

TUBERCULOSIS IN NEBRASKA - 2008

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 (US), TB was the leading cause of death in 1900. With the advent of effective treatment, the US 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 12,898 TB cases reported in the US for 2008, which are the latest reported incidence numbers available. Since 2002, the number of tuberculosis cases has declined in Nebraska, reaching 25 cases in 2006 and 2007. A slight increase occurred in 2008, reaching 33 cases.

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 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: 2008 Statewide Summary

In 2008, Nebraska had a total of 33 cases of TB, at a rate of 1.9 cases per 100,000 people. 2006 and 2007 represent the lowest number of TB cases and the lowest attack rates over the last five years in Nebraska. The highest was in 2004 when Nebraska had 39 cases, at a rate of 2.2 cases per 100,000 people. The case rate has been declining since 2004-2006 (2.2 cases per 100,000 in 2004, 1.5 cases per 100,000 in 2006 and 2007), but increased slightly in 2008 (1.9 cases per 100,000 in 2008).

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 preventive medication for these people if they choose to take it, free of charge. In 2006, 1,075 people were provided medication through the Latent TB Infection Program. In 2007, 1,399 people were served with this program. In 2008, 750 people were served through the Latent TB Infection Program. The decrease may be attributed to providers utilizing QuantiFERON-TB Gold. (See page 15 for information about this test.)

An analysis of the current medication distribution system that began in 2005, versus the previous one, showed that the overall average cost of administering INH (Isoniazid) to all enrolled clients decreased 72%. The average cost per client for those clients who completed 6 months and 9 months of INH therapy decreased approximately 78%. The completion rates per enrolled client increased by 35% for those clients who completed 6 months of INH therapy and increased 94% for those clients who completed 9 months of INH therapy.

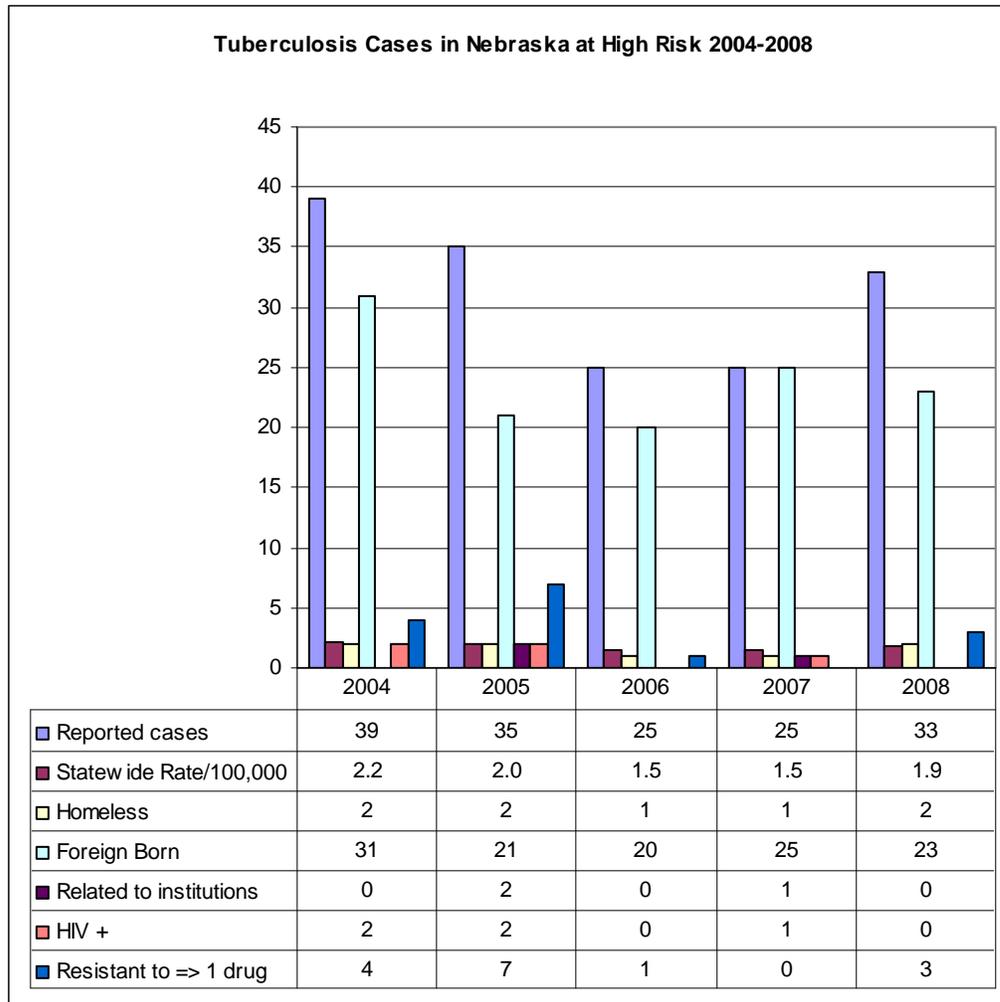
Current CDC guidelines recommend either a 6 or a 9 month course of

therapy for treatment of latent tuberculosis infection and Nebraska accepts either as completed therapy.

Tuberculosis by Risk Factors:

In 2008, 71% of the cases were reported in the foreign born. The distribution by country of origin is as follows: 6 from Guatemala, 5 from Mexico, 2 each from Vietnam, France, and Sudan, and 1 each from the Philippines, Ethiopia, Nepal, Somalia and India. In 2007, all of the 25 cases of TB were foreign born. 2008 saw an overall decrease of 29% (23) of cases coming from the foreign born.

In 2008, two cases were homeless; no case was co-infected with HIV (Human Immunodeficiency Virus); and no case was related to an institution. There were three cases with drug resistance among the culture confirmed cases; all were mono resistant (resistant to just one of the first line TB drugs.)



Tuberculosis in Nebraska 2008 by County:

Seven of Nebraska's ninety-three counties reported cases of tuberculosis in 2008. For the period of 2004-2008, twenty-two counties reported at least one case of tuberculosis and are reported on the list that follows. Five counties, reporting five or more cases, accounted for 122 of the 157 cases (78%) that occurred from 2004 through 2008.

Douglas (Omaha), Sarpy (included in the Omaha metro area) and Lancaster are the state's three most populous counties. Together they reported

109 cases or 69% of the cases during the last five year period.

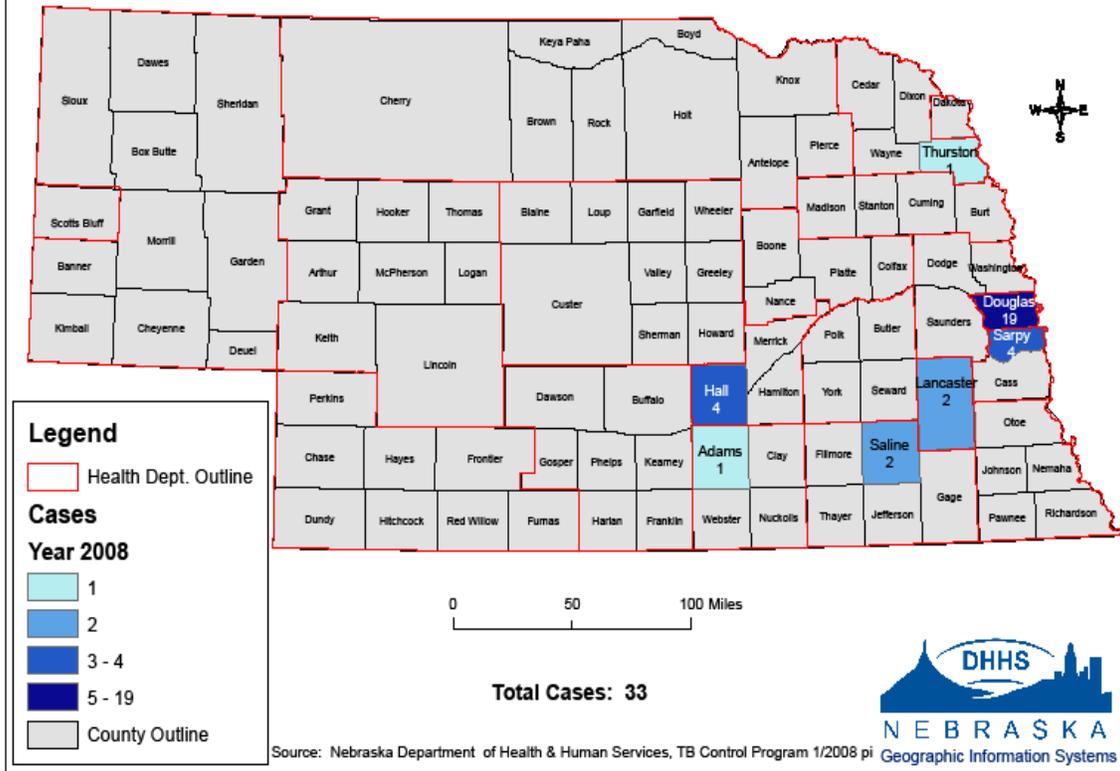
**NEBRASKA DEPARTMENT OF HEALTH & HUMAN SERVICES
TUBERCULOSIS CASES REPORTED BY COUNTY
2004-2008**

NUMBER OF CASES REPORTED BY YEAR

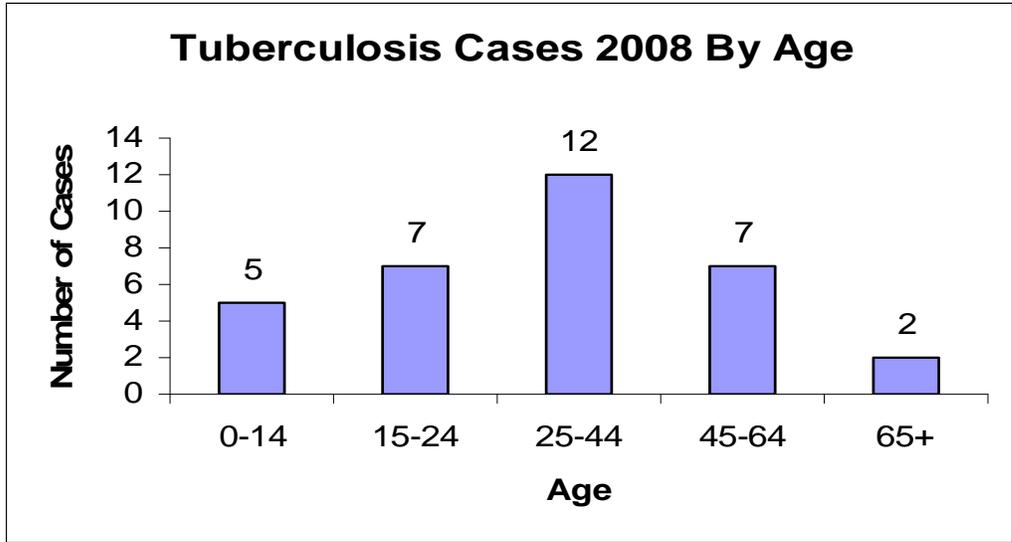
COUNTY	2004	2005	2006	2007	2008	TOTAL
Adams				1	1	2
Buffalo	1	1				2
Burt			1			1
Cass				1		1
Colfax	2					2
Dakota		1	2	1		4
Dawson			1			1
Dodge	2	1				3
Douglas	17	16	10	10	19	72
Franklin		1		1		2
Hall	3			1	4	8
Howard			1			1
Johnson		1				1
Lancaster	8	7	3	6	2	26
Lincoln	1	1	2	1		5
Madison	3	1				4
Nemaha			1			1
Platte		2	1	1		4
Rock				1		1
Saline					2	2
Sarpy	2	2	2	1	4	11
Thayer						1
Thurston		1	1		1	
TOTAL	39	35	25	25	33	157

Source: Nebraska Department of Health & Human Services, TB Control Program
1/2009

Nebraska Department of Health & Human Services Tuberculosis Cases Reported by County, 2008



Source: Nebraska Department of Health & Human Services, TB Control Program 1/2009

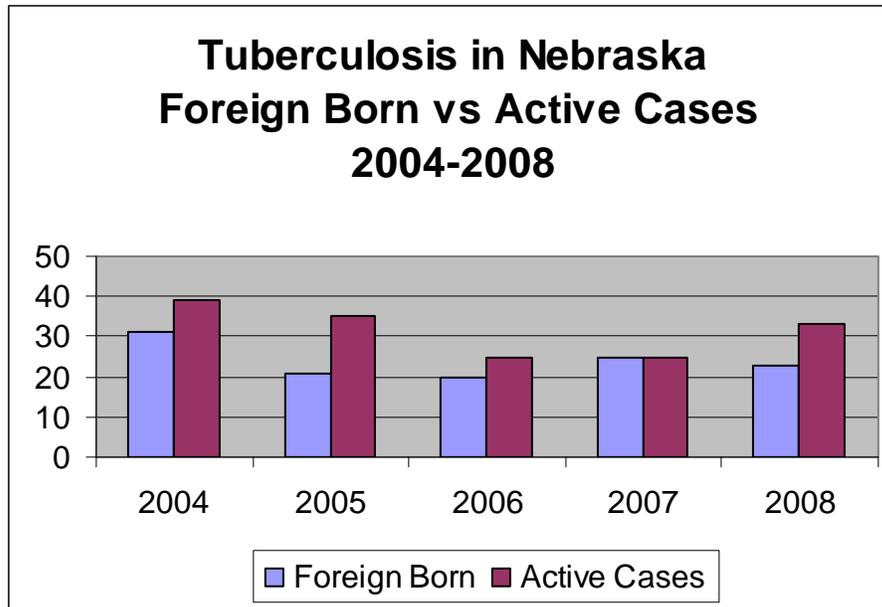


Source: Nebraska Department of Health and Human Services, TB Control Program, 2009

Tuberculosis in Nebraska 2008 by Country of Origin:

Foreign born persons have a higher risk for exposure to or infection with M. 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.

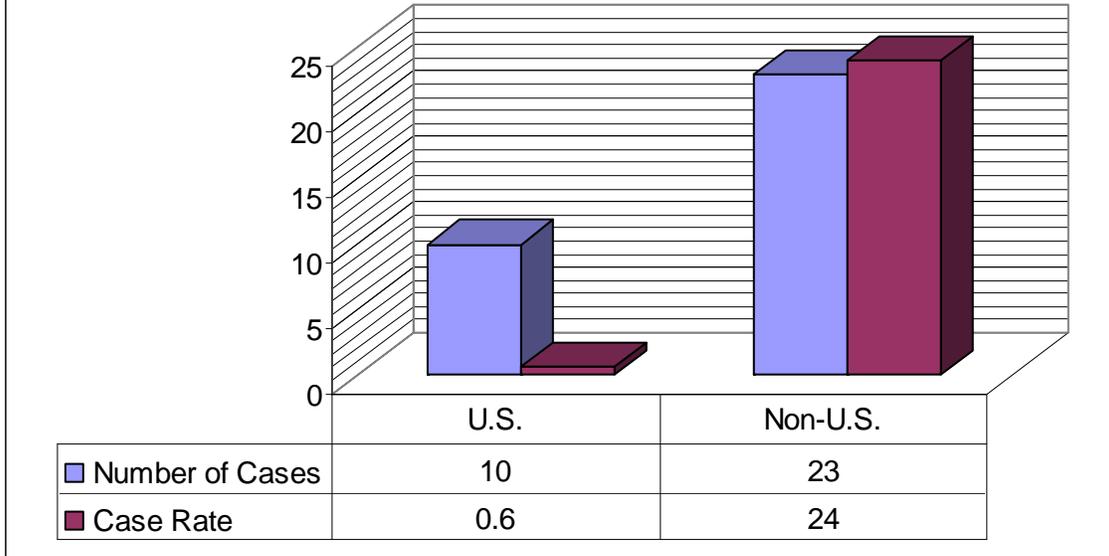
In 2008, 71% of the cases reported were among the foreign born and 29% among the US born. 2008 represented a decrease from 2007 when there were no U.S. born cases in Nebraska. All of the 25 active cases of TB were in the foreign born in 2007. The countries of origin were listed earlier in this report.



Source: Nebraska Department of Health and Human Services, TB Control Program, 2009

According to the United States Census Bureau, Nebraska's population consists of approximately 95% U.S. born and approximately 5% foreign born. The number of foreign born cases compared to the population yields a case rate of approximately 24 per 100,000 foreign born people compared to a case rate of 0.06 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 an understanding of cultural beliefs. Meeting these needs 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 2008 by Place of Origin

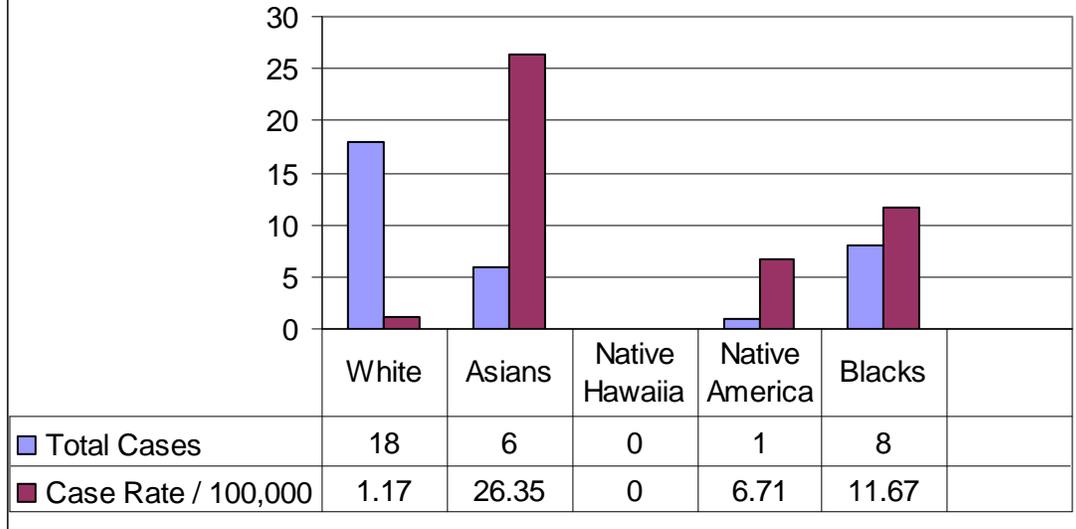


Source: Nebraska Department of Health and Human Services, TB Control Program, 2009

Tuberculosis in Nebraska 2008 by Race and Ethnicity:

In Nebraska, the largest numbers of cases are reported in the white population. Other racial populations have a significantly higher case rate. The Asian population group had the highest case rate at 26.35. The number of cases and the rates per 100,000 shown by race are shown in the table below.

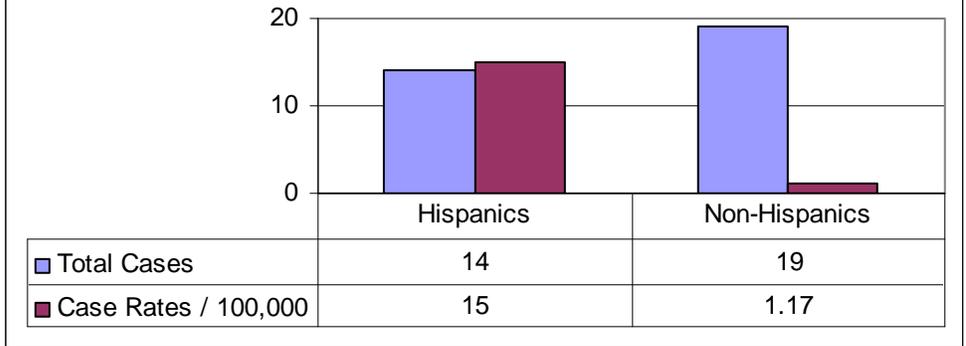
Tuberculosis Cases and Case Rates in Nebraska 2008 by Race



Source: Nebraska Department of Health and Human Services,
TB Control Program, 2009

Nebraska's population is 82% non-Hispanic based upon information from the U.S. Census Bureau. Fourteen cases in 2008 were of Hispanic or Latino ethnicity and 19 were non-Hispanic. The attack rates were 15/100,000 for Hispanics and 1.17 /100,000 for non-Hispanics.

Tuberculosis Cases and Case Rates in Nebraska by Ethnicity, 2008

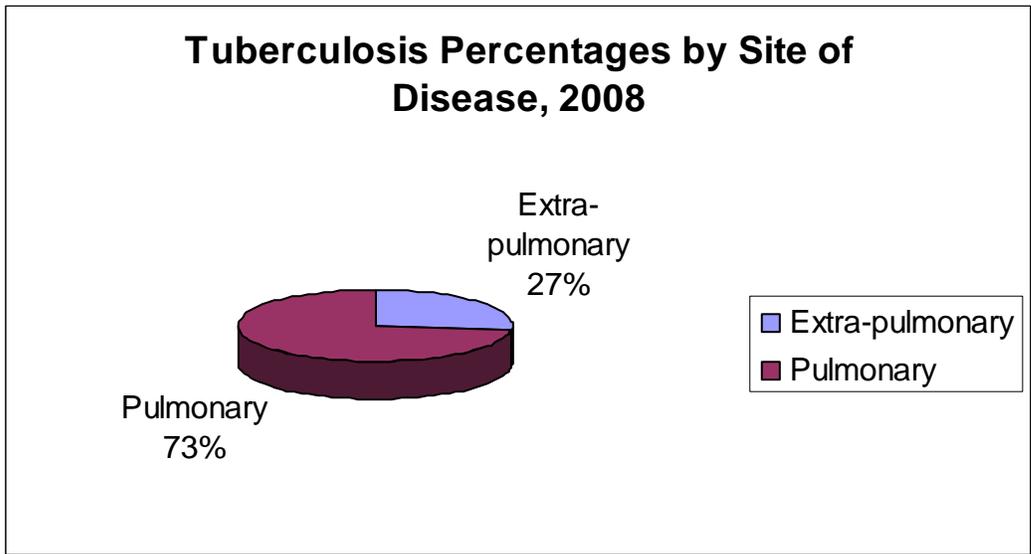


Source: Nebraska Department of Health and Human Services, TB Control Program, 2009

Tuberculosis in Nebraska 2008 by Site of Disease:

Of the 33 cases of Tuberculosis reported in 2008, 24 (73%) had pulmonary disease and 9 (27%) had extra-pulmonary disease.

Tuberculosis Percentages by Site of Disease, 2008



Source: Nebraska Department of Health and Human Services, TB Control Program, 2009

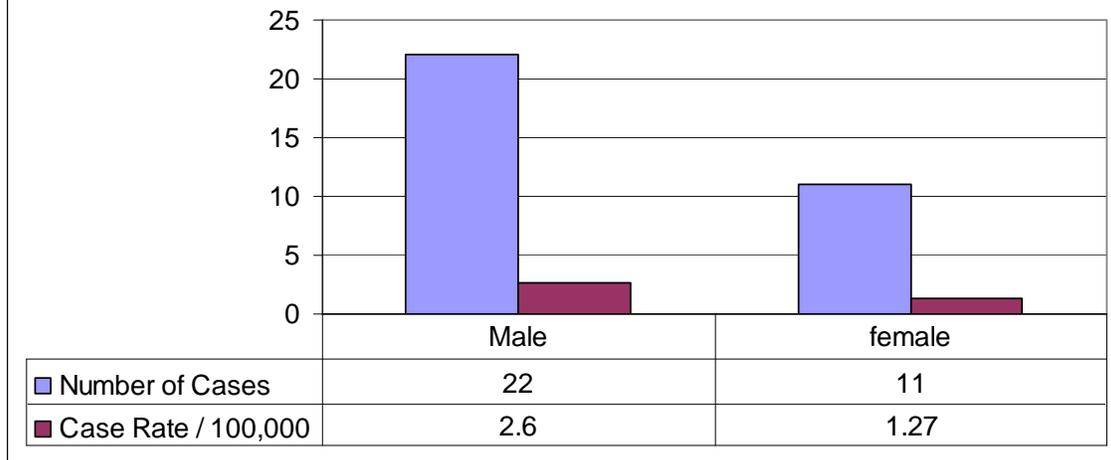
Tuberculosis in Nebraska 2008 by Verified Cases:

Nebraska continues to use CDC's guidelines for both clinical and laboratory confirmed cases. This surveillance method started in 2003. Seven of the 33 (21%) cases in 2008 were clinically diagnosed; the remaining twenty-six (79%) cases were laboratory confirmed with positive cultures for *M. 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 2008, 51 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 2008 by Gender:

In 2008, the number of male cases was 22 and the number of female cases was 11. According to the U.S. Census Bureau in Nebraska, males represent approximately 49% of the population and females represent 51% of the population. More male cases were present in the state compared to female cases overall. The case rate for males in 2008 was 2.6/100,000 and the case rate for females in 2008 was 1.27/100,000.

Tuberculosis Cases and Case Rates in Nebraska 2008 by Gender



Source: Nebraska Department of Health and Human Services, TB Control Program, 2009

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. These measures include something as simple as asking the patient about adherence to doing pill counts on follow-up visits. Directly observed therapy (DOT), which is having someone observe the patient taking their medication, is also used. When DOT is used, medications may be given intermittently, which often is more convenient for the patient.

In 2008, twenty-seven (87%) of the 31 treated cases were put on DOT. (Two patients died before therapy was started and are not included in the total number of cases.) This is an increase from the 71% that were put on DOT in 2007. This increase is due to the fact that 16% of the cases in 2007 were extra-pulmonary compared to 13% of the cases in 2008. DOT is the standard of care

for pulmonary TB, but because extra-pulmonary TB cases do not pose a public health threat, they are not a priority for DOT in some jurisdictions.

Tuberculosis Program in Nebraska: Updates and Progress Report

The Tuberculosis Program provides guidance and technical assistance to tuberculosis efforts throughout the state. The program maintains disease surveillance records and provides services to individuals with tuberculosis disease or infection. The services provided are: laboratory services for AFB smears, cultures and susceptibilities; medications used for the treatment of TB or latent TB infection; contracts with local health departments to provide DOT when ordered and to conduct contact investigations; and payment for x-rays and medical office visit fees for cases and contacts of infectious cases when there is no other source of payment available. TB education and training is provided for nurses, physicians and laypersons upon request.

In 2006, a new blood test to assist in the evaluation of tuberculosis disease and latent tuberculosis infection became available through the Nebraska Public Health Laboratory. This test is FDA approved and is called QuantiFERON-TB Gold. Since prior vaccination with BCG (Bacillus Calmette-Guerin vaccine) does not cause the TB interferon test to become positive, it is very useful in testing people who have been vaccinated with BCG. The test is covered by Medicaid and insurance, and if third party payment is not available, through the TB Program on a case-by-case basis. It is necessary for any test to be paid for through the TB Program to have prior approval. The blood sample must arrive at

the lab within twelve hours of collection, which is a barrier for use in the western half of the state. Processing of the sample is available between 8:00 a.m. and 8:00 p.m. Monday through Friday, with testing performed once a week.

State of Nebraska Tuberculosis Program-Contact Information:

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The TB website is: <http://www.dhhs.ne.gov/puh/cod/Tuberculosis/tbindex.htm>