

**Arizona  
Annual  
Tuberculosis  
Surveillance  
Report**

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**2015**



ARIZONA DEPARTMENT  
OF HEALTH SERVICES

PREPAREDNESS

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## I. Executive Summary

The Arizona Department of Health Services' (ADHS) Tuberculosis Control Program (the Department) conducts surveillance, data analysis, program evaluation, and consultation for health care providers, health care facilities, and Arizona's tribal and local health departments (LHDs). Close collaboration with the Arizona State Public Health Laboratory (ASPHL), ensures appropriate laboratory testing for specimens and monitoring drug-resistance patterns in the state.

Arizona is comprised of fifteen counties and twenty-one federally recognized tribes. The LHDs provide direct patient care for tuberculosis (TB) control activities. The LHDs coordinate with various medical providers and correctional health staff members within their jurisdiction to provide TB control and prevention services.

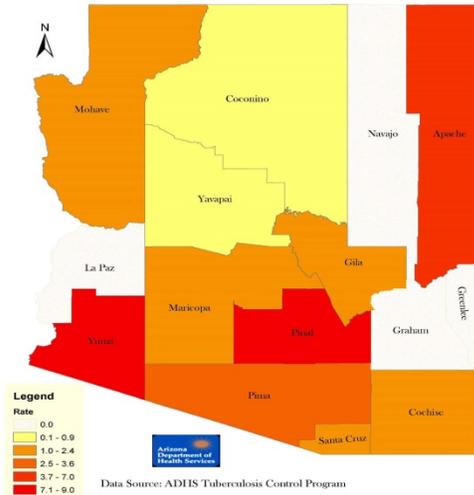
The ASPHL provides comprehensive testing services including acid-fast bacillus (AFB) smear, culture, nucleic acid amplification, identification, and drug susceptibility testing for clinical mycobacterial samples statewide. The laboratory serves as a reference laboratory for all isolates suspected to be positive for TB and performs drug susceptibility testing for all first-time positive isolates. The laboratory also sends isolates to the Centers for Disease Control and Prevention (CDC) contract lab in Michigan for genotyping of all positive culture isolates.

This report provides information about Arizona's reported TB cases in 2015 and completion of treatment data for 2013. The latest year for completion of treatment information available is 2013 due to length of time needed to successfully complete TB treatment.

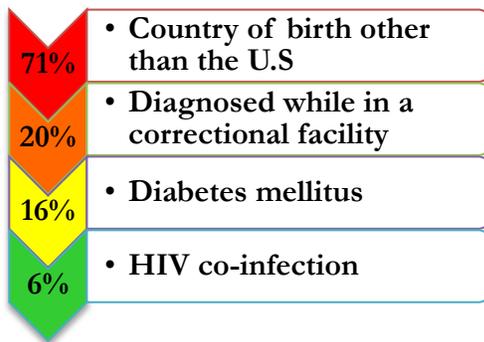
## II. Report Highlights

- ❖ **Cases of active TB disease reported in Arizona totaled 198 in 2015.** The 2015 TB case rate in Arizona was 2.9 per 100,000 population compared to 3.0 per 100,000 nationally.

Figure 1. TB Cases and Case Rates, Arizona 2015



- ❖ **Risk factors** identified for all Arizona TB cases include:



- ❖ **Drug susceptibility** testing was reported for 100% (147/147) of the culture positive TB cases.
  - 11.6% (17/147) reported isoniazid (INH) resistance.
  - 2 cases of multi-drug resistance (MDR) were reported.

- ❖ **Completion of treatment** has been a targeted focus of the Department. The latest year for which completion of treatment data is available is 2013. The completion of treatment for both correctional and non-correctional TB cases remained steady.

### Non-Correctional TB Cases



### Correctional TB Cases

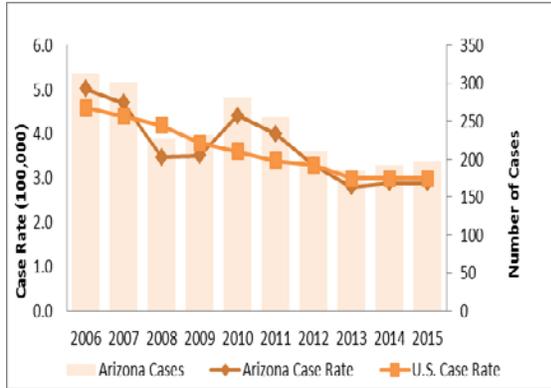


- ❖ **Continuity of care** for active TB cases who return to their home country is achieved with international referrals via [CureTB](#) and TBNet, part of [MCN](#) (Migrant Clinicians Network)

- These agencies provide assistance to TB cases for medical case management and continuity of care. The Department coordinates Meet and Greets through the Ports of Entry of Nogales and San Luis for cases returning to Mexico. These Meet and Greets are coordinated with the Office of Border Health, LHDs, ADHS TB Control, correctional facilities and the health department in Mexico. In 2015, fifteen meet and greets were arranged.

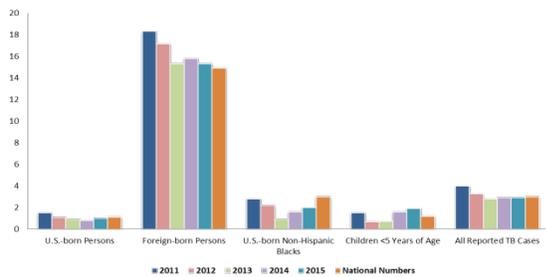
### III. Case Rates

**TB Cases and Case Rates in Arizona and Nationally, 2006-2015**



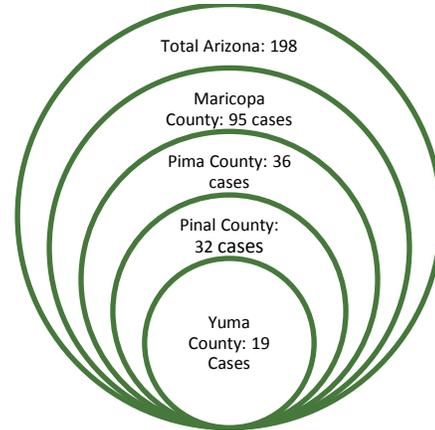
In 2015, Arizona’s LHDs reported 198 cases of active TB with a case rate of 2.9 per 100,000. This represents a 2.6% increase in the number of cases and level case rate compared to 2014. In the U.S., a total of 9,563 TB cases were reported in 2015 with a case rate of 3.0 per 100,000. This was the first national increase in TB incidence since 1992.

**TB Case Rates by Selected Population Groups, Arizona, 2015**



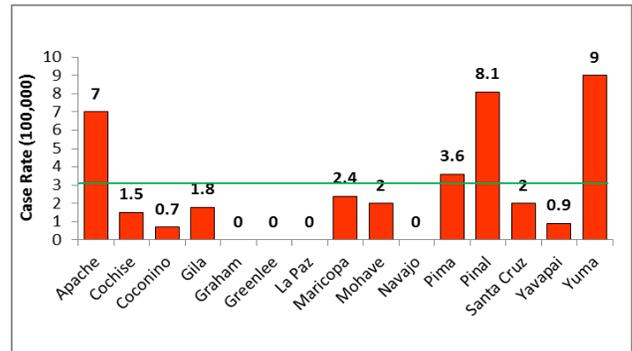
In 2015, the TB case rate among foreign-born individuals was 15.3 per 100,000. The case rate among U.S.–born persons was 1.1 per 100,000. Among U.S.–born Non-Hispanic blacks, the rate was 2.0 per 100,000. TB case rates among children less than five years of age was 1.9 per 100,000. All case rates increased except foreign-born TB cases.

**Selected Number of TB Cases, Arizona 2015**



Four of Arizona’s fifteen counties Maricopa, Pinal, Pima and Yuma comprised 92% (182/198) of active TB cases reported. A full list of TB cases and case rates can be found on the [Arizona Tuberculosis Program’s Webpage](#).

**TB Case Rates by County, Arizona, 2015**



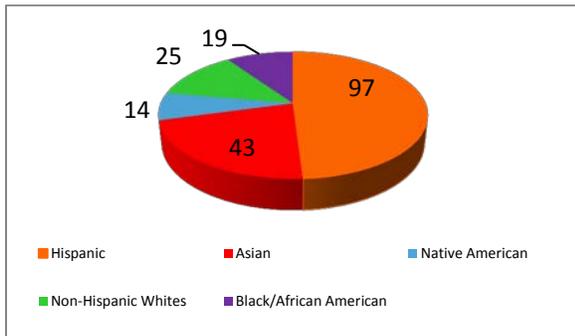
The statewide TB case rate, represented by the bright green line, was exceeded in Apache, Pinal, Pima and Yuma counties. Maricopa County, Arizona’s most populous county reports around 50% of the states TB cases annually. Their case rate had a slight increase from 2.3 in 2014 to 2.4 in 2015.

In 2015, there were no cases reported in Graham, Greenlee, La Paz or Navajo

counties. Also to note, all but one of the TB cases reported in Pinal County was diagnosed within a correctional facility. There are twenty-one correctional facilities located within Pinal County, including U.S. Immigrations and Customs Enforcement Service Processing Centers (ICE-SPC), federal, state, local and privately managed facilities.

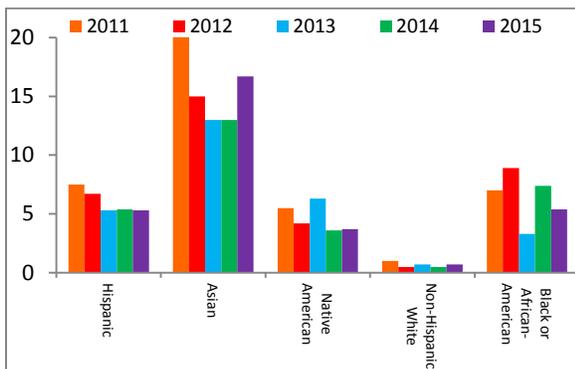
#### IV. Cases and Case Rates by Race and Ethnicity

Number of TB Cases by Race and Ethnicity, Arizona, 2015



Hispanic ethnicity of any race accounts for almost half of all reported TB cases annually. The second largest number of TB cases comes from people of Asian descent.

Case Rates by Race and Ethnicity, Arizona, 2011-2015



The highest rate among racial/ethnic groups was reported for TB patients of Asian descent, followed by African-Americans then Hispanics. This follows previous year's trends.

#### V. Cases by Gender

TB Cases by Gender, Arizona, 2015



In 2015, males accounted for 70% of active TB cases compared to 30% for females. This is consistent with nationwide and previous years' surveillance data.

#### VI. Cases and Case Rates by Age Groups

Number of TB Cases and Case Rates by Age Groups, Arizona 2015

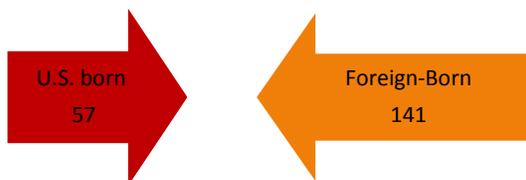
65+	47 cases	65+	4.6
45-64	57 cases	45-64	3.5
25-44	56 cases	25-44	3.3
15-24	24 cases	15-24	2.6
5-14	6 cases	5-14	0.7
0-4	8 cases	0-4	1.8

In 2015, the largest number of cases was in the age group 45-64, followed by 25-44 then

those aged 65+. The highest case rates fall in the 65 or older case rate followed by 45-64 then 25-44.

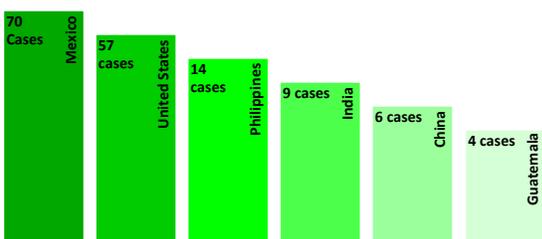
## VII. Case Rates by Nativity and Country of Origin

TB Cases by Nativity, Arizona 2015



In 2015, 71.2% (141/198) of the TB cases were identified as foreign-born cases. U.S.-born TB cases accounted for 28.8% (57/198) of total reported cases. For TB surveillance purposes, a U.S.-born person is defined as someone born in the United States or its associated jurisdictions. It also includes someone born in a foreign country, but with at least one U.S.-citizen parent.

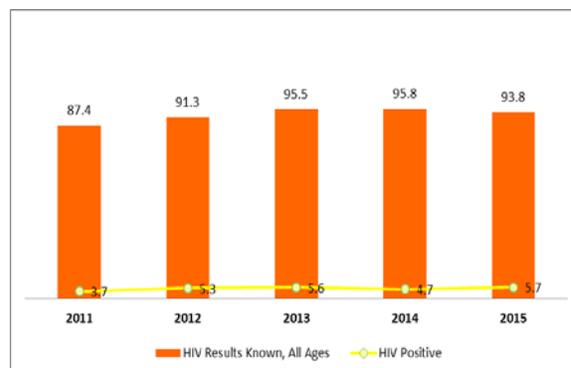
Highest Burden Countries for TB Cases in Arizona, 2015



81% (160/198) of the cases came from the above countries. The remaining 38 cases came from several countries in Africa, Southeast Asia, the Middle East, and South America, but are represented by 3 cases or less.

## VIII. HIV Co-infection and HIV Testing Status

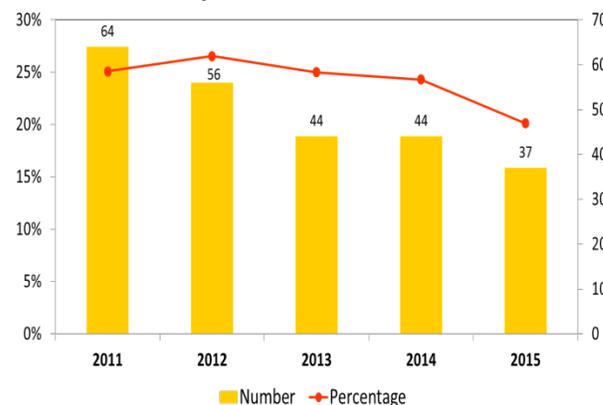
Percentage of TB Cases with HIV Co-infection and % HIV Results Known, Arizona, 2011 -2015



In 2015, HIV co-infection reached a 5-year high with 5.7% of TB cases being co-infected. HIV is the strongest known risk factor for TB disease. The Department recommends that medical providers provide HIV counseling and testing for all TB patients. Co-infection with HIV and TB in individuals is a major concern because immunosuppression caused by HIV can negatively impact the body's ability to fight infection. Individuals with co-infection have high mortality rates and can develop drug resistance. This potentially leads to longer and more complex treatment regimens.

## IX. TB Cases Diagnosed in Correctional Facilities

TB Cases Diagnosed in a Correctional Facility, Arizona, 2011-2015



Arizona has consistently ranked as one of the highest states in the nation for percentage of TB cases diagnosed while incarcerated. In 2015, among reported cases over the age of fourteen, 20% resided in a correctional facility at time of diagnosis. Routine evaluation of all inmates for TB during the intake process allows for diagnosis of both latent TB infection (LTBI) and active TB in this population. The Department works together with LHDs to provide correctional health staff with TB training and education to ensure facilities abide by inmate screening requirements.

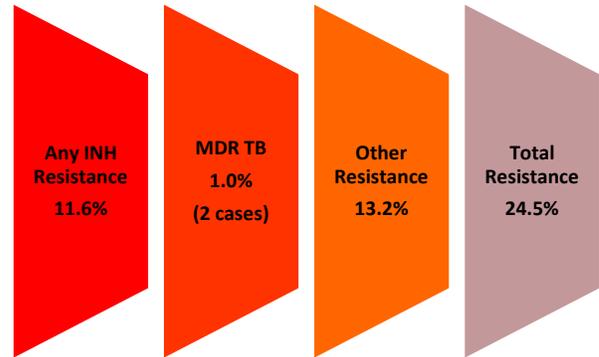
## X. TB Risk Factors

**TB Cases by Selected Risk Factors, Arizona, 2015**



## XI. TB Drug Resistance Patterns

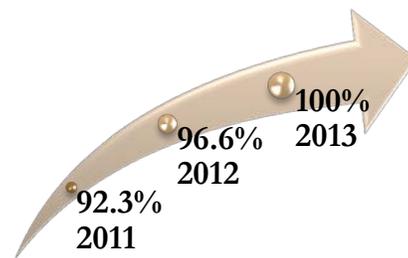
**TB Cases Reported with Drug Sensitivity and Drug Resistance, Arizona, 2015**



In 2015, 74.2% (147/198) of cases had culture positive results. Of these cases, 100% reported drug sensitivity results. Drug resistance in Arizona has been slowly increasing in Arizona. 2015 had the highest percentage of total resistance. Almost 1 in 4 TB cases had some sort of drug resistance.

## XII. Directly Observed Therapy

**Directly Observed Therapy, Arizona, 2011-2013**

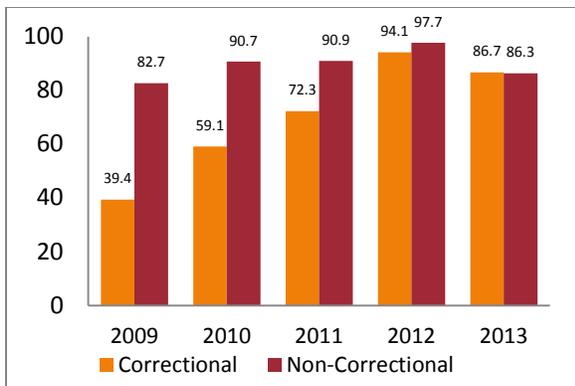


Directly observed therapy (DOT) is the standard of care for administering TB medications to active cases. In DOT, health care workers observe the individual take his/her medications to ensure compliance with the treatment regimen. All LHDs are encouraged to provide DOT for community cases. DOT can be difficult for some of

Arizona's LHDs as most of the rural counties are large and require long distance travel to provide this service. Video DOT (vDOT) is being utilized by more and more LHDs in Arizona. The effectiveness of LHD efforts is demonstrated by the results for 2013, where no cases only self-administered medications.

### XIII. Completion of Treatment

**Completion of Treatment for Correctional vs. Non-Correctional TB Cases, Arizona, 2009-2013**



Completion of treatment for TB cases is a continuing focus for the Department. The overall goals for treatment of TB are to cure the individual patient and limit the transmission of TB to other people. Thus, successful treatment of each individual TB patient benefits the individual and the community.

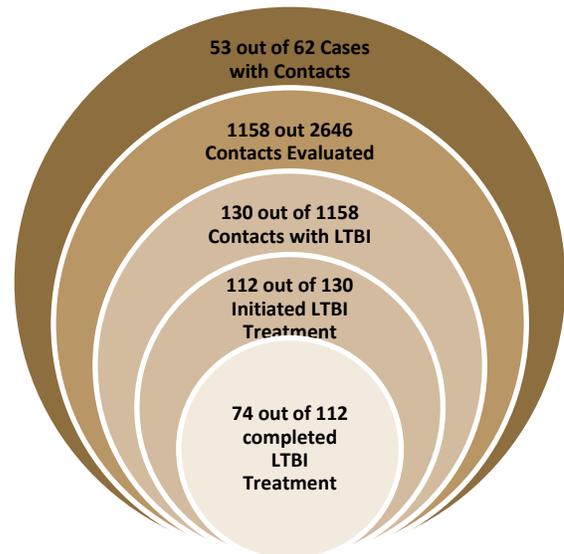
The Department conducted cohort reviews and collaborated with LHDs which improved completion of treatment in Arizona for non-correctional cases. Also, the Department utilizes international referrals to provide completion of treatment information for TB cases that have left the U.S. and returned to their country of origin.

Residence in a correctional facility impacts completion of treatment rates negatively.

The denominator does not include cases which moved out of the U.S. during treatment. The Department has been focusing on improving treatment completion through close collaboration with the Pinal County TB Program. Most of Arizona's correctional cases reside in Pinal County. Pinal County has made big strides in improving collaboration with the correctional facilities in 2015.

### XIV. Contact Investigation Data

**Sputum-Smear Positive TB Contact Investigations, Arizona, 2013**

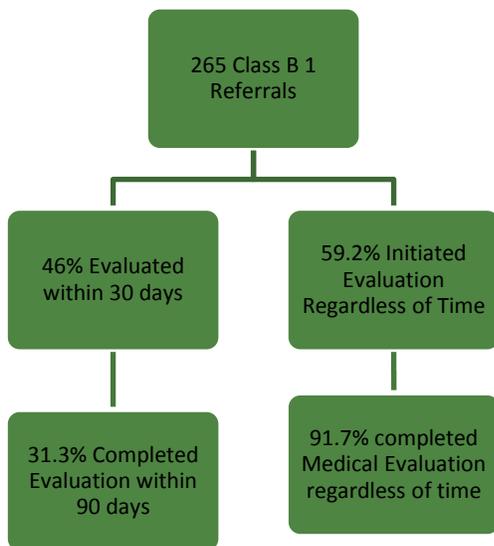


Contact investigations are an essential component of TB control. Contact investigations identify, examine, and evaluate all persons who are at risk of TB infection due to recent exposure to a diagnosed infectious case; sputum-smear positive cases are the priority for contact investigations. This process facilitates new case finding which in turn allows for early detection and treatment of new infections. In some cases, it may even prevent disease.

The LHDs are responsible for conducting contact investigations or coordinating with responsible parties outside local public health to ensure contact investigations are completed. The last year in which contact information data is available is 2013 due to the length of time to complete treatment

## XV. International Referrals and Class Bs

### Evaluation of Class B Referrals, Arizona, 2015



### Treatment of Class B Referrals, Arizona, 2013



Immigrants and refugees traveling to the U.S. are evaluated for TB as part of the admission process, and are assigned a classification according to the status of their disease. Class A individuals have TB disease and have been granted a waiver. Class B1 includes individuals with non-infectious pulmonary TB disease with negative acid-fast bacilli sputum smears and cultures. Class B1 also includes extra pulmonary TB cases. Class B2 individuals have positive skin tests but have negative evaluations for active TB disease. Class B3 individuals are recent contacts of a known TB case. Class B1 individuals are the priority for the Department.

The CDC Division of Global Migration and Quarantine notifies the Department of all Class B individuals entering the state. The Department forwards these referrals to the LHDs where the individual will reside. The LHDs provide medical evaluation and treatment. The transitory nature of the immigrant and refugee population makes it difficult to initiate or complete evaluations and treatment for these individuals. The Department is developing strategies to overcome these barriers.

### International Referrals and Case Management

The Department coordinates with international referral agencies to ensure continuity of care for individuals with TB or suspected of having TB who return to their home country. CureTB facilitates the referral process with public health officials in Mexico and is expanding to other countries. Migrant Clinicians Network (TBNNet) facilitates the referral process for all countries including Mexico. Close collaboration with these entities has positively impacted completion of treatment. Also, in 2015, both agencies were given access and trained to use Arizona's electronic communicable disease surveillance system, Medical Electronic Disease Surveillance Intelligence System (MEDSIS).

This has further improved communication and collaboration.

### **Border Health Activities**

To ensure continuity of care for individuals being treated for TB who are repatriated to Mexico through Nogales and San Luis, Arizona, the Department coordinates “Meet and Greets.” The Meet and Greet involves transferring these individuals from Arizona and federal law enforcement authorities to Mexican law enforcement and public health authorities.

The Meet and Greet protocol developed in 2007 has resulted in better coordination of inmates returning to Mexico. The protocol includes working closely with Pinal County Public Health, ADHS Office of Border Health, correctional facilities, LHDs, Sonoran partners, CureTB, and ICE authorities. In 2015, the Department arranged fifteen Meet and Greets through the port of Nogales and one through the port of San Luis.

The Department is collaborating with Sonoran public health officials to improve communication and completion of treatment for binational TB cases. MEDSIS is available for use in Sonora, Mexico as well.

## **XVI. Conclusion**

The Department continues to partner with LHDs, federal agencies, correctional facilities, and the international community to prevent and control TB in Arizona. These partnerships have improved treatment completion, data quality, and communication between different jurisdictions. Continued close collaborations with LHDs and outside partners will prevent further spread and curb the emergence of drug-resistant TB.