



Philadelphia TB Newsletter

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TB Control Program

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The Philadelphia TB Newsletter is a quarterly publication that is intended to be a resource for clinicians, infection control personnel, and laboratories 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 case studies.

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Preventing Future Tuberculosis Cases: The TB Contact Investigation

By Anthony Lloyd
TB Program Field Supervisor

In 1962, isoniazid was demonstrated to be effective in preventing tuberculosis (TB) among household contacts of persons with disease. Consequently, investigation and treatment of contacts with latent TB infection has become an important strategy in the control and elimination of TB. Contact investigations are complicated and typically require processing many pieces of information: infectiousness of the index patient, duration of contact exposure, proximity of local air circulation, and exposure influenced by immune competence. The contact investigation is not just limited to household and family members; it is often extended to other congregate settings outside of the home.

Extended contact investigations can be a challenge to tuberculosis control programs. In all cases, program staff must quickly mobilize to coordinate communication between several organizations in order to diffuse tension and concerns in the workplace. While training and education has become a useful tool in easing pandemonium, confidentiality presents the greatest challenge for the TB program. Cooperation with workplace management and occupa-

tional safety staff is key to a successful contact investigation.

Over the past 10 years, the Philadelphia TB Control Program has conducted contact investigations in various settings, including schools and universities, homeless shelters, and hospitals as well as many other congregate settings. As a result of these investigations, hundreds of people with latent tuberculosis infection (LTBI) have been treated and many future cases of TB have been prevented. The following articles in this issue highlight some of the more complex contact investigations that have been conducted during the past year by the Philadelphia TB Control Program, including an airplane investigation of Hurricane Katrina evacuees, a TB outbreak among children in a day-care, and the use of *Mycobacterium tuberculosis* isolate genotyping to identify contacts.

For more information, please see "Guidelines for the Investigation of Contacts of Persons with Infectious Tuberculosis." MMWR Vol.54/RR-15, December 16, 2005," which is available at www.cdc.gov, or contact the TB Control Program.

Famous people who suffered or died from TB:

Charlotte Brontë

Ralph Waldo Emerson

Edgar Allan Poe

Wolfgang Amadeus Mozart

Frédéric Chopin

Eleanor Roosevelt

Ulysses S. Grant

Florence Nightingale

Doc Holliday

Sir Walter Scott

Andrew Jackson

Henry David Thoreau

TB Case on a Flight Evacuating Hurricane Katrina Displaced Persons from New Orleans to Philadelphia

By Felicia Lewis, MD
EIS Officer, PDPH & CDC

On September 7, 2005, a domestic flight evacuated 37 displaced persons (DPs) from New Orleans to Philadelphia. Duration of the flight was approximately 2.5 hours. Four air marshals and an undetermined number of crew members were also present on the flight.

Medical triage and screening of DPs was performed immediately after disembarkation by local public health and volunteer clinicians in an unused airport terminal. Persons were screened for active and chronic medical and mental health issues using a brief intake form. Four persons were referred for more extensive evaluation in an emergency department (ED). One of these persons was homeless before the hurricane, had a fever, and was complaining of cough. Tuberculosis was suspected, and the person was placed in a surgical mask and transported to an emergency department (ED) by EMS (Emergency Medical Services) who were pre-positioned on-site.

Chest radiography performed at the ED revealed a cavitary lesion in the left upper lobe. The affected person was

placed in a negative pressure room at the hospital and empiric anti-TB therapy was initiated. Smears for acid-fast bacilli were positive. Pan-sensitive *Mycobacterium tuberculosis* eventually grew from sputum cultures. Subsequently, the patient completed treatment and moved to live with relatives.

The Philadelphia TB Control Program performed skin testing on the other DPs from the flight upon their arrival into the shelter. All infected persons were placed on directly observed preventative therapy after active tuberculosis was ruled out. Repeat testing was performed 10-12 weeks later on those who were locatable, and all were PPD negative.

The rapid identification of an active case of tuberculosis in this Katrina evacuee prevented exposure of a substantial number of people in a group living facility. This case illustrates the importance of public health measures in the overall response to environmental disasters like Hurricane Katrina.

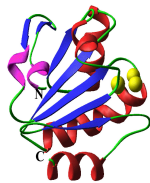


St. Bernard Parish Health Department following Hurricane Katrina, New Orleans, LA. Photograph taken by Daniel Dohony, MPH, CDC Public Health Advisor.

Molecular Genotyping of *Mycobacterium tuberculosis*

By Jennifer Beck
TB Program Intern

Recently, the CDC published guidelines that recommend universal genotyping for TB isolates. Genotyping identifies the DNA fingerprint of individual tuberculosis strains; and thus, has the ability to identify unsuspected relationships between cases, detect drug resistant strains, detect and control outbreaks, and identify false-positive cultures and laboratory cross-contamination. Genotyping also has the ability to detect clusters of patients with genetically related tuberculosis strains. Tuberculosis programs can use this genotyping information to evaluate the completeness of current contact investigation protocols and monitor progress of their program.



Photograph of a secreted protein from *M. tuberculosis*. Image taken from Protein Structure Initiative.

Currently, the Philadelphia Tuberculosis Control Program is working on a genotyping project to assess its importance and relevance to the goals of the program. Through the identification of these clusters, the TB Control Program has found many unsuspected epidemiological relationships between cases. Epidemiological relationships help

explain the where and how of TB transmission among patients. The TB Control Program uses a questionnaire for cluster investigations, which involves re-interviewing in an attempt to establish epidemiological relationships within clusters. During the past year, thirty unique clusters have been identified in Pennsylvania.

The cluster investigations will help to determine the importance of casual transmission, which is short-term exposure to an infectious TB patient. These investigations may also be beneficial to the unique population in Philadelphia, where half of the cases reported last year were in foreign born and hard-to-reach populations. It is often difficult to get complete primary contact investigations from these populations, which may result in missed opportunities for disease prevention.

Through genotyping and cluster investigations the TB Control Program hopes to better understand the importance of casual or non-traditional transmission, clarify the importance of clustered patients without known epidemiological links, evaluate the current primary contact investigations effectiveness, and refine the current program policy.

New TB Drug Developments

By Nikki Pritchett, MPH
TB Program Epidemiologist



At the June 2006 National TB Controllers Workshop in Atlanta, Jussi Saukonen, MD of Boston University School of Medicine discussed new developments in TB drugs. The long-term objectives of these drugs are to shorten and simplify treatment, prevent development of multi-drug resistant TB, simultaneously treat TB and AIDS, and improve treatment of latent tuberculosis infection. Currently, six drugs are undergoing clinical testing: diarylquinoline TMC207, Nitroimidazole PA-824, Gatifloxacin, Moxifloxacin, OPC67683, and Pyrrole LL-3858. Different combinations of these drugs have been tested in which one new drug replaces one of the standard TB drugs. The results have shown that the new drug combinations are effective at shortening treatment times from 6 months to 4 months with minimal to no toxicity. For more information, please see the CDC TB Trial Consortium website at www.cdc.gov/nchstp/tb/tbtc.



Philadelphia Department of Public Health

Tuberculosis Control Program

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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.

TB Outbreak in Philadelphia Daycare

By Chrysanthus Nnumolu, MPH
Flick Memorial Clinic Administrator

In November 2005, Patient A was reported to the Philadelphia TB Control Program as a suspected pulmonary TB case and later grew pan-sensitive *Mycobacterium tuberculosis* from a sputum culture. Patient A worked as an aide in a daycare center in one of the city's shelters for women with children. The contact investigation identified 37 adults and 36 children who had been exposed to the index patient, and tuberculin skin test was offered to all contacts.

All children under age 4 were referred for chest x-ray. Six of these chest x-rays were found to be abnormal by the pediatric medical TB specialist at the Flick Clinic. These children were started on three standard anti-tuberculosis medicines and, after two months of treatment, their repeat chest x-rays showed improvement. Most of these children have just completed treatment, or will be completing in the next few weeks.

Thirty-four children were tuberculin skin-tested (TST); one had had a previous positive TST by history and was screened for symptoms, and another had left the shelter before testing began. All children had negative TST results at this first testing. Thirty adults were tested at the first stage; 7 already had left the

shelter. One adult tested positive.

Follow-up skin testing was performed 10-12 weeks later. Most of the children were retested; however, 11 of them had left the shelter. Letters were sent to the primary physicians of those children, recommending follow-up testing. One child converted to positive TST. This child had a normal chest x-ray and was started on isoniazid. Among the adult population, follow-up testing yielded one converter and the patient was sent for chest x-ray which was normal. The patient was started on therapy for latent tuberculosis infection.

This case presented TB Control with many challenges from which we are able to make the following recommendations: in a child care setting where people are transient, investigation of contacts needs to be immediate; parents should be educated; administration at the facility should be involved during the investigation and treatment to increase compliance and deal with social issues; the investigators should be able to identify those at risk and stop exposure immediately; finally, those under 4 years of age must be referred immediately for chest x-ray even if their skin test is negative, with rapid evaluation of the x-rays by qualified observers.