Philadelphia Department of Public Health

Philadelphia TB Newsletter

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INSIDE THIS ISSUE

Philadelphia TB Control Program Releases Its First Newsletter

The Philadelphia TB Newsletter is a quarterly newsletter that is intended to be a practical resource for clinicians, laboratories, and infection control personnel who diagnose, treat, and/or report tuberculosis (TB) in Philadelphia. It will provide treatment updates and recommendations, review local and national TB epidemiology, and present upcoming TB outreach and prevention activities. This inaugural edition contains information regarding Philadelphia TB epidemiology, TB among the foreign born, QuantiFERON, pediatric TB, World TB Day, and reporting.

TB Control Program

The Philadelphia Department of Public Health's Tuberculosis Control Program is dedicated to the prevention, diagnosis, and treatment of tuberculosis. The program conducts surveillance and offers a wide variety of services, including free TB testing and diagnosis, case management for people with confirmed or suspected TB as well as latent TB infection, contact investigation, directly observed therapy (DOT), consultations to providers, and direct patient care at the Lawrence F. Flick Memorial Center.

The Lawrence F. Flick Memorial Center, located at 305 S. 13th Street, is the clinical site for the Philadelphia Department of Public Health's Tuberculosis Control Program. The center is operated in conjunction with the American Lung Association, and is the only publicly funded, dedicated TB clinic in Philadelphia. Opened in 1988 to aid in the city's efforts to eradicate tuberculosis, the center also serves as a Pennsylvania referral site for complicated TB cases from other districts in Pennsylvania. The Flick Center is locally recognized for its medical and pharmacological evaluations of patients. The clinic provides comprehensive TB management services free of charge, including directly observed therapy, medications, and clinical evaluations.

TB Facts

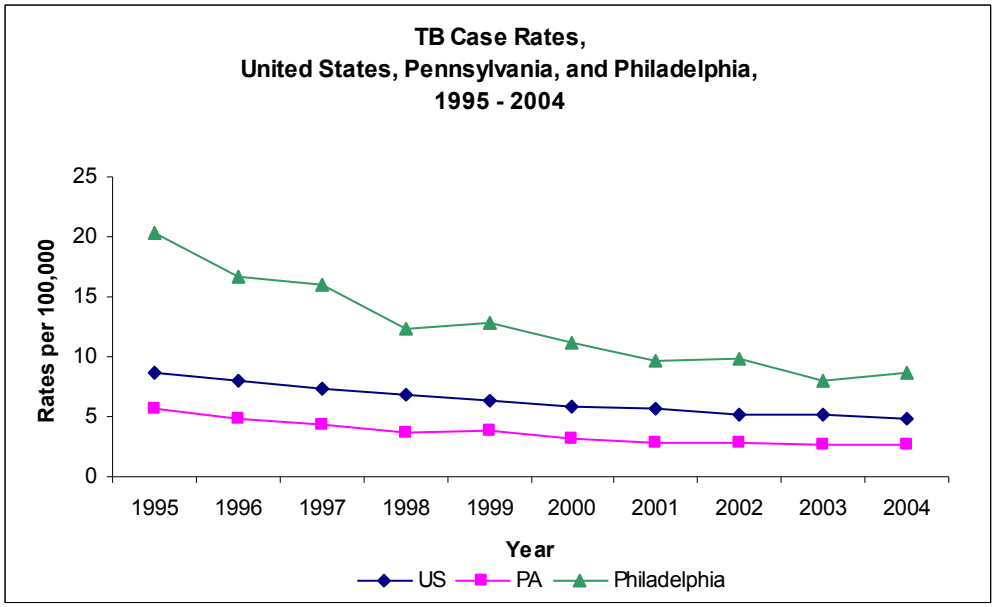
One third of the world's population is infected with TB

Each year, 2-3 million people in the world die from TB

Someone in the world is newly infected with TB each second

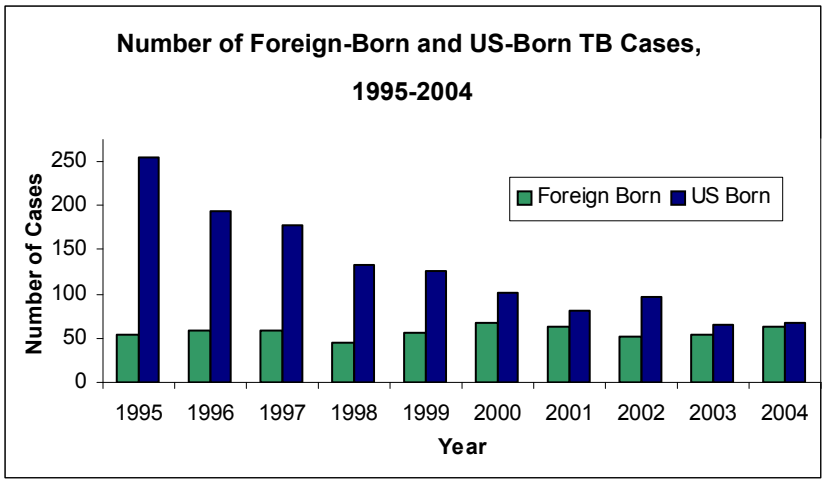
Philadelphia TB Epidemiology

During the past decade, the number of newly diagnosed tuberculosis cases in Philadelphia has declined by 68% from 309 cases in 1995 to 129 cases last year. The TB cases in Philadelphia represent 39% of the total number of cases reported in Pennsylvania during 2004. The incase rate for 2004 was approximately 8.7 cases per 100,000 population. This rate is almost triple the national rate (2.6 per 100,000) and almost double the state rate (4.9 per 100,000). The rates for the period 1995-2004 are presented in the graph below:



TB Among the Foreign Born

Despite recent successes, Philadelphia continues to have a substantial caseload in a complex, diverse environment, specifically among the foreign-born. It is anticipated that TB cases in Philadelphia will decline at a slower rate over the next decade as immigrants and difficult to reach populations assume a larger proportion of the caseload. While the number of new cases declined during the last decade, TB among the foreign-born has remained constant. The percentage of foreign-born cases has more than doubled since 1995 as illustrated below. Currently, foreign-born cases account for nearly half of all reported cases in Philadelphia. In 2004, cases originated from 26 different countries. Asians account for 65 percent of the foreign-born cases, with Vietnam (17.7%), China (11.3%), Cambodia (6.5%) and India (6.5%) indicated most often as country of origin.



QuantiFERON ®-TB Gold

The FDA recently approved QuantiFERON®-TB Gold (QFT-G), which is a blood test for the diagnosis of latent tuberculosis (LTBI) and tuberculosis disease (TB). QFT-G is an interferon-gamma release assay (IGRA), which measures the release of interferon-gamma from white blood cells. The traditional tuberculin skin test (TST) measures *in vivo* delayed-type hypersensitivity (Type IV) to PPD. Since PPD is a mixture of multiple antigens, it can elicit a response in patients who have been exposed to many types of mycobacteria. On the other hand, QFT-G measures the response to two synthetic peptides (ESAT-6 and CFP-10) analogous to proteins found only in *M. tuberculosis*, pathogenic *M. bovis*, *M. kansasii*, *M. szulgai* and *M. marinum*. Importantly, ESAT-6 and CFP-10 are not found in BCG vaccine strains of *M. bovis* or in nontuberculous mycobacteria (NTM) other than the strains listed bove. Thus, QFT-G is more specific than the TST, and BCG vaccination and exposure to most NTM are unlikely to elicit false positive results with QFT-G.

So far, QFT-G appears about as sensitive as the TST for TB, though it may be less sensitive for detection of LTBI – a difficult situation to study, since no confirmatory test exists for latent infection. As with the TST, a negative QFT-G does not by itself exclude either LTBI or TB. At this point, data for QFT-G are extremely limited on children younger than 17, contact investigations, response to reinfection and patients with immunodeficiency.

Advantages of QFT-G are the requirement for only one patient encounter, availability of results in 24 hours, objective interpretation and lack of affect by prior BCG vaccination or exposure to most NTM. Disadvantages are the requirements for venipuncture, proper handling of specimens, technical proficiency of laboratory and staff; also, it is more costly than the TST.

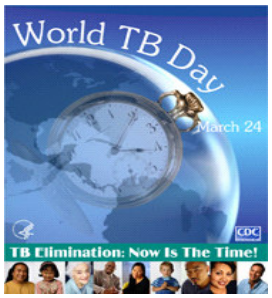
The CDC has recommended that QFT-G may be employed "in all circumstances in which the TST is currently used." It is not necessary to confirm a positive QFT-G result with a TST, and patients should be evaluated and managed as they would have been with a positive TST.

For more information, please see "Guidelines for Using the QuantiFERON®-TB Gold Test for Detecting *Mycobacterium tuberculosis* Infection, United States. MMWR Vol.54/RR-15, December 16, 2005," which is available on the CDC website, or contact the TB Control Program at the Philadelphia Department of Health.

David Schlossberg, MD, FACP
Medical Director, TB Control Program

World TB Day

World TB Day is held annually on March 24th in order to raise awareness about the threat of TB and the steps needed to control the disease. World TB day also commemorates the discovery of the TB bacillus by Dr. Robert Koch in March 1882. At that time, TB killed one in seven people in the in the US and Europe. Although this disease can be cured and controlled, TB still remains the second leading cause of death among infectious diseases in the world, with more than 2 million deaths each year. This year's theme for World TB Day is Actions for Life: towards a world free of TB.



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Fax: 215-685-6477

Reporting

All TB cases and suspected cases must be reported to the TB Control Program within 24 hours of identification. To report a case or suspect call 215-685-6873. Reports can also be faxed to 215-685-6477 or submitted through the Pennsylvania National Electronic Disease Surveillance System (PA-NEDSS). Reporting information is available on the TB Control website at: www.phila.gov/health or can be obtained by calling 215-685-6873.

Pediatric TB

The diagnosis of TB infection or disease in pediatric patients indicates recent transmission, usually from an adult. Therefore, contact investigation is a public health priority. Most often, transmission is from a close family member or primary care giver, e.g. mother, father, grandmother, aunt or uncle.

Pediatric Tuberculosis should be regarded as a spectrum of EXPOSURE –to- INFECTION- to-DISEASE, because progression from an infected individual (EXPOSURE) to INFECTION and subsequently DISEASE can occur much faster in children under 2 years of age (occurring within the incubation of the disease, i.e. 6 to 12 weeks).

The risk of progression to disease is age-dependant, being 40-50% for 0-2 year olds, ~ 20% for 2-4 year olds and 10-15% for over 5 year old; the 5-10 year olds are the most protected age group.

In states with high TB incidence an increase in patients less than 2 years of age has been evident over the last 4 years. The majority of children with LTBI or TB disease have foreign-born parents or parents in high-risk groups for TB.

Diagnosis is based on GOOD epidemiological history taking because children may have negative PPD in the face of severe disease such as miliary or disseminated (with hepato-splenomegaly) disease, TB meningitis and pleural TB. Children less than 8 years old cannot produce a sputum sample, and gastric aspirates have a yield of 10% on culture even in the most experienced hands. Also, any CXR abnormality may be the primary presentation of pulmonary TB, in addition to the classic hilar adenopathy middle lobe infiltrates.

The accuracy of PPD is age and immune maturity dependent, since it depends on anamestic memory of lymphocytes to the tuberculin protein. Adequate cell mediated immune responses have been documented to occur between 12 and 18 months. Boys have more false negative PPDs than toddler girls.

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