

State of Nebraska
Department of Health and
Human Services

Tuberculosis Program
Annual Report – 2009



TUBERCULOSIS IN NEBRASKA - 2009

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 11,540 TB cases reported in the US for 2009, which is the lowest recorded rate since national TB Surveillance began in 1953. Nebraska did not have a significant decrease in cases in 2009. There were 32 reported cases in 2009 compared to 33 in 2008.

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: 2009 Statewide Summary

In 2009, Nebraska had a total of 32 cases of TB, for a rate of 1.8 cases per 100,000 people. Years 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 2005 when Nebraska had 35 cases, for a rate of 2.0 cases per 100,000 people. The case rate declined to 1.5 cases per 100,000 in 2006 and 2007, but increased slightly in 2008 to 1.9 cases per 100,000. Five year data for low-incidence states like Nebraska are often not sufficient enough to reflect trends in morbidity.

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 preventive medication for these people if they choose to take it, free of charge. A total of 4,021 people were enrolled in the latent TB infection (LTBI) program from 2005-2009, an average of 63-77 enrollees per month. The majority of enrollees, 92%, were foreign born. The distribution by age group was 1% 0-4 years, 22% 5-19 years, 57% 20-39 years, 17% 40-59 years, and 3% 60+ years.

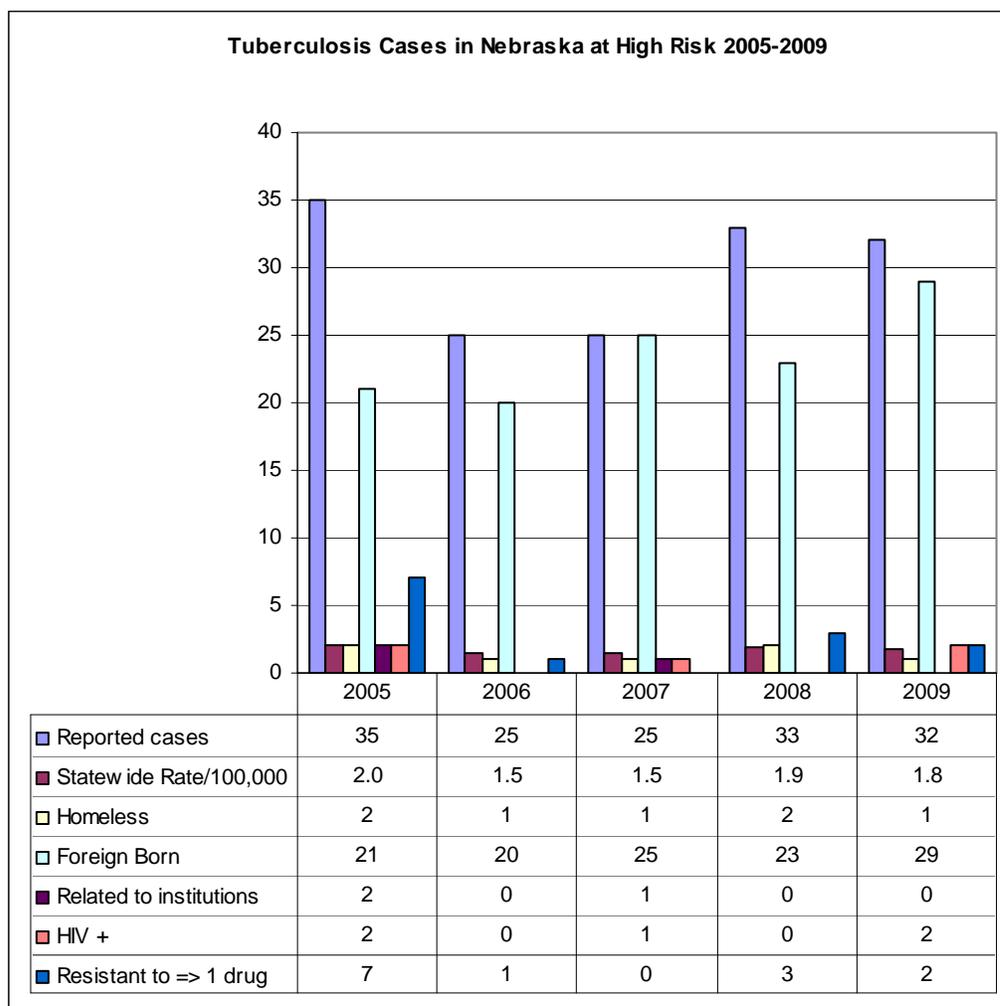
An analysis of the current medication distribution system that began in 2005, versus the previous one, showed that the overall average cost of administering INH (Isoniazid) to all enrolled clients decreased 72%. The average cost per client for those clients who completed 6 months and 9 months of INH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

Active TB Summary

Tuberculosis by Risk Factors:

In 2009, 91% of the cases reported were foreign born. The distribution by country of origin follows: six (6) from Mexico, five (5) from Somalia, three (3) from Vietnam, two (2) from Myanmar and Nepal, and one (1) each from Iraq, Kenya, Puerto Rico, Haiti, Zimbabwe, Sierra Leone, Ivory Coast, Hong Kong and the Congo. The number of foreign born cases compared to the population in 2009 yields a case rate of approximately 32.0 per 100,000 foreign born people, compared to .2 per 100,000 U.S born people.

Of the 32 cases of Tuberculosis in Nebraska in 2009, 29 were foreign born, one (1) was homeless, no case was related to institutions and two (2) cases were co-infected with HIV. There were two (2) cases with drug resistance among the culture confirmed cases; one (1) was mono resistant; one (1) was multi-drug resistant. The multi-drug resistant case required an intravenous medication along with several other second line TB drugs and required much support and follow-up from the local health department public health nurses. There were two (2) cases that were foreign students attending colleges in Nebraska, but these are not included in the following table. The table is based on data required to be collected by the Centers for Disease Control for national surveillance purposes.



Tuberculosis in Nebraska 2009 by County:

Nebraska has 93 counties, seven (7) of which reported cases of tuberculosis in 2009. For the period of 2005-2009, 22 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 120 of the 150 (80%) cases that occurred from 2005 through 2009. Douglas (Omaha), Sarpy (included in the Omaha metro area) and Lancaster are the

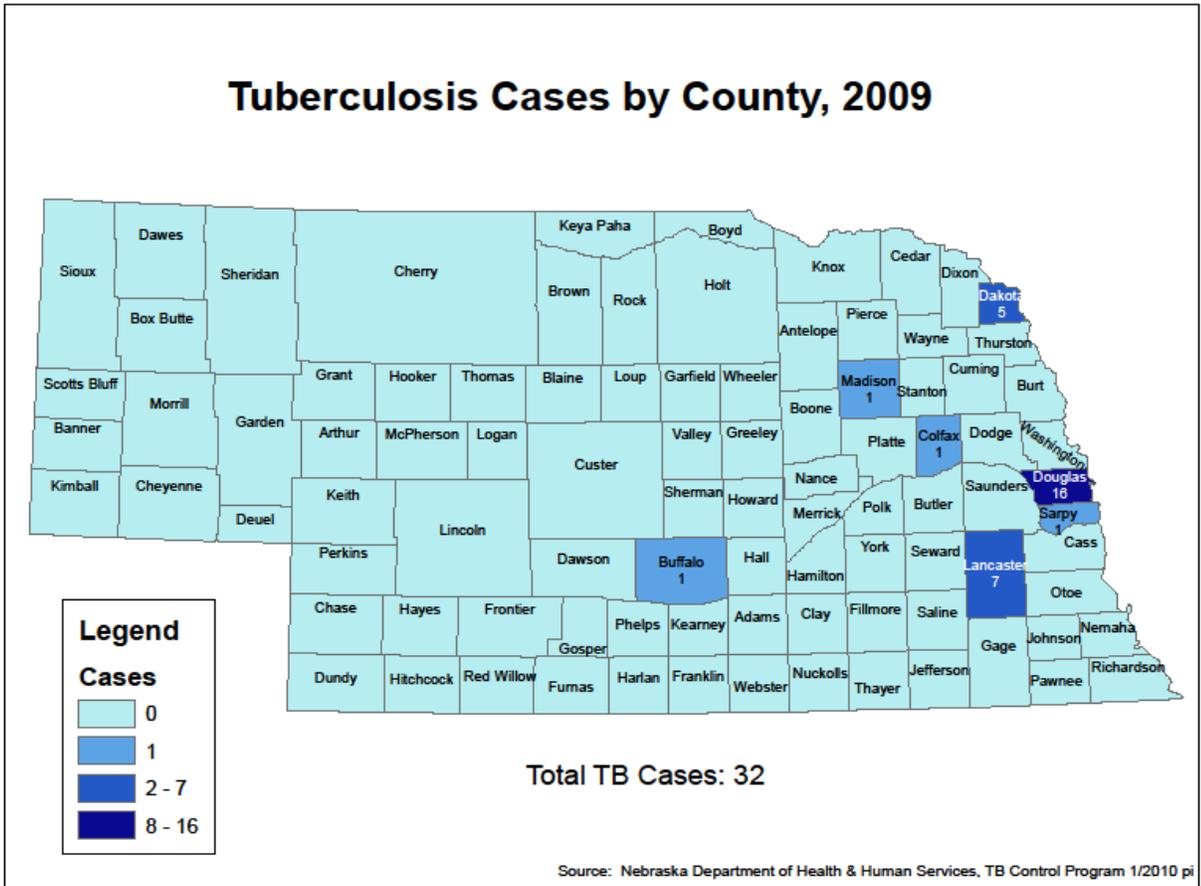
state's three most populous counties. Together they reported 106 cases or 71% of the cases during the last five-year period.

**NEBRASKA DEPARTMENT OF HEALTH & HUMAN SERVICES
TUBERCULOSIS CASES REPORTED BY COUNTY
2005-2009**

**NUMBER OF CASES
REPORTED BY YEAR**

COUNTY	2005	2006	2007	2008	2009	5
						YEAR
						TOTAL
Adams			1	1		2
Buffalo	1			-	1	2
Burt		1				1
Cass			1			1
Colfax					1	1
Dakota	1	2	1		5	9
Dawson		1				1
Dodge	1					1
Douglas	16	10	10	19	16	71
Franklin	1		1			2
Hall			1	4		5
Howard		1				1
Johnson	1					1
Lancaster	7	3	6	2	7	25
Lincoln	1	2	1			4
Madison	1				1	2
Nemaha		1				1
Platte	2	1	1			4
Rock			1			1
Saline				2		2
Sarpy	2	2	1	4	1	10
Thurston	1	1		1		3
TOTAL	35	25	25	33	32	150

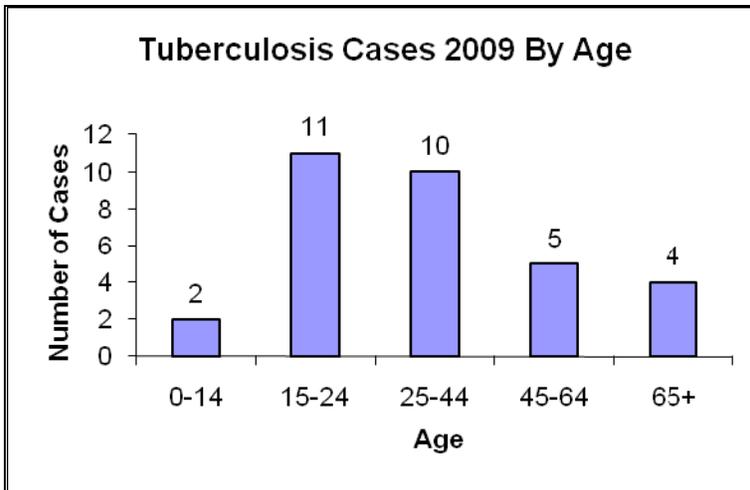
Tuberculosis Cases by County, 2009



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

Tuberculosis in Nebraska 2009 by Age Group:

In 2009, the 15-24 age group had the highest incidence of cases (11) and the 0-14 age group had the lowest incidence of cases (2). 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.



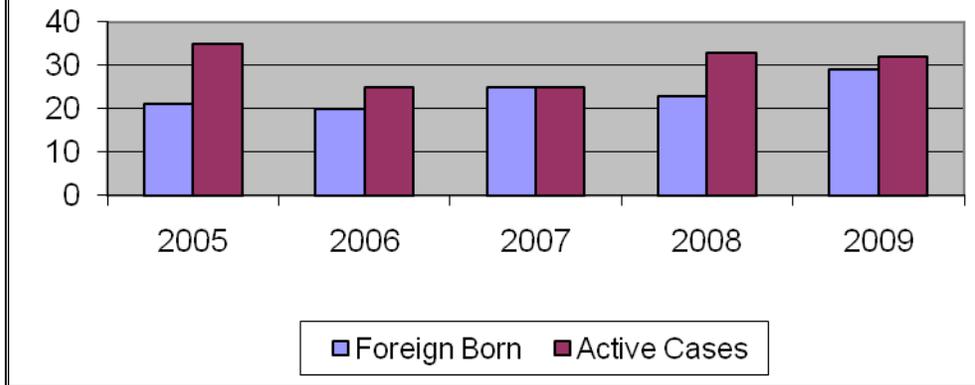
Source: Nebraska Department of Health and Human Services,
TB Control Program, 2009

Tuberculosis in Nebraska 2009 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 2009, 91% (29) of the cases reported were among the foreign born and 9% (3) among the U.S. born. The countries of origin were listed earlier in this report.

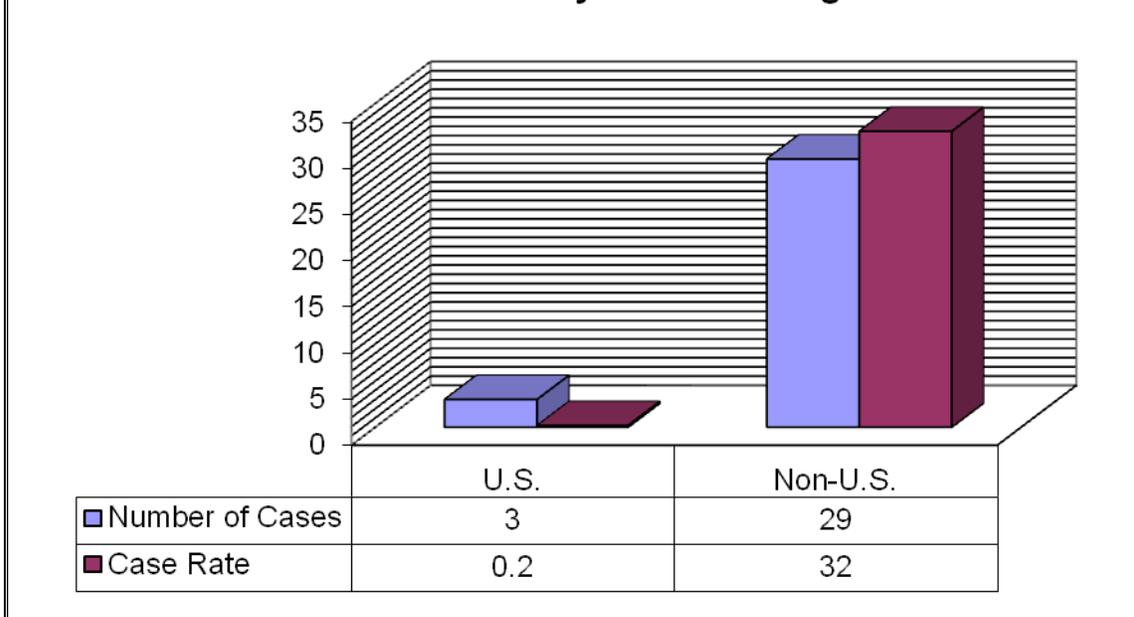
Tuberculosis in Nebraska Foreign Born vs Active Cases 2005-2009



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

According to the year 2000 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 32 per 100,000 foreign-born people compared to a case rate of 0.2 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 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.

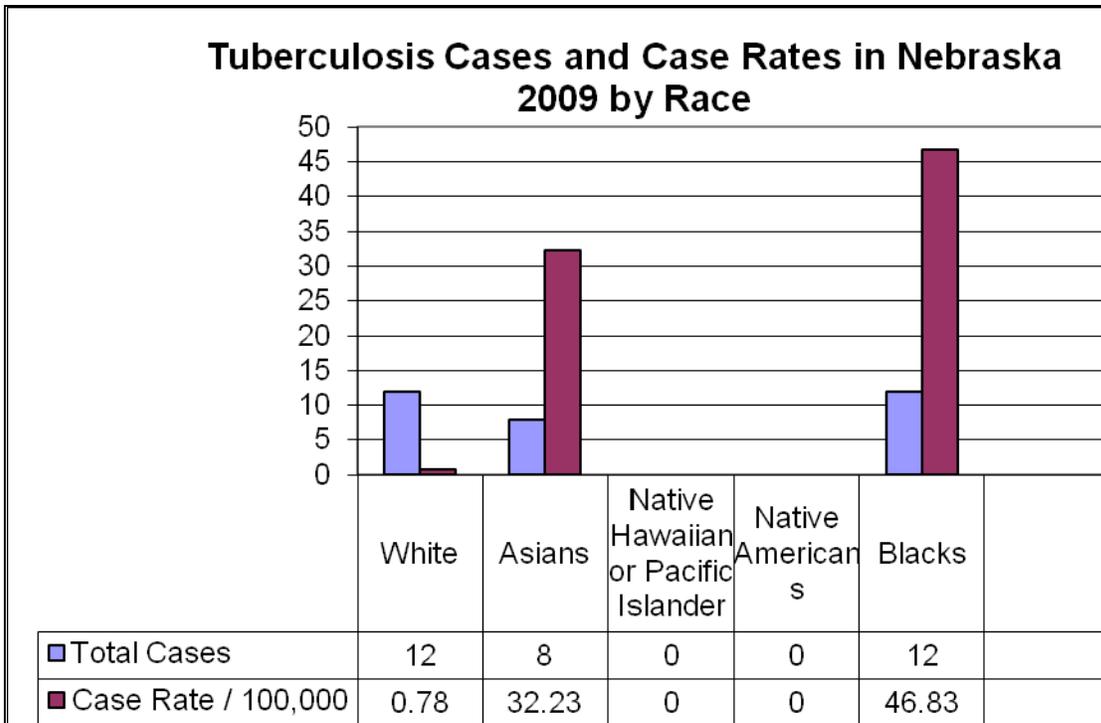
Tuberculosis Cases and Case Rates in Nebraska 2009 by Place of Origin



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

Tuberculosis in Nebraska 2009 by Race and Ethnicity:

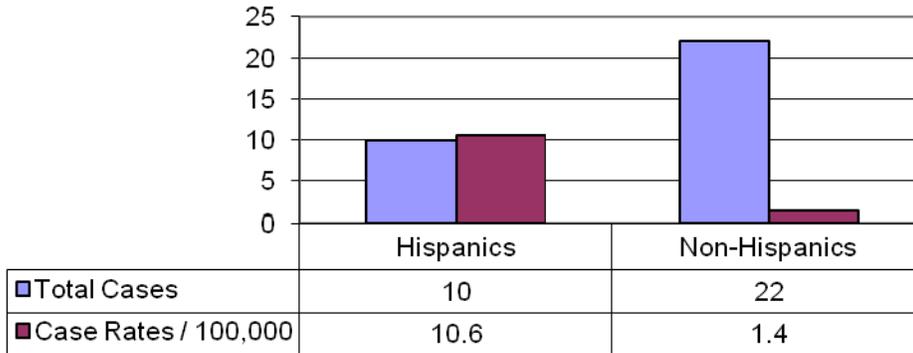
In Nebraska, the largest numbers of cases are reported in the white and black population. However, the black race and other racial populations have significantly higher case rates. The black population group had the highest case rate at 46.83/100,000. The number of cases and the rates per 100,000 shown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



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

Nebraska's population is 82% non-Hispanic based upon information from the year 2000 U.S. Census Bureau. Ten (10) cases in 2009 were of Hispanic or Latino ethnicity and 22 were non-Hispanic. The attack rates were 10.6/100,000 for Hispanics and 1.4 /100,000 for non-Hispanics.

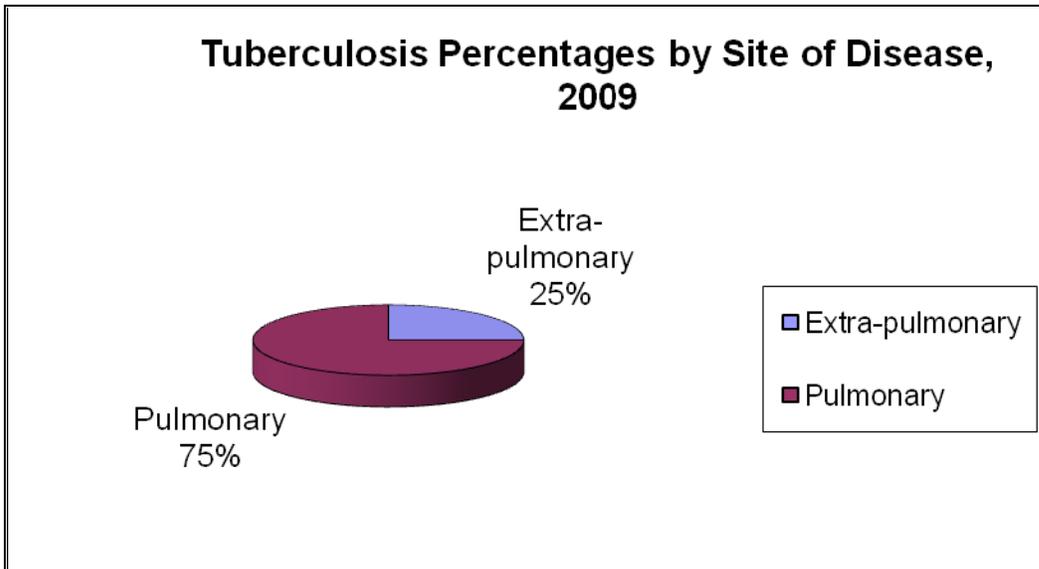
Tuberculosis Cases and Case Rates in Nebraska by Ethnicity, 2009



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

Tuberculosis in Nebraska 2009 by Site of Disease:

Of the 32 cases of tuberculosis reported in 2009, 24 (75%) had pulmonary disease and 8 (25%) had extra-pulmonary disease.



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

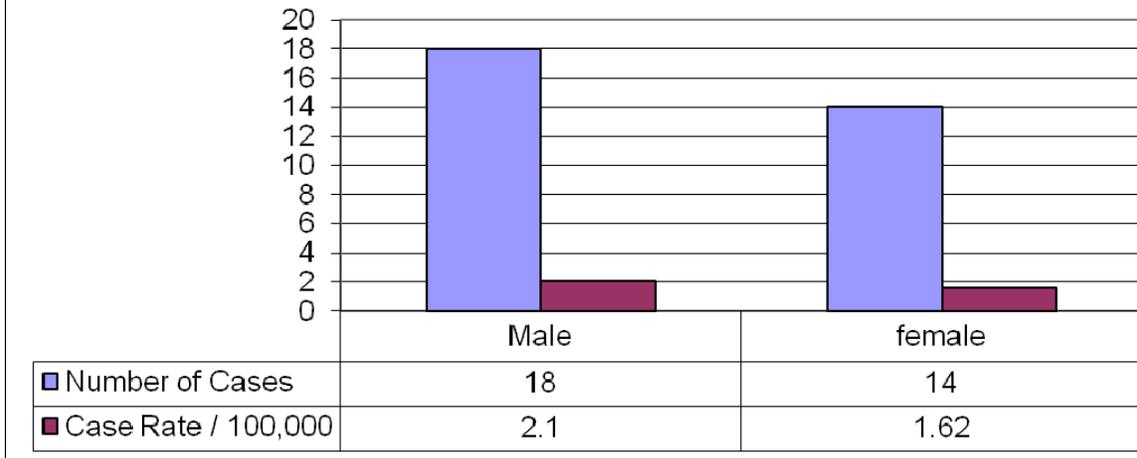
Tuberculosis in Nebraska 2009 by Verified Cases:

Nebraska continues to use CDC's guidelines for both clinical and laboratory-confirmed cases. This surveillance method started in 2003. Eleven of the 32 (34%) cases in 2009 were clinically diagnosed; the remaining 21 (66%) 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 2009, 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 2009 by Gender:

In 2009, the number of male cases was 18 and the number of female cases was 14. 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. 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 2009 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. 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 2009, 29 (90%) of the 32 treated cases were put on DOT. This is an increase from the 86% that were put on DOT in 2008. Currently all pulmonary cases are given DOT even if clinically diagnosed. The majority of extra-

pulmonary cases are also started on DOT, but because of a lack of resources in the local health departments, this cannot always be accomplished for cases that aren't considered an immediate public health risk.

Tuberculosis Program in Nebraska: Updates and Progress Report

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 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 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.

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