

**STATE OF NEVADA
DEPARTMENT OF HEALTH AND HUMAN SERVICES - HEALTH DIVISION**

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**TUBERCULOSIS PROGRAM
ANNUAL PROGRESS REPORT FOR 2010**

MARCH 31, 2011



The Nevada TB Program Overview:

The mission of the Nevada State Health Division's (NSHD) Tuberculosis Program is to prevent, control, track, and ultimately eliminate tuberculosis (TB) in the citizens of Nevada. Statewide the TB Program comprises of: the NSHD, three local health authorities (Clark County, Washoe County and Carson City), the state public health laboratory, the NSHD Public Health and Clinic Services Program, the Department of Corrections, and all agencies, organizations and health professionals interested in advancing Nevada's progress toward improving our TB prevention and control efforts.

Nevada's TB Programs are staffed as follows:

Agency	Name	Title
Nevada State Health Division (NSHD)	Susanne Paulson	State TB Controller
Carson City Health and Human Services (CCHHS)	Marena Works Dustin Boothe	Director Case Manager
The NSHD's Public Health and Clinic Services Program (PHCS)	Wanda Nix 14 Community Health Nurses	TB Program Coordinator Case Managers
Southern Nevada Health District (SNHD)	Patricia O' Rourke-Langston Kara Bennis Laurie Hickstein Christina Madison Elsa Casco Penny Orr Judy Slaney Diane Valencia Maria Figgs Sheila Gutierrez Sage Nagai Hailey Blake Kim Ogren Monique Johnson	Community Health Nurse Manager TB Clinic Manager TB Program Coordinator Pharmacist Case Manager Case Manager Case Manager Case Manager Case Manager Case Manager Disease Investigator Intervention Specialist Disease Investigator Intervention Specialist Sr. Administrative Assistant Administrative Assistant
Washoe County Health District (WCHD)	Candy Hunter Diane Freedman Judy Medved-Gonzalez Joyce Minter Sally Fry Sandra Maestas	Community Health Nurse Manager TB Program Coordinator Case Manager Case Manager Case Manager Administrative Assistant
Nevada State Public Health Laboratory (NSPHL)	Stephanie Van Hooser Robert D. Hoffman Christine Staskowski	Administrative Director Microbiology Supervisor Microbiologist

Nevada Demographics:

By geographical size, Nevada is the 7th largest state in the nation with a large majority of the state being vast, sparsely populated areas. The state is composed of 17 counties that cover 110,540 total square miles. Of the 17 counties in Nevada, three are considered urban (Clark, Washoe, and Carson City), one is considered rural (Douglas), and the remaining 13 are considered frontier. Areas with a "frontier" designation are defined as having 7 persons or less per square mile. Nevada's frontier and rural counties account for only 11% percent of the state population but 87% of the state land mass. Most of Nevada's rural and frontier communities are located a considerable distance from' major urban area health centers, illustrating the challenges

of serving these residents. Nye County, located in the southern region of the state, is the third largest area county in the continental United States and has only 2.3 persons per square mile.

Based on population, Nevada has been the fastest growing state in the nation for more than 20 years, excluding 2006. Lyon County, a rural county neighboring Carson City, was the fastest growing county per capita in the nation for five years (2002 to 2006), falling to the fourth fastest growing in 2007. From 2000 to 2005, Lyon County increased 41.6%, and the rural and frontier counties in Nevada combined grew 16.5%. By 2025, Nevada is expected to rank 15th largest in state population based on net internal migration.

Nevada's racial/ethnic composition based on the 2010 Census data is: 66.2 % White, 8.1 % Black or African American, 7.2 % Asian, 1.2 % American Indian and Alaska Native, 0.6% Native Hawaiian & Other Pacific Islander, 12.6 % Other and 4.7% Mixed Race. Nevada's Hispanic or Latino population makes up 26.5% of the population. From 2000-2009 census estimations, Nevada was identified as one of nine states in the nation that the United States Census Bureau anticipates will become a minority-majority state in the upcoming decades. As minority populations (specifically foreign-born) tend to have disproportionately higher rates of TB (due to high TB incidence rates in the country of origin) and are more likely to be uninsured or underinsured, Nevada will need to prepare for the increased demand on its existing infrastructure to provide appropriate medical services to control the spread of TB.

Nevada Epidemiological Profile:

In line with the Center for Disease Control and Prevention's (CDC) goal to promote and protect the nation's health ([Healthy People 2020](#)), Nevada's TB Program, in accordance with Nevada Revised Statute, supports TB prevention and control activities across the State. The 2010 TB surveillance statistics presented in this report are collected in the National Electronic Disease Surveillance System (NEDSS) and disseminated in a [TB Fast Facts](#) (or see page 31 of this report).

Trends

Nevada reported 114 new active cases of TB in 2010, an 8% increase from the 106 cases reported in 2009 (case rates of 4.3 and 4.0 per 100,000 population respectively). Thirteen additional cases received treatment for TB disease in Nevada (not included in the 114 case count) these patients relocated to Nevada and were counted by another State (5 from CA, 2 from CO, 2 from AZ, and 1 each from GA, MN, FL, and IL).

Risk Factors

The Nevada TB Program is facing many significant challenges in addressing its mission of reducing the incidence of TB through the aggressive management of newly diagnosed cases and extensive preventative treatment of those infected with TB. The most notable and unpredictable challenge is the complexity of the TB cases in Nevada.

Of the 114 cases reported in 2010:

- 10 (9%) were co-morbid with diabetes
- 13 (11%) were homeless
- 11 (10%) abused alcohol
- 77 (68%) were foreign born; of these 29 (25%) first entered the U.S. with either a visa, or as an immigrant, asylee, or refugee
- 7 (6%) were co-infected with HIV
- 1 (1%) Nevadan died from TB in 2010
- 5 (4%) admitted to drug abuse
- 21 (18%) were pediatric cases (<19yrs of age); of those 16 (14%) were less than 5 yrs of age

Drug Resistance

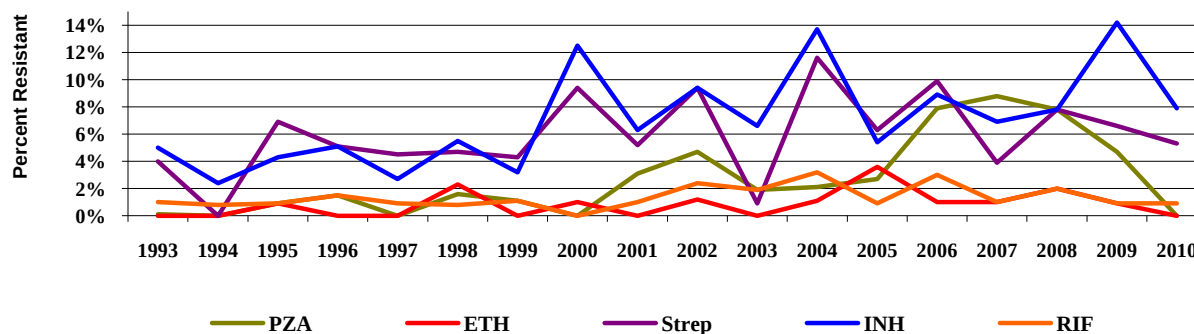
From 2001 through 2010, Nevada has had 19 Multi-Drug Resistant TB (MDR-TB) cases reported with the most recently diagnosed case in March 2010. In addition, since 1993, Nevada has treated two Extensively Drug Resistant TB (XDR-TB) cases. Three MDR-TB cases are currently receiving treatment in Clark County. All drug resistant cases of TB have complex treatment regimens with an extended duration of therapy which costs TB programs anywhere from \$20,000 to \$200,000 per case per year.

In 2010, 456 persons with a Class B TB notification arrived in Nevada, of those, 3 (3%) were diagnosed with active TB disease. The foreign-born population is at risk for developing active TB and also at risk for having resistant forms of TB due to the increased prevalence of MDR-TB and XDR-TB in certain countries. To cure these cases more extensive treatment regimens (longer therapy duration with complex medication regimens) are required. Nevada's TB program has consistently had multiple MDR-TB cases receiving treatment since 2001 (2-5 annually) which elevates the public health burden.

The prevention and control of TB in Nevada is dependent upon (in part) meeting the challenges of controlling TB in the increasing number of foreign-born persons who come to the United States/Nevada infected with *M. tuberculosis* or who develop TB disease soon after arriving. The prevention and control of TB has been compounded by MDR-TB and XDR-TB strains. The complex and costly antibiotic regimen and the increased treatment time (average of 2 years) needed to successfully treat these resistant strains can potentially drain the TB programs' treatment funds and threaten TB prevention and control efforts.

Although single drug resistant (SDR) TB organisms are not the first thing one thinks of when drug resistance is discussed, if not properly treated these organisms are our future MDR-TB and XDR-TB organisms. SDR-TB organisms often require modified treatment regimens as well as modified preventative therapy regimens for infected contacts. The chart below shows the history of SDR-TB in Nevada cases from 1993 to present (2010 data is preliminary). The number of organisms resistant to the standard first-line TB medications is increasing; TB is becoming more drug resistant.

Single Drug Resistant TB - Nevada 1993-2010



Surveillance

Three electronic data surveillance systems have been implemented by the NSHD TB-Program: 1) National Electronic Disease Surveillance System TB Program Area Module (NEDSS TB-PAM) to capture Report of Verified Case of Tuberculosis (RVCT) data, 2) Secured Data Network – Electronic Data Notification (SDN-EDN) for TB-Classified immigrant notifications, and 3) TB Genotype Information Management System (TB-GIMS) to identify clusters and/or

outbreaks. The Nevada TB Programs have successfully accomplished the goal of providing/utilizing direct access of these systems at the Local Health Authority (LHA) level. The LHA's have been directly utilizing these data systems for one full year. As of January 2010, the Washoe County TB Clinic transitioned to an electronic medical records system and has successfully become a paperless clinic.

The NSHD TB Program is continuing to host monthly statewide TB conference calls. The participants discuss topics of interest, propose potential changes in protocol, review specifics regarding current cases, as well as plan and implement improvements to standardize TB practices statewide.

Ongoing Projects:

- Produce an epidemiology report specifically addressing areas of concern in order to identify and implement programmatic changes to improve outcomes (e.g., pediatrics, and persons spending time in correctional facilities).
- Establish statewide reporting format for pharmacies to report the dispensing of two or more TB medications.
- Producing targeted educational presentations (i.e., law enforcement, surveyors, practitioners, etc).
- Writing and reviewing Policies and Procedures.
- State laws and regulations review and revision.
- Institute quarterly statewide cohort review

Training and Outreach

In July 2010, The NSHD developed and distributed a technical bulletin [Screening Pediatric Patients at Risk for Tuberculosis Disease](#) to raise awareness regarding Nevada's alarming increase in the frequency of TB cases in Nevada's youth and their common risk factors. The technical bulletin recommends TB testing for patients identified as having the risk factors and associations. A full pediatric epidemiology report is being assembled to more completely analyze this increase and implement appropriate program changes to prevent and control the spread of TB in this most vulnerable population. To increase TB awareness at the community level Nevada is conducting a statewide coloring contest for World TB Day, 2011.

In September 2010, Susanne Paulson partnered with Laurie Hickstein in Las Vegas and Diane Freedman in Reno for the second annual presentation of TB 101 to NSHD licensed state facility surveyors and residential group home staff. The two conferences stressed the importance of TB screening for employees and residents. The conferences were well attended and well received. They provide a free educational platform for surveyors, facilities and program staff to share methods for becoming and maintaining compliance with Nevada laws and regulations.

Forty seven professionals attended the two day TB conference on December 9-10, 2010, titled **Partnerships for TB Control: The Nevada Experience**. This conference was hosted by the NSHD in conjunction with The Francis J. Curry Regional Training and Medical Consultation Center. Topics covered included: TB case management, cohort review, managing incarcerated individuals, working with the lab, and utilizing IGRAs (TB blood test). The participants had opportunity to meet other TB stakeholders from all across Nevada and share experiences, ideas and concerns. One outcome from this conference was the development of a TB/Pharmacy/Lab workgroup focused on creating protocols for TB drug level blood testing and a molecular testing protocol. The need to create a corrections resource directory that will span all levels of corrections is another result from the conference.

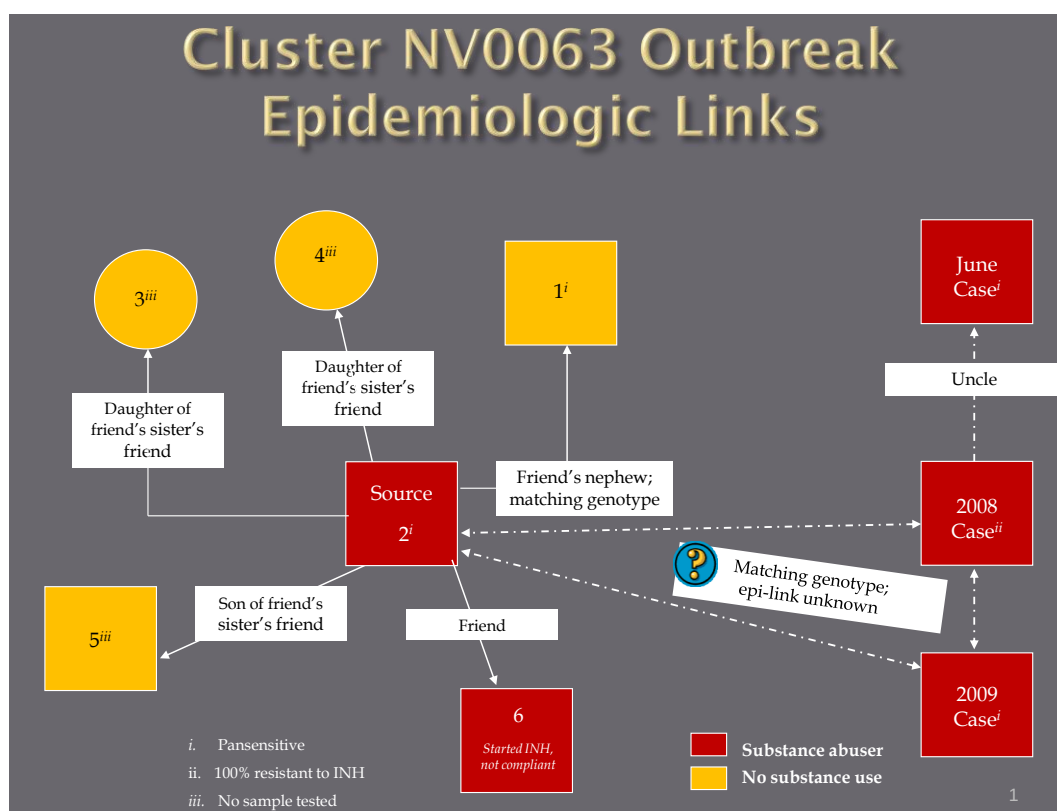
Cohort Review

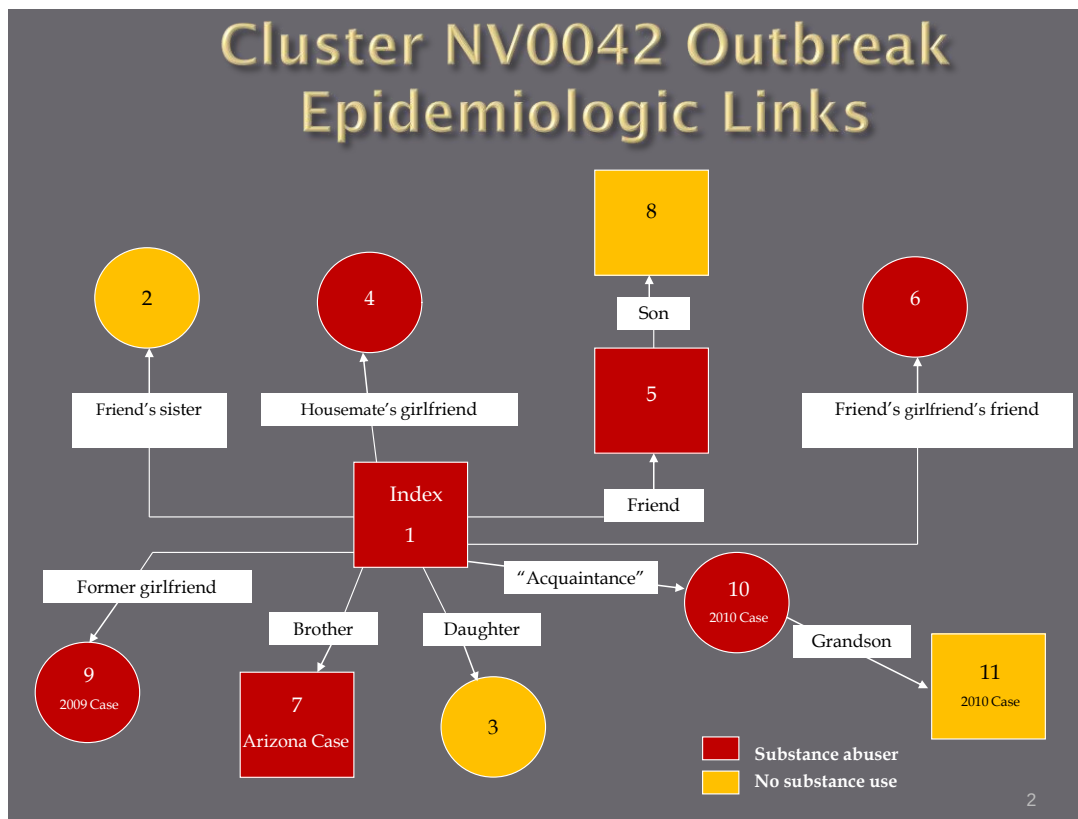
Historically, case review has been taking place on a weekly basis at the local level throughout the case management period for all TB cases in Nevada. Cohort review will be conducted on a quarterly basis for all Nevada cases completing treatment 6 months previous to the review. The cohort review process provides an opportunity for the TB Programs to present their cases, discuss the patient plan used and how well it worked, how incentive and enablers were utilized to meet goals, the treatment plan used, what management strategies were implemented, and lessons learned. The SNHD TB Program has taken the initiative and held the first two cohorts for Clark County (12/14/2011 & 3/15/2011). It is anticipated that by the end of 2011 Nevada will be conducting statewide cohorts on a quarterly basis.

Significant Contact Investigations:

Clark County received TB outbreak assistance (Epi-Aid) from the CDC in August of 2008 and again in June of 2010. Two separate outbreaks were genotypically identified for two separate groups of individuals associated with illicit drug use and having a history of incarceration. Due to the elusive nature of these individuals, the contact investigations have been difficult and span multiple calendar years. Complications involving the coordination/collaboration of evaluating large or evasive numbers of contacts was resource intensive and challenging.

Outbreak Investigation Overview x 2 Outbreaks	2008-2010 Cluster NV0042	2010 – Ongoing Cluster NV0063
Number of contacts identified through the investigation	574	683
Number of contacts who have had a complete evaluation	499 (87%)	206 (30%)
Total active TB cases identified in outbreak	11	6 - 9
Total Latent TB infections identified in outbreak	122	20





Other Significant 2010 Contact Investigations:

- An adult HIV positive female, with a history of mental illness, drug use, prostitution and incarceration, was reported by a local hospital as having an active case of TB. She did not seem lucid during the initial interview, and in order to investigate contacts in her neighborhood the investigator had to go door-to-door with a photo of the patient, asking people whether or not they knew her, and the extent of their contact with her. The investigation took place in a lower income neighborhood with many homeless individuals where the patient claimed to have been babysitting children. The investigation revealed that the patient had resided in various residences in which children had also been living. The contact investigation ultimately identified multiple child contacts, one of whom was started on medicine for active TB. As many of the contacts were homeless individuals locating the contacts to perform the evaluations and providing preventative therapy when needed was an additional challenge.
- An adult male was reported by a local hospital as having a recurrent case of TB. He was homeless and frequently stayed in a neighborhood known as the "Naked City." He was barely lucid during his initial interview, and shortly thereafter his condition rapidly deteriorated causing him to require intubation and not available for further interviewing. The TB clinic staff was obliged to conduct the contact investigation by calling contacts from the original contact investigation from approximately 2 years previous, and going door to door with a photo of the patient making inquiries about the daily activities of the case and possible people he spent time with. Many people denied contact with the case, claiming that he was an inappropriately-behaving alcoholic homeless man, but the contact investigation nevertheless identified a number of contacts requiring evaluation and when applicable preventative therapy.

- The contact investigation for an adult male has been continuing since it began in February of 2010, when contacts were notified by letter to report for testing, including QuantiFERON Testing (QFT) and chest x-ray referrals. One investigator has been attempting to follow up with over 90 contacts, the vast majority of whom are from a waiting room in a clinic that caters to HIV-positive individuals. Many of the contacts did not have accurate contact information provided to the TB Clinic by the HIV Clinic, so the investigator has had to try and track them down using internet searches, neighborhood visits, and telephone contact with county TB clinics in other jurisdictions. The investigator prepared letters for missing contacts which were placed in their charts at the HIV clinic, asking whoever opens the chart to call the investigator and order a QFT and chest X-ray on the contact; so far, several missing contacts have been found in this manner. One difficulty with getting the evaluation rate up for this investigation has been that there are many contacts received a Tuberculin Skin Test (TST) or QFT but did not follow-up to get a chest X-ray, even after having been contacted or visited multiple times. In general, this investigation has a large proportion of contacts that exhibit non-adherence with testing and have a history of providing inaccurate contact information which hinders follow-up.
- An adult female with pulmonary TB, AIDS, hepatitis C, and mental health problems including hallucinations, illegal drug use including heroin, speed and marijuana, was issued legal orders to comply with TB therapy and then was issued a court order for a Global Positioning System (GPS) tracking device to monitor where she was. This client was placed in a studio apartment and needed intensive case management services to remain adherent to Directly Observed Therapy (DOT). She was arrested in October for solicitation and placed in jail. She completed TB treatment in jail and then transferred to Immigration Customs Enforcement (ICE) custody for felony immigration charges and deportation.
- Nevada's TB Program successfully placed an adult male on the "Do Not Board" list with the CDC's Division of Global Migration and Quarantine (DGMQ). The patient did not believe that TB was a serious condition requiring him to comply with the prescribed treatment regimen and he continued to travel back and forth across the U.S. border. Once located via this system he was escorted back to Las Vegas by the CDC quarantine officer on the Flight to Life air ambulance. He is currently being monitored via a GPS tracking device and compliant with his daily DOT.
- An adult male with cavitary, pulmonary TB had changes in his chest CT scan which showed an alveolar hemorrhage. This patient underwent a left upper lobe lung resection while still smear positive because the surgeon stated he would have bled to death if it had not been performed. The client recovered well from the surgery. His disease progressed undiagnosed for a long time because he waited to seek medical care as he did not have medical insurance. He went to the ER only after he began coughing up a large amount of blood. His niece, a 34 month old child who is a household contact was also diagnosed with pulmonary TB.
- An adult male was severely ill with the dual infection of TB and HIV. He was experiencing mental health issues and was very frightened of being admitted to a healthcare facility. Multiple attempts to convince the client to go to the hospital were refused. Collaboration among many providers and a health order issued by the District Health Officer finally were successful in getting the client the care that was desperately needed.

The Aggregate Report of Program Evaluation (ARPE) data for all final 2009 contact investigations and all ongoing 2010 investigations will be submitted in August 2011.

Significant Program Barriers:

Controlling the spread of TB is a challenge within itself; Nevada's challenge is compounded by tourism and a transient population. As a top international tourist destination, Nevada has over 39.2 million visitors each year. The ability to control and prevent the spread of TB within this diverse population has become increasingly difficult each year.

Due to the global economic crisis and the estimated \$2.5 billion dollar shortfall in Nevada's budget, the Governor's initial proposed budget proposes beginning FY12-13, TB activities previously provided for by the state general funds (>\$600,000) be redirected to be supported by the counties who service those communities.

The SNHD TB clinic had to move in April of 2010 due to problems with the old TB clinic and was temporarily housed in the SNHD Incident Command Trailer. The TB clinic had to suspend use of the videophone because there was not a landline in the new clinic setting. In order to maintain DOT services the SNHD began using SKYPE through a dedicated computer. This new program worked so well that the TB clinic plans to retain the use of SKYPE for DOT whenever compatible with the patients needs. There are currently 25 clients on SKYPE DOT in Clark County. The staff has commented that the picture is much clearer than the videophone and many of the clients already had the SKYPE program set up, using it to talk with their relatives in other countries. The permanent location for the SNHD TB Clinic is a section of the maintenance building on the Shadow lane campus which has been remodeled to suit the needs of the clinic and officially opened March 24, 2011.

Despite the strides that have been made, forging relationships and providing education to correctional staff; managing non-adherent patients have continued to consume extensive amounts of time, effort and funding. The use of GPS devices have been implemented to assist with compliance but, it has its limitations. For example, if the patient doesn't charge the GPS device this technology cannot be used to locate them. Due to economic hardship some patients have not been able to pay their electric bill; the TB program has had to assume this expense to ensure the GPS device can remain charged.

Although the detention of a non-adherent TB patient is always the last resort, that option, along with a facility capable of maintaining airborne isolation protocols for infectious TB patients, needs to become available to Nevada's TB Programs. Comprehensive TB laws and isolation protocols combined with capacity building endeavors will enable the TB Programs to protect civil rights at the same time as public health.

Prevention and Control Activities from January 1, 2010 through December 31, 2010

The information in this section is presented in the following format: 1) national goal, 2) national objective(s) associated with that goal, 3) Nevada's status at achieving the objective, 4) National TB Indicators Project (NTIP) graphs (if available), 5) table indicating Nevada's five year target objectives, and 6) a short discussion for each objective.

NTIP is a secure, web-based monitoring system established in 2009 to be the monitoring component for TB control programs in the United States. Beginning in 2010, all programs receiving CDC cooperative agreement funds for TB prevention and control activities were required to use NTIP indicator data to complete their interim and annual progress reports to the Centers for Disease Control (CDC). These NTIP reports provide standard definitions, indicators, and calculations such that all TB programs in the U.S. are collecting and using data consistently to assess progress toward achieving the national objectives and performance targets.

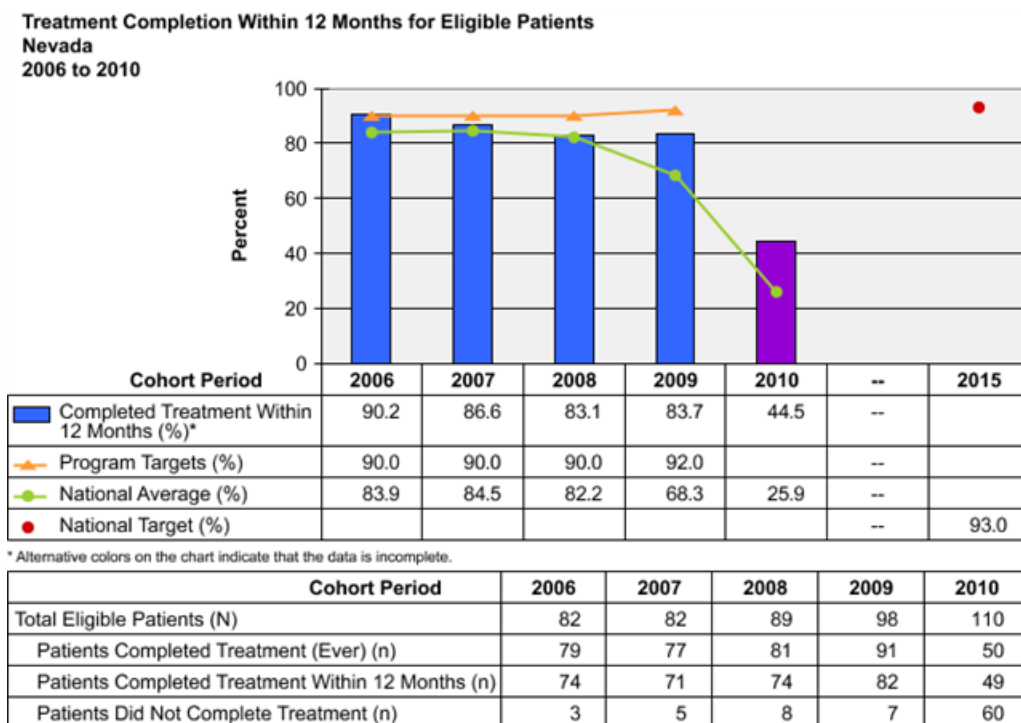
NTIP uses routinely collected surveillance data on individual TB cases to measure the performance of state and local TB control programs, helps programs to prioritize improvement efforts and focus on key TB control activities and track their progress toward national program objectives. This service assists TB programs to perform systematic examination of the processes that are done to better understand the factors that contribute to program outcomes and to plan program improvement efforts.

NTIP draws from current data collection systems and consists of a standard set of indicators within the established national TB objectives. Officials at all TB control programs receiving federal TB funds have online access to their own NTIP reports and the national summary. Each of the 15 national objectives is associated with one to four indicators. Data for 12 of the 15 indicators comes from three national surveillance systems: the National Tuberculosis Surveillance System (case reports, diagnosis and management data collected via the RVCT form), the Aggregate Reports for Program Evaluation (contact investigation data), and the Electronic Disease Notification System (immigrant and refugee health screening after U.S. arrival). The NTIP report reviews national progress comparing the performance of the most recent year with data from the previous 4 years. As treatment for active disease takes about 9-12 months to complete, data for some cases might not be available until 2 years after the initial case report date.

Goal 1: Improve treatment completeness among identified cases of Tuberculosis.

Objective 1.1: For patients with newly diagnosed TB for whom 12 months or less of treatment is indicated, increase the proportion of patients who complete treatment within 12 months to 93.0%

State Program Status: Ongoing



National Tuberculosis Indicators Project (NTIP) Data as of March 1, 2011

Five Year Target Objectives For: Nevada's Completion of Treatment Objective

2006-09 National Average	2006-09 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
79.7%	85.9%	87.5%	87.6%	87.7%	87.8%	87.9%	93%

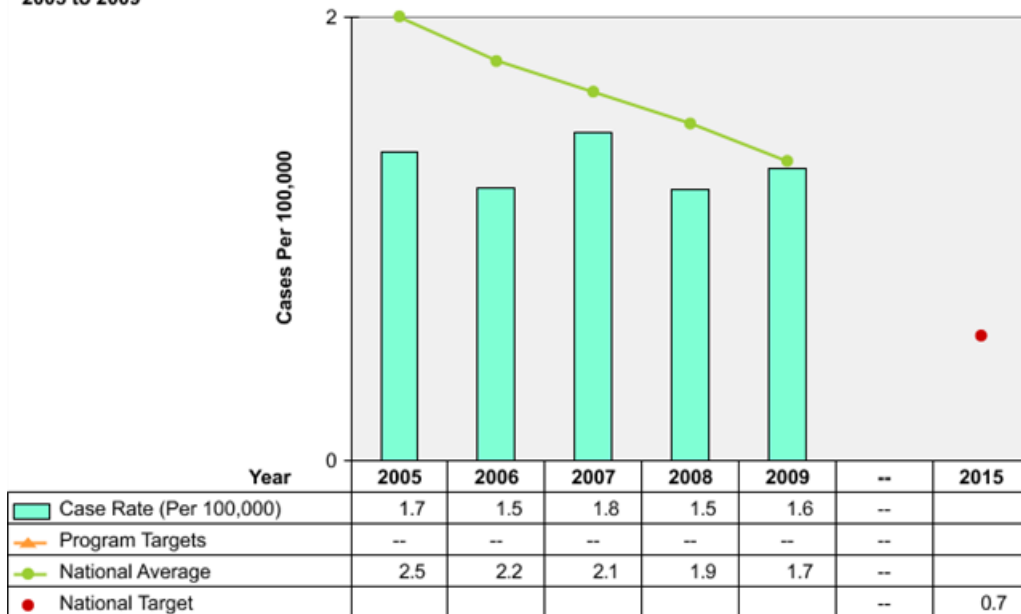
Discussion: As the standard treatment regimen for TB is 6 months or greater, analysis of 2010 completion rates will not be available for evaluation until the following year. The complexity of the cases seen in Nevada has extended treatment regimens not only for some of our active cases but for some LTBI regimens; therefore, the adherence to treatment has been more difficult to sustain. It is anticipated that the 2010 data will be in line with, or improved from, the previous year's results after the cases with extended treatment regimens are complete. Nevada has consistently performed slightly above the national average for this objective.

Goal 2: Decrease TB Case Rates.**Objective 2.1:**

- Decrease the TB case rate in **U.S. - born** persons to less than 0.7 cases per 100,000.
- Increase the average yearly decline in TB case rate in U.S.-born persons to at least 11.0%.

Status: Unmet

TB Case Rate in U.S.-born Persons
Nevada
2005 to 2009



Year	2005	2006	2007	2008	2009
Population of U.S.-born Persons in Nevada (N)	1,965,460	2,020,508	2,064,134	2,102,779	2,138,076
Total Cases in U.S.-born Persons (n)	34	31	38	32	35

National Tuberculosis Indicators Project (NTIP) Data as of February 2011

Five Year Target Objectives For: Nevada's U.S. Born Case Rate Objective

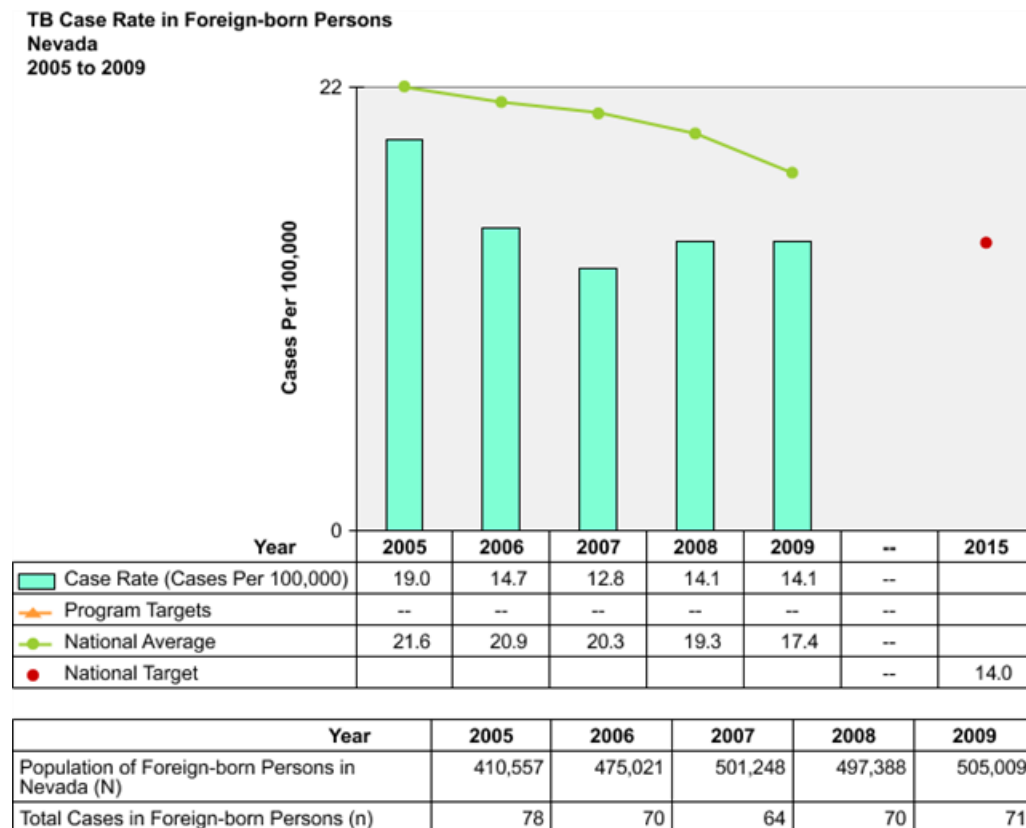
2005-09 National Average	2005-09 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
2.08	1.62	1.71	1.70	1.69	1.68	1.67	0.7

Discussion: Approximately one-third of Nevada's cases are U.S. born. Nevada has been fortunate to have experienced a decline in this population and has maintained a rate below the national average.

Objective 2.2:

- Decrease the TB case rate for **foreign-born** persons to less than 14.0 cases per 100,000.
- Increase the average yearly decline in TB case rate in foreign-born persons to at least 4.0%.

Status: Met



National Tuberculosis Indicators Project (NTIP) Data as of February 2011

Five Year Target Objectives For: Nevada's Foreign Born Case Rate Objective

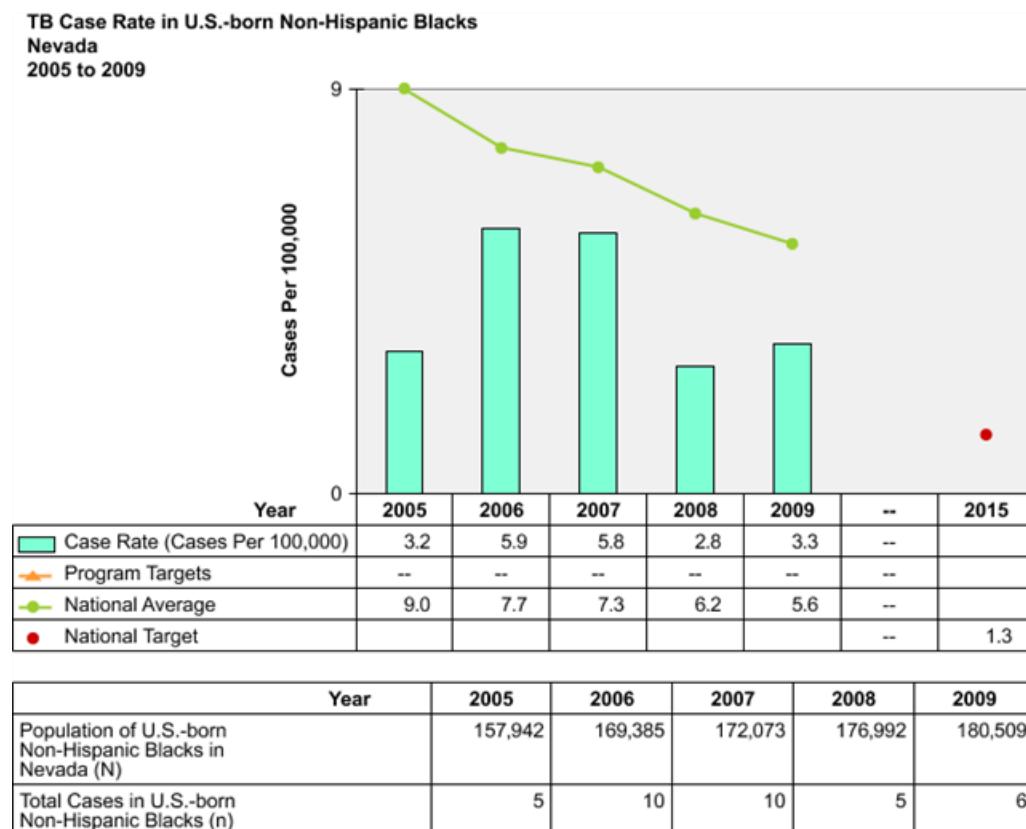
2005-09 National Average	2005-09 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
19.9	14.9	14.8	14.7	14.7	14.6	14.6	14

Discussion: Approximately two-thirds of Nevada's cases are Foreign-born. Due to the diligent work conducted by the TB Programs, Nevada is fortunate to be able to sustain a fairly constant number in this population and maintain a rate below the national average.

Objective 2.3:

Decrease the TB case rate in **U.S.-born non-Hispanic blacks** to less than 1.3 cases per 100,000.

Status: Met



National Tuberculosis Indicators Project (NTIP) Data as of February 2011

Five Year Target Objectives For: Nevada's U.S.-Born non-Hispanic Case Rate Objective

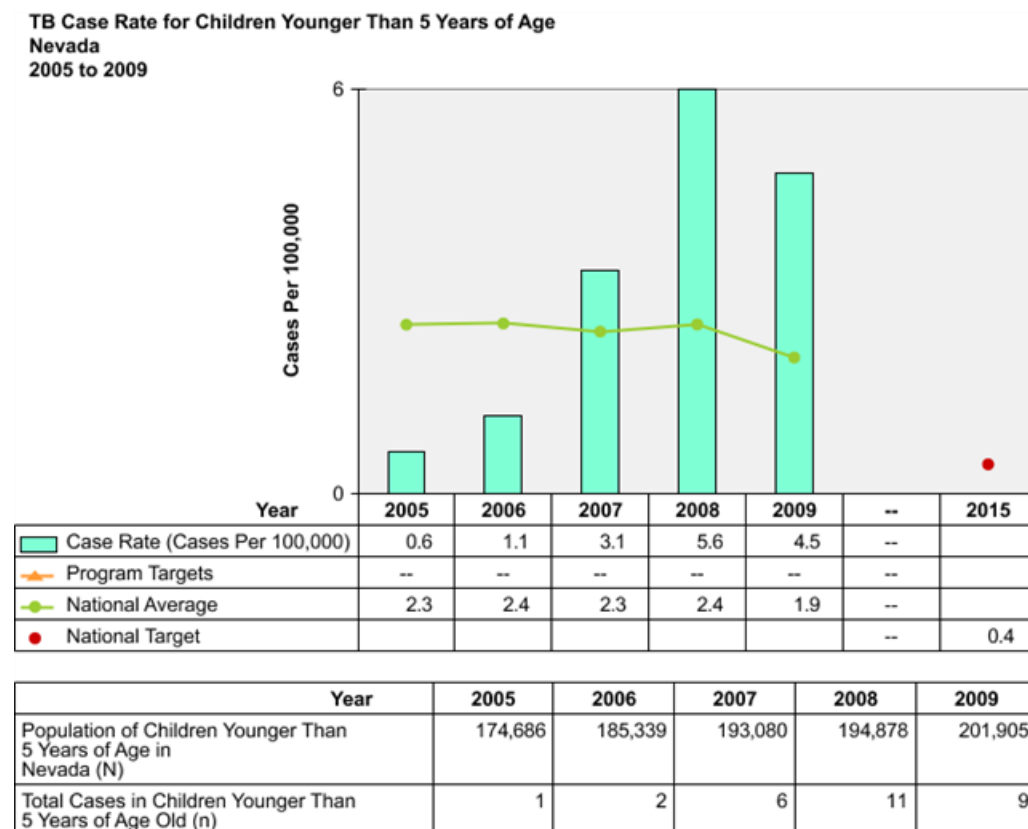
2005-09 National Average	2005-09 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
7.16	4.2	4.5	4	3.5	3	3	1.3

Discussion: Nevada's rate among this population has consistently been below the national average for this objective.

Objective 2.4:

Decrease the TB case rate for **children younger than 5 years** of age to less than 0.4 cases per 100,000.

Status: Unmet



National Tuberculosis Indicators Project (NTIP) Data as of February 2011

Five Year Target Objectives For:
Nevada's children younger than 5 years Case Rate Objective

2005-09 National Average	2005-09 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
2.26	2.98	2.0	1.9	1.8	1.7	1.6	0.4

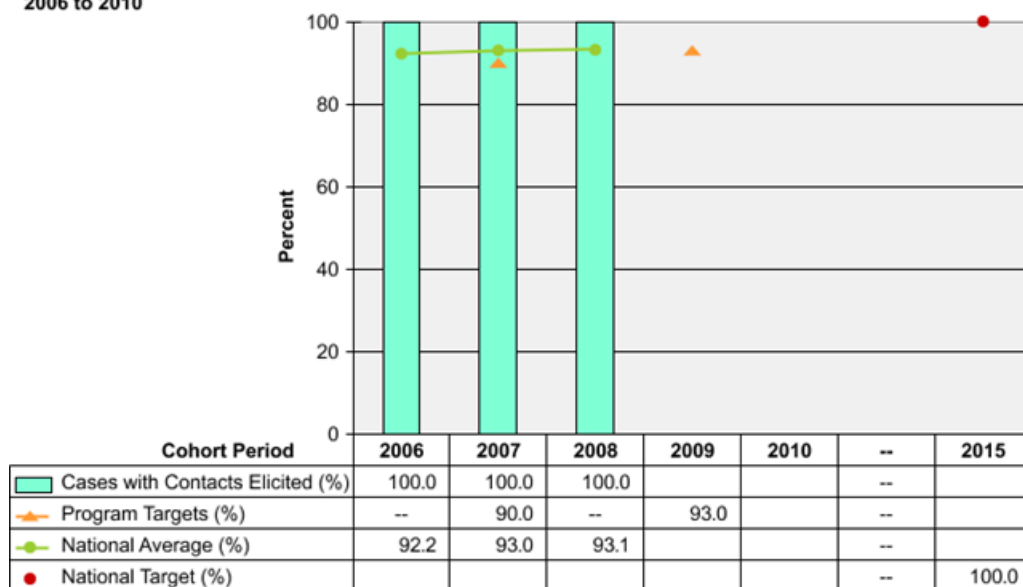
Discussion: 16 children < 5 years of age were diagnosed with TB in Nevada in 2010. An epidemiological study is being conducted to investigate the increase in pediatric TB cases Nevada has been experiencing since 2007. Additionally, Nevada's TB Program has embarked on the first ever statewide World TB Day Coloring Contest to educate the students and the families of Nevada's citizens about the signs, symptoms and mode of transmission of TB and what to do if you or someone you know may have TB. See the materials at: http://www.health.nv.gov/CD_HIV_TBWorldDay.htm

Goal 3: Improve Contact Investigations.**Objective 3.1:**

Increase the proportion of TB patients with positive acid-fast bacillus (AFB) sputum-smear results who have contacts elicited to 100.0%.

Status: Met

Sputum Acid-fast Bacillus (AFB) Smear-positive TB Cases with Contacts Elicited
Nevada
2006 to 2010



Cohort Period	2006	2007	2008	2009	2010
Total Sputum AFB Smear-positive TB Cases for Investigation (N)	56	50	45		
Cases with Contacts Elicited (n)	56	50	45		
Cases with No Contacts (n)	0	0	0		

National Tuberculosis Indicators Project (NTIP) Data as of February 7, 2011

Five Year Target Objectives For: Percent of TB Cases with Contacts Elicited Objective

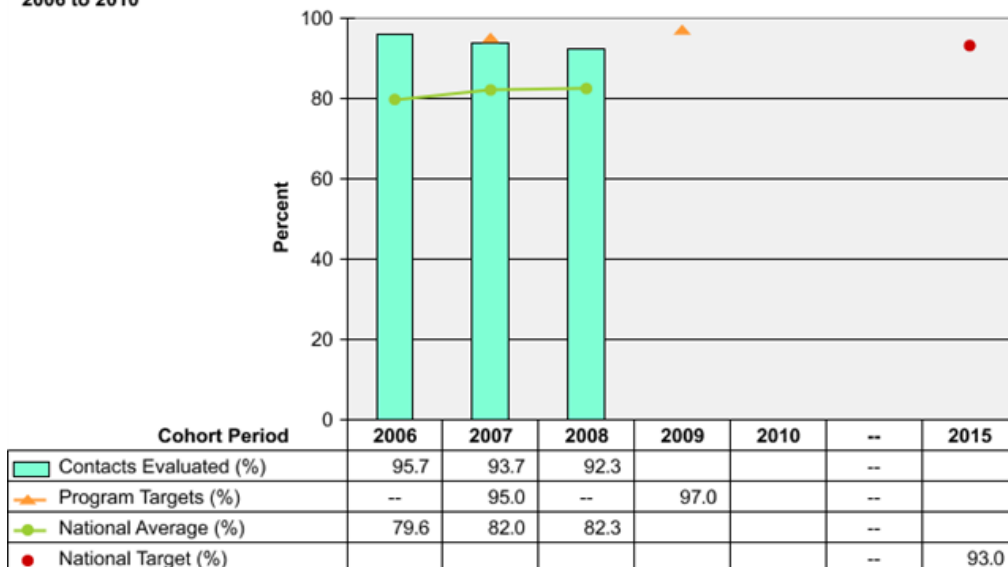
2006-08 National Average	2006-08 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
92.76	100	100	100	100	100	100	100

Discussion: The standard of care in Nevada is to conduct a contact investigation interview on every pulmonary case of TB regardless of the smear result; all household contacts of extra-pulmonary cases are evaluated for infection. If TB is diagnosed post-mortem, the family, friends and coworkers are interviewed and contacts evaluated for infection. Since 2001, Nevada has not had a single pulmonary case that did not have contacts identified.

Objective 3.2: Increase the proportion of contacts to sputum AFB smear positive TB patients who are evaluated for infection and disease to 93.0%.

Status: Met

**Evaluation of Contacts to Sputum Acid-fast Bacillus (AFB) Smear-positive TB Cases
Nevada
2006 to 2010**



Cohort Period	2006	2007	2008	2009	2010
Total Contacts to Sputum AFB Smear-positive TB Cases (N)	2,135	1,571	896		
Contacts Evaluated (n)	2,044	1,472	827		
Contacts Not Evaluated (n)	91	99	69		

National Tuberculosis Indicators Project (NTIP) Data as of February 2011

Five Year Target Objectives For: Percent of TB Contacts Who Receive an Evaluation

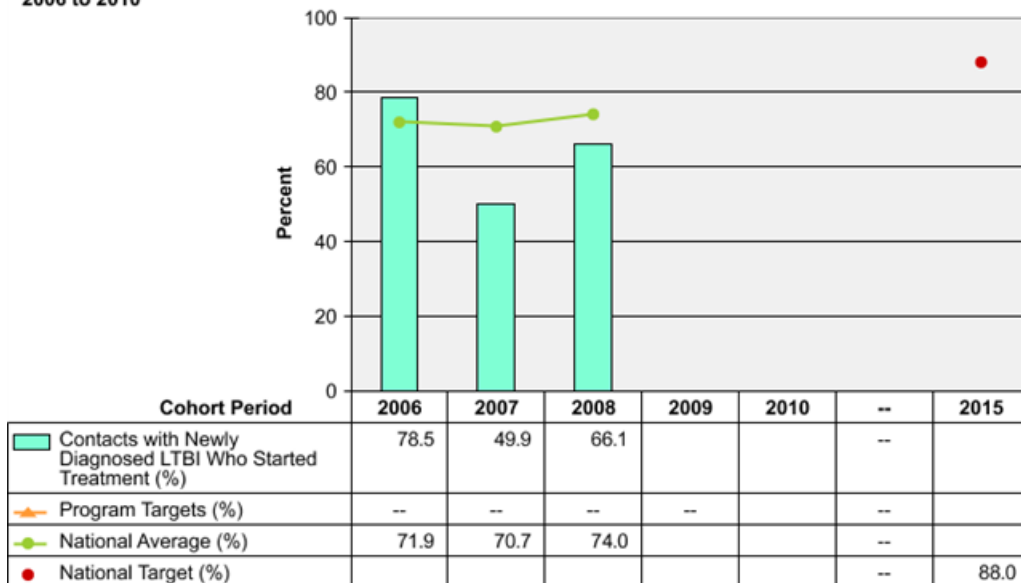
2006-08 National Average	2006-08 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
81.3	93.9	97	97	97	97	97	93

Discussion: In order to obtain complete evaluations, Nevada TB Programs continue to actively pursue all contacts identified. To expedite the evaluation process the use of IGRA's has been utilized whenever possible. Educating contacts as to the importance of knowing their status in order to make an informed decisions regarding prophylactic therapy and the use of incentives and enablers are all methods used to elicit complete evaluation screenings.

Objective 3.3: Increase the proportion of contacts to sputum AFB smear-positive TB patients with newly diagnosed latent TB infection (LTBI) who start treatment to 88.0%

Status: Unmet

Contacts with Newly Diagnosed Latent TB Infection (LTBI) Who Started Treatment
Nevada
2006 to 2010



Cohort Period	2006	2007	2008	2009	2010
Total Contacts with Newly Diagnosed LTBI (N)	506	367	319		
Contacts Who Started Treatment (n)	397	183	211		
Contacts Who Did Not Start Treatment (n)	109	184	108		

National Tuberculosis Indicators Project (NTIP) Data as of February 2011

Five Year Target Objectives For: Percent of TB Contacts Who Start an LTBI Treatment Regimen

2004-06 National Average	2006-08 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
72.2	64.8	83.9	84	84.1	84.2	84.3	88

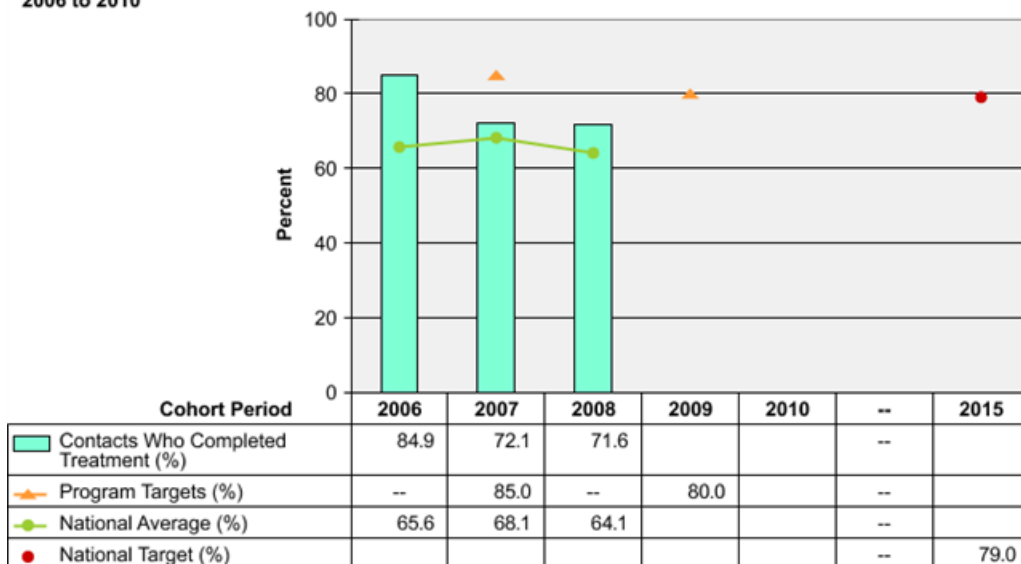
Discussion: Preventative therapy is not mandatory, but highly recommended to all persons diagnosed with latent TB infection (LTBI) in Nevada. The LHA's educate contacts about LTBI treatment options, and provide extensive education and counseling regarding the advantages of completing a treatment regimen for LTBI. They explain possible risks for the development of active TB disease if LTBI treatment is not completed and the protection LTBI therapy may provide. If the contact decides not to participate in a preventative treatment regimen they are provided information/education regarding the signs and symptoms to be aware of for TB disease and instructed to seek medical attention if they experience these signs and/or symptoms.

The TB Program will continue with activities to ensure this objective reaches its highest possible percent participation level.

National Objective 3.4: For contacts to sputum AFB smear-positive TB patients who have started treatment for the newly diagnosed LTBI, increase the proportion who complete treatment to 79.0%.

Status: Unmet

Treatment Completion for Contacts Who Have Started Treatment for Newly Diagnosed Latent TB Infection (LTBI)
Nevada
2006 to 2010



Cohort Period	2006	2007	2008	2009	2010
Total Contacts Who Have Started Treatment for Newly Diagnosed LTBI (N)	397	183	211		
Contacts Who Completed Treatment (n)	337	132	151		
Contacts Who Did Not Complete Treatment (n)	60	51	60		

National Tuberculosis Indicators Project (NTIP) Data as of February 2011

Five Year Target Objectives For:
Percent of TB Contacts Who Complete LTBI Treatment Regimen

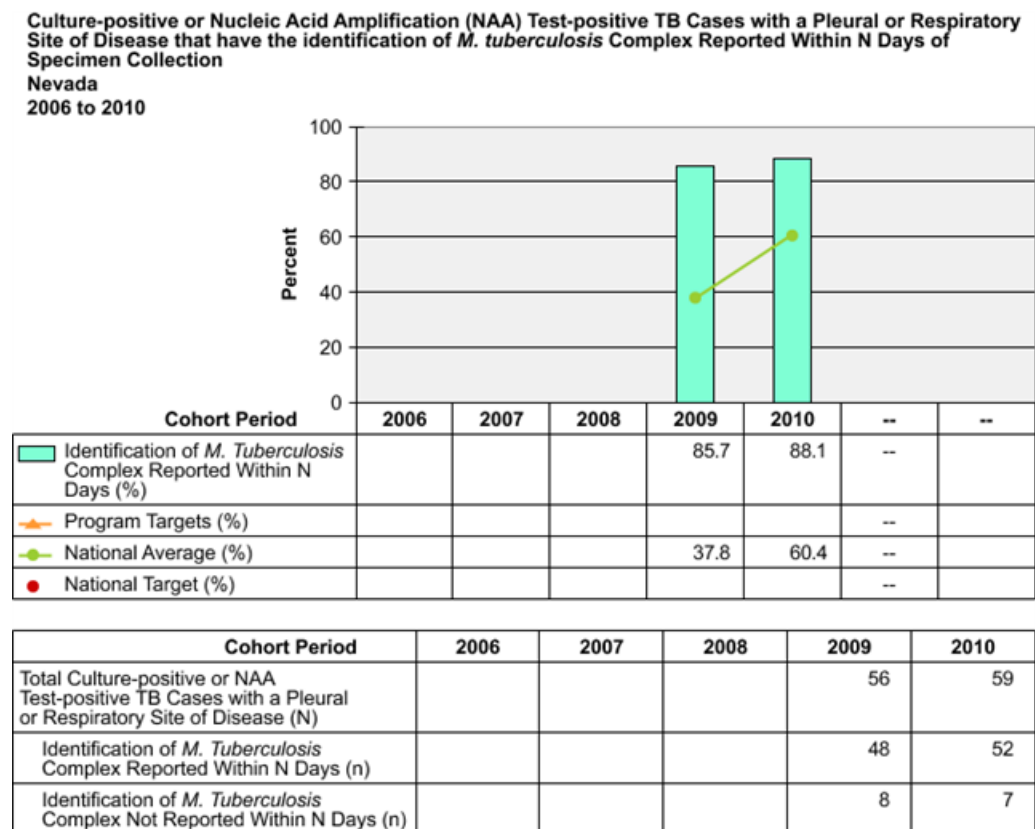
2004-06 National Average	2006-08 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
65.9	76.2	85.1	85.2	85.3	85.4	85.5	79

Discussion: Preventative therapy is not mandatory, but highly recommended to all persons diagnosed with latent TB infection (LTBI) in Nevada. Whether it's due to the side effects associated with INH, the extensive time commitment required to complete a treatment regimen (compared to other communicable diseases), or the fact that the person does not feel ill, some contacts decide not to complete preventative therapy for LTBI. Nevada's TB Program utilizes incentives, enablers, and counseling to address this challenge. The TB Program will continue with activities to ensure this objective maintains its highest possible percent completion level.

Goal 4: Improve Laboratory Reporting

Objective 4.1: Increase the proportion of culture-positive or nucleic acid amplification (NAA) test-positive TB cases with a pleural or respiratory site of disease that have the identification of *M. tuberculosis* complex reported by laboratory within 7 days from the date that the initial diagnostic pleural or respiratory specimen was collected to 80%.

Status: Met



National Tuberculosis Indicators Project (NTIP) Data as of March 1, 2011

Five Year Target Objectives For:

Percent of TB cases with an identity of MTBC reported within 7 days of specimen collection

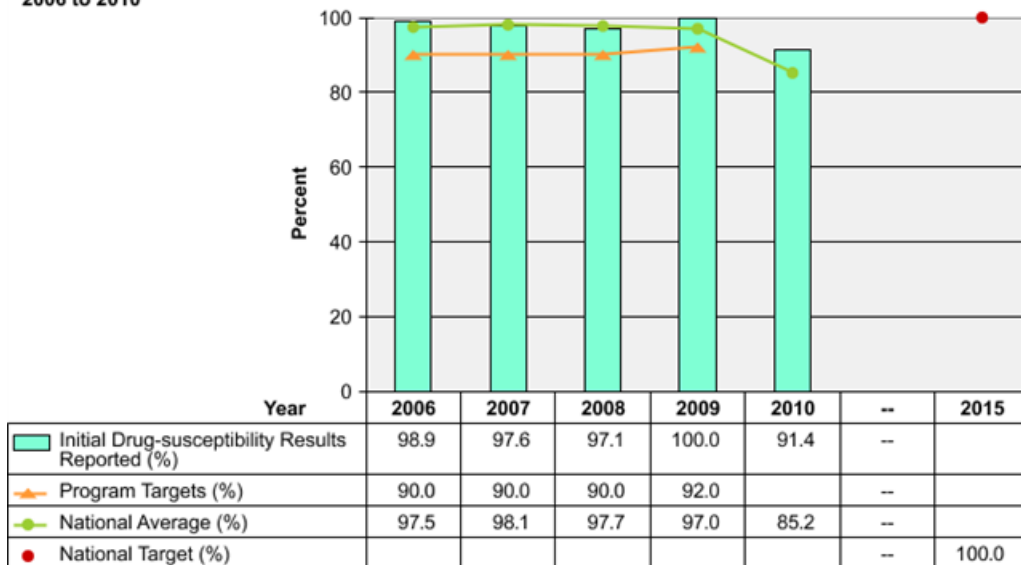
2009-10 National Average	2009-10 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
49.1	86.9	75%	76%	77%	78%	79%	80%

Discussion: As this is a new national objective Nevada is pleased to learn that the NSPHL is meeting the national objective by performing timely testing and reporting of the nucleic acid amplification test which quickly identifies *M. tuberculosis* as the AFB seen on a smear when MTB is present in a culture.

Objective 4.2: Increase the proportion of culture-positive TB cases with initial drug-susceptibility results reported to 100.0%.

Status: Unmet

Reporting of Initial Drug-susceptibility Results for Culture-positive TB Cases
Nevada
2006 to 2010



Year	2006	2007	2008	2009	2010
Total Culture-positive TB Cases (N)	87	84	69	72	70
Initial Drug-susceptibility Results Reported (n)	86	82	67	72	64
Initial Drug-susceptibility Results Not Reported (n)	1	2	2	0	6

National Tuberculosis Indicators Project (NTIP) Data as of March 10, 2011

Five Year Target Objectives For: Percent of TB culture-positive cases with drug-susceptibility results reported

2006-10 National Average	2006-10 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
95.1	97	96.9	97	97.1	97.2	97.3	100

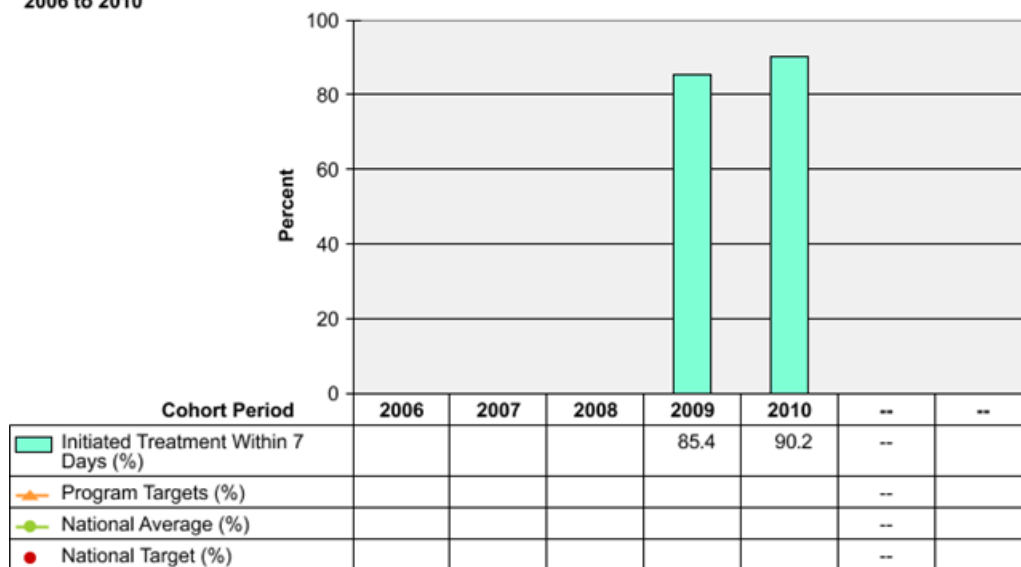
Discussion: Nevada consistently ensures >95% of cultures positive for MTBC receive drug susceptibility testing (DST). Occasionally an organism is mixed with another MOTT and a pure culture is not able to be obtained, or the organism fails to grow in the susceptibility testing media; reference laboratories are utilized to assist with attaining susceptibilities when needed. As Nevada consistently performs at or above the national average, it is anticipated that once the December 2010 cultures are complete, this will again be >95%.

Goal 5: Expedite Treatment Initiation

Objective 5.1: Increase the proportion of TB patients with positive AFB sputum-smear results who initiate treatment within 7 days of specimen collection to 90%.

Status: Met

**Treatment Initiation Within 7 Days of Specimen Collection for Patients with Positive Acid-fast Bacillus (AFB) Sputum-smear Results
Nevada
2006 to 2010**



Cohort Period	2006	2007	2008	2009	2010
Total Patients with Positive AFB Sputum-smear Results (N)				41	41
Treatment Initiated Within 7 Days (n)				35	37
Treatment Not Initiated Within 7 Days (n)				6	4

National Tuberculosis Indicators Project (NTIP) Data as of March 1, 2011

Five Year Target Objectives For:

Percent of MTB suspects with positive AFB smears that begin treatment with 7 days of specimen collection

2009-10 National Average	2009-10 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
Not Available	87.8	90%	90%	90%	90%	90%	TBD

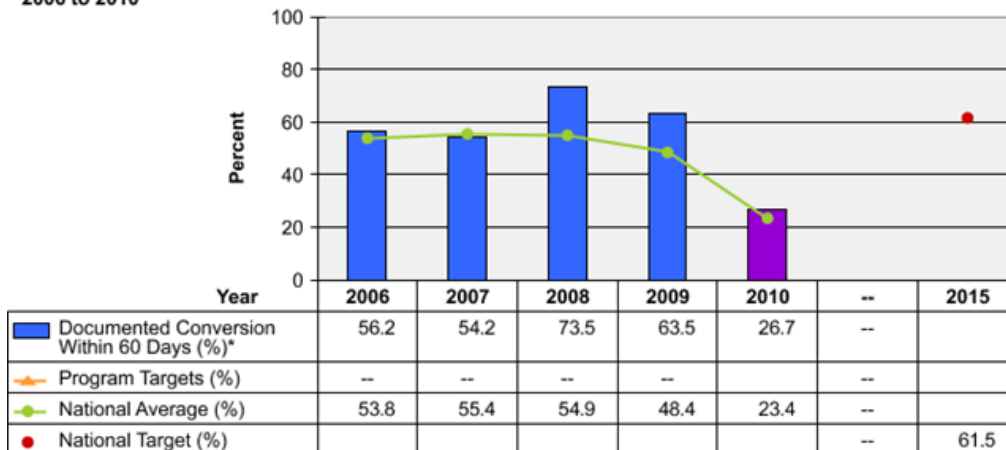
Discussion: The initial diagnosis of TB must be made by assessing the clinical features, patient history, preliminary laboratory results and the chest radiographic examination, and cannot be ruled out just because *M. tuberculosis* cannot be isolated. Providing technical assistance regarding the importance of starting the standard 4-drug regimen any time the suspicion is high for TB disease has been a goal of the TB Program for many years now. It is evident from this objective that the local programs are successfully educating the health care providers of the importance of “thinking TB” and initiating treatment early in the diagnostic phase.

Goal 6: Improve Sputum Culture Conversion Rates

Objective 6.1: Increase the proportion of TB patients with positive sputum culture results who have documented conversion to sputum culture-negative within 60 days of treatment initiation to 61.5%.

Status: Met

**Sputum Culture Conversion Documented Within 60 Days of Treatment Initiation for Patients with Positive Sputum Culture Results
Nevada
2006 to 2010**



* Alternative colors on the chart indicate that the data is incomplete.

Year	2006	2007	2008	2009	2010
Total TB Patients with Positive Sputum Culture Results Initiated Treatment (N)	64	59	49	52	45
Converted Within 60 Days (n)	36	32	36	33	12
Converted After 60 Days (n)	22	22	8	16	8
No Documentation of Conversion (n)	6	5	5	3	25

National Tuberculosis Indicators Project (NTIP) Data as of March 1, 2011

Five Year Target Objectives For:

Percent of sputum culture conversions which occur within 60 days of treatment initiation

2006-09 National Average	2006-09 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
53.12%	61.85%	53%	53.5%	54%	54.5%	56%	61.5%

Discussion: With the complexity of the TB cases being treated in Nevada, extended treatment regimens are not uncommon due to extended conversion times. To address this issue SNHD has a full time pharmacists (Dr. Christina Madison) on staff who specializes in developing customized treatment regimens for TB patients, which takes into consideration additional risk factors a patient may have which could impair absorption and/or efficacy as well as difficulties associated with drug interactions. Emphasis has also been given to improved documentation of RVCT data, which allows for a more accurate conversion rate. Nevada is currently working on protocols for ordering blood drug levels and how to interpret the results.

Goal 7: Improve the Quality and Completeness of TB Data Reporting**Objective 7.1: Increase the completeness of each core Report of Verified Case of Tuberculosis (RVCT) data item reported to CDC, as described in the TB Cooperative Agreement announcement to 99.2% by 2015.**

Status: Unmet

National Tuberculosis Indicators Project

Data Reporting: RVCT

Data Updated: [2-21-2011]

National Objective:

Increase the completeness of each core Report of Verified Case of Tuberculosis (RVCT) data item reported to CDC, as described in the TB Cooperative Agreement announcement, to 99.2% by 2015.

Variable	RVCT		Nevada 2010		
	Fields	(N)	Unknown Missing (n)	Complete (n)	Complete (%)
Date of Birth	7	114	0	114	100.0
Race	10	114	1	113	99.1
Country of Origin ^a	11	114	0	112	98.2
Month-Year Arrived in U.S. ^a	12	72	5	67	93.1
Status at Diagnosis of TB	13	114	0	114	100.0
Previous Diagnosis of Tuberculosis	14	114	0	114	100.0
Major Site of Disease	15	114	5	109	95.6
Sputum Smear	17	114	4	110	96.5
Sputum Culture	18	114	20	94	82.5
Culture of Tissue and Other Body Fluids	20	114	4	110	96.5
Nucleic Acid Amplification Test Result	new	114	2	112	98.2
Chest X-ray	21	114	3	111	97.4
Tuberculin Skin Test at Diagnosis	22	114	5	109	95.6
HIV Status	23	114	2	112	98.2
Initial Drug Regimen ^b	27	114	1	113	99.1
Date Therapy Started ^b	28	114	2	112	98.2
Initial Drug Susceptibility Results ^c	33	70	7	63	90.0
Susceptibility Results ^d	34	63	0	63	100.0
Sputum Culture Conversion Documented ^e	35	47	26	21	44.7
Date Therapy Stopped ^b	36	113	61	52	46.0
Reason Therapy Stopped ^b	37	113	62	51	45.1
Directly Observed Therapy ^b	39	113	59	54	47.8
TOTAL		2,299	269	2,030	88.3

a. Data collected if not born in United States or the U.S. affiliated Pacific Islands.

b. Data collected only if alive at diagnosis and started therapy.

c. Data collected on culture-positive cases only.

d. Data collected on culture-positive cases with Initial Drug Susceptibility Results (RVCT field 33) reported as "Yes".

e. Data collected on sputum culture-positive cases that are alive at diagnosis and have started therapy.

Objective: Increase the completeness of each core Report of Verified Case of Tuberculosis (RVCT) data item reported to CDC, as described in TB Cooperative Agreement announcement, to 99.2% by 2015.

Indicator: Percent completeness of each core RVCT data item. Core RVCT variables are defined in the Additional Guidance to Clarify Data Necessary for TB Registry and Reporting Requirements for FY 2010 Non-Competing Continuation Application.

Data Sources: RVCT fields as listed in tables.

Cohort: All TB cases, counted in the year of interest.

Calculation: [Number of cases with a specified core RVCT variable completed / Cohort] X 100

National Tuberculosis Indicators Project (NTIP) Data as of February 21, 2011

Five Year Target Objectives For:
Percent of Complete RVCT data reported to CDC

2004-08 National Average	2004-09 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
Not Available	95.9%	94%	95%	96%	97%	98%	99.2%

Discussion: In 2009, Nevada had a 98.4% completion rate for this objective. It is anticipated that once the 2010 cases are complete, Nevada will again meet or exceed this completion rate. In 2009, Nevada installed and implemented the NEDSS TB-PAM system to manage Nevada's RVCT data. The three major TB reporting areas (Carson, Clark and Washoe Counties) input RVCT data directly into the NEDSS system. This direct input method allows complete and timely data capturing, and will ultimately enable Nevada to meet the 2015 National Objective of 99.2% completeness for reporting. The CDC has been experiencing some transmission receipt problems and is currently working to reconcile this glitch.

Objective 7.2: Increase the completeness of each core Aggregated Reports of Program Evaluation (ARPEs) data items reported to CDC, as described in the TB Cooperative Agreement announcement, to 100%.

Status: Met

Five Year Target Objectives For:
Percent of Complete ARPE data reported to CDC

2004-08 National Average	2004-09 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
Not Available	100%	100%	100%	100%	100%	100%	100%

Discussion: Nevada has, and will continue to report 100% complete ARPE data as described in the TB Cooperative Agreement.

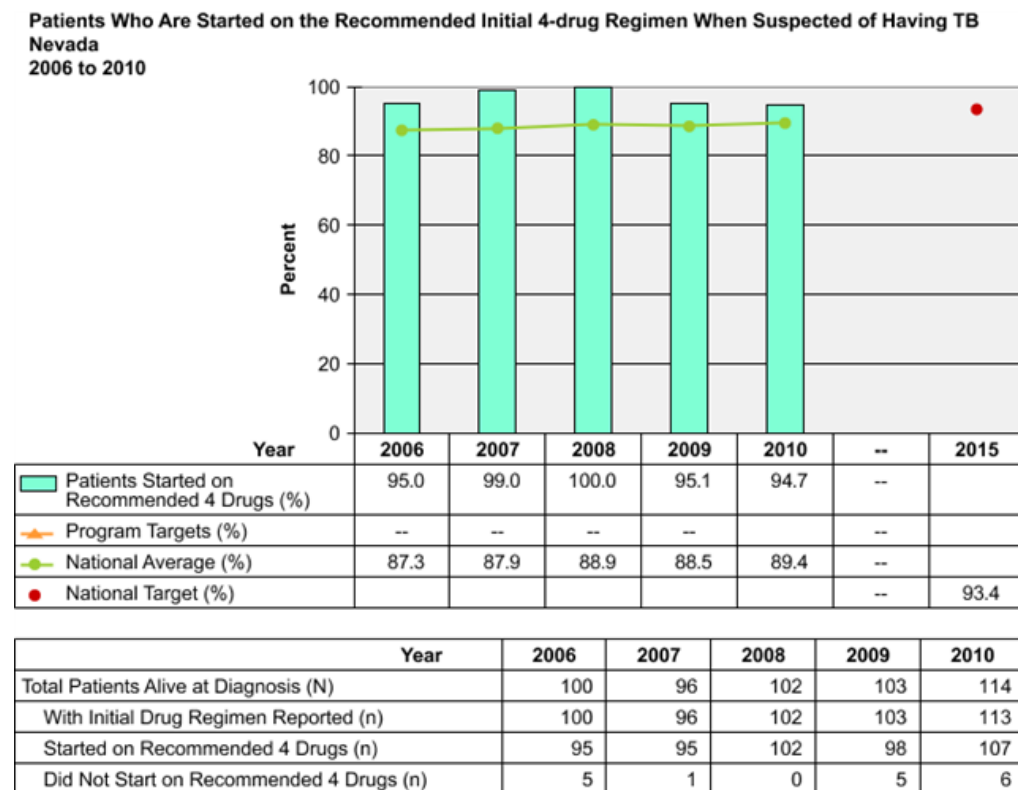
Objective 7.3: Increase the completeness of each core Electronic Disease Notification (EDN) system data item reported to CDC, as described in the TB Cooperative Agreement announcement, to 90%

Status: Unknown

Five Year Target Objectives For:
Percent of Complete EDN data reported to the CDC

National Average	Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
Not Available	N/A – New variable	50%	50%	51%	52%	53%	100%

Discussion: The Electronic Data Notification System (EDN) system deployed in 2009 by the CDC's Division of Global Migration and Quarantine (DGMQ) has improved the notification of the Class A, B1, B2, and B3 immigrants and refugees to the State TB Program. Until the EDN system develops a percent completeness report Nevada will not be able to report on this new objective. It is anticipated that since 96% of Nevada's B-notifications have an evaluation started (see objective 11.1 in this report) that Nevada will perform well on this objective.

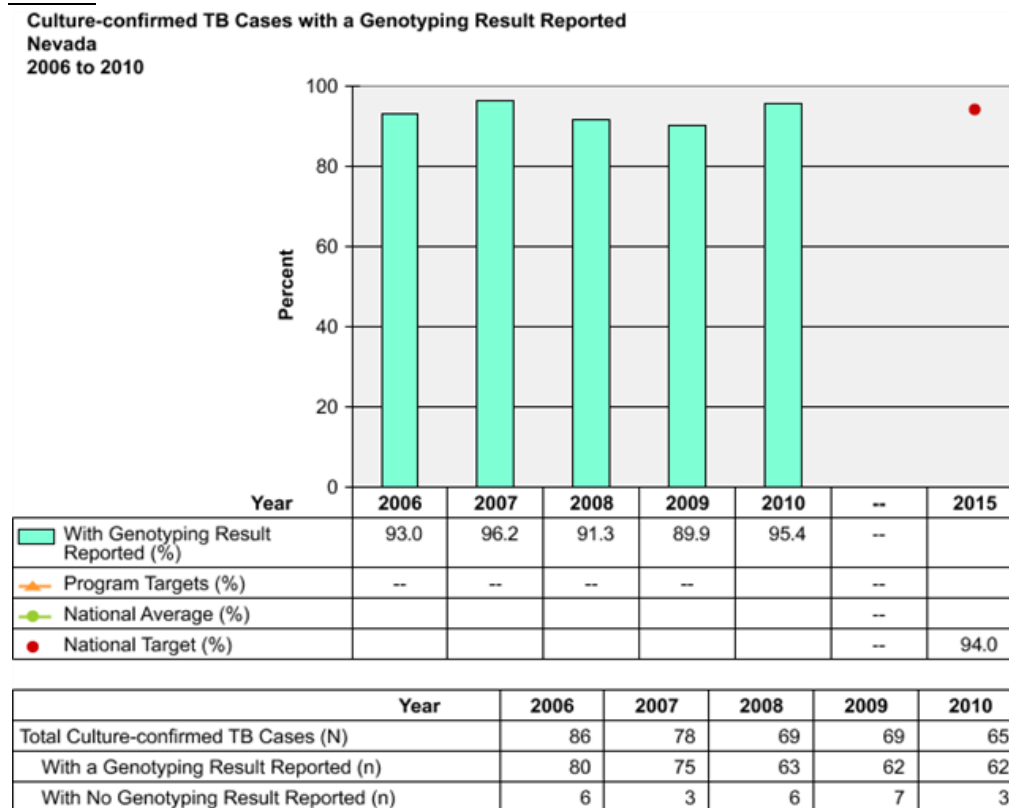
Goal 8: Improve the Recommendation of Initial Therapy for TB Suspects.**Objective 8.1: Increase the proportion of patients who are started on the recommended initial 4-drug regimen when suspected of having TB disease to 93.4%.**Status: Met

National Tuberculosis Indicators Project (NTIP) Data as of March 1, 2011

Five Year Target Objectives For:
Percent of suspects started on 4-drug regimen

2006-10 National Average	2006-10 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
88.4%	96.7%	96%	96%	96%	96%	96%	93.4%

Discussion: As LTBI is not a reportable disease in Nevada, this objective can only be recorded for suspects that are later confirmed to have active disease and are reported via the RVCT form. Nevada makes starting suspected TB patients on the standard 4-drug regimen early in the diagnosis process a priority (see objective 5.1 of this report).

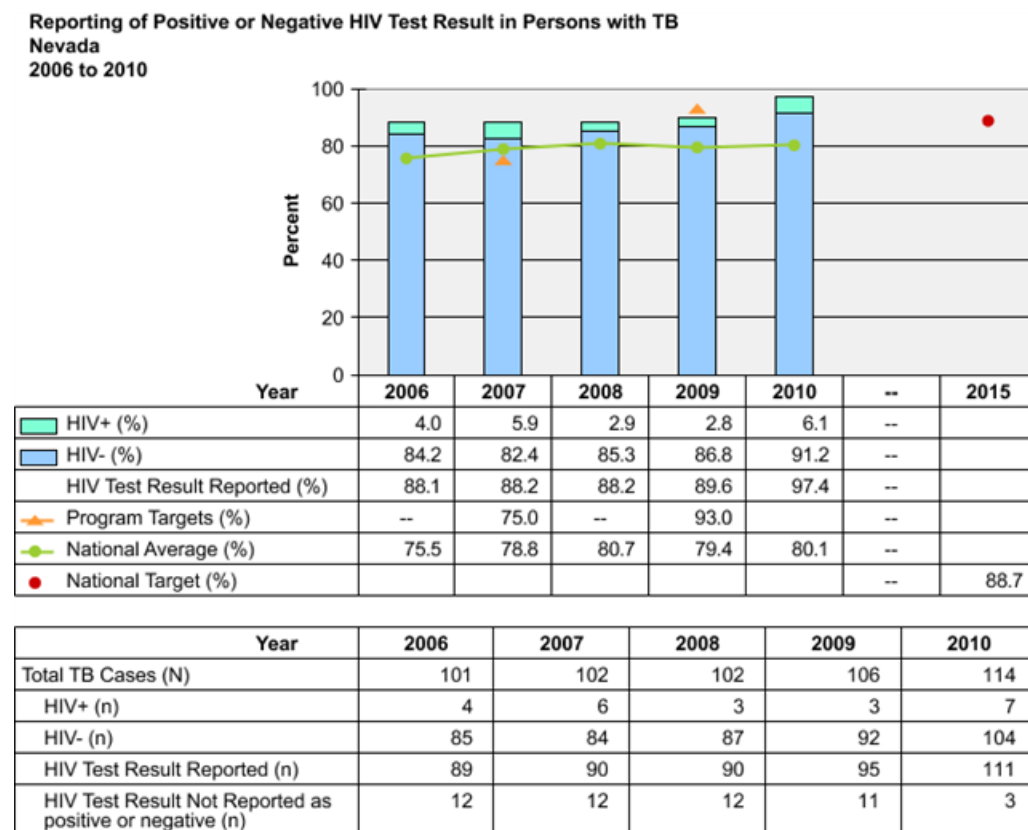
Goal 9: Obtain a Genotype for Culture Positive Cases.**Objective 9.1: Increase the proportion of culture-confirmed TB cases with a genotyping result reported to 94.0%.**Status: Met

National Tuberculosis Indicators Project (NTIP) Data as of February 2011

Five Year Target Objectives For: Percent of culture positive MTB cases that have genotype reported

2006-10 National Average	2006-10 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
N/A	93.2%	96%	96%	96%	96%	96%	94%

Discussion: The NSPHL submits every organism identified as MTBC for genotyping as part of their standard procedure. As TB-GIMS is a new data management system implemented in 2010, the super users for the system (State Controller and NSPHL Microbiology Supervisor) are still working on reconciling some of the cases that have missing or unknown data.

Goal 10: Know the HIV Status of TB cases.**Objective 10.1: Increase the proportion of TB cases with positive or negative HIV test result reported to 88.7%.**Status: Met

National Tuberculosis Indicators Project (NTIP) Data as of March 1, 2011

Five Year Target Objectives For: Percent of TB cases with an HIV result reported

2004-08 National Average	2006-10 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
78.9%	90.3%	90%	90%	90%	90%	90%	88.7%

Discussion: Nevada's TB Protocols recommend HIV testing for all TB patients, regardless of age. Occasionally low risk children are exempt from testing; this is decided on a case-by-case basis. For persons who have died prior to TB diagnosis (or soon after) HIV status is reported if the documented results are available within the last two years. The TB and HIV Programs also conduct a data match to verify completeness and accuracy.

Goal 11: Improve Immigrant and Refugee Evaluations.

Objective 11.1: For immigrants and refugees with abnormal chest x-rays read overseas as consistent with TB, increase the proportion who initiate medical evaluation within 30 days of arrival to 20%.

Status: Met

Percentage of TB Follow-Up Worksheets Started - Jurisdiction

Notification In Past...	30 Days		60 Days		180 Days		365 Days	
Jurisdiction	# TB Notifications	# (%) Follow-Ups	# TB Notifications	# (%) Follow-Ups	# TB Notifications	# (%) Follow-Ups	# TB Notifications	# (%) Follow-Ups
Nevada State	38	36 (94.7%)	55	53 (96.4%)	221	214 (96.8%)	473	456 (96.4%)

Electronic Disease Notification (EDN) Data as of March 4, 2011

Five Year Target Objectives For:

Percent of immigrants and refugees with a TB classification that receive an evaluation within 30 days of arrival

National Average	Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
Not Available	N/A – New variable	16%	17%	18%	19%	20%	20%

Discussion: Nevada's TB Programs diligently pursue class B notifications to initiate and complete TB evaluations in a timely manner. As this is a known high risk group which yield active infectious cases every year targeting this population for complete evaluations is a priority for Nevada as is evident by the 94.7% evaluation initiation rate.

Objective 11.2: For immigrants and refugees with abnormal chest x-rays read overseas as consistent with TB, increase the proportion who complete medical evaluation within 90 days of arrival to 45%.

Status: Unknown

Five Year Target Objectives For:

Percent of immigrants and refugees with a TB classification that complete an evaluation within 90 days of arrival

National Average	Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
Not Available	N/A – New variable	41%	42%	43%	44%	45%	45%

Discussion: The Electronic Data Notification System (EDN) system deployed in 2009 by the CDC's Division of Global Migration and Quarantine (DGMQ) is not currently capable of evaluating this new objective. Until the EDN system develops a percent completeness report Nevada will not be able to report on this new objective. It is anticipated that since 96% of Nevada's B-notifications have an evaluation started (see objective 11.1 in this report) that Nevada will perform well on this objective.

Objective 11.3: For immigrants and refugees with abnormal chest x-rays read overseas as consistent with TB and who are diagnosed with latent TB infection (LTBI) during evaluation in the U.S., increase the proportion who start treatment to 60%.

Status: Unknown

Five Year Target Objectives For:

Percent of immigrants and refugees diagnosed with LTBI who start treatment

National Average	Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
Not Available	N/A – New variable	50%	52%	54%	56%	58%	60%

Objective 11.4: For immigrants and refugees with abnormal chest x-rays read overseas as consistent with TB, and who are diagnosed with latent TB infection (LTBI) during evaluation in the U.S. and started on treatment, increase the proportion who complete LTBI treatment to 50%.

Status: Unknown

Five Year Target Objectives For:

Percent of immigrants and refugees diagnosed with and started on LTBI therapy who complete treatment regimen

National Average	Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
Not Available	N/A – New variable	40%	42%	44%	46%	48%	50%

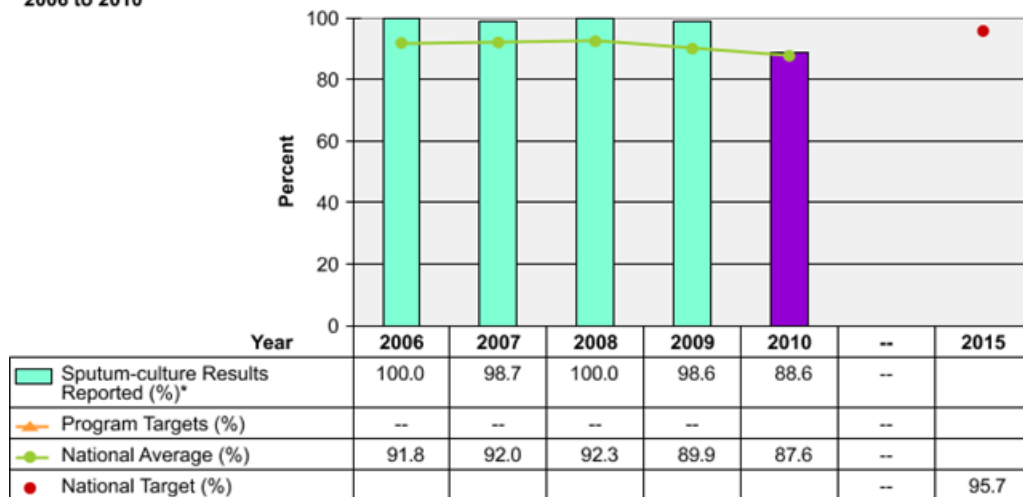
Discussion: As this is a new National Objective, Nevada does not have data for 11.2-11.4 objectives. The LHA have recently begun entering this information directly into the SDN-EDN. Once reports are generated from this information management system we will be able to evaluate our success.

Goal 12: Increase Sputum-Culture Reported

Objective 12.1: Increase the proportion of TB cases with a pleural or respiratory site of disease in patients ages 12 years or older that have a sputum-culture result reported to 95.7%.

Status: Met

Reporting of Sputum-culture Results in TB Cases with a Pleural or Respiratory Site of Disease in Patients Ages 12 Years or Older
Nevada
2006 to 2010



* Alternative colors on the chart indicate that the data is incomplete.

Year	2006	2007	2008	2009	2010
Total Pulmonary, Laryngeal or Pleural TB Cases (N)	82	83	86	86	85
Total Pulmonary, Laryngeal or Pleural TB Cases in Patients Ages 12 Years or Older (N)	80	77	74	73	70
Sputum-culture Result Reported (n)	80	76	74	72	62
Sputum-culture Result Not Reported (n)	0	1	0	1	8

National Tuberculosis Indicators Project (NTIP) Data as of March 1, 2011

Five Year Target Objectives For:

Percent of TB patients 12yr or older that have a sputum culture result reported

2006-09 National Average	2006-09 Nevada Average	2010 Objective	2011 Objective	2012 Objective	2013 Objective	2014 Objective	2015 National Objective
91.5%	98.8%	90%	91%	92%	93%	94%	95.7%

Discussion: Nevada has consistently exceeded the 95.7% national target for this goal. It is anticipated that once the 2010 cases are complete it will once again reflect >95.7% reporting for this objective.

Goal 13: Improve Program Evaluations.

Objective 13.1: Increase program evaluation activities by monitoring program progress and tracking evaluation status of cooperative agreement recipients.

Objective 13.2: Increase the percent of cooperative agreement recipients that have an evaluation focal point.

Status: In Process

Discussion: The data collection tool is currently being created; the first draft will be made available for review April 30, 2011.

Goal 14: Develop a Human Resource Development Plan.

Objective 14.1: Increase the percent of cooperative agreement recipients who submit a program-specific human resource development plan (HRD), as outlined in the TB Cooperative Agreement announcement, to 100.0%.

Objective 14.2: Increase the percent of cooperative agreement recipients who submit a yearly update of progress-to-date on HRD activities to 100.0%.

Status: Met

Discussion: The quarterly reports submitted to the state TB program by the sub grant recipients provide a narrative outlining HR activities taking place for that region for each quarter.

Goal 15: Training Focal Point.

Objective 15.1: Increase the percent of cooperative agreement recipients that have a TB training focal point.

Status: Met

Discussion: The State TB Controller is the TB education and training focal point for Nevada. Nevada's TB stakeholders participated in a Nurse to Nurse training conference hosted by the Francis J. Curry Center held December 9th and 10th.

Nevada State Health Division ~ Tuberculosis Program

Tuberculosis Fast Facts, 2006 - 2010

	2010			2009			2008			2007			2006		
County	No.	% of Total	Rate per 100,000**	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000
Clark	97	85.1%	5.1	87	82.1%	4.6	91	89.2%	4.8	92	90.2%	5.0	89	88.1%	5.0
Washoe	12	10.5%	2.9	14	13.2%	3.4	11	10.8%	2.7	6	5.9%	1.5	11	10.9%	2.8
Carson City	2	1.8%	3.6	2	1.9%	3.6	0	0.0%	0.0	2	2.0%	3.6	0	0.0%	0.0
All Other Counties*	3	2.6%	1.1	3	2.8%	1.1	0	0.0%	0.0	2	2.0%	0.7	1	1.0%	0.4

Gender	No.	% of Total	Rate per 100,000**	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000
Male	72	63.2%	5.3	63	59.4%	4.7	68	66.7%	5.1	61	59.8%	4.7	66	65.3%	5.2
Female	42	36.8%	3.2	43	40.6%	3.3	34	33.3%	2.6	41	40.2%	3.3	35	34.7%	2.9

Race/Ethnicity	No.	% of Total	Rate per 100,000**	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000
White, non-Hispanic	17	14.9%	1.2	18	17.0%	1.2	16	15.7%	1.1	18	17.6%	1.2	18	17.8%	1.2
Black, non-Hispanic	21	18.4%	10.7	14	13.2%	7.1	10	9.8%	5.2	14	13.7%	7.4	17	16.8%	9.4
Hispanic	27	23.7%	3.9	26	24.5%	3.7	43	42.2%	6.3	37	36.3%	5.7	38	37.6%	6.2
Asian	44	38.6%	26.1	46	43.4%	27.3	32	31.4%	19.5	32	31.4%	20.4	28	27.7%	19.0
Native American	2	1.8%	7.2	2	1.9%	7.2	1	1.0%	3.6	1	1.0%	3.7	0	0.0%	0.0
Multirace/Unknown	3	2.6%	4.8	0	0.0%	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Age	No.	% of Total	Rate per 100,000**	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000
0 to 9	18	15.8%	4.6	14	13.2%	3.5	12	11.8%	3.1	8	7.8%	2.1	3	3.0%	0.8
10 to 19	3	2.6%	0.9	7	6.6%	2.0	3	2.9%	0.9	8	7.8%	2.3	3	3.0%	0.9
20 to 29	12	10.5%	3.3	10	9.4%	2.7	13	12.7%	3.6	15	14.7%	4.1	16	15.8%	4.5
30 to 39	15	13.2%	3.9	12	11.3%	3.1	14	13.7%	3.7	13	12.7%	3.5	15	14.9%	4.1
40 to 49	13	11.4%	3.5	18	17.0%	4.8	20	19.6%	5.4	11	10.8%	3.0	20	19.8%	5.5
50 to 59	31	27.2%	9.4	15	14.2%	4.5	14	13.7%	4.3	16	15.7%	4.9	22	21.8%	6.9
60+	22	19.3%	4.9	30	28.3%	6.7	26	25.5%	6.3	31	30.4%	7.5	22	21.8%	5.6

HIV Status	No.	% of Total	Rate per 100,000**	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000
HIV Positive	7	6.1%	N/A	3	2.8%	N/A	3	2.9%	N/A	6	5.9%	N/A	4	4.0%	N/A
HIV Negative	92	80.7%	N/A	83	78.3%	N/A	86	84.3%	N/A	84	82.4%	N/A	85	84.2%	N/A
Not Offered	1	0.9%	N/A	10	9.4%	N/A	12	11.8%	N/A	11	10.8%	N/A	12	11.9%	N/A
Refused HIV Test	0	0.0%	N/A	0	0.0%	N/A	0	0.0%	N/A	0	0.0%	N/A	0	0.0%	N/A
Unknown	10	8.8%	N/A	10	9.4%	N/A	1	1.0%	N/A	1	1.0%	N/A	0	0.0%	N/A

Country of Origin	No.	% of Total	Rate per 100,000**	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000
United States	36	31.6%	N/A	37	34.9%	N/A	32	31.4%	N/A	37	36.3%	N/A	31	30.7%	N/A
Philippines	26	22.8%	N/A	35	33.0%	N/A	22	21.6%	N/A	26	25.5%	N/A	20	19.8%	N/A
Mexico	16	14.0%	N/A	10	9.4%	N/A	25	24.5%	N/A	24	23.5%	N/A	26	25.7%	N/A
Ethiopia	5	4.4%	N/A	7	6.6%	N/A	5	4.9%	N/A	3	2.9%	N/A	5	5.0%	N/A
China	4	3.5%	N/A	0	0.0%	N/A	3	2.9%	N/A	4	3.9%	N/A	4	4.0%	N/A
Vietnam	6	5.3%	N/A	4	3.8%	N/A	1	1.0%	N/A	0	0.0%	N/A	0	0.0%	N/A
India	1	0.9%	N/A	0	0.0%	N/A	0	0.0%	N/A	1	1.0%	N/A	1	1.0%	N/A
Guam	3	2.6%	N/A	0	0.0%	N/A	0	0.0%	N/A	0	0.0%	N/A	0	0.0%	N/A
El Salvador	2	1.8%	N/A	0	0.0%	N/A	0	0.0%	N/A	0	0.0%	N/A	0	0.0%	N/A
Rumania	2	1.8%	N/A	0	0.0%	N/A	0	0.0%	N/A	0	0.0%	N/A	0	0.0%	N/A
Other	13	11.4%	N/A	13	12.3%	N/A	14	13.7%	N/A	7	6.9%	N/A	14	13.9%	N/A

TOTAL	No.	% of Total	Rate per 100,000**	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000	No.	% of Total	Rate per 100,000
Nevada	114	100%	4.3	106	100.0%	4.0	102	100%	3.9	102	100%	4.0	101	100%	4.1

*Sources: TB Counted Cases: Nevada Tuberculosis Information Management System (TIMS) from 2005 to 2008; and National Electronic Diseases Surveillance System(Nevada) from 2009 to 2010; Release date: February 2011.

Population: Annual State Resident Population Estimates for 6 Race Groups(3 Race Alone Groups and Two or More Races) by Age, Sex, and Hispanic Origin. (SC_EST2009-a1d6m6):April 1,2000 to July 1,2009- U.S. CENSUS BUREAU, POPULATION DIVISION, Release date: June 2010. **Please note: 2010 Rates were calculated with 2009 estimation.

All Other Counties includes the counties of Churchill, Douglas, Elko, Esmeralda, Eureka, Humboldt, Lander, Lincoln, Lyon, Mineral, Nye, Pershing, Storey, and White Pine

For more information, please contact the Nevada State Health Division, Tuberculosis Program
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Nevada State Public Health Laboratory TB Activities from January 1, 2010 through December 31, 2010

Description of the Laboratory Work Load	YEAR TOTAL
1. Total number of clinical specimens process and cultured. Not including isolates referred from other laboratories.	1,800
2. Number of individual patients for whom a clinical specimen (e.g. sputum, CSF, Biopsy) was processed and TB culture was inoculated.	1,054
2a. Of these, report the number of individual patients for whom at least one culture was positive for <i>M. tuberculosis</i> complex.	88
3. Number individual patients for whom a reference isolate was received by the public health laboratory to rule out or confirm the identification of <i>M. tuberculosis</i> complex.	209
3a. Of these, report the number of individual patients for whom at least one reference isolate identified as <i>M. tuberculosis</i> complex.	89
4. Number of individual patients for whom drug susceptibility tests (DST) were performed for first line-drugs and/or whose isolates were referred to other laboratories for DST if first-line DST testing is not done in-house.	92
5. Number of individual patients from your jurisdiction for whom a clinical specimen (e.g. sputum, CSF, etc.) was tested directly with a nucleic acid amplification test (NAAT) or another rapid test or another rapid test. (This includes testing performed in-house and referred testing) (This does not include testing conducted in your laboratory on specimens referred from outside your jurisdiction) (This does not refer to rapid species identification tests (i.e.	103
5a. Of these, report the number of individual patients for whom a NAAT or other rapid detection test was positive for <i>M. tuberculosis</i> complex.	46
6. Number of individual patients for whom the laboratory referred an isolate for <i>M. tuberculosis</i> complex for genotyping	97

Turn- Around- Time Data	YEAR TOTAL
1. Promote rapid delivery of specimens. (TAT goal: Specimens should be received in the laboratory within 24 hours of specimen collection). Report the percent of specimens received with 1, 2, and 3 calendar days	
1a. % of specimens received within 1 calendar day	39%
1b. % of specimens received within 2 calendar days	21%
1c. % of specimens received within 3 calendar days	16%
2. Use fluorescent acid-fast staining and promptly transmit results by phone, FAX, or electronically. (TAT goal: Report acid-fast microscopy results within 24 hours of specimen receipt.)	
2a. % of specimens received within 1 calendar day	100%
2b. % of specimens received within 2 calendar days	0%
2c. % of specimens received within 3 calendar days	0%
3. Identify growth as acid-fast and use rapid methods to identify isolates as <i>M. tuberculosis</i> as soon as possible and report results promptly. (TAT goal: 14-21 calendar days from receipt.) Report percent <i>M. tuberculosis</i> complex isolates identified from initial diagnostic specimens (e.g. sputum, CSF, etc.) identified within 21 calendar days.	
3a. % of <i>M. tuberculosis</i> isolated identified within 21 calendar days	91%
4. Determine the susceptibilities (DST) of initial <i>M. Tuberculosis</i> complex isolated to first-line drugs in a rapid culture system and report results promptly. (TAT goal: 21-28 calendar days from receipt of specimen). Report the percent of Rifampin susceptibility results reported for <i>M. tuberculosis</i> isolated from initial diagnostic specimens within 28 days.	
4a. % of 1st line DST results reported within 28 calendar days	96%
5. Report the number of individual patients for whom laboratory confirmation of tuberculosis was provided within 48 hours of clinical specimen (e.g. sputum, CSF, etc.) receipt (i.e., use of NAAT or direct HPLC)	46

The Nevada State Public Health Laboratories Description of Activities:

All specimens are processed the day of receipt, including weekends. All AFB smears are read and reported within 24 hours of processing. MTBC-MTD test is performed Monday, Wednesday and Friday on first-time positive AFB smear samples. Processed specimens are inoculated to MGIT broth and 7H11 selective agar. Both broth and solid culture media are incubated for 6 weeks. Positive MGIT broths are stained and Accuprobes are performed Tuesdays and Fridays to identify isolated AFB. All results are called and faxed to the submitting clinic or laboratory, the local county TB health department and the NSHD, Office of Epidemiology.

For initial processing of specimens for isolation of *M. tuberculosis* the NSPHL utilizes: the Bactec 960, Auramine-Rhodamine fluorescent stain, the Genprobe MTD test for rapid ID, Genprobe Accuprobes for identification of MTBC, MAIC, *M. gordonae* and *M. kansasii*. Once organisms are identified as belonging to the MTBC their identification is biochemically confirmed utilizing: 68°C catalase test, niacin production and nitrate reduction. All new *M. tuberculosis* isolates receive a susceptibility panel which includes 2 dilutions of Streptomycin and INH, and single concentrations of Rifampin, Ethambutol and PZA. Isolates resistant to INH and Rifampin are automatically tested by conventional method of Agar Proportion versus Ethionamide, Kanamycin, Ciprofloxacin, Ofloxacin and PAS to determine XDR-TB. If additional testing is required or requested, the isolate is sent to the National Jewish TB Department in Denver, CO, or the CDC in Atlanta, GA. All patients who are cultured positive for *M. tuberculosis* have their initial isolate sent to Richmond, California for TB genotyping.

Unlike a hospital laboratory where the collection of a specimens occur onsite, the NSPHL receives specimens from multiple locations via mail or courier service. Most locations are shipping samples each day of collection. An exception to this is the SNHD TB Clinic where the majority of samples originate from; these samples are batched and shipped twice per week. Although SNHD is aware that this manner of batching samples is not the most effective way to quickly diagnose patients, it is the most fiscally efficient. The NSPHL also receives positive samples that have been processed at various hospitals and commercial laboratories throughout the State; this situation also increases the laboratory's turn-around-time from time of collection of sample to receipt by NSPHL.

The NSPHL has offered QFT testing since August, 2007. Although the test has increased in popularity it is still not widely utilized. The primary obstacle to increasing the utilization of this screening test remains the collection and transportation of samples to the lab and associated costs.

The PCR testing algorithm proposed by the CDC suggests performing a PCR test on the first specimen of every suspected case of TB, skipping the AFB smear of that specimen, and then going straight to culture, if the PCR result was positive than a smear would be done on that specimen prior to culture. The remaining two specimens would be processed the same as in the past. The NSPHL is not currently planning to switch to this specimen processing schedule as the cost for increasing the number of MTD tests performed cannot be supported at this time. The NSPHL currently performs Genprobe MTD testing only on new smear positive cases every Monday, Wednesday and Friday.