THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT TYLER
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TBeat

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To Contact Us

Mailing address:
Heartland National TB Center
2303 SE Military Drive
San Antonio, TX 78223

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

Fax Numbers:
Administration
(210) 531-4590
Medical Consultation
(210) 531-4500

www.HeartlandNTBC.org

Determining Treatment History in the Absence of Documentation

In determining appropriate treatment for a patient, clinicians rely on information from a variety of sources including smear and culture results, radiographs, and patient history. A patient's report of symptoms of TB, prior exposures, diagnoses, and medication regimens all have an impact on treatment decisions. In the absence of medical records, obtaining an accurate history of past TB treatment can prove challenging. Coaxing details from a patient can be time consuming and may also require some creativity.

Even if records are available, the patient should always be questioned thoroughly about prior TB treatment. A patient is rarely able to provide exact dates and dosages of medications previously taken, but if the subject is pursued they are often able to correlate dates with holidays or special events, which can often assist the medical professional in establishing a timeframe for prior treatment.

Establishing a timeframe for prior treatment is crucial, especially since the risk of relapse during the first two years following successful treatment is greater for patients who took longer than two months to convert sputum specimens to negative, and/or who had radiographic evidence of cavitary disease. If the continuation phase of treatment was not extended by an additional three months for a total of nine months, relapse rates can be significantly higher. Accurate information regarding the initial radiographic findings, culture conversions, and length of treatment all play into determining a patient's risk of relapse, and informs current treatment options to decrease the likelihood of relapse for these at-risk patients.

HNTC Staff

Medical Director
Barbara Seaworth, MD
(210) 531-4541
barbara.seaworth@dshs.state.tx.us

Assistant Medical Director
David Griffith, MD
(903) 877-7267
UTHC Tyler
david.griffith@uthct.edu

Medical Consultant
Lisa Y. Armitige, MD, PhD
(210) 531-4548
lisa.armitige@dshs.state.tx.us

Executive Director
Stephanie Ott, CPM
(210) 531-4542
stephanie.ott@uthct.edu

Training and Product Development
Director, Education & Training
Mary Long, MSPH
(210) 531-4545
mary.long@uthct.edu

Education Specialist
Robert Granger, MPH
(210) 531-4509
robert.granger@uthct.edu

Education Specialist
Jessica Quintero, BS
(210) 531-4568
jessica.quintero@uthct.edu

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New Additions to Heartland Staff

Lisa Y. Armitige, MD, PhD Heartland National TB Center in San Antonio is pleased to announce the addition of Lisa Y. Armitige, MD, PhD, to the staff as a **Medical Consultant.**

Dr. Armitige is an Associate Professor of Medicine at the University of Texas Health Science Center at Tyler (UTHSC-Tyler) and an Adjunct Assistant Professor of Internal Medicine and Pediatrics at UT-Houston Medical School. She received a BA in Biochemistry from Rice University in 1989 and in 1998 was the 50th graduate of the UT-Houston MD/PhD Program. Dr. Armitige pursued a combined residency in internal medicine and pediatrics (1998-2002) and completed a Fellowship in adult infectious diseases (2003-2005) at UT-Houston.

Upon completion of her training, Dr. Armitige joined the faculty at UT-Houston Medical School where she taught medical students, residents and infectious diseases fellows on inpatient and outpatient clinical services. Her outpatient clinics included a full service HIV clinic and a hospital-based tuberculosis clinic in Harris County, Houston, Texas.

Her research interest is pathogenesis of *Mycobacterium tuberculosis*. Studies in her laboratory have included investigations of *M. tuberculosis* virulence factors and correlates of the bacteria's behavior with human host response. Dr. Armitige has published several abstracts and peer-reviewed articles in her field.

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2303 SE Military Drive,
San Antonio, Texas 78223
www.heartlandntbc.org

1-800-TEX-LUNG (1-800-839-5864)

HNTC Staff

Medical Consultation

Nurse Consultant/Educator
Alisha Blair, LVN
(210) 531-4546
alisha.blair@uthct.edu

Nurse Consultant/Educator
Elizabeth Mauldin, RN, BSN
(210) 531-4580
elizabeth.mauldin@uthct.edu

Nurse Consultant/Educator
Catalina Navarro, RN, BSN
(210) 531-4569
catalina.navarro@uthct.edu

Nurse Consultant/Educator
Debbie Onofre, RN, BSN
(210) 531-4539
debbie.onofre@uthct.edu

Administration

Program Coordinator
Delfina Sanchez, MA
(210) 531-4528
delfina.sanchez@uthct.edu

Administrative Specialist
Alysia Thomas-Gibbons
(210) 531-4549
alysia.thomas@uthct.edu

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Dr. Armitige's awards include the 2004 UNCF/Merck Postdoctoral Science Research Fellowship Award, the 2004 Infectious Diseases Society of America Bayer Harold Neu Postdoctoral Fellowship Award, the 2006-2007 UT-Houston Dean's Teaching Excellence Award, and the 2010 Benjy F. Brooks Teaching Award from UT-Houston.

While in Houston, Dr. Armitige's teaching responsibilities included roles as Preceptor for the UT-Houston second-year *Fundamentals of Medicine* course (1999-2003, 2006-2008), Faculty Advisor for the UT-Houston first-year *Immunology* course (2003-2009; she was voted 'Best Teacher Clinical Immunology' 2006-2009), Lecturer for the UT-Houston first-year *Microbiology* course (2004-2010; she was voted 'Best Teacher Microbiology' in 2004-2009), and Facilitator for the UT-Houston second-year *Problem-Based Learning* course (2007-2009).

Dr. Armitige holds membership in the following professional societies: American Society for Microbiology, Infectious Diseases Society of America, American College of Physicians, and is a Fellow of the American Academy of Pediatrics.

We welcome Dr. Armitige to our team; she can be reached at 210-531-4548 or at lisa.armitige@dshs.state.tx.us.

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Robert Granger, MPH Coming to San Antonio from Morgan State University in Baltimore, Maryland, is Robert Granger, III Heartland's newest **Education Specialist.** A native Floridian who attended the University of Florida, he received a Bachelors of Science in Health Education and Behavior, with a concentration in Health Promotion. While an undergraduate, Robert developed an interest in chronic disease prevention. Prior to graduation, he completed two internships in personal training and diabetes education.

Prior to graduate school, Robert worked at the Florida Department of Health as a Health Education Consultant for the Bureau of Chronic Disease and Prevention. His desire to promote chronic disease prevention in underserved population groups led him to pursue a Masters degree in Public Health from Morgan State University. During his matriculation of the program, Robert developed an interest in program planning and evaluation and subsequently selected Behavioral Health Sciences as his concentration. For his practicum experience, he planned and implemented a pilot program entitled "P.L.A.Y. at Morgan". "P.L.A.Y. at Morgan" is a five-week summer program designed to gain insight on the strategies needed to develop successful obesity intervention for African American adolescents.

Elizabeth Mauldin, RN, BSN New to the cadre of **Nurse Consultants/Nurse Educators** at Heartland is Elizabeth "Lisa" Mauldin, RN, BSN. Most recently with the City Chest Clinic in San Antonio, Lisa has over sixteen years' experience in nursing, working not only in tuberculosis control, but having had a long career as a school nurse and educator. She practiced as a school nurse in San Antonio, Texas; Iwakuni, Japan; and Hohenfels, Germany. Overseas, she served as a liaison between the school and the military medical command to develop health promotion programs that focused on combating childhood obesity. She also coordinated assessment and treatment of special needs students with both the Army command and the schools.

A graduate of the University of Texas Health Science Center School of Nursing at San Antonio, Lisa also holds an undergraduate degree from Trinity University in San Antonio in English and Sociology, and is a Texas state certified secondary teacher.

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

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.

Case Presentation
Determining Treatment Options with Limited Documentation

Case History:

A 62 year old woman from Mexico was referred to the local health department in November 2009 with a positive Tuberculin Skin Test (TST) (22 mm), and an abnormal chest x-ray. Radiography indicated pulmonary parenchymal scarring with no pleural effusion and multiple calcified granulomata. Three sputa samples obtained in August, December, and January, were all smear and culture negative. The patient was asymptomatic, but revealed during intake that she was diagnosed with tuberculosis (TB) thirty-two years before and was treated for one year. Also noted was a partial lung resection in Mexico 7 years earlier, reason unknown.

Many concerns were raised in regards to the adequacy and completeness of the patient's previous TB treatment given the lack of medical documentation and incomplete history.

Background:

With a positive TST, once active tuberculosis is ruled out, the patient should be assumed to have latent tuberculosis infection (LTBI). The patient did have three separate sputum smears and cultures over a 5 month period and denied any symptoms of TB. However she was noted to have an abnormal chest radiograph so to complete the evaluation in order to exclude an active process, a repeat chest x-ray was requested. Comparison chest x-rays revealed no changes, the stable radiograph was consistent with LTBI.

When a patient has a history of active TB in the past and currently has an abnormal chest radiograph even without evidence of active disease, it is important to identify whether treatment was adequate. The 2003 Centers for Disease Control and Prevention (CDC), American Thoracic Society (ATS), Infectious Disease Society of America (IDSA) guidelines, *Treatment of Tuberculosis*, notes "Persons with a positive TST who have radiographic findings consistent with prior pulmonary tuberculosis (ATS/CDC Class 4) and who have not been treated are at increased risk for the subsequent development of active tuberculosis. Case rates among such persons in one study were about 2.5 times those of persons infected with *M. tuberculosis* who did not have chest radiographic abnormalities. Once active tuberculosis has been excluded by sputum culture, these persons are high-priority candidates for treatment of LTBI."

This patient was treated for tuberculosis in Mexico 32 years ago (around 1979) at a time when it was very possible that rifampin was not included in the regimen, or if included was not utilized for the entire duration of treatment. This concern regarding rifampin is supported by the reported treatment duration of one year. The introduction of rifampin into treatment schedules was coupled with a "short course" treatment. The FDA approval for clinical use in the US only dates back to 1971 and in the summer of 1980 a nine month course of isoniazid and rifampin was recommended for use in the US. During this time frame, many programs globally only used rifampin in the initial two months of treatment and then completed therapy with another six months of isoniazid and ethambutol or did not use rifampin at all. Rifampin use was limited by its

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expense and the desire to hold it in reserve. Directly observed therapy (DOT) has only been implemented widely in Mexico during the past decade. DOT was introduced into treatment in the US in the late 1980s. Therefore, the strength of the regimen as well as adherence and adequacy, may be questioned.

Her provider was encouraged to ask questions designed to elicit a better sense of the treatment received in Mexico thirty-two years ago and to identify the reason for pulmonary resection 7 years earlier. During the follow up interview, the patient reported that she was treated with 60 doses of an injectable, and noted that the TB medications made her urine turn red. This report is consistent with a TB regimen that included rifampin. It is possible that she may have been treated for TB more recently than was initially reported. She noted the reason for partial lung resection was hemoptysis.

Health Department staff counseled the patient regarding her increased risk for recurrent tuberculosis as well as for signs and symptoms of active disease. Before a recommendation for treatment of LTBI could be made, the patient returned to Mexico.

Teaching Points:

- Patients with a positive TST or Interferon gamma release assay (IGRA) with symptoms of tuberculosis should be evaluated promptly
- When obtaining sputa samples for Acid Fast Bacilli (AFB) testing, follow cultures until final (usually 6 weeks)
- Multiple client interviews may be necessary to obtain full past medical history
- Comparison chest x-rays can determine stability or evolution of disease; they along with response of symptoms to treatment may be the key to a diagnosis of culture negative TB
- Patients giving history of treatment for TB should be asked if medications cause their urine to appear orange or red to aid in the assessment as to whether rifampin was used
- Always counsel patients about the signs and symptoms of TB and give instructions as what to do if they are experiencing symptoms
- If the patient was treated outside the US, research regarding availability of anti-TB meds in that country should be done
- Questions should be tailored to the patient's age, education level, cultural background, and responses to previous questions
- Obtaining accurate information of prior TB treatment is critical for making a correct diagnosis and recommending proper management

Key Concepts:

Soliciting history of previous TB treatment requires a great deal of patience and attention to detail. In a culturally sensitive and confidential setting, allow plenty of time, utilize an accurate and unbiased medical interpreter (if necessary), and be willing to repeat or rephrase a question to obtain information. Give the patient encouragement to reveal accurate information by asking and responding in a nonjudgmental manner.

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Key Concepts continued from Page 6

Ask the patient if he/she has any written information regarding his or her treatment, including any old radiographs.

- Have you been told you had TB before?
- Have you been treated for TB?
- Have you received injections for a lung problem?
- Have you purchased and used medicated cough syrups in a foreign country?
- Were you ever diagnosed as a "cougher?"

If your patient answers "**yes**" to any of the following questions he or she may have been previously treated for TB:

- Where were you treated?
- What drugs did you receive?
- How many different drugs? How many pills each day? What size and colors were the pills/capsules?
- Did you receive injections, if so for how long?
- How long were you on treatment?
- When did you start?
- When did you stop? Why did you stop (completed treatment, adverse reaction)?
- It's hard to remember to take medicine every day. How often did you remember your medications?
- TB medicine is expensive. Were you ever without medication?
- Did you miss medication sometimes? How often?
- Did healthcare workers observe you taking your medications?
- Did your urine turn orange?
- Did you feel better?
- Did you ever have sputum examined? What was the result?
- If positive, did your subsequent sputa test negative?
- Did your doctor ever tell you that you had to be treated for TB for a longer period? That you had a return of TB? That you had drug resistance?
- Did your TB symptoms return after completing treatment?

If your patient answers **"yes"** to the following questions, their treatment may have been for LTBI:

- Have you been exposed to or had contact with anyone with TB?
- If yes, when was that?
- Did you have a skin test? Do you know the results?
- Did you have a chest x-ray? Do you know the results?

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Key Concepts continued from Page 7

- Did you receive medications to prevent TB? If so, what drugs did you take and for how long?

If the patient was previously treated for TB in the United States or Mexico, records detailing his or her treatment should be obtained from the local jurisdiction or through ***CureTB*: Binational TB Referral Program** (www.curetb.org or 619-542-4013). If the patient was treated by a public health agency or by a private provider in another country, records may be available and should be sought. The World Health Organization website provides links and contact information for TB programs located throughout the world: http://www.who.int/topics/tuberculosis/en/.

Obtain records when possible regarding treatment of a presumed source case.

References:

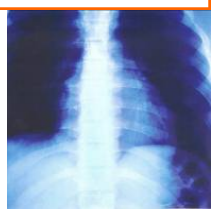
Centers for Disease Control and Prevention (CDC). *Treatment of Tuberculosis*. American Thoracic Society, CDC, and Infectious Diseases Society of America. MMWR 2003;52 (No. TT-11): pp. 39-40.

Francis J. Curry National Tuberculosis Center and California Department of Public Health. 2008. *Drug Resistant Tuberculosis: A Survival Guide for Clinicians.* Second Edition: pp. 20-21.

Sensi, P. "History of the Development of Rifampin." *Reviews of Infectious Diseases*. Volume 5.3 (1983): pp. 402-6.

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)



Heartland National TB Center—2010 Training Dates

Date	Course	Location
July 12-15	Advanced Nurse Mini-Fellowship	San Antonio, TX
July 27-28	Infectious Disease Conference: TB Update	Phoenix, AZ
July 27, Aug 3, 17	TB Management of the HIV Patient: A Webinar Series	
August 24	Understanding & Managing LTBI	Arnold, MO
August 26	An Overview to Contact Investigation: A Webinar	
September 15-16	Handling TB & HIV Co-Infection	Fargo, ND
October	TB in Vulnerable Populations	Chicago, IL
October 19	Advanced TB Nurse Case Management	St Paul, MN
October 19-20	4 Corners TB/HIV Conference	Flagstaff, AZ
November 3-5	TB Nurse Case Management	San Antonio, TX
December 1-3	TB Intensive	San Antonio, TX

Please go to http://www.heartlandntbc.org/training.asp for contact and registration information for each course and webinar. Proposed topics are subject to change; check Heartland's website for the latest updates.