2009 Annual Report on Tuberculosis by the Fresno County Department of Public Health

Tuberculosis in Fresno County

Preliminary figures indicate that 67 cases of tuberculosis disease were recognized in Fresno County during 2009.* This is slightly decreased from the 73 cases officially reported in 2008, which abruptly reversed the downward trend of the five years prior (See Figure 1). The number represents 7.4 cases per 100,000 people (7.4/100,000). In 2008 tuberculosis (TB) affected 4.2/100,000 people in the US, 7.0/100,000 in California, and 7.7/100,000 in Fresno County. The current public health goal for reducing TB disease is 1/100,000 (Healthy People 2010).

Of the 67 cases of TB disease in 2009, 41 were male (61%) and 26 were female (39%). Twenty one of the 67 had disease outside of the lung, including musculoskeletal TB (4), lymph node TB (5), pleural TB (7), peritoneal TB (1), and four with disseminated TB (see Figure 2). Four patients had a history of treatment for TB in the past.

Thirty five TB disease patients (52%) were Hispanic and 12 (18%) were Hmong (See Figure 3 for further details on ethnicity distribution). Forty four patients (66%) were foreign born (countries of birth included Mexico, Philippines, Laos, Vietnam, Honduras, Thailand, Pakistan, Peru, China, France, and India). Of these 44 foreign born patients the average time in the United States prior to diagnosis was 17 years, with a range from one year to 50 years.

None of the TB disease patients were homeless in 2009. Two (3%) patients with TB reported drug use, and 4 (8.7% of those TB disease patients tested) were HIV positive. (Twenty one of the 67 cases had unknown HIV status or were children not tested). Eight (12%) patients with TB died in 2009. Two (3%) patients had medical conditions (other than HIV) or had been taking medications that alter immune status.

The average age of TB patients diagnosed in Fresno County in 2009 was 47.3 years with a range from under one year to 85 years. (See Figure 4 for age related details). Three (4.5%) patients were age five or younger.

Of the 67 cases of diagnosed TB in 2009, 20 (30%) were culture negative. Of the 47 culture positive TB cases, none were extensively drug resistant tuberculosis (XDR-TB), 3 (6.4%) were multi-drug resistant TB (MDR-TB), 2 (4.3%) were isoniazid (INH) resistant only, 3 (6.4%) were streptomycin resistant only, and 2 (4.3%) were resistant to both INH and streptomycin (see Figure 5). Thirty seven (79%) of the culture positive patients were pansensitive.

* 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.
Referral for TB disease in Fresno County came from hospitals (41), private medical providers (19), Department of Public Health contact investigations (4), diagnostic laboratories (1), interjurisdictional transfer (1), and screening of immigrants (1) (see Figure 6).

The extent of pulmonary involvement at the time of diagnosis in those patients with TB in 2009 is noted in Figure 7. Thirty three 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 2009.

Patients with TB disease in 2009 were from a wide variety of walks of life. Figure 9 demonstrates the different occupations held by these patients.

Recognized missed opportunities for TB control among the 2009 TB disease patients included two instances of failing to take recommended treatment for latent TB infection (LTBI), two instances of delayed or missed diagnosis of active TB, one instance of incorrect treatment of previous TB disease, and two instances of missed diagnosis leading to improper treatment for LTBI.

**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 4% of MDR or multi-drug resistant TB (those resistant to at least INH and rifampin) were found to be this XDR (extensively drug resistant) TB between 2000 and 2004. 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.
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 and evaluating them for TB infection or TB disease then 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 of 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 information as required at such times as the health officer requires.

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

Seven Year TB Incidence in Fresno County
Figure 2

TB Disease Sites

- Pulmonary (46, 68.7%)
- Peritoneal (1, 1.5%)
- Pleural (2, 3.0%)
- Musculoskeletal (2, 3.0%)
- Musculoskeletal/pulmonary (2, 3.0%)
- Disseminated (4, 6.0%)
- Lymph node (5, 7.5%)
- Pleural/pulmonary (5, 7.5%)

Figure 3

Race / Ethnicity Distribution

- Hispanic (35, 52.2%)
- Hmong (12, 17.9%)
- Vietnamese (1, 1.5%)
- Japanese (1, 1.5%)
- Chinese (1, 1.5%)
- Caucasian (1, 1.5%)
- Filipino (2, 3.0%)
- Cambodian (2, 3.0%)
- Black (3, 4.5%)
- East Indian (5, 7.5%)
- Laotian (4, 6.0%)
Figure 4

Age Distribution

Figure 5

TB Drug Resistance Patterns

No Resistance (37)

INH (2)
INH/Streptomycin (2)
Streptomycin (3)
MDR (3)
No Culture (20)
Figure 6

TB Referral Sources

- Hospital (41, 61.2%)
- Private Health Provider (19, 28.4%)
- Diagnostic lab (1, 1.5%)
- Interjurisdictional Transfer (1, 1.5%)
- Immigrant Screening (1, 1.5%)
- Contact Investigation (4, 6.0%)

Figure 7

Pulmonary Disease Extent

- Infiltrate (21, 31.3%)
- Cavitary (18, 26.9%)
- Effusion (6, 9.0%)
- Nodule (3, 4.5%)
- Miliary (4, 6.0%)
- Scarring (1, 1.5%)
- Atelectasis (1, 1.5%)
- Adenopathy/infiltrate (1, 1.5%)
- Adenopathy (2, 3.0%)
- No Pulmonary Pathology (5, 7.5%)
- Infiltrate/effusion (5, 7.5%)
Figure 8
Residence Zip Codes

Figure 9
Occupations