

In This Issue...

- **Headlines**
- **Introducing**
- **Related Links**
- **TBit**
- **In The Works**
- **Case Presentation**
- **Upcoming Trainings**
- **Regional News**

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Educational and Training Resources for the TB Professional

For today's TB health professional, staying informed and up-to-date with the ever-changing field of tuberculosis diagnosis, treatment and patient management can be a daunting task. There are several TB-specific educational and training resources that can make the job easier.

TB Education & Training Resources

Website

This website is sponsored by the Centers for Disease Control and Prevention (CDC), Division of Tuberculosis Elimination (DTBE) and maintained by the National Prevention Information Network (NPIN). This Website is intended for use by TB and other health care professionals, patients, and the general public. You can use this site to:

- Search for TB education and training materials
- Submit TB materials for inclusion in the database
- Find out how to order TB materials
- View the E-Newsletter
- Locate funding opportunities
- Get information about TB organizations
- Find out about upcoming events
- Sign up for TB-related listservs and digests
- Locate TB images
- Locate TB-related web links
- Find out about the TB Education & Training Network (TB ETN)

Each month, the website highlights a new resource material that can be viewed on-line, ordered from the publishing agency or printed out (if in printable form).

[Click here for TB Education & Training Resources website](#)

Contact Information

Email: info@findtbresources.org

Phone: 800-458-5231 FAX: 301-565-3710

Continued on page 2

The **VISION** of the Heartland is to provide **excellence, expertise,** and **innovation** in training, medical consultation, and product development to reduce the impact of tuberculosis in our region.

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Continued from page 1

The **TB Education and Training Network (TB ETN)**

was formed by the CDC Division of Tuberculosis Elimination (DTBE) to bring TB professionals together to network, share resources, and build education and training skills. Currently, membership includes representatives from TB programs, correctional facilities, hospitals, nursing homes, federal agencies, universities, the American Lung Association, Regional Training and Medical Consultation Centers, and other U.S. and international organizations interested in TB education and training issues.

Goals of the Network include furthering TB education and training by:

- Building, strengthening and maintaining collaboration
- Providing a mechanism for sharing resources to avoid duplication
- Developing, improving and maintaining access to resources
- Providing updated information about TB courses and training initiatives
- Assisting members in skill building

Benefits of Membership:

- Network and collaborate with other TB professionals
- Exchange ideas, information and experiences
- Access and share resources
- Collaborate on training and education research
- Receive updated information about TB courses and training initiatives
- Build TB education and training-related skills
- Pilot test and preview new communication and education materials

TB ETN has an annual conference; the 2007 meeting is scheduled for August 7-9 in Atlanta, Georgia. More information and details can be found on the TB ETN webpage.

To access the website:

TB Education & Training Network

To join TB ETN (no membership fees, can join at any time):

Join TB Education & Training Network

Contact Information for TB ETN:

Email: tbetn@cdc.gov

Phone: 404-639-8135 FAX: 404-639-8960



Tuberculosis

The CDC National Prevention Information Network (NPIN) is the U.S. reference, referral and distribution service for information on HIV/AIDS, sexually transmitted diseases (STDs) and tuberculosis (TB).

Continued on page 3

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Continued from page 2

NPIN produces, collects, catalogs, processes, stocks and disseminates materials and information on HIV/AIDS, STDs and TB to organizations and people working in those disease fields in international, national, state and local settings.

All NPIN services are designed to facilitate sharing of information and resources on education and prevention services, published materials, research findings and trends among users.

- **Databases:** NPIN databases you can search, what they contain, and how to access them
- **NPIN Materials:** materials you can order, how to order them and how they can be delivered to you
- **Reference and Referral Services:** What their information specialists do
- **NPIN Resource Center:** services available at NPIN Resource Center, where the Center is located and how to contact it
- **Related Services:** Other services sponsored by the CDC that provide information about HIV/AIDS, STD and TB prevention

In the Tuberculosis section, the following headings are available:

- **What's New:** The most recent activities, news, or publications about TB elimination
- **TB Today:** The current state of the epidemic in the United States, including an overview of key issues, risk groups and statistics
- **Elimination and Control Today:** What the CDC's 2002 prevention goals are. What role prevention plays in eliminating and controlling TB infection.
- **Making the Connection:** What STDs and HIV/AIDS have to do with TB. Why diagnosis and treatment of STDs and HIV/AIDS are important to TB prevention.
- **CDC Guidelines and Recommendations:** The current CDC guidelines and recommendations for the detection, treatment and care of TB.
- **Program Management:** What successful health-related community partnerships have in common. How you can put those elements in place in your community.
- **Screening and Treatment:** How to find screening, treatment and referral services. What role screening, treatment and referral play in successful prevention programs.
- **Surveillance and Data Management:** How to access the surveillance reports that are available for your area. The relevant CDC guidelines for surveillance activities.
- **Education and Training:** How to plan, develop and measure education and training activities. What types of TB education and training resources and materials are available for health care providers, clinicians and the public.
- **FAQs and Basic Facts:** Basic information about TB transmission, screening, treatment and elimination. Definitions of key terms.

Continued on page 4

**Deadline for the
next issue is
February 15, 2007.
Please submit all
items for
consideration to:
mary.long@uthct.edu**

continued from page 3

**Click here for NPIN Tuberculosis
Contact Information**

Hours: Monday through Friday, 9 a.m. to 8 p.m. (ET)

E-mail: info@cdcnpin.org

Phone: 1-800-458-5231, 1-800-243-7012 TTY

FAX: 1-888-282-7681 Fax

Chat: Talk online with an NPIN Information Specialist
Monday through Friday, 9 a.m. to 8 p.m. (ET)

TB Update

TB Update is sponsored by the Division of Tuberculosis Elimination (DTBE) of the CDC and the CDC National Prevention Information Network (CDCNPIN). The TB-Related News and Journal Items Weekly Update is distributed via e-mail each Friday and includes:

- Summaries of TB-related news items from the Prevention News Update and from newspapers around the world
- Citations and abstracts of new scientific journal articles on TB
- Conference announcements
- Job announcements
- Other items of interest to the TB community

To subscribe to **TB-Related News and Journal Items Weekly Update**,
go to: http://www.cdcnpin.org/scripts/listserv/tb_update.asp

The Centers for Disease Control and Prevention's Division of TB Elimination is another resource for educational and training materials. [It should be the first site for medical professionals new to the field of tuberculosis.](#)

Education and Training Materials, Division of TB Elimination

Questions and Answers About TB

TB Guidelines

TB Fact Sheets

TB Slide Sets

TB Related MMWRs and Articles

In addition to the above resources, each Regional Training and Medical Consultation Center (RTMCC) funded by the CDC develops educational products and conducts trainings on tuberculosis. Please check each Center's website for available materials and upcoming trainings.

Francis J. Curry National Tuberculosis Center

Heartland National Tuberculosis Center

Northeastern Regional Training and Medical Consultation Consortium

Southeastern National Tuberculosis Center

The MISSION of the Heartland National TB Center is to build capacity with our partners. We will share expertise in the treatment and prevention of tuberculosis by: developing and implementing cutting-edge trainings, delivering expert medical consultation, providing technical assistance, and designing innovative educational and consultative products.

Introducing 2005 Tuberculosis Surveillance Report and Slide Set

The Centers for Disease Control and Prevention (CDC), Division of Tuberculosis Elimination (DTBE) has completed their annual Surveillance Report and accompanying slide sets for "Reported Tuberculosis in the United States, 2005." The TB Surveillance Reports contain tabular and graphic information about reported TB cases collected from 59 reporting areas (the 50 states, the District of Columbia, New York City, US dependencies and possessions and independent nations in free association with the United States).

The Surveillance Report contains Morbidity Trend Tables; Morbidity Tables for the entire United States: 2005; Morbidity Tables for each state: 2005; Morbidity Tables by Reporting Areas: 2005 and 2003; Morbidity Tables for Cities and Metropolitan Statistical Areas: 2005; and Tuberculosis in the US-affiliated Pacific Island Jurisdictions (UAPIJ): 2005. Additionally, appendices "Tuberculosis Case Definition for Public Health Surveillance" and "Recommendations for Counting Reported Tuberculosis Cases" are available. Please go to the following CDC web pages:

- **Reported Tuberculosis in the United States, 2005 Surveillance Report:** <http://www.cdc.gov/nchstp/tb/surv/surv2005/default.htm>
- **2005 Surveillance Slides:** <http://www.cdc.gov/nchstp/tb/pubs/slidesets/surv/surv2005/default.htm>

Online Tuberculosis Information System (OTIS)

The Online Tuberculosis Information System (OTIS) is a query-based system containing information on verified TB cases reported to the Centers for Disease Control and Prevention.

Archived Tuberculosis Surveillance Reports

The documents found online are historical, archived information from the years listed below. The information contained in these documents, while accurate at the time of release, may not be the most currently available:

Reported Tuberculosis in the United States; 2004, 2003, 2002, 2001, 2000 and 1999.

Related Links

- [American Lung Association](#)
 - [American Thoracic Society](#)
 - [Division of Global Migration & Quarantine, CDC](#)
 - [Global Health Facts on TB](#)
 - [International Union against Tuberculosis and Lung Disease](#)
 - [National Tuberculosis Curriculum Consortium](#)
 - [Office of Refugee Resettlement](#)
 - [Open Society Institute: The Global Plan to Stop TB](#)
 - [Stop TB Partnership](#)
 - [Tuberculosis Research Today](#)
 - [World Health Organization, Tuberculosis](#)
-

TBit

Stop TB in the African-American Community Website

The Division of Tuberculosis Elimination (DTBE) of CDC has launched the new *Stop TB in the African-American Community* website (<http://www.cdc.gov/nchstp/tb/TBinAfricanAmericans/default.htm>) which provides quick, anytime access to information and resources related to TB prevention, control and elimination in the African-American community. This resource has been developed for people who have an interest in the topic of TB in this community. It also serves as a repository for information related to this issue and includes the following sections:

- [Tuberculosis in the African-American Community](#)
- [Stop TB in the African-American Community Summit](#)
- [Stop TB in the African-American Community Listserv](#)
- [TB Challenge Newsletter: Partnering to Eliminate TB in African Americans](#)
- [Morbidity and Mortality Weekly Reports \(MMWR\) related to TB in African Americans](#)
- [TB Educational Resources for the African-American Community](#)
- [TB-Related Listservs, Newsletters, Digests and Web-Based Resources](#)
- [Other Links related to TB in African Americans and Other Populations](#)

There are no subscription requirements for visitors to this site. All materials that have been developed by the CDC on this website are free of charge.

In addition, DTBE has launched the *Stop TB in the African-American Community* listserv (go to http://www.cdcnpin.org/scripts/listserv/tb_aa.asp to subscribe). The listserv provides a forum for exchanging information, sharing activities and experiences, and engaging in ongoing discussions related to the prevention, control and elimination of TB in the African-American community. As an interactive platform, it allows individuals subscribing to the listserv to share resources by posting and receiving messages, submitting materials and providing announcements about upcoming events and activities related to this topic. Listserv members may receive immediate delivery of posted messages or choose a daily digest of all postings over a 24-hour period. The listserv is free of charge and open to anyone with interest in TB in the African-American community.

For more information, please contact Dr. Cornelia White at (404) 639-8337 or by email at zhz3@cdc.gov.

In the Works

The following products (algorithms) have been updated and are located on the Heartland website. They are available for printing or downloading.

- [Assessing and Managing the Risk of Liver Disease in the Treatment of LTBI](#) (PDF ~ 257 KB)
- [Evaluation of Pregnant Patient at Risk for TB](#) (PDF ~ 242 KB)
- [Management of the TB Patient at Risk of Hepatotoxicity](#) (PDF ~ 260 KB)

Please send any corrections, additions or article submissions for the Heartland *TBeat* Newsletter to:

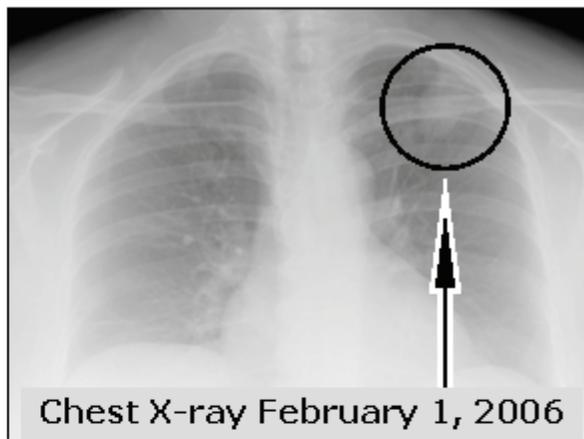
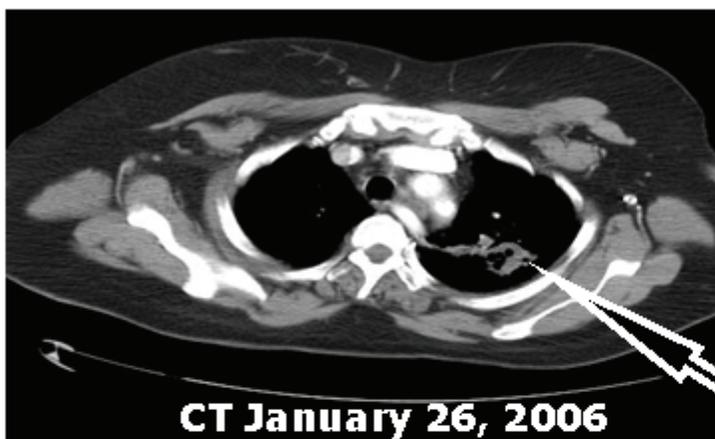
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Case Presentation Missed Opportunities

Medical History

A 52 year old Hispanic female presented in January 2006 with left upper quadrant (LUQ) pain. An abdominal x-ray series revealed a density in the left upper lung; there was no hilar, mediastinal or axillary adenopathy. She denied cough, fever or night sweats. She had no prior history of tuberculosis. She immigrated to the US from Mexico 20 years ago and occasionally returns there to visit family. She is a diabetic and a non-smoker. She was referred to the local public health department where a tuberculin skin test (TST) was done and had an induration of 25 mm. Three sputums were negative for *M. tuberculosis* by direct staining and culture. A CT scan revealed a 2.4 cm slightly irregular cavitary mass in the left upper lobe. After the negative cultures, she was started on a 9 month course of isoniazid (INH) and vitamin B6.

Six months later in August of 2006, a CT showed a thick-walled cavitary lesion. She was referred for thoracotomy and surgical removal of the mass. A left upper lobectomy was performed which showed a thick walled cavitary lesion (4.5 x 3.5 x 3 cm in size) with no evidence of malignancy. The cavitary lesion had focal extension into the surrounding bronchiole. A direct smear was 2+ positive for Acid Fast Bacilli (AFB) on the tissue specimen; *Mycobacteria tuberculosis* was isolated by culture and confirmed by mycolic acid analysis within 9 days. The patient's physician made a diagnosis of old granulomatous disease (tuberculosis). The patient had an unremarkable surgical recovery; she was discharged with diabetic medication and continued on her INH and vitamin B6. Three repeat sputums were obtained by the local public health department after her release from the hospital; they were all AFB smear and culture negative. The state TB public health department initiated a 4 drug regimen; INH, rifampin (RIF), pyrazinamide (PZA) and ethambutol (EMB); also referred to as RIPE. Subsequently, drug susceptibility studies showed her isolate resistant to INH.



Cavitary lesion

Continued on Page 8

Case Presentation continued from page 7

Teaching Points

- The differential diagnosis of latent TB infection (LTBI) or TB disease is critical in the treatment and management of TB-infected patients. LTBI patients are not infectious and have no symptoms consistent with tuberculosis. They can go on to develop TB disease if untreated; certain sub-populations of people are more at risk to advance to full-blown TB disease. Patients with pulmonary TB disease usually present with symptoms (mild to severe) and are generally infectious; this infectiousness makes these patients a public health threat; see Table below.

	Latent TB Infection	TB Disease
Infectivity	NOT infectious to others	Can be <u>highly</u> infectious to others depending on the body site of the TB infection; i.e. laryngeal or pulmonary
Symptoms	Asymptomatic	Range from asymptomatic to severe; site of TB disease determines symptoms; i.e. pulmonary infection - cough, hemoptysis
Diagnosis	<ul style="list-style-type: none"> • Positive Tuberculin Skin Test (TST); positive cutoff determined by patient risk factors; i.e. HIV+, age, recent contact of infectious TB case • Negative Chest X-ray (CXR) • Negative AFB sputum and cultures 	<ul style="list-style-type: none"> • Positive TST but may be negative in immunocompromised patients and in some with disease • Abnormal CXR or CT • Positive AFB smears in >70% and culture in >90% (some may have a diagnosis of culture negative disease)
Treatment	<ul style="list-style-type: none"> • <i>Preferred</i> - INH daily for 9 months • <i>Alternative</i> regimens available due to drug resistance, adverse drug reactions and patient intolerance 	<ul style="list-style-type: none"> • <i>Preferred</i> - 4 drug regimen (RIPE) daily for first 2 months, followed by 2X weekly INH and RIF for 18 weeks • <i>Alternative</i> regimens available due to drug resistance, adverse drug reactions and patient immune status
Failure to Treat	Risk of advancing to TB disease; lifetime risk dependent on many factors; i.e. recent infection, immune status, recent immigration in foreign-born persons, other concurrent medical conditions	Usually results in progressive disease, may result in death in >25% of individuals
Public Health Risk	None unless patient advances to pulmonary or laryngeal TB disease	High; site of TB disease determines infectivity to others

- The following medical conditions are associated with an increased risk of progression from LTBI to TB disease:
 - o HIV infection
 - o Injection drug use
 - o **Radiographic evidence of prior healed TB**
 - o Low body weight ($\geq 10\%$ below ideal)
 - o Silicosis, **diabetes mellitus**, chronic renal failure or on hemodialysis, gastrectomy, jejunioileal bypass, solid organ transplant, head and neck cancers, conditions that require prolonged use of immunosuppressive agents such as prednisone or TNF-alpha antagonists
- The size of the TST induration (in mm) and patient factors determine whether the TST is considered positive. A positive TST requires further testing to differentiate LTBI or TB disease:
 - o TST ≥ 5 mm induration is **positive** in: HIV+ persons; recent contacts of infectious TB cases; persons with fibrotic changes on CXR consistent with prior TB; organ transplant patients; persons on immunosuppressive agents (prednisone ≥ 15 mg/day for 1 month or TNF-alpha antagonists)

Continued on Page 9

Teaching Points continued from page 8

- TST \geq **10 mm induration** is **positive** in: recent immigrants (within last 5 years) from high prevalence countries; injection drug users, residents or employees of high-risk congregate settings; Mycobacteriology lab personnel; concurrent medical conditions (silicosis, **diabetes mellitus**, chronic renal failure or on hemodialysis, gastrectomy, jejunoileal bypass, solid organ transplant, head and neck cancers); children younger than 4 years of age; children or adolescents exposed to adults at high risk for TB disease
- TST \geq **15 mm induration** is **positive** in: persons with no risk factors for TB
- The following diagnostic measures should be employed to rule out TB disease if the TST is considered positive:
 - Chest x-ray (posterior-anterior views; children less than 5 years of age should have a lateral view also); additional studies (such as CT) maybe added to fully view the chest area
 - Sputum examination by AFB smear and culture is indicated when the patient has an abnormal CXR or respiratory symptoms. Three sputums should be collected at least 8 hours apart and at least one should be an early morning specimen.
 - Physical exam and complete patient medical history noting all risk factors. A written documentation of a previously positive TST is required; a patient's verbal history is not sufficient.
- TB infection in older diabetes mellitus patients is usually due to reactivation of an old focus rather than through a fresh contact. The usual signs and symptoms of TB disease may be absent or mild with the lack of a fever or cough. The absence of respiratory symptoms may delay diagnosis; radiographic changes in the lungs can be atypical or limited. Abdominal tuberculosis and other rare manifestations such as pseudotumors in the lungs and papulonecrotic tuberculid tuberculosis of the maxilla, zygoma and sinus can be more common in diabetic patients.¹
- When a radiographic abnormality is present that is possibly consistent with active tuberculosis, radiographic stability should be determined before starting treatment for LTBI. A repeat CXR is suggested after 2 to 3 months. If the CXR is stable, that is usually an indication, along with negative sputum cultures, for a diagnosis of LTBI. When there is a radiographic manifestation that is worrisome for active disease, even with radiographic stability, a more aggressive attempt at a diagnosis should be made. Consultation with an expert in the treatment of tuberculosis is recommended for patients who have such radiographs.
- When active tuberculosis is a possibility, it is best to start four drug standard therapy (RIPE) pending the results of cultures. Treatment of active disease with a single drug leads to resistance to that drug.

References

¹JEET (Joint Effort to Eradicate Tuberculosis); "TB & Diabetes" <http://www.ourjeet.com/general1/diabetes.asp>; December 22, 2006.

Center for Disease Control and Prevention. Core Curriculum on Tuberculosis: What the Clinician Should Know. Fourth edition, 2000; p. 39-46.

Center for Disease Control and Prevention and New Jersey Medical School National Tuberculosis Center. Guide for Primary Health Care Providers: Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection, 2005.

Dutt, A. K. "Epidemiology and Host Factors" in Tuberculosis & Nontuberculous Mycobacterial Infections, 5th ed. New York: McGraw Hill, Medical Publishing Division, 2006.

Khan, A. E. and Kimerling, M.E. "Chemotherapy of Tuberculosis" in Tuberculosis & Nontuberculous Mycobacterial Infections, 5th ed. New York: McGraw Hill, Medical Publishing Division, 2006.

MMWR. Guidelines for the Treatment of Tuberculosis. June 20, 2003, Volume 52(11): p. 3-10.

Heartland National TB Center provides a *Medical Consultation Line* that is staffed Monday to Friday, 8:00 AM to 5:00 PM (CST). After business hours, voice mail is available and will be returned in one business day:

Toll Free Telephone Number: 1-800-TEX-LUNG (1-800-839-5864)

Upcoming Trainings

- Heartland National TB Center—Proposed 2007 Dates*

<u>Date</u>	<u>Course</u>	<u>Location</u>
February 27-28	Contact Investigation	St. Louis, Missouri
March 6-8	Contact Investigation	San Antonio, Texas
April 25-26	Contact Investigation	Minnesota
May 17-18	Contact Investigation	Oklahoma
May 18	Video Conference	North Dakota
May 22-24	Contact Investigation	Chicago, Illinois
June 5-8	TB Intensive	Tyler, Texas
June 15	Video Conference	North Dakota
July 17-19	Responding to a Public Health Event	San Antonio, Texas
July 20	Video Conference	North Dakota
August 17	Video Conference	North Dakota
August 29-31	Responding to a TB Event	Wichita, Kansas
September 11-13	Contact Investigation	Arizona
September	TB Update (Midwest TB Controllers)	Illinois
September 25-28	TB Intensive	Chicago, Illinois
October	TB Update (4 Corners TB Controllers)	Colorado
November 6-9	Hospital Infection Control	San Antonio, Texas
December 4-7	TB Intensive	Tyler, Texas

Please go to <http://www.heartlandntbc.org/training.asp> for contact and registration information for each course. Additionally, we have webinars planned on Genotyping; Pediatric TB; HIV / TB; and Adverse Drug Reactions. We will also conduct an on-line training course in the fall of 2007 on Hepatotoxicity. Proposed topics and dates are subject to change; check website for the latest updates.

Regional News

- Latest issue of TB Notes** is currently available from the CDC Division of TB Elimination (DTBE). This is a quarterly newsletter that contains news about DTBE activities and highlights from state and local TB programs across the country. It also contains a calendar of events describing meetings, conferences and other educational activities of potential interest to those working in the field of TB. Please go to the following webpage:

http://www.cdc.gov/nchstp/tb/notes/TBN_4_06/tbn406.pdf

- Upcoming Conference—International Union Against Tuberculosis & Lung Diseases North America Region (IUATLD NAR) 11th Annual Meeting: Powering Up Political Will for TB Control.** Sponsors: British Columbia Lung Association and American Lung Association of Metropolitan Chicago.

Dates and Location: February 22 - 24, 2007; Vancouver, BC, Canada

The theme of this year's conference is "Powering Up Political Will for TB Control." Attendees will have an opportunity to explore many different aspects of tuberculosis prevention and control, including the global impact of international standards, the implications and challenges of human resources, the effects of drug-resistant tuberculosis, new tools and technologies, and jurisdictional aspects of tuberculosis prevention and control. The meeting will be part of the STOP TB Canada meeting and will be joined by the Nurse's Assembly.

For complete conference information visit:

http://www.bc.lung.ca/lungdiseases/tuberculosis_iuatld.html