intersect with TB.

E. CHAPTER OVERVIEW

The thesis opens with in-depth background on tuberculosis in Chapter II. The chapter provides additional information for tuberculosis in those countries that have extremely high rates of illegal migration to the United States and those countries that have high rates of drug-resistant TB. Chapter III provides a layperson's overview of the removal process. This is both to give the reader an idea of the scope of immigration enforcement in the United States and to provide an understanding of the timeframes involved in the removal process. Chapter IV begins the policy options analysis by reviewing the current enforcement and TB policies. Chapter V examines the strategy of curing TB before deportation, and Chapter VI analyzes the option of greater international cooperation to combat TB in deportees. Chapter VII then covers the pros and cons of

⁸⁶ Kathleen Swindeman, and Nancy Lee Jones, *Extensively Drug-Resistant Tuberculosis (XDR-TB): Emerging Public Health Threats and Quarantine and Isolation* (Washington, DC: Congressional Research Service, 2008); Ruth Wasem, *Immigration Policies and Issues on Health-Related Grounds for Exclusion* (Washington, DC: Congressional Research Service, 2014).

performing additional TB testing on illegal migrants encountered by the DHS. Finally, Chapter VIII provides the conclusions and recommendations derived from the research and analysis.

II. BACKGROUND ON TUBERCULOSIS

Before analyzing the policy options concerning immigration enforcement and TB, it is necessary to have at least a layperson's understand of the disease and the threat it poses to public health. This chapter begins with a review of TB, including both TB disease and TB infection. It then reviews diagnosis and treatment of TB. Because many countries use the bacille Calmette–Guérin (BCG) vaccine, basic information on that preventive measure is reviewed. Finally, the current state of TB in the United States and selected countries worldwide is presented.

A. TUBERCULOSIS DISEASE AND INFECTION

A bacterium named *Mycobacterium tuberculosis* causes tuberculosis. TB most frequently occurs in the lungs (pulmonary TB), but it can infect any part of the body.⁸⁷ TB is spread from person to person through the air when someone with TB disease exhales or spits, and it is often through coughing.⁸⁸ In addition, exposure to the bacterium can produce two related conditions—active TB disease (hereafter TB or TB disease) and latent TB infection (hereafter LTBI or TB infection).

Tuberculosis is a serious public health concern worldwide. According to the World Health Organization, in 2014 10 million people developed TB, 1.5 million people died from the disease, and an estimated 480 thousand developed multidrug-resistant TB.⁸⁹ Additionally, as much as one-third of the world's population has LTBI.⁹⁰ Despite these terrible statistics, TB is treatable. The WHO estimates that TB treatment saved 43 million lives between the years 2000 and 2014.⁹¹

⁸⁷ Centers for Disease Control and Prevention, “Basic TB Facts,” last modified March 20, 2016, <http://www.cdc.gov/tb/topic/basics/default.htm>.

⁸⁸ Centers for Disease Control and Prevention, “How TB Spreads,” last modified March 11, 2016, <http://www.cdc.gov/tb/topic/basics/howtbspreads.htm>.

⁸⁹ World Health Organization, “Tuberculosis: Fact Sheet No. 104,” last modified March 2016, <http://www.who.int/mediacentre/factsheets/fs104/en/>.

⁹⁰ *Ibid.*

⁹¹ *Ibid.*

People with TB infection have no symptoms and are not contagious, but they are at an increased risk for developing TB disease.⁹² Although the greatest risk is within two years of contracting LTBI, but the disease can become active any time that the person's immune system is compromised. The CDC recommends that people with TB infections receive treatment to prevent developing TB disease.⁹³ By way of contrast, people with TB disease are infectious and can die if they do not receive treatment. The World Health Organization estimates that someone with TB disease can infect 10 to 15 people every year.⁹⁴

Symptoms of TB disease include weight loss, persistent coughing, chest pain, coughing up blood, fatigue, fever, night sweats, and loss of appetite.⁹⁵ Furthermore, the presence of other medical conditions can affect TB. According to the CDC, "Medical conditions such as diabetes, cancer, and HIV infection alter the immune system's ability to fight TB germs."⁹⁶ A coinfection of TB and HIV makes TB even more deadly. In fact, a coinfection with TB is one of the primary causes of death for people with HIV.⁹⁷

Improper treatment of TB, such as when patients only complete part of their course of antibiotics or is prescribed the wrong course of treatment, can lead to the development of resistance to the drugs normally used to treat TB. Drug-resistant TB comes in several forms, depending on how many drugs to which it is resistant. Drug-resistant TB is resistant to either isoniazid or rifampin, two of the four frontline antibiotics used to treat TB. Multidrug-resistant TB (MDR-TB) is resistant to both isoniazid and rifampin. The most problematic form of TB is extensively drug-resistant TB (XDR-TB). XDR-TB is resistant to isoniazid and rifampin, fluoroquinolone, and at

⁹² Centers for Disease Control and Prevention [CDC], "Latent TB Infection and TB Disease," last modified March 11, 2016, <http://www.cdc.gov/tb/topic/basics/tbinfectiondisease.htm>.

⁹³ Ibid.

⁹⁴ World Health Organization [WHO], "Tuberculosis in China," accessed July 13, 2016, <http://www.wpro.who.int/china/mediacentre/factsheets/tuberculosis/en/>.

⁹⁵ Ibid.

⁹⁶ Centers for Disease Control and Prevention, "Health Disparities in TB," last modified November 21, 2013, <http://www.cdc.gov/tb/topic/populations/HealthDisparities/default.htm>.

⁹⁷ Centers for Disease Control and Prevention, "TB and HIV Coinfection," last modified July 17, 2012, <http://www.cdc.gov/tb/topic/TBHIVcoinfection/default.htm>.

least one injectable “second line” drug.⁹⁸ More information on drug-resistant TB is in Section 3, Treatment.

There has been no definitive study on the risk of developing TB based on contact with an infected person. Doctors have not determined a safe exposure time for the disease; any contact with someone infected with TB has at least a small chance of transmission of the disease.⁹⁹ Studies have identified several risk factors for catching TB but not the individual importance of each factor. Known factors include the level of infection in the person with TB, duration of contact, proximity of contact, the amount of air circulation available during contact, and underlying medical conditions in the potential recipient.¹⁰⁰ This means that while immigration officers who spend time in vehicles, processing centers, and detention centers with people who have TB are at risk of infection, it is impossible to quantify that risk.

B. TESTING AND DIAGNOSIS

Diagnosing TB can be difficult, time-consuming, and expensive. According to the CDC, a complete medical evaluation for TB includes five components:¹⁰¹

1. Review of the patient’s medical history
2. A physical examination
3. Test for the presence of *Mycobacteria tuberculosis*
4. Chest X-ray
5. Laboratory examination of specimens (sputum sample)

⁹⁸ Centers for Disease Control and Prevention [CDC], “Drug-Resistant TB,” last modified April 13, 2016, <http://www.cdc.gov/tb/topic/drtb/>.

⁹⁹ Zachary Taylor, “Guidelines for the Investigation of Contacts of Persons with Infectious Tuberculosis: Recommendations from the National Tuberculosis Controllers Association and CDC,” *Morbidity and Mortality Weekly Report* 54, no. RR15 (2005): 1–37, <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5415a1.htm>.

¹⁰⁰ *Ibid.*

¹⁰¹ Centers for Disease Control and Prevention [CDC], “Core Curriculum on Tuberculosis: What the Clinician Should Know Chapter 4: Diagnosis of Tuberculosis Disease,” last modified May 11, 2016, <http://www.cdc.gov/tb/education/corecurr/pdf/chapter4.pdf>.

1. Testing for the Presence of Mycobacteria Tuberculosis

A blood test (the interferon-gamma release assay or IGRA) or the Mantou tuberculin skin test (TST) detects the presence of *Mycobacterium tuberculosis*; however, it detects TB infection, not TB disease.¹⁰² Healthcare costs in the United States are determined by a myriad of factors and can be difficult to generalize, but one study found that a TST program used to screen workers costs \$73.20 per person; the IGRA was found to be less expensive and cost \$54.83 per person.¹⁰³ A 2011 report by the World Health Organization's Special Programme for Research and Training in Tropical Diseases (TDR) estimated that India conducts 1.5 million TB blood tests every year at a total cost of more than \$15 million dollars or around \$10 per test.¹⁰⁴

During the TST, a patient is injected in the arm with a small amount of fluid known as "tuberculin," and then in 48 to 72 hours the reaction of the arm to the fluid is measured with a ruler. A reaction of a certain size is considered a positive test and indicates that the patient is infected with TB. An advantage of the TST is that it can be given to almost everyone, including children and people with HIV infections.¹⁰⁵ The main disadvantages of the TST are the timeframe necessary to obtain a result, and the necessity for the patient to return to a healthcare provider to have the result measured. These disadvantages are not an issue for someone who has been detained for removal proceedings, but it makes the use of a TST impractical for someone who is arrested and then released in less than 48 to 72 hours. Also, while a TST can be given to someone who received the BCG vaccine, it is possible that they will have a positive TST even if they are not infected with TB, making it necessary to perform further diagnostic tests.

¹⁰² Centers for Disease Control and Prevention [CDC], "Testing for TB Infection," last modified April 14, 2016, <http://www.cdc.gov/tb/topic/testing/tbtesttypes.htm>.

¹⁰³ Peter Wrighton-Smith et al., "Screening Healthcare Workers with Interferon- γ Release Assay versus Tuberculin Skin Test: Impact on Costs and Adherence to Testing (the SWITCH Study)," *Journal of Occupational & Environmental Medicine* 54, no. 7 (2012): 806–815.

¹⁰⁴ World Health Organization [WHO], "Two New Studies on TB Diagnostics Tests: Global and Indian Data," Special Programme for Research and Training in Tropical Diseases (TDR), last modified August 9, 2011, <http://www.who.int/tdr/news/2011/tb-global-indian-data/en/>.

¹⁰⁵ Centers for Disease Control and Prevention, "Testing for Tuberculosis (TB)," last modified December 19, 2014, http://www.cdc.gov/tb/publications/factsheets/testing/tb_testing.htm.

The IGRA is a blood test that measures the reaction of a person's immune system to TB bacteria. The CDC recommends that people who have received the BCG vaccine be tested with an IGRA instead of a TST.¹⁰⁶ However, there is limited information on the efficacy of this test for children and people with compromised immune systems.¹⁰⁷ Blood must be tested within eight to 30 hours after it is drawn, and results can also take eight to 30 hours. The testing also requires special training, handling, and equipment. This means that while the IGRA is usually faster than a TST, it is still not practical for aliens arrested and released in less than 72 hours.

2. Laboratory Examination of Specimens

Laboratory examination of specimens takes two forms: a sputum smear (also referred to as sputum smear microscopy and acid fast bacilli [or AFB] smear), and a sputum culture. Sputum is a thick fluid produced in the lungs and air passageways. In most low and middle-income countries, sputum smear microscopy is the primary method of diagnosing TB disease.¹⁰⁸ For a sputum smear, two or more samples of sputum are collected from the patient, smeared on a glass slide, stained with acid, and examined under a microscope.

The CDC guidelines for the collection of sputum samples recommend, “At least three consecutive sputum specimens are needed, each collected in 8- to 24-hour intervals, with at least one being an early morning specimen.”¹⁰⁹ If the examiner sees mycobacterium in the smear, then the test was “smear positive” or “AFB positive.” The sputum smear is inexpensive, easy to perform, and provides results within hours.

¹⁰⁶ Ibid.

¹⁰⁷ Centers for Disease Control and Prevention, “Fact Sheets: Interferon-Gamma Release Assays (IGRAs)—Blood Tests for TB Infection,” last modified September 1, 2012, <http://www.cdc.gov/tb/publications/factsheets/testing/igra.htm>.

¹⁰⁸ Prabha Desikan, “Sputum Smear Microscopy in Tuberculosis: Is it Still Relevant?” *Indian Journal of Medical Research* 137, no. 3 (2013): 442–444.

¹⁰⁹ CDC, “Core Curriculum on Tuberculosis,” 84.

However, the sensitivity of the test is low. The AFB smear only finds about 50–60 percent of TB cases.¹¹⁰ It also produces both false positives and false negatives.¹¹¹

A sputum culture is performed by growing bacteria derived from sputum samples in a solid or liquid nutrient medium and observing the cultures that form. The sputum culture has a high specificity and can also be used to detect drug resistance, but it takes up to four weeks to obtain a result, and four to six weeks to check drug resistance.¹¹²

3. The Bacille Calmette-Guérin Vaccine

There is a vaccine available to help prevent tuberculosis infection—the bacille Calmette-Guérin (BCG) vaccine. According to the World Health Organization, the BCG vaccine is one of the most widely distributed vaccines in the world, but “It does not prevent primary infection and, more importantly, does not prevent reactivation of latent pulmonary infection, the principal source of bacillary spread in the community.”¹¹³ In other words, the BCG vaccine does not keep people with LTBI from developing active TB. The effect of the vaccine on adolescents and adults has been described by the Advisory Council for the Elimination of Tuberculosis as “variable.”¹¹⁴ The BCG vaccine is known to provide protection for up to 15 years, but its effectiveness beyond that timespan is unknown.¹¹⁵ Furthermore, the effectiveness of the vaccine decreases with time.¹¹⁶

¹¹⁰ WHO, “Two New Studies on TB;” Global Health Education [GHE], “TB Tests—Skin Test, Sputum and Other Types of TB Test,” accessed July 13, 2016, <http://www.tbfacts.org/tb-tests>.

¹¹¹ Centers for Disease Control and Prevention [CDC], “TB 101 For Healthcare Workers—Lesson 5. Bacteriological Examination: Examination of AFB Smears,” accessed July 13, 2016, <http://www.cdc.gov/tb/webcourses/tb101/page3294.html>.

¹¹² GHE, “TB Tests.”

¹¹³ World Health Organization, “Biologicals: BCG Vaccine,” accessed July 13, 2016, <http://www.who.int/biologicals/areas/vaccines/bcg/en/>.

¹¹⁴ Jeffrey Starke et al., “The Role of BCG Vaccine in the Prevention and Control of Tuberculosis in the United States: A Joint Statement by the Advisory Council for the Elimination of Tuberculosis and the Advisory Committee on Immunization Practices,” *Morbidity and Mortality Weekly Report* 45, no. RR-4 (1996): 1–18.

¹¹⁵ Patrick Nguipdop-Djomo et al., “Duration of BCG Protection against Tuberculosis and Change in Effectiveness with Time Since Vaccination in Norway: A Retrospective Population-based Cohort Study,” *The Lancet Infectious Diseases* 16, no. 2 (2016): 219–226.

¹¹⁶ *Ibid.*

C. TREATMENT

Tuberculosis, whether latent or active, is curable. TB that is not drug-resistant (also known as drug-susceptible TB, pan-sensitive TB, or just TB) is most commonly treated with a course of four antibiotics that must be taken every day for two months and two that must be taken for an additional four to seven months.¹¹⁷ The U.S. Food and Drug Administration (FDA) has approved 10 drugs for use in treating TB, but the two most commonly used are isoniazid and rifampin.¹¹⁸ According to the CDC, the direct cost to treat drug-susceptible TB in 2014 was about \$17,000.¹¹⁹ Direct costs include only the cost of medicine and the healthcare provider. The addition of indirect costs, such as transportation and lost productivity, makes the cost much higher.

If not treated properly, TB can develop drug-resistance. Historically, people tended to complete less than the full course of TB treatment due to factors, such as the length of treatment, side effects of treatment, and not feeling ill. The medical community developed a protocol known as directly observed therapy or DOT for this reason. The concept of DOT is simple: to ensure compliance with treatment a medical professional watches the TB patient take each dose of their medication. The CDC recommends that all TB patients be treated using the DOT protocol.¹²⁰

There are potential side effects to all of the drugs used to treat TB. Those side effects are one of the primary reasons that people do not complete TB treatment.¹²¹ Side effects can include serious conditions such as liver damage, neuropathy, hepatitis, skin rash, gastrointestinal disorders, vision changes, and undesirable interactions with other drugs.¹²²

¹¹⁷ CDC, “Treatment for TB Disease.”

¹¹⁸ Ibid.

¹¹⁹ CDC, “Drug-Resistant TB.”

¹²⁰ CDC, “TB 101 For Healthcare Workers.”

¹²¹ Niyi Awofeso, “Anti-tuberculosis Medication Side-effects Constitute Major Factor for Poor Adherence to Tuberculosis Treatment,” *Bulletin of the World Health Organization* 86, no. 3 (2008): 161–240.

¹²² Centers for Disease Control and Prevention, “Latent Tuberculosis Infection: A Guide for Primary Healthcare Providers,” April 3, 2013, <http://www.cdc.gov/tb/publications/ltni/treatment.htm>.

Of all types of TB, drug-resistant TB is the most difficult, expensive, and time-consuming to treat. Multidrug-resistant TB requires a daily course of highly toxic antibiotics for two years.¹²³ The CDC estimates that MDR-TB costs an estimated \$150,000 to treat, and XDR-TB could cost more than \$482,000 to treat a single patient.¹²⁴

Tuberculosis is a complicated disease, and there are social barriers to its treatment as well as medical difficulties. Many of these social barriers are acutely present in the population of illegal migrants. Such barriers include language difficulties, conflicts with religious practices, a stigma associated with TB infection, lack of financial resources, poor access to healthcare, frequently changing residences, and an inability to attend DOT sessions due to lack of transportation or work schedule.¹²⁵

D. TUBERCULOSIS IN SELECTED COUNTRIES OF INTEREST

It is not practical to review the current state of TB in every country. This section presents statistics for the United States and other countries of interest chosen due to the burden of TB in the country, TB control efforts in the country, the number of illegal migrants the United States receives from the country, or the number of legal migrants the United States receives. The World Health Organization (WHO) is the authoritative source for TB statistics worldwide and thus provides many of the statistics cited.

1. Tuberculosis in the United States

The United States has a very low burden of TB, and the general incidence of TB has been steadily declining in the United States since 1990. According to the WHO, in 2014 the U.S. incidence of TB was 3.1 cases per 100,000 population.¹²⁶ In 2014, the United States spent about \$143 million on its national TB program.¹²⁷ The United States

¹²³ National Institute of Allergy and Infectious Diseases, “Tuberculosis (TB) Treatment,” last modified March 19, 2012, <https://www.niaid.nih.gov/topics/tuberculosis/understanding/pages/treatment.aspx>.

¹²⁴ CDC, “Drug-Resistant TB.”

¹²⁵ Centers for Disease Control and Prevention, “Treatment of LTBI,” last modified April 5, 2016, <http://www.cdc.gov/tb/topic/treatment/ltbi.htm>.

¹²⁶ World Health Organization, “Country Profiles: United States of America,” last modified 2014, http://www.who.int/substance_abuse/publications/global_alcohol_report/profiles/usa.pdf?ua=1.

¹²⁷ Ibid.

tests all TB cases for drug resistance and reported an 83percent treatment success rate for drug-susceptible TB.¹²⁸ The number of people with TB infection is much higher than the number with TB disease; more 11 million people in the United States are believed to have LTBI.¹²⁹

The incidence of TB in the United States is not evenly distributed across the population. In 2012, 63 percent of the TB cases in the United States were among the foreign-born population, and the rate of TB in the foreign-born population was 10 times higher than that of the U.S. born population.¹³⁰ In 2014, there were 9421 new cases of TB reported to the CDC, and 66 percent of those were among the foreign-born population.¹³¹ Mexican-born people accounted for the largest number of cases at 1277. Totals from selected other countries include El Salvador, 97 cases; Guatemala, 180 cases; Honduras, 142 cases; China, 421 cases; India, 479 cases; Vietnam, 501 cases; and Philippines, 748 cases.¹³² The rate of re-activation, people who previously had TB again developing TB disease, is 13 times higher among the foreign-born population in the United States.¹³³ More than half of the aliens illegally migrating to the United States in 2010 came from countries with a high incidence of TB.¹³⁴

The United States does not routinely administer the BCG vaccine, nor is it recommended by the CDC except for certain infants at high risk of contracting TB.¹³⁵

¹²⁸ Ibid.

¹²⁹ Diane Bennett et al., “Prevalence of Tuberculosis Infection in the United States Population: The National Health and Nutrition Examination Survey, 1999–2000,” *American Journal of Respiratory and Critical Care Medicine* 177, no. 3 (2008): 248–255.

¹³⁰ Morano et al., “Latent Tuberculosis Infection Screening,” Combellick, Zuroweste, and Gany. “TBNet.”

¹³¹ Centers for Disease Control and Prevention, “Reported Tuberculosis in the United States: 2014,” last modified October 6, 2014, <http://www.cdc.gov/tb/statistics/reports/2014/pdfs/tb-surveillance-2014-report.pdf>.

¹³² Ibid.

¹³³ Kelly Kyanko et al., “Undocumented Immigrants Face a Unique Set of Risks from Tuberculosis Treatment: Is This Just?” *American Medical Association Journal of Ethics* 18, no. 3 (2016): 311–318.

¹³⁴ Ibid.

¹³⁵ Centers for Disease Control and Prevention, “Tuberculosis (TB) Vaccination,” last modified May 13, 2009, <http://www.cdc.gov/vaccines/vpd-vac/tb/default.htm>.

2. Tuberculosis in Mexico

According to the WHO, the incidence of TB in Mexico is 21 cases per 100,000 people.¹³⁶ Mexico spent about \$17 million on its national TB program in 2014. In addition, Mexico reported 21,881 cases of TB to the WHO in 2014 and reported an 80 percent success rate in treating new drug-susceptible TB cases.¹³⁷ However, these numbers can be somewhat misleading. Mexico relies primarily on the AFB smear to diagnosis TB.¹³⁸ As cited above, the sensitivity of the sputum smear is only 50 to 60 percent, and testing is not universal. Mexico also tested less than 1percent of new TB cases for drug resistance in 2014.

Mexico uses the BCG vaccine.¹³⁹

3. Tuberculosis in El Salvador

According to the WHO, the incidence of TB in El Salvador was 41 cases per 100,000 people in 2014, and El Salvador's national TB program had an estimated budget of \$5.1 million.¹⁴⁰ Moreover, El Salvador reported 2220 cases of TB to the WHO in 2014 and tested 54 percent of new cases for drug resistance. El Salvador reported a 93 percent successful treatment rate for new drug-susceptible TB in 2014. Also, El Salvador primarily uses the sputum smear to diagnose TB.¹⁴¹

El Salvador uses the BCG vaccine.¹⁴²

¹³⁶ World Health Organization, "Tuberculosis Profile: Mexico," accessed July 13, 2016, https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FPROD%2FEEXT%2FTBCountryProfile&ISO2=MX&LAN=EN&outtype=html.

¹³⁷ Ibid.

¹³⁸ Eduardo Hernandez-Garduno et al., "Tuberculosis in Mexico and the USA, Comparison of Trends Over Time 1990–2010," *Tuberculosis and Respiratory Diseases* 78, no. 8 (2015): 246–252.

¹³⁹ Alice Zwerling et al., "The BCG World Atlas: A Database of Global BCG Vaccination Policies and Practices," *PLoS Med* 8, no. 3: e1001012, doi: 10.1371/journal.pmed.1001012, <http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1001012>.

¹⁴⁰ World Health Organization, "Tuberculosis Profile: El Salvador," accessed July 13, 2016, https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FPROD%2FEEXT%2FTBCountryProfile&ISO2=SV&LAN=EN&outtype=html.

¹⁴¹ Ibid.

¹⁴² Zwerling et al., "The BCG World Atlas."

4. Tuberculosis in Guatemala

According to the WHO, in 2014 the incidence of TB in Guatemala was 57 cases per 100,000 people, and Guatemala's TB program had an estimated budget of \$11 million. Guatemala reported 3224 cases of TB to the WHO in 2014 and tested 17 percent of new cases for drug resistance. Additionally, Guatemala reported an 84 percent success rate for treating new drug-susceptible TB cases in 2014. Guatemala primarily uses the sputum smear to diagnose TB.¹⁴³

Guatemala uses the BCG vaccine.¹⁴⁴

5. Tuberculosis in Honduras

According to the WHO, in 2014 the incidence of TB in Honduras was 43 cases per 100,000 people, and Honduras's TB program had an estimated budget of \$13 million. In 2014, Honduras reported 2820 cases of TB to the WHO and tested six percent for drug resistance. Honduras reported an 89 percent success rate for treating new drug-susceptible TB cases in 2014. Like other Central American countries, Honduras primarily uses the sputum smear to diagnose TB.¹⁴⁵

Honduras uses the BCG vaccine.¹⁴⁶

6. Tuberculosis in China

According to the WHO, in 2014 the incidence of TB in China was 68 cases per 100,000 people, and China's TB program had an estimated budget of \$340 million. Additionally, China reported 826,155 cases of TB to the WHO in 2014 and tested 19

¹⁴³ World Health Organization, "Tuberculosis Profile: Guatemala," accessed July 13, 2016, https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FPROD%2FEXT%2FTBCountryProfile&ISO2=GT&LAN=EN&outtype=html.

¹⁴⁴ Zwerling et al., "The BCG World Atlas."

¹⁴⁵ World Health Organization, "Tuberculosis Profile: Honduras," accessed July 13, 2016, https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FPROD%2FEXT%2FTBCountryProfile&ISO2=HN&LAN=EN&outtype=html.

¹⁴⁶ Zwerling et al., "The BCG World Atlas."

percent of new cases for drug resistance. China reported a 95 percent success rate for treating new drug-susceptible TB cases in 2014.¹⁴⁷

China is second only to India in the number of new cases of TB each year. The WHO estimates that China has nearly one million new cases of TB every year.¹⁴⁸ However, it has made great strides in controlling TB and is one of a small number of countries to meet the WHO's global TB control target by diagnosing at least 80 percent of TB cases and treating more than 90 percent of those. China accomplished this feat through a nationwide implementation of a DOT program.¹⁴⁹

China uses the BCG vaccine.¹⁵⁰

7. Tuberculosis in India

According to the WHO, in 2014 the incidence of TB in India was 167 cases per 100,000 people, and India's TB program had an estimated budget of \$261 million. India reported an astounding 1,683,915 cases of TB to the WHO in 2014 and tested only two percent of those for drug resistance! India reported an 88 percent success rate for treating new drug-susceptible TB cases in 2014.

In addition, India has the highest known burden of TB in the world, and this has implications for U.S. immigration policy. According to a Pew Research Center study, citizens of India comprised four percent of the illegal migrants to the United States in 2012, making India the fourth largest source of illegal migrants.¹⁵¹ Despite the recent influx of these migrants, there has been little interaction between the DHS and illegal migrants from India. In fiscal year 2015, ICE removed only 311 citizens of India from the

¹⁴⁷ World Health Organization, "Tuberculosis Profiles: China," accessed July 13, 2016, https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FPROD%2FEXT%2FTBCountryProfile&ISO2=CN&LAN=EN&outtype=html.

¹⁴⁸ Ibid.

¹⁴⁹ Ibid.

¹⁵⁰ Zwerling et al., "The BCG World Atlas."

¹⁵¹ Passel and Cohn, *Unauthorized Immigrant Totals*.

United States.¹⁵² The reasons for this small number are unknown. One possible explanation is that Indian migrants are not being convicted of crimes and thus do not fall among the current DHS immigration enforcement priorities.

India uses the BCG vaccine.

8. Tuberculosis in Russia

According to the WHO, in 2014 the incidence of TB in Russia was 84 cases per 100,000 people, and Russia's TB program had an estimated budget of nearly \$2 billion (\$1,894,000,000). Additionally, Russia reported 136,168 cases of TB to the WHO in 2014 and tested 84 percent of new cases for drug resistance. Moreover, Russia reported a 68 percent success rate for treating new drug-susceptible TB cases in 2014.¹⁵³ Russia uses the BCG vaccine.¹⁵⁴

¹⁵² U.S. Immigration and Customs Enforcement, *ICE Enforcement and Removal Operations Report: Fiscal Year 2015* (Washington, DC: U.S. Immigration and Customs Enforcement, 2105), Appendix C.

¹⁵³ World Health Organization, "Tuberculosis Profiles: Russian Federation," accessed July 13, 2016, https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FPROD%2FEXT%2FTBCountryProfile&ISO2=RU&LAN=EN&outtype=html.

¹⁵⁴ Zwerling et al., "The BCG World Atlas."

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III. AN OVERVIEW OF THE REMOVAL PROCESS

As discussed in Chapter II, one of the drawbacks to treating TB is the amount of time necessary to diagnose and treat the disease. However, the immigration enforcement process typically takes enough time to complete TB treatment. This is particularly true for people in removal proceedings who are not detained by the DHS. A layperson's understanding of the removal process will assist in understanding some of the timeframes and policy options described in this thesis.

A. THE IMMIGRATION AND NATIONALITY ACT

The immigration law of the United States is the Immigration and Nationality Act (as amended), hereafter known as “the INA,” codified in Title 8 of the United States Code. The most recent version of the INA is the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (often referred to as IIRIRA).¹⁵⁵ Before March 1, 2003, the responsibility for enforcing the INA belonged solely to the Immigration and Naturalization Service (INS). The INS was an agency within the Department of Justice, and ultimate legal authority under the INA resided in the attorney general. The U.S. Border Patrol, although often referred to as an independent entity, was a division of the INS. However, with the creation of the Department of Homeland Security on March 1, 2003, authority over the INA was transferred to the secretary of homeland security. The DHS split the INS into three agencies: U.S. Immigration and Customs Enforcement (ICE), U.S. Customs and Border Protection (CBP), and U.S. Citizenship and Immigration Services (CIS).¹⁵⁶ All three agencies now share responsibility for enforcing the INA. CIS does not arrest aliens, but it does put people into removal proceedings. Although both ICE and CBP arrest aliens, ICE is solely responsible for detaining aliens during the removal process.

¹⁵⁵ Illegal Immigration Reform and Immigrant Responsibility Act of 1996 [INA], Pub. L. No. 104–208, 110 Stat. 3009–546 (1996). The Illegal Immigration and Immigrant Responsibility Act of 1996 is the latest version of the Immigration and Nationality Act.

¹⁵⁶ An Act to Establish the Department of Homeland Security and for Other Purposes (Homeland Security Act) Act of 2002, Pub. L. No. 107–296 (2002).

B. INITIATING REMOVAL PROCEEDINGS

The removal process begins when an immigration officer encounters an alien. That officer could be a Border Patrol agent patrolling the Rio Grande River, an inspector at an international airport, an adjudications officer reviewing an application for permanent residence, or a deportation officer taking custody of an alien from jail or prison. The immigration officer examines the person and decides whether or not he or she appears to be removable and if so, by what legal mechanism. To be removable, a person must be a citizen of a country other than the United States. Removal consists of two distinct legal concepts: inadmissibility and deportability. Before 1996, there were separate proceedings for the two, but in 1996, IIRIRA combined both under “removal proceedings.” For most purposes in this thesis inadmissibility, removability, and deportability (and variations such as remove and deport) can be used interchangeably. Legal grounds for inadmissibility are found in the INA § 212, and removability is found in INA § 237. Grounds for inadmissibility and removal include such things as being convicted of a drug offense, being convicted of a crime of domestic violence, being present in the United States without having been admitted or paroled, and immigrants who do not possess valid visas.¹⁵⁷

Once the immigration officer has decided to place an alien in removal proceedings, then the alien is issued a charging document notifying them of the charges against them, the possible outcomes of those charges, whether or not they will be receiving a hearing, the right to representation, and possible appeal rights. There are many types of immigration charging documents:

- a notice to appear issued under § 236 of the INA
- a notice of intent to issue a final administrative removal order issued under § 238 of the INA (administrative removal)
- a notice of intent to issue an expedited removal order under § 235 of the INA (expedited removal)
- a notice of intent to reinstate a final order of removal under § 241 of the INA (reinstated removal)

¹⁵⁷ INA § 237 (a) (2) (B); INA § 212 (a) (6) (A); INA § 212 (a) (7) (A) (i) (I).

- a visa waiver removal under § 217 of the INA (visa waiver removal)
- a notice to detain, remove, or present alien (depart foreign under safeguard) under § 254 of the INA (alien crewman removal).

The ultimate result of any of these charging documents, removal from the United States, is the same, but the legal processes involved are very different.

C. REMOVAL HEARINGS AND ORDERS OF REMOVAL

If the DHS issues an alien a notice to appear, then that person must appear before an immigration judge. Immigration judges work for the Executive Office for Immigration Review (EOIR), an agency within the Department of Justice.¹⁵⁸ Immigration judges conduct removal proceedings, including interviewing witnesses, taking testimony, and reviewing evidence.¹⁵⁹ Aliens may have the attorney of their choice during proceedings, but they must pay for their own representation.¹⁶⁰ At the end of proceedings, the immigration judge may grant the alien a benefit, such as political asylum or permanent residence, allow the alien to voluntarily depart the United States, or issue an order of removal. Both the alien and the government have the right to appeal the immigration judge's decision to the Board of Immigration Appeals (BIA).¹⁶¹ A decision by the BIA may be appealed to the U.S. District Court having jurisdiction over the immigration judge who issued the original order. Once in federal court, a removal case has the same appeal rights as any other federal court case.

An order of removal from which no appeal is filed is said to be "final." If either party reserves the right of appeal, then the immigration judge's order is "stayed" and does not become final. If the right of appeal is reserved but no appeal is filed within 30 days, then the original order becomes final. If either the alien or the government files an appeal, then there is no final order until the BIA rules on the appeal. The immigration judge may

¹⁵⁸ U.S. Department of Justice, "Executive Office for Immigration Review," accessed July 14, 2015, <https://www.justice.gov/eoir>.

¹⁵⁹ INA § 240.

¹⁶⁰ INA § 240 (b) (4) (A).

¹⁶¹ U.S. Department of Justice, "Board of Immigration Appeals," last modified March 24, 2016, <https://www.justice.gov/eoir/board-of-immigration-appeals>.

also issue an order of removal if an alien does not appear at his or her hearing as required. This is known as an “in absentia” order of removal.¹⁶²

There are many paths to removal that do not go through an immigration judge. For instance, expedited removal, reinstated removal, administrative removal, visa waiver removal, and alien crew removal do not require a hearing before an immigration judge. For these types of removals, the alien is issued both a charging document and a removal order under the authority of the arresting agency. There is no right of appeal for these types of removal orders. Finally, a U.S. district judge may directly issue a removal order as part of sentencing any non-citizen defendant convicted of certain crimes. Section 238 of the INA contains the authority for this action.

D. REMOVAL PROCEEDINGS TIMEFRAMES

Not only are removal proceedings legally complex, but they also take time. According to a report published in 2011 by the Transnational Records Access Clearinghouse, the average removal case took 482 days to receive an order from EOIR.¹⁶³ By January 2016 that time had grown to an average of 667 days for each case, and there are currently more than 474,000 cases pending before EOIR.¹⁶⁴ A 2012 report by the Department of Justice Office of the Inspector General (OIG) found that some cases took more than five years to complete.¹⁶⁵ These numbers are for aliens not in ICE custody; aliens in custody are EOIR’s priority.¹⁶⁶ EOIR has a self-imposed goal of completing cases for aliens detained by DHS in 60 days. According to the 2012 OIG

¹⁶² INA § 240(b) (5) (A).

¹⁶³ Transnational Records Access Clearinghouse, “New Judge Hiring Fails to Stem Rising Immigration Case Backlog,” last modified June 7, 2011, <http://trac.syr.edu/immigration/reports/250/>.

¹⁶⁴ Transnational Records Access Clearinghouse, “Immigration Court Backlog Tool: Pending Cases and Length of Wait in Immigration Courts,” accessed July 13, 2016, http://trac.syr.edu/phptools/immigration/court_backlog/.

¹⁶⁵ U.S. Department of Justice Office of the Inspector General [DOJ OIG], *Management of Immigration Cases and Appeals by the Executive Office for Immigration Review* (OIG Report No. I-2013-001) (Washington, DC: U.S. Department of Justice, Office of the Inspector General, 2012), <https://oig.justice.gov/reports/2012/e1301.pdf>, iii.

¹⁶⁶ *Oversight of the Executive Office for Immigration Review: Hearing before the Committee on the Judiciary, House of Representatives*, 114th Cong., 1 (2015) (statement of Juan P. Osuna, Director, Executive Office for Immigration Review).

report, in 2010 EOIR met this goal for 85 percent of detained cases.¹⁶⁷ Appeals add additional time. The BIA took an average of 16 months to decide the appeals for non-detained aliens, and three and a half months for aliens in detention.¹⁶⁸

It is also possible for an alien to go through removal proceedings more than once. For example, one potential outcome of a BIA appeal is to remand proceedings back to an immigration judge; this starts the entire cycle over again. Aliens may also file a “motion to re-open” a previously decided case.¹⁶⁹ If an alien received her or his order of removal in absentia and files a motion to re-open, then the order of removal is automatically stayed until an immigration judge rules on the motion.¹⁷⁰

E. ASYLUM CLAIMS

Any alien may assert that she or he is afraid to return to her or his country of origin, commonly referred to as claiming asylum, regardless of the charging document issued to the alien. If this happens, then the alien is not immediately deported. Instead, he or she receives a “credible fear” hearing from a CIS asylum officer. Next, the alien receives a hearing with an immigration judge to rule on his or her asylum claim.¹⁷¹ Any order of removal issued before the claim is adjudicated, for example in expedited removal proceedings, is only executed if the immigration judge rules against the alien’s claim. The timeframes listed in Section D: Removal Proceedings Timeframes include the adjudication of asylum claims.

Because the United States receives asylum applications from countries with moderate to high burdens of tuberculosis, the demographics of asylum applicants has a direct bearing on the intersection of U.S. immigration enforcement policy and TB. Every year, thousands of migrants from El Salvador, Guatemala, Honduras, and Mexico apply for asylum in the United States. These migrants are frequently apprehended along the

¹⁶⁷ DOJ OIG, *Management of Immigration Cases*, 7.

¹⁶⁸ *Ibid.*, iii.

¹⁶⁹ INA § 240(c) (7).

¹⁷⁰ INA § 240(b) (5) (C) (ii).

¹⁷¹ 8 CFR, § 1003.42 [Review of credible fear determination]. s

U.S. border with Mexico and detained for at least some period. The number of El Salvadorans applying for asylum has increased every year since 2010, swelling from 2900 in fiscal year (FY) 2011 to 10,469 in FY2015. Guatemalan applications for asylum grew from 2454 in FY2011 to 6898 in FY2015, and Honduran asylum claims exploded from 1157 in FY2011 to 8332 in FY2015. Additionally, Mexican asylum claims grew from 7454 in FY2011 to 10,143 in FY2014 but then fell back to 8926 in FY2015. Despite these large numbers of asylum claims, only a fraction are receiving asylum. In FY2015, the EOIR granted asylum to only 303 El Salvadorans, 369 Guatemalans, 307 Hondurans, and 203 Mexicans.¹⁷²

China, Russia, and India, the other countries specifically analyzed in this thesis, are also sources of asylum applicants. The number of asylum applications from Chinese citizens has decreased each year since 2011, dropping from 10,481 applications in 2011 to 1757 applications in 2015. Chinese citizens receive more grants of asylum in the United States than any other nationality. The number of Indian asylum applicants has remained relatively constant for the past five years. There were 1612 Indian asylum applications in 2011, and 1135 Indian asylum applications in 2015. The number of Russian asylum applicants has decreased every year since 2010, falling from 491 applications in FY2011 to a mere 98 applications in FY2015.¹⁷³

F. EOIR STATISTICS

One of the reasons for the extended timeframes of the removal process is that EOIR reviews an enormous caseload each year. As illustrated in Table 1, EOIR has received nearly 200,000 new cases each year since 2011. Table 2 demonstrates that EOIR only completes a portion of its new cases every year. This contributes to the length of the removal process. Table 3 shows that the majority of cases heard by EOIR have been for aliens not in ICE custody.¹⁷⁴ The information from the tables is taken directly from the

¹⁷² U.S. Department of Justice, Executive Office for Immigration Review, “Statistics and Publications: Statistics,” last modified May 2, 2016, <https://www.justice.gov/eoir/file/asylum-statistics/download>.

¹⁷³ Ibid.

¹⁷⁴ The federal fiscal year runs from October 1 to September 30. For example, fiscal year 2011 covers October 1, 2010 to September 30, 2011.

EOIR *FY2015 Statistics Yearbook*.¹⁷⁵ As is explained in subsequent chapters, the length of time available for treatment and the custody status of aliens are important factors when analyzing policy options for immigration enforcement and TB treatment.

Table 1. Immigration Court Cases Received by Case Type¹⁷⁶

Type of Case	FY2011	FY2012	FY2013	FY2014	FY2015
Removal	236,604	211,285	193,660	226,042	187,005
Credible Fear	885	739	1,770	6,498	6,629
Reasonable Fear	441	815	1,159	1,777	2,587
Claimed Status	26	37	31	22	21
Asylum Only	403	356	395	294	255
Rescission	49	25	47	31	46
Continued Detention Review	5	2	0	3	2
NACARA	1	0	2	4	1
Withholding Only	884	1,091	2,334	3,168	2,988
Total	239,298	214,350	199,398	237,839	199,534

¹⁷⁵ Adapted from Office of Planning, Analysis, and Statistics, *FY2015 Statistics Yearbook* (Falls Church, VA: Executive Office for Immigration Review, 2016), <https://www.justice.gov/eoir/statistical-year-book>, B1-B2.

¹⁷⁶ Ibid.

Table 2. Immigration Court Initial Case Completions by Case Type¹⁷⁷

Type of Case	FY2011	FY2012	FY2013	FY2014	FY2015
Deportation	669	639	698	531	570
Exclusion	61	54	54	36	57
Removal	206,038	184,847	167,753	156,470	169,043
Credible Fear	893	707	1,727	6,351	6,630
Reasonable Fear	443	775	1,139	1,712	2,570
Claimed Status	28	35	32	23	19
Asylum Only	423	366	381	360	294
Rescission	46	36	39	34	30
Continued Detention Review	3	2	2	2	3
NACARA	8	2	3	1	2
Withholding Only	681	760	1,348	2,620	2,357
Total	209,293	188,223	173,176	168,140	181,575

¹⁷⁷ Ibid.

Table 3. Immigration Court Initial Case Completions for Detained Aliens
(Including IHP)¹⁷⁸

	Initial Case Completions for Detained Aliens	Initial Case Completions for All Aliens	Percentage Detained
FY11	112,787	209,293	54%
FY12	89,621	188,223	48%
FY13	63,331	173,176	37%
FY14	61,590	168,140	37%
FY15	51,005	181,575	28%

G. DETENTION DURING AND AFTER REMOVAL PROCEEDINGS

Of note, the DHS does not detain all aliens who are encountered and arrested by its immigration officers. An alien can be in removal proceedings whether in detention or not. There are many reasons that the DHS might release an alien. Examples of these reasons include serious humanitarian concerns, if the alien has serious health issues, or whether detention space is available at the time of the encounter. Serious humanitarian concerns can include situations such as the alien being the sole care provider for a child or disabled relative, or the alien being the witness to, or victim of, a crime. Aliens may also be released on bond or on a program titled “Alternatives to Detention” (see Chapter V).

Different sections of law govern detention before the issuance of an order of removal (known as “pre-order detention”) and detention after issuance of an order of removal (known as “post-order detention”). Section 236 of the INA, “Apprehension and Detention of Aliens,” governs pre-order detention. Section 236 states in part, “On a warrant issued by the Attorney General, an alien may be arrested and detained pending a decision on whether the alien is to be removed from the United States.”¹⁷⁹ Certain classes

¹⁷⁸ The “IHP” referred to in the title of Table 3 is the Institutional Hearing Program. This program consists of EOIR adjudicating removal cases for aliens that are incarcerated in state and federal prisons so that they may be removed expeditiously once ICE assumes custody at the expiration of their sentence.

¹⁷⁹ The attorney general’s functions relating to immigration enforcement were transferred to the Secretary of Homeland Security by the Homeland Security Act of 2002.

of aliens, including those convicted of aggravated felonies, suspected terrorists, aliens who are inadmissible on certain criminal grounds of exclusion, and for other reasons, are subject to mandatory detention. The DHS may detain aliens who are not subject to mandatory detention or release them under such conditions as the DHS secretary imposes. These conditions can include a bond of at least \$1500, conditional parole, or release on ATD.¹⁸⁰ To state this more plainly, the INA requires the DHS to detain some aliens, but it is up to the arresting agency whether or not to detain most arrested persons.

There is no statutory limitation on the amount of time the DHS may detain an alien while removal proceedings are pending. Under INA § 236(a) aliens not subject to mandatory detention may ask an immigration judge to review the conditions of their custody (commonly referred to as a “bond hearing”). The alien must prove to the satisfaction of the immigration judge that the alien poses no danger to the community, danger to national security, or a flight risk. The immigration judge has broad leeway in determining which factors to consider in custody redetermination proceedings.¹⁸¹ The 9th Circuit Court of Appeals held in the 2013 decision *Rodriguez v. Robbins* that any alien, even one subject to mandatory detention, who is detained for more than 180 days must be given a bond hearing before an immigration judge.¹⁸² There is no comparable rule applicable in other federal appellate circuits.

Section 241 of the INA, “Detention and Removal of Aliens Ordered Removed,” governs post-order detention. Section 241 instructs DHS to detain aliens who have been ordered removed and to remove them from the United States within 90 days. As with pre-order detention, the law requires the detention of some aliens during this 90-day period. Categories of aliens whom the DHS must detain include aliens convicted of aggravated felonies and terrorists.¹⁸³ The DHS may release aliens who are not subject to mandatory detention during the removal period under such conditions as the DHS secretary imposes.

¹⁸⁰ INA § 236(a) (2).

¹⁸¹ “*Matter of Guerra*, 24 I&N, (BIA, 2006),” Lexis Nexis, <https://www.justice.gov/sites/default/files/eoir/legacy/2014/07/25/3544.pdf>, 37.

¹⁸² *Rodríguez v. Robbins*, No. 12–56734 (9th Cir. 2013).

¹⁸³ INA § 241(a) (2).

Detention beyond the 90 day removal period is governed by 8 U.S.C. § 1231(a) (6) (1994 ed., Supp. V), which allows continued detention for, in part:

An alien ordered removed [1] who is inadmissible... [2] [or] removable [as a result of violations of status requirements or entry conditions, violations of criminal law, or reasons of security or foreign policy] or [3] who has been determined by the Attorney General to be a risk to the community or unlikely to comply with the order of removal, may be detained beyond the removal period and, if released, shall be subject to [certain] terms of supervision...

In plain language, most aliens do not have to be detained even after receiving an order of removal, and even those aliens who must be detained are eventually released if they cannot be deported within the legal timeframe.

It is not always possible for the government to remove people within this 90-day window for a variety of reasons not germane to this policy options review. In the case of aliens who are subject to mandatory detention, this presented a significant legal question with potential Constitutional implications. The U.S. Supreme Court resolved this question in *Zadvydas v. Davis*.¹⁸⁴ The Supreme Court held that there is a presumptively reasonable post-order detention period of 180 days. Detained aliens can challenge their detention through habeas corpus proceedings.¹⁸⁵ In *Zadvydas*, the Supreme Court stated about habeas proceedings:

In answering that basic question, the habeas court must ask whether the detention in question exceeds a period reasonably necessary to secure removal. It should measure reasonableness primarily in terms of the statute's basic purpose, namely assuring the alien's presence at the moment of removal. Thus, if removal is not reasonably foreseeable, the court should hold continued detention unreasonable and no longer authorized by statute.¹⁸⁶

A subsequent decision, *Clark v. Martinez*, extended the *Zadvydas* decision to inadmissible aliens.¹⁸⁷

¹⁸⁴ *Zadvydas v Davis*, 533 U.S. (2001), § IV.

¹⁸⁵ 28 U. S. C., § 2241(c) (3).

¹⁸⁶ *Zadvydas*.

¹⁸⁷ *Clark et al. v. Martinez*, 543 U.S. 371 (2005), <https://www.law.cornell.edu/supct/html/03-878.ZS.html>.

H. UNEXECUTED ORDERS OF REMOVAL

The fact that an alien has been issued an order of removal does not mean that he or she will depart the United States. The INS estimated that there were 331,734 aliens with unexecuted final orders of removal, also known as immigration fugitives, in September 2001. By August 2006, this number had swelled to 623,292.¹⁸⁸ ICE no longer publishes numbers on immigration fugitives.

¹⁸⁸ Jacqueline Simms, Kristine Odina, and Michael Zeitler, *An Assessment of the United States Immigration and Customs Enforcement's Fugitive Operations Teams* (OIG-07-34) (Washington, DC: Department of Homeland Security Office of Inspector General, 2007), https://www.oig.dhs.gov/assets/Mgmt/OIG_07-34_Mar07.pdf, 12.

IV. THE STATUS QUO: CURRENT IMMIGRATION ENFORCEMENT LAW AND POLICY AS THEY RELATE TO TUBERCULOSIS

A. CURRENT IMMIGRATION ENFORCEMENT POLICIES

This section reviews the current immigration enforcement policies of the DHS relating to the arrest, detention, and removal of undocumented migrants. Additionally, it analyzes the effects of specific aspects of these policies on TB. Finally, it identifies gaps in the DHS's ability to identify and treat aliens with TB based on current policies.

1. DHS Policy on Apprehension, Detention, and Removal

The INA has been refined through the policies of the Department of Homeland Security. The current DHS policy is laid out in "Policies for the Apprehension, Detention, and Removal of Undocumented Immigrants" (hereafter "the 2014 DHS policy"), issued on November 20, 2014, by DHS Secretary Jeh Johnson.¹⁸⁹ This policy supersedes all previous DHS guidance on enforcement priorities.

2. Encounter and Arrest Policies and Practices

Immigration enforcement begins with the encounter and arrest of an alien by immigration officers. The 2014 DHS policy made the apprehension of aliens attempting to cross the border illegally and aliens convicted of felony offenses some of DHS's top immigration enforcement priorities.¹⁹⁰ The incidence of TB along the U.S. border with Mexico is higher than the general rate for either country, and incarcerated populations are at an enhanced risk for TB infection.¹⁹¹ Thus, while the 2014 DHS policy does not directly address infectious diseases, an unintended consequence of the policy is that the DHS enforcement priorities include categories of aliens known to be at increased risk for TB.

¹⁸⁹ DHS, *Policies for the Apprehension*.

¹⁹⁰ *Ibid.*

¹⁹¹ Lobato and Cegielski, "Preventing and Controlling Tuberculosis," 1–2; CDC, "TB in Correctional Facilities."

The initial encounter is also the first chance for the DHS to identify that an alien has TB. The arrested alien may report symptoms of active TB disease such as a bad cough, chest pain, coughing up blood, weakness or fatigue, chills, and fever.¹⁹² Note that officers are not trained medical professionals and receive no formal training on identifying TB. After the arrest, the alien is then processed so that she or he may be placed in removal proceedings. Processing provides another chance for the arresting officer to again observe the alien for any obvious symptoms of illness, as well an opportunity to ask the alien if he or she has any medical issues. During processing, the alien's biographical information and all factors pertinent to the initiation of removal proceedings are recorded on form I-213 "Record of Deportable/Inadmissible Alien." Of note, the form does not contain a field for medical history.

After the DHS processes an alien is for removal proceedings, ICE must decide whether or not to detain that person. Both CBP and ICE arrest aliens, but CBP does not detain aliens beyond the time spent at the processing station. If CBP decides to detain an alien, then that alien is then turned over to ICE for further action. Once ICE takes custody of an alien, policy requires that person to be given a risk classification assessment (RCA) as early in the process as possible unless the alien is subject to mandatory detention or is going to be removed within five days.¹⁹³ The RCA was developed to assist with creating uniformity in custody and release decisions.¹⁹⁴

The RCA contains questions on personal details, encounter details, supporting information, special vulnerabilities, mandatory detention, the risk to public safety, and the risk of flight.¹⁹⁵ The RCA does not include communicable diseases under "risk to public safety." Public safety considerations consist of an alien's criminal history, history of violence, and any disciplinary history while previously incarcerated. Based on these

¹⁹² Centers for Disease Control and Prevention, "Tuberculosis (TB) Disease: Symptoms & Risk Factors," last modified June 10, 2015, <http://www.cdc.gov/features/tbsymptoms/>.

¹⁹³ Marcia Moxey Hodges et al., U.S. *Immigration and Customs Enforcement's Alternatives to Detention (Revised)* (OIG-15-22) (Washington, DC: Department of Homeland Security, Office of the Inspector General, 2015), 11.

¹⁹⁴ Ibid.

¹⁹⁵ Ibid.

factors, the RCA system provides a recommendation for detention or release and a potential bond amount if applicable. The RCA places serious illnesses under “special vulnerabilities” category. The instructions for the RCA under “Serious Physical Illness” state, “Assess whether the individual has been diagnosed or claims to have a serious physical illness such as diabetes, seizures, HIV, AIDS, heart problems, cancer, epilepsy, or other serious illness.”¹⁹⁶ However, there is no direct mention of TB in the RCA. Special vulnerabilities might best be thought of as reasons to not detain an alien, counterweighted by risk factors such as criminal convictions or a history of escape attempts. If the RCA calculation recommends detention but the alien has a serious medical condition, then she or he is referred to a supervisor for a decision on whether to detain or release that person and under what release conditions.¹⁹⁷

3. Detention Policies and Practices

This section reviews the current policies relating to the detention of undocumented migrants. It also reviews the healthcare provisions of the 2011 PBNDS relating to TB. Additionally, it identifies that not all detained aliens are managed using the same detention standards, nor do all detained aliens receive identical care for TB.

a. Healthcare Provisions of the ICE Detention Standards

The detention provisions of the INA make no mention of public health or communicable disease. The INA does contain health-related grounds for excluding someone from entry into the United States and for the detention of alien crew for medical examination, but for purposes of this thesis restricts consideration to aliens who are already present in the United States or who are apprehended while attempting to enter the United States illegally.

ICE is responsible for providing medical care to all aliens in its custody. Different standards of care apply if the alien is detained for more than 72 hours or less than 72 hours. The Immigration Health Services Corps (IHSC), a division of ICE, follows the

¹⁹⁶ Ibid., 29.

¹⁹⁷ Ibid., 11.

2011 PBNDS at those facilities other than family residential centers where it directly provides medical coverage. However, three other sets of standards are in effect at different detention facilities around the country: the 2000 National Detention Standards, the 2008 Performance Based Detention Standards, and the Family Residential Standards.¹⁹⁸ This multiplicity of care standards greatly complicates ICE's response to communicable diseases. ICE does not have publicly available standards for under 72-hour detention.

The 2011 PBNDS are the most current detention standards. They are the guiding standard for around 60 percent of ICE detainees.¹⁹⁹ Also, they are the standards used at facilities where the IHSC provides medical services, and ICE is actively working to convert facilities that are on older detention standards to the 2011 PBNDS. For these reasons, the 2011 PBNDS will be used for all further discussions of ICE's detention and healthcare policies. Any exceptions will specifically state the detention standard referenced.

b. The 2011 Performance Based Detention Standards and Tuberculosis

The 2011 PBNDS requires that an alien receive a TB screening following CDC guidelines within 12 hours of arriving at the detention facility. This screening may be given by a medical professional or a specially trained detention officer. The detainee may not be placed in a housing unit until this screening is completed. Detention facilities are not required to screen detainees who were in the continuous custody of a law enforcement agency and who have a documented TB screening within the past six months. Annual or periodic TB tests are required for any alien in detention for more than one year. Detention facilities are also required to have a healthcare practitioner conduct a comprehensive health examination within 14 days of arrival. This comprehensive assessment includes both physical and mental health screenings. However, detention

¹⁹⁸ ICE, "ICE Detention Standards;" ICE, "Family Residential Standards."

¹⁹⁹ U.S. Immigration and Customs Enforcement, "Immigration Enforcement: Detention Reform," accessed July 20, 2016, <https://www.ice.gov/detention-reform>.

facilities are not required to provide assessments to any detainee who has had a documented comprehensive health assessment within the last 90 days.

The 2011 PBNDS requires:

Detainees with symptoms suggestive of TB, or with suspected or confirmed active TB disease based on clinical and/or laboratory findings, shall be placed in a functional airborne infection isolation room with negative pressure ventilation and be promptly evaluated for TB disease. Patients with suspected active TB shall remain in airborne infection isolation until determined by a qualified provider to be noncontagious in accordance with CDC guidelines.²⁰⁰

The 2011 PBNDS includes numerous procedural safeguards for managing confirmed and suspected cases of active TB. The detention facility must “Report all cases to local and/or state health departments within one working day of meeting reporting criteria and in accordance with established guidelines and applicable laws...”²⁰¹ The facility must also notify the IHSC PHSP and provide biographical information, a case summary report, and a treatment status and start date. This notification was not required by the 2000 National Detention Standards and thus is not required at some ICE detention facilities.²⁰² The detention facility must notify the IHSC PHSP of any hospitalizations, facility transfers, releases, or removals. This is to help coordinate continuity of care if ICE releases the alien before removal and to enlist local health department assistance in arranging continuity of care if the alien is released or removed to another country. Multidrug-resistant and extensively drug-resistant TB cases must be coordinated with the state or local health department to create a customized treatment regimen. Aliens are educated about their TB treatment and provided with a 15-day supply of medications when transferred, released, or removed.²⁰³

²⁰⁰ ICE, “2011 Operations Manual,” 7.

²⁰¹ *Ibid.*

²⁰² U.S. Immigration and Customs Enforcement [ICE], “2000 Detention Operations Manual: Health Services—Medical Care,” accessed July 20, 2016, <https://www.ice.gov/detention-standards/2000>.

²⁰³ *Ibid.*

c. Medical Staff at ICE Detention Facilities

Not all detention facilities used by ICE follow the same healthcare model, and ICE uses several types of detention facilities.²⁰⁴ The first type is a service processing center or SPC. An SPC is owned by ICE and can be staffed with either ICE officers or contract personnel. The next type is a contract detention facility or CDF. A CDF is owned and operated by a contractor but operating exclusively on an ICE contract. The majority of facilities are known as inter-government service agreement (IGSA) facilities. These facilities can be owned by state governments, county or local governments, or contractors, and generally do not solely house ICE detainees. An IGSA that solely houses ICE detainees is known as a dedicated IGSA. Some IGSA facilities are used exclusively for detaining people for less than 72 hours. These distinctions are important because the medical care provisions of the 2011 PBNDS apply in general only to facilities used for over 72-hour detention, only at facilities bound by the 2011 PBNDS, and certain procedures in those provisions do not apply to non-dedicated IGSA facilities.²⁰⁵ Non-dedicated IGSA facilities must use comparable procedures to those listed in the ICE standard.

The IHSC oversees the healthcare of ICE detainees. The IHSC is composed of “more than 900 U.S. Public Health Service commissioned officers, federal civil servants, and contract support staff.”²⁰⁶ However, IHSC only directly oversees medical care at 21 ICE detention and staging facilities.²⁰⁷ Medical care at the other facilities is provided by the government or private entity that operates the facility. Facilities without IHSC coverage face challenges such as rapid turnover and remote locations.²⁰⁸

²⁰⁴ Gambler, *Immigration Detention*, 9.

²⁰⁵ ICE, “2000 Detention Operations Manual.”

²⁰⁶ U.S. Immigration and Customs Enforcement, “ICE Health Services Corps,” accessed July 13, 2016, <https://www.ice.gov/ice-health-service-corps>.

²⁰⁷ *Ibid.*

²⁰⁸ Diana Schneider, “Complexities of Tuberculosis Case Management for U.S. Immigration and Customs Enforcement (ICE) Detainees” (paper presented at the International Union Against TB and Lung Disease/NAR 2008, Paris, France, March 1, 2008).

4. Removal Policies and Practices

When the DHS removes from the United States a detained alien who has TB, the detention facility should coordinate with the IHSC PHSP on an international referral and continuity of therapy. In 2004, ICE implemented a policy allowing for a temporary “medical hold” so that the IHSC could arrange for continuity of care before removal.²⁰⁹ In 2005, ICE formalized policies for referring medical cases to two organizations: TBNet and CureTB.²¹⁰

TBNet, created by the Migrant Clinicians Network in 1996, provides continuity of care through case management of highly mobile TB patients, such as deportees.²¹¹ According to TBNet, most alien patients only receive eight weeks of therapy before departing the United States. Such deportees usually make at least three major moves: from the population to a detention center, from the detention center to their country of origin, and/or from their place of arrival to their home in their country of origin. TBNet uses a caseworker to keep in telephone contact with the deported patients and with their healthcare provider to ensure that the patient is continuing treatment.

CureTB is “a referral and continuity of care program for tuberculosis patients and their contacts who travel between the United States, Mexico, and Central America.”²¹² CureTB functions as an information exchange and facilitation service. It educates deportees and connects them with TB clinics in their destination country and provides clinical information to the receiving clinics. CureTB also provides follow-up case information to the referring entity every two months and a final report after 12 months.²¹³

²⁰⁹ Kevin Fenton and Kenneth Castro, “Prevention and Control of Tuberculosis in Correctional and Detention Facilities: Recommendations from CDC,” *Morbidity and Mortality Weekly Report* 55, no. RR-9 (2006): 1–44.

²¹⁰ Combellick, Zuroweste, and Gany, “TBNet;” Schneider and Lobato, “Tuberculosis Control.”

²¹¹ Combellick, Zuroweste, and Gany, “TBNet.”

²¹² San Diego County Health and Human Services Agency, “CureTB Referral Program,” accessed July 13, 2016, http://www.sdcounty.ca.gov/hhsa/programs/phs/cure_tb.

²¹³ “CureTB Bi-national Referral Program—Information for Providers,” YouTube video, 1:33, posted by countysandiego, last modified September 13, 2013, https://www.youtube.com/watch?v=H_Mib2qjWIw.

There are notable differences between TBNet and CureTB. TBNet requires patient consent as a prerequisite for enrollment in the program. CureTB does not require consent because it is a program within a government public health entity. TBNet has more frequent contact with deported TB patients, while CureTB is more involved in active case management such as reviewing treatment plans and DOT records.²¹⁴

B. ANALYSIS OF THE INTERSECTION OF CURRENT IMMIGRATION ENFORCEMENT POLICIES AND TB

This section analyzes the effects of current immigration enforcement policies on the DHS's ability to identify and treat aliens with TB. Also, it reviews the potential risk that TB poses to DHS immigration officers and discusses the inability of DHS officers to identify the presence of TB. It then discusses challenges with treating TB under the current detention standards. Finally, it reviews how the removal process complicates the treatment of TB.

1. The Intersection of Immigration Apprehension Policies and TB

Just as apprehension provides the first chance for DHS officers to identify the presence of TB, it also presents the first chance for the transmission of infectious TB. Such transmission could occur during a field interview, in the transporting vehicle, or at the office where processing occurs. There is no safe exposure time to someone who has infectious TB; any length of contact carries at least a small risk of transmitting the disease.²¹⁵ It is very difficult to quantify a person's chance of contracting TB from contact with an infected person. Studies have identified several risk factors for catching TB such as the virulence of the infection in the person with TB, duration of contact, proximity of contact, the amount of air circulation available during contact, and underlying medical conditions in the potential recipient.²¹⁶ The DHS does not keep statistics on employees infected with TB or any other disease, and so it is not possible to further quantify this risk.

²¹⁴ Elson, personal communication.

²¹⁵ Taylor, "Guidelines for the Investigation of Contacts."

²¹⁶ Ibid.

Before a person receives treatment for TB, the disease must first be identified. There are many gaps in the DHS's ability to identify the presence of TB disease at the time an alien is encountered or arrested. If the DHS releases an arrested alien, then the only medical information taken from most aliens is through an interview with an ICE officer and the creation of an I-213 and an RCA. In the cases of aliens received directly from penal institutions, medical records are sometimes available for review. ICE's RCA does include questions on serious physical illnesses, but the form does not directly reference TB. Medical issues are a reason to release an alien from custody rather than to detain someone. Aliens may have TB and not be aware of it or may not disclose prior treatment to officers even when questioned. Furthermore, immigration officers are not medical personnel and are not trained to recognize the symptoms of TB. Even if an officer did observe signs of illness, or if the arrested alien gave a complete and accurate review of any symptoms of illness, the untrained officer could well miss the signs of TB. Many TB symptoms such as coughing, fever, chills, and fatigue are very similar to the flu or other illnesses.

ICE procedures do not require an RCA for aliens who are subject to mandatory detention or are removable within five days. ICE uses non-judicial removal authorities, such as reinstated removal and administrative removal, to remove many aliens transferred to ICE custody after release from jail, or prison.²¹⁷ These aliens are also frequently subject to mandatory detention, which again means that no RCA is required. Aliens apprehended at the border are frequently subject to the use of expedited removal or another legal authority that allows for their rapid deportation.²¹⁸ When that alien is from Mexico, this means that removal is likely to take less than the five-day window. Thus, prisoners and Mexican nationals, both populations are known to be at enhanced risk for TB infection, are also some of the most likely to be rapidly removed without DHS performing even a cursory evaluation of that risk through completion of an RCA. If an alien does not receive an RCA, then form I-213 is the only place to note any medical issues, and the form does not contain a narrative field specifically for medical issues.

²¹⁷ Immigration and Nationality Act of 1952, § 238, § 241(a) (5) (1952) [as amended].

²¹⁸ *Ibid.*, § 235.

2. The Intersection of Immigration Detention and TB

The primary way that ICE identifies the presence of TB is through the health screening performed when an alien is placed in detention for more than 72 hours. However, ICE detains only a fraction of the total number of aliens arrested by the DHS, and thus it is impossible to know how many aliens with either latent or active TB are encountered by the DHS each year.

In FY2013, ICE detained an average of 32,805 people per day, and aliens spent an average of 27 days in ICE custody.²¹⁹ During that same period, ICE removed 368,644 people. Of these, 235,093 were arrested at or near the border while attempting to enter the United States from Mexico.²²⁰ Furthermore, there were 241,493 Mexican citizens removed. Most of the removals used non-judicial removal authorities. Expedited removals accounted for 101,000 people, 159,624 were subject to reinstated removal, and 23,455 were allowed to depart voluntarily before the initiation of removal proceedings. Only around 75,000 were issued a final order of removal by an immigration judge.²²¹ In summation, the overwhelming majority of removals were for Mexican citizens arrested at the border and issued a non-judicial order of removal. This means that the majority of aliens arrested and removed were not in ICE detention for more than 72 hours, and thus the DHS did not test them for TB.

A study by the American Thoracic Association noted, “Persons who have immigrated from areas of the world with high rates of TB have incidence rates that approach those of their countries of origin for the first several years after arrival in the United States.”²²² The DHS has not published a statistic for how many cases of TB were reported in ICE custody during FY2013, but for discussion purposes, a model can be built

²¹⁹ Gambler, *Immigration Detention*, 7.

²²⁰ U.S. Immigration and Customs Enforcement, “ICE Announces FY 2013 Removal Numbers,” last modified December 18, 2013, <https://www.ice.gov/news/releases/ice-announces-fy-2013-removal-numbers>.

²²¹ U.S. Immigration and Customs Enforcement [ICE], *2013 ICE Immigration Removals* [ERO annual report] (Washington, DC: U.S. Immigration and Customs Enforcement, 2014), www.ice.gov/doclib/about/offices/ero/pdf/2013-ice-immigration-removals.pdf, 4.

²²² David Cohn et al., “Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection,” *Morbidity and Mortality Weekly Report* 49, no. RR6 (2000): 1–54.

using the assumption that the TB rate for immigrants was the same as the reported rate in their country of origin. As previously noted, in FY2013 ICE removed 368,644 people. That total included 241,493 Mexicans, 47,769 Guatemalans, 37,049 Hondurans, and 21,602 El Salvadorans.²²³ According to the World Health Organization, the incidence of TB in Mexico was 21 cases per 100,000 people, in Guatemala it was 57 cases per 100,000 people, in Honduras it was 43 cases per 100,000 people, and in El Salvador it was 41 cases per 100,000 people.²²⁴ If the incidence of TB in aliens removed by the DHS matched the incidence of their home countries, then in FY2013 the DHS removed approximately 103 people with TB from just those four countries. This equates to 29.6 cases per 100,000 people removed.

By way of comparison, both removal data and reported TB data are available for FY2004 and FY2005. ICE has changed the methodology used to report removal data several times making a comparative analysis with 2013 removal numbers impossible, but these numbers at least serve to help frame the issue.²²⁵ In FY2004, ICE removed 202,842 aliens, and in FY2005, ICE removed 208,521 aliens. In FY2004, the reported incidence of TB for aliens in ICE custody was 82.6 per 100,000, and in FY2005, it was 121.5 per 100,000.²²⁶ For an analysis of the incidence of TB in ICE custody see Chapter VII.

These numbers, although not an exact comparison, help to illustrate the potential magnitude of the problem of TB in immigration enforcement. In FY2004, ICE removed only about half as many aliens as in FY2013. Despite this drastic disparity in the number of removals, the reported incidence of TB for aliens in ICE custody, a fraction of the total of aliens encountered by the DHS, was nearly three times the 2013 estimate using the model built with current World Health Organization figures for all aliens removed by ICE. The reported incidence of TB in FY2005 is more than four times the FY2013 estimate, while the removal numbers are again just over half of the FY2013 removals.

²²³ ICE, *2013 ICE Immigration Removals*.

²²⁴ World Health Organization, "Tuberculosis (TB): Tuberculosis Country Profiles," last modified March 21, 2016, <http://www.who.int/tb/country/data/profiles/en/>.

²²⁵ U.S. Department of Homeland Security, "Yearbook of Immigration Statistics," last modified September 3, 2015, <https://www.dhs.gov/yearbook-immigration-statistics>.

²²⁶ Schneider and Lobato, "Tuberculosis Control."

Because ICE only tests aliens for TB if they are in detention for more than 72 hours, it is impossible to say with any accuracy how many aliens with TB the DHS encountered. However, at least in 2004 and 2005, the known incidence of TB in ICE custody far exceeded the number generated from the 2013 theoretical model using a much larger population.

The ICE detention standards may contribute to the creation of drug-resistant TB because they do not require the complete treatment of TB before removal. As previously noted in Part 1C of this chapter, the ICE policy requires that aliens with TB are treated until they are no longer contagious. It is important to note that noncontagious is not synonymous with cured. The 27 days that the average alien spends in detention is not sufficient time to cure TB. Improper or incomplete treatment of TB disease can result in a return to a contagious state, acquired drug resistance, transmission of the disease to others, and poor outcomes including death.²²⁷

3. The Intersection of Removal Policies and TB

Removal from the United States presents many challenges to TB treatment. In 2001 the CDC noted, “One of the most challenging tasks in managing TB among detainees is the coordination of care during the post-detention period in the United States or in the patients’ countries of origin.”²²⁸ In November 2002, the Advisory Council for the Elimination of Tuberculosis (ACET) recommended that a working group be formed to review problems with post-detention TB treatment of aliens released or removed by the INS.²²⁹ ACET suggested that removal should only occur after the “responsible state TB controller” approved a treatment plan, including verifying that necessary treatment is available at the destination. ACET also suggested referring cases to international TB referral programs such as TBNet and CureTB.

²²⁷ CDC, “Treatment for TB Disease.”

²²⁸ Saunders et al., “Tuberculosis Screening.”

²²⁹ Nolan et al., “Post-detention Completion,” 438, 440–441.

The CDC recommends directly observed therapy (DOT) for all TB treatment.²³⁰ DOT is a protocol where a healthcare provider watches the patient take each dose of medication to ensure that the patient fully and correctly completes the course of treatment. If a detainee with TB is released from custody but remains in the community, then they are referred to local health officials for continuity of care, including DOT.

Aliens deported by the DHS are in a completely different situation. ICE policy requires that the alien is given a 15-day supply of medication, but this is a small fraction of the necessary three to nine-month course of treatment.²³¹ As previously noted, ICE refers deported TB patients to TBNet and CureTB. Of note, ICE has no authority to enforce this referral either on the part of the aliens or the part of the foreign government or health department receiving the deportee. Once in their country of origin, aliens may travel to or reside in a location where they have limited access to healthcare or have limited funding to buy medication and pay for treatment. Aliens may also cease treatment if they do not feel sick; the medical community created DOT to address this exact issue. There is even a chance that, due to different protocols on TB testing and treatment, someone diagnosed with TB in the United States would not be recognized in their home country as having the disease. The presence of drug-resistant TB or factors such as co-morbidity with other conditions, such as HIV/AIDS, can add additional complications.

In a 2011 report, TBNet claimed an 85 percent rate of successful completion of treatment for all cases referred to TBNet between May 1, 2005, and February 28, 2008.²³² Five percent refused to continue treatment, and 10 percent were lost to follow-up. Referred deportees with multi-drug resistant TB had a 50 percent treatment success rate. One limitation of the TBNet study is that due to the different detention standards in effect, ICE detention facilities refer “most but not all” TB cases of deportee before removal. ICE referred Mexican citizens deported from states other than Texas, and New Mexico to CureTB instead of TBNet.

²³⁰ American Thoracic Society, “Treatment of Tuberculosis.”

²³¹ ICE, “National Detention Standards.”

²³² *Ibid.*

Results cited by CureTB are different than the figures reported by TBNet. In 2009, a report by CureTB stated, “Our results are consistent with early assessments of outcomes among TB patients in ICE custody. We found that 80% of all TB patients were enrolled in an international TB referral program, with 58% completing treatment and 23% either lost to follow-up or with no reported outcome.”²³³

On March 1, 2008, Commander Diana Schneider of the ICE Immigration Health Services Corps gave a presentation to the International Union Against TB and Lung Disease.²³⁴ During that presentation, Commander Schneider reported the key outcomes of TB referrals for the period of January 2004 to July 2006. ICE reported 416 active TB patients during this period. Of these, 356 people, nearly 86 percent, were enrolled in a TB referral program. Of those so enrolled, 208 (about 58 percent) completed treatment. ICE deported 284 active TB patients, and 148 of those (about 52 percent) completed treatment. ICE released 45 active TB patients inside the United States; 27 of those (60 percent) completed treatment. In all, 112 people (about 28 percent) did not complete treatment. Of those, 71 were “lost to follow-up,” and 30 either refused treatment totally or else ceased treatment at some point. Moreover, 50 people (12 percent) had no known treatment outcome. Finally, 22 people (around 5 percent) were reclassified as not having TB or were not recommended for treatment.

As can be seen from the numbers reported above TBNet, CureTB, and ICE report different results from TB referrals. There are not enough data available to account for the disparity in reported results. It is possible that it stems from the differences in populations involved in the reports. For instance, CureTB dealt solely with Mexicans, while TBNet mostly dealt with aliens from countries other than Mexico, and ICE is reporting an amalgam of all nationalities. Both CureTB and TBNet now refer cases to any country.²³⁵ CureTB does not require patient consent for enrollment in the program, but TBNet

²³³ Deiss et al., “Influences of Cross-Border Mobility.”

²³⁴ Schneider, “Complexities of Tuberculosis Case Management,” 26.

²³⁵ Elson, personal communication.

does.²³⁶ It is also possible that TBNet’s case management model achieves better outcomes because it uses case managers to interact with both deported TB patients and healthcare workers; perhaps this additional interpersonal communication encourages better participation. The difference in case management models between CureTB and TBNet are also possible causes of the disparity in results.

This thesis uses the number reported by ICE as the baseline. To reiterate, according to ICE, around 40 percent of aliens with active TB failed to complete treatment either in their home country or the United States. DHS statistics also show that removal from the United States, particularly for those aliens illegally crossing the U.S. border with Mexico, does not mean that the alien will never again be a member of an American community. For example, in FY2014 CBP’s Office of Border Patrol removed 205,058 persons. Of those, 54,115, slightly more than one-quarter of every alien arrested, had been previously removed from the United States.²³⁷ This statistic on deportee recidivism is consistent with a 2003 CDC report on post-detention completion rates for TB treatment in which the authors stated, “During January 2000–March 2001, CURE-TB reported that 25 percent of TB patients deported to Latin America with known follow-up returned to the United States (K. Moser, San Diego Health and Human Services Agency, personal communication, 2001).”²³⁸ The United States maintains a clear public health interest in aliens with TB present in the country, regardless of the person’s legal status until that TB is cured.

C. SUMMARY

The status quo is that current immigration enforcement policies concentrate TB control efforts on the detained population. Testing is performed only on aliens detained for more than 72 hours. Aliens must be treated for TB disease until they are no longer contagious before they can be deported. ICE uses two international referral services to

²³⁶ San Diego County Health and Human Services Agency, “CureTB Referral Program,” Migrant Clinicians Network, “TBNet: Global Tuberculosis Management,” accessed July 13, 2016, <http://www.migrantclinician.org/services/network/tbnet.html>.

²³⁷ ICE, *ICE Enforcement and Removal* 2014, 8.

²³⁸ Nolan et al., “Post-detention Completion.”

help provide continuity of care after removal. The existence of multiple detention standards and the fact the ICE IHSC provides medical care at only a select group of facilities complicates TB treatment and case management.

V. POLICY OPTION: CURE TUBERCULOSIS BEFORE REMOVAL

A. POLICY DESCRIPTION AND COMPARISON TO THE STATUS QUO

As noted in Chapter IV, there are many issues with ensuring that deported TB patients complete their treatment after removal. This is problematic because improper or incomplete treatment of TB disease can result in a return to a contagious state, acquired drug resistance, transmission of the disease to others, and poor outcomes, including death.²³⁹ One way to potentially obtain better treatment outcomes for aliens undergoing TB treatment is for them to complete TB treatment in the United States before removal. According to the CDC, “Treatment of patients with tuberculosis is most successful within a comprehensive framework that addresses both clinical and social issues of relevance to the patient.”²⁴⁰ Aliens’ removal from the United States to their country of origin is one such social issue of relevance and must be taken into account when creating a treatment plan. Under this policy option, there would be no consideration of removal from the United States before the successful completion of treatment for aliens with either latent or active TB.

1. Proposed Changes to the Status Quo Apprehension Policy

There would be no changes to the overall DHS immigration enforcement strategy under this policy option. For example, ICE would not target aliens with diseases of public health significance for arrest and removal. However, before TB can be treated, the arresting agency must be aware that it exists. This would require a change to the way DHS processes aliens for removal proceedings or additional TB testing. Chapter VII analyzes the policy option to increase TB testing.

As established in Chapter IV, the initial encounter with an immigration enforcement officer provides the DHS’s first chance to identify the presence of TB. This is primarily done through an in-person interview and the creation of two forms: the form

²³⁹ CDC, “Treatment for TB Disease.”

²⁴⁰ Ibid.

I-213 (record of deportable alien), and the risk classification assessment (RCA). The form I-213 does not have a dedicated space for medical information. Although the RCA does contain information about health issues, it does not ask about TB. It would be a relatively simple matter to update the forms to include TB screening questions, but this would not change the fact that immigration officers are not trained healthcare providers and could miss the presence of TB even if they note the presence of symptoms.

In 2006, the CDC recommended that short-term detention facilities should perform a TB symptom screening on all new intakes.²⁴¹ While the report does not directly refer to immigration processing centers, the principles in the report would still apply. The question then becomes who would perform such a screening. The obvious answer is that medical professionals would administer the screening, but this would be extremely expensive. There are around 135 Border Patrol stations in the United States.²⁴² According to the Bureau of Labor Statistics, the median wage for a licensed practical nurse in 2015 was \$44,030 per year.²⁴³ Even if one nurse were sufficient for each Border Patrol station, this would cost the DHS \$5,944,050 per year, and this figure does not yet include any of the dozens of ICE offices in the United States.

The existing ICE detention standards point towards a potential solution to this problem. The ICE detention standard on medical care requires that new detainees receive an initial healthcare screening within 12 hours of arrival at the facility. This screening can be performed by “a healthcare provider or a specially trained detention officer.”²⁴⁴ DHS could extend this policy to cover processing centers and train immigration officers to perform initial health screenings for all arrested aliens. While immigration officers might earn more in wages than do licensed practical nurses, it might be possible to perform

²⁴¹ Earnest, G. Scott et al., “Prevention and Control of Tuberculosis in Correctional and Detention Facilities: Recommendations from CDC,” *Morbidity and Mortality Weekly Report* 55, no. RR09 (2006): 1–44. Earnest, G. Scott, Michael Gressel, Kenneth Mead, Teresa Seitz, and Douglas Trout.

²⁴² U.S. Customs and Border Protection, “Border Patrol Sectors,” accessed July 13, 2016, <https://www.cbp.gov/border-security/along-us-borders/border-patrol-sectors>.

²⁴³ Bureau of Labor Statistics, “Occupational Employment Statistics: Occupational Employment and Wages, May 2015, 29–2061 Licensed Practical and Licensed Vocational Nurses,” last modified March 30, 2016, <http://www.bls.gov/oes/current/oes292061.htm>.

²⁴⁴ ICE, “National Detention Standards.”

healthcare screenings using existing staff and thus not increase costs. If such a specially trained officer believed that an alien exhibited symptoms of TB, or described a medical history consistent with TB, then that alien could be referred for further testing. Such testing could occur whether or not the DHS detained that person, but the suspected presence of a disease of public health significance would be a factor in determining to detain the person due to the risk the disease poses to the community. However, such screenings would only detect a fraction of the TB disease present in the population encountered by immigration officers. Many people with TB disease are asymptomatic.²⁴⁵

As discussed in Chapter III, the DHS does not detain the majority of aliens arrested by its officers even if those aliens are in removal proceedings. Encountered aliens may fall outside of DHS's enforcement priorities, be the sole care provider for a child or disabled relative, or have some other factor, which makes their detention be not in the best interests of the government. The DHS may set whatever conditions it sees fit for release from custody. If the initial health screening proposed in this policy option showed that an alien might have TB, then one of those release conditions could be that the released person be tested for TB, and if found to have TB, then to undergo treatment for the disease.

2. Proposed Changes to the Status Quo Detention Policies

This section outlines several possible options for modifying detention practices to more directly address challenges related to TB. It reviews court cases related to immigration detention and the potential legality of using immigration detention authority to treat people for diseases, such as TB. It then reviews other disease-related detention authorities. Finally, it analyzes the possible use of the ICE program "Alternatives to Detention" to help manage treatment of aliens with TB in a non-detained setting.

a. Detention to Continue Medical Care

Curing TB before removal would not entail changes to the healthcare provisions of the ICE detention standards, but there would potentially be changes to the application

²⁴⁵ Elson, personal communication.

of the DHS's detention authorities. As discussed in Chapter IV, at the time of arrest ICE uses the RCA to determine if an alien should be detained or released and if released what the conditions of release should be. The RCA takes into account if the alien is a flight risk, is a danger to the community, or has a special vulnerability. The term danger (or risk) to the community also frequently appears in court decisions concerning immigration detention, such as *Zadvydas*.²⁴⁶ The danger to the community is always discussed in terms of criminal convictions and history of violence; however, there is nothing in the statute that precludes consideration of a communicable disease as a danger to the community. The Immigration Amendments Act of 1990 excludes any alien "who is determined (in accordance with regulations prescribed by the Secretary of Health and Human Services) to have a communicable disease of public health significance."²⁴⁷ To paraphrase this ground of exclusion: aliens who have communicable diseases of public health significance present a danger to the community. Infectious TB is one such disease.²⁴⁸

As discussed in Chapter III, aliens not subject to mandatory detention may ask an Immigration Judge to review the conditions of their custody (commonly referred to as a "bond hearing"). The Immigration Judge has broad leeway to determine what factors to consider during a bond hearing.²⁴⁹ ICE could argue that diseases of public health significance such as infectious TB pose a danger to the community and constitute a basis for continued detention. While it is not possible to pre-suppose whether this argument would prevail in a bond hearing, the immigration judges can consider the matter due to their leeway in bond hearings. Such an argument would not be effective in the case of an alien with latent TB as that person poses no imminent danger to the community.

Detention following the issuance of a final order of removal presents separate issues. To reiterate the Supreme Court's decision in *Zadvydas*:

²⁴⁶ *Zadvydas*.

²⁴⁷ 42 C.F.R. § 34.2 (b).

²⁴⁸ *Ibid*.

²⁴⁹ "Matter of Guerra, 24 I&N Dec. 37 (BIA 2006)."

In answering that basic question, the habeas court must ask whether the detention in question exceeds a period reasonably necessary to secure removal. It should measure reasonableness primarily in terms of the statute's basic purpose, namely assuring the alien's presence at the moment of removal. Thus, if removal is not reasonably foreseeable, the court should hold continued detention unreasonable and no longer authorized by statute.²⁵⁰

Zadvydas again refers to danger to the community as a reason to detain an alien, and it makes no reference to communicable diseases or other health issues.

Despite the potential legal obstacles, we should not overlook the fact that immigration detention provides a unique opportunity to treat aliens for TB. In criminal detention, the convicted person must be released promptly at the expiration of their sentence regardless of any existing health issues. By way of contrast, aliens in civil detention for removal proceedings may be held in detention for the duration of their removal proceedings, regardless of the length of those proceedings, and a presumptively reasonable period of 180 days after receiving a final removal order. These timeframes are sufficient to complete a full course of treatment (depending on the specific treatment regimen) for latent TB infection or uncomplicated active TB disease. Of note, *Zadvydas* does not require the release of an alien after 180 days; it only establishes that 180 days is presumptively reasonable. Post 180-day detention must be justified as to its reasonableness. ICE headquarters reviews detention beyond 180 days, and danger to the community is the primary factor considered in continued detention. A communicable disease of public health significance arguably poses the necessary danger to the community to justify continued detention.

Additional legal issues must be considered when contemplating the use of civil immigration detention specifically for medical care. The Supreme Court's decision in *Zadvydas* states that the reasonableness of the length of detention relates directly to the government's ability to remove an alien from the United States. Thus, it could be argued that under *Zadvydas*, the continued detention of an otherwise removable alien for the purpose of medical treatment is not permissible. The court system has not tested this

²⁵⁰ *Zadvydas*, § IV.

proposition. It is also possible that the courts would only find detention during the period of infectiousness to be reasonable. Not all forms of TB are on the list of diseases of public health significance, only infectious TB. A possible solution for the legal hurdles created by new uses of detention authority is offered below in the section titled “A Potential Solution—Alternatives to Detention.”

b. Quarantine and Isolation—Other Health-Related Detention Authorities

If the courts, whether immigration or United States, held that civil immigration detention could not be used specifically to ensure medical treatment of aliens during or after removal proceedings, it would then be necessary to rely on other public health detention authorities to continue treatment in a custodial setting. This would also be true in the case of an alien with TB, who was detained during removal proceedings but was granted some form of relief from removal, had their proceedings terminated or was otherwise no longer subject to the DHS’s civil immigration detention authorities.

In *Through the Quarantine Looking Glass: Drug-Resistant Tuberculosis and Public Health Governance, Law, and Ethics*, the authors stated:

Public health authorities possess a variety of powers to restrict the autonomy or liberty of persons who pose a public health threat because they are infected with, or have been exposed to, dangerous, contagious pathogens. These authorities can direct individuals to discontinue risk behaviors (e.g., ‘cease and desist’ orders), compel them to submit to physical examination or treatment, and detain them using public health or criminal justice powers. Legal authority to exercise these powers in the United States can be found at local, state, and federal levels.²⁵¹

This policy options analysis considers only federal authorities.

The secretary of Health and Human Services (HHS) has the authority to quarantine or isolate under the Public Health Service Act.²⁵² This includes the authority to apprehend and detain individuals infected with quarantinable diseases. Quarantinable

²⁵¹ David Fidler, Lawrence Gostin, and Howard Markel, *Through the Quarantine Looking Glass: Drug-Resistant Tuberculosis and Public Health Governance, Law, and Ethics* (Bloomington, IN: Indiana University Maurer School of Law, 2007), 620.

²⁵² 42 U.S.C. § 264–272 (2005).

diseases are established by executive order, and infectious TB is one of these diseases.²⁵³ Furthermore, there are both civil and criminal penalties for violating quarantine laws.²⁵⁴ In practice, federal isolation and quarantine authorities are rarely used in modern times. In 2007, the CDC issued an isolation order against a U.S. citizen diagnosed with extensively drug-resistant TB; it was the first federal isolation order issued since 1963.²⁵⁵

c. A Potential Solution—Alternatives to Detention

ICE has already provided a potential solution to both the potential legal issues raised by changing the use of immigration detention authority to help treat TB and to the high cost of traditional detention. The solution, a program appropriately named Alternatives to Detention (ATD), is “a flight-risk mitigation tool that uses technology and case management to increase an alien’s compliance with release conditions, and to facilitate alien compliance with court hearings and final orders of removal while allowing aliens to remain in their community...”²⁵⁶ ATD uses tools such as random telephone check-ins verified through voice recognition technology, Global Positioning System (GPS) ankle bracelets, and both scheduled and unscheduled home and office visits to encourage an alien’s compliance with the conditions of her or his release.

ATD is significantly cheaper than traditional detention. ICE estimates that it costs an average of \$119 per day to detain an alien.²⁵⁷ In contrast, the cost of ATD ranges from \$0.17 per day to \$17.78 per day per participant, depending on the technology used and

²⁵³ Exec. Order no. 13,295, 42 U.S.C. 264(b) (Apr. 4, 2003) [Revised List of Quarantinable Communicable Diseases].

²⁵⁴ 42 U.S.C. § 271 (2005).

²⁵⁵ David Fidler, Lawrence Gostin, and Howard Markel, “Extensively Drug-Resistant Tuberculosis: An Isolation Order, Public Health Powers and a Global Crisis,” *Journal of the American Medical Association* 298, no. 1 (2007): 83.

²⁵⁶ U.S. Immigration and Customs Enforcement, *U.S. Immigration and Customs Enforcement (ICE) Advisory Committee on Family Residential Centers (ACFRC) Read Aheads* [sic] (Washington, DC: U.S. Immigration and Customs Enforcement, 2016), www.ice.gov/sites/default/files/documents/Document/2016/acfrcBriefingMaterialsMar2016.pdf, 12.

²⁵⁷ U.S. Immigration and Customs Enforcement [ICE], *Salaries and Expenses: Fiscal Year 2014 Congressional Justification* (Washington, DC: Department of Homeland Security, 2013), <http://www.dhs.gov/sites/default/files/publications/MGMT/DHS-%20Annual%20Performance%20Report%20and%20Congressional-Budget-Justification-FY2014.pdf>, 44.

the contracted services applied to the alien.²⁵⁸ In 2012, the average cost per participant in ATD was \$5.94.

Aliens released on ATD can be supervised directly by ICE officers or enrolled in programs operated by contractors. One such ATD program is the Intensive Supervision Appearance Program (ISAP).²⁵⁹ The ISAP contract does not currently provide for the contractor to ensure compliance with medical treatment, but it does include a component for referrals for medical services.²⁶⁰ The 2011 PBNDS requires the IHSC PHSP to coordinate with state and local health departments for continuity of care when ICE releases an alien infected with TB into the community. This process would also apply to aliens released from detention facilities on ATD but not aliens released directly from arrest and processing sites. The state or local health department with jurisdiction over the alien's place of residence would bear the responsibility for the cost of treatment and case management.

3. Proposed Changes to the Status Quo Removal Policy

The only change to ICE's removal policies under this policy option would be the fundamental change that ICE would not remove aliens until cured of TB disease.

B. ANALYSIS OF CURING TB BEFORE REMOVAL

This section analyzes some of the challenges to curing TB before removing an alien from the United States. These challenges include the cost of detention, the limitation of the Alternatives to Detention program, and the inability of ICE to pay for the medical care of anyone not detained by ICE.

²⁵⁸ Ibid.

²⁵⁹ The current contract, ISAP III, was effective as of November 2014. It has not been published for public review, but the solicitation for bids can be reviewed at: https://www.fbo.gov/?s=opportunity&mode=form&id=f1b8467882cbe8b26e54d26f08bef5b1&tab=core&_cview=1.

²⁶⁰ Hodges et al., *U.S. Immigration and Customs Enforcement's Alternatives*, 4.

1. The Cost of Detention

If the DHS detains aliens for the additional time necessary to complete TB treatment, then it will add to the already high cost of immigration detention. The cost of detention remains a sizable hurdle even if policy overcomes the significant legal issues related to detaining individuals for medical treatment. ICE estimates that aliens with criminal convictions (ICE's current enforcement priority) remain in ICE custody for an average of 34.5 days.²⁶¹ Using this figure and the previously cited rate of \$119 per day for detention, ICE spends an average of \$4105.50 to detain the average criminal alien for removal. To detain the same alien for 270 days (the maximum length of time necessary to complete therapy for latent or active TB disease as noted in Chapter II) would cost \$32,130. Note that the cost of detention would only be higher for aliens who would otherwise have been released from custody. There would be no additional detention cost for those aliens who would already be in custody during their removal proceedings.

2. Issues with Alternatives to Detention

ATD may relieve the burdens of detention, but it is not a panacea for medical treatment. Once ICE releases an alien from detention, there are potential obstacles to treatment even if they remain in the United States. For example, the alien may reside in an area where medical care is sparse or underfunded. This is particularly true along the U.S. border with Mexico. According to the CDC, "Low socioeconomic status, crowded living conditions, and limited access to healthcare increase the risk for TB transmission on both sides of the border."²⁶² The same report also noted, "A total of 10 of 24 counties evaluated along the U.S.-Mexico border are medically underserved and of low socioeconomic status."²⁶³

It is also true that ICE uses the Alternatives to Detention Program as a condition of release for a reason. If that reason has not changed then even if an alien does not comply with medical treatment requirements, it might not be feasible to take that alien

²⁶¹ ICE, *Salaries and Expenses*, 44.

²⁶² Lobato and Cegielski, "Preventing and Controlling Tuberculosis," 1–2.

²⁶³ *Ibid.*

into custody to enforce compliance. For example, if someone was released on Alternatives to Detention because he or she was the sole care provider for a child, then it is unlikely that he or she would be taken into custody unless there had been a substantial change in conditions, such as having been convicted of a felony.

3. Limitations on ICE Funded Medical Care

It is one thing for the DHS to require that an alien seeks medical treatment; it is another thing entirely for that alien to get such treatment. While treatment for latent TB infection is not exorbitantly expensive, it does have a cost. Healthcare costs in the United States are highly variable, but as an example in March 2016, the California Department of Health estimated that treatment for latent TB infection would cost \$147 per month or \$441 for a three-month course of treatment.²⁶⁴ Treatment for active TB disease is much more expensive; in a 2014 report, the CDC estimated that TB treatment cost \$17,000 per patient.²⁶⁵

The question inevitably arises as to who will pay for this treatment. ICE's healthcare appropriations only apply to aliens in detention.²⁶⁶ Once IC releases an alien, regardless of the conditions of her or his release, ICE is no longer able to pay for the medical care. As important as the question of who pays for medical care is, the answer is outside the scope of this thesis. It is worth remembering that many aliens who are in removal proceedings but not detained by ICE are already receiving healthcare in the United States.

The picture is much less complicated for aliens who are in ICE custody; ICE pays all healthcare costs for detained aliens. Because ICE does not publish information on the cost of detainee healthcare, it is impossible to estimate accurately the potential additional

²⁶⁴ This cost is specifically for a "12-dose INH/rifapentine regimen." This is a relatively new regimen that is completed in 12 weekly doses instead of a daily dose for nine months. California Department of Public Health, "Tuberculosis Control Branch," accessed May 18, 2016, <https://www.cdph.ca.gov/programs/tb/Documents/TBCB-INH-RIF-LTBI-fact-sheet.pdf>.

²⁶⁵ Suzanne Marks et al., "Treatment Practices, Outcomes, and Costs of Multidrug-Resistant and Extensively Drug-Resistant Tuberculosis, United States, 2005–2007," *Emerging Infectious Diseases* 20, no. 5 (2014): http://wwwnc.cdc.gov/eid/article/20/5/13-1037_article. Marks, Suzanne, Jennifer Flood, Barbara Seaworth, Yael Hirsch-Moverman, Lori Armstrong, Sundari Mase, Katya Salcedo et al.

²⁶⁶ Schneider, "Complexities of Tuberculosis Case Management."

cost of curing TB before removal, but a model can be created using existing data. As outlined in Chapter IV, ICE reported 416 active TB patients between January 2004 and July 2006.²⁶⁷ If the CDC estimate of \$17,000 is used as a cost estimate to cure active TB, then it would have cost ICE \$7,072,000 to cure those 416 people in addition to the cost of detention. This translates into \$2,828,800 per year. While this is a large sum of money, it must be kept in perspective. As noted in Chapter IV, in FY13 ICE detained an average of 32,805 aliens per day at an average cost of \$119 for a total of \$3,903,795 per day. The estimated cost of curing 416 aliens of active TB is less than ICE spends on two days of detention.

C. SUMMARY

One policy option to overcome difficulties in curing deported aliens of TB after their removal is to cure the disease in the United States prior to their removal. There are many barriers to such a policy; the first of these is that the DHS only identifies TB through the detention intake screening process. A protocol could be created to do a symptom screening at the time of arrest, but this would have limited usefulness as many people with TB are asymptomatic. The removal process often takes enough time to treat TB disease completely, but if this were done while an alien was in detention, it would be both costly and face potential legal challenges. The use of ICE's Alternatives to Detention Program would ameliorate the high cost of detention and remove legal challenges but delivering medical treatment could still be problematic. The DHS is not able to pay for the medical treatment of aliens who are not in detention.

²⁶⁷ Schneider and Lobato, "Tuberculosis Control."

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VI. POLICY OPTION: INCREASE INTERNATIONAL COOPERATION TO TREAT TUBERCULOSIS AFTER REMOVAL

Some potential modifications to U.S. immigration enforcement policy would take place outside of the U.S. border. Studies by the CDC and other groups have suggested that increased international cooperation is a vital component of a national strategy to combat TB.²⁶⁸ This chapter presents a review of increased international cooperation as a policy option. Also, it presents several options to present a more thorough picture of the range of options available when considering the DHS's response to TB. However, consideration is given only to cooperation that somehow intersects with U.S. immigration enforcement, usually in the context of a procedure that occurs after someone with TB has been deported.

Tuberculosis is a global problem that does not stop at border crossings. For example, the geographic region surrounding the U.S. border with Mexico has an incidence of TB that is higher than the general rate in either country. The population along the border is very transient, with an estimated 300 million people legally or illegally crossing that border every year.²⁶⁹ Sometimes border crossers return to their country of origin, and sometimes they stay. Deportation from the United States does not stop the cross-border activity; as previously noted, 25 percent of the aliens arrested by CBP at the U.S.-Mexico border had been previously removed from the United States. This fluidity of population means that combatting the threat TB poses to public health in the United States is an issue that must be tackled on both sides of the border. When the concept of the border is expanded to include international air travel, the multi-national nature of the threat of TB is compounded even further.

²⁶⁸ Lobato et al., "Preventing and Controlling Tuberculosis."

²⁶⁹ Lobato et al., "Preventing and Controlling Tuberculosis;" Centers for Disease Control and Prevention, "US-Mexico Cross-Border Health," last modified April 24, 2014, <http://www.cdc.gov/healthcommunication/toolstemplates/entertainment/tips/us-mexico-health.html>.

A. POLICY DESCRIPTION AND COMPARISON TO STATUS QUO

This policy option begins with the basic understanding that the United States maintains a public health interest in an alien with TB until that alien is cured. The United States engages in enhanced cooperation with countries receiving deportees undergoing TB treatment to ensure that the deportee is cured of the disease. The increased international cooperation policy option maintains the same procedures as the status quo until the DHS removes the person from the United States. As explained in Chapter IV, the DHS already uses two referral services, TBNet, and CureTB, to coordinate continuity of care after deportation. For this policy analysis, it is presumed that the DHS would continue to use these referral services and would also increase cooperation in other ways.

1. Current International Cooperation Measures

The CDC uses a three-step referral program for anyone who begins treatment for TB in the United States but relocates to another country before completion of treatment—regardless of their immigration status.²⁷⁰ These steps are,

- Notification of TB control personnel in the patient's country of destination.
- TB control personnel in that country advise patient to complete treatment.
- Patient is advised and educated on the importance of completing treatment.

As described in Chapter IV, ICE's use of TBNet and CureTB mirrors these three steps.

The fact that different countries use different definitions for active TB complicates the international referral process. This situation could result in deportees with TB no longer receiving treatment once they arrive in their country of citizenship. This, in turn, could contribute to the deportee developing drug resistance which could then be spread to others. For example, a case diagnosed as active TB in the United States might not be considered to be active TB in Mexico. Tuberculosis diagnosis in Mexico is made almost exclusively using an acid-fast bacilli (AFB) smear.²⁷¹ As discussed in

²⁷⁰ Centers for Disease Control and Prevention, "Process for International Notification of TB Cases," last modified September 1, 2012, <http://www.cdc.gov/tb/programs/international/default.htm>.

²⁷¹ Hernandez-Garduno et al., "Tuberculosis in Mexico and the USA."

Chapter II, the AFB smear is not an infallible method of diagnosing TB. A review of the known TB cases in ICE custody in 2006 showed that only 46 of the 175 cases were positive using the AFB smear.²⁷² The implication is that almost 75percent of the cases of TB being treated by ICE in 2006 before removal to Mexico might not have continued to receive treatment after deportation if the final cultures were negative. Similar situations are possible in any country that does not use the same diagnostic methodology as the United States. To help combat this problem, the CDC recommended the creation of a uniform case definition.²⁷³

For this reason, ICE typically does not treat immigration detainees for latent TB infection unless they have a complicating condition, such as HIV.²⁷⁴ However, this practice is also problematic. As explained in Chapter II, people with latent TB infection are more likely to develop active TB. Thus, the cycle continues—the deportee may either develop TB in a country where TB treatment outcomes are highly likely to be less optimal than in the United States, transmit the TB infection to family and co-workers, or return to the United States with active TB.

2. Current Public Health Cooperation Efforts between the United States and Other Countries

International cooperation to combat TB is an ongoing and ever-evolving effort. For example, the United States and China are involved in a joint research partnership to study TB at the Henan Provincial Chest Hospital.²⁷⁵ While these efforts are important, they fall outside the scope of this thesis. One effort that is more directly applicable to immigration enforcement is the Binational Border Infectious Disease Surveillance Program (BIDS), established in 1999, between the United States and Mexico. The CDC website explains, “BIDS relies on local, state, and federal collaboration to enhance infectious disease surveillance, build border-region epidemiology and laboratory

²⁷² Schneider, “Complexities of Case Management.”

²⁷³ Lobato et al., “Preventing and Controlling Tuberculosis.”

²⁷⁴ Elson, personal communication.

²⁷⁵ Anthony Fauci, “Working Together to End TB,” U.S. National Institutes of Health, accessed July 13, 2016, <http://shenyang.usembassy-china.org.cn/tb.html>.

capacity, and strengthen binational communication systems to improve disease prevention.”²⁷⁶ Thus, the ICE IHSC reporting a Mexican deportee undergoing TB treatment to the Mexican Secretaria de Salud is a function of BIDS. In the United States, BIDS is funded by the CDC through grants to public health partners at the local level. This allows those partners to direct surveillance efforts at local priorities, concentrate on groups, such as border-crossers and other highly mobile populations, and coordinate with similar local-level groups across the border.²⁷⁷ BIDS led to the creation of the “U.S.-Mexico Guidelines for Cooperation” adopted in 2012.²⁷⁸

3. U.S.-Funded Directly Observed Therapy (Short-Course) Programs

One study suggested that if the United States were to pay for DOT programs in countries that are sources of migration to the United States, it would be both effective at controlling TB and less expensive than treating the same patient in the United States.²⁷⁹ The study modeled outcomes in three countries: Mexico, Haiti, and the Dominican Republic. In addition, the study looked at three possible strategies for dealing with TB: chest X-rays (the status quo), chest X-rays and increased tuberculin skin testing, the United States funding an expansion of DOT programs in the countries. The study concluded that even if the United States paid for all costs to increase DOT in Mexico, Haiti, and the Dominican Republic, it would ultimately result in cost savings to the United States in both direct and indirect costs for treating TB.²⁸⁰ Increased screening in addition to the expansion of DOT was even more effective but also much more expensive.²⁸¹

²⁷⁶ Centers for Disease Control and Prevention, “Binational Border Infectious Disease Surveillance Program (BIDS),” last modified July 15, 2015, <http://www.cdc.gov/usmexicohealth/bids/index.html>.

²⁷⁷ Ibid.

²⁷⁸ Centers for Disease Control and Prevention, “United States Mexico Guidelines for Cooperation,” last modified June 28, 2013, <http://www.cdc.gov/usmexicohealth/united-states-mexico-guidelines-cooperation.html>.

²⁷⁹ Schwartzman et al., “Domestic Returns from Investment.”

²⁸⁰ Ibid.

²⁸¹ Ibid.

There are many important points referenced in the study. The authors of the study pointed out an important difference between enhanced screening programs and funding DOT programs: a screening program would only involve legal migrants.²⁸² Increasing a country's ability to treat TB through a DOT program would affect both legal and illegal migrants. It also emphasized that the higher the burden of TB in a country the greater the benefit derived from increasing DOT programs. This idea can be expanded to cover other countries from which large numbers of illegal migrants to the United States originate, many of which have TB burdens higher than either the United States or Mexico. Chapter II presented the TB rates of several countries of interest, and Chapter VII provides further discussion of the effect of increased screening programs.

4. Technology Enabled Directly Observed Therapy (Short-Course)

There are many challenges in delivering a DOT program to deportees. The U.S. border with Mexico is a medically underserved area.²⁸³ Furthermore, DOT and other TB control programs worldwide are chronically underfunded.²⁸⁴ Even if a DOT program were consistently available, it is not always easy for people to undergo such therapy, and these challenges are most pronounced in low- to middle-income countries.²⁸⁵ That is to say, the countries from which most illegal migrants come to the United States. By definition DOT requires daily supervision, meaning that either the patient must travel to a clinic to be observed taking their medication, or a medical professional must travel to the patient. If the patient has a work schedule that conflicts with available clinic hours, this can be a very difficult barrier to treatment, as can the difficulty of travel to and from a clinic.

In a world where the number of people with access to smartphones or another portable computing technology grows ever larger, it seems only natural that healthcare

²⁸² Ibid.

²⁸³ Lobato et al., "Preventing and Controlling Tuberculosis."

²⁸⁴ World Health Organization, *The Global Plan to Stop TB 2006–2015* (Geneva, Switzerland: World Health Organization, 2006), 57–62.

²⁸⁵ R. Garfein et al., "Feasibility of Tuberculosis Treatment Monitoring by Video Directly Observed Therapy: A Binational Pilot Study," *International Journal of Tuberculosis and Lung Disease* 19, no. 9 (2015): 1057–1064.

professionals would turn to technology to enable programs such as DOT. This type of mobile data enabled healthcare has come to be known as “mobile health” or just “m-health.”²⁸⁶ ITU, the United Nations agency responsible for information and telecommunications, estimates that in 2015 69 percent of the world’s population is covered by 3G mobile broadband, and 89 percent of those living in urban areas have access to mobile broadband.²⁸⁷

Mobile health is a new venture, and more research is necessary to determine the effectiveness of m-health intervention on TB. Existing uses for m-health in TB control programs include educational text messages, communicating test results, diagnostics (through transmission of pictures and other data), and even a cough detector.²⁸⁸ Small studies have been performed to review the usefulness of sending messages reminding TB patients of their clinical appointments, but these have shown little improvement over standard clinical visits. A more innovative idea is a pill box linked to a smartphone application that monitors when the box is opened and sends a reminder if the patient does not open the box within a specified timeframe. This approach has shown good preliminary results, but more testing is needed.²⁸⁹

Another m-health technology being explored is the use of video monitoring for DOT.²⁹⁰ The concept is simple: patients would use their computer or smartphone to log into an application that films them taking their medicine. This should theoretically have the same benefits as a clinical DOT program in that a medical professional could review the video and confirm that medication was taken. Such a program could be beneficial for reasons, including lowering the burden on both deportee patients and healthcare providers.

²⁸⁶ C. Denkinger et al., “Mobile Health to Improve Tuberculosis Care and Control: A Call Worth Making,” *International Journal of Tuberculosis and Lung Disease* 17, no. 6 (2013): 719–727.

²⁸⁷ “ITU Releases 2015 ICT Figures: Statistics Confirm ICT Revolution of the Past 15 Years,” last modified May 26, 2015, http://www.itu.int/net/pressoffice/press_releases/2015/17.aspx#.V2QON6K8wrd.

²⁸⁸ Ibid.

²⁸⁹ Ibid.

²⁹⁰ Garfein et al., “Feasibility of Tuberculosis Treatment Monitoring.”

There are many limitations to m-health monitoring of TB treatment, the most obvious of which is that the deportee would need access to wireless coverage. As previously cited, this is becoming less of an issue worldwide, but there are still millions of people in the world without access to mobile phones. It must also be noted that the antibiotics used to treat TB are not without side effects, and side effects are some of the primary reasons that patients discontinue treatment.²⁹¹ Dealing with treatment side effects might be even more challenging for patients who are not directly seeing a healthcare professional.

5. Contact Investigations

Anyone with active TB might spread the disease to anyone else who shares his or her air space. Therefore, when a public health agency becomes aware of someone with active TB, it performs what is known as a “contact investigation.”²⁹² During this investigation, officials attempt to locate every person with whom the infected person has had significant contact during the contagious period and determine if those people have contracted TB. This is particularly urgent in the case of multidrug-resistant and extensively drug-resistant TB due to the difficulty of curing these forms of the disease. In today’s highly interconnected world, such investigations can be extremely difficult and complex.

For example, in 2012 CBP encountered its first known case of extensively drug-resistant TB. The U.S. Border Patrol apprehended the person while he was attempting to cross the U.S. border near McAllen, Texas.²⁹³ The man was not from Mexico; he was from Nepal. In the course of his journey to the United States, he passed through Asia, Brazil, and Mexico. He traveled by airplane, boat, car, and on foot. It is nearly impossible to know how many people with whom he came into contact on this journey, but he could have infected any of them. Twelve Border Patrol agents who dealt with the unnamed man were tested for TB; fortunately, none of them tested positive.

²⁹¹ Awofeso, “Anti-tuberculosis Medication Side-effects.”

²⁹² Taylor, “Guidelines for the Investigation of Contacts.”

²⁹³ McKay, “Dangerous TB Patient Detained.”

Contact investigations are an important part of a tuberculosis control program. While dealing with these investigations in the immigration enforcement context requires extensive international cooperation, they can have benefits for the United States as well as the other country involved. For example, a 2013 study noted, “Improving contact investigations in Mexico will likely translate in a decrease in TB incidence not only in Mexico but also in U.S. border states.”²⁹⁴ BIDS was one important step in this direction, but as the case of the Nepalese man with XDR-TB illustrates an agreement with a single country is not sufficient.

B. ANALYSIS OF THE INCREASED INTERNATIONAL COOPERATION POLICY OPTION

The CDC identified increased international cooperation as a necessary component of a worldwide strategy to stop the spread of TB. Challenges to the delivery of TB treatment include social stigma, access to medical care, competing resource demands (e.g., food versus healthcare), and a distrust of government.²⁹⁵ These challenges apply to deportees as much as they apply to the general populace and arguably more so due to the low economic standing of most illegal migrants to the United States. Addressing the majority of these societal issues is beyond the scope of this thesis. However, studies show there are things that can be done to increase access to and compliance with DOT programs. Mobile health is one of those things. Such technologies could apply to deportees with access to mobile technology. Additional studies are necessary to determine both the effectiveness and cost of such programs.

All efforts to expand international cooperation in treating TB will incur a cost. It would require additional research on the specific expansion program pursued to determine the amount of that cost.

²⁹⁴ Hernandez-Garduno et al., “Tuberculosis in Mexico and the USA.”

²⁹⁵ “Barriers to Access,” TB alert, accessed July 13, 2016, <http://www.tbalert.org/about-tb/global-tb-challenges/barriers-to-accessing-treatment>.

C. SUMMARY

There are several possible ways to increase international cooperation to treat TB after deportation. These include the development of a uniform case definition for TB, treatment for TB infection outside of the United States, increased cooperation to perform contact investigations, the use of novel technologies such as mobile health, and the U.S. funding DOT programs in other countries. All of these topics are areas for which additional research is necessary.

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VII. POLICY OPTION: INCREASE TUBERCULOSIS TESTING

Before someone can be treated for TB, it is first necessary to know if she or he has the disease. The DHS has no data on how many migrants with LTBI or TB that immigration officers encounter. This is because, as explained in Chapter IV, only aliens detained for more than 72 hours are tested for TB. The DHS releases most aliens it encounters in less than 72 hours, and thus they are never tested for TB (see Chapters III and IV). At the same time, aliens not in detention are frequently in removal proceedings for a year or more. This means that if they have undiagnosed TB, then they have the opportunity to pass the disease on to others, or to develop TB disease if they entered the country with LTBI.

What is known is that the prevalence of TB in ICE custody is much higher than the general population of the United States or even the general populations of the countries from which most aliens encountered by the DHS come. A recently completed study reviewed the medical records of aliens detained by ICE during 2014 at facilities where IHSC provided direct medical care, a population consisting of 144,379 individuals. There were 147 confirmed cases of TB disease among this group.²⁹⁶ This equates to a TB incidence of 102 cases per 100,000 people, nearly 33 times the general incidence of TB in the United States (see Chapter II)! Of the countries discussed in this thesis (the United States, Mexico, El Salvador, Guatemala, Honduras, China, India, and Russia), only India has a higher incidence of TB than that found in ICE detention. The study also identified multiple factors that made the ICE detainees more susceptible to TB than the general population. These include malnutrition, crowded living conditions, and other stressors from migrating that exacerbate the chance of reactivating LTBI. Also identified are known risk factors for TB transmission such as homelessness, substance abuse, and previous detention. An additional consideration is the possibility of exposure to TB in areas where TB is more prevalent such as detention centers and the U.S.-Mexico border

²⁹⁶ Nicole Boardman et al., “The Full Clinical Spectrum of Pulmonary TB Disease Identified During Screening of U.S. ICE Detainees” (presentation, U.S. Immigration and Customs Enforcement, Washington, DC, May 17, 2016).

region.²⁹⁷ Again, these 147 cases are from a subset of ICE detainees, and detainees are a subset of the people encountered by the DHS. There is currently no way to know how many people with active TB are encountered each year by the DHS.

The final policy option analyzed in this thesis is to increase the amount of TB testing done by the DHS on arrested aliens. This chapter begins with a review of the current DHS policy on TB testing arrested aliens. It then reviews the practicalities of expanding testing programs using different testing methods. Finally, it presents an analysis of the effect of expanded testing efforts, considering multiple permutations of testing methods and subjects.

A. THE STATUS QUO OF TB TESTING

As explained in Chapter II, both symptom screening and diagnostic testing are necessary parts of diagnosing TB. Chapter V discussed the option of additional symptom screening at the time of arrest. Symptom screening involves an interview with the alien, a physical examination for symptoms of TB, and a review of the alien's medical history. Diagnostic testing involves the use of radiology (chest X-rays), the tuberculin skin test (TST), interferon gamma release assay (IGRA) blood test, sputum smear/acid fast bacilli (AFB) test, or sputum culture.

The status quo is that the DHS only tests for TB those aliens detained for more than 72 hours. The 2011 PBNDS establishes ICE's current policy on TB testing.²⁹⁸ The standards provide many "expected outcomes" that must be met by all detention facilities. Some of the outcomes (numbered as in the PBNDS) applicable to TB are:

1. Centers for Disease Control and Prevention (CDC) guidelines for the prevention and control of infectious and communicable diseases shall be followed.
2. Detainees with chronic conditions shall receive care and treatment, as needed, including monitoring of medications, diagnostic testing, and chronic care clinics.

²⁹⁷ Ibid.

²⁹⁸ ICE, "National Detention Standards."

3. Each detainee shall receive a comprehensive medical, dental, and mental health intake screening within 12 hours upon arrival at each detention facility.
4. Each detainee shall receive a comprehensive health assessment, including a physical examination and mental health screening, by a qualified, licensed healthcare professional no later than 14 days after entering into ICE custody or arrival at the facility.²⁹⁹

The 2011 PBNDS also provides:

All new arrivals shall receive TB screening within 12 hours of intake and in accordance with CDC guidelines (www.cdc.gov/tb). For detainees that have been in continuous law enforcement custody, symptom screening plus documented TB screening within six months of arrival may be accepted for intake screening purposes.

Annual or periodic TB testing shall be implemented in accordance with CDC guidelines.³⁰⁰

To understand the ICE policy on TB testing, then, it is necessary to know the CDC guidelines on testing. The CDC website, www.cdc.gov/TB, provides the most current information on CDC guidelines for TB. Chapter II presents additional information on TB testing. Testing using the TST, IGRA, AFB smear, sputum culture, and chest X-ray are all recognized under the CDC guidelines.

Testing for TB infection is different than testing for TB disease. The TST or IGRA blood test identify TB infection. The AFB smear, sputum culture, or chest X-ray test for the TB disease. The distinction is an important one because both types of testing are permitted under the CDC guidelines and thus under the PBNDS. The exact TB test used by a detention facility has many implications. For example, an alien with a positive TST requires additional testing to rule out TB disease. This means that additional medical resources, including the time of the medical staff at the facility, must be expended on the detainee. It also means additional healthcare costs for the detention facility and thus for the DHS.

²⁹⁹ Ibid., 278–279.

³⁰⁰ Ibid.

IHSC is primarily concerned with detecting and treating active TB disease as a way of controlling infection in a congregated setting, and the chest X-ray is the primary tool used by the IHSC to diagnose active TB disease.³⁰¹ Detainees are usually not treated for LTBI at IHSC facilities due to the likelihood that treatment will not continue if the alien is deported. Though there are some exceptions, such as co-morbidity with other diseases such as HIV, this is only true at the facilities where IHSC directly provides medical services. Other facilities may choose to treat LTBI or not. If aliens begins treatment at such a facility and then that treatment is discontinued once they return to their native country, they are at risk for developing drug resistance that can then be transmitted to others if they develop active TB disease.

B. ANALYSIS OF TB TESTING METHODS IN AN IMMIGRATION ENFORCEMENT SETTING

All diagnostic tools have both benefits and drawbacks. This section provides an analysis of the pros and cons of different testing methods in the context of immigration enforcement.

1. Tuberculin Skin Test

As discussed in Chapter II a tuberculin skin test requires 48 to 72 hours before a medical professional can evaluate the results. This makes the TST impractical for anyone detained less than 72 hours. Any alien released from custody after receiving a TST could be required to report to a healthcare worker to have the test evaluated at a later date, but this presents many logistic challenges. As noted in Chapter V, the DHS has no mechanism to pay for medical care after ICE releases someone from detention. The DHS would be forced to rely on local public health services or other medical providers to evaluate TST tests and take appropriate action. However, those providers have no legal obligation to report TB testing results or treatment to the DHS and may even be prevented by health privacy laws from disclosing such information. This could make tracking of the alien's treatment impossible, something that then poses a safety concern for future actions between the DHS and the infected person. The DHS does not restrict

³⁰¹ Elson, personal communication.

the locations to which an alien may travel after release. For example, an alien could be released by the U.S. Border Patrol in Laredo and relocate to New York City. This would make coordination with public health entities extremely challenging. Aliens may also provide one address but then choose to reside in another location or reside in an area with limited availability of medical services. There is also a question of what the DHS's recourse would be if the tested person did not comply with instructions to have the test evaluated in a timely manner. This is particularly true in the case of family units and others who have legal concerns regarding their detention.

The TST is used to diagnose latent TB infection. Additional testing is required to determine if someone with a positive TST has infectious TB.

2. Interferon Gamma Release Assay Blood Test

The IGRA is another tool used to detect latent TB infection. In the immigration enforcement context, it has many of the same disadvantages as the TST, such as the time necessary to obtain results and the difficulty of the DHS taking action when there is a positive diagnosis of TB. The IGRA has the additional disadvantage of requiring a healthcare worker to obtain a blood sample and ship that sample to a laboratory for evaluation.

Another disadvantage of the IGRA comes from the sheer volume of people encountered by the DHS. In FY2015 the U.S. Border Patrol arrested 337,117 persons or an average of 924 people per day.³⁰² Such a high volume of people makes the handling and processing of samples extremely challenging. It is also possible that laboratories would not be able to evaluate such a large collection of samples. However, the evaluation of current TB laboratory facilities in the United States is outside the scope of this thesis.

The IGRA does have some advantages over the TST. One such advantage of the IGRA is that the tested person is not required to report to a healthcare worker to have the test evaluated. This also eliminates uncertainty over who would pay for the testing,

³⁰² U.S. Customs and Border Protection, "Stats and Summaries: U.S. Border Patrol Total Apprehensions (FY1925–FY2015)," accessed July 13, 2016, <https://www.cbp.gov/sites/default/files/documents/BP%20Total%20Apps%20FY1925-FY2015.pdf>.

although for aliens released from detention the treatment of that person's TB would still fall on the public health system. Another advantage is that the CDC recommends the use of the IGRA for people who have received the BCG vaccine.³⁰³ As discussed in Chapter II, most migrants come from countries where the BCG is in common use.

3. Chest X-Ray

Advanced communication tools, such as the internet, created a relatively new type of medicine known as telemedicine. At its most basic, telemedicine is the ability to have a person in one location receive medical services from a healthcare provider at another location and contact between the two carried out through the transmission of high-definition images and other data. When telemedicine is used to read X-rays, it is known as teleradiology.³⁰⁴ Teleradiology has made the use of a chest X-ray to diagnose active TB disease possible even at remote locations, such as some Border Patrol stations.

There are advantages and disadvantages to using teleradiology to diagnose TB. The primary advantage of teleradiology is that it is possible to obtain a result within a matter of hours, making the test practical even for people detained for only a short period. The test is relatively inexpensive; under the current ICE contract, the direct cost is \$12.60 per X-ray at ICE detention facilities.³⁰⁵ However, a radiology testing program would also require equipment, a location to administer the X-ray, and trained personnel not normally present at DHS arrest and processing locations. Moreover, in some states, special training and licensing are required to administer such X-rays.³⁰⁶ There are health risks associated

³⁰³ CDC, "Testing for TB Infection."

³⁰⁴ Nishigandha Burute and Bhavin Jankharia, "Teleradiology: The Indian Perspective," *Indian Journal of Radiology and Imaging* 19, no. 1 (2009): 16–18.

³⁰⁵ Diana Elson, personal communication, May 28, 2016, referencing discussion with Philip Farabaugh (Associate Medical Director, Field, Western Region Clinical Director, ICE Health Services Corps) on May 17, 2016.

³⁰⁶ American Registry of Radiologic Technologists, "State Licensing FAQs," accessed July 13, 2016, <https://www.arrt.org/faq/state-licensing>.

with any use of radiology, but the health risks of chest X-rays by themselves are very low.³⁰⁷

Teleradiology is used to detect active TB disease.

4. Acid Fast Bacilli Test

As discussed in Chapter II, the acid fast bacilli (AFB) test is the diagnostic tool most commonly used worldwide to detect TB. The AFB requires collecting a sputum sample from the person tested. Sputum is not the same as spittle; rather, it is the fluid produced from within the lungs during coughing.³⁰⁸ This limits testing to only those persons that currently have a productive cough. According to the American Thoracic Society, “it is of utmost importance that careful attention be given to the collection and handling of specimens.”³⁰⁹ While such careful sampling is possible at detention center medical clinics, it is not practical at arrest and processing sites such as Border Patrol stations. In addition, transporting samples to a laboratory takes time, as does the analysis of the samples. This means that, as with a TST, the tested alien could be released from custody before receiving the results of the AFB.

As with all medical procedures, the cost must also be taken into account. There is no federal estimate for the cost of an AFB, but as one point of reference, the Missouri Department of Health and Senior Services charges healthcare providers \$48 per test.³¹⁰ The DHS does not keep data on apprehended aliens with productive coughs, and so it is not possible to further estimate the cost of an AFB testing program.

The low specificity of the AFB (see Chapter II) is also a disadvantage. Once a positive smear result had been received, additional testing is required, usually in the

³⁰⁷ National Heart, Lung, and Blood Institute, National Institutes of Health, “What Are the Risks of a Chest X-Ray?” last modified August 1, 2010, <https://www.nhlbi.nih.gov/health/health-topics/topics/cxray/risks>.

³⁰⁸ American Thoracic Society, “Diagnostic Standards and Classification of Tuberculosis in Adults and Children,” *American Journal of Respiratory and Critical Care Medicine* 161, no. 4 part 1 (2000): 1376–1395.

³⁰⁹ *Ibid.*

³¹⁰ Missouri Department of Health and Senior Services, “Acid-Fast Bacilli (AFB) Smear and Culture,” accessed July 13, 2016, <http://health.mo.gov/lab/smearculture.php>.

form of a sputum culture. The additional time required to receive a culture result means that even aliens originally detained by the DHS might no longer be in custody by the time the results were received.

One potential advantage of this two-part testing process is that because the test would begin while an alien is in ICE custody, the DHS might be able to absorb the cost of the test rather than transmitting the cost to a local health department. A more in-depth review of DHS medical funding would be necessary to determine the exact conditions under which the DHS could provide this funding.

The AFB is used to detect TB disease.

C. ANALYSIS OF ADDITIONAL TB TESTING

An analysis of additional TB testing in an immigration enforcement context requires the consideration of multiple scenarios. The policy would need to address whether testing should be for latent TB infection or TB disease. Additionally, the most effective testing methodology would need to be selected. The policy would need to cover whether there should be additional testing in detention, at the time of arrest and processing, or both. Finally, the policy would need to distinguish between the general testing of all arrested or detained persons and the targeted testing of specific populations. These scenarios are interdependent. For example, the choice of testing method depends on who is tested and where. The choice to test for LTBI or TB disease changes the method used and whether it is used only in detention or also at the time of apprehension, etc.

1. Testing for Latent TB Infection versus Testing for TB Disease

As previously discussed, ICE does not normally treat arrested aliens for LTBI due to the likelihood that they would not continue to receive treatment if removed from the United States. Unless the DHS were to adopt the policy that all aliens should be treated for LTBI, it does not make sense to test for latent TB infection.

As outlined in Chapter III, in many cases aliens both in removal proceedings, whether in custody or out of custody, are in the United States for a sufficient length of

time to complete TB treatment. This makes the treatment of LTBI a practical possibility. The Advisory Council for the Elimination of Tuberculosis (ACET) recommends that people in high-risk populations should be treated for LTBI to prevent them from developing contagious TB.³¹¹ High-risk populations include “foreign-born persons, including children, recently arrived (within five years) from countries that have a high TB incidence or prevalence.”³¹² The ACET does not define high incidence or prevalence beyond noting that it included “most countries in Africa, Asia, and Latin America.”³¹³ This broad group of countries encompasses the countries from which the majority of illegal migrants to the United States come.

It is also true that certain groups, for example, Mexican citizens with final orders of removal, do not remain in ICE custody for a period long enough to treat LTBI. If the DHS were to adopt the practice of treating aliens for LTBI, it would be necessary to make a determination on a case by case basis whether to initiate such treatment.

2. Choice of Testing Methodology

There has been no definitive study recommending one type of testing program as the best. The CDC guidelines provide for the use of multiple methods to detect TB. A 2001 study of tuberculosis screening in federal prison concluded that the TST and chest X-ray were near equals in specificity, but that the rapid results from chest X-rays meant that both staff and detainees were exposed to infectious inmates for a shorter length of time.³¹⁴ In addition, a 2016 study concluded that 20 percent of TB cases in ICE detention would not have been detected without the use of a chest X-ray.³¹⁵ The current low cost of the chest X-ray and availability of teleradiology for facilities that do not have a dedicated medical provider capable of interpreting a chest X-ray are also factors in its favor.

³¹¹ Bloch, “Screening for Tuberculosis.”

³¹² Ibid.

³¹³ Ibid.

³¹⁴ Saunders et al., “Tuberculosis Screening.”

³¹⁵ Boardman et al., “The Full Clinical Spectrum.”

The choice of methodology also depends on the decision of whether to test for LTBI or only for TB disease. If ICE continues primarily to treat active TB cases, then the choice of diagnostic method is reduced to the AFB smear or the chest X-ray, and the chest X-ray has a greater specificity than the AFB smear. According to ACET,

Chest radiography is the preferred screening method when the objective is to identify persons who have current pulmonary TB and when preventive therapy for infected persons is not the primary goal (e.g., in high turnover jails or in some homeless shelters).³¹⁶

The ACET does not define a “high turnover jail,” but the phrase accurately describes immigration detention.

3. Testing at Apprehension versus Additional Testing in Detention

ICE detention standards require that all aliens detained for over 72 hours receive a TB test. Thus, the issue under consideration for a potential policy change is whether this is sufficient or if testing should be expanded to include aliens released immediately or detained for less than 72 hours.

As discussed in this chapter as well as previous chapters, aliens encountered by the DHS have many factors putting them at an increased risk for TB. There is no special sub-set of factors that makes aliens screened for TB as they enter detention facilities more likely to have TB than aliens who are released directly from Border Patrol stations or ICE field offices. Therefore, it is likely that rate of TB prevalence is the same for all arrested aliens.

According to the ACET, when creating a strategy to combat TB, “the first priority is identifying and completely treating all persons who have active TB.”³¹⁷ Because the DHS tests only a fraction of the aliens encountered for TB, only a fraction of the cases of active TB is currently identified and treated.

³¹⁶ Bloch, “Screening for Tuberculosis.”

³¹⁷ Ibid.

4. Targeted Testing versus General Testing

Any testing program must decide who to test in addition to which test to perform. The status quo, as discussed above, is to test all aliens in detention for more than 72 hours. The issue for a potential policy change is whether, if the DHS tested aliens at arrest and processing sites, it would test all arrested aliens or only a select population. The CDC does not recommend testing for people with a low risk of LTBI. However, the CDC recommends testing for “recent immigrants from high prevalence countries.”³¹⁸ Again, the term “high prevalence countries” is not defined.

It is possible to look at targeted versus general testing through a cost/benefit filter. There have been no studies comparing the cost of targeted or general testing programs in the United States. However, a 2014 study in Australia examined the issue of whether Australia should test all immigrants for TB or only those immigrants coming from countries with a high prevalence of TB. Australia is similarly positioned to the United States in that it has an incidence of TB lower than the countries from which it receives migrants.³¹⁹ The study concluded that testing everyone would reduce the spread of TB in Australia, but that it was much more expensive than targeted testing.³²⁰

D. SUMMARY

As previously discussed, the DHS currently performs TB tests only on aliens in detention for over 72 hours. Because the majority of aliens are not detained, they are also not tested for TB. There are several testing methods recognized by the CDC, including the tuberculin skin test, interferon-gamma release assay, chest radiography, and acid-fast bacilli smear. All of these tests have disadvantages in the context of immigration enforcement. Of these four methods, the chest X-ray has been shown to be the most effective at identifying active TB in the population encountered by the DHS. Changes in

³¹⁸ Cohn et al., “Targeted Tuberculin Testing and Treatment.”

³¹⁹ World Health Organization, “Australia: Tuberculosis Profile,” accessed July 13, 2016, https://extranet.who.int/sree/Reports?op=Replet&name=/WHO_HQ_Reports/G2/PROD/EXT/TBCountryProfile&ISO2=AU&outtype=html.

³²⁰ Denholm and McBryde, “Can Australia Eliminate TB?”

technology have made it possible to implement an X-ray program at arrest and processing centers, but research would need to be done to determine its practicality.

VIII. CONCLUSIONS AND RECOMMENDATIONS

A. PROS AND CONS OF THE POLICY OPTIONS

This section reviews each policy option presented in the thesis and presents an analysis of the positive and negative aspects of each option.

1. Pros and Cons of the Status Quo Policy

The status quo policy option does have several factors that recommend its continued use. First, it follows the current CDC guidelines on treating TB for aliens in detention. The policy also emphasizes the continuity of care through referrals to public health agencies, both domestically and abroad. This should theoretically work to reduce the chance of aliens who have been deported or released from custody developing drug-resistant or multi-drug resistant TB. Finally, the status quo has a great advantage in that it requires no additional work or resources. The DHS wrote the procedures, Congress provided the funding, and implementation has already occurred.

However, the status quo policy option also has sizeable factors that argue against it. The first is that the status quo does not identify all cases of active TB, nor does it completely treat cases of active TB. Thus, it does not meet the criteria for the optimal policy. Under the status quo policy, the true boundaries of the interaction between immigration enforcement and TB are impossible to know. As discussed in previous chapters, the countries from which the United States receives the majority of unlawful migrants all have higher incidences of TB than does the United States. The incidence of TB in ICE detention is also much higher than the rate of TB in the United States. ICE releases the majority of aliens it encounters or returns Mexican citizens directly to Mexico without detention or formal proceedings. Because ICE only performs TB tests and medical evaluations on aliens who are in detention for more than 72 hours, it is impossible to say with any certainty how many people with latent or active TB are encountered by the DHS.

Another factor for consideration is the differing healthcare requirements of the multiple ICE detention standards. Facilities where the IHSC provides healthcare have

excellent TB control programs, but this is not necessarily the case at other detention centers. Those other facilities may use different testing methods, may or may not treat detainees for LTBI, and may or may not notify the IHSC of cases of TB. This also means that international referrals may or may not be made when the alien with TB is deported, thus increasing the chance of incomplete treatment.

Any person who breathes the same air as another person with infectious TB is at risk of contracting the disease. A person with infectious TB is a constant risk to others, whether at home, during travel to the United States, in a transporting vehicle, at a processing facility, in a detention facility, or in the community at large. TB respects neither occupation nor nationality; immigration officers, other migrants, and the public in both the United States and the alien's country of origin are all at risk. As referenced in Chapter II, people with latent TB, although not infectious, are at an enhanced risk of developing active TB. Such people then continue to pose a threat to public health for years after United States immigration authorities encounter them.

2. Pros and Cons of Curing TB before Removal

The United States has an extremely low incidence of TB compared to the other countries of special interest considered in this thesis: Mexico, Guatemala, El Salvador, Honduras, China, India, and Russia. This indicates that the United States has better outcomes with TB treatment than do these countries. While it is true that this list comprises only a fraction of all of the nations on Earth, it does cover the four countries to which ICE removes the greatest number of people each year. Therefore, curing aliens of TB in the United States before removal should provide better outcomes for the majority of removed aliens.

This policy option is superior to the status quo policy in that it meets one of the two priorities identified by ACET: complete treatment of all cases of active TB disease. Without additional policy change, it would do nothing to address the priority of identifying all cases of active TB. Adding health screenings during processing could identify some aliens with TB prior to a detention screening but might have limited impact due to the lack of symptoms in many people with TB. At the same time, if it were

necessary to hire people specifically to do these screenings, then it would increase the already high cost of immigration enforcement, thus turning the positive factor into a potentially negative one.

The potentially negative public perception of the detention or other case management aspects of this policy option poses a potential negative factor. It could be argued that detaining aliens so that they may complete a course of treatment is the first step down a very slippery slope. In *Zadvydas* and other decisions, the Supreme Court has held that there must be procedural protections for lengthy detention and that it must apply to a narrow group of people. Diseases of public health significance are already a specific set of illnesses established by statute, and this arguably provides both the necessary procedural protection and constitutes the necessary narrow group.

Many of the negative aspects of detention can be solved through the use of ICE's Alternatives to Detention Program. The program is far less expensive than traditional detention, and allows ICE a way to monitor compliance with TB treatment.

Cost also remains a substantial negative factor. As outlined in Chapter V, referring additional aliens for treatment would result in additional healthcare costs. To exacerbate this factor, current funding allocations would not allow the DHS to bear the burden of these additional costs for any alien not in detention. This could be particularly problematic for aliens who reside in areas that are already facing public health funding shortages. It is not possible to estimate the additional cost of curing TB prior to removal, but it remains an unalterable fact that treating additional people means spending more money.

3. Pros and Cons of Increased International Cooperation to Treat TB after Removal

It is difficult to assess the pros and cons of this policy option because it is not a single option. There are a myriad of ways that cooperation could be increased, each of which would then need to be evaluated for its costs and its benefits. There is little research available on the options presented as examples of possible increased cooperation.

Of the international factors that affect the treatment of tuberculosis arguably the factor with the greatest impact is that different countries do not use the same testing methodology or definition for TB. It is currently possible that deported TB patients would not continue to receive TB treatment after their removal because their receiving country would not consider them to have TB. An analysis of the barriers to the creation of a universal definition for TB is outside the scope of this thesis.

The use of the DOT protocol to treat TB has successfully contributed to TB control efforts in countries such as the United States and China. Helping to ensure that deported aliens complete TB treatment using DOT should not only help fight TB in the receiving country, but also in the United States due to the one quarter of deported aliens who return to the United States after removal. Although there has been limited research in this area, the concept of providing DOT through the use of mobile technology, such as smart phones, has shown early promise. Ever increasing numbers of people, particularly in metropolitan areas, have access to mobile broadband technology.

The existence of substantial social and economic barriers to deported aliens receiving medical treatment is a complicating factor with this policy option. As discussed in Chapter I, unlawful migrants are typically from lower social and income strata. In countries that do not pay for medical care, the cost of treatment may prevent deported aliens from receiving treatment, particularly if they are asymptomatic and do not feel like they need medical treatment. This economic barrier could also make it difficult or impossible for a deported person to participate in mobile-health enabled DOT.

4. Pros and Cons of Additional Testing

It is a fact that the DHS does not know how many people with TB it encounters. Any increase in testing should pay dividends in the detection of additional cases of TB. Depending on one's point of view, this can be a pro or a con. As long as the DHS is unaware of the existence of a case of TB, there is no moral, legal, or ethical requirement to treat it. Once the DHS becomes aware of a person has TB, it is then bound at the very least to determine if that person is contagious.

Another perspective relating to testing suggests that once the DHS is aware that someone has TB, then that person can be treated. This protects both the individual and the public. It also makes it possible to perform a contact investigation to find people who have come into contact with the infected person and are thus at risk for transmission of the disease. This includes the immigration officers responsible for the person's arrest, transportation, and detention.

An unavoidable negative aspect of this policy option is that any program of additional testing will incur additional costs. Depending on the test used the costs could include testing materials, personnel, physical space, equipment, specimen handling and transporting, and laboratory fees in addition to the cost of treating any diagnosed TB. More research is necessary to determine the cost of any chosen program of additional testing.

All of the CDC approved methods of testing for TB have drawbacks in the context of immigration enforcement. Some research has shown that the chest X-ray is the most effective method of testing for TB disease, but there are many logistical hurdles to implementing a universal radiology program at all arrest and processing sites. For instance, the DHS would need to purchase equipment, provide facility space, train personnel, and fund the program.

Finally, regardless of the effectiveness of a testing program, there would be substantial barriers to providing medical treatment for any aliens found to have TB disease. As previously discussed, the DHS could not provide funding or treatment for aliens who are not detained. This would add additional burdens to the public health system even in areas where aliens had sufficient access to such a system.

B. POLICY RECOMMENDATION: A HOLISTIC APPROACH

It is apparent that tuberculosis is a serious problem in the world of immigration enforcement. As discussed above, the status quo policy is very effective at dealing with active TB in detention, but this is primarily at facilities where IHSC provides medical services. In Chapter I, the optimal policy solution was defined as the policy that would meet the ACET priority of identifying and completely treating all persons who have

active TB. Both additional testing and additional treatment are necessary to achieve this goal. At the same time, as discussed in Chapter VII, testing all arrested aliens for TB, while very effective, is also much more expensive. Thankfully, it is possible to achieve some of the outcomes of the optimal policy while making targeted changes to the status quo.

Once the decision is made to focus on aliens in detention with active TB it simplifies the choice of diagnostic methodology. The chest X-ray is fast, highly specific, and inexpensive. Through the miracle of teleradiology, X-ray testing could be implemented at detention centers not previously capable of providing radiographic services. As the chest X-ray has demonstrated advantages over the TST, the ICE PBNDS should be modified to require the universal use of the chest X-ray for TB screening. The updated detention standard must then apply to all detention facilities used by ICE to provide uniform results in detecting active TB.

The policy option of curing tuberculosis before removal should be implemented as exactly that—once the DHS is aware that an alien has active TB then that alien should be treated until they are cured before removal from the United States. This would apply to aliens both in detention and aliens released from detention. To help ensure that aliens who are released from detention comply with treatment requirements ICE should enroll aliens undergoing TB treatment in the Alternatives to Detention Program with treatment for tuberculosis as a requirement for continued freedom.

Finally, as discussed in the literature review, there is only one published study looking at the likelihood of immigration enforcement employees contracting tuberculosis. That study pointed out that immigration officers were provided little to no information on tuberculosis.³²¹ We must not forget that the employees of the DHS are on the front lines for encountering TB, and it is incumbent on the DHS to provide for their wellbeing.

The first step towards this goal is to educate immigration officers about TB. Both CBP and ICE use an internet based training delivery platform known as the Performance

³²¹ De Perio, Niemeier, and Neimeier, “TB Exposures among Immigration Employees;” De Perio, R. Niemeier, and Groenewold, “The Effectiveness of Using Interferon-gamma.”

and Learning Management System (PALMS).³²² The DHS should develop a PALMS training module to inform its employees about the risks of TB. Moreover, implementing a PALMS training program would be an inexpensive way to provide universal coverage of the DHS immigration officers arresting, transporting, and detaining aliens. Both ICE and CBP employ course developer/instructors (CDIs); these CDIs could create a TB training program in conjunction with IHSC. The only additional direct cost of the program would be the salary paid to an employee spending the required time to complete the training.

Training could also improve employee safety in other ways. Employees should be made aware that the CDC recommends TB testing for people in certain professions, including people who work in the detention environment.³²³ In addition, education about TB could help immigration officers recognize TB signs and symptoms. Processing forms can be modified to include health information, including asking about symptoms that might indicate the presence of TB.

C. IMPLEMENTATION ISSUES

There are many potential barriers to the implementation of the proposed policy changes. The most obvious of these is the potential cost of the changes. Curing aliens of TB will result in additional medical expenses as well as additional case management expenses for services such as ATD. Because the DHS is only able to pay for the healthcare of aliens in detention, the additional cost to treat aliens released from detention would be born by the various state and local health departments where the aliens reside. The cost of implementing chest X-ray screening at all detention centers is a factor, but it must be remembered that all over 72-hour facilities already a TB screening program of some sort. At \$12.60 per X-ray, it is even possible that the chest X-ray will save money. There is also the issue of whether state and local health departments can absorb not only the cost but the additional workload created by additional referrals from the DHS. This is an area that requires further research.

³²² U.S. Department of Homeland Security, “DHS-ALL-049 Performance and Learning Management System (PALMS),” last modified August 10, 2015, <https://www.dhs.gov/publication/dhs-all-049-performance-and-learning-management-system-palms>.

³²³ Fenton and Castro, “Prevention and Control of Tuberculosis.”

As long as different detention facilities use different detention standards, there will be different results in TB control programs. However, this is not an insurmountable barrier to the proposed policy changes because, as discussed in Chapter IV, ICE is already working to change all detention facilities to the 2011 PBNDS.

The largest potential barrier to the implementation of policy change is that TB and other infectious diseases are not a priority of the DHS and its agencies' immigration enforcement policies. According to ICE, "U.S. Immigration and Customs Enforcement (ICE) enforces federal laws governing border control, customs, trade and immigration to promote homeland security and public safety."³²⁴ The specific mission of Enforcement and Removal Operations, the component of ICE responsible for the transportation, detention, and removal of arrested aliens, is

To identify, arrest, and remove aliens who present a danger to national security or are a risk to public safety, as well as those who enter the United States illegally or otherwise undermine the integrity of our immigration laws and our border control efforts.³²⁵

Neither the ICE nor the ERO mission statements directly address public health or infectious disease. This does not mean that ICE does not care about infectious disease, but dealing with disease is not the agency's primary mission. That the DHS arrests and detains aliens with TB and other infectious diseases is an unintended consequence of the DHS mission, but one that impacts public safety and thus remains part of the ICE mandate.

No legislative change would be necessary to implement the recommended policy changes. However, if a review of public health funding found that the only practical way to enact the proposed changes would be for the federal government to fund all costs, then they would require appropriation legislation.

³²⁴ U.S. Immigration and Customs Enforcement, "Who We Are," accessed July 22, 2016, <https://www.ice.gov/about>.

³²⁵ U.S. Immigration and Customs Enforcement, "Enforcement and Removal Operations," accessed July 22, 2016, <https://www.ice.gov/ero>.

D. CONCLUSION

Tuberculosis is indisputably on the ICE agenda; changes in the PBNDS as recently as 2011 and the use of CureTB and TBNet to help ensure continuity of care for deported aliens are proof of this. ICE's TB control program for aliens in detention meets CDC guidelines. It would be easy for ICE to decide that it has exercised due diligence and nothing further remains to be done. However, there is clearly not the case. The rates of TB in ICE detention are frighteningly high and particularly so when combined with the fact that the DHS truly has no idea how many people with TB it encounters every day. Discrepancies in ICE detention standards mean that the IHSC may or may not be aware of aliens in detention with TB. Such aliens may or may not receive complete treatment for their TB when they are returned to their country of origin, and this could contribute to the development of drug resistance and the spread of TB. Finally, many of those aliens will return to the United States. Targeted changes to immigration enforcement policies would pay dividends in increased safety for its officers and the public. Testing all detained aliens for TB using a chest X-ray and treating all aliens with active TB until cured will help alleviate these problems.

The Department of Homeland Security recently issued a new mission statement, "With honor and integrity, we will safeguard the American people, our homeland, and our values."³²⁶ This statement again does not address TB or other infectious diseases, but such diseases are a hazard to both DHS employees and the public. The DHS should safeguard its employees, the American people, and the people of the world from the threat of TB. DHS immigration enforcement policies impact that threat. Should the United States alter its immigration enforcement policies to address more directly the threat that tuberculosis poses to public health? Yes.

³²⁶ U.S. Department of Homeland Security, "About DHS," last modified June 29, 2016, <https://www.dhs.gov/about-dhs>.

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LIST OF REFERENCE

- Achkar, Jaqueline, Tsering Sherpa, Hillel Cohen, and Robert Holzman. "Differences in Clinical Presentation among Persons with Pulmonary Tuberculosis: A Comparison of Documented and Undocumented Foreign-Born to US-Born Persons." *Clinical Infectious Diseases* 47, no. 10 (2008): 1277–1283.
- American Thoracic Society. "Diagnostic Standards and Classification of Tuberculosis in Adults and Children." *American Journal of Respiratory and Critical Care Medicine* 161, no. 4 part 1 (2000): 1376–1395.
- . "Treatment of Tuberculosis." *Morbidity and Mortality Weekly Report* 52, no. RR11 (2003): 1–77.
- Avila, Oscar, and Margaret Ramirez. "Health Departments Fight Tuberculosis on both Sides of the U.S. Border with Mexico: Mexican Immigrants Often Contract the Disease before Entering US, Bringing It North to Cities Like Chicago, Officials Say." *Chicago Tribune*, February 6, 2009. http://articles.chicagotribune.com/2009-02-16/news/0902150175_1_tb-tuberculosis-border.
- Awofeso, Niyi. "Anti-tuberculosis Medication Side-effects Constitute Major Factor for Poor Adherence to Tuberculosis Treatment." *Bulletin of the World Health Organization* 86, no. 3 (2008): 161–240.
- Bennett, Diane, Jeanne M. Courval, Ida Onorato, Tracy Agerton, Judy D. Gibson, Lauren Lambert, Geraldine M. McQuillan, Brenda Lewis, Thomas R. Navin, and Kenneth G. Castro. "Prevalence of Tuberculosis Infection in the United States Population: The National Health and Nutrition Examination Survey, 1999–2000." *American Journal of Respiratory and Critical Care Medicine* 177, no. 3 (2008): 248–255.
- Bloch, Alan. "Screening for Tuberculosis and Tuberculosis Infection in High-Risk Populations: Recommendations of the Advisory Council for the Elimination of Tuberculosis." *Morbidity and Mortality Weekly Report* 44, no. RR-11 (1995): 18–34.
- Boardman, Nicole, T. Moore, Diana Elson, J. Freiman, Diane Schneider, and E. Lederman. "The Full Clinical Spectrum of Pulmonary TB Disease Identified During Screening of U.S. ICE Detainees." Presentation, U.S. Immigration and Customs Enforcement, Washington, DC, May 17, 2016.
- Burute, Nishigandha, and Bhavin Jankharia. "Telerradiology: The Indian Perspective." *Indian Journal of Radiology and Imaging* 19, no. 1 (2009): 16–18.

- Cohn, David, Michael O'Brien, Lawrence Geiter, Fred Gordon, Earl Hershfield, C. Robert Horsburgh, John Jereb et al. "Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection." *Morbidity and Mortality Weekly Report* 49, no. RR6 (2000): 1–54.
- Combellick, Joan, Ed Zuroweste, and Francesca M. Gany. "TBNet: The Impact of an Innovative Public-Private Intervention on Tuberculosis Control among an Internationally Mobile Population." *Journal of Immigrant & Refugee Studies* 9, no. 3 (2011): 229–241.
- De Perio, Marie, R. Todd Niemeier, and Matthew Groenewold. "The Effectiveness of Using Interferon-gamma Release Assays in Screening Immigration Employees for Latent Tuberculosis Infection." *International Journal of Occupational and Environmental Health* 17, no. 4 (2011): 322–327.
- De Perio, Marie, R. Todd Niemeier, and Maureen T. Neimeier. "TB Exposures among Immigration Employees." *American Jails* 27, no. 1 (2013): 24–28.
- Deiss, Robert, Richard Garfein, Remedios Lozada, Jose Burgos, Kimberly Brouwer, Kathleen Moser, Maria Zuniga, Timothy Rodwell, Timothy Ojeda, and Stephanie Strathdee. "Influences of Cross-Border Mobility on Tuberculosis Diagnoses and Treatment Interruption among Injection Drug Users in Tijuana, Mexico." *American Journal of Public Health* 99, no. 8 (2009): 1491–1495.
- Denholm, Justin T., and Emma S. McBryde. "Can Australia Eliminate TB? Modeling Immigration Strategies for Reaching MDG Targets in a Low-Transmission Setting." *Australian & New Zealand Journal of Public Health* 38, no. 1 (2014): 78–82.
- Denkinger, C., J. Grenier, A. Stratis, A. Akkihal, N. Pant-Pai, and M. Pai. "Mobile Health to Improve Tuberculosis Care and Control: A Call Worth Making." *International Journal of Tuberculosis and Lung Disease* 17, no. 6 (2013): 719–727.
- Desikan, Prabha. "Sputum Smear Microscopy in Tuberculosis: Is it Still Relevant?" *Indian Journal of Medical Research* 137, no. 3 (2013): 442–444.
- Fauci, Anthony. "Working Together to End TB." U.S. National Institutes of Health. Accessed July 13, 2016. <http://shenyang.usembassy-china.org.cn/tb.html>.
- Fenton, Kevin, and Kenneth Castro. "Prevention and Control of Tuberculosis in Correctional and Detention Facilities: Recommendations from CDC." *Morbidity and Mortality Weekly Report* 55, no. RR-9 (2006): 1–44.
- Fidler, David, Lawrence Gostin, and Howard Markel. "Extensively Drug-Resistant Tuberculosis: An Isolation Order, Public Health Powers and a Global Crisis." *Journal of the American Medical Association* 298, no. 1 (2007): 83–86.

- . *Through the Quarantine Looking Glass: Drug-Resistant Tuberculosis and Public Health Governance, Law, and Ethics*. Bloomington, IN: Indiana University Maurer School of Law, 2007.
- Fitchett, Joseph, Antonio Vallecillo, and Clara Espitia. “Tuberculosis Transmission across the United States-Mexico Border.” *Pan American Journal of Public Health* 29, no. 1 (2011): 57–60.
- Gambler, Rebecca. *Immigration Detention: Additional Actions Needed to Strengthen Management and Oversight of Facility Costs and Standards* (GAO-15-153). Washington, DC: U.S. Government Accountability Office, 2014. www.gao.gov/assets/670/666467.pdf.
- Garfein, R., K. Collins, F. Munoz, K. Moser, P. Cerecer-Callu, F. Raab, P. Rios et al. “Feasibility of Tuberculosis Treatment Monitoring by Video Directly Observed Therapy: A Binational Pilot Study.” *International Journal of Tuberculosis and Lung Disease* 19, no. 9 (2015): 1057–1064.
- Grange, John, and Alie Zumla. “The Global Emergency of Tuberculosis: What Is the Cause?” *The Journal of the Royal Society for the Promotion of Health* 122, no. 2 (2002): 78–81.
- Greenwood, Michael, and Watson Warriner. “Immigrants and the Spread of Tuberculosis in the United States: A Hidden Cost of Immigration.” *Population Research & Policy Review* 30, no. 6 (2011): 839–859.
- Hernandez-Garduno, Eduardo, Fabiola Mendoza-Damian, Adriana Garduno-Alanis, and Salvador Ayon-Garibaldo. “Tuberculosis in Mexico and the USA, Comparison of Trends Over Time 1990–2010.” *Tuberculosis and Respiratory Diseases* 78, no. 8 (2015): 246–252.
- Moxey Hodges, Marcia, Lorraine Eide, Jennifer Kim, and Morgan Ferguson. U.S. *Immigration and Customs Enforcement’s Alternatives to Detention (Revised)* (OIG-15-22). Washington, DC: U.S. Department of Homeland Security, Office of the Inspector General, 2015.
- Kyanko, Kelly, James Jun-Chieh, Katherine Yun, and Brendan Parent. “Undocumented Immigrants Face a Unique Set of Risks from Tuberculosis Treatment: Is This Just?” *American Medical Association Journal of Ethics* 18, no. 3 (2016): 311–318.
- Levine, Jared E. *Public Health and Border Security: HHS and DHS should further Strengthen their Ability to Respond to TB Incidents*. Washington, DC: Government Accountability Office, 2008.

- Liu, Yecai, Michelle S. Weinberg, Luis S. Ortega, John A. Painter, and Susan A. Maloney. "Overseas Screening for Tuberculosis in US—Bound Immigrants and Refugees." *New England Journal of Medicine* 360, no. 23 (2009): 2406–2415.
- Lobato, Mark, and J. Peter Cegielski. "Preventing and Controlling Tuberculosis along the US-Mexico Border." *Morbidity and Mortality Weekly Report* 50, no. RR1 (2001): 1–2. <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5001a1.htm>.
- Marks, Suzanne, Jennifer Flood, Barbara Seaworth, Yael Hirsch-Moverman, Lori Armstrong, Sundari Mase, Katya Salcedo et al. "Treatment Practices, Outcomes, and Costs of Multidrug-Resistant and Extensively Drug-Resistant Tuberculosis, United States, 2005–2007." *Emerging Infectious Diseases* 20, no. 5 (2014): http://wwwnc.cdc.gov/eid/article/20/5/13-1037_article.
- McKay, Betsy. "Dangerous TB Patient Detained on U.S. Border." *Wall Street Journal*, March 2, 2013, <http://www.wsj.com/articles/SB10001424127887323978104578332461533970412>.
- McKay, Betsy. "Risk of Deadly TB Exposure Grows Along US-Mexico Border." *Wall Street Journal*, March 9, 2013, <http://www.wsj.com/articles/SB10001424127887323293704578336283658347240>.
- Mitruka, Kiren, Haley Blake, Roque Miramontes, Sapna Bamrah, Carla Chee, and Laurie Hickstein. "A Tuberculosis Outbreak Fueled by Cross-Border Travel and Illicit Substances: Nevada and Arizona." *Public Health Reports* 129, no. 1 (2014): 78–85.
- Morano, Jamie, Alexei Zelenev, Mary Walton, R. Douglas Bruce, and Frederick Altice. "Latent Tuberculosis Infection Screening in Foreign-Born Populations: A Successful Mobile Clinic Outreach Model." *American Journal of Public Health* 104, no. 8 (2014): 1508–1515.
- Morris, Marylyn, and Joyceen Boyle. "Resistance, Health, and Latent Tuberculosis Infection: Mexican Immigrants at the US-Mexico Border." *Research and Theory for Nursing Practice: An International Journal* 32, no. 3 (2007): 185–197.
- Nguipdop-Djomo, Patrick, Einar Haldal, Laura Rodrigues, Ibrahim Abubakar, and Punam Mangtani. "Duration of BCG Protection against Tuberculosis and Change in Effectiveness with Time Since Vaccination in Norway: A Retrospective Population-based Cohort Study." *The Lancet Infectious Diseases* 16, no. 2 (2016): 219–226.

- Nolan, C., L. Kawamura, K. Moser, R. Granich, C. Wallace, D. Schneider, M. Lobato, and A. Miranda. "Post-Detention Completion of Tuberculosis Treatment for Persons Deported or Released from the Custody of the Immigration and Naturalization Service." *Morbidity and Mortality Weekly Report* 52, no. 19 (2003): 438–441. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5219a3.htm>.
- Office of Planning, Analysis, and Statistics. *FY2015 Statistics Yearbook*. Falls Church, VA: Executive Office for Immigration Review, 2016. <https://www.justice.gov/eoir/statistical-year-book>.
- Olson, Steve, Elizabeth English, and Anne Claiborne, *The New Profile of Drug-Resistant Tuberculosis in Russia: A Global and Local Perspective: Summary of a Joint Workshop*. Washington, DC: National Academies Press, 2011.
- Passel, Jeffrey S., and D'Vera Cohn. *Unauthorized Immigrant Totals Rise in 7 States, Fall in 14*. Washington, DC: Pew Research Center, 2014. <http://www.pewhispanic.org/2014/11/18/chapter-2-birthplaces-of-u-s-unauthorized-immigrants/>.
- Posey, Drew, Mary Naughton, Erika Willacy, Michelle Russell, Christine Olson, Courtney Godwin, Pamela McSpadden et al. "Implementation of New TB Screening Requirements for U.S. -Bound Immigrants and Refugees 2007–2014." *Morbidity and Mortality Weekly Report* 63, no. 11 (2014): 234–236.
- Pratt, R., V. Robison, T. Navin, and H. Menzies. "Trends in Tuberculosis—United States, 2007." *Morbidity and Mortality Weekly Report* 57, no. 11 (2008): 281–285, <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5711a2.htm>.
- Reyes-Guillen, Ivett, Hector Sanchez-Perez, Jorge Cruz-Burguete, and Miren Izaurieta-de Juan. "Anti-Tuberculosis Treatment Defaulting: An Analysis of Perceptions and Interactions in Chiapas, Mexico." *Salud Publica De Mexico* 50, no. 3 (2008): 251–257.
- Rodriguez, K., R. Arce, J. Laswell, E. Zuroweste, D. Katsch, A. Fike, D. Schneider et al. "Deportation of Tuberculosis Patients Complicated by a Medication Shortage—Honduras, May–August 2006." *Morbidity and Mortality Weekly Report* 56, no. 26 (2007): 655–658.
- Saunders, David, Donna Olive, Susan Wallace, Debra Lacy, Rodol Leyba, and Newton Kendig. "Tuberculosis Screening in the Federal Prison System: An Opportunity to Treat and Prevent Tuberculosis in Foreign-Born Populations." *Public Health Reports* 116, no. 3 (2001): 210–218.

- Schneider, Diana. "Complexities of Tuberculosis Case Management for U.S. Immigration and Customs Enforcement (ICE) Detainees" (paper presented at the International Union Against TB and Lung Disease/NAR 2008, Paris, France, March 1, 2008).
- Schneider, Diana, and Mark Lobato. "Tuberculosis Control among People in U.S. Immigration and Customs Enforcement Custody." *American Journal of Preventive Medicine* 33, no. 1 (2007): 9–14.
- Scott, Earnest G., Michael Gressel, Kenneth Mead, Teresa Seitz, and Douglas Trout. "Prevention and Control of Tuberculosis in Correctional and Detention Facilities: Recommendations from CDC." *Morbidity and Mortality Weekly Report* 55, no. RR09 (2006): 1–44.
- Schwartzman, K., O. Oxlade, R. Barr, F. Grimard, I. Acosta, J. Baez, E. Ferreira et al. "Domestic Returns from Investment in the Control of Tuberculosis in Other Countries." *New England Journal of Medicine* 2005, no. 353 (2005): 1008–1020.
- Simms, Jacqueline, Kristine Odina, and Michael Zeitler. *An Assessment of the United States Immigration and Customs Enforcement's Fugitive Operations Teams* (OIG-07-34). Washington, DC: Department of Homeland Security Office of Inspector General, 2007. https://www.oig.dhs.gov/assets/Mgmt/OIG_07-34_Mar07.pdf.
- Starke, Jeffrey, Samuel Dooley, Charles Nolan, Paul Davidson, Kathleen Gensheimer, Jeffrey Glassroth, Kathleen Moser et al. "The Role of BCG Vaccine in the Prevention and Control of Tuberculosis in the United States: A Joint Statement by the Advisory Council for the Elimination of Tuberculosis and the Advisory Committee on Immunization Practices." *Morbidity and Mortality Weekly Report* 45, no. RR-4 (1996): 1–18.
- Swindeman, Kathleen, and Nancy Lee Jones. *Extensively Drug-Resistant Tuberculosis (XDR-TB): Emerging Public Health Threats and Quarantine and Isolation*. Washington, DC: Congressional Research Service, 2008.
- Taylor, Zachary. "Guidelines for the Investigation of Contacts of Persons with Infectious Tuberculosis: Recommendations from the National Tuberculosis Controllers Association and CDC." *Morbidity and Mortality Weekly Report* 54, no. RR15 (2005): 1–37. <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5415a1.htm>.
- U.S. Department of Homeland Security. *Policies for the Apprehension, Detention, and Removal of Undocumented Immigrants* [memo]. Washington, DC: U.S. Department of Homeland Security, 2014.

- U.S. Department of Justice Office of the Inspector General. *Management of Immigration Cases and Appeals by the Executive Office for Immigration Review* (OIG Report No. I-2013-001). Washington, DC: U.S. Department of Justice, Office of the Inspector General, 2012. <https://oig.justice.gov/reports/2012/e1301.pdf>.
- U.S. Immigration and Customs Enforcement. *2013 ICE Immigration Removals* [ERO annual report]. Washington, DC: U.S. Immigration and Customs Enforcement, 2014. www.ice.gov/doclib/about/offices/ero/pdf/2013-ice-immigration-removals.pdf.
- . *ICE Enforcement and Removal Operations Report Fiscal Year 2014*. Washington, DC: Department of Homeland Security, 2014.
- . *ICE Enforcement and Removal Operations Report Fiscal Year 2015*. Washington, DC: Department of Homeland Security, 2015.
- . *Salaries and Expenses: Fiscal Year 2014 Congressional Justification*. Washington, DC: Department of Homeland Security, 2013. <http://www.dhs.gov/sites/default/files/publications/MGMT/DHS-%20Annual%20Performance%20Report%20and%20Congressional-Budget-Justification-FY2014.pdf>.
- . *U.S. Immigration and Customs Enforcement (ICE) Advisory Committee on Family Residential Centers (ACFRC) Read Aheads* [sic]. Washington, DC: U.S. Immigration and Customs Enforcement, 2016. www.ice.gov/sites/default/files/documents/Document/2016/acfrcBriefingMaterialsMar2016.pdf.
- Wasem, Ruth. *Immigration Policies and Issues on Health-Related Grounds for Exclusion*. Washington, DC: Congressional Research Service, 2014.
- World Health Organization. *The Global Plan to Stop TB 2006–2015*. Geneva, Switzerland: World Health Organization, 2006.
- . *Global Tuberculosis Report 2014*. Geneva, Switzerland: World Health Organization, 2014.
- Wrighton-Smith, Peter, Laurie Sneed, Francis Humphrey, Xuguang Tao, and Edward Bernacki. “Screening Healthcare Workers with Interferon- γ Release Assay versus Tuberculin Skin Test: Impact on Costs and Adherence to Testing (the SWITCH Study).” *Journal of Occupational & Environmental Medicine* 54, no. 7 (2012): 806–815.
- Zwerling, Alice, Marcel Behr, Aman Verma, Timothy Brewer, Dick Menzies & Madhukar Pai. “The BCG World Atlas: A Database of Global BCG Vaccination Policies and Practices.” *PLoS Med* 8, no. 3: e1001012. doi: 10.1371/journal.pmed.1001012. <http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1001012>.

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