

**State of Nebraska  
Department of Health and Human  
Services**

**Tuberculosis Program  
Report 2015**



## TUBERCULOSIS IN NEBRASKA – 2015

### Introduction:

Tuberculosis (TB) is an infectious disease caused by the bacterium *Mycobacterium tuberculosis*, and is one of the leading causes of death in the world today. Worldwide, in 2014, 9.6 million people fell ill with TB and 1.5 million died from it. In the United States, TB was the leading cause of death in 1900. With the advent of effective treatment, the U.S. experienced a steady decline in cases until the mid-1980s. A resurgence of TB occurred at that time, with national case rates peaking in the early 1990s. Through extensive public health interventions at the national, state, and local levels, tuberculosis is once again on the decline nationally. 2014 national data shows 9421 cases for a case rate of 3.0/100,000. Provisional 2015 national data is a further increase in cases to 9,563 with the same case rate. Nebraska did not follow this trend and had a decrease in cases in 2015. There were 33 cases for a case rate of 1.8/100,000. This was a 13% increase in cases from 2014, which was a 10-year high for cases. TB cases nationally are on the rise for the first time since 1990's.

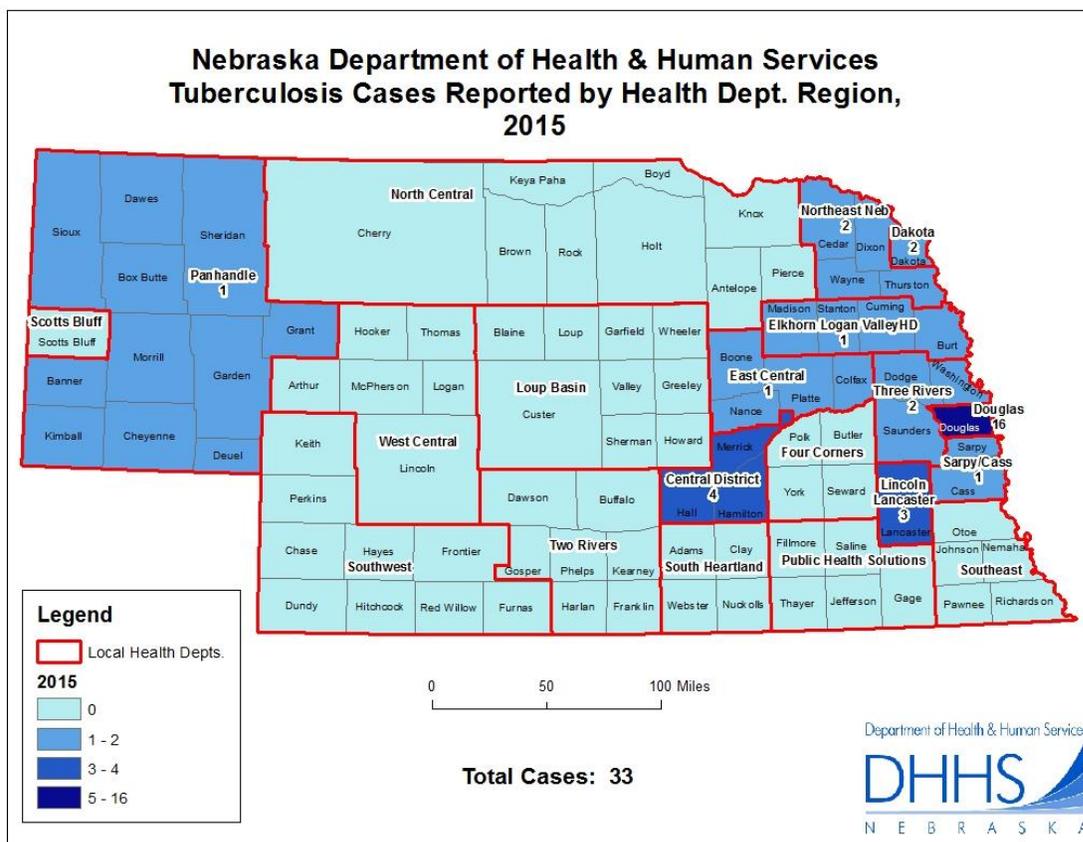
Although Nebraska has an overall low incidence of TB, the cases continue to be difficult to treat because of the high percentage of foreign-born population that comprise Nebraska's TB morbidity and also because of the complexity of the cases. The language and cultural barriers of the foreign-born population require a tremendous amount of public health resources to ensure a successful TB treatment outcome. Nationally and worldwide, there continues to be a great need for research in tuberculosis to develop new diagnostic tools and new drugs to fight the disease. Nebraska has not yet seen an increase in multi-drug and extensive drug-resistant diseases that have become more

frequent around the world, but we realize that the global burden of TB is not far away from Nebraska's borders. It is true that "TB anywhere is TB everywhere".

### Tuberculosis in Nebraska: 2015 Statewide Summary

In 2015, Nebraska had a total of 33 cases of TB, for a rate of 1.8 cases per 100,000 people. The lowest was in 2013 when Nebraska had 21 cases, for a rate of 1.1 case per 100,000 people. However, it is important to note that even 10 year data for low-incidence states like Nebraska are often not sufficient enough to reflect trends in morbidity.

There were 11 counties in Nebraska that reported at least one case of TB for 2015. County incidence rates are available by request through the State TB Program (see Attachment A) since the population in some counties is too small to publish the data. Following is a map showing the cases by county health department for 2015.



## **Tuberculosis in Nebraska 2015 by County Health Department:**

Nebraska has 93 counties that are covered by 20 county or district health departments. Since some of Nebraska's counties have less than a 20,000 population base, surveillance data is reported by the county health departments rather than by individual counties. If county-specific data is required it is available by request from the State TB Program (Attachment A). For the period of 2011-2015, 16 county health department or health districts reported at least 1 case of tuberculosis. Seven county health districts, reporting 5 or more cases, accounted for 113 of the 137 or 83% of cases that occurred from 2011 through 2015. Douglas County Health Department (Omaha), Sarpy/Cass Department of Health and Wellness (included in the Omaha metro area) and Lincoln-Lancaster County Health Department (Lincoln area) are the state's three most populous health districts. Together they reported 88 cases or 64% of the cases during the last five-year period. The data below is one of the tools used by health care facilities when completing their annual risk assessments for TB.

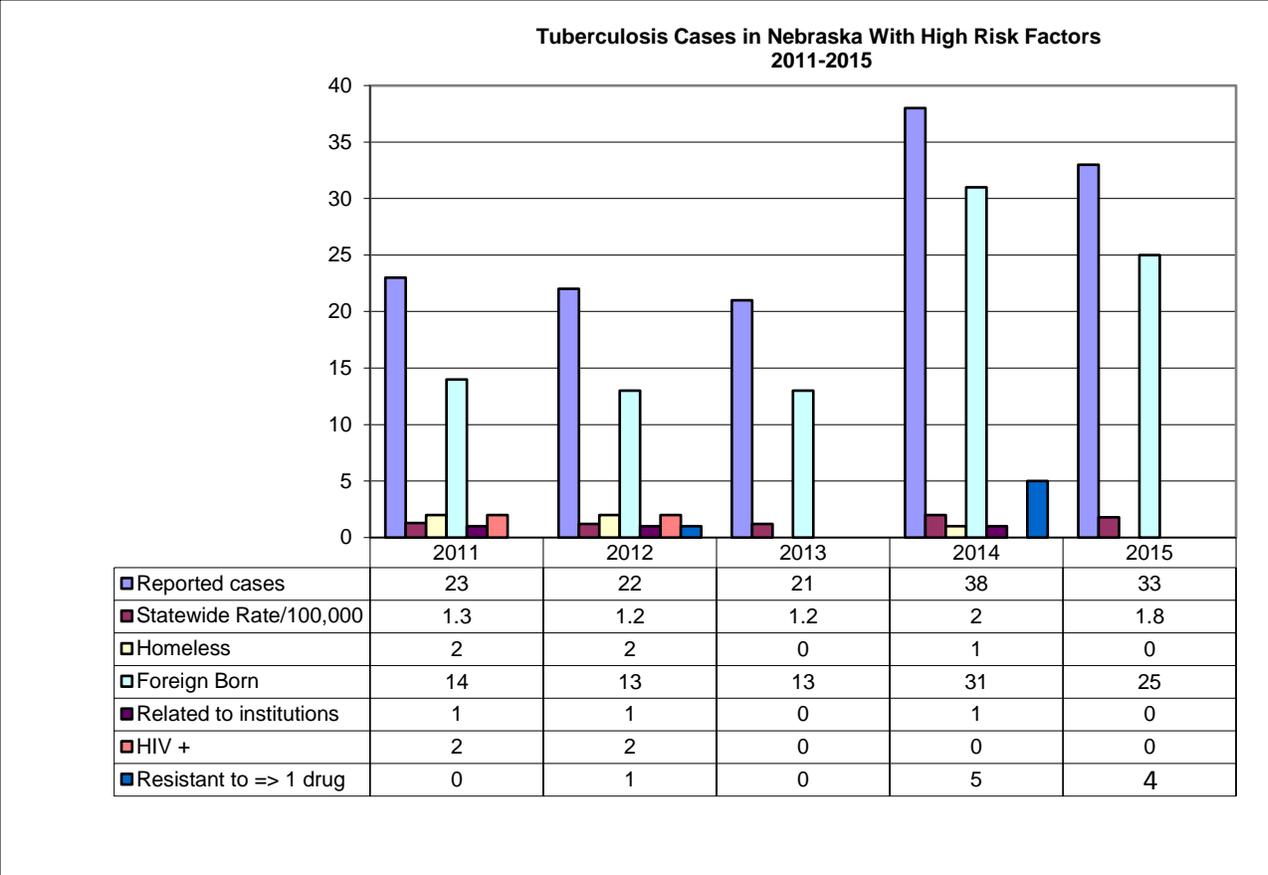
**Reported TB Cases**  
**Nebraska County and District Health Departments 2011-2015**

<i>Health Department or District Name</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>5 Year Totals</i>
<i>Central District HD</i>	0	1	1	2	4	8
<i>Dakota County HD</i>	1	1	1	3	2	8
<i>Douglas County HD</i>	11	13	9	18	16	67
<i>East Central HD</i>	2	1	0	0	1	4
<i>Elkhorn Logan Valley HD</i>	1	0	1	2	1	5
<i>Four Corners HD</i>	0	0	0	1	0	1
<i>Lincoln/Lancaster County HD</i>	3	4	3	5	3	18
<i>Northeast District HD</i>	0	0	0	1	2	3
<i>Panhandle HD</i>	2	0	0	0	1	3
<i>Public Health Solutions</i>	1	0	1	1	0	3
<i>Sarpy/Cass County HD</i>	1	0	1	0	1	3
<i>South Heartland HD</i>	0	0	0	1	0	1
<i>Southeast District HD</i>	0	0	0	1	0	1
<i>Three Rivers</i>	0	0	0	0	2	2
<i>Two Rivers HD</i>	0	2	3	2	0	7
<i>West Central HD</i>	1	0	1	1	0	3
<b>TOTAL</b>	<b>23</b>	<b>22</b>	<b>21</b>	<b>38</b>	<b>33</b>	<b>137</b>

**Active TB Summary**

**Tuberculosis by Risk Factors:**

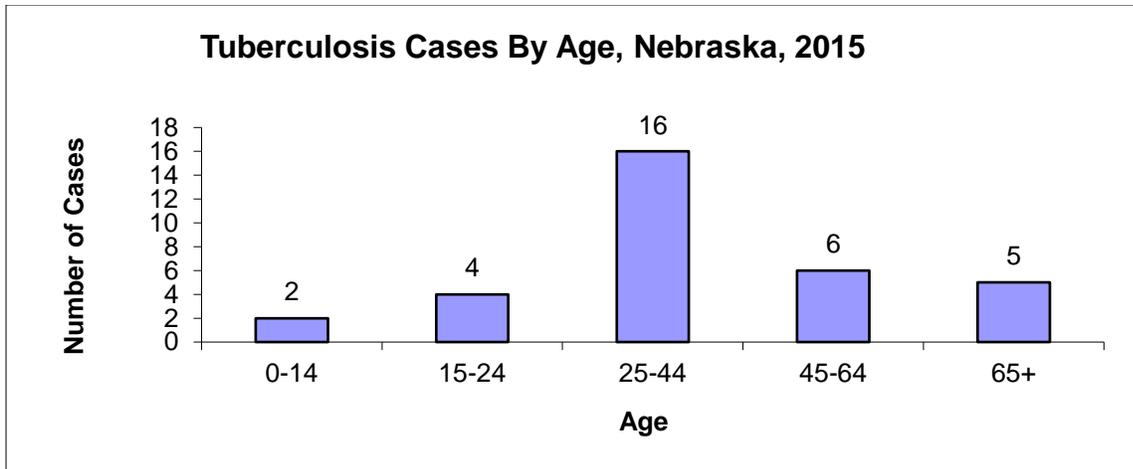
Of the 33 cases of tuberculosis in Nebraska in 2015, 25 were foreign born, and none were homeless, associated with an institution or co-infected with HIV. Two cases were resistant to 2 drugs (1 case was resistant to Isoniazid and Pyrazinamide and the 2<sup>nd</sup> case was resistant to Isoniazid and Streptomycin), one case was resistant to 3 drugs (Isoniazid, Pyrazinamide and Streptomycin), and one case was just resistant to Isoniazid.



Source: Nebraska Department of Health & Human Services, TB Control Program 2016

**Tuberculosis in Nebraska 2015 by Age Group:**

In 2015, the highest number of cases, 16, was identified in the 25-44 age group. The lowest number of cases, 2, was identified between 0 and age 14. For the past several years, tuberculosis cases have occurred in greater numbers in the young adult population. Often this means that active cases are in contact with children and are in the workforce, both of which require in-depth contact investigations, follow-up and the increased possibility of disease transmission.



Source: Nebraska Department of Health and Human Services, TB Control Program, 2016

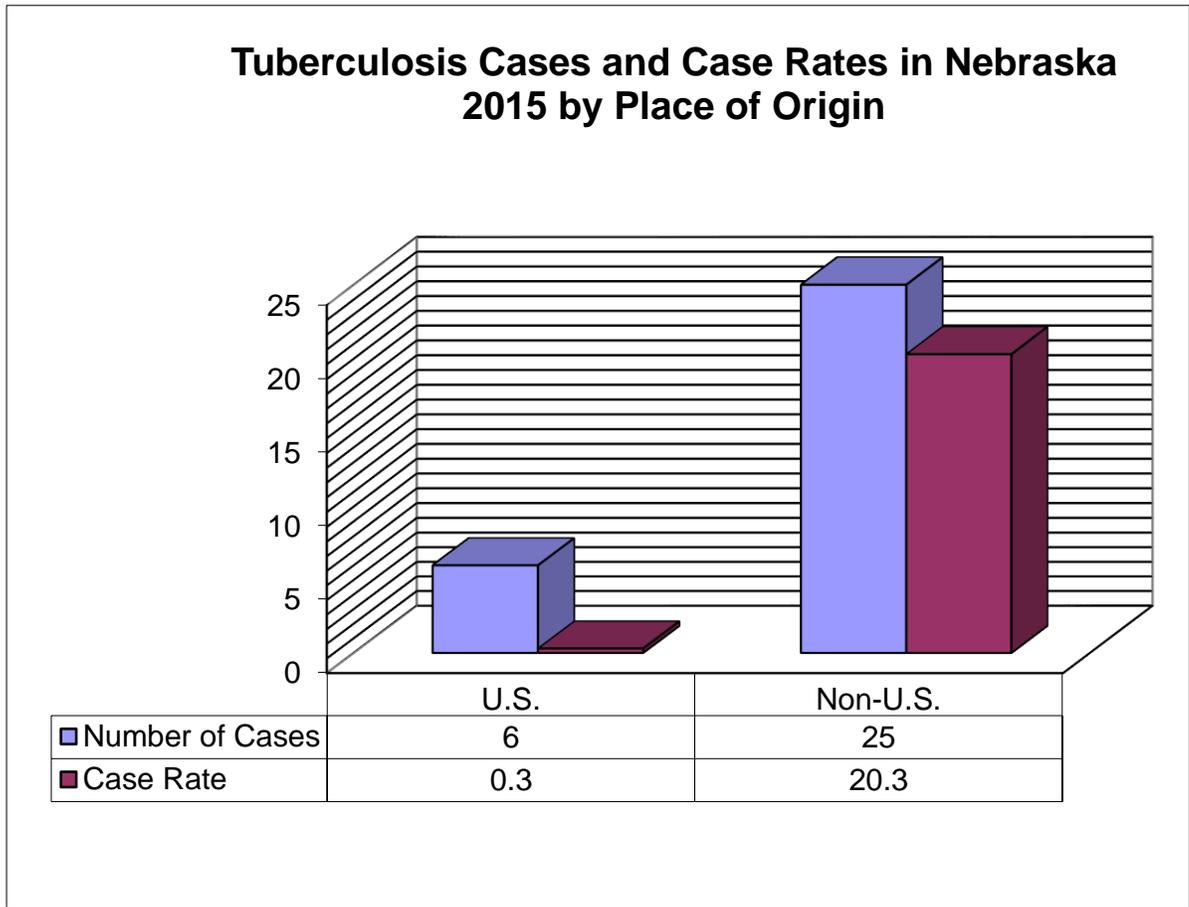
### **Tuberculosis in Nebraska 2015 by Country of Origin:**

Foreign-born persons have a higher risk for exposure to or infection with tuberculosis, especially those that come from areas that have a high TB prevalence such as Asia, Africa, Latin America, Eastern Europe and Russia. Many persons from these regions now reside in Nebraska.

In 2015, 25 (76%) of the 33 cases reported were among the foreign born and 2 with unknown country of birth. The distribution by country of origin is as follows: 6 from Burma, 3 each from Mexico and Vietnam, 2 each from Guatemala and Togo, and 1 each from Bangladesh, Bhutan, China, Gambia, Ghana, Honduras, Kenya, Norway, and Somalia.

The number of foreign-born cases for 2015 compared to the population yields a case rate of approximately 20.3 per 100,000 foreign-born people compared to a case rate of 0.3 per 100,000 U.S.-born people. The case management activities around each of the foreign-born cases require a higher level of public health resources. The foreign-born population often needs resources for basic health care services, transportation and interpretation. The health department must have an understanding of cultural beliefs.

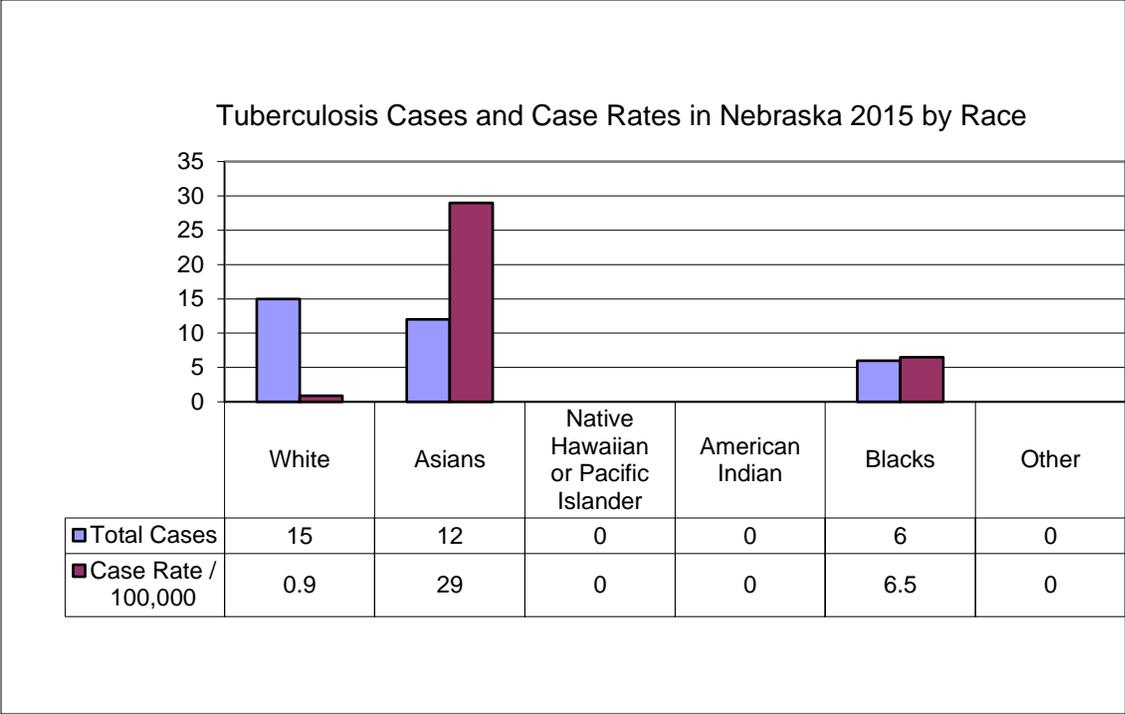
When providing services to the different populations, there are great challenges to both the state and local health departments as they work to maintain high standards in completion of therapy rates and complete contact investigations.



Source: Nebraska Department of Health and Human Services, TB Control Program, 2016

**Tuberculosis in Nebraska 2015 by Race and Ethnicity:**

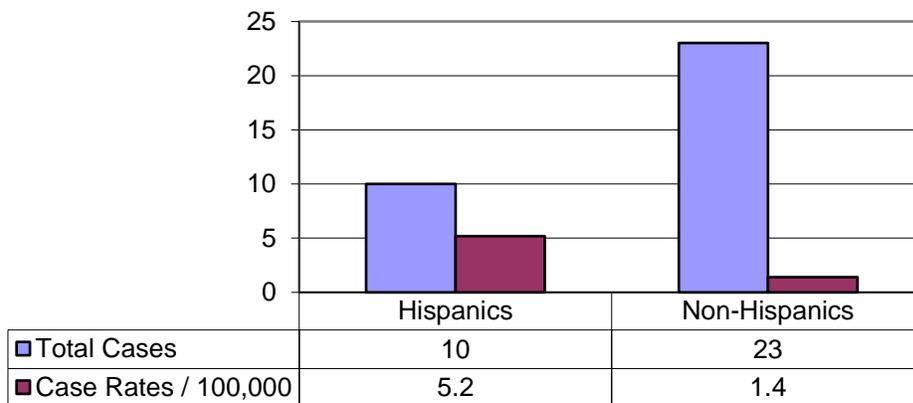
In Nebraska, the largest number of TB cases by race are reported by those identifying themselves as white. Other racial populations have significantly higher case rates. In 2015 the Asian population with 12 cases had the highest case rate at 29/100,000. There were 6 cases in the black group for a case rate of 6.5/100,000. The white population had 15 cases for a case rate of 0.9/100,000.



Source: Nebraska Department of Health and Human Services, TB Control Program, 2014

Nebraska’s population is 81% non-Hispanic based upon information from the year 2014 U.S. Census Bureau population estimates. Ten cases in 2015 were of Hispanic or Latino ethnicity and 23 were non-Hispanic. The attack rates were 7.7 /100,000 for Hispanics and 1.5 /100,000 for non-Hispanics.

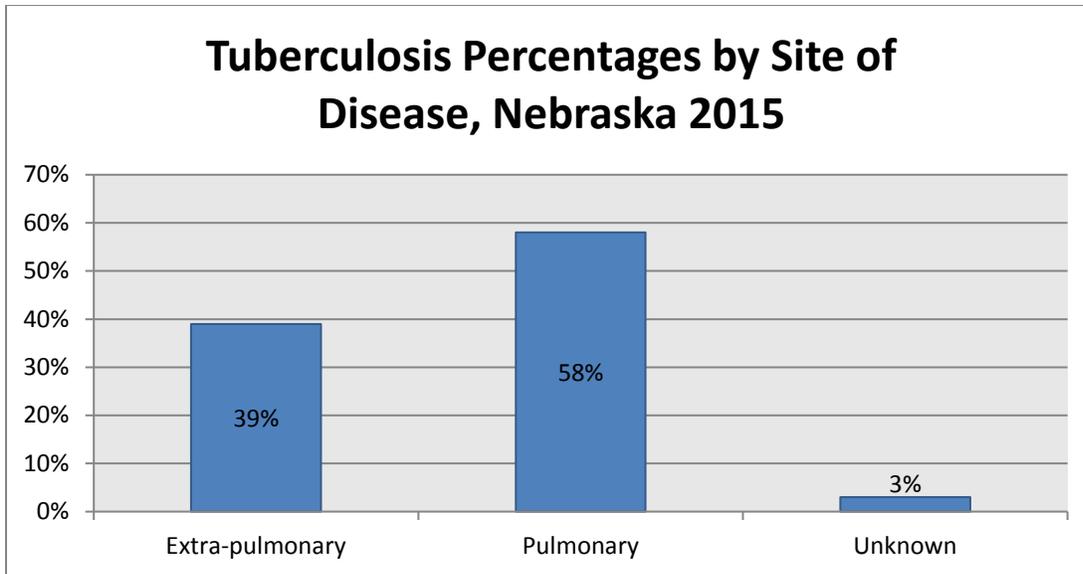
### Tuberculosis Cases and Case Rates in Nebraska by Ethnicity, 2015



Source: Nebraska Department of Health and Human Services, TB Control Program, 2014

#### Tuberculosis in Nebraska 2015 by Site of Disease:

Of the 33 cases of tuberculosis reported in 2015, 19 (58%) had pulmonary disease, 13 (39%) had non-pulmonary disease and 1 (3%) was unknown. Extra-pulmonary TB can be more difficult to diagnose because of unusual presentations. It is more common in people who come from areas of the world where TB is endemic. Extra-pulmonary sites of disease included: lymph nodes, bone and/or joint, breast, eye, kidney and spinal cord. Although these are unusual presentations of disease, clinicians in Nebraska continue to “think TB” in order to diagnose and treat these cases appropriately.



Source: Nebraska Department of Health and Human Services, TB Control Program, 2016

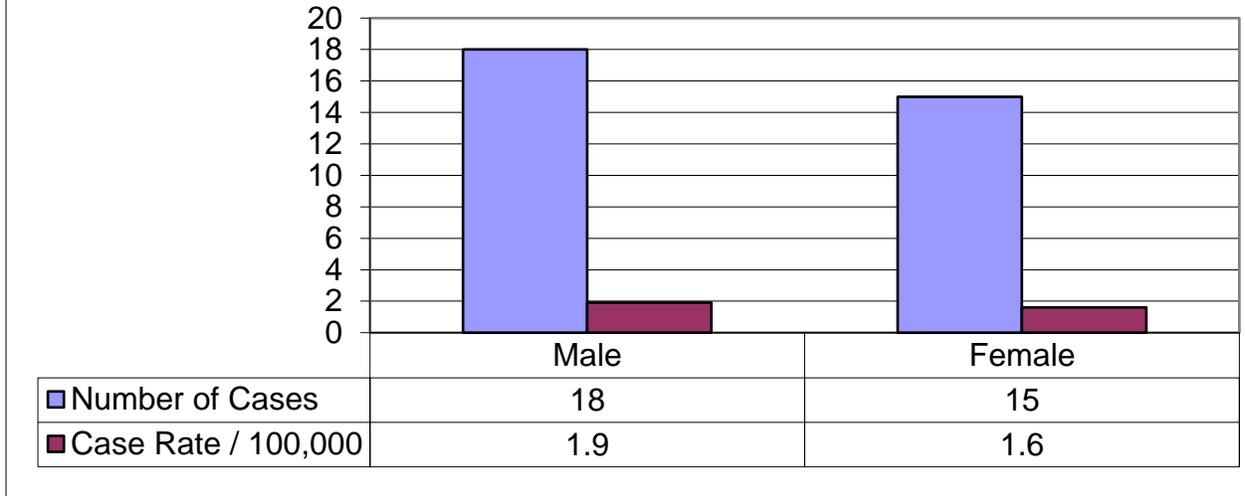
#### **Tuberculosis in Nebraska 2015 by Verified Cases:**

Nebraska continues to use Center for Disease Control and Prevention (CDC) guidelines for both clinical and laboratory-confirmed cases. This surveillance method started in 2003. Eight of the 33 (24%) cases in 2015 were clinically diagnosed; the remaining 25 (76%) cases were laboratory-confirmed with positive cultures for tuberculosis. It should be noted that even though the tuberculosis rate in the state is low, many more cases are investigated as tuberculosis suspects. In 2015, 60 suspects were evaluated and followed until either proven to be active with TB or until the decision was made to treat them for latent TB infection (LTBI) only.

#### **Tuberculosis in Nebraska 2015 by Gender:**

In 2015, the number of male cases was 18 and the number of female cases was 15. According to the U.S. Census Bureau 2014 population estimates, in Nebraska, males represent approximately 49.8% of the population and females represent 50.2% of the population.

## Tuberculosis Cases and Case Rates in Nebraska 2015 by Gender



Source: Nebraska Department of Health and Human Services, TB Control Program, 2015

### Directly Observed Therapy (DOT) and Tuberculosis:

A major factor in determining the outcome of treatment is patient adherence to the drug regimen. Careful attention is paid to measures designed to foster adherence. Directly observed therapy (DOT), which is having someone observe patient's taking their medication, is the standard of care for TB patients in the nation and in Nebraska. DOT assures compliance in taking the 6-9 month treatment regimen which is important to prevent drug resistance. It also provides the opportunity for monitoring for side effects and for doing contact investigations. When DOT is used, medications may be given intermittently, which often is more convenient for the patient and the local health department.

In 2015, 19 (58%) of the 33 treated cases were put on DOT. The 14 cases not started on DOT were cases of extra-pulmonary disease. Not all extra-pulmonary cases are given DOT because the cases aren't considered an immediate public health risk and

because there is a lack of resources in the local health departments. Eight of the 14 extra-pulmonary cases in 2015 were given DOT. Currently throughout the state of Nebraska, the standard of care is that all pulmonary cases are given DOT, even if clinically diagnosed.

### **Latent TB Infection (LTBI) Summary**

TB also affects persons in the state who are infected with the disease but not yet sick with it. The state's TB program provides Isoniazid (INH) which is used as a preventive medication for people infected with TB if they choose, free of charge. A total of 1,778 people were enrolled in the LTBI medication program from 2013-2015, an average of 49 enrollees per month. Of the 1396 persons with a known country of birth, the majority, 87%, of LTBI enrollees in the years 2013-2015, were foreign born. The distribution by age group was 0-4 years, 1%; 5-19 years, 15%; 20-39 years; 51%, 40-59 years, 25%; and 60+ years, 7%. Treating people infected with TB, but not yet sick with it, is important to prevent TB disease in the future.

Persons with latent TB infection do not feel sick and do not have any symptoms. They are infected with *M. Tuberculosis*, but do not have TB disease. The only sign of TB infection is a positive reaction to the tuberculin skin test or TB blood test. **Persons with latent TB infection are not infectious and cannot spread TB infection to others.**

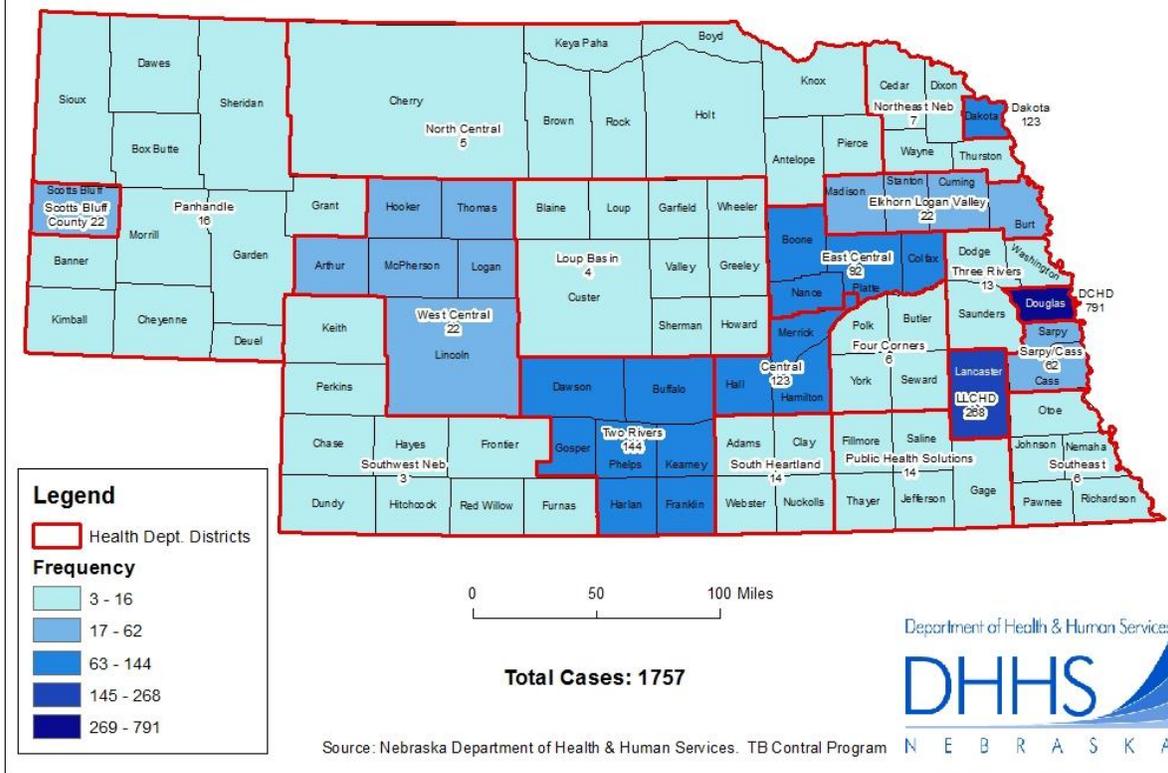
Overall, without the treatment, about 5 to 10% of infected persons will develop TB disease at some time in their lives. About half of those people who develop TB will do so within the first two years of infection. For persons whose immune systems are weak, especially those with HIV infection, the risk of developing TB disease is considerably higher than for persons with a normal immune system.

Of special concern are persons infected by someone with extensively drug-resistant TB (XDR TB) who later develop TB disease; these persons will have XDR TB, not regular TB disease.

Current CDC guidelines recommend either a 6 or a 9-month course of INH, 4-month course of RIF (Rifampin) or a new 12 dose, once weekly, regimen of INH and Rifapentine under direct observation. The shortened treatment cycle of INH and Rifapentine would allow more people to successfully complete treatment but the cost of this treatment given under DOT, limits the TB Program in providing this option to Nebraskans. In 2014, contacts that were found during contact investigations were offered this treatment with several accepting it and successfully completing the course. More providers are prescribing this treatment even when it cannot be supported by the State TB Program, as they become aware of the benefits of it.

Nebraska accepts all of the listed options as a way to complete therapy. At this time Nebraska does not require latent TB infection to be reported to the State TB Program unless medication is requested.

## Persons with Latent Tuberculosis Infections Receiving Medications from Nebraska TB Program, Nebraska, 2013 through 2015



### Tuberculosis Program in Nebraska: Updates and Progress Report

In July 2010, the Nebraska TB Program and the Kansas TB Program started to do regional, quarterly, cohort reviews of each state’s respective cases as required by the CDC for states receiving federal funds. This regional approach to the reviews was the first in the nation and has provided a template for other low-incidence states. The cohort reviews continue to provide a great opportunity for learning about varied TB disease manifestations and the case management services involved.

The Tuberculosis Program continues to provide guidance and technical assistance to tuberculosis efforts throughout the state. The program maintains disease surveillance records and provides services to individuals identified with tuberculosis disease or

infection. The services provided are: laboratory services for acid fast bacillus smears, cultures and susceptibilities; medications used for the treatment of TB or LTBI and DOT when ordered. Contact investigations are provided through contracts with local health departments and payment for x-rays and medical office visit fees for cases and contacts of infectious cases is available when there is no other source of payment. TB education and training is provided for nurses, physicians and laypersons upon request. The TB Education Focal Point had exhibits at professional conferences which provide an efficient way to get information on TB out to the professional health care community. A webinar with complex TB case reviews was held on World TB Day, March 24<sup>th</sup>, 2014 and was well received.

Although the overall rate of TB in the United States has declined substantially since 1992, the rate of decrease among foreign-born persons has been much smaller than that for U.S.-born persons. In 2015, Nebraska: Ranked 43rd among the 50 states in TB rates (1.1 per 100,000 persons) and 61.9% of TB cases occurred in foreign-born persons.

## **ATTACHMENT A**

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The TB website is: <http://dhhs.ne.gov/TB>