

Tuberculosis in Foreign-Born Persons in the State of Minnesota and TB Prevention Programs in Dakota and Olmsted Counties

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I. Introduction

Tuberculosis (TB) is an infectious disease caused by a type of bacteria called *Mycobacterium tuberculosis*. TB is spread from person to person through the air, when someone with active tuberculosis of the respiratory tract coughs, sneezes, yells, or otherwise expels bacteria-laden droplets. When inhaled by another person, some of these invaders establish sites of infection throughout the body.¹

Tuberculosis remains a serious threat to the health and well-being of millions of people. It is an epidemic in many parts of the world. According to World Health Organization estimates, the largest number of new TB cases in 2004 occurred in Southeast Asia, which accounted for 33% of cases globally.² However, the estimated incidence per capita in sub-Saharan Africa is nearly twice that of Southeast Asia, at nearly 400 cases per 100,000 people.³

Though the incidence of tuberculosis in the United States decreased by 44% and is now at a historically low level (14,517 cases in 2004), the incidence of tuberculosis in foreign-born people remains unchanged.⁴ Furthermore, according to recommendations by the American Thoracic Society, Centers for Disease Control (CDC), and the Infectious Disease Society of America, one of the main challenges to TB elimination is the prevalence of tuberculosis among foreign-born persons residing in the United States.⁵

Information regarding tuberculosis and foreign-born tuberculosis is widely documented. The World Health Organization (WHO), the

CDC, state Health Departments, and an array of other organizations document and disseminate data on foreign-born people with tuberculosis. Local county health offices are engaged on the front line in tuberculosis control and prevention. County offices then report directly to health departments at the state level. County health offices also provide TB patient screening, education, and prevention measures once they receive referrals from the department of health for refugees or local health clinics for patients showing clinical symptoms.

II. Public Health Significance

The World Health Organization declared tuberculosis a global emergency in 1993, in response to steady increases in the incidence of TB, the shifting dynamics in TB diseases related to the Acquired Immune Deficiency Syndrome (HIV/AIDS) epidemic, and the emergence of multi-drug resistant TB.⁶ The relation to HIV and the issue of multi-drug resistant TB, however, are beyond the scope of this paper.

Because the world population is crossing international borders due to conflict, commerce, and tourism, the potential transmission of infectious diseases carried along with human interaction is a high-priority concern of public health experts. In most of the developed countries, many infectious diseases are decreasing or even eliminated.⁷ This has been accomplished mainly through sanitation, immunization, and improved health and public health practices. The proportion of foreign-born tuberculosis cases nationwide in 2004 was 54%, constituting a majority of cases for the third consecutive year, which is a public health concern in terms of surveillance, treatment, education, and prevention.⁸ Therefore, the continuous arrival of foreigners from high tuberculosis prevalence countries will affect the low prevalence host countries. This situation will have a direct impact on the host country's caseload, health policy, and resources (in terms of human power and finance), and more importantly, the epidemiological trends of the disease itself.

III. Statement of Purpose

This article is a combination of a literature review on foreign-born people with tuberculosis and an evaluation of the tuberculosis control program activities in detecting, treating, and preventing tuberculosis in Olmsted and Dakota Counties in Minnesota.

The paper reviews historical aspects of foreign-born tuberculosis around the globe, in the United States, as well as the available literature on this topic. Interviews with officials in the two counties provide information and insight about tuberculosis prevention and control at the local level, and the characteristics and day-to-day challenges of working with foreign-born patients. Furthermore, the paper will identify gaps in prevention, detection, and design of the control programs in order to provide recommendations based on the literature and program evaluations.

The evaluation method for the TB control program relies on interviews conducted with the two TB control program officials. The interviews were conducted at the two county offices. The key informants were informed of their rights and consented to be interviewed. The materials for the literature review are from the CDC regarding information and guidelines in tuberculosis control, various WHO reports on tuberculosis cases around the world, and the Internet, such as Medline and PubMed searches on foreign-born tuberculosis. The term *foreign-born* is defined as a person living in the United States who was not a U.S. citizen at birth.⁹

IV. Methodology

The literature search was conducted using One Search, which contains databases of health and medicine including Ovid, PubMed, EBSCO, Medline, and MNCAT. The search resulted in more than 300 articles. The articles covered foreign-born cases and analysis around the world, in particular in low tuberculosis prevalence regions like Western Europe, Canada, and the United States.

The Institutional Review Board of the University of Minnesota approved this study prior to the interviews and literature review. The criteria for article selection were relevance to the topic and date of the published article.

The interviews with the Olmsted and Dakota Counties tuberculosis control programs were intended to review and gain an understanding of how tuberculosis prevention programs are operated. The selection criteria were programs that were currently working with foreign-born tuberculosis patients.

In addition, I have used reports from the World Health Organization, Centers for Disease Control and Prevention, Minnesota Department of

Health (MDH) Center for Immigration Study, and the Homeland Security Office Division of Immigration.

V. Background

Immigration and travel have always been practiced by humankind, with the goals of a better life, education, trade, or shelter from persecution and war. The trends and the magnitude of population movement for the past fifty years have been influenced by decolonization, large refugee movements due to conflicts and civil wars, and the collapse of the former Soviet Union.¹⁰ Furthermore, advancements in transportation and mobility, globalization of world trade, and tourism have made travel more accessible and necessary. In 1990, the International Organization for Migration estimated that 120 million people were long-term residents of a country other than their country of birth. Just over ten years later, this had increased to more than 150 million.¹¹

According to Census Bureau data, the United States' foreign-born or immigrant population (legal and illegal) reached a new record of more than 35 million in March 2005. Immigration accounts for 12.1% of the total population, the highest percentage in eight decades.¹² The foreign-born population is generally classified as follows:

Refugee: according to the Homeland Security Office of Immigration definition in 2005, a refugee is an alien outside the United States who is unable or unwilling to return to his or her country of origin because of persecution or a well-founded fear of persecution on account of race, religion, nationality, membership in a particular group, or political opinion. In 2005, 53,813 refugees arrived in the United States. Of that number, 7,516 settled in Minnesota (this number does not represent secondary immigration within the states).

Asylum (Asylee): an alien in the United States who is unable or unwilling to return to his/her country of origin due to persecution or well-founded fear of persecution. Asylees must meet the same criteria as refugees; however, whereas a refugee is located outside the United States at the time of application, an asylee is located within the United States at the time of application (or at a port of entry). The number of asylees in 2005 was 25,257.¹³ The number of asylees in Minnesota is not known.

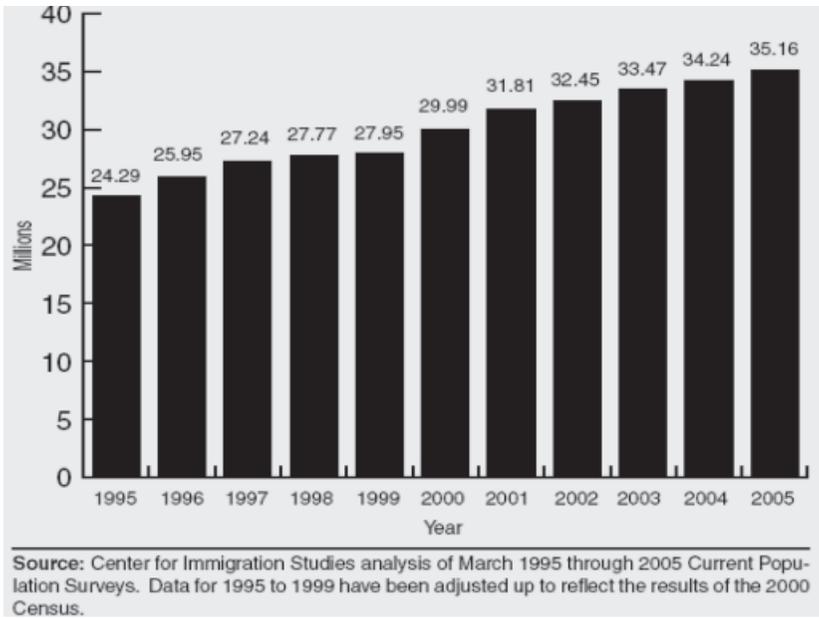


Figure 1. U.S. Immigration Increased over Time to Reach 35.16 Million.

Unauthorized Immigrant: Unauthorized immigrants are defined as all foreign-born non-citizens who are not legal residents. These groups are those who entered the United States without inspection or who were admitted temporarily and stayed past the date they were required to leave. There were an estimated 10.5 million unauthorized immigrants residing in the United States in January 2005.¹⁴

Non-immigrant: a foreign national seeking to enter the United States temporarily for specific purposes. Non-immigrants include tourists, business travelers, transit aliens, students, highly skilled workers, fiancés of U.S. citizens, and diplomats. In 2005, there were 175.4 million non-immigrant admissions.¹⁵

VI. Tuberculosis: A Global Burden

The recent WHO 2006 report, “Global Tuberculosis Control, Surveillance, Planning, and Financing,” indicated that in 2004 there were nine million new TB cases and approximately two million deaths. The number of TB cases was stable or falling in five WHO regions, but growing

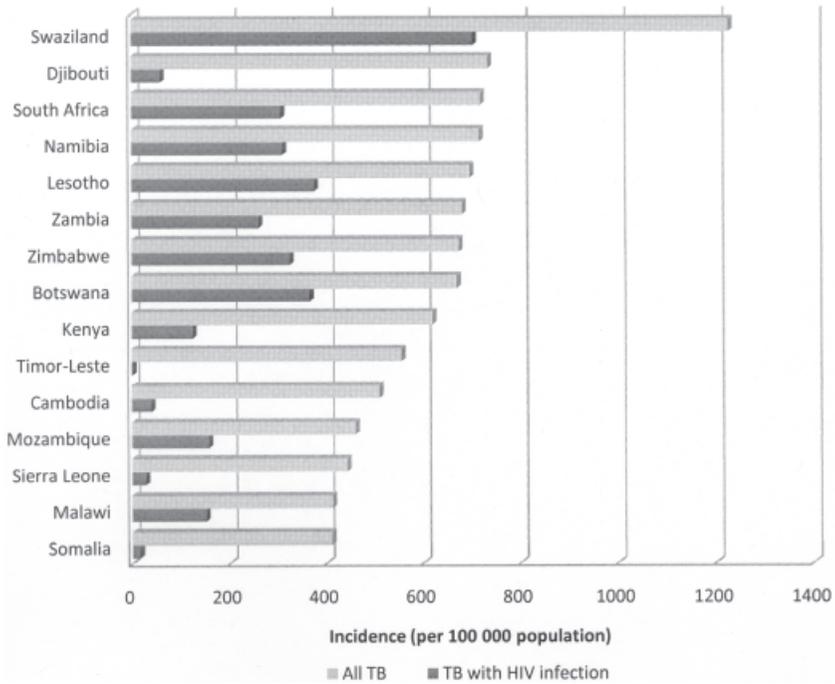


Figure 2. Countries with Highest Estimated TB Incidence Rates Per Capita and Corresponding Incidence Rates of HIV-Positive TB Cases, 2004.

in Africa, where the TB epidemic is still driven by the spread of HIV. More than 80% of all TB patients live in sub-Saharan Africa and Asia.¹⁶ An increasing number of these immigrants are coming to the United States.

The Millennium Development Goals set an ambitious objective of a 50% reduction of tuberculosis prevalence and death rate (relative to 1990) by 2015 and to eliminate TB as a public health problem by 2050 (less than one case per million population). By the end of 2004, out of 211 countries and territories, 200 reported to the World Health Organization on tuberculosis case notification and treatment. Tuberculosis rates remain high and challenging in many parts of the world. In 2004, there were 4.9 million new and relapse cases, of which 2.2 million (46%) were new smear-positive tests.¹⁷ Based on data from reporting countries in 2004, WHO estimates that there were 8.9 million new cases of tuberculosis (140/100,000), including 3.9 million (62/100,000)

new smear-positive cases.¹⁸ Furthermore, the United Nations report comparing the different regions indicates that Africa accounts for 24%, South Asia 35%, and the western Pacific region 24%. Together, they account for 83% of all notified cases around the world.¹⁹

The World Health Organization has ranked countries based on incidence of tuberculosis cases and given prominence to 22 high-burden countries. These countries are India, China, Indonesia, Niger, South Africa, Bangladesh, Pakistan, Ethiopia, Philippines, Kenya, Democratic Republic of Congo, Russian Federation, Vietnam, Tanzania, Uganda, Brazil, Afghanistan, Thailand, Mozambique, Zimbabwe, Myanmar, and Cambodia. Among the fifteen countries with the highest estimated TB incidence rates per capita, eleven are in Africa, including Somalia, Ethiopia, Kenya, and Sudan from East Africa,²⁰ where the majority of the recent immigrants to Minnesota are from or have lived as refugees.²¹ Furthermore, 25% of all immigrants come to the United States from the 22 high tuberculosis burden countries, including India, China, the Philippines, the Russian Federation, Vietnam, and Brazil.²²

VII. Foreign-Born Tuberculosis Cases in the U.S.

Through the cooperation with state and local health departments, CDC has collected information since 1953 on the number of newly reported cases of TB in the United States. Currently, the fifty states as well as the District of Columbia, New York City, Puerto Rico, and seven other jurisdictions in the Pacific and Caribbean, submit their tuberculosis case information to the Division of Tuberculosis Elimination (DTBE), Centers for Disease Control and Prevention.²³

The proportion of tuberculosis cases among foreign-born people in the United States increased progressively during the 1990s. In 2004, persons born outside the United States accounted for 54% of reported cases. Though the incidence of tuberculosis in the United States decreased by 44% and now is occurring at a historically low level, the incidence of tuberculosis in foreign-born people remains unchanged.²⁴

Despite the nationwide downward trend, TB continues to exact a severe toll on many U.S. communities. Seven states now bear more than half the total burden of the disease. California, Florida, Georgia, Illinois, New Jersey, New York, and Texas account for 59.9% of the national total. The toll continues to be greatest among minority and foreign-born individuals, who consistently have higher rates of TB disease.²⁵

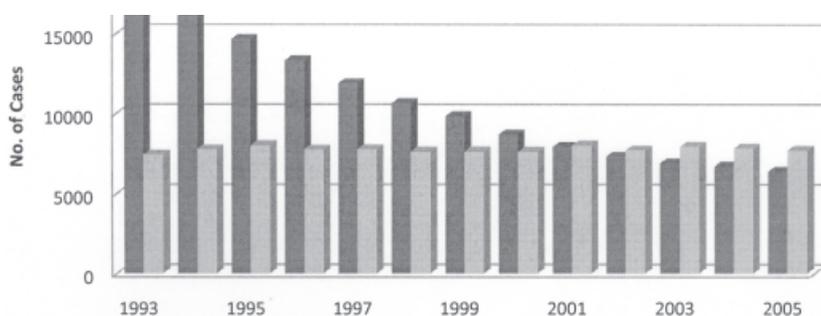


Figure 3. Number of TB Cases in U.S.-born vs. Foreign-Born Persons, 1993–2005.

For the first time, Hispanics (29%) exceed non-Hispanic Blacks (28%) as the racial/ethnic group with the largest percentage of cases.²⁶ In 1993, 69% of reported cases were among U.S.-born people (7.4 cases per 100,000) whereas 29% were among foreign-born persons (34.0 per 100,000). In comparison, in 2004, 54% of reported cases occurred among foreign-born persons, and the respective cases were 2.6 per 100,000 for U.S.-born and 22.8 per 100,000 for foreign persons.

One-third of all immigrants lack health insurance. Immigrants and their U.S.-born children account for almost three-fourths (nine million) of the increase in the uninsured population since 1989.²⁷

A. State of Minnesota

Minnesota’s foreign-born population has increased significantly as refugees around the world are choosing to reside in the state. According to the Center for Immigration Studies report in December 2005, Minnesota’s immigrant population increased from 261,000 in 2000 to 374,000 in 2005 (a 43.3% increase). The state also has one of the highest percentages of tuberculosis cases among foreign-born residents in the United States. The percentage of foreign-born persons’ TB cases in Minnesota increased from 50% in 1995 to 87% in 2005.²⁸ The largest number of foreign-born TB patients was reported in Minnesota during the past five years.

The Minnesota Department of Health (MDH) TB Prevention and Control Program, in collaboration with local public health departments and health care professionals statewide, collects and analyzes surveillance data to monitor epidemiological TB trends. The MDH also provides consultation to clinicians and local public health departments to

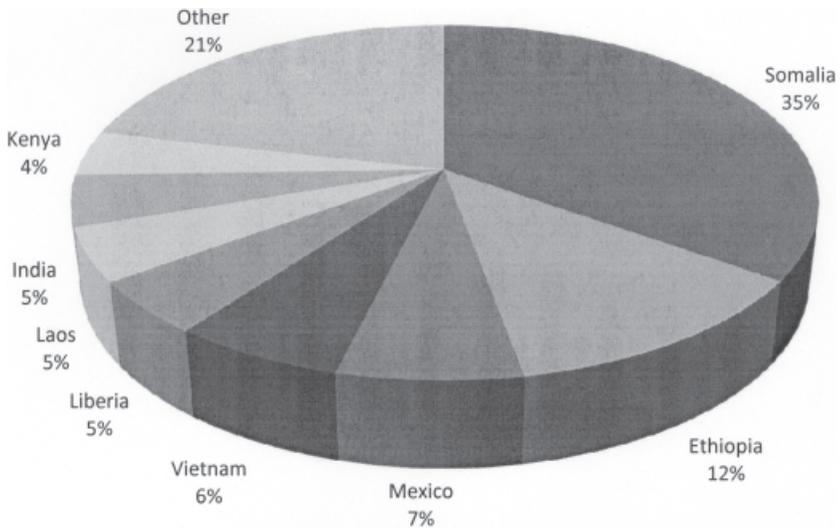


Figure 4. Foreign-Born Tuberculosis Cases by Country of Birth, Minnesota, 2001–2005.

assure appropriate clinical management and therapy for TB patients. In 2005, there were 199 new TB cases statewide, which represents an incidence rate of 3.8 per 100,000 population,²⁹ in comparison with 4.9 cases per 100,000 people nationwide.

The distribution of tuberculosis cases reported in Minnesota noticeably differs between U.S.-born and foreign patients. Nearly three-fourths (73%) of foreign-born patients reported during 2001–2005 were between 15 and 44 years of age. In contrast, among U.S.-born patients the most common age group was 44 years and older.³⁰

Among the foreign-born patients in Minnesota from 2001 through 2005, the largest percentage (34%) was born in Somalia. Other countries of birth, representing 5%–10% of case patients each, included Ethiopia, Laos, Vietnam, Mexico, Liberia, and India. Patients from a geographically and ethnically diverse group of 55 other countries represent 26% of TB cases reported during this period.³¹

1. Minnesota Tuberculosis Control and Prevention Program

Tuberculosis control programs are designed to detect and prevent tuberculosis transmission through screening at-risk groups and foreign-born people coming to the United States, and provide treatment as a preventive measure.³² According to the Minnesota Department of

Health Tuberculosis Prevention and Control Program, the following tasks are provided in assisting TB control:

a. Disease Surveillance/Epidemiology: Compile standardized case reports for all TB cases reported, notify local health departments of newly reported TB cases in their jurisdiction, analyze and summarize epidemiological data about TB and distribute the information to health care providers, report the data to public health agencies, report surveillance to the CDC, and conduct or participate in epidemiological studies.

b. Case Management/Contact Investigation: Monitor the status of individuals through regular contacts with physicians and public health nurses to ensure appropriate medications are supplied, and work closely with health departments to receive and send referrals for TB patients who move between jurisdictions.

c. Consultation/Education: Consult with care providers and local health departments about standard recommendations regarding diagnostic procedures, treatment regimens, clinical follow-up and TB investigations; disseminate national TB guidelines and develop state guidelines.

d. Screening and Follow-Up of Immigrants and Refugees at Risk for TB: Receive paperwork from CDC division of Quarantine and Global Migrations, and track TB screening results and outcome of treatments of TB diseases.

e. TB Medications Services: Provide free medications for patients statewide who are receiving treatment for TB or latent TB infection.

Screening and follow-up of immigrants and refugees at risk is conducted in collaboration with county tuberculosis clinics. In the state of Minnesota there are three county tuberculosis clinics: Hennepin, Ramsey, and Olmsted Counties. Other counties contract to provide health services to their TB patients with these three clinics or with private clinics. County tuberculosis prevention programs mostly perform case management tasks when they contract with third-party providers.³³

2. Dakota and Olmsted Counties Tuberculosis Prevention Programs

In 2005, Dakota County reported fifteen tuberculosis cases and Olmsted County reported thirteen cases.³⁴ The majority of tuberculosis patients in both counties are foreign-born persons from sub-Saharan Africa. The duties of the program are to work with the Minnesota Department of Health Tuberculosis Prevention and Control Program in screening for TB with X-ray, Mantoux, sputum, and blood tests, and to conduct follow-up services for positive tests results, providing contact investigation. Olmsted County provides Direct Observed Therapy (DOT) in treating patients and incentives to complete therapy.

Olmsted County has an advantage in having its own TB clinic, but more importantly, it can utilize the Mayo Clinic. The county tuberculosis prevention and control program has one full-time physician, two nurses, and two outreach workers, who themselves are foreign born. This program also has various language interpreters on site and has a part-time lab technician.

The Dakota County tuberculosis prevention and control program has four nurses, two full time and two part-timers. The foreign-born TB cases are mostly from Somalia, Ethiopia, and Mexico, as well as children adopted by American citizens from high tuberculosis risk countries.

Officials in both counties identified similar challenges working with foreign-born tuberculosis victims. The main challenge is the stigma associated with tuberculosis. According to the Dakota County nurse, “no one wants to talk about it, there is a lot of blame and shame, and therefore it is sometimes difficult to make contact investigations.” The Olmsted County program director stated that the greatest challenge in working with foreign-born patients is to convince them that they have tuberculosis and that we care enough to treat them, and, finally, that they adhere to the treatment regimens.

Though both counties’ tuberculosis patients are entirely foreign born, neither county has a different design or strategy to prevent or control the increasing number of foreign-born cases. However, Olmsted County has done a great deal in terms of educating physicians in recognizing TB symptoms and educating the community around the issues of prevention and treatment, including confidentiality, as well as engaging other stakeholders such as pharmacists. They have also hired an outreach worker and interpreters from the community to assist in

this initiative. The Dakota County nurse acknowledged the challenges in working with foreign-born tuberculosis patients. However, officials said in the interviews that they do their best to learn about the different cultures and norms, and work with foreign-born patients with professionalism and respect.

Funding of the TB program for Olmsted County comes from various sources. The most important ones are Medical Assistance reimbursements, a small grant from MDH, another grant from the Mayo Clinic, plus tax dollars. The funding for Dakota County includes Minnesota Department of Health grants and taxes from the county.

Both county staffs were asked how they view the control and prevention of foreign-born tuberculosis cases. The Olmsted County director said that there is a great need for a partnership of public and private medicine. He stated that the partnership they have with Mayo Clinic is a great asset in preventing and controlling tuberculosis. He also emphasized the importance of research in understanding the at-risk populations and what motivates someone to seek health services.

The Dakota County nurse stated that taking time to learn about patients' cultures, communicating openly, and asking about their culture helped build trust. She added that it was important to be open-minded when working with TB patients because the course of sickness and treatment is different for each one and therefore working individually and taking time to learn about their backgrounds were important factors.

VIII. Literature Review

The relationships between diseases, travel, and migration have historical roots that continue to influence modern medical activities.³⁵ Traditional medical approaches dealing with migrant health have focused on the recognition, identification, and management of specific diseases. The activities have been based on the principle of protecting the recipient population.³⁶

Europe has one of the lowest rates of tuberculosis among its citizens. Yet the foreign-born tuberculosis rates have been increasing steadily (as in the United States). This is also mainly linked to increased immigration from high-prevalence areas. In Norway, the incidence of tuberculosis is among the lowest in Europe, five to seven cases per 100,000 inhabitants. While only 5% of the populations were foreign

born in 2001, 74% of tuberculosis patients were reported to be from this group.³⁷

In the Netherlands, 60% of registered tuberculosis cases in 1998 were foreign born, half of whom were asylum seekers. Medical records of 46,424 of the 96,000 asylum seekers were reviewed between 1994 and 1997. The result showed 103 pulmonary TB cases diagnosed at entry, which is a prevalence of 222/100,000 among the asylum seekers in the Netherlands.³⁸

A study of the epidemiological profile of risk factors for active tuberculosis in people immigrating to Ontario, Canada, demonstrates the same trend as in other developed nations. Many people immigrating to Ontario are from nations classified by the U.N. as high TB prevalence countries, such as Somalia, Vietnam, Philippines, other sub-Saharan African countries, India, and China.³⁹

In the Netherlands study, the immigrants' countries of origin were the former Yugoslavia (including Bosnia), Somalia, Iran, Iraq, Afghanistan, Zaire, Angola, and Sri Lanka.⁴⁰ The Norwegian Institute of Public Health study stated that the immigrants' countries of origin were Somalia, Pakistan, Philippines, Thailand, Vietnam, and the former Yugoslavia.

Since the early 1990s, more than half of all Somali immigrants, mainly refugees to the United States, have settled in Minnesota. Between January 1, 1993 and June 30, 1998, eighty-two cases of TB were identified in the Somali ethnic group in Olmsted County. In 1997, the incidence of TB in Somalis was 170 per 100,000 population, based on an estimated population of 15,000 Somalis in the state. Somalis comprised less than 0.4% of the state's population, but accounted for 17% of all Minnesota cases.⁴¹ Furthermore, another study of tuberculosis incidence in Olmsted County in 1990–2001 confirmed that Somalia was the most common country of origin for foreign-born patients with tuberculosis.⁴²

In nations using routine immigrant medical screening, the health-related mandates are designed to prevent the admission of migrants who pose public health threats. As a consequence, immigration-related TB screening is designed to manage active pulmonary diseases that could be transmitted person-to-person, creating events of public health significance.⁴³

Many active TB cases among the foreign-born are attributable to the reactivation of latent TB infection. Reactivation rates are highest during the first 2–5 years following migration.⁴⁴ Currently, all persons attempting to enter the United States as refugees or through applica-

tion for immigrant visas must undergo a medical examination that includes screening for active TB.⁴⁵ Asylum seekers within the United States are encouraged to seek medical examinations when they apply for asylum and are mandated to undergo medical examinations when they are applying for a Green Card, which might take two to four years from the day the I-94 Visa is granted.⁴⁶

In the Netherlands, immigrants and long-term visitors of all ages intending to stay for more than three months are required by law to report to the police department within weeks of arrival. Upon registration, all entrants (with the exception of those from the European Union, U.S.A., Canada, Israel, Surinam, Japan, Australia, and New Zealand) are referred to mandatory entry screening at tuberculosis clinics at Municipal Health Clinics (MHS).⁴⁷

Despite the fact that screening immigrants for pulmonary tuberculosis is widely used, the effectiveness of screening only *legal* immigrants under the category of foreign-born peoples has raised skepticism in some papers. Although the evaluation of persons who enter the U.S. with a positive notification has yielded a high rate for identifying active tuberculosis cases, it was not able to identify the majority or recent arrivals with the most infections from tuberculosis.⁴⁸ Most immigrants and refugees classified as TB suspects by foreign screening completed the U.S. screening process, which had a high yield for detecting active and latent TB. Only a minority of foreign-born persons (12%) with active TB were discovered through this program, however, and additional measures are needed to facilitate early discovery in other foreign-born populations.⁴⁹ Despite overseas screening, refugees have high TB rates, and contribute substantially to the host country TB case burden. Enhanced surveillance and targeted programs to address TB in refugees should be a public health priority.⁵⁰

In 1994, the World Health Organization published a framework document for Effective Tuberculosis Control, summarizing the strategy, control policy package, and key technical operations of national tuberculosis projects in countries with a high incidence of the disease.⁵¹ This document presented the essential elements of WHO-recommended strategy for tuberculosis control, called Directly Observed Therapy (DOT). These include a political commitment to tuberculosis control; diagnosis based on bacteriology (sputum smear under the microscope); case findings among symptomatic patients presenting to health services; standard short-course chemotherapy provided under proper case management conditions, including directly observed ther-

apy; the provision of a regular supply of essential anti-tuberculosis medications; and the establishment and maintenance of a recording and reporting system with evaluation of treatment outcomes.⁵²

Drafting a prevention or control program requires a consideration of the dynamics of tuberculosis infection in a population. At the center of this dynamic are cases beyond the scope of my paper, such as latent infection, drug resistance, and the HIV epidemic in high-burden tuberculosis countries. The basic tuberculosis control strategy in low-incidence countries aims at minimizing transmission by maintaining high case discovery and cure rates, especially among potentially infectious bacteriology confirmed cases.⁵³

As TB is nearly 100% curable, it can be controlled if appropriate policies are followed, effective clinical and public health management is ensured, and there are communal and coordinated efforts from within and outside the health sector. However, in the context of a large AIDS epidemic, TB incidence will inevitably increase.⁵⁴

IX. Discussion

Discussing the issue of tuberculosis in foreign-born persons emigrating from high-prevalence TB countries to low-prevalence industrialized nations is very complex. There are cultural, social, economic, and policy issues to be highlighted in order to elucidate the situation in the global as well as local context, and their relationships to one another.

As globalization continues, human mobility for a better life, trade, tourism, and freedom from persecution continues to transfer infectious diseases to host countries. In 2004, the nine million tuberculosis cases and approximately two million deaths around the globe were a serious public health threat and burden to developing nations with limited resources and experts, as well as to developed nations, where the trend of tuberculosis is dramatically changed by immigrants from developing nations.

Immigrants in the United States are classified according to their process of entry and reason for coming. They are classified as "Refugees." In 2005, there were 53,813 refugees; 25,257 asylum cases; 10.5 million unauthorized immigrants; and 175.4 million non-immigrants. The categorization of foreign-born people has significant implications for policies and programs related to prevention and control programs. For instance, refugees are pre-screened in third countries where the refugees resided and went through the complete process of immigration.

As a result, the United States immigration services have information regarding their health status and notify the CDC and state and county health offices if they show any infectious symptoms.

Asylees are also well known to the governments, even though there is no immediate mandatory screening while they are in the process of requesting asylum since they are already in the country. They are encouraged to seek screening and health care as part of the process. Furthermore, a private health entity provides screening when a new person from a foreign country comes to their facility without health information. I think the process of encouraging asylum-seekers to obtain screening is simply an act of people to be responsible and acquire medication. If all human beings were so responsible for themselves and others, we would have fewer quandaries around the globe.

In order to have better detection and prevention of tuberculosis, asylees require a different strategy and, most importantly, a new mandatory policy of screening while they are applying for asylum within the country. For 10.5 million unauthorized immigrants, the challenge is clearly evident, as their entry categorization indicates. However, the non-immigrant group is composed of living, working individuals who enter the country and stay without legal documents. The non-profit community and faith-based organizations could work effectively and alleviate the fear of being repatriated back to the country of origin. It is in the interest of the larger community and public health and other health groups to further research the impact of immigrants on tuberculosis and other infectious diseases, and to provide them with screening and health-related support.

Foreign-born tuberculosis cases accounted for 73% of all cases in Minnesota. The majority of the cases are East African immigrants, who are predominantly the recent immigrants into the state. From information gathered from their website, the state tuberculosis prevention program seems to be providing the necessary support, such as information and guidance and sometimes expertise. My focus has been to review the local offices at the county level that are the face of the battle to control tuberculosis.

Dakota and Olmsted counties are experiencing an increase in their foreign-born population, as are other parts of the state. Though the two counties have more or less the same number of patients and the same type of tuberculosis cases in terms of countries of origin, Olmsted County has financial and expert support from the Mayo Clinic. It is one of the few counties in the state that has its own public health clinic.

Dakota County contracts with the Ramsey County public health clinic and entirely depends on funding from MDH and tax dollars.

Both of the county staffs expressed as the main challenge the stigma associated with the illness. As the foreign-born populations are from different countries and tend to speak different languages and practice different customs, it is important to prioritize cases in terms of their number and homogeneity in order to provide culturally appropriate support to the patients. Service providers, including physicians and nurses, have to be trained to recognize symptoms of tuberculosis, which shares symptoms with other disease that are common in this region. Furthermore, in order to provide high quality service and achieve success in controlling tuberculosis, as the Olmsted County tuberculosis program director said, there is a great need for a partnership of public health and private medicine.

The influx of immigrants from high tuberculosis countries has affected most industrialized nations in the same way as in Minnesota. In the Netherlands, Norway, Denmark, Canada, and other nations, the foreign-born tuberculosis rate has increased dramatically and shifted resources and human power to control the disease.

A. Limitations

The intention of this project is to review the available literature and historical background, and then evaluate the two counties' TB prevention and control programs. My specific interest is in the tuberculosis cases in foreign-born populations. My paper does not assess latent tuberculosis, drug resistance, or AIDS and TB in foreign-born populations.

The strength of the literature lies in documenting the evolution of tuberculosis in foreign-born people in low TB prevalence countries. As this nation has more resources and expertise, different organizations—governmental and non-governmental—have been working hard on research as well as documenting and disseminating information.

Although the literature provided information about the prevalence and progression of tuberculosis in foreign-born populations, it has limitations in providing information about such disease transmission to native-born populations. It also has weaknesses in providing information on tuberculosis prevention methods or programs that have been successful with foreign populations.

The implications for public health administration and policy programs are specifically in the areas of tuberculosis program design,

management, and implementation, and tuberculosis-related policies. Prevention and control programs for foreign-born populations have to take into consideration the multiple challenges faced by these groups, such as economic, social, and immigration status. Social aspects may include language barriers. Cultural differences might be displayed in terms of health-seeking behaviors, adjustments, and problems understanding the complex U.S. health care system.

Policy is another important tool in advocating for change. Any program of tuberculosis control and prevention requires laws and regulations that have a direct impact on the way it functions. Hence, public health experts have to be continuously on the front line in advocating for public health and human rights improvements.

X. Conclusion

Birthplace is the main risk factor of foreign-born tuberculosis in low-prevalence countries. As is clearly indicated in the United Nations World Health Organization's ranking and the various reports and research papers from developed nations, specific countries from different parts of world highly impact tuberculosis epidemiology in historically tuberculosis-controlled Western countries.

Tuberculosis is a curable disease, however it has faced huge obstacles in high-prevalence countries. It competes for resources and attention with various incurable diseases and other public health priorities (such as AIDS), and other disasters in developing nations, where there is a lack of resources and expertise. However, in developed nations, tuberculosis can indeed be controlled in foreign-born populations if appropriate policies and effective clinical and public health measures and procedures are introduced.

Engaging immigrant communities and organizations in the discussion of screening, treatment, and education is also a desirable way of empowering recent immigrants in their health care and the well-being of the larger community. As education is a vital part of any intervention, it is essential to communicate about tuberculosis prevention programs and other health-related messages using their own channels, such as through native-language radio shows, TV, and so on.

There is also much public health expertise within the immigrant groups. These experts might not have the required credentials to compete in the employment market and serve in the field, due to language barriers and certifications. For instance, due to colonial ties and other geopolitical relationships, many Somalis studied medicine and

health-related subjects in Italy and in various Arabic-speaking countries. There has to be a way to utilize their knowledge and experience to fight tuberculosis.

Though Olmsted County has a clear advantage over Dakota County in terms of Mayo Clinic support, I believe that the Tuberculosis Prevention Program serves as a model for other counties in the state and nationwide.

Notes

1. United States Institute of Medicine (IOM) 2000.
2. World Health Organization (WHO) 2005.
3. WHO 2006.
4. Centers for Disease Control (CDC) 2005.
5. CDC 2005.
6. MDR-TB (WHO 2004).
7. Brian D. Gushulak and Douglas W. MacPherson 2006.
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25. CDC.
26. CDC 2005.
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