State of Nebraska
Department of Health and Human Services

Tuberculosis Program
Report 2014

TUBERCULOSIS IN NEBRASKA – 2014

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 2012, 8.6 million people fell ill with TB and 1.3 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. 2013 national data shows 9558 cases for a case rate of 3.0/100,000. Provisional 2014 national data is a further decrease in cases to 9,412 with the same case rate. Nebraska did not follow this trend and had an increase in cases in 2014. There were 38 cases for a case rate of 2.0/100,000. This was a 10-year high for cases and a 55% increase in cases from 2013.

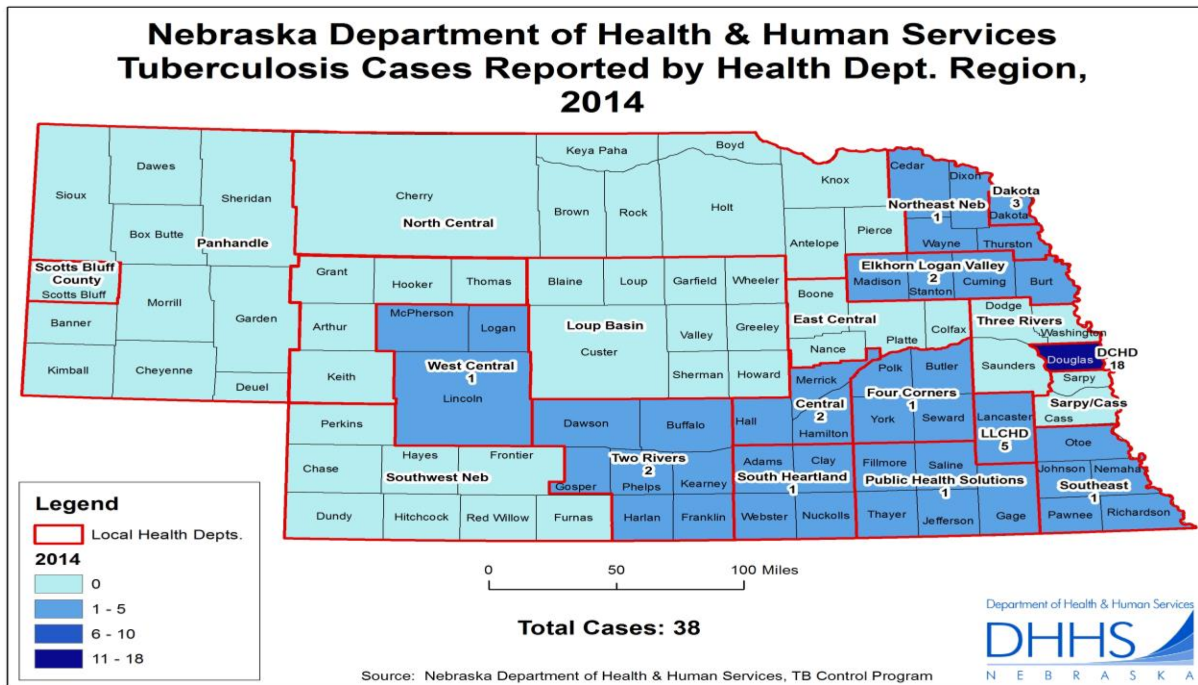
Although Nebraska has an overall low incidence of TB, the cases continue to be difficult to treat because of the high percentage of foreign-born population that comprise Nebraska's TB morbidity and also because of the complexity of the cases. The language and cultural barriers of the foreign-born population 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: 2014 Statewide Summary

In 2014, Nebraska had a total of 38 cases of TB, for a rate of 2 cases per 100,000 people. This represents the highest number of TB cases and the highest attack rate over the last ten years in Nebraska. 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 ten-year data for low-incidence states like Nebraska are often not sufficient enough to reflect trends in morbidity.

There were 12 counties in Nebraska that reported at least one case of TB for 2014. County incidence rates are available through requests through the State TB Program (see Attachment A) since the population in some of the counties is too small to publish the data. Following is a map showing the cases by county health department for 2014.



Tuberculosis in Nebraska 2014 by County Health Department:

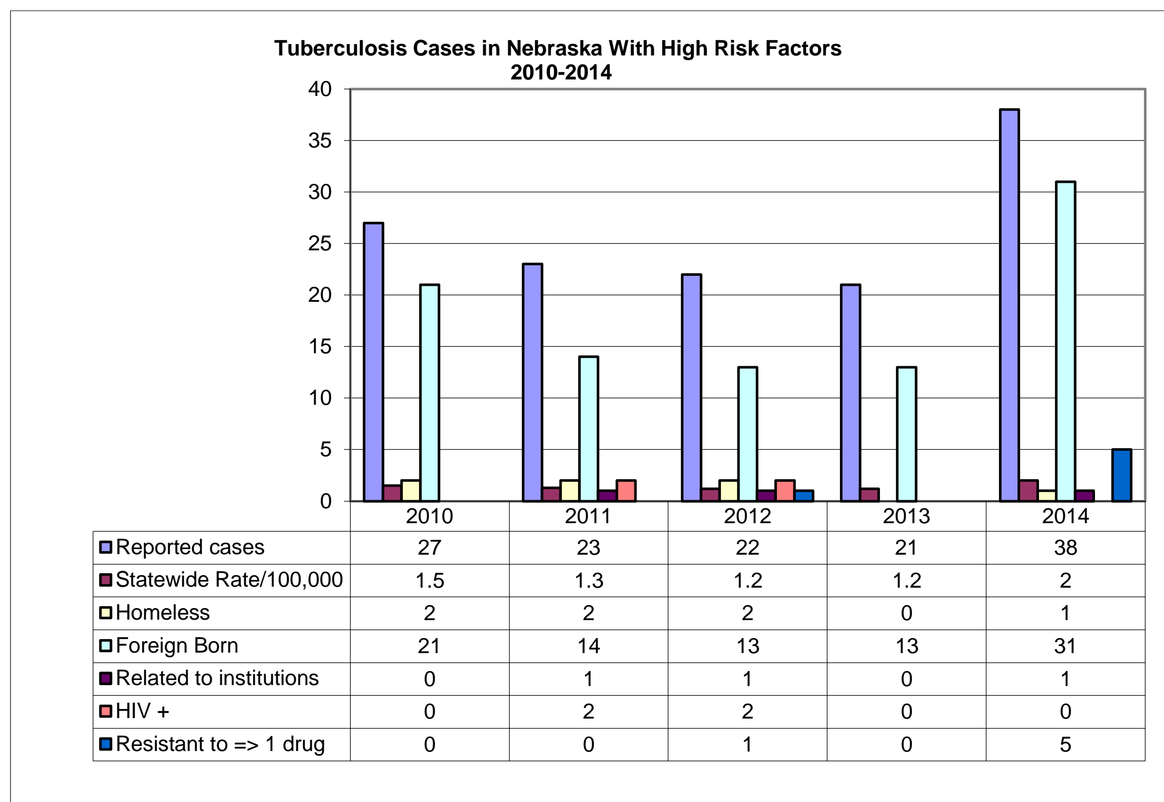
Nebraska has 93 counties that are covered by 20 county or district health departments. Since some of Nebraska's counties have less than a 20,000 population base, surveillance data is reported by the county health departments rather than by individual counties. If county-specific data is required it is available by request from the State TB Program (Attachment A). For the period of 2010-2014, 15 county health department or health districts reported at least 1 case of tuberculosis. Six county health districts, reporting 5 or more cases, accounted for 111 of the 131 or 85% of cases that occurred from 2010 through 2014. 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 89 cases or 68% 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 2010-2014

Health Department or District Name	*2010*	*2011*	*2012*	*2013*	*2014*	*5 Year Totals*
Panhandle HD		2				2
Two Rivers HD	1		2	3	2	8
Dakota County HD	1	1	1	1	3	7
Douglas County HD	15	11	13	9	18	66
Central District HD	1		1	1	2	5
Lincoln/Lancaster County HD	5	3	4	3	5	20
West Central HD		1		1	1	3
Southeast District HD	1				1	2
Elkhorn Logan Valley HD	1	1		1	2	5
East Central HD	1	2	1			4
Public Health Solutions		1		1	1	3
Sarpy/Cass County HD	1	1		1		3
Northeast District HD					1	1
Four Corners HD					1	1
South Heartland HD					1	1
TOTAL	27	23	22	21	38	131

Active TB Summary
Tuberculosis by Risk Factors:

Of the 38 cases of tuberculosis in Nebraska in 2014, 31 were foreign born, 1 was homeless, 1 case was from a nursing home and 1 case was from a jail setting. There were no cases co-infected with HIV. Two cases were Isoniazid (INH) mono resistant, 3 cases were resistant to Pyrazinamide with one of those cases also resistant to low level INH.



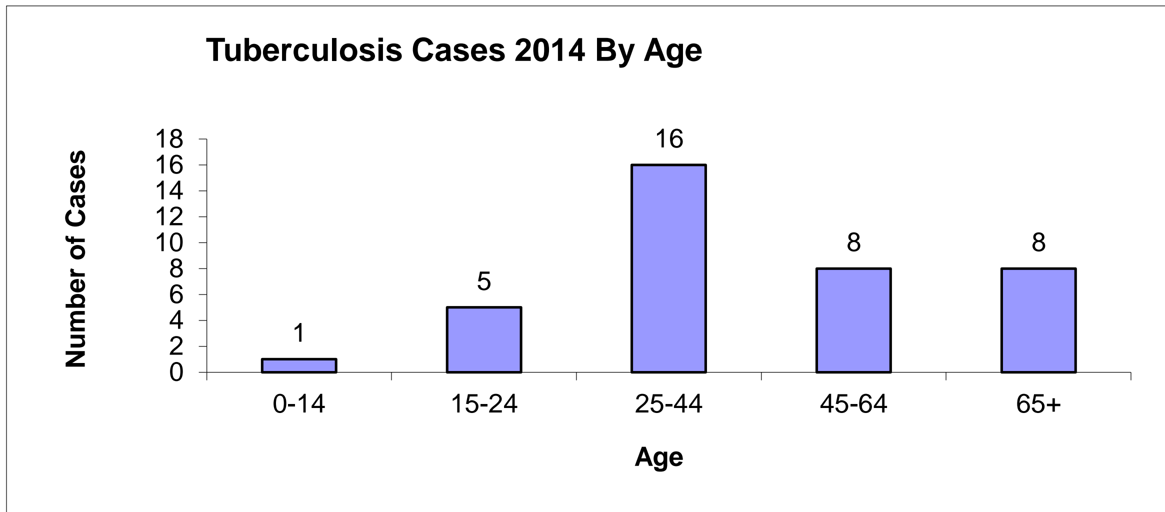
	2010	2011	2012	2013	2014
Reported cases	27	23	22	21	38
Statewide Rate/100,000	1.5	1.3	1.2	1.2	2
Homeless	2	2	2	0	1
Foreign Born	21	14	13	13	31
Related to institutions	0	1	1	0	1
HIV +	0	2	2	0	0
Resistant to => 1 drug	0	0	1	0	5

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

Tuberculosis in Nebraska 2014 by Age Group:

In 2014, the highest number of cases, 16, was identified in the 25-44 age group. The lowest number of cases, 1, was identified between 0 and age14. 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. An unusual occurrence this year was the high number of cases in the 65+ category. One patient was 97 years old and is benefiting from treatment.



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

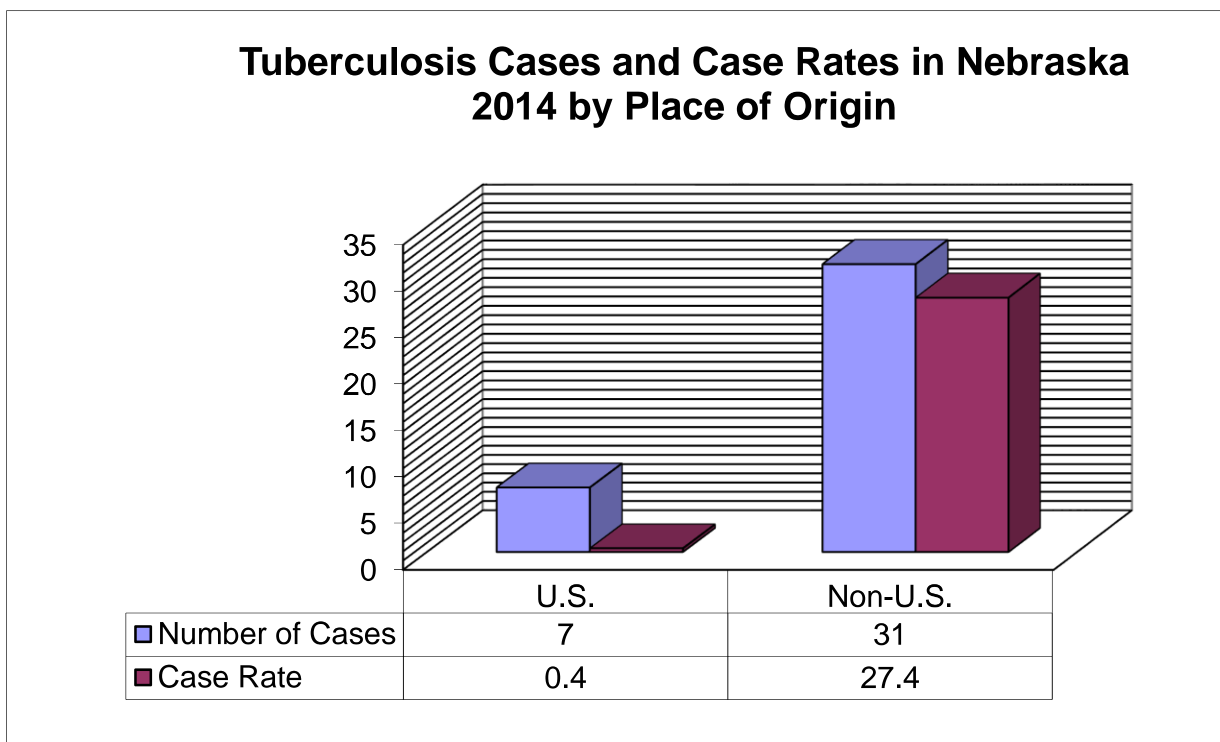
Tuberculosis in Nebraska 2014 by Country of Origin:

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 2014, 31 of the cases reported were among the foreign born. The percentage of foreign born cases was 82% for 2014. The distribution by country of origin is as follows: 9 from Mexico, 4 each from Vietnam and Somalia, 3 from Sudan, 2 each from Guatemala, Kenya and Myanmar and 1 each from Korea, Togo, Indonesia, Nepal and the Philippines.

The number of foreign-born cases for 2014 compared to the population yields a case rate of approximately 27.4 per 100,000 foreign-born people compared to a case rate

of 0.4 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.



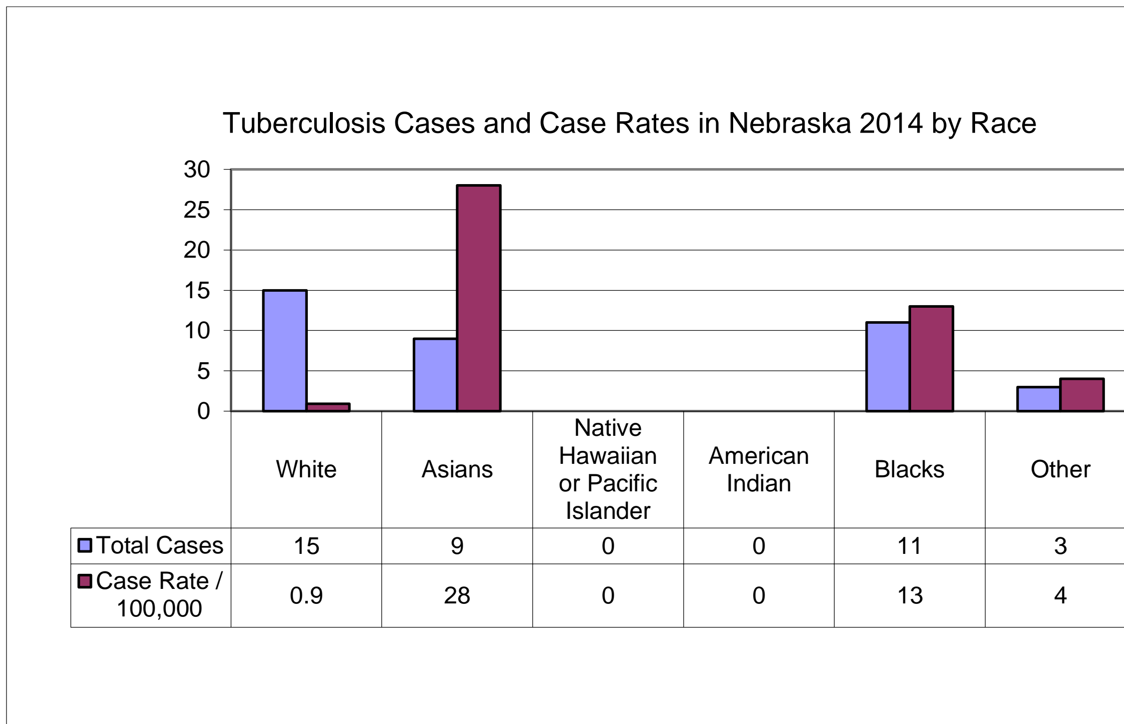
	U.S.	Non-U.S.
Number of Cases	7	31
Case Rate	0.4	27.4

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

Tuberculosis in Nebraska 2014 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 2014 the Asian population with 9 cases had the highest case rate at 28/100,000.

There were 11 cases in the black group for a case rate of 13/100,000. The white population had 15 cases for a case rate of 0.9/100,000.

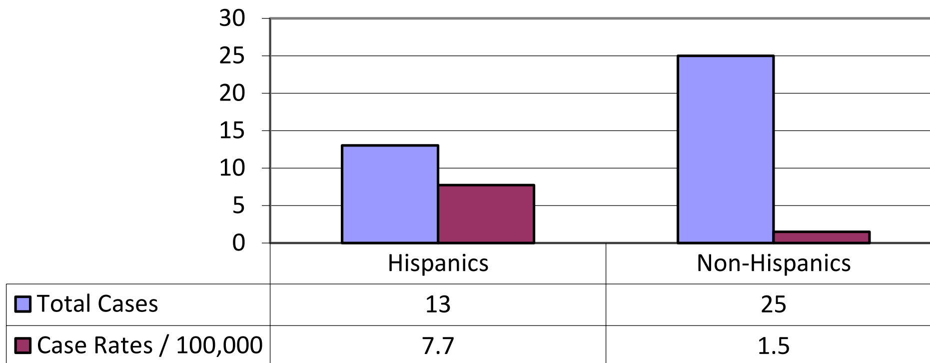


	White	Asians	Native Hawaiian or Pacific Islander	American Indian	Blacks	Other
Total Cases	15	9	0	0	11	3
Case Rate / 100,000	0.9	28	0	0	13	4

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

Nebraska's population is 82% non-Hispanic based upon information from the year 2010 U.S. Census Bureau. Thirteen cases in 2014 were of Hispanic or Latino ethnicity and 25 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, 2014

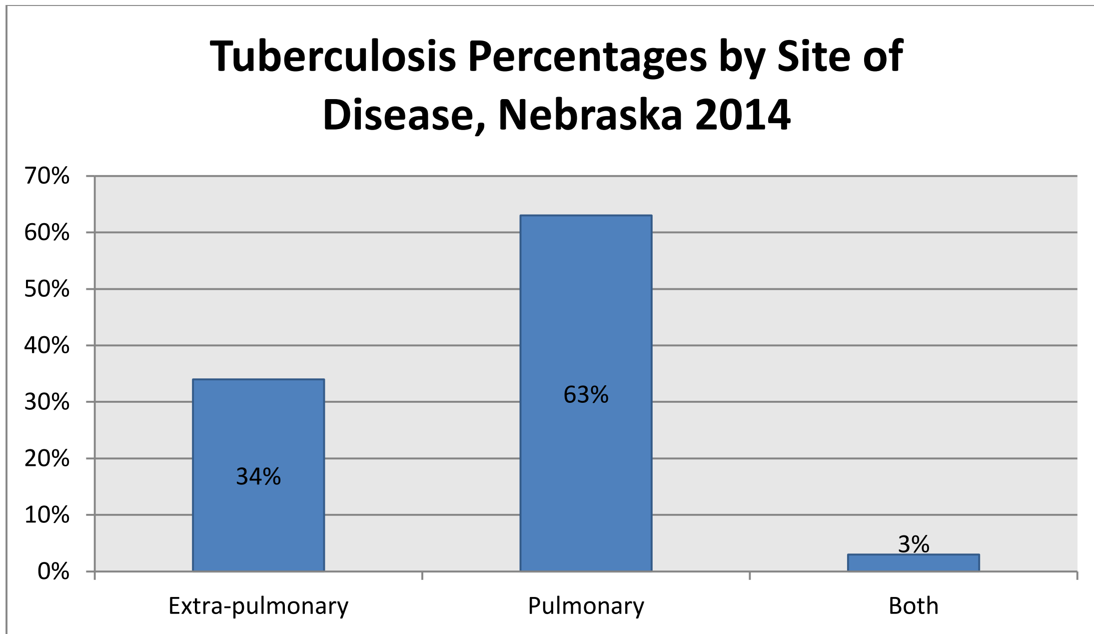


	Hispanics	Non-Hispanics
Total Cases	13	25
Case Rates / 100,000	7.7	1.5

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

Tuberculosis in Nebraska 2014 by Site of Disease:

Of the 38 cases of tuberculosis reported in 2014, 24 (63%) had pulmonary disease, 13 (34%) had non-pulmonary disease and 1 (3%) had both. 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, pleural fluid, eye, abdominal fluid and a wound. 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, 2014

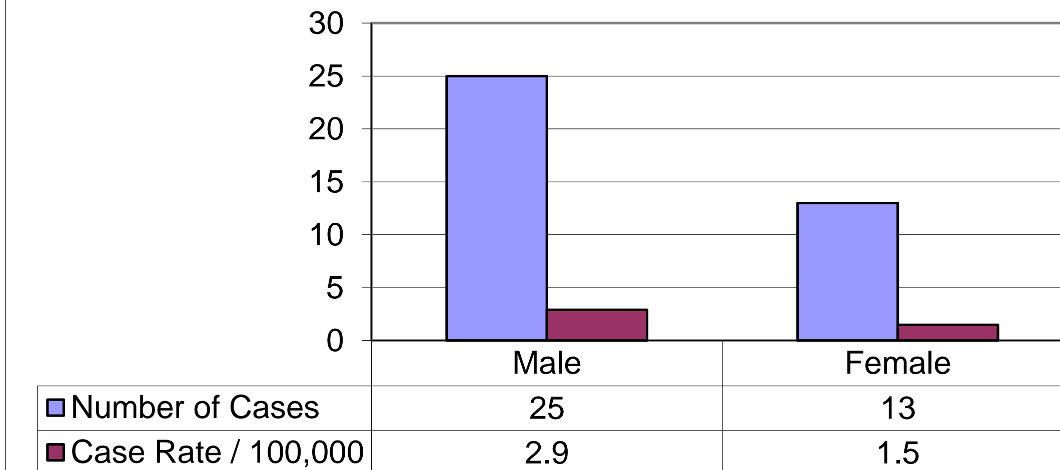
Tuberculosis in Nebraska 2014 by Verified Cases:

Nebraska continues to use CDC's guidelines for both clinical and laboratory-confirmed cases. This surveillance method started in 2003. Seven of the 38 (18%) cases in 2014 were clinically diagnosed; the remaining 31 (82%) 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 2014, 60 suspects were evaluated and followed until either proven to be TB or until the decision was made to treat them for latent TB infection (LTBI) only.

Tuberculosis in Nebraska 2014 by Gender:

In 2014, the number of male cases was 25 and the number of female cases was 13. 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 2014 by Gender



	Male	Female
Number of Cases	25	13
Case Rate / 100,000	2.9	1.5

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

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 the patient taking their medication, is 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 and the local health department.

In 2014, 30 (79%) of the 38 treated cases were put on DOT. The 8 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. Five of the 13 extra-

pulmonary cases in 2014 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

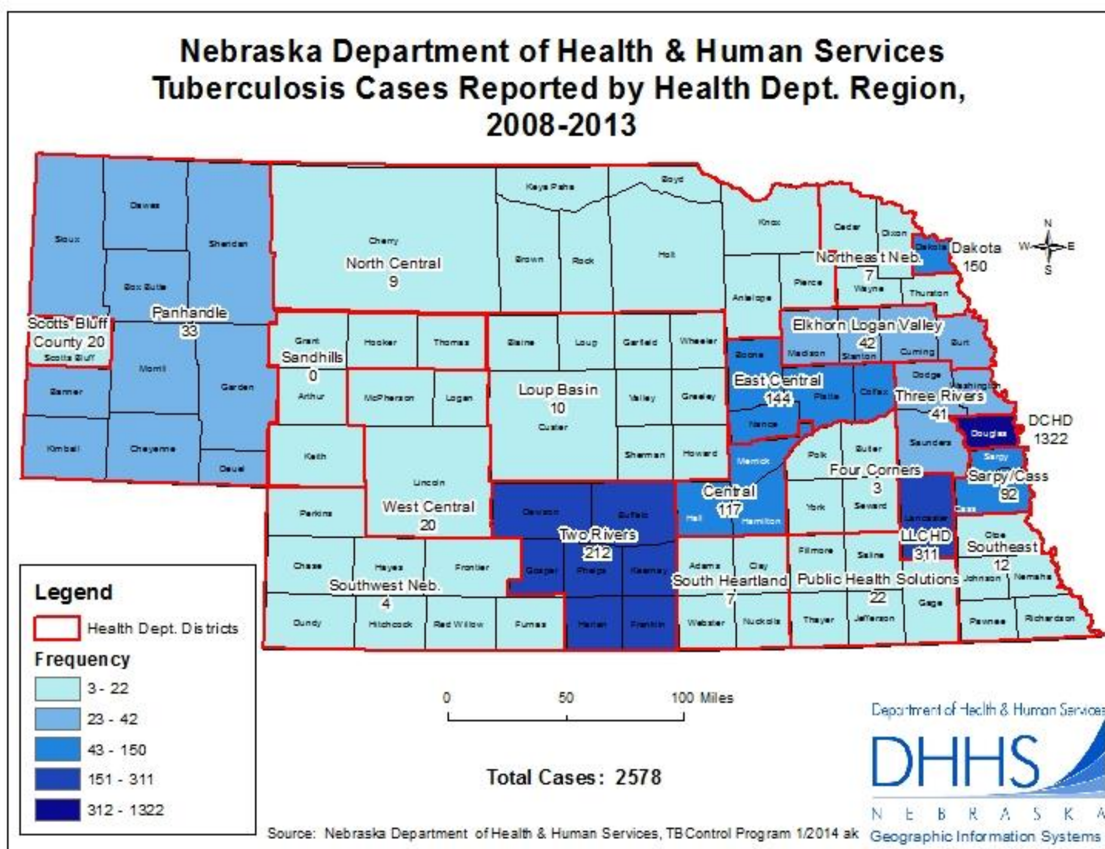
TB also affects persons in the state who are infected with the disease but not yet sick with it. The state's TB program provides INH which is used as a preventive medication for people infected with TB if they choose, free of charge. A total of 3,036 people were enrolled in the LTBI medication program from 2008-2014, an average of 42 enrollees per month. In 2013 there was a dramatic drop to 299 enrollees for the year. This can be attributed to the INH shortage that occurred from January 2013 to April 2013. By mid-year the pharmaceutical supplies came back to normal levels and testing has continued as before the shortage.

The majority, 86%, of LTBI enrollees in the years 2008-2013, were foreign born. The distribution by age group was 0-4 years, 1.4%; 5-19 years, 16.5%; 20-39 years; 55%, 40-59 years, 22%; and 60+ years, 4%. 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 INH, a 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.



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 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 be held on World TB Day, March 24th, 2014 and was well received.

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.

ATTATCHMENT A

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