



Bulletin No. 9

May 15, 2000

Update - Tuberculosis in Anchorage

During the first 4 months of 2000, 20 Anchorage residents were identified and started on directly observed therapy (DOT) for active tuberculosis (TB). In comparison, the number of new TB cases in Anchorage in all of 1998 and 1999 were 23 and 14, respectively. Nine of the 20 cases in 2000 are infants and children under 14 years of age; nine are from one large extended family.

This large family was previously evaluated for TB in 1997 and 1998, following identification of a 3-month-old baby with active TB. This infant and her mother came to the Anchorage Department of Health and Human Services TB clinic for a refill of isoniazid (INH) shortly after arrival from the lower 48 in July 1997. At that time the baby's father was hospitalized in their hometown in the lower 48. His sputa were smear positive for acid fast bacilli (AFB) and culture-positive for *Mycobacterium tuberculosis* (*MTb*) susceptible to all first-line TB drugs (drug-sensitive). The baby had started INH at 2 months of age, but the family had run out of medicine while traveling to Alaska. The baby was asymptomatic with a normal physical examination. However, a chest x-ray showed an extensive left-upper-lobe infiltrate, and gastric aspirates grew drug-sensitive *MTb*. Subsequently, two other family members in Anchorage, ages 13 and 22 years, were diagnosed with active TB. Sixteen other family members were PPD positive, 14 were recommended for treatment for latent TB infection (LTBI), and 10 completed INH preventive therapy in 1998.

In January 2000, a 13-year-old family member had a 16-mm PPD on routine school screening. She reported cough, sweats, and 6-pound weight loss. Chest x-ray showed prominent hilar markings but "no active pulmonary disease." Sputum specimens were smear negative but culture positive for drug-sensitive *MTb*. She was started on treatment for active TB and an extensive contact investigation was begun. To date, eight additional family members with active TB have been identified:

- An asymptomatic 5-year-old girl with a 13-mm PPD (was 0-mm in 12/97) and normal physical exam. Chest x-ray showed an extensive left upper lobe infiltrate. Gastric aspirates grew *MTb*.
- A 4-month-old girl with 0-mm PPD, left-sided pulmonary infiltrate, and gastric aspirate culture positive for *MTb*.
- A 10-month-old boy with 25-mm PPD, left-sided infiltrate, and gastric aspirate culture positive for *MTb*.
- A 10-month-old boy with cough, 20-mm PPD, left upper lobe infiltrate, and gastric aspirate smear and culture positive for *MTb*.
- An 11-month-old girl with cough, 13-mm PPD, diffuse infiltrates on x-ray, and gastric aspirate smear and culture positive for *MTb*. Cerebrospinal fluid was negative for *MTb*.
- A 28-year-old male with chronic productive cough, sweats, fevers, and weight loss. He had a large right-upper-lobe cavity with consolidation. Sputa were smear and culture positive. The man, who is the fraternal uncle of the 3-month-old baby diagnosed with TB in 1997, is believed to be the source for the cluster of pediatric cases. He had arrived in Anchorage from the lower 48 in November 1999.
- A 58-year-old male with chronic cough, fever, chest pain, and chronic obstructive pulmonary disease. His sputa were smear negative but culture positive. He was PPD positive in 1997 but had not previously been treated for LTBI.
- A 48-year-old male with cough, chest pain, and a 25-mm PPD. His sputa were smear negative but culture positive.

All *MTb* isolates from these cases are drug-sensitive. HIV testing has been completed on five of the cases; all 5 were HIV-negative.

Twenty-four other family members are receiving treatment for LTBI. Thirteen have newly positive PPD reactions. Eight are PPD-negative children with close contact to the adult smear-positive case. They will be retested after 3 months and treatment for LTBI will be discontinued if they remain PPD negative. Three persons previously identified as PPD positive and recommended for therapy also recently started INH. Three additional persons recently identified as PPD positive are being evaluated.

In addition to this large family cluster, three other new pediatric TB cases have recently been identified and started on DOT. They include:

- Two siblings, ages 3- and 21-months, with abnormal chest x-rays and PPD reactions of 4-mm and 15-mm, respectively. They were identified after their mother was diagnosed with smear and culture positive pulmonary TB. The mother reported a worsening cough for the past year, during which she saw a number of health care providers before her diagnosis was determined.
- A 9-year-old boy with 12-mm PPD and a swollen cervical lymph node which was confirmed as scrofula by biopsy. No source case has been identified.

Comments: In the last decade, tuberculosis has reemerged as a major worldwide public health hazard with increasing incidence among adults and children. These cases of pediatric TB serve as a reminder that an adult with smear-positive pulmonary or laryngeal TB poses a great risk to close household contacts, especially infants and young children, who can progress rapidly to active disease following infection.

In adults, the distinction between TB infection and disease is usually clear because disease in adults is usually accompanied by symptoms, and patients frequently are infectious. The natural history of TB is often different for infants and young children, largely due to an immature immune system that cannot control mycobacterial multiplication. Among children with recent TB infection, active multiplication of mycobacteria can occur with or without the presence of radiographic abnormalities or clinical symptoms. Gastric aspirate cultures may be positive for *MTb* even in recently infected children with normal chest radiographs. Exposed infants and young children can progress to disease even before developing a significant skin test response, and as many as 40% to 50% of infants with untreated LTBI develop active disease within 1 to 2 years.

The two essentials of TB control remain unchanged. The first priority is identification and treatment of persons with active TB. TB control depends upon astute clinicians with a high index of suspicion for TB to identify, report, and initiate appropriate therapy of persons with active TB. It also requires public health professionals to ensure that persons with TB complete the full course of

DOT.

The second critical element is diligent and thorough public health investigation to find and evaluate persons who have been in contact with TB patients. All contacts need to be evaluated for TB disease and infection and appropriate treatment must be assured.

(Submitted by Bruce Chandler, MD, MPH, Medical Officer, Municipality of Anchorage Department of Health and Human Services.)