
City of Berkeley
Department of Health and Human Services
Public Health Division

# Reports of Verified Cases of Tuberculosis, Berkeley, 1993-2006

**Prepared by**

**Neil Maizlish, PhD, MPH, Epidemiologist**
**Warren Lee, BS, Volunteer**

City of Berkeley Public Health Division
Community Health Action & Assessment Section (CHAAS)
1947 Center Street, 2nd Floor
Berkeley, CA 94704

**2/11/08**

## INTRODUCTION

The purpose of this report is to describe the demographics and statistical trends of verified tuberculosis cases in Berkeley residents and the number of close, constant contacts that personnel in the Berkeley Public Health Division followed up as part of contact investigations. In addition to documenting historical patterns, this information may useful for resource planning.

## METHODS

### Data Sources

All cases in Berkeley residents confirmed as tuberculosis by personnel in the City of Berkeley Public Health Division (PHD) were reported to the California Department of Public Health using the standardized form Report of Verified Case of Tuberculosis (RVCT) [See Appendix]. The form includes patient identifiers, demographics, diagnostic information, and initial treatment information. Follow-up forms also include initial information on drug susceptibility (Follow-up Report 1) and case completion data on conversion, duration of drug therapy, and drug susceptibility (Follow-up Report 2).

Data from all three forms were key-entered by personnel in the State's Tuberculosis Control Branch (TCB). Data were coded in consistent format starting in 1993 and the TCB provided data to the PHD as an Excel spreadsheet covering RVCTs from 1993 to July 2007. Residential zip code was included, but not the street address from the original report.

Data from contact investigations of each verified case were recorded in worksheets by PHD nursing personnel and stored in the PHD medical record archive. The worksheets were manually abstracted and contacts were counted for each Berkeley case and for each case that moved to Berkeley after being confirmed in other health jurisdictions. Data on the number of contacts for each verified case were entered into an Excel spreadsheet and joined on a unique identifier (RVCT ID) to the TCB-provided database. Non-Berkeley cases were defined as non-matches.

Berkeley population denominators used in rates were estimated by linear interpolation (1991-1999) and linear extrapolation (2001-2006) from U.S. Census data from the 1990 and 2000 censuses.[1]

To carry out a geospatial analysis at the level of census tract (rather than zip code), address information of cases in the TCB-provided database was identified from cases matched to data in the Confidential Morbidity Reports, 1993-2006. The match key was the first two letters of the last name and date of birth. In a similar patient population, this match key was found to have a sensitivity of 93% and positive predictive value of 99.5%.[2]

Statistical significance of differences in rates was assessed with chi square tests and a criterion level of $p < 0.05$. Confidence intervals were calculated for rates using the exact Poisson distribution. Due to sparse data, the year that the RVCT was reported to the TCB was aggregated into three time periods: 1993-1997, 1998-2002, and 2003-2006. Because data for 2007 was not complete, the time period of analysis was 1993-2006. Linear time trends were tested for statistical significance using chi square test for trend. Statistical calculations were made in STATA 10.

## RESULTS

### Demographics

There were 142 Reports of a Verified Case of Tuberculosis (RVCTBs) in Berkeley residents from 1993 to 2006, including 3 persons who were reported dead at diagnosis (Table 1). The annual number of cases and annual average rates significantly declined in the successive time periods: from 13.3 per 100,000 in 1993-7 to 5.7 per 100,000 from 2003-6. The highest number of cases occurred in young adults (25-44 year olds), but the age-specific rate tended to increase with increasing age. In successive time periods, steep declines in the age-specific rate were found in each age group except young adults. The number and rate of male cases exceeded that of females except in the most recent time period. Asians (followed by African Americans) had the highest rates and accounted for at least one-third of all cases. Each race/ethnic group experienced steep declines in their TB rate over time, but race/ethnic disparities persisted for Asian and African Americans in the most recent time period. Asians accounted for an increasing percentage of cases over time.

Geographic concentrations of cases and high rates occurred in census tracts adjacent to the campus of the University of California, and south and west Berkeley (Table 2, Figure 1).

Immigrants from 24 different countries accounted for 72 (51%) cases (Table 3), who immigrated predominantly from Asian countries (N=40), excluding India and Pakistan (N=13), and Latin America (N=13). At least one-third of these cases had been residing in the United States ≥5 years since immigrating. The percent of homeless decreased nonsignificantly from 19% in 1993-1997 to 4% in 2003-2006. The proportion of cases that reported alcohol use or drug use (including injected drugs) in the prior year decreased from 27% in 1993-1997 to 5% in 2003-2006 (p=0.06).

### Interjurisdictional Transfers and Contact Investigations

In addition to the 142 Berkeley cases, 29 cases were referred from other local health jurisdictions. For Berkeley cases and interjurisdictional transfers, 693 contacts were identified (Table 3). The distribution of contacts per case was skewed. Forty-two cases (26%) involving 6 or more contacts per case accounted for 68% (474/693) of all contacts.

### Diagnostic and Treatment Profile

A previous diagnosis for tuberculosis was reported in 8% of cases (Table 4). There were 6 cases (occurring from 1996 to 2001) in people with AIDS or matched to the California AIDS registry. The lungs were the most common site of infection. Approximately two-thirds had a positive sputum culture, one third had a positive sputum smear, 90% had an abnormal chest X-ray, 61% had a positive tuberculin skin test, and 18% had a positive tissue culture.

Isoniazid, rifampin, pyrazinamide, and ethambutol were each part of the initial treatment regiment in >90% of cases (Table 5). The lag time from date of diagnosis to treatment initiation was less than 1 week in approximately one-third of cases, and ≥3 weeks for approximately one-third of cases. There has been a significant decrease in isoniazid susceptibility (increased resistance) in recent years. The proportion of cases completing a therapeutic regimen was high (>81%), and not significantly different over time. Only 2% of cases were lost to follow-up. Over the successive time periods, proportionately more cases had longer (≥26 weeks) durations of chemotherapy. The proportion of cases who exclusively underwent directly observed therapy

(DOT) peaked at 50% during 1998-2002. In 2003-2006, a combination of DOT and self-administration (72%) was the predominant format of medication administration.

## DISCUSSION

The findings in Berkeley generally mirror those of California and the United States: tuberculosis case rates have declined over the past 10 years, and racial and ethnic minorities and the foreign-born bear a disproportionate burden of the disease.[3-4] Salient observations in the Berkeley population include an apparent decrease in homelessness and alcohol/drug use in TB cases. Resistance to isoniazid appears to have increased over the study period. Contact tracing is a labor-intensive activity: the 142 verified cases involved nearly 700 additional contacts and follow-up. The proportion of cases that complete therapy has been high over the years studied, but the therapeutic regimen in recent years is increasingly longer and increasingly combines self-administration with directly observed therapy.

Analyses of the clinical results of contact investigations was hampered by the lack of automated data collection forms that provide individual-level (disaggregated) information. This obstacle can be overcome by creating a standardized data collection tool. In 2007, such a tool was piloted for a contact investigation at a Berkeley preschool. Extending this tool to other types of contact investigations will allow the Public Health Division have a robust response to TB contact investigations in a variety of settings, and strengthen infrastructure for other communicable disease reporting.

The main limitation of this study was that tuberculosis is a relative rare disease in the Berkeley population, and data over many years must be pooled to provide statistically stable estimates for subgroup analyses. Although a high proportion (133/142) of RVCTs were matched to cases in the Confidential Morbidity Reports (CMR), approximately 20% of cases could not be geocoded due to missing address information in the CMR. Although zip code was available for 100% of cases, it lacks specificity compared to the census tract.

## RECOMMENDATIONS

- Automating data collection using a database housed at the PHD will enhance the ability of staff to follow-up cases and contacts, and to generate aggregate statistics in a timely manner. A database can also be used to automate the time-consuming manual process of reporting statistical data to the State's Tuberculosis Control Branch.

- Algorithms and follow-up protocols should be finalized for TB. This will facilitate a standardized approach to case and contact investigations, and enhance consistency and quality.

- Contact investigations and directly observed therapy are highly repetitive, labor intensive activities. The PHD should consider the role of non-nurse personnel for aspects of disease investigations and directly observed therapy.

**ACKNOWLEDGEMENTS**

The authors acknowledge Leslie Henry, RN and José Dúcos of the Berkeley Public Health Division for their review of this report. Liam Reilly, volunteer, assisted with abstraction of the contact investigation forms. Thanks are extended to Jennifer Allen, William Elms and other staff of the Tuberculosis Control Branch, California Department of Public Health, who provided data and documentation.

**REFERENCES**

1. U.S. Bureau of Census. Summary Files 1-4. Detailed Tables (http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_submenuId=datasets_1&_lang=en). Washington, DC: U.S. Bureau of Census; 2000.

2. Maizlish N, Herrera L. A record linkage protocol for a diabetes registry at ethnically diverse community health centers. *JAMIA*. 2005;12:331-337.

3. Tuberculosis Control Branch. Report on Tuberculosis in California, 2005. Richmond: California Department of Health Services, Division of Communicable Disease Control; March 2007.

4. R Pratt, V Robison, T Navin. Trends in Tuberculosis Incidence — United States, 2006. Morbidity and Mortality Weekly Report 2007;56:245-250

**Table 1** – Demographic Characteristics of Verified Cases of Tuberculosis, Berkeley, 1993-2006

| Item | Total | | | 1993-1997 | | | 1998-2002 | | | 2003-2006 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | Rate* | N | % | Rate (95% CI)† | N | % | Rate | N | % | Rate |
| Total | | | | 67 | 47 | 13.3# (10.3-16.9) | 51 | 36 | 9.9 (7.4-13.1) | 24 | 17 | 5.7 (3.7-8.6) |
| 1993 | 12 | 8 | 12 | | | | | | | | | |
| 1994 | 8 | 6 | 8 | | | | | | | | | |
| 1995 | 14 | 10 | 14 | | | | | | | | | |
| 1996 | 13 | 9 | 13 | | | | | | | | | |
| 1997 | 20 | 14 | 20 | | | | | | | | | |
| 1998 | 7 | 5 | 7 | | | | | | | | | |
| 1999 | 17 | 12 | 17 | | | | | | | | | |
| 2000 | 4 | 3 | 4 | | | | | | | | | |
| 2001 | 12 | 8 | 12 | | | | | | | | | |
| 2002 | 11 | 8 | 11 | | | | | | | | | |
| 2003 | 5 | 4 | 5 | | | | | | | | | |
| 2004 | 4 | 3 | 4 | | | | | | | | | |
| 2005 | 10 | 7 | 10 | | | | | | | | | |
| 2006 | 5 | 4 | 5 | | | | | | | | | |
| Age (Years) | | | | | | | | | | | | |
| 0–14 | 8 | 6 | 5 | 5 | 7 | 8 | 3 | 6 | 5 | 0 | 0 | 0 |
| 15–24 | 26 | 18 | 8 | 15 | 22 | 12 | 6 | 12 | 5 | 5 | 21 | 5 |
| 25–44 | 50 | 35 | 11 | 21 | 31 | 12 | 17 | 33 | 10 | 12 | 50 | 10 |
| 45–64 | 33 | 23 | 10 | 12 | 18 | 12 | 15 | 29 | 13 | 6 | 25 | 6 |
| 65+ | 25 | 18 | 17 | 14 | 21 | 26 | 10 | 20 | 19 | 1 | 4 | 2 |
| Sex | | | | | | | | | | | | |
| Male | 86 | 61 | 12 | 38 | 57 | 15 | 36 | 71 | 14 | 12 | 50 | 6 |
| Female | 56 | 39 | 8 | 29 | 43 | 11 | 15 | 29 | 6 | 12 | 50 | 6 |
| Ethnicity | | | | | | | | | | | | |
| African Am. | 55 | 39 | 28 | 28 | 42 | 35 | 19 | 37 | 28 | 8 | 33 | 18 |
| Asian/P.I. | 54 | 38 | 70 | 22 | 33 | 91 | 21 | 41 | 75 | 11 | 46 | 43 |
| Latino | 15 | 11 | 11 | 7 | 11 | 16 | 6 | 12 | 12 | 2 | 8 | 5 |
| Other | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 0 | 0 | 0 |
| White | 15 | 11 | 2 | 8 | 12 | 3 | 4 | 8 | 1 | 3 | 13 | 1 |

* Rate per 100,000
† Poisson exact 95% confidence intervals
# Significant linear time trend 1993-2006
Note: Gray-shaded area indicates numbers too small to provide statistically reliable estimates

**Table 2** – Number of Cases and Rate of Verified Cases of Tuberculosis by Census Tract, Berkeley, 1998-2002

| Census Tract | N | Rate per 100,000 |
|---|---|---|
| 4211 | 0 | 0 |
| 4212 | 1 | 5 |
| 4213 | 0 | 0 |
| 4214 | 0 | 0 |
| 4215 | 1 | 5 |
| 4216 | 0 | 0 |
| 4217 | 3 | 20 |
| 4218 | 0 | 0 |
| 4219 | 3 | 16 |
| 4220 | 1 | 15 |
| 4221 | 2 | 15 |
| 4222 | 0 | 0 |
| 4223 | 0 | 0 |
| 4224 | 0 | 0 |
| 4225 | 2 | 11 |
| 4226* | 0 | 0 |
| 4227 | 0 | 0 |
| 4228 | 1 | 4 |
| 4229 | 3 | 25 |
| 4230 | 0 | 0 |
| 4231 | 1 | 5 |
| 4232 | 1 | 7 |
| 4233 | 0 | 0 |
| 4234 | 2 | 9 |
| 4235 | 1 | 7 |
| 4236 | 1 | 3 |
| 4237 | 2 | 14 |
| 4238 | 1 | 6 |
| 4239 | 2 | 11 |
| 4240 | 4 | 14 |

* Campus of University of California, Berkeley

**Table 3** – Demographic Characteristics of Verified Cases of Tuberculosis, Berkeley, 1993-2006

| | Total | | 1993-1997 | | 1998-2002 | | 2003-2006 | |
|---|---|---|---|---|---|---|---|---|
| Item | N | % | N | % | N | % | N | % |
| Country of Origin | | | | | | | | |
| US | 70 | 49 | 37 | 55 | 23 | 45 | 10 | 42 |
| Not US | 72 | 51 | 30 | 45 | 28 | 55 | 14 | 58 |
| China | 10 | | | | | | | |
| Philippines | 9 | | | | | | | |
| Mexico | 9 | | | | | | | |
| India | 8 | | | | | | | |
| Pakistan | 5 | | | | | | | |
| Nepal | 4 | | | | | | | |
| Vietnam | 4 | | | | | | | |
| Hong Kong | 3 | | | | | | | |
| South Korea | 3 | | | | | | | |
| Kenya | 2 | | | | | | | |
| Mongolia | 2 | | | | | | | |
| 13 others* | 13 | | | | | | | |
| Date of Entry to Diagnosis | | | | | | | | |
| <1 year | 15 | 21 | 10 | 33 | 1 | 4 | 4 | 29 |
| 1-4.9 | 21 | 30 | 10 | 33 | 8 | 31 | 3 | 21 |
| 5-9.9 | 12 | 17 | 5 | 17 | 7 | 27 | 0 | 0 |
| 10+ | 22 | 31 | 5 | 17 | 10 | 38 | 7 | 50 |
| Homelessness: Yes | 22 | 16 | 13 | 19 | 8 | 16 | 1 | 4 |
| No | 118 | 84 | 54 | 81 | 41 | 84 | 23 | 96 |
| Drug Use: Yes | 29 | 22 | 17 | 27 | 11 | 24 | 1 | 5 |
| No | 101 | 78 | 46 | 73 | 35 | 76 | 20 | 95 |
| Total contacts | 693 | | 295 | | 305 | | 93 | |
| Berkeley | 635 | | 267 | | 276 | | 92 | |
| Non-Berkeley | 58 | | 28 | | 29 | | 1 | |
| Number of Contacts/RVCT | | | | | | | | |
| 0 | 31 | | 19 | | 5 | | 7 | |
| 1 | 27 | | 10 | | 12 | | 5 | |
| 2 | 25 | | 13 | | 8 | | 4 | |
| 3 | 19 | | 11 | | 4 | | 4 | |
| 4 | 10 | | 3 | | 5 | | 2 | |
| 5 | 9 | | 5 | | 3 | | 1 | |
| 6+ | 42 | | 17 | | 20 | | 5 | |
| Number of Contacts/RVCT (non-Berkeley) | | | | | | | | |
| 0 | 9 | | 3 | | 4 | | 2 | |
| 1 | 4 | | 3 | | 0 | | 1 | |
| 2 | 3 | | 2 | | 1 | | 0 | |
| 3 | 5 | | 2 | | 3 | | 0 | |
| 4+ | 5 | | 2 | | 3 | | 0 | |

* There was 1 case each in Somalia, Indonesia, Japan, Turkey, Portugal, Romania, Spain, Chile, Guatemala, Honduras, Cambodia, and Thailand

**Table 4** – Diagnostic Information of Verified Cases of Tuberculosis, Berkeley, 1993-2006

| Item | Total | | 1993-1997 | | 1998-2002 | | 2003-2006 | |
|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % |
| Previous Diagnosis | | | | | | | | |
| Yes | 12 | 8 | 4 | 6 | 7 | 14 | 1 | 4 |
| No | 129 | 91 | 63 | 94 | 43 | 84 | 23 | 96 |
| Major Site | | | | | | | | |
| Pulmonary | 119 | 84 | 55 | 82 | 45 | 88 | 19 | 79 |
| Pleural | 6 | 4 | 2 | 3 | 2 | 4 | 2 | 8 |
| Lymphatic, Cervical | 4 | 6 | 4 | 6 | 0 | 0 | 0 | 0 |
| All Other | 13 | 6 | 6 | 9 | 4 | 8 | 3 | 13 |
| Sputum Culture | | | | | | | | |
| Positive | 94 | 66 | 41 | 61 | 37 | 73 | 16 | 67 |
| Negative | 25 | 18 | 12 | 18 | 7 | 14 | 6 | 25 |
| Not Done | 23 | 16 | 14 | 21 | 7 | 14 | 2 | 8 |
| Sputum Smear | | | | | | | | |
| Positive | 52 | 37 | 21 | 31 | 20 | 39 | 11 | 46 |
| Negative | 69 | 49 | 34 | 51 | 24 | 47 | 11 | 46 |
| Unknown | 21 | 15 | 12 | 18 | 7 | 14 | 2 | 8 |
| Chest X-Ray | | | | | | | | |
| Normal | 14 | 10 | 9 | 13 | 3 | 6 | 2 | 8 |
| Abnormal | 128 | 90 | 58 | 87 | 48 | 94 | 22 | 92 |
| Tuberculin Skin Test | | | | | | | | |
| Positive | 87 | 61 | 46 | 69 | 27 | 53 | 14 | 68 |
| Negative | 10 | 7 | 7 | 10 | 3 | 6 | 0 | 0 |
| Unknown | 3 | 2 | 0 | 0 | 1 | 2 | 2 | 8 |
| Culture of Tissue | | | | | | | | |
| Positive | 26 | 18 | 13 | 19 | 10 | 20 | 3 | 13 |
| Negative | 13 | 9 | 6 | 9 | 4 | 8 | 3 | 13 |
| Not Done | 101 | 71 | 48 | 72 | 36 | 71 | 17 | 71 |
| Unknown | 2 | 1 | 0 | 0 | 1 | 2 | 1 | 4 |

**Table 5** – Treatment Information of Verified Cases of Tuberculosis, Berkeley, 1993-2006

| Item | Total | | 1993-1997 | | 1998-2002 | | 2003-2006 | |
|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % |
| Initial Drug Regimen | | | | | | | | |
| Isoniazid | 138 | 97 | 67 | 100 | 48 | 94 | 23 | 96 |
| Rifampin | 133 | 94 | 64 | 96 | 46 | 90 | 23 | 96 |
| Pyrazinamide | 133 | 94 | 62 | 93 | 48 | 94 | 24 | 100 |
| Ethambutol | 125 | 88 | 54 | 81 | 47 | 92 | 24 | 100 |
| Streptomycin | 2 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| Others | 2 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| Date of Diagnosis to Treatment | | | | | | | | |
| <1 week | 46 | 33 | 24 | 36 | 16 | 33 | 6 | 25 |
| 1 week | 16 | 12 | 5 | 7 | 7 | 15 | 4 | 17 |
| 2 weeks | 33 | 24 | 18 | 27 | 9 | 19 | 6 | 25 |
| 3 weeks | 29 | 21 | 14 | 21 | 8 | 17 | 7 | 29 |
| 4+ weeks | 15 | 11 | 6 | 9 | 8 | 17 | 1 | 4 |
| Susceptibility to Drug* | | | | | | | | |
| Isoniazid | 101 | 90 | 48 | 94 | 41 | 95 | 12 | 67 |
| Rifampin | 110 | 98 | 51 | 100 | 42 | 98 | 17 | 94 |
| Pyrazinamide | 93 | 83 | 35 | 69 | 41 | 95 | 17 | 94 |
| Ethambutol | 108 | 96 | 51 | 100 | 41 | 95 | 16 | 89 |
| Streptomycin | 75 | 69 | 39 | 76 | 30 | 70 | 6 | 33 |
| Treatment Status | | | | | | | | |
| Completed | 118 | 87 | 57 | 85 | 44 | 92 | 17 | 81 |
| Moved | 6 | 4 | 2 | 3 | 2 | 4 | 2 | 9 |
| Lost to follow-up | 3 | 2 | 2 | 3 | 0 | 0 | 1 | 5 |
| Died | 9 | 7 | 6 | 9 | 2 | 4 | 1 | 5 |
| Weeks of Therapy | | | | | | | | |
| 0 | 60 | 42 | 35 | 52# | 21 | 41 | 4 | 17 |
| 1-25 | 34 | 24 | 20 | 30 | 10 | 20 | 4 | 17 |
| 26-56 | 48 | 34 | 12 | 18 | 20 | 39 | 16 | 66 |
| Type of Therapy | | | | | | | | |
| Self-Administered | 54 | 40 | 35 | 52# | 16 | 33 | 3 | 14 |
| DOT Exclusively | 45 | 33 | 18 | 27 | 24 | 50 | 3 | 14 |
| DOT and Self-Administered | 37 | 27 | 14 | 21 | 8 | 17 | 15 | 72 |

* No cases of reported use of ethionamide, kanamycin, cycloserine, capreomycin, para-amino salicylic acid, amikacin, rifabutin, ciprofloxacin, ofloxacin

# Percentages are significantly different ($p < 0.05$)

**Figure 1.** Verified TB Cases by Census Tract, Berkeley, 1993-2006

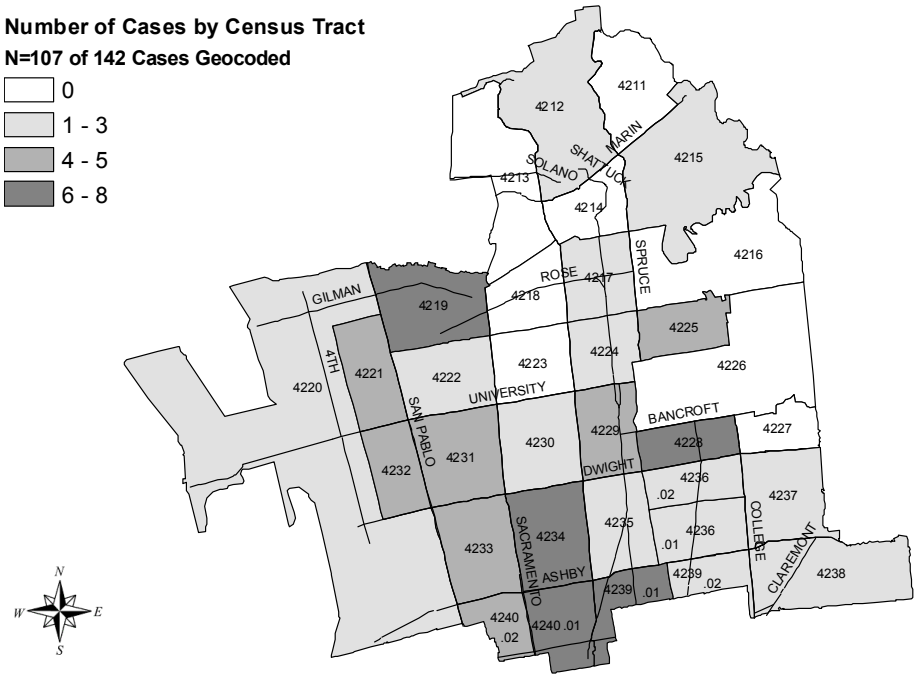
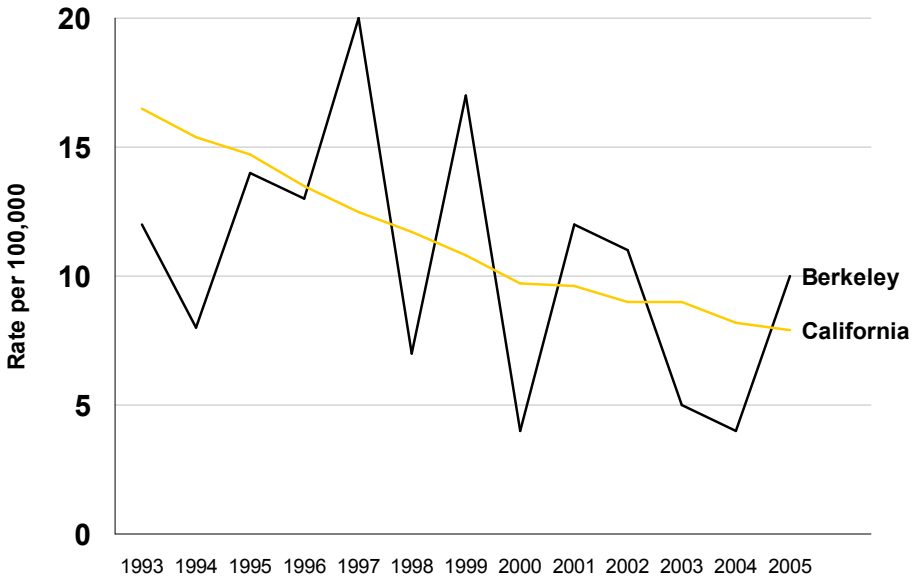



**Figure 2.** Tuberculosis Case Rates per 100,000, Berkeley and California, 1993-2005




Source: California Department of Health Services, 2007; City of Berkeley, 2007

Appendix

State of California—Health and Human Services Agency

Department of Health Services

U. S. Department of Health and Human Services
Public Health Service
Centers for Disease Control and Prevention (CDC)
Atlanta, Georgia 30333

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

# REPORT OF VERIFIED CASE OF TUBERCULOSIS

| Patient name (last) (first) (M.I.) | Address (number, street) | City | State | ZIP code |
|---|---|---|---|---|
| | | | | |

SOUNDEX

1. State reporting
   Specify: _____
   Alpha state code

2.
   State case number
   City/county case number

3. Date submitted (Month, Day, Year)
   By:

4. Address for case counting
   City
   Within city limits 1 Yes 2 No
   County
   ZIP code –

5. Date reported (Month, Day, Year)

6. Date counted (Month, Day, Year)

7. Date of birth (Month, Day, Year)

8. Sex
   1 Male
   2 Female
   9 Unknown

9. Race *(select one or more)*
   1 American Indian or Alaskan Native
   2 Asian *(specify)*: _____
   3 Black or African American
   4 Native Hawaiian or Pacific Islander *(specify)*: _____
   5 White
   9 Unknown

10. Ethnicity *(select one)*
    1 Hispanic or Latino
    2 Not Hispanic or Latino
    9 Unknown

11. Country of origin
    U.S.
    Not U.S. *(specify country)*: _____
    Unknown

12. Month/year arrived in U.S. (Month, Year)

13. Status at diagnosis of TB
    1 Alive
    2 Dead
    9 Unknown

14. Previous diagnosis of tuberculosis
    1 Yes
    2 No
    9 Unknown
    Year
    If yes, list year of previous diagnosis
    1 If more than one previous episode, check here

15. Major site of disease
    00 Pulmonary
    10 Pleural
    21 Lymphatic: Cervical
    22 Lymphatic: Intrathoracic
    23 Lymphatic: Other
    29 Lymphatic: Unknown
    30 Bone and/or joint
    40 Genitourinary
    50 Miliary
    60 Meningeal
    70 Peritoneal
    80 Other*
    90 Site not stated
    *If site is "Other," enter anatomic code (see list)

16. Additional site of disease
    00 Pulmonary
    10 Pleural
    21 Lymphatic: Cervical
    22 Lymphatic: Intrathoracic
    23 Lymphatic: Other
    29 Lymphatic: Unknown
    30 Bone and/or joint
    40 Genitourinary
    50 Miliary
    60 Meningeal
    70 Peritoneal
    80 Other*
    *If site is "Other," enter anatomic code (see list)
    If more than one additional site, check here. 88

17. Sputum smear
    1 Positive
    2 Negative
    3 Not done
    9 Unknown

18. Sputum culture
    1 Positive
    2 Negative
    3 Not done
    9 Unknown

19. Microscopic exam of tissue and other body fluids
    1 Positive
    2 Negative
    3 Not done
    9 Unknown
    If positive, enter anatomic code(s) (see list)

20. Culture of tissue and other body fluids
    1 Positive
    2 Negative
    3 Not done
    9 Unknown
    If positive, enter anatomic code(s) (see list)

21. Chest X-ray
    1 Normal
    2 Abnormal
    3 Not done
    9 Unknown
    If abnormal *(check one)*
    1 Cavitary
    2 Noncavitary consistent with TB
    3 Noncavitary not consistent with TB
    If abnormal *(check one)*
    1 Stable
    2 Worsening
    3 Improving
    9 Unknown

22. Tuberculin (Manloux) skin test at diagnosis
    1 Positive
    2 Negative
    3 Not done
    9 Unknown
    Millimeters (mm) of induration
    If Negative, was patient anergic 1 Yes 2 No 9 Unknown

Information contained on this form which would permit identification of any individual has been collected with a guarantee that it will be held in strict confidence, will be used only for surveillance purposes, and will not be disclosed or released without the consent of the individual in accordance with Section 308(d) of the Public Health Service Act (42 U.S.C. 242m).

DHS 8820 A (1/03)

State of California—Health and Human Services Agency

Department of Health Services

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

U.S. Department of Health and Human Services
Public Health Service
Centers for Disease Control and Prevention (CDC)
Atlanta, Georgia 30333

# REPORT OF VERIFIED CASE OF TUBERCULOSIS

**Initial Drug Susceptibility Report** **(Follow-Up Report—1)**

| Patient name (last) | (first) | (M.I.) | Address (number, street) | City | State | ZIP code |
|---|---|---|---|---|---|---|
| | | | | | | |

| SOUNDEX | State reporting<br>Specify _____<br>Alpha state code | Year counted | State case number<br>City/county case number |
|---|---|---|---|
| | | | |

***Submit this report for all culture-positive cases.***

33. Initial Drug Susceptibility Results

Was drug susceptibility testing done? 0 ☐ No 1 ☐ Yes 9 ☐ Unknown

*If answer is no or unknown, do not complete rest of report.*

If yes, enter date first isolate collected for which drug susceptibility was done: Month ☐☐ Day ☐☐ Year ☐☐☐☐

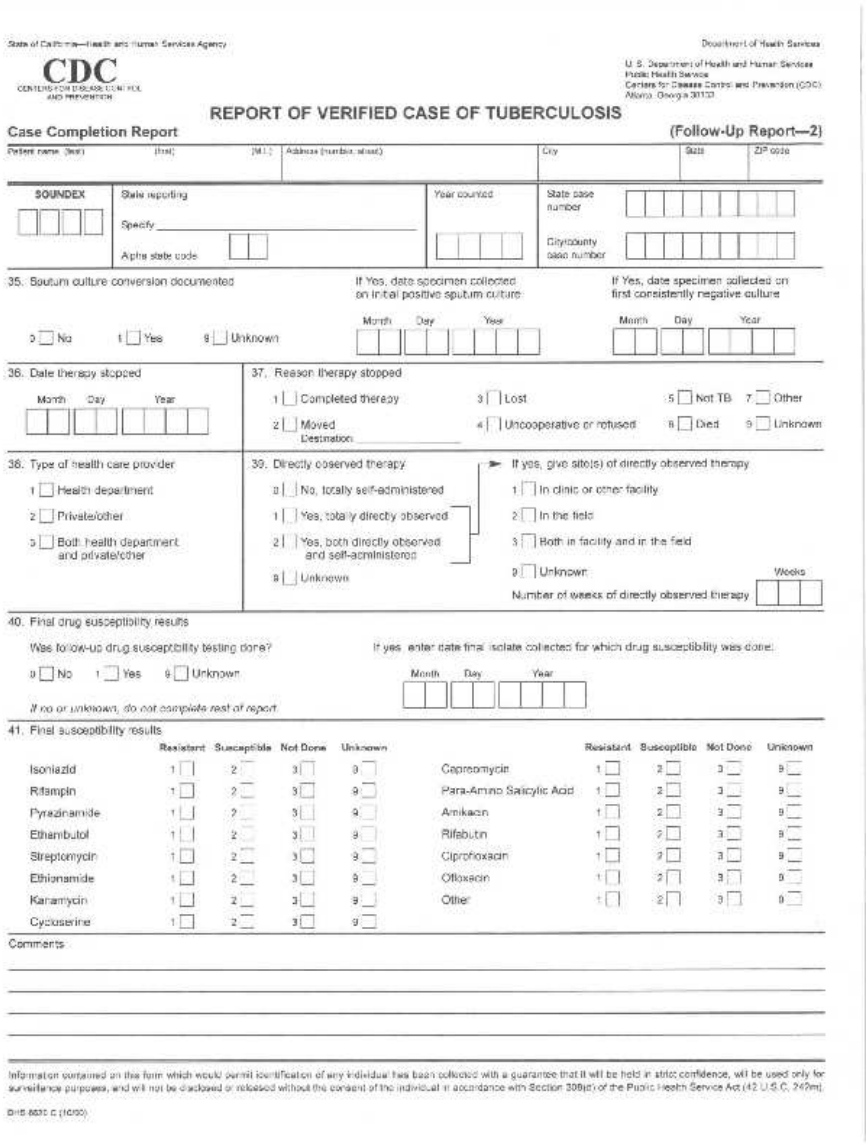
34. Susceptibility Results

| | Resistant | Susceptible | Not Done | Unknown |
|---|---|---|---|---|
| Isoniazid | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Rifampin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Pyrazinamide | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Ethambutol | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Streptomycin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Ethionamide | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Kanamycin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Cycloserine | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Capreomycin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Para-Amino Salicylic Acid | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Amikacin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Rifabutin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Ciprofloxacin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Ofloxacin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Other | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |

Comments

Information contained on this form which would permit identification of any individual has been collected with a guarantee that it will be held in strict confidence, will be used only for surveillance purposes, and will not be disclosed or released without the consent of the individual in accordance with Section 308(d) of the Public Health Service Act (42 U.S.C. 242m).

DHS 8566 B (10/01)



State of California—Health and Human Services Agency

Department of Health Services

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

U.S. Department of Health and Human Services
Public Health Service
Centers for Disease Control and Prevention (CDC)
Atlanta, Georgia 30333

# REPORT OF VERIFIED CASE OF TUBERCULOSIS

## Case Completion Report

(Follow-Up Report—2)

Patient name (last) | (first) | (M.I.) | Address (number, street) | City | State | ZIP code

SOUNDEX

State reporting
Specify _____
Alpha state code

Year counted

State case number

City/county case number

35. Sputum culture conversion documented
0 ☐ No 1 ☐ Yes 9 ☐ Unknown

If Yes, date specimen collected on initial positive sputum culture
Month Day Year

If Yes, date specimen collected on first consistently negative culture
Month Day Year

36. Date therapy stopped
Month Day Year

37. Reason therapy stopped
1 ☐ Completed therapy
2 ☐ Moved
Destination: _____
3 ☐ Lost
4 ☐ Uncooperative or refused
5 ☐ Not TB
6 ☐ Died
7 ☐ Other
9 ☐ Unknown

38. Type of health care provider
1 ☐ Health department
2 ☐ Private/other
3 ☐ Both health department and private/other

39. Directly observed therapy
0 ☐ No, totally self-administered
1 ☐ Yes, totally directly observed
2 ☐ Yes, both directly observed and self-administered
9 ☐ Unknown

If yes, give site(s) of directly observed therapy
1 ☐ In clinic or other facility
2 ☐ In the field
3 ☐ Both in facility and in the field
9 ☐ Unknown

Number of weeks of directly observed therapy: Weeks

40. Final drug susceptibility results

Was follow-up drug susceptibility testing done?
0 ☐ No 1 ☐ Yes 9 ☐ Unknown

*If no or unknown, do not complete rest of report.*

If yes, enter date final isolate collected for which drug susceptibility was done:
Month Day Year

41. Final susceptibility results

| | Resistant | Susceptible | Not Done | Unknown |
|---|---|---|---|---|
| Isoniazid | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Rifampin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Pyrazinamide | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Ethambutol | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Streptomycin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Ethionamide | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Kanamycin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Cycloserine | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Capreomycin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Para-Amino Salicylic Acid | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Amikacin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Rifabutin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Ciprofloxacin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Ofloxacin | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |
| Other | 1 ☐ | 2 ☐ | 3 ☐ | 9 ☐ |

Comments

Information contained on this form which would permit identification of any individual has been collected with a guarantee that it will be held in strict confidence, will be used only for surveillance purposes, and will not be disclosed or released without the consent of the individual in accordance with Section 308(d) of the Public Health Service Act (42 U.S.C. 242m).

DHS 8636 C (10/90)