



**Epidemiology
of**

Tuberculosis

in Sonoma County

2006 Annual Report

prepared by

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Table of Contents

| | |
|----------------------------------|---|
| Index of Tables and Figures..... | 2 |
| Executive Summary..... | 3 |
| RATES AND DEMOGRAPHICS..... | 4 |
| Age..... | 4 |
| Race/Ethnicity..... | 4 |
| Birth Country..... | 5 |
| DRUG RESISTANCE..... | 6 |
| TREATMENT OUTCOMES..... | 6 |
| REFERENCES..... | 7 |

Index of Tables and Figures

| | |
|--|---|
| Table 1 – Age-specific Rates of Tuberculosis, Sonoma County 2002-2006..... | 5 |
| Figure 1 – Rate of TB Infection, Three-year Rolling Average, Sonoma County 1994-2006..... | 4 |
| Figure 2 – Rates of TB by Ethnicity, Sonoma County 2000-2006..... | 5 |
| Figure 3 – Country/Region of Origin of Foreign-born TB cases, Sonoma County 2001-2006..... | 5 |
| Figure 4 -Distribution of Antibiotic Resistance Patterns among TB isolates, Sonoma County..... | 6 |
| Figure 5 - Proportion of Cases by Outcome, Sonoma County, 1997-2006..... | 6 |

Executive Summary

The rate of tuberculosis (TB) in California is regularly above the national average of 4.8 cases per 100,000 persons and, in 2005, California had the 3rd highest rate of TB in the nation at 7.9 cases per 100,000 persons.¹ Sonoma County was ranked 32nd among counties in California with a rate of 2.3 new cases per 100,000 persons in 2005.²

People at higher risk for tuberculosis include immigrants from parts of the world where TB is still widespread, people with HIV infections, the homeless, the elderly and close contacts of people with infectious TB.

Of particular note in Sonoma County:

Overall

- An increase in the number and rate of TB cases, rising from 2.3 in 2005 (N=11) to 2.8 cases per 100,000 persons in 2006 (N=14).^{3,4}
- Of the 14 cases diagnosed in 2006, 78.5% (N=11) were pulmonary. All pulmonary and two non-pulmonary cases were culture confirmed (N=13, 93%).

Race/Ethnicity

- Consistently high rates of TB among Asians and Hispanics.
- Foreign-born persons account for a high proportion of new TB cases in 2006 (79%).

Drug Resistance

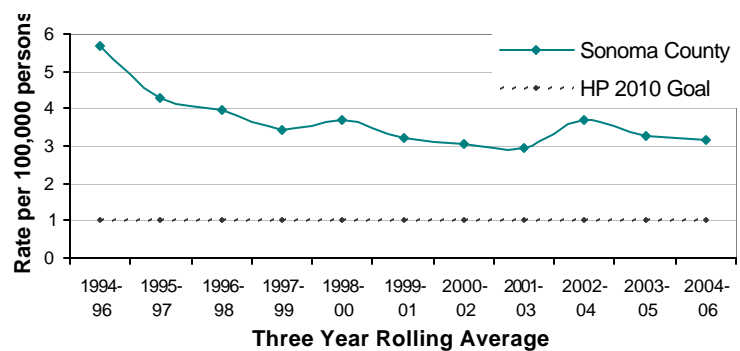
- Continuing increases over time in the proportion of TB isolates that are drug resistant.

RATES AND DEMOGRAPHICS

In 2006, the rate of new cases increased from 2.3 to 2.8 cases per 100,000 persons (N=14). This represents a 22% increase from 2005. Over the past ten years, the rate of TB disease in Sonoma County remains consistent at approximately 3 cases per 100,000 persons (Figure 1).

With the 2006 rate of 2.8 cases per 100,000 persons, Sonoma County meets the national definition for a low-incidence jurisdiction (<3.5 cases per 100,000 persons).⁶ However, the rate of TB infection in Sonoma County is consistently higher than Healthy People 2010 goal of 1.0 case per 100,000 population.⁷

Figure 1 – Rate* of TB Infection, Three-year Rolling Average, Sonoma County and Healthy People 2010 Goal 1994-2006⁵



*Rates per 100,000 population
Sources: State of California, Department of Health Services, Tuberculosis Control Branch.

Age

Because the absolute number of cases is small, it is difficult to evaluate changing trends in age groups. In 2006, the two groups most affected by TB infection were persons aged 25-44 and persons aged 45-64. Since 2000, persons aged 25-44 have had the highest age-specific rates of TB, ranging from 3.0 to 8.8 cases per 100,000 persons.

Race/Ethnicity

Persons who are Asian or report Hispanic ethnicity have a much higher rate of disease (30 and 6 cases per 100,000 persons, respectively, Table 1). In 2006, 43% of TB cases reported Hispanic ethnicity and 43% reported Asian race. The majority of these persons reported a non-US birth country (N=11; 5 Mexico, 6 Southeast Asia). Compared to the 2006 Sonoma County population, 19% Hispanic and 4% Asian, these two groups are and are disproportionately affected by TB

Table 1 – Race- and Ethnicity-specific Rates* of Tuberculosis, Sonoma County 2006

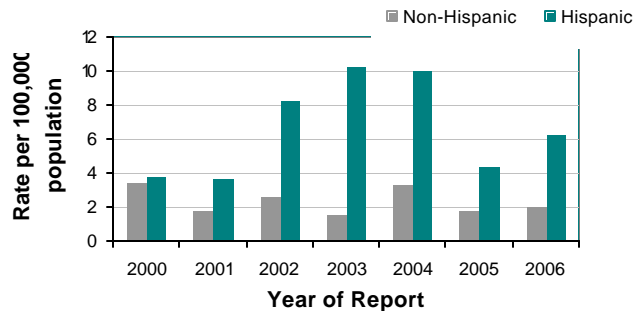
| | Tuberculosis Cases | | | Population | |
|-------------------------------|--------------------|-------------|------------|----------------|-------------|
| | Case | Percent | Rate | Number | Percent |
| County Total | 14 | 100% | 2.8 | 492,930 | 100% |
| White | 2 | 14% | 0.6 | 352,783 | 72% |
| Hispanic | 6 | 43% | 6.3 | 95,731 | 19% |
| Asian/Pacific Islander | 6 | 43% | 30.1 | 19,933 | 4% |
| African American | 0 | 0% | 0.0 | 7,560 | 2% |
| American Indian/Alaska Native | 0 | 0% | 0.0 | 5,794 | 1% |

*Rates per 100,000 population

Source: State of California, Department of Health Services, TB Control Branch

The rate of TB among Asians has remained consistently high in the past five years (2000-2006 average of 29 cases per 100,000 persons). Similarly, the rate in persons reporting Hispanic ethnicity remains higher than non-Hispanics at 6.6 cases per 100,000 persons during the same time period (Figure 2).

Figure 2 – Rates* of TB by Ethnicity, Sonoma County 2000-2006



*Rates per 100,000 population

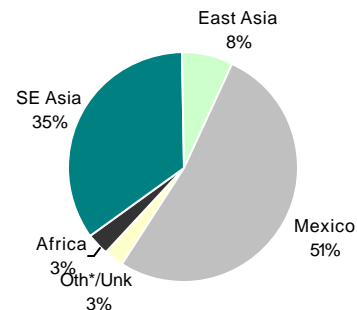
Source: State of California, Department of Health Services, TB Control Branch

Birth Country

Over the past ten years, an average of 71% of Sonoma County’s TB cases occurred in foreign-born individuals (range 50-91%). In 2006, 79% of cases reported a non-US birth country.

In California in 2005, 77% of all reported tuberculosis cases occurred in persons born outside of the United States, compared to 55% of cases nationally.^{8,9} In Sonoma County in 2005, 91% of persons with TB were foreign-born. As shown in Figure 3, between 2001 and 2006, the most common country of origin reported was Mexico, (N=33, 51%), followed by countries in South-east Asia (N=23, 35%) and East Asia (N=5, 8%).

Figure 3 – Country/Region of Origin of Foreign-born TB cases, Sonoma County 2001-2006 (N=65)



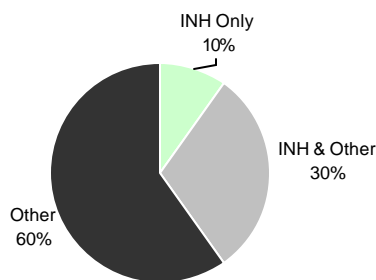
*Oth/Unk includes one case from India and one not specified.
Source: State of California, Department of Health Services, TB Control Branch

DRUG RESISTANCE

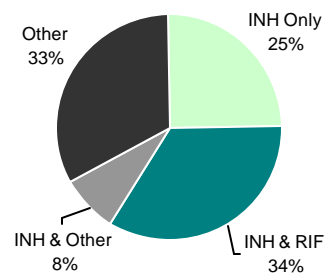
Single and multiple drug-resistant TB strains continue to be an emerging problem in Sonoma County. In recent years, the proportion of cases resistant to isoniazid alone has increased from 10% between 1997 and 2001 to 25% between 2002 and 2006 (Figure 4). There have been five multi-drug resistant cases (isolates resistant to isoniazid and rifampin) in Sonoma County, one each in 1994, 2002, 2003 and two in 2006.

Figure 4 – Distribution of Antibiotic Resistance among Resistant TB isolates, Sonoma County

1997-2001 (N=10)



2002-2006 (N=12)



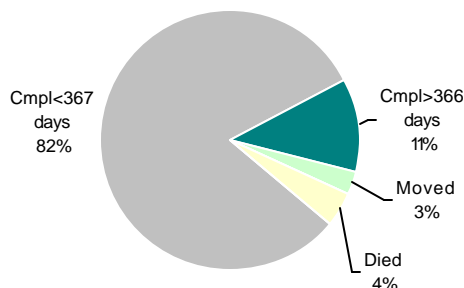
Source: State of California, Department of Health Services, TB Control Branch

TREATMENT OUTCOMES

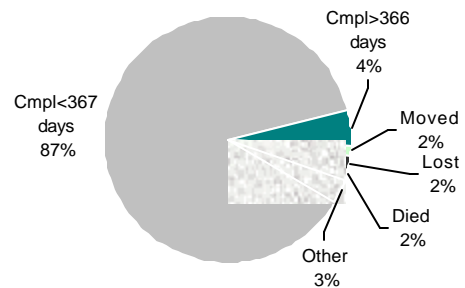
Sonoma County continues to improve the proportion of persons completing therapy in less than one year, increasing from 82% of persons between 1997 and 2001 to 87% of persons between 2002 and 2006 (Figure 5).

Figure 5 - Proportion of Cases by Outcome, Sonoma County, 1997-2006*

1997-2001 (N=70)



2002-2006 (N=66)**



*4 MDR cases (1 each in 2002 and 2003, 2 in 2006) were excluded from these figures.

**9 persons currently in treatment as of 3/20/2007.

Source: State of California, Department of Health Services, TB Control Branch

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