Tuberculosis in Fresno County

Preliminary figures indicate that 54 cases of tuberculosis disease were recognized in Fresno County during 2010.* This is the second consecutive annual decrease in TB disease incidence in Fresno County and a 53% decrease in the number of cases since 2003 (See Figure 1). The number represents 5.5 cases per 100,000 people (5.5/100,000). In 2009 tuberculosis (TB) affected 3.8/100,000 people in the US, 6.4/100,000 in California, and 6.9/100,000 in Fresno County. In California in 2009 Fresno ranked 10th among the counties in TB incidence.

Of the 54 cases of TB disease in 2010, 33 were male (61%) and 21 were female (39%). Sixteen of the 54 had disease outside of the lung. These extrapulmonary sites of disease included lymph nodes, pleura, retroperitonium, pericardium, and meninges. Two individuals had disseminated TB (see Figure 2).

Twenty nine TB disease patients (54%) were Hispanic, seven (13%) were East Indian, and six (11%) were Hmong (See Figure 3 for further details on ethnicity distribution). Thirty nine patients (72%) were foreign born (countries of birth included Mexico, Laos, Cambodia, Thailand, Honduras, El Salvador, Ukraine, China, and India). Of these 39 foreign born patients the average time in the United States prior to diagnosis was 21 years, with a range from one year to 49 years.

One of the TB disease patients was homeless at the time of diagnosis in 2010. Two (3.7%) patients with TB reported significant drug use, and two (10.5% of those TB disease patients tested) were HIV positive. (Thirty five of the 54 cases had unknown HIV status). Three (5.5%) patients with TB died in 2010. Twenty five (46%) patients had medical conditions or behaviors (other than HIV or significant drug use) that put them at increased risk for TB disease (including alcohol abuse, smoking, diabetes, renal disease, pregnancy, immunosuppression due to medication or cancer, and gastrectomy). Four patients had a history of treatment for TB disease in the past.

The average age of TB patients diagnosed in Fresno County in 2010 was 42.4 years with a range from under one year to 89 years. (See Figure 4 for age related details). Three (5.5%) patients were age five or younger.

* These figures may vary slightly from subsequently published data from state and federal agencies due to minor differences in interpretation of RVCT (Report of Verified Case of Tuberculosis) criteria and time lines, as well as the use of different population estimates.
Of the 54 cases of diagnosed TB in 2010, 13 (24%) were culture negative. Of the 41 culture positive TB cases, none were extensively drug resistant tuberculosis (XDR-TB), one (2.4%) was multi-drug resistant TB (MDR-TB), 2 (4.8%) were isoniazid (INH) resistant only, one (2.4%) was pyrazinamide resistant only, and two were pending at the time of this report (see Figure 5). Thirty five (85%) of the culture positive patients were pansensitive.

Referral for TB disease in Fresno County came from hospitals (29), private medical providers (11 ), Department of Public Health contact investigations (3), diagnostic laboratories (4), jail or prison (3), screening at the site of employment (2), and screening of immigrants (2) (see Figure 6).

The extent of pulmonary involvement at the time of diagnosis in those patients with TB in 2010 is noted in Figure 7. Twenty eight percent of patients presented with radiological evidence of very advanced disease (cavitary lesion or miliary pattern).

Figure 8 indicates TB disease by zip code in Fresno County in 2010.

Patients with TB disease in 2010 came from all walks of life. Figure 9 demonstrates the different occupations held by these patients.

Recognized missed opportunities for TB control among the 2010 TB disease patients included three instances of failing to take recommended treatment for latent TB infection (LTBI), four instances of delayed or missed diagnosis of active TB, three instances of individuals missed during contact investigation of active disease, one instance of missed screening for TB at a correctional facility, and one instance of both failure to take recommended LTBI treatment and missed diagnosis of TB disease.

**Tuberculosis in California, the United States, and other Nations**

Fully 1/3 of the world’s population is infected with TB. Worldwide there are nine million new cases of TB disease annually with two million deaths annually. TB is the second leading cause of infectious disease-related deaths worldwide, the leading cause of death in those with HIV/AIDS, and the leading killer of women of childbearing age.

It is estimated that 10% of Californian’s are infected with TB and of these 10% will develop TB disease during their lifetime.

**Development of Drug Resistant TB**

Recent recognition of TB disease that is resistant to both INH and rifampin as well as any fluoroquinolone and any second line injectable medication poses a grave threat to public health. In the United States between 2000 and 2004, 4% of patients with MDR or multi-drug resistant TB (TB resistant to at least INH and rifampin) were found to have this XDR (extensively drug resistant) TB. These drug resistances make the disease almost untreatable with currently available antibiotics and the mortality rate in those with this
disease and co-infection with AIDS is extremely high. There have been two cases of XDR-TB recognized in Fresno County to date. Both were successfully treated.

Public Health Strategies to Control, Prevent, and Eliminate TB

Currently four recognized processes are involved in the control of, and attempt to eliminate, TB. The first of these is finding, and promptly and adequately treating, individuals that have active disease. The second process in TB control is identifying individuals who have been exposed to someone with TB disease, evaluating them for TB infection or TB disease, and treating them if they have either of these. The third process in the control of TB is “targeted testing” and involves screening individuals known to be at higher risk for contracting TB to determine if they may have the infection or the disease. The final process in TB control is the application of control measures in high risk settings. The dedicated, knowledgeable, and professional staff of the Chest Clinic Program identify and treat TB disease and infection, identify and evaluate exposures to TB, screen certain high risk populations, and assist the public with the application of control measures in high risk environments.

California statute (Title 17) requires notification be given to the county health department of all diagnosed or suspicious cases of tuberculosis by telephone or fax within one working day of identification. Health and Safety Code statute (121362) also requires that providers treating persons with active TB report to the local health officer any pertinent information the health officer requests.

Additional Information Available

If you have any questions regarding TB infection or disease or the control of TB in Fresno County please contact our Community Liaison Nurse at 559-445-3413.
**FIGURE 1**

Tuberculosis

FRESNO COUNTY 2010
8-Year Incidence Rates Per 100,000 Population

![Graph showing incidence rates](image)

Source: Fresno County Department of Public Health, Epidemiology Program

**Figure 2**

TB Disease Sites

- Pulmonary (38, 71.7%)
- Retroperitoneal (1, 1.9%)
- Pleural (1, 1.9%)
- Pleural/pulmonary (1, 1.9%)
- Pericardium (1, 1.9%)
- Meningitis (1, 1.9%)
- Meningitis/pulmonary (3, 5.7%)
- Lymph node (4, 7.5%)
- Lymph node/pulmonary (1, 1.9%)
- Disseminated (2, 3.8%)
Figure 3

Race / Ethnicity Distribution

- East Indian (7, 13.0%)
- Chinese (2, 3.7%)
- Caucasian (6, 11.1%)
- Cambodian (3, 5.6%)
- Black (1, 1.9%)
- Hmong (6, 11.1%)
- Hispanic (29, 53.7%)

Age Distribution (Figure 4)

- Patient Age
- Incidence

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

0 1 2 3 4 5 6 7 8 9 10

3 5 3 6 9 3 1
Figure 5

TB Drug Resistance Patterns

No Culture (13)
MDR (1)
INH (2)
PZA (1)
pending (2)

No Resistance (35)

Figure 6

TB Referral Sources

Hospitals (29, 53.7%)
Contact Investigations (3, 5.6%)
Immigrant Screening (2, 3.7%)
Work screening (2, 3.7%)
Prison (1, 1.9%)
Jail (2, 3.7%)
Diagnostic Lab (4, 7.4%)
Private Health Provider (11, 20.4%)
Figure 7

Pulmonary Disease Extent

- Infiltrate (22, 40.7%)
- Effusion (3, 5.6%)
- Cavitory (13, 24.1%)
- Adenopathy (1, 1.9%)
- No Pulmonary Lesions (5, 9.3%)
- Pleural thickening (1, 1.9%)
- Nodule (2, 3.7%)
- Nodule / adenopathy (1, 1.9%)
- Miliary (2, 3.7%)
- Infiltrate / Effusion (4, 7.4%)

Figure 8

Residence Zip Codes

- 93702 (4, 7.4%)
- 93706 (4, 7.4%)
- 93648 (3, 5.6%)
- 93657 (3, 5.6%)
- 93701 (3, 5.6%)
- 93725 (3, 5.6%)
- 93727 (3, 5.6%)
- 93720 (2, 3.7%)
- 93723 (2, 3.7%)
- 93722 (8, 14.8%)
- 93662 (7, 13.0%)
- 93728 (1, 1.9%)
- 93726 (1, 1.9%)
- 93666 (1, 1.9%)
- 93631 (1, 1.9%)
- 93630 (1, 1.9%)
- 93624 (1, 1.9%)
- 93611 (1, 1.9%)
- Prison (1, 1.9%)
- Homeless (1, 1.9%)
- Jail (1, 1.9%)
Figure 9

Occupations

- field worker (8, 14.8%)
- retired (11, 20.4%)
- food service (4, 7.4%)
- disabled (3, 5.6%)
- homemaker (3, 5.6%)
- incarcerated (3, 5.6%)
- trucker (3, 5.6%)
- unemployed (3, 5.6%)
- clerical (2, 3.7%)
- student (2, 3.7%)
- maintenance (2, 3.7%)
- infant (2, 3.7%)
- teacher (1, 1.9%)
- stocker (1, 1.9%)
- laborer (1, 1.9%)
- instructor (1, 1.9%)
- housekeeper (1, 1.9%)
- health care (1, 1.9%)
- engineer (1, 1.9%)
- child (1, 1.9%)
- homemaker (3, 5.6%)
- trucker (3, 5.6%)
- unemployed (3, 5.6%)
- clerical (2, 3.7%)
- student (2, 3.7%)
- maintenance (2, 3.7%)
- infant (2, 3.7%)