

State of Nebraska  
Department of Health and  
Human Services

Tuberculosis Program  
Annual Report - 2011



## TUBERCULOSIS IN NEBRASKA - 2011

### **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. In the United States (U.S.), 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. There were 11,181 TB cases reported in the U.S. for 2010 for an incidence rate of 3.6/100,000 which is the lowest recorded rate since national TB surveillance began in 1953. Nebraska also had a decrease in cases in 2011. There were 23 reported cases in 2011 compared to 27 in 2010.

Although the number of active cases remains low, the cases continue to be difficult to treat because of the high percentage of foreign-born population that comprise Nebraska's TB morbidity. The language and cultural barriers of this 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 the increase in multi-drug and extensive drug-resistant disease, but these are showing up more frequently around the world, and 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: 2011 Statewide Summary

In 2011, Nebraska had a total of 23 cases of TB, for a rate of 1.3 cases per 100,000 people. This represents the lowest number of TB cases and the lowest attack rate over the last five years in Nebraska. The highest was in 2008 when Nebraska had 33 cases, for a rate of 1.9 cases per 100,000 people. However, it is important to note that five-year data for low-incidence states like Nebraska are often not sufficient enough to reflect trends in morbidity.

There were 10 counties in Nebraska that reported at least one case of TB for 2011.

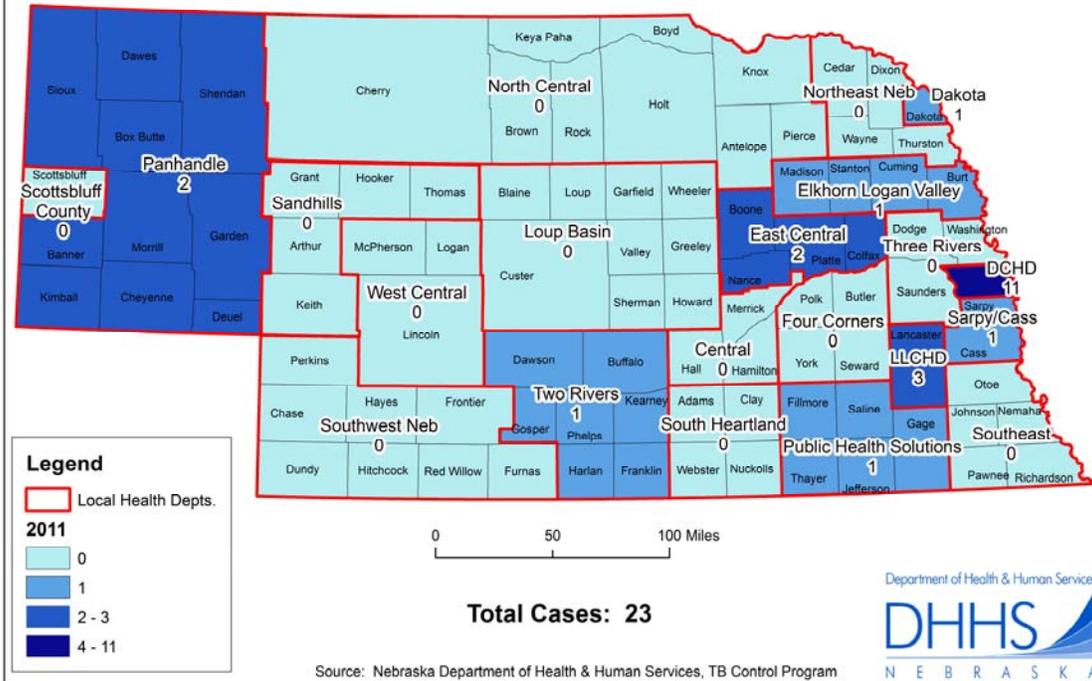
The list with the case rate is outlined below.

### 2011 County Rates of TB

<u>County</u>	<u>Cases</u>	<u>Rate</u>
Box Butte	1	8.8
Colfax	2	19
Dakota	1	4.8
Dawes	1	10.9
Douglas	11	2.1
Lancaster	3	1
Lincoln	1	2.75
Madison	1	2.9
Saline	1	7
Sarpy	1	0.6

Source: Nebraska Department of Health & Human Services, TB Control Program 2011

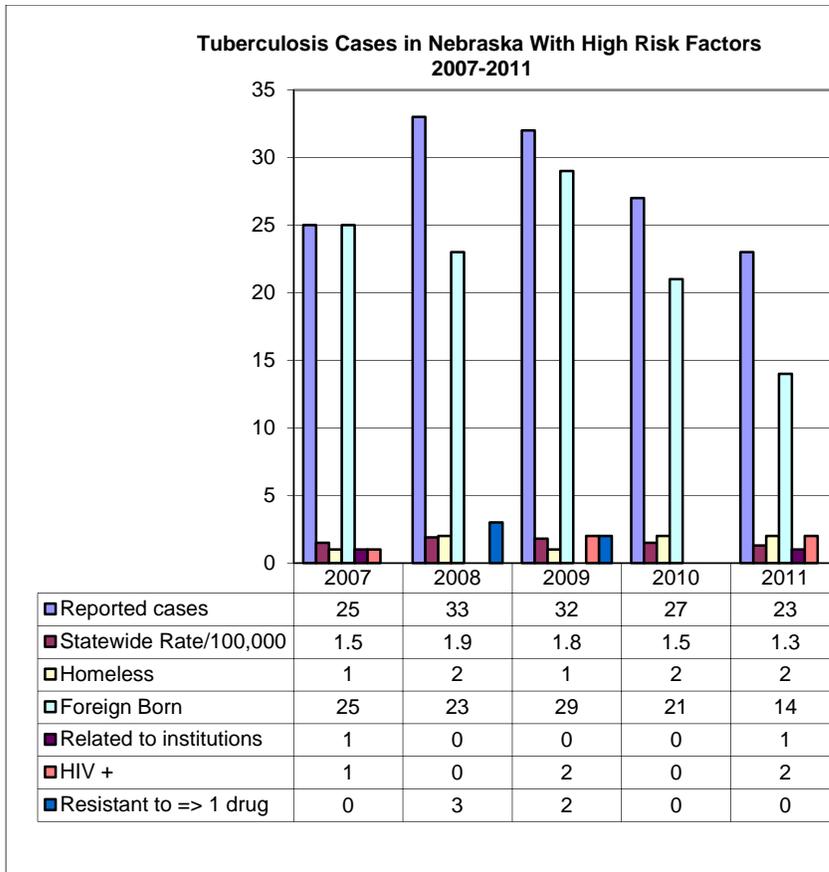
## Nebraska Department of Health & Human Services Tuberculosis Cases Reported by Health Dept. Region, 2011



### Active TB Summary

#### Tuberculosis by Risk Factors:

Of the 23 cases of tuberculosis in Nebraska in 2011, 14 were foreign born, two (2) were homeless, one case was from a nursing home and two cases were co-infected with HIV. There were no cases with drug resistance among the culture-confirmed cases. The table below is based on data that is required to be collected by the Centers for Disease Control for national surveillance purposes.



Source: Nebraska Department of Health & Human Services, TB Control Program 2011

### **Tuberculosis in Nebraska 2011 by County:**

Nebraska has 93 counties, ten (10) of which reported cases of tuberculosis in 2011. For the period of 2007-2011, 20 counties reported at least one (1) case of tuberculosis and are reported on the list that follows. This list is used by health care facilities when they are working up risk assessments for tuberculosis.

Five (5) counties, reporting five (5) or more cases, accounted for one hundred sixteen (116) of the one hundred forty (140) (83%) cases that occurred from 2007 through 2011. Douglas (Omaha), Sarpy (included in the Omaha metro area) and Lancaster are the state's three most populous counties. Together they reported one hundred two (102) cases or 73% of the cases during the last five-year period.

**NEBRASKA DEPARTMENT OF HEALTH & HUMAN SERVICES  
TUBERCULOSIS CASES REPORTED BY  
COUNTY**

**2007-2011**

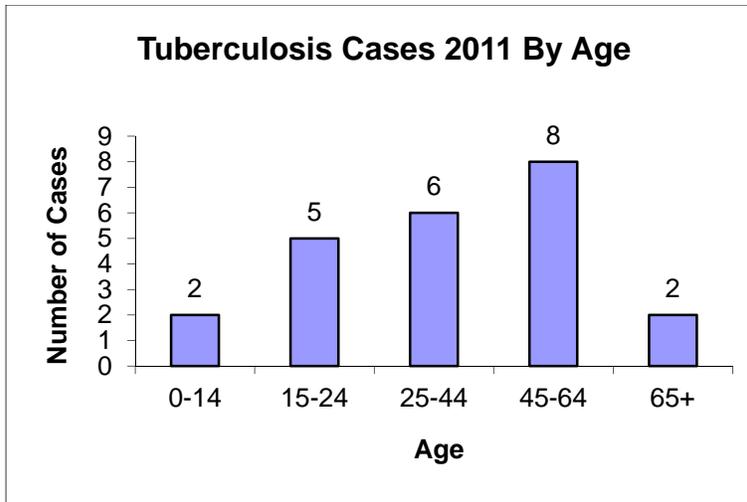
**NUMBER OF CASES  
REPORTED BY YEAR**

COUNTY	2007	2008	2009	2010	2011	5 YEAR
						TOTAL
Adams	1	1				2
Box Butte					1	1
Buffalo			1			1
Cass	1					1
Colfax			1	1		2
Dakota	1		5	1	1	8
Dawes					1	1
Dawson				1		1
Douglas	10	19	16	15	11	71
Franklin	1					1
Hall	1	4		1		6
Lancaster	6	2	7	5	3	23
Lincoln	1				1	2
Madison			1	1	1	3
Otoe				1		1
Platte	1				2	3
Rock	1					1
Saline		2			1	3
Sarpy	1	4	1	1	1	8
Thurston		1				1
<b>TOTAL</b>	<b>25</b>	<b>33</b>	<b>32</b>	<b>27</b>	<b>23</b>	<b>140</b>

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

**Tuberculosis in Nebraska 2011 by Age Group:**

In 2011, the 45-64 age group had the highest incidence of cases (8) and the 0-14 and 65+ age groups had the lowest incidence of cases (2 each). For the past several years, tuberculosis cases have occurred in greater numbers in the young adult population. Often this means that active cases are around children and in the workforce, both of which require in-depth contact investigations and follow-up.



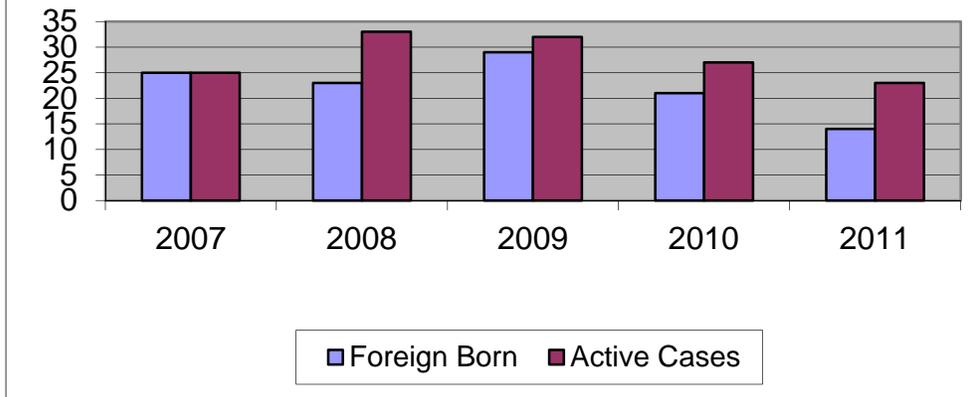
Source: Nebraska Department of Health and Human Services, TB Control Program, 2011

### **Tuberculosis in Nebraska 2011 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 groups now reside in Nebraska.

In 2011 61% (14) of the cases reported were among the foreign born and 39% (9) among the U.S. born. The distribution by country of origin is as follows: three (3) from Somalia, two each (2) from Sudan and Mexico, and one (1) each from Vietnam, China, Myanmar, Kenya, Zimbabwe, India and Malaysia.

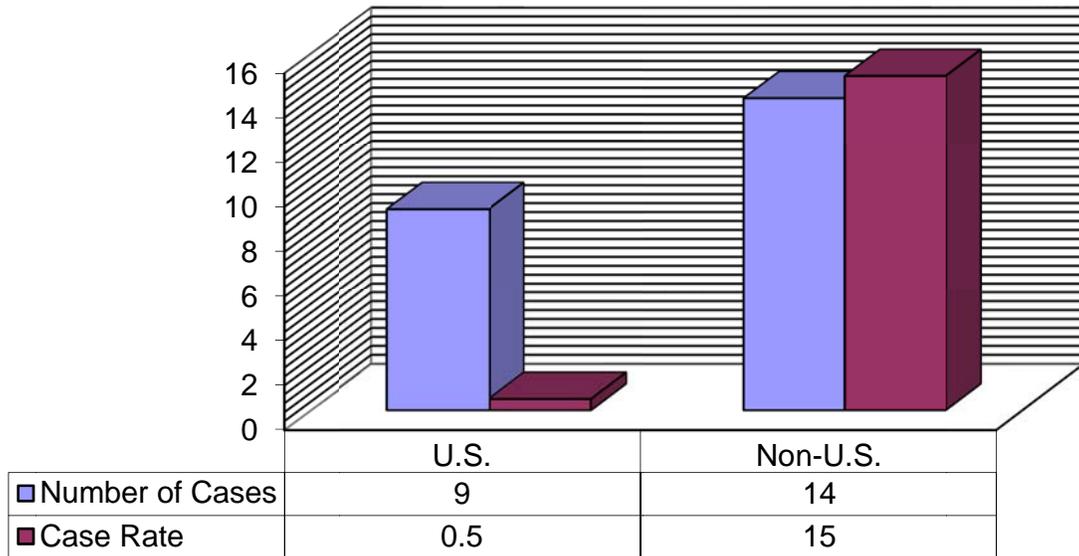
## Tuberculosis in Nebraska Foreign Born vs. Active Cases 2007-2011



Source: Nebraska Department of Health and Human Services, TB Control Program, 2011

The number of foreign-born cases compared to the population yields a case rate of approximately 15 per 100,000 foreign-born people compared to a case rate of 0.5 per 100,000 U.S.-born people. The case management activities around each of the foreign-born cases require a large amount of public health resources. The foreign-born population often needs resources for basic health care services, transportation, interpretation and the health department needs an understanding of cultural beliefs. Meeting these needs, especially when so many different countries are represented, presents 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.

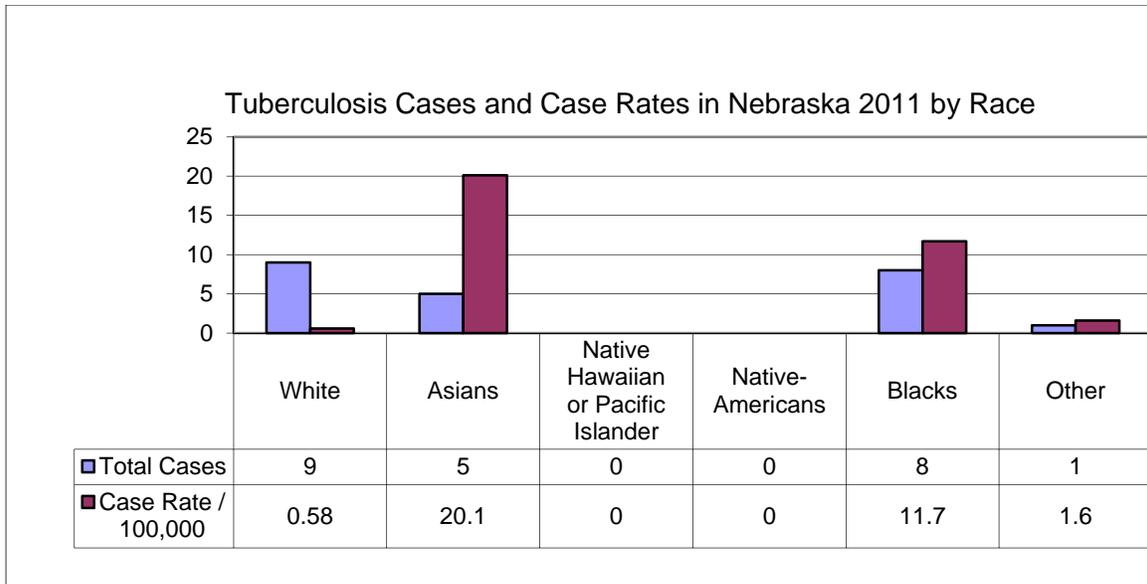
### Tuberculosis Cases and Case Rates in Nebraska 2011 by Place of Origin



Source: Nebraska Department of Health and Human Services, TB Control Program, 2011

### **Tuberculosis in Nebraska 2011 by Race and Ethnicity:**

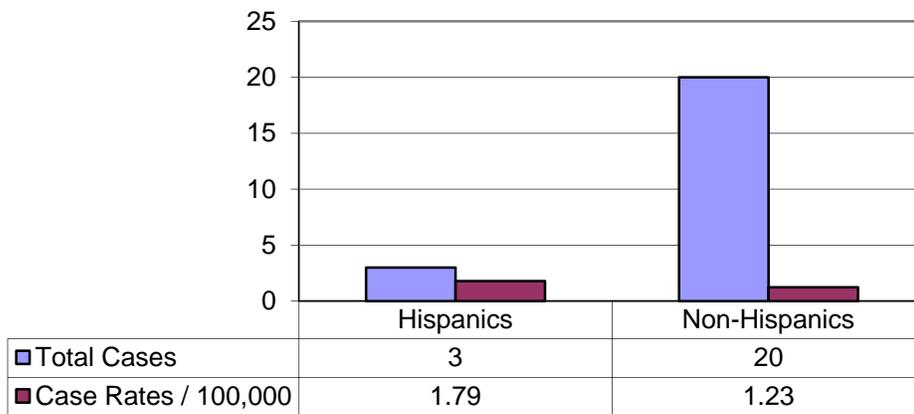
In Nebraska, the largest numbers of cases are reported in the white and black populations. However, the black race and other racial populations have significantly higher case rates. The black population group had the highest case rate at 46.83/100,000. The number of cases and the rates per 100,000 shown by race are shown in the table below.



Source: Nebraska Department of Health and Human Services, TB Control Program, 2011

Nebraska's population is 82% non-Hispanic based upon information from the year 2010 U.S. Census Bureau. Three (3) cases in 2011 were of Hispanic or Latino ethnicity and 20 were non-Hispanic. The attack rates were 1.8 /100,000 for Hispanics and 1.23 /100,000 for non-Hispanics. This is a change from 2010 when the attack rate for the Hispanic population was 7.1/100,000. A reason for this change has not been able to be determined at this time.

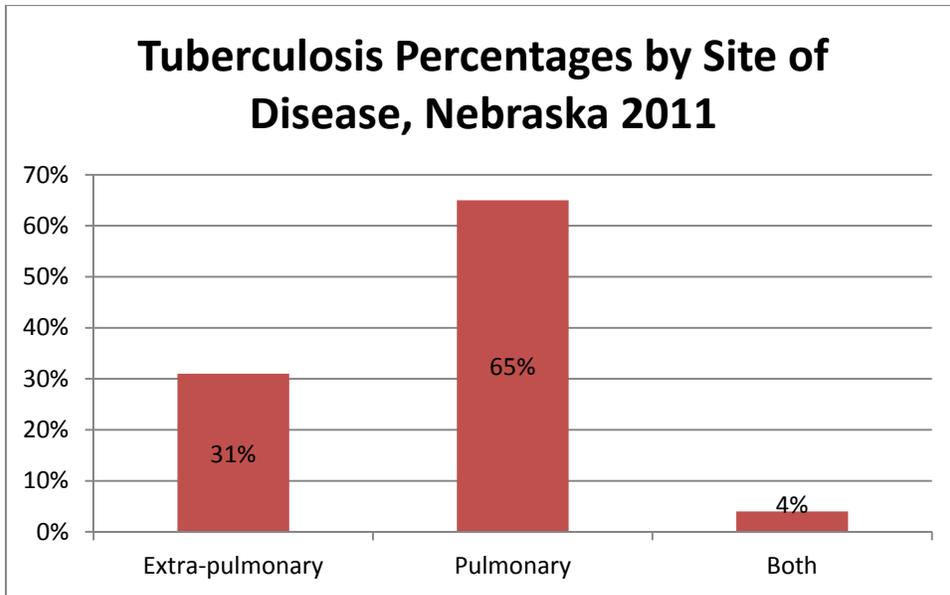
## Tuberculosis Cases and Case Rates in Nebraska by Ethnicity, 2011



Source: Nebraska Department of Health and Human Services, TB Control Program, 2011

### Tuberculosis in Nebraska 2011 by Site of Disease:

Of the 23 cases of tuberculosis reported in 2011, 15 (65%) had pulmonary disease, 7 (31%) had non-pulmonary disease and 1 (4%) had both. Extra pulmonary TB can be more difficult to diagnose because of unusual presentations. Clinicians in Nebraska continue to “think TB” and diagnose and treat these cases appropriately.



Source: Nebraska Department of Health and Human Services, TB Control Program, 2011

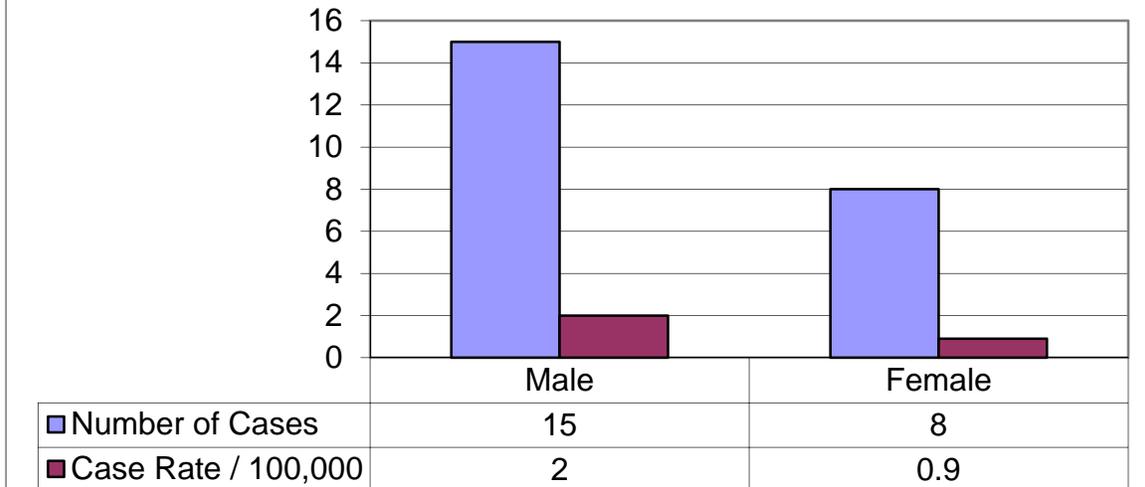
#### **Tuberculosis in Nebraska 2011 by Verified Cases:**

Nebraska continues to use CDC's guidelines for both clinical and laboratory-confirmed cases. This surveillance method started in 2003. Five of the 23 (22%) cases in 2011 were clinically diagnosed; the remaining 18 (78%) cases were laboratory-confirmed with positive cultures for tuberculosis. It should be noted that even though the tuberculosis burden in the state is low, many more cases are investigated as tuberculosis suspects. In 2011 48 suspects were evaluated and followed until either proven to be TB or until the decision was made to treat them for latent TB infection only.

#### **Tuberculosis in Nebraska 2011 by Gender:**

In 2011, the number of male cases was 15 and the number of female cases was 8. According to the U.S. Census Bureau year 2000 data, in Nebraska, males represent approximately 49% of the population and females represent 51% of the population.

## Tuberculosis Cases and Case Rates in Nebraska 2011 by Gender



Source: Nebraska Department of Health and Human Services, TB Control Program, 2011

### 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 the patient taking their medication, is becoming the standard of care for TB patients in the nation and in Nebraska. DOT assures compliance in taking the six to nine-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.

In 2011 18 (78%) of the 23 treated cases were put on DOT. This is the same percentage that that occurred in 2010. There were 7 extra-pulmonary cases diagnosed in 2011, and 2 of these cases were also given DOT. Currently all pulmonary cases are given DOT, even if clinically diagnosed. The national standard is that all cases are given DOT, but because extra-pulmonary cases aren't considered an immediate public health

risk and because there is a lack of resources in local health departments, not all of the extra-pulmonary cases in Nebraska are given DOT.

### **Latent TB 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 preventive medication for these people if they choose to take it, free of charge. A total of 5,382 people were enrolled in the latent TB infection (LTBI) medication program from 2005-2011, an average of 64 enrollees per month. The majority of enrollees, 91%, were foreign born. The distribution by age group was 2% 0-4 years, 20% 5-19 years, 56% 20-39 years, 19% 40-59 years, and 3% 60+ years. Treating people infected with TB, but not yet sick with it, is important to prevent TB disease in the future.

Current CDC guidelines recommend either a 6 or a 9-month course of therapy for treatment of latent tuberculosis infection with Isoniazid or a new option that came out in December 2011. The new option is a 12, once weekly, regimen of Isoniazid and Rifapentine under direct observation. The shortened time should allow for more people to successfully complete treatment, but because of the increased cost of the Rifapentine and the DOT, the Nebraska TB Program can offer this only in very unusual situations. Plans are underway for a small study to be done using this new option, to better assess the amount of resources this option will require.

Nebraska accepts all of the above mentioned options as completed therapy. At this time Nebraska does not require latent TB infection to be reported to the State TB Program unless medication is requested.



In 2009, the Nebraska Public Health Lab (NPHL) began offering an in vitro diagnostic test to detect TB directly from respiratory specimens. Based on CDC recommendations, the test is appropriate for patients showing symptoms of active pulmonary tuberculosis for whom the test result would alter case management or TB control activities. The test can be done on either acid fast bacilli (AFB) smear positive or smear negative specimens. The name of the test is Mycobacterium TB Amplified Direct Test. Please contact the TB Program for additional information.

Starting December 1, 2009, the NPHL began using an improved TB interferon antigen response test (Quantiferon-Gold In Tube). The main advantage to this test is that the specimen is viable up to 16 hours before processing is required.

An update for the TB law was passed in the 2009 Legislative session. The legislation allows for court-ordered evaluations for TB, court-ordered health measures for TB and specifies what the program can pay for in caring for an outpatient TB patient.

In July 2010, the Nebraska TB Program and the Kansas TB Program started to do regional cohort reviews of each state's respective cases. Cohort reviews are required by the CDC for states receiving cooperative agreement federal funds. This regional approach to the reviews was the first in the nation and will provide a template for other low-incidence states. The cohort reviews have provided a great opportunity for learning about varied TB disease manifestations and the case management involved. All interested persons can listen to them as they are conducted quarterly. For more information, please contact one of the TB Program staff.

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The TB website is: [http://dhhs.ne.gov/publichealth/Pages/cod\\_tuberculosis\\_tbindex.aspx](http://dhhs.ne.gov/publichealth/Pages/cod_tuberculosis_tbindex.aspx)