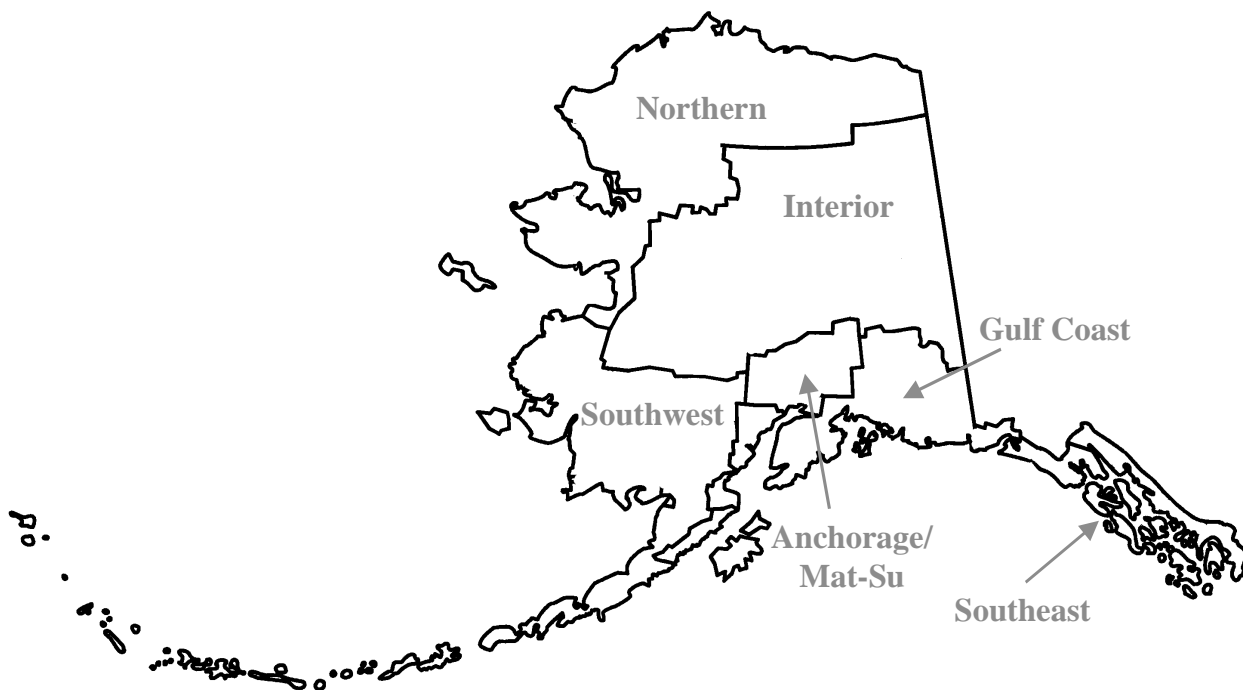


# Tuberculosis in Alaska

## 2017 Annual Report

*October 10, 2018*



### **STATE OF ALASKA**

Department of Health and Social Services  
Division of Public Health  
Section of Epidemiology

<http://dhss.alaska.gov/dph/Epi/id/Pages/tb.aspx>

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*Acknowledgements:*

*Tuberculosis prevention and control in Alaska is a multiagency activity from assisting in screening activities to collecting and analyzing laboratory specimens to ensuring that patients receive appropriate medication. We thank all public health and clinical partners who contribute to this effort.*

*Data were compiled by Alaska Division of Public Health, Section of Epidemiology staff with special thanks to Megan Tompkins, MPH, Infectious Disease Program Information System Coordinator.*

## **Executive Summary**

In 2017, Alaska reported 53 confirmed cases of tuberculosis (TB), or 7.2 cases per 100,000 people. Southwest and Northern regions continue to record the highest rates in the state, and the Alaska Native population continues to bear a disproportionate burden. There are numerous unique challenges in Alaska which continue to contribute to high rates of disease. A historically very high rate of TB in the mid-20<sup>th</sup> century has led to large numbers of latently infected individuals in rural regions of the state. Social challenges, such as household crowding in some of these areas and the great distances often required to receive medical care can facilitate the transmission of TB.

In spite of these ongoing challenges, notable successes and improvements in TB control occurred in 2017. A transition to a risk-based school screening system has resulted in a focus on testing for children only with factors that put them at higher risk of TB exposure and in a marked cost-savings to the State. Continued adoption of shorter course treatment for latent infection with a 3-month isoniazid and rifapentine regimen has led to improved treatment completion. An ongoing focus on enhanced contact investigations has led to improved outcomes for individuals at high risk for TB infection and disease. An interactive training module for community-based directly observed therapy aides was piloted and adopted. Finally, much progress was made to harmonize and streamline the Alaska electronic TB databases, which has improved all facets of case management.

A shift towards identifying, testing, and successfully treating individuals at high risk for latent TB infection (LTBI) has been discussed as a further strategy to decrease TB rates, as the effectiveness of traditional approaches seems to have plateaued. In the coming years, it will be important for Alaska to not only continue current TB control efforts but also to adopt a more systematic approach that includes LTBI surveillance and treatment.

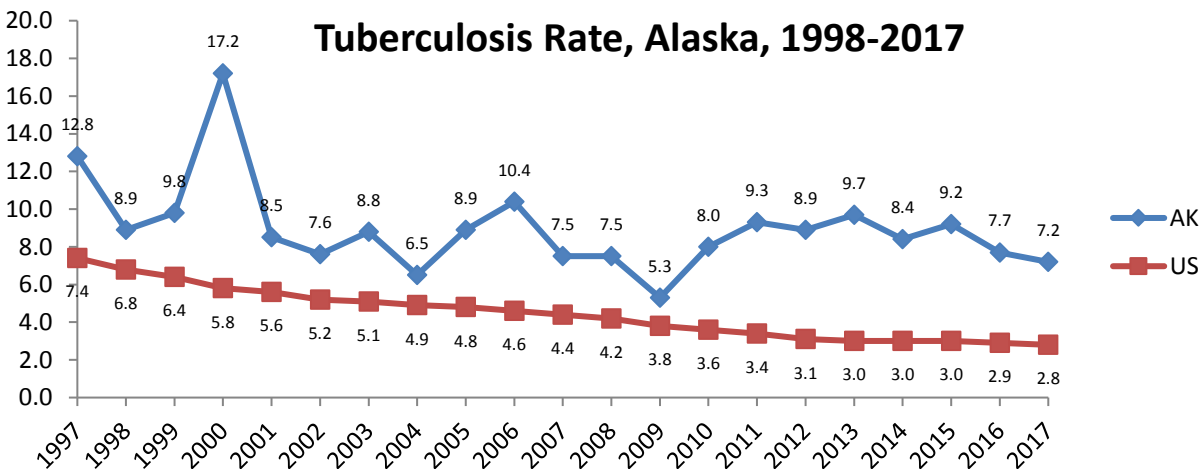
<b>Tuberculosis Cases Summary Statistics, Alaska, 2013-2017</b>					
<b>Statistic</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Total annual TB case count	71	62	68	57	53
Alaska population	736,399	736,337	737,625	739,828	737,080
Alaska case rate (per 100,000)	9.6	8.4	9.2	7.7	7.2
U.S. case rate (per 100,000)	3.0	3.0	3.0	2.9	2.8
Alaska population 0-14 years	159,860	159,846	158,116	158,935	158,608
Cases 0-14 yrs old (% total)	10 (14%)	2 (3%)	12 (17%)	7 (12%)	7 (13%)
Cases/100,000	6.3	1.3	7.6	4.4	4.4
Cases foreign-born (% total)	16 (23%)	12 (19%)	8 (12%)	11 (19%)	15 (28%)
Cases homeless (% total)	7 (10%)	16 (23%)	9 (13%)	2 (4%)	2 (4%)
Cases isoniazid-resistant	5 (7%)	6 (10%)	11 (16%)	5 (9%)	6 (11%)
Cases multiple drug resistant TB (MDR-TB)	0	1	0	1*	1
Cases offered HIV testing (% of total)	62 (87%)	58 (94%)	54 (79%)	51 (89%)	46 (87%)
Cases infected with HIV	0	0	0	1	1
Cases with drug use (IV & non-IV) (% total)	7 (10%)	6 (10%)	14 (21%)	15 (26%)	7 (13%)
Cases with excessive alcohol use (% total) aged >14	21 (35%)	25 (42%)	21 (40%)	16 (28%)	10 (19%)

\*Current guidance from the CDC requires conventional drug susceptibility test results to confirm a diagnosis of MDR TB, and does not allow molecular susceptibility results as the single diagnostic test.

## Trends in Tuberculosis

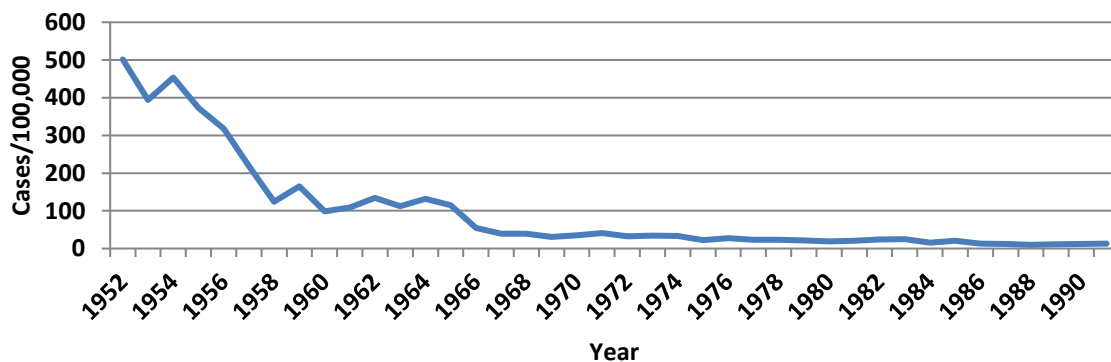
### ***Incidence of Tuberculosis***

In 2017, 53 cases of tuberculosis (TB) were reported to the Alaska Tuberculosis Program for an incidence of 7.2 cases per 100,000 population, a decline from the rate of 9.2 in 2015 and 7.7 in 2016. The United States TB incidence was 2.8 cases per 100,000 in 2017, slightly less than the 2.9 rate in 2016.



Historically, Alaska experienced some of the highest rates of TB morbidity and mortality in the early and mid-20<sup>th</sup> century. Great progress was made in rapidly reducing the burden of disease seen during this time, as noted in the figure below. Much of the TB activity in Alaska today is related to this legacy and the ongoing challenges in Alaska of health care infrastructure and geography.

### **Tuberculosis Rates – Alaska, 1952-1991**



In 2017, Alaska was one of 12 reporting areas with a tuberculosis rate that exceeded the U.S. national average. The states with the highest TB rates are listed below.

<b>States with Highest TB Incidence, 2017*</b>			
<b>State or District</b>	<b>Number Cases</b>	<b>Incidence of TB</b>	<b>Population</b>
Alaska	53**	7.2**	737,080
Hawaii	116	8.1	1,426,393
California	2,056	5.2	39,536,653
Texas	1,127	4.0	28,304,596
New York	806	4.1	19,849,399

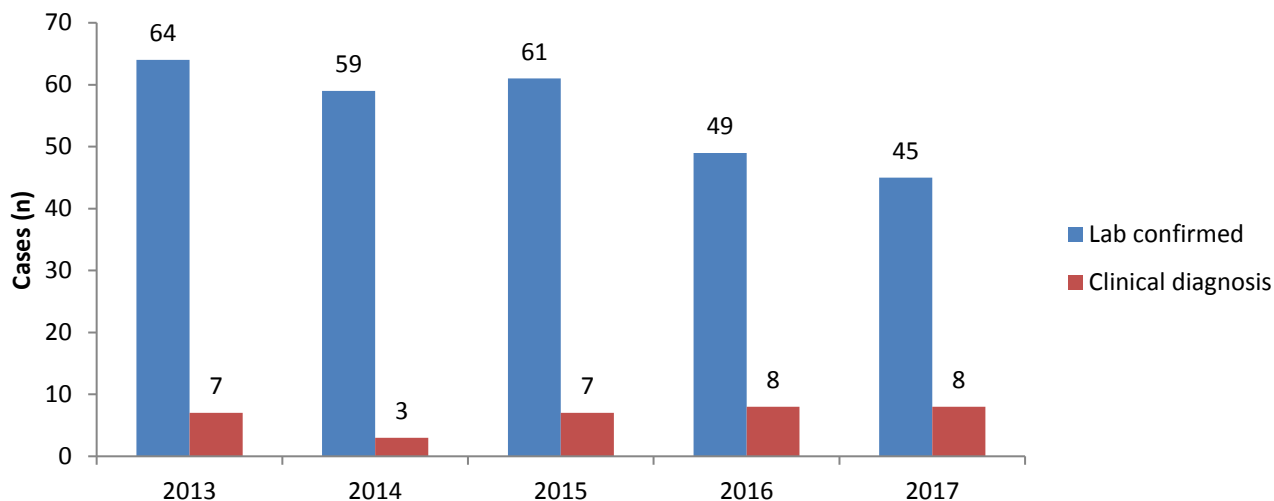
\*<https://www.cdc.gov/mmwr/volumes/67/wr/mm6711a2.htm>

\*\*Note that the MMWR quotes preliminary figures (n=52, rate of 7.0); statistics presented here are final.

### **Tuberculosis by Case Definition**

Cases of active TB can be classified as either a laboratory-confirmed or a clinical case, based on CDC definition: <https://wwwn.cdc.gov/nndss/conditions/tuberculosis/case-definition/2009/>. Laboratory-confirmed cases include those with isolation of *Mycobacterium tuberculosis* from a clinical specimen, demonstration of *M. tb* with nucleic acid amplification, or demonstration of acid-fast bacilli when a culture is not possible or is falsely negative. A “false negative” may be suspected as a result of bacterial or fungal overgrowth or related to the methods of collection, i.e., with cytology/pathology preparations, and in consideration of other parameters such as symptomatology or imaging studies. While clinical cases lack laboratory confirmation, they must include certain criteria such as signs and symptoms of TB, treatment with two or more TB medications, a completed diagnostic evaluation, and either tuberculin skin test or interferon gamma release assay results. The vast majority of TB cases in Alaska are laboratory-confirmed, with between 3 and 8 clinical cases or provider-diagnosed cases each year from 2013-2017.

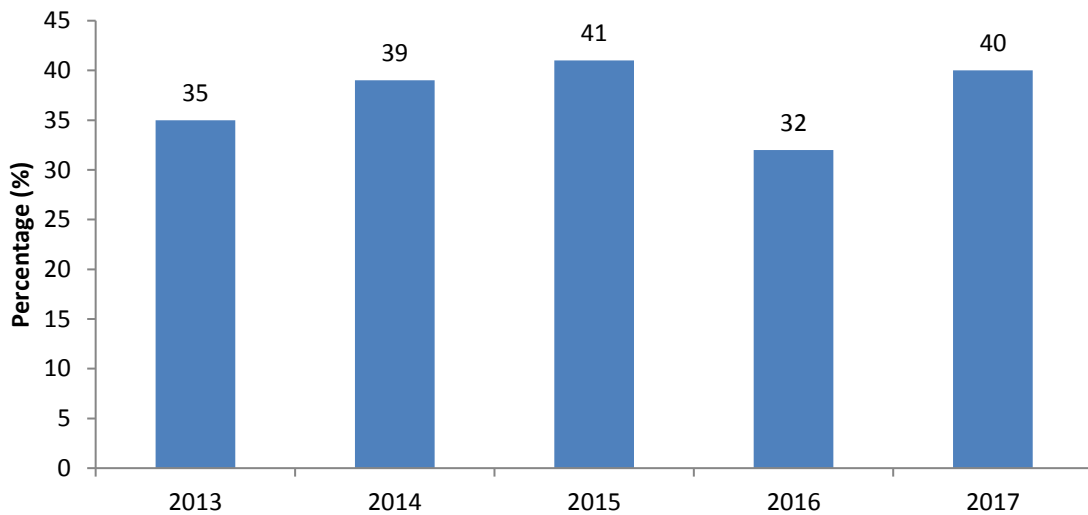
### **Tuberculosis Cases by Case Definition – Alaska, 2013-2017**



### ***Smear Status***

Individuals suspected of having pulmonary TB disease have sputum specimens sent to the laboratory to look for TB bacteria. Specimens are monitored for growth of TB bacteria for 6 weeks. Those with initial positive smears upon examination are considered to be more infectious than those with negative smears. From 2013-2017, between 32-41% of TB cases had positive smears.

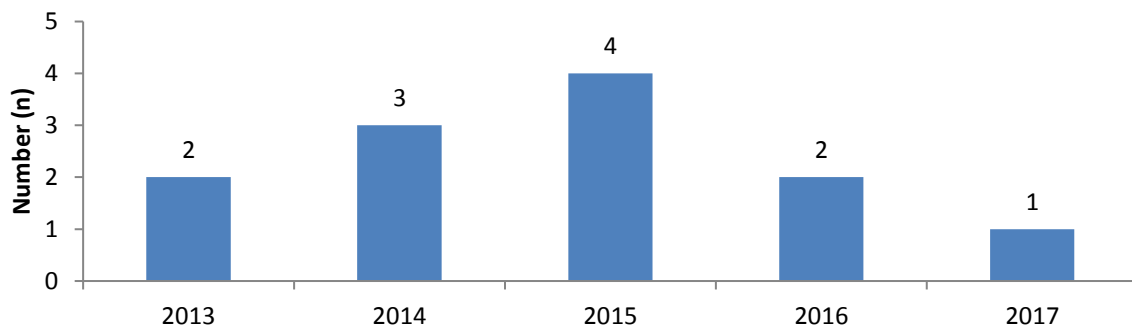
**Percentage of Tuberculosis Patients Who Were Smear Positive – Alaska, 2013-2017**



### ***Deaths Related to Tuberculosis***

Most years in Alaska there are deaths attributable to TB. While individuals with TB may also die from unrelated causes, 12 TB-related deaths occurred from 2013-2017.

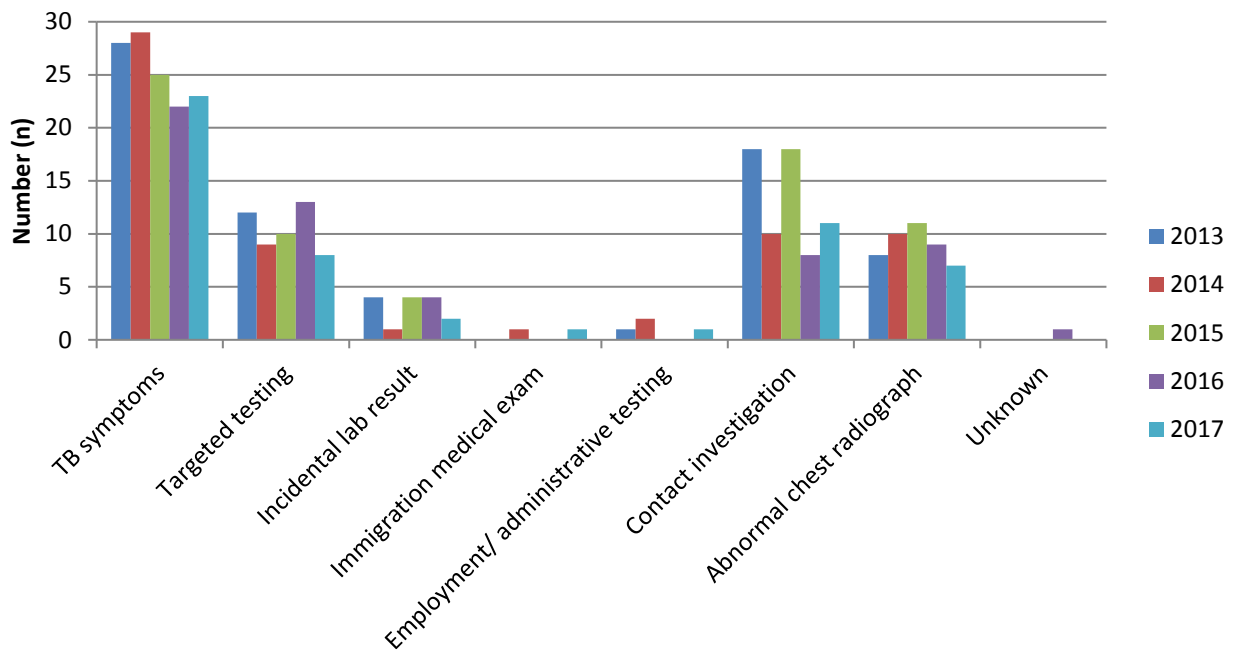
**Deaths Related to Tuberculosis – Alaska, 2013-2017**



### **Reason for Initial Evaluation**

Individuals diagnosed with TB disease in Alaska are most frequently initially evaluated for TB due to TB symptoms such as cough, fever, weight loss or night sweats. Another large proportion of TB cases are identified as part of contact investigations. Targeted testing for individuals with risk factors for TB (such as being from a country with high rates of TB), and follow-up on abnormal radiographs obtained for other reasons are other common ways that individuals with TB are first evaluated.

### **Reason Initially Evaluated for Tuberculosis – Alaska, 2013-2017**



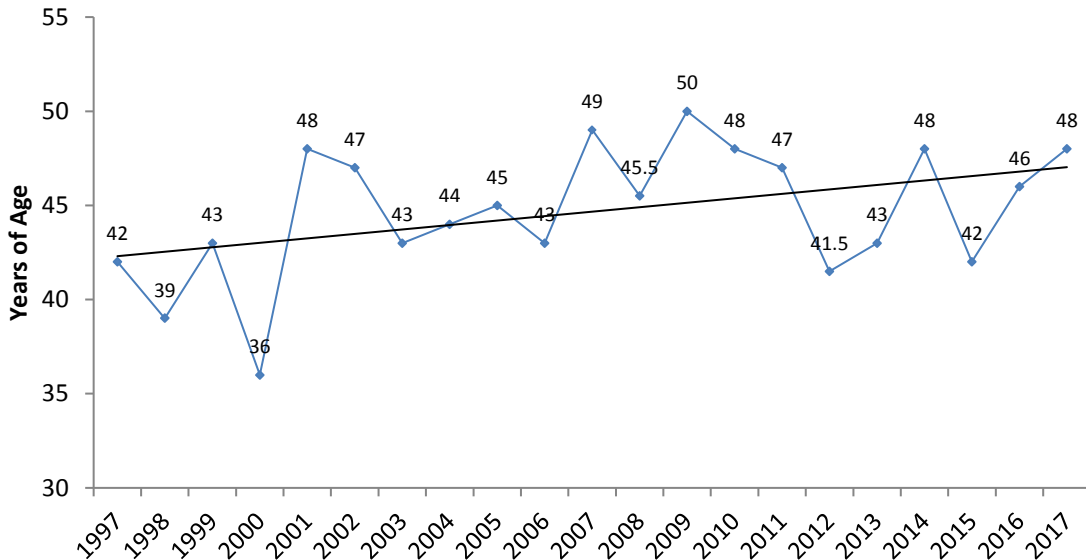


## Demographics of TB in Alaska

### **Age**

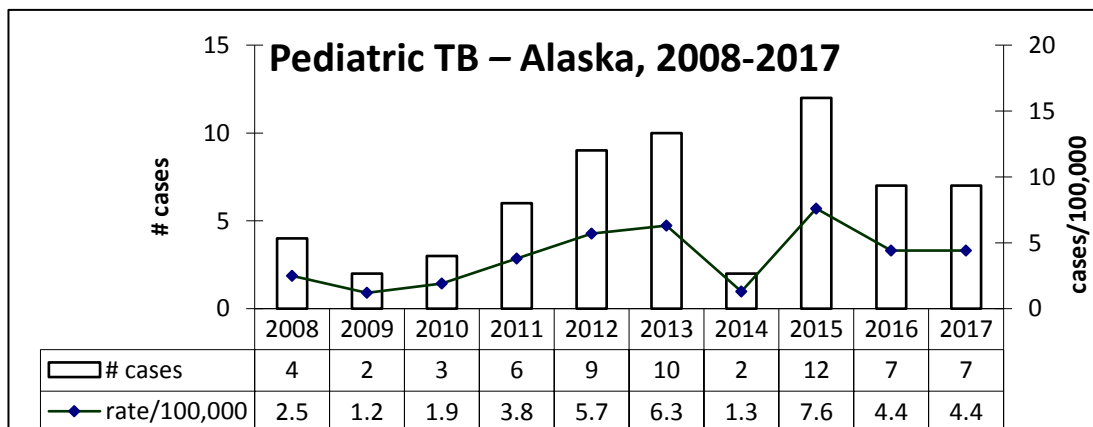
In 2017, the mean age of persons with TB was 43 years; the median age was 48 years. Since 1997, the median age has increased.

**Median Age of TB Cases – Alaska, 1997-2017**



### **Pediatric TB**

For the purposes of this report, a child is anyone less than 15 years of age. In 2017, seven children were diagnosed and treated for TB, a rate of 4.4 cases per 100,000 children. The rate of pediatric TB in Alaska has ranged from a high of 7.6 cases per 100,000 to a low of 1.3 cases per 100,000 children over the past 5 years.



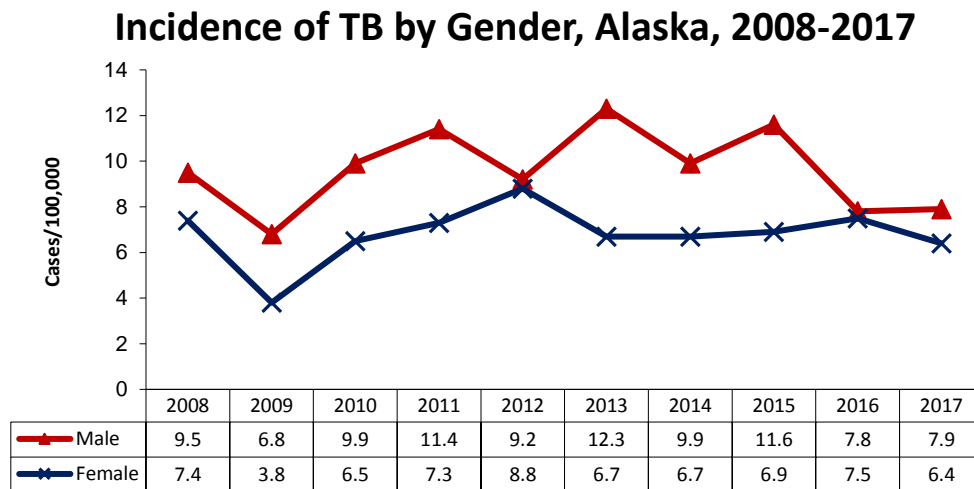
### Race

Alaska Native and foreign-born persons continue to bear a disproportionate burden of TB in Alaska.

<b>TB Incidence Rates per 100,000 by Race Categories – Alaska, 2013-2017</b>					
<i>Race</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>
White	0.8	0.4	0.6	0.4	0.8
Black/African-American	0.0	0.0	0.0	5.1	3.7
Alaska Native	44	38	50.8	37.1	29.2
Asian/Pacific Islander	23	23	17	21.6	26.0
Foreign-Born	33.9	21.5	12.8	17.6	26.5
Statewide TB incidence rate, all races	9.7	8.4	9.2	7.7	7.2

### Sex

In 2017, 57% of TB case-patients were male. Incidence rates for males have exceeded those for females during all ten of the past ten years.



## Homelessness

In 2017, two of 53 (4%) TB case-patients were reported to be homeless, one in the Anchorage area and one in the Southwest region. The estimated total homeless persons for Alaska in 2017 was 1,845 yielding a rate of 108 homeless persons with TB per 100,000 (source: United States Interagency Council on Homelessness, 2017 Homelessness Statistics by State [https://www.usich.gov/tools-for-action/map/#fn\[\]=1500&fn\[\]=2900&fn\[\]=6100&fn\[\]=10100&fn\[\]=14100&all\\_types=true&year=2017&state=AK](https://www.usich.gov/tools-for-action/map/#fn[]=1500&fn[]=2900&fn[]=6100&fn[]=10100&fn[]=14100&all_types=true&year=2017&state=AK)).

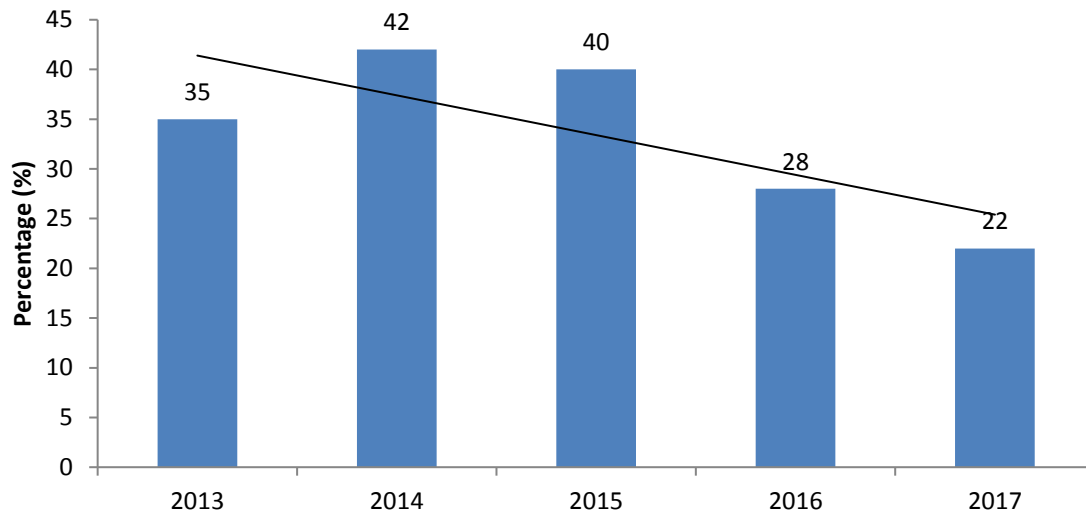
<b>Number and Location of Homeless Persons with TB, 2013-2017, Alaska</b>					
<b>Region</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Anchorage/Mat-Su Region	5	8	6	2	1
Northern Region	1	3	2	0	0
Southwest Region	1	2	1	0	1
Southeast Region	0	0	0	0	0
Gulf Coast Region	0	0	0	0	0
Interior Region	0	1	0	0	0
<b>Statewide Total Homeless Cases</b>	7	14	9	2	2
%TB cases homeless	10%	23%	13%	4%	4%
<b>Statewide Homeless Population Estimate</b>	1,946	1,784	1,956	1,940	1,845
Homeless case rate per 100,000	360	784	460	103	108

During 2014, a dramatic spike in the case rate per 100,000 homeless individuals was seen. The rate has since trended downward to a 5-year low of 103 per 100,000 in 2016. TB screening for homeless individuals is an ongoing challenge. A high proportion of homeless people have long-standing latent TB infection; therefore, TB skin testing is not useful for measuring ongoing TB transmission in shelters and other organizations that serve this population. Symptom screening coupled with sputum tests have become the tools of choice in this population. The Municipality of Anchorage Department of Health and Human Services performs targeted TB screening among the homeless population on a regular basis.

## Excessive Alcohol Use

Heavy alcohol use is associated with TB. Both a pathogenic impact on the immune system and social links likely play a role in this association. Poorer outcomes such as death during treatment, treatment interruptions, and suboptimal culture conversion have been associated with excessive alcohol use. Nationally, approximately 15% of TB patients have excessive alcohol use documented (Volkman et al. *Int J Tuberc Lung Dis* 2015;19(1):111–19.) In Alaska, between 22-42% of individuals diagnosed with TB from 2013-2017 had documented excessive alcohol use.

## TB Cases Aged >15 Years with Excessive Alcohol Use – Alaska, 2013-2017



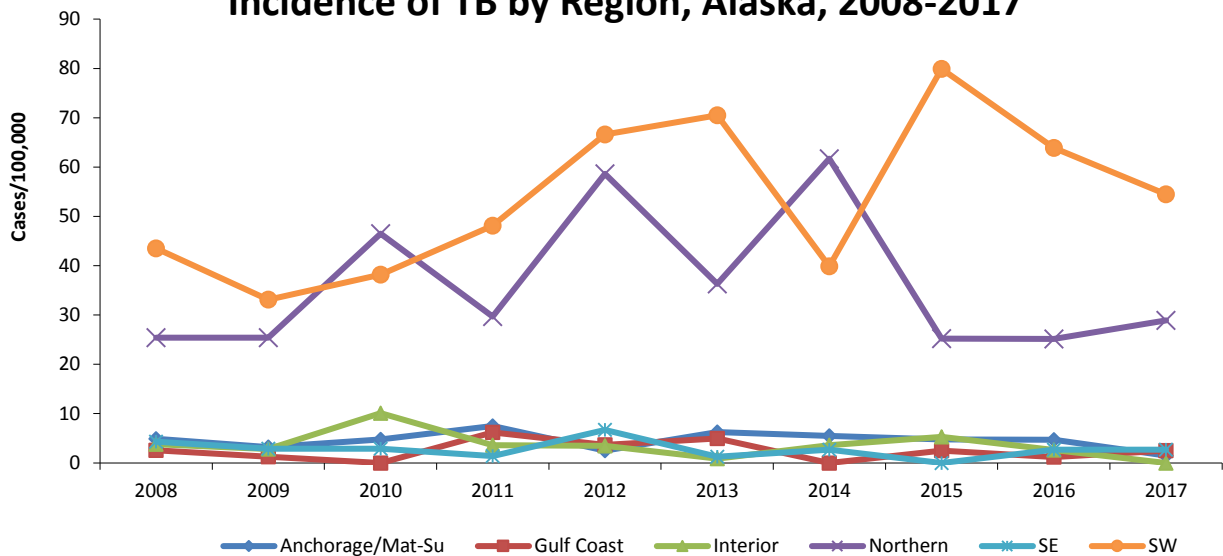
### **Regional trends**

The incidence of tuberculosis is not evenly distributed throughout the state. The highest rates are found in the Southwest and Northern regions of the state, which also have relatively higher proportions of Alaska Native residents. The six regions of the state are shown in the map on the title page of this document.

### Count and Incidence of TB Cases by Region – Alaska, 2013-2017

<b>Region</b>	<b>2013 (cases/100,000)</b>	<b>2014 (cases/100,000)</b>	<b>2015 (cases/100,000)</b>	<b>2016 (cases/100,000)</b>	<b>2017 (cases/100,000)</b>
Anchorage	25 (8.3)	22 (7.3)	19 (6.4)	18 (6.0)	18 (6.0)
Mat-Su	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.0)	0 (0.0)
Gulf Coast	4 (5.0)	0 (0.0)	2 (2.5)	1 (1.2)	2 (2.5)
Interior	1 (0.9)	4 (3.6)	6 (5.3)	3 (2.7)	0 (0.0)
Northern	10 (36.3)	17 (61.7)	7 (25.2)	7 (25.2)	8 (28.9)
Southeast	1 ( 1.3)	2 (2.7)	0 (0.0)	2 (2.7)	2 (2.74)
Southwest	30 (70.5)	17 (39.9)	34 (79.9)	27 (63.9)	23 (54.5)
<b>STATE TOTAL</b>	<b>71 (9.6)</b>	<b>62 (8.4)</b>	<b>68 (9.2)</b>	<b>57 (7.7)</b>	<b>53 (7.2)</b>

## Incidence of TB by Region, Alaska, 2008-2017



The Southwest Region includes the East and West Aleutians, Bethel Census Area, Bristol Bay, Dillingham Census Area, Kusilvak Census Area, and Lake and Peninsula Borough. This region has had the highest rate of TB in Alaska for 8 of the 10 previous years. The case rate per 100,000 had shown a promising decline to 39.9 in 2014, but it again increased to 79.9 in 2015. The following two years' rates are trending down. Small, rural village-based outbreaks continue to pose an ongoing challenge to TB control in Alaska.

The Northern Region includes the North Slope Borough, Nome Census Area, and Northwest Arctic Borough. This region has reported declining case rates during the past three years, but continues to experience a higher proportional burden.

### ***Village and Community Outbreaks***

All isolates grown at the Alaska State Public Health Laboratory are sent to CDC for genotyping. The descriptions of notable village-based outbreaks below include genotyping (and GENTYPE) information.

#### **Village A**

The single largest YK Delta village outbreak for many years occurred in 2013: a total of 17 cases of active TB were detected in this village of less than 1,000 people. One case had compatible symptoms and was PCR positive, but smear and culture negative. The remaining 16 case-patients had positive cultures (four gastric, 12 sputa), and all shared GENTYPE G13072. Ages ranged from under 5 to over 70 years of age. Thirteen of the case-patients were male. Two additional TB cases with matching G13072 GENTYPE were identified in 2014 from this and a neighboring village, with one additional case in a separate YK village in 2015. In 2016 this village saw four more confirmed

cases, two of which were G13072, and two of which were clinically diagnosed with no culture or genotype results. No cases of any genotype were diagnosed in this village in 2017.

### **Village B**

Village B is located in the YK Delta Region and the last outbreak occurred in 1987, when 11 cases of TB were reported. After 19 years without any TB, a single case was reported in 2009, followed by four cases in 2010. More than 2.5% of this community had active TB. Of four isolates available for testing, all were genotype cluster AK\_0017. Two more cases with this genotype were discovered in this village in 2011. In 2012, four further cases with this GENTYPE (G10422) were identified in Alaska, two from this village, one from Anchorage and one from a village in the Northern Region with travel reported to the Southwest, although no direct contact to known active TB cases. In 2013, four new active TB cases with G10422 were reported, one from Village B. In 2014, three additional cases in this cluster were identified. No further cases with this genotype have been identified anywhere in the state since 2014. However, this village had two active cases with other genotypes diagnosed in 2016, indicating continued recent transmission from other genotypes circulating in this village or other geographic areas, or reactivation of old infection.

### **Village C**

In 2013, eight TB cases were reported from a village of under 700 persons, Village C, in the Northern Region, all with GENTYPE G11428. One case involved a patient who was successfully treated in 2009. In 2014, six further cases were detected with matching GENTYPE in village C, with four additional cases detected in the hub town and one in an additional nearby village. This genotype cluster has continued and now includes four 2015 cases, one in 2016, and three in 2017. This village continues to be a focus of targeted investigation and testing through biannual TB village screening assessments.

### **Village D**

Prior to 2015, the last confirmed case of TB in village D, a village in the Southwest Region of under 700 persons, was in 1985. In January of 2015, an adult female and infant from village D were diagnosed with TB with GENTYPE G08423, a GENTYPE previously seen predominantly in Anchorage homeless persons. Subsequent contact investigations in village D identified eight more cases of TB in this village, all with the same GENTYPE, for a rate of over 1,400 per 100,000 persons. This GENTYPE was identified in 3 additional geographically disparate cases in 2016. No additional active cases were identified with this genotype or any other genotypes in village D during 2017, although 1 clinical case was diagnosed/ treated in 2017. Although not included in this 2017 report, in 2018, there has been significant activity in this village.

### **Village E**

After no TB cases detected since 2011, village E, a village of under 800 in the Southwest Region, experienced an outbreak of TB in 2015. In February 2015, TB was diagnosed in a young man from this village. Subsequent village-wide contact investigations identified an additional nine cases of TB in 2015 and three in 2016. All of these cases with specimens available have been isoniazid-

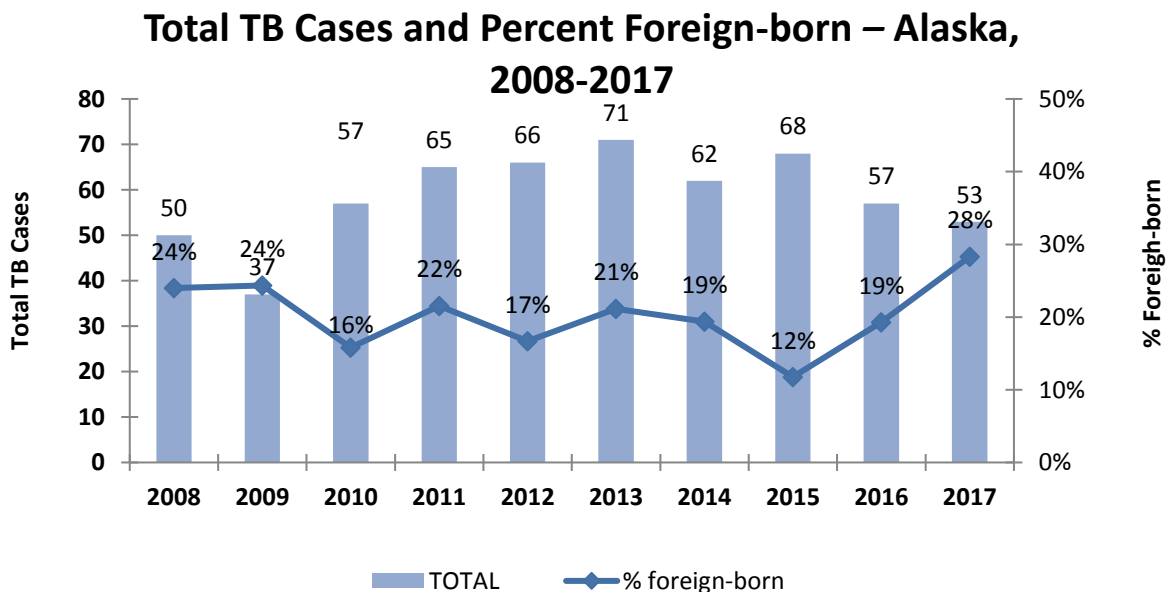
resistant, with the same GENTYPE (G15522) not previously seen elsewhere in Alaska or in the entire United States. One case with this genotype was identified in the Anchorage area in 2017; this individual is known to have connections to village E.

**Village F**

A village of fewer than 700 persons in the Southwest region which had seen no cases of active TB since 2011 has been a source of recent outbreak activity. Ten cases of active disease were diagnosed during both 2016 and 2017, for an incidence rate of over 3,500 per 100,000 of the population in village F. Four additional 2017 outbreak cases were identified in a neighboring village with frequent back-and-forth travel, for 24 total outbreak-related cases. Cases range in age from 2-78 years old, with mean age of 36 years old. Fifteen (62.5%) of the cases have been female. Focused interventions ongoing in this village include biannual TB screening assessments and thorough contact investigation. Preliminary counts from 2018 indicates slowing transmission, suggesting effectiveness of these control measures.

***Foreign-born Persons with TB***

In 2017, 15 (28%) of 53 TB cases were in foreign-born individuals, which is the highest percentage during the past ten years. Country of birth for these individuals included fourteen from the Philippines and one from Vietnam. In comparison, nationally 70% of all TB case-patients were foreign-born in 2017. While Alaska’s distribution of cases contains a smaller percentage of foreign-born individuals than the national data, this proportion has steadily increased over the past three years. Alaska’s foreign-born incidence rate in 2017 was 26.5/100,000.



Between 2008 and 2017, 116 foreign-born persons were diagnosed with tuberculosis in Alaska, representing 20% of total TB cases. They originated from 22 different countries. The Philippines was the country of origin for 59% (69) of foreign-born TB cases.

<b>Country of Origin for TB Cases Foreign-Born, &gt;1 Case – Alaska, 2008-2017</b>	
<b>Country of Origin</b>	<b>Count of TB Cases (% of all foreign-born cases)</b>
Philippines	69 (59%)
Laos	12 (10.3%)
Korea, Republic of	8 (6.9%)
Mexico	5 (4.3%)
Thailand	3 (2.3%)
China	2 (1.7%)
Ethiopia	2 (1.7%)
Vietnam	2 (1.7%)

### ***Non-pulmonary Tuberculosis***

In 2017, seven individuals had extra-pulmonary TB only, one had pulmonary and bone sites of disease, and the remaining 45 individuals had pulmonary TB only. In the past 5 years, approximately 12% of all TB cases involved an extra-pulmonary site.

<b>Body Site of Non-Pulmonary TB – Alaska, 2013-2017</b>						
<b>Site</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>Total</b>
Bone/Joint	1	2	2		2	<b>7</b>
Eye and Ear				1	1	<b>2</b>
Gastrointestinal/Colon			1			<b>1</b>
Genitourinary	1		1	1		<b>3</b>
Lymphatic: cervical		2				<b>2</b>
Lymphatic: other		1				<b>1</b>
Meningeal			2		1	<b>3</b>
Pancreas				1		<b>1</b>
Pericardium			1			<b>1</b>
Peritoneal				2	1	<b>3</b>
Pleural	2	1	1	4	3	<b>11</b>
Other	1					<b>1</b>
<b>Total for year</b>	<b>5</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>8</b>	<b>36</b>

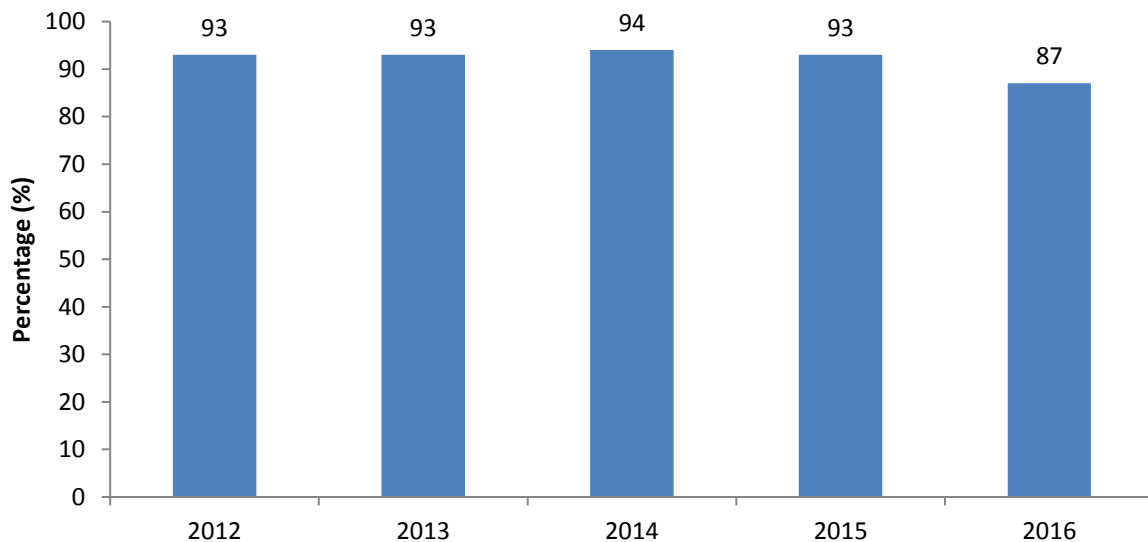


## Treatment Indicators

### ***Completion of Treatment***

For individuals with drug-susceptible TB, completion of therapy within 9 months is a priority, and most individuals complete therapy in under 9 months. The most common reasons to extend therapy include adverse reactions to medications, other medically indicated regimen adjustments, and lapses in directly observed therapy. On some occasions, patients are non-compliant or lost to follow-up, often due to underlying social issues. Serving non-compliant individuals with medical orders to comply with prescribed medications for TB treatment under state public health law is a complex process, and is generally met with limited success. Analysis of completion rates excludes those who died before completion of treatment.

### **Treatment Completed Within 12 Months – Alaska, 2012-2016\***



\*Data through 2016, as 2017 data will not be finalized until cases have had time to complete treatment.

### ***Contact Investigation***

Over the past 5 years, the measures for contact investigations have remained about the same at a level above national targets. Ensuring thorough and timely contact investigations remains a priority for the TB Program. Specific measures below are calculated for the identification and evaluation of high- and medium-priority contacts to the most infectious patients: smear positive, pulmonary cases. Including smear-negative culture-positive pulmonary cases, about 400 high- and medium- priority contacts were evaluated annually on average during the past five years.

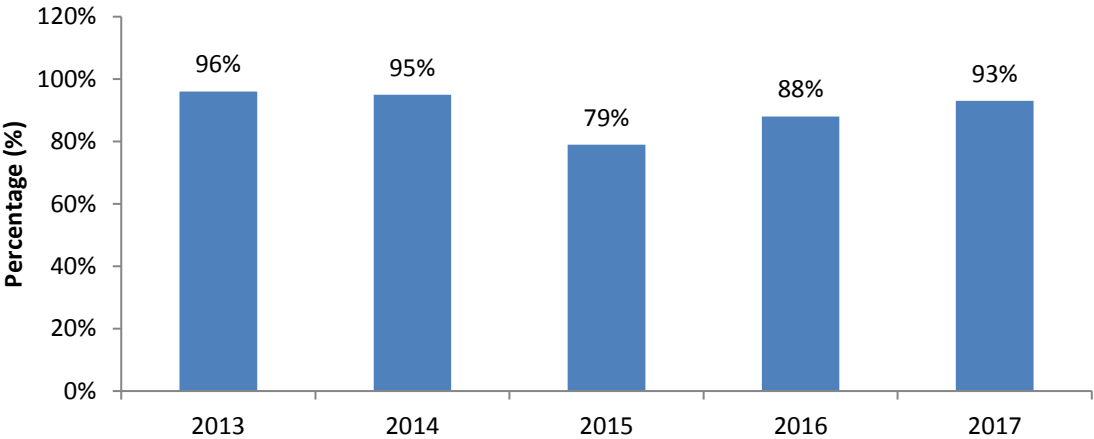
<b>Contact Investigation Measures by Year – Alaska, 2013-2017</b>					
<i>Measure</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>
Total Cases	71	62	68	57	53
Smear positive cases	25	23	28	18	21
Count of contacts to smear positive cases	221	181	180	120	175
Smear positive TB cases with contacts identified, n(%)	24 (96%)	22 (96%)	28 (100%)	18 (100%)	21 (95%)
Contacts evaluated for TB infection and disease, n(%)	198 (90%)	142 (79%)	167 (93%)	101 (84%)	157 (90%)
Infected contacts started on therapy, n(%)	39 (49%)	17 (28%)	24 (96%)	25 (100%)	34 (100%)
Contacts who completed therapy, n(%)	31 (80%)	11 (65%)	23 (96%)	23 (92%)	25 (74%)*

\*preliminary - some patients still under treatment

**Recommended Initial Therapy**

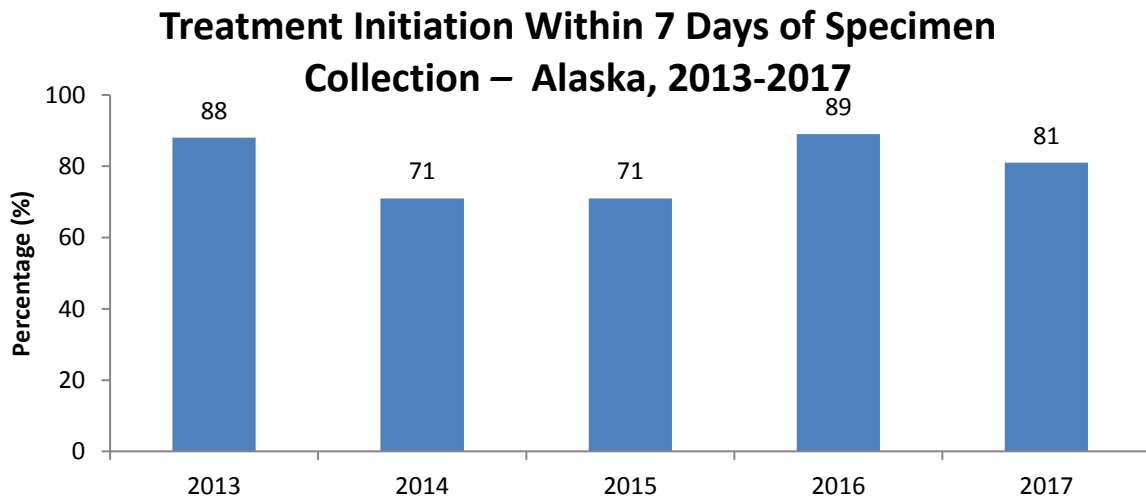
Clinicians and public health nurses in Alaska accept the standard four-drug regimen as the standard of care for treatment of TB disease. In cases where the TB patient is epidemiologically linked to another case with known susceptibilities to first line drugs, the patient may be started on a 3-drug regimen as ethambutol would not be necessary as a guard against resistant organisms. For four of the past five years, 79% or more of patients have started on a four-drug regimen. In 2015, eight patients (12% of cases) were from a village outbreak with known isoniazid (INH) resistance and were intentionally not started on INH for this reason.

**Patients Started on 4-Drug Regimen – Alaska, 2013-2017**



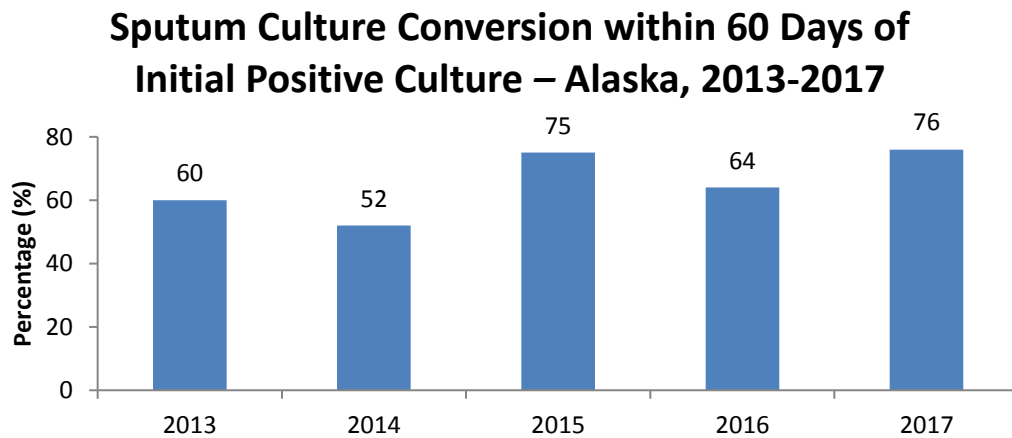
### ***Treatment Initiation***

With the vast geography and limited health care infrastructure that TB control in Alaska faces, getting individuals diagnosed with TB started on therapy quickly will always be a challenge. Specimens from rural Alaska may take 7 days or longer to arrive at the Alaska State Public Health Laboratory. Additionally, getting medications to remote villages can sometimes take days as well. In spite of these challenges, the majority of individuals diagnosed with TB in Alaska initiate treatment within 7 days.



### ***Sputum Culture Conversion***

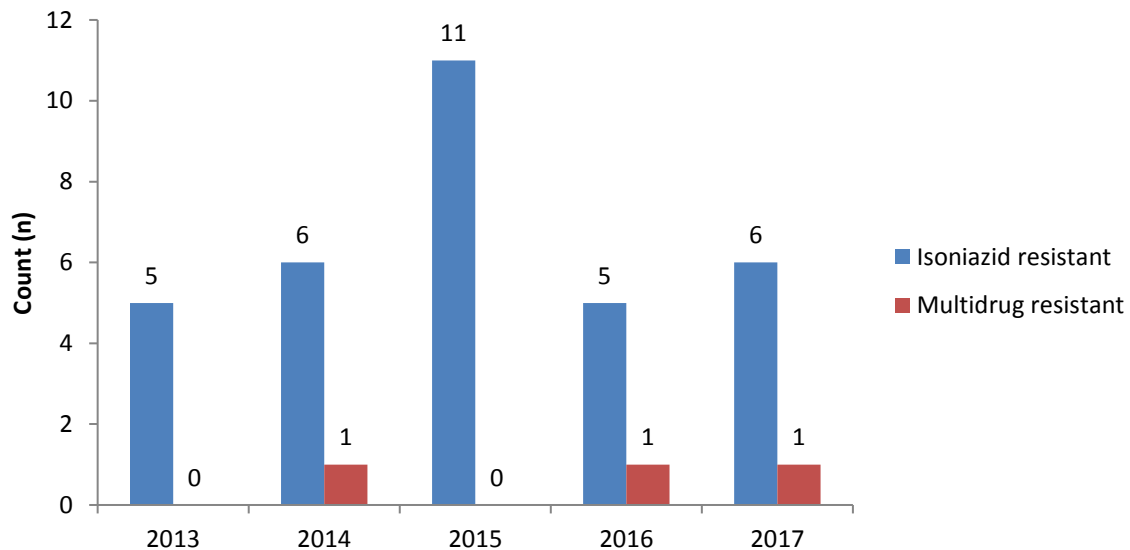
Ideally, individuals with TB disease who are culture positive will demonstrate conversion to negative cultures within 60 days of treatment initiation. Extensive disease requiring an extended treatment regimen, delays in obtaining sputa because of remote location or failure to request sputa, and poorly compliant patients continue to play significant roles in delays of documented culture conversion. Over the past 5 years, between 52-76% of culture positive cases documented culture conversion within 60 days.



### **Drug Resistance**

One multidrug resistant (MDR) case was diagnosed each in 2014, 2016, and 2017. The case from 2014 was in a foreign-born individual from Southeast Asia. Alaska had 11 isoniazid resistant cases of TB in 2015, and no MDR cases. One village in Alaska, which experienced an outbreak of TB in 2015, had a circulating isoniazid-resistant strain which was responsible for all TB from this village and thus accounted for the high number of isoniazid-resistant cases in 2015. During 2016, one case of MDR-TB was diagnosed in a foreign-born individual originally from an Asian country. Current guidance from the CDC requires conventional drug susceptibility test results to confirm a diagnosis of MDR TB, and does not allow molecular susceptibility results as the single diagnostic test. The State of Alaska is treating and counting this particular case as an MDR patient, but within CDC publications, this case will not be listed as MDR. Future case counting guidance from the CDC will continue to adapt to the progress and developments made in molecular testing, and may provide consideration for molecular susceptibility tests. The 2017 MDR case was also an individual originally born in an Asian country.

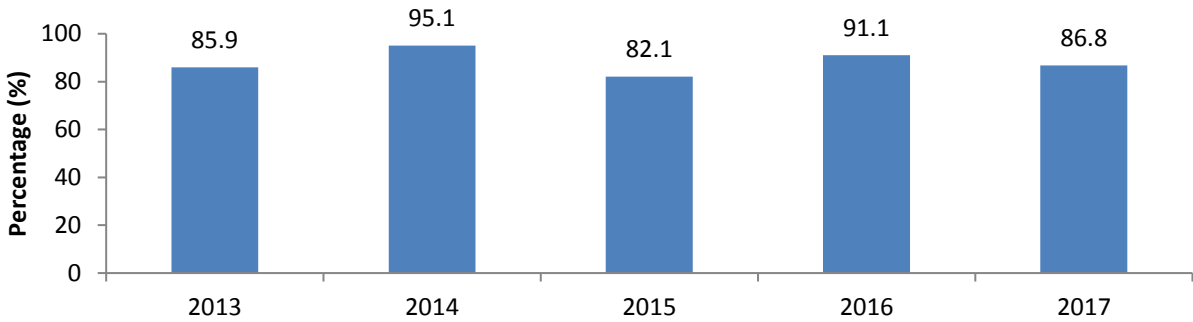
### **Isoniazid Resistant and Multidrug Resistant Tuberculosis Cases – Alaska, 2013-2017**



### **Known HIV Status**

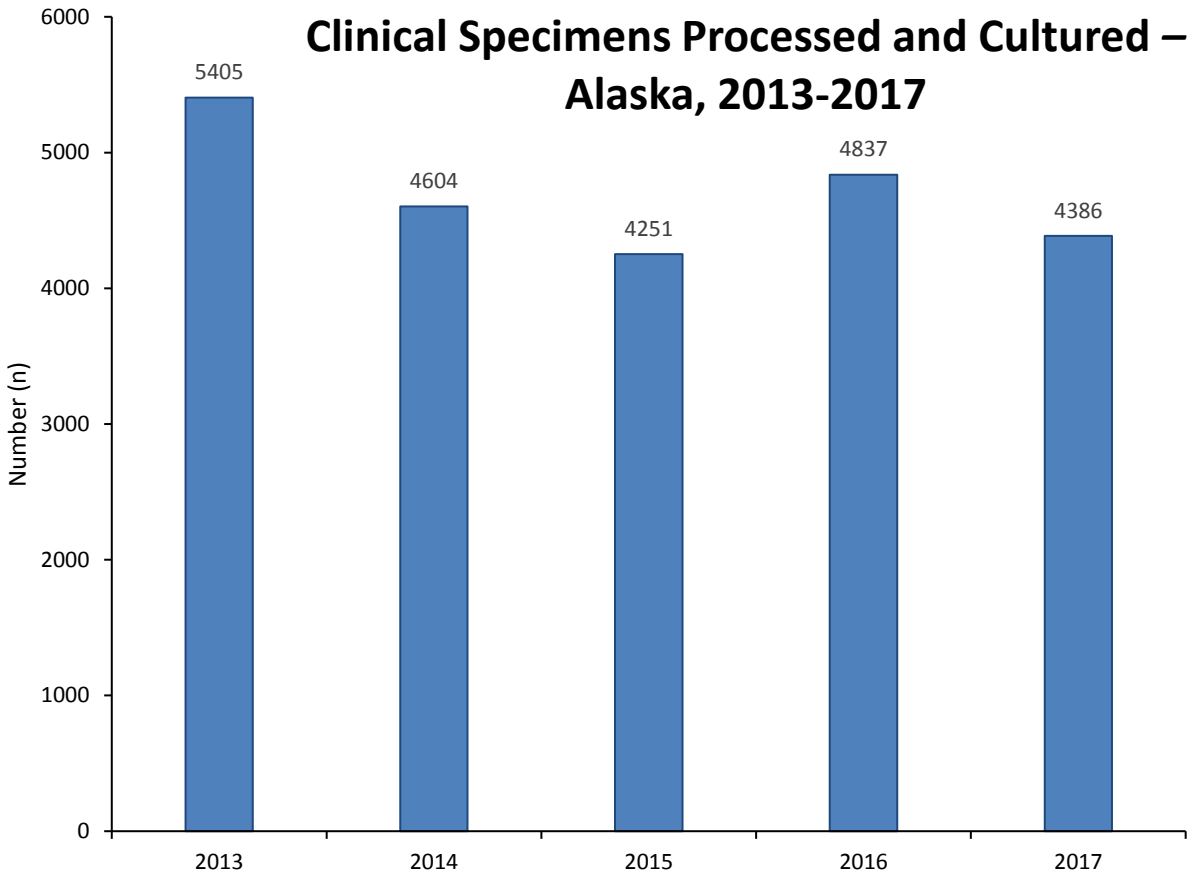
There has been overall acceptance of HIV testing by both providers and TB patients, and there are few barriers to HIV testing, even in the most remote parts of the state.

### Percentage of Cases with Known HIV Status – Alaska, 2013-2017



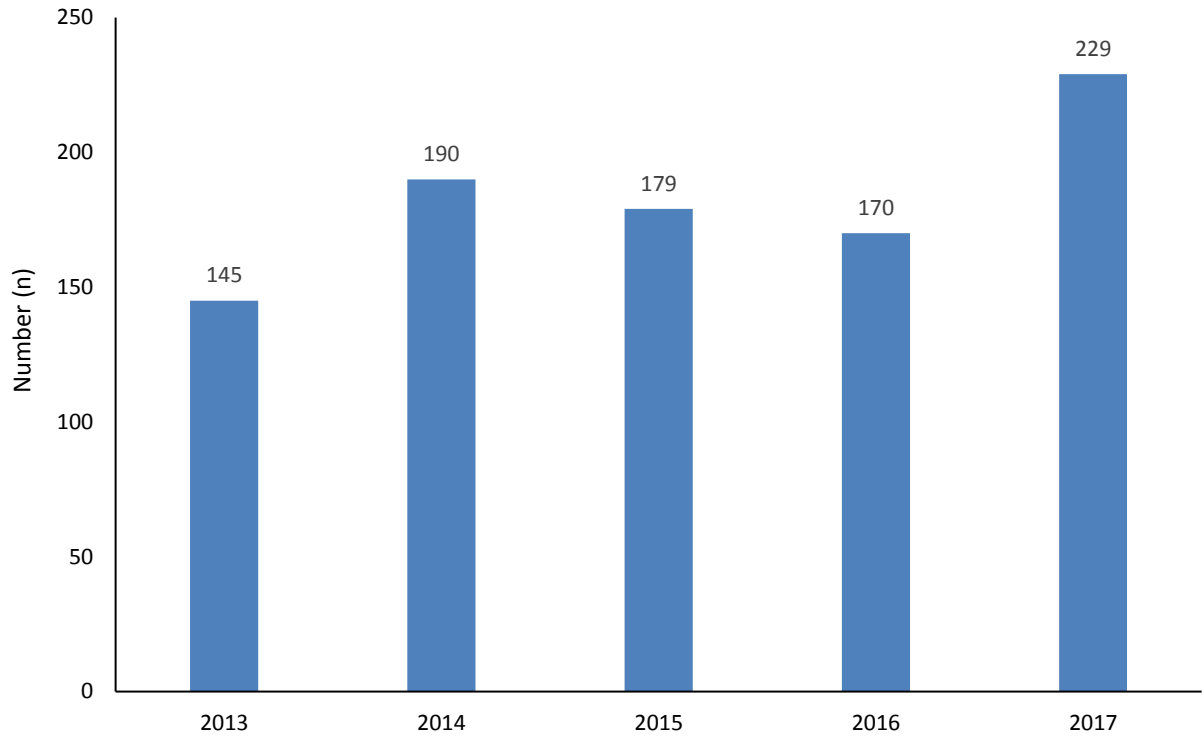
### Laboratory Testing

The Alaska State Public Health Laboratory (ASPHL) is capable of processing patient samples, identifying mycobacteria, performing first-line drug susceptibilities, and performing nucleic acid amplification (NAA) testing on specimens. All cultures are sent to CDC laboratories for genotyping.



ASPHL developed and validated in-house NAA testing in 2011, and this test has proved invaluable in rapidly identifying TB DNA in specimens. ASPHL processed 317 specimens in 2016 and 411 in 2017 for NAA testing. This equated to over 220 patients being evaluated via NAA testing in 2017.

### Number of Patients who Received NAA Testing – Alaska, 2013-2017



## **Resources and Links**

### ***State of Alaska***

TB Control Program Website

<http://dhss.alaska.gov/dph/Epi/id/Pages/tb.aspx>

TB Control Program Annual Report

[http://dhss.alaska.gov/dph/Epi/id/SiteAssets/Pages/TB/TB\\_Report\\_2017.pdf](http://dhss.alaska.gov/dph/Epi/id/SiteAssets/Pages/TB/TB_Report_2017.pdf)

Section of Epidemiology TB *Bulletins*

<http://epibulletins.dhss.alaska.gov/Bulletin/DisplayClassificationBulletins/39>

Alaska TB Control Manual

[http://dhss.alaska.gov/dph/Epi/id/SiteAssets/Pages/TB/TB\\_Manual.pdf](http://dhss.alaska.gov/dph/Epi/id/SiteAssets/Pages/TB/TB_Manual.pdf)

### ***Centers for Disease Control and Prevention***

Main TB Website

<https://www.cdc.gov/tb/>

National TB Indicators Project

<http://www.cdc.gov/tb/publications/factsheets/statistics/ntip.htm>

TB Glossary

<https://www.cdc.gov/tb/topic/basics/glossary.htm>