



SOUTH DAKOTA DEPARTMENT OF HEALTH 2024 Tuberculosis Program Annual Report

CONTENTS

EPIDEMIOLOGY OF TUBERCULOSIS IN THE UNITED STATES	
EPIDEMIOLOGY OF TUBERCULOSIS IN SOUTH DAKOTA	5
SUMMARY OF LATENT TB INFECTION IN SOUTH DAKOTA	11
SUMMARY OF TB IN FOREIGN-BORN PERSONS IN SOUTH DAKOTA	13
TB PROGRAM CASELOAD 2015 TO 2024	
TB PROGRAM CONTACT INFORMATION	

EPIDEMIOLGY OF TUBERCULOSIS IN THE UNITED STATES

Tuberculosis (TB) is an airborne infectious disease that remains a significant public health concern. National reporting of tuberculosis cases has occurred for all state jurisdictions since 1953 with incidence rates remaining high for decades. The incidence of TB steadily declined from 1993 to 2019, reaching 2.7 cases per 100,000 population by 2019. Incidence substantially declined in 2020 to 2.2 cases per 100,000, coinciding with the COVID-19 pandemic. During 2021-2023, TB incidence partially rebounded but remained substantially below pre-pandemic years. During 2024, TB incidence increased to 3.0 cases per 100,000 with increases reported in all demographic groups representing a total of 10,347 cases. Figure 1 illustrates the total number of reported TB cases in the United States since 1953.



In 2024, every U.S. state reported TB cases; however, California, Texas, New York, and Florida alone accounted for 49% of the total cases, as shown in Figure 2.





Higher rates of TB are observed in certain racial and ethnic groups representing an ongoing health disparity. Figure 3 describes the percentage of TB cases by race in the United States in 2024.

Another notable health disparity in reported TB cases is the country of birth, with persons born outside the United States showing significantly higher rates of TB. This trend has continued consistently over time with 77% of TB cases reported in the United States in 2024 having a history of being born in another country. Figure 4 highlights the upward trend of this disparity over the past 15 years.



EPIDEMIOLGY OF TUBERCULOSIS IN SOUTH DAKOTA

TB cases have been reported every year in South Dakota going back over a hundred years with the first official records dating back to 1913. TB case rates remained elevated during the first half of the 20th century but began to decline significantly in the 1950s. This drop was driven by the introduction of anti-tuberculosis medications, mandatory TB case reporting to the South Dakota Department of Health, comprehensive case management, and contact investigations for individuals exposed to the disease. Figure 5 illustrates a 100-year history of reported TB cases in South Dakota.



During the last 10 years, South Dakota reported an average of 14 TB cases per year. During 2024, there were 12 cases of TB reported, a decrease from 2023 when 14 cases were reported as shown in Figure 6.



The 2024, average age of a TB case in South Dakota was 40 years of age. This is a slight decrease in age compared to 2023 when the average age was 41 years of age. There were 2 children less than 10 years of age reported in 2024. Figure 7 illustrates the age and gender at diagnosis for TB cases reported in 2024.



Most TB cases have historically been diagnosed in adults in South Dakota with very few cases reported in children. Figure 8 shows the percentage of TB cases by age group for the 15-year time-period of 2010 to 2024 demonstrating this trend.



Native Americans have historically had the highest percentage of TB cases by race. This trend continued in 2024 with Native Americans contributing to 33% of the cases. In addition, TB cases of persons born outside the United States continue to rise. Table 1 and Figure 9 provide a breakdown of 2024 TB cases by race.

Race	Male	Female	Total	Percentage of Cases	
Native American	2	2	4	33%	
Non-Hispanic White	0	0	0	0%	
Black	2	1	3	25%	
Asian	1	2	3	25%	
Hispanic	2	0	2	17%	
TOTAL	7	5	12	100%	

Table 1. TUBERCULOSIS CASES REPORTED BY GENDER AND AGE SOUTH DAKOTA 2024



TB cases are reported by the patient's county of residence at the time of diagnosis. In 2024, most TB cases were reported in the southeast part of South Dakota as described in Figure 10.



The TB incidence rate, which measures the number of TB cases per 100,000 population, is the best measure for determining progress towards TB elimination in South Dakota. Native American TB case rates have decreased in recent years while Non-Hispanic White cases have consistently remained low. Black, Asian, and Hispanic cases primarily represent TB cases born outside the United States. Table 2 provides additional information on TB case rates from 2019 to 2024.

Race	2019	2020	2021	2022	2023	2024
US All races	2.7	2.2	2.4	2.5	2.9	3.0
SD All races	2.0	1.8	1.3	1.1	1.6	1.3
SD Native American	1.2	8.7	2.7	2.7	2.7	5.5
SD Non-Hispanic White	0.4	0.2	0.4	0.1	0.1	0
SD Black	54.4	14.7	4.9	24.4	9.8	14.7
SD Asian	52.6	30.1	27.3	6.8	27.3	20.5
SD Hispanic	0	0	5.0	2.5	12.6	5.0

Table 2. TUBERCULOSIS INCIDENCE RATES PER 100,000 BY RACE AND YEARSOUTH DAKOTA2019-2024

Figure 11 provides a comparison of the 2024 TB case rate per 100,000 population for the United States as well as a regional comparison of South Dakota and the bordering states of North Dakota, Minnesota, Iowa, Nebraska, Wyoming, and Montana.





Figure 12 describes the percentage of TB cases by site of disease. The non-pulmonary TB sites of disease include pleural, lymphatic, renal, spinal cord and meningeal.

Co-infection with HIV is an important risk factor that increases the risk of developing active TB, therefore all TB cases diagnosed in South Dakota are also offered HIV testing. Co-infected TB cases require more monitoring for toxicity because they are frequently treated with second-line TB medication. Figure 13 describes the number of TB cases who are also co-infected with HIV during the years of 2014 to 2024 documenting that HIV co-infected TB cases remain uncommon.



All culture positive TB isolates submitted to the South Dakota State Public Health Laboratory are sent for drug susceptibility testing to determine if the specimen is resistant to first-line TB medications including isoniazid (INH), rifampin (RIF), pyrazinamide (PZA) and ethambutol (EMB). Multi-drug-resistant TB is defined by CDC as having a resistance to at least rifampin and is a significant public health problem because of the difficulty in achieving a successful treatment outcome. A drug susceptibility result showing only PZA resistance is an indication the patient might be infected with *Mycobacterium bovis*. Figure 14 illustrates the drug resistance patterns for TB cases reported from 2010 to 2024 showing that South Dakota most often has single drug-resistant cases. South Dakota has only reported one case of multi-drug-resistant TB case (MDR) which occurred in 2015.



SUMMARY OF LATENT TB INFECTION IN SOUTH DAKOTA

While the treatment and management of confirmed TB cases remain the top priority for the TB Program, achieving tuberculosis elimination in South Dakota will ultimately require a strong focus on preventing future cases. This is accomplished by identifying and treating persons with latent TB infection. These individuals are infected with the TB bacteria (*Mycobacterium tuberculosis*) but have not yet developed an active form of the disease. By finding and treating persons with latent TB infection, future TB cases can be prevented.

As of August 2, 2011, the South Dakota Department of Health revised the reporting requirements for latent TB infection to only report persons with latent TB infection (LTBI) who have certain risk factors because these individuals are at the highest risk for development of active TB. This reporting change allows the TB Program to focus staff time, medication and resources towards persons who have the highest risk of developing active TB. LTBI patients reported to the Department of Health are eligible for nurse case management and treatment for LTBI to prevent them from developing tuberculosis disease. Table 3 provides a description of the reportable risk factors for patient with latent TB infection in South Dakota.

Table 3. REPORTABLE TB RISK FACTORS FOR PERSONS WITH LATENT TB INFECTION IN SOUTH DAKOTA

	REPORTABLE TB RISK FACTORS IN SOUTH DAKOTA
*	Foreign-born persons who entered the United States in the last 5 years
*	Persons evaluated for tumor necrosis factor-alpha therapy
*	Immunosuppressive therapies
*	Radiographic evidence of prior tuberculosis
*	Children less than 5 years of age
*	Close contacts to infectious tuberculosis cases
*	HIV infection
*	Diabetes
*	Renal dialysis
*	Silicosis
*	Organ transplant
*	Head and neck cancers
*	Leukemia
*	Hodgkin's disease

For more information about reporting patients with latent TB infection, please visit the TB Program website at: <u>https://doh.sd.gov/topics/disease-prevention-services/tuberculosis/</u>.



Figure 15 shows the number of persons reported to the TB Program with reportable TB risk factors over the last 10 years.

Figure 16 illustrates the number of patients with reportable latent TB infection that started and completed an appropriate course of treatment. Since some treatment options can last up to 9 months, some patients represented in 2024 are still in the process of completing treatment.



SUMMARY OF TB IN FOREIGN-BORN PERSONS IN SOUTH DAKOTA

TB cases in persons who were born outside the United States continues to represent an important risk group in the United States as well as in South Dakota. Figure 17 describes the percentage of foreign-born TB cases in South Dakota which has steadily increased in the last 15 years.



The majority of foreign-born persons who develop active TB do so within the first 5 years of arriving in the United States. Figure 16 illustrates that 57% of foreign-born TB cases in South Dakota since 2010 developed tuberculosis within the first 5 years of their arrival. Because of this increased risk, these individuals are reported to the TB Program and offered preventive treatment and case management to reduce the likelihood that they will develop TB later in their lifetime.





Foreign-born TB cases in South Dakota continue to arrive from all parts of the world; however, the majority are from African or Asian descent. Figure 19 describes the continent of birth for TB cases in South Dakota from 2010 to 2024.

South Dakota continues to see great diversity in the countries of birth for foreign-born TB cases reported. During the 15-year time-period between 2010 to 2024, South Dakota reported TB cases who were born in 30 different countries. These cases pose unique challenges, stemming from language and cultural barriers as well as differing beliefs about TB transmission, diagnosis, and treatment. Figure 20 describes the country of birth for foreign-born TB cases reported in South Dakota from 2010 to 2024. Countries of birth in the "other" category include Bangladesh, Brazil, Cambodia, Congo, Eritrea, Honduras, Kenya, Laos, Liberia, Mauritania, Myanmar, Nicaragua, Palau, Peru, Russia, Somalia, South Korea, South Sudan, Tanzania, Thailand, and Uganda.



In South Dakota, foreign-born TB cases are consistently reported among younger individuals compared to U.S.-born individuals (Figure 21). This adds challenges, as these cases often involve young children exposed at home and employed adults, requiring broader workplace contact investigations and increasing the number of contacts needing testing and treatment.



Another factor related to the increase of foreign-born TB cases in South Dakota is a geographic change in the county they are reported from. Historically, most TB cases were reported from counties that included and bordered American Indian reservations. More recently there has been a shift to more TB cases reported in counties in the Southeast part of South Dakota, particularly Minnehaha County where most foreign-born persons resettle which is illustrated in Figure 22.



- "Tribal Land Counties" include Bennett, Brule, Buffalo, Charles Mix, Corson, Dewey, Jackson, Lyman, Mellette, Moody, Pennington, Roberts, Oglala Lakota, Todd, Tripp, Walworth and Ziebach.
- "Southeast SD Counties" include Lincoln, Moody, Minnehaha, Turner, and Union.

TB PROGRAM CASELOAD 2015 TO 2024

The TB Program caseload consists of four categories of patients:

- TB cases (persons diagnosed with active TB)
- TB suspects (persons suspected of having active TB with a pending diagnosis)
- TB contacts (persons with exposure to an infectious TB case)
- TB infection (persons with latent TB infection [LTBI] reported with a positive TB skin test or positive IGRA [interferon gamma release assay] test)

Disease Intervention Specialist (DIS) staff conduct investigations for all patients reported from these four categories. TB cases are provided case management for the full duration of their treatment, usually between 6 and 12 months, however treatment can be longer if they are drug resistant. TB suspects are provided case management and treatment if appropriate, until a TB diagnosis has been confirmed or ruled out. TB contacts are followed to ensure appropriate testing, medical follow-up, and treatment if appropriate by medical providers. Persons with latent TB infection (LTBI) are provided case management and treatment which is between 3 and 9 months. Over the past 10 years, there have been 8 times as many TB suspects as confirmed TB cases. Although most of these suspects are ruled out, they still require time and resources from DIS. Figure 23 provides the cumulative number of TB Program caseload assignments to DIS by year. These assignments are also broken out by each of the four categories on page 19.













TB PROGRAM CONTACT INFORMATION

For more information about the TB Program or reporting cases, please contact the following staff or visit the South Dakota Department of Health, TB Program website at the following link: <u>https://doh.sd.gov/topics/disease-prevention-services/tuberculosis</u>

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For more information about Mycobacteriology testing or submitting TB specimens to the South Dakota Public Health Laboratory, please contact the following staff or visit the South Dakota Public Health Laboratory, Mycobacteriology Testing website at the following link: <u>https://doh.sd.gov/laboratory/medical-microbiology-testing/mycobacteriology-testing/</u>

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