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TBeat

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In This Issue...

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Emerging High Risk Behaviors for Exposure to Tuberculosis

Drug-use along with several other medical, circumstantial, and social or lifestyle factors has long since been associated with a higher incidence of TB infection and higher risk for disease regardless of the prevalence of TB infection in the community. TB programs target high-risk groups such as substance abusers in order to better implement control and prevention measures such as screening and preventative therapy; however as trends shift, certain groups not considered at risk may eventually be identified as a high priority, and vice versa. The "drug-use" category demonstrates these current shifts, as the activities of drug-users can change quickly in response to social, economic, or legal factors. Perhaps the most fluid areas within this high-risk group are the points at which drug-use converges with low-risk groups, such as young healthy adults or upper middle class university students. It is at these convergence points that public healthcare workers must be prepared for the shifts that pose a possible increased risk of TB to a new group of people.

Currently much of the increased risk associated with drug-use is due to overlapping social and lifestyle factors including homelessness, imprisonment, mental health issues, and alcohol abuse. Injection drug users are also at an increased risk of HIV infection, and many substance abusers in general suffer from malnutrition. These environmental and medical conditions not only result in an increased risk for infection but may also increase the risk for progression to active disease. In addition, new evidence suggests a more direct link between drug use and TB. A case-control study of TB in London reveals a correlation between smear-positive TB and crack cocaine use. It is hypothesized that the damage caused by smoking crack cocaine (known as crack lung) impairs lung function and may increase susceptibility to infectious diseases.[1]

However the risk of disease transmission is not limited to injection-drug and hard-drug users. Often overlooked, shared water pipes used for smoking drugs such as

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marijuana or tobacco also have the potential for spreading infectious diseases. The danger in these practices is that they are often considered less harmful and have less strong associations with additional health risk behaviors.[2] Water pipe or hookah smoking is a rising infection control concern because it is usually a social group activity in which each participant inhales from and passes around a shared mouthpiece. The activity typically occurs in small, poorly ventilated rooms and continues for at least an hour. Risks to employees of these facilities are likely even more significant but have not been evaluated. Hookah smoking can easily be ignored as a disease risk factor due to its casual use and widespread popularity.

Hookah smoking is common practice throughout much of the world. It has been estimated that >100 million people worldwide smoke hookahs daily.[3] In much of the world this practice is more than a drug-use behavior, rather it is a cultural, familial, ritualistic, and symbolic custom. However its popularity has spread throughout different countries, economic classes, and age groups. In the United States hookah smoking is a popular social activity with adolescents and young adults, especially from middle and upper income families. One recent study revealed that non-Arab-American youth generally perceive hookah smoking to be less harmful than cigarettes,[4] although the contrary has been proven.[5] At universities hookah smoking is a common method of socialization for both foreign-born and domestic students. As many disease investigators know university students can be a highly transient group with many contacts, but little contact information, and the casual group nature of smoking hookah can complicate such situations.

The implications of these findings can be alarming; however it is crucial for public healthcare workers and health educators to be aware of such trends. While hookah smoking is a recognized site of TB transmission in the Middle East it has not been reported in the United States as a site of transmission. Yet in recent cases of TB in young adults (university students), contact investigators have noted occasional hookah use as a social activity. The Advisory Council for the Elimination of Tuberculosis states that, "local public health officials should identify community groups among whom TB and transmission of infection occur. Identifications of these groups requires collecting and analyzing a) data on newly reported cases available as part of TB surveillance, b) data not routinely collected and/or analyzed, and c) data from tuberculin screening programs."[6] In taking these steps local health departments can adequately target emerging and locally defined high-risk populations or areas.

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Researched by: Alysia Thomas and Laura Muraida, Heartland National TB Center

Written by: Laura Muraida, Heartland National TB Center

FOOTNOTES:

[1]Story, A.; Bothamley, .G and Hayward, A. Crack Cocaine and Infectious Tuberculosis. *Emerging Infectious Diseases*. 2008; Vol. 14, No. 9: 1466-1469.

[2]Knishkowy, B and Amitai, Y. Water-Pipe Smoking: An Emerging Health Risk Behavior. *Pediatrics.* 2005; 116: e113-e119.

[3]Ibid

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White Rabbit

By Jefferson Airplane

One pill makes you larger
And one pill makes you small
And the ones that mother gives you
Don't do anything at all
Go ask Alice
When she's ten feet tall

And if you go chasing rabbits
And you know you're going to fall
Tell 'em a **hookah smoking caterpillar**
Has given you the call
Recall Alice
When she was just small

When men on the chessboard
Get up and tell you where to go
And you've just had some kind of mushroom
And your mind is moving slow
Go ask Alice I think she'll know

When logic and proportion
Have fallen sloppy dead
And the White Knight is talking backwards
And the Red Queen's "off with her head!"
Remember what the dormouse said;
"FEED YOUR HEAD

Submitted by Michelle Hulse, MD; Minnesota

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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.

Regional News

Minnesota Tuberculosis (TB) Awareness and Treatment ECHO-TV Program

By Elizabeth Kingdon, Minnesota Department of Health

Minnesota Department of Health's (MDH) Refugee Health and Tuberculosis Programs are pleased to offer a show about tuberculosis (TB) for the public. This show was produced by the ECHO-TV (Emergency and Community Health Outreach) collaborative. Developed as an educational and outreach tool for persons at elevated risk for TB, the DVD contains seven versions of a 20-minute show that originally aired on public television in Minnesota in March 2008.

There are seven versions: English, Hmong, Khmer, Lao, Somali, Spanish, and Vietnamese. Each version was taped using bilingual and bicultural hosts and healthcare providers. Content was written by MDH TB Program staff. All non-English programs are subtitled in English.

Although the content of the shows varies slightly, each version has these key messages in common:

- People from countries where TB is common should get tested for TB.
- TB is curable and preventable.
- If you have TB it's important that you take all of your medicine and follow the advice of a medical professional.
- Anyone can have TB so there is no need to be ashamed if you have the disease.

This content is available in DVD and web streaming formats. A limited number of DVDs are available at no cost to organizations in the United States that serve populations at elevated risk for TB. Each DVD contains all seven languages. The DVD order form, direct links to the streaming video, and information about ECHO are available at www.health.state.mn.us/divs/idepc/diseases/tb/echo.html.

Please contact Beth Kingdon (Elisabeth.Kingdon@state.mn.us or 651-201-5529) if you have any questions about this project.

Related Links

- AIDS Education and Training Centers
- American Thoracic Society
- Division of TB Elimination, CDC
- Find TB Resources
- Joint RTMCC Products Page
- National Tuberculosis Curriculum Consortium
- Stop TB Partnership
- Tuberculosis in African Americans, CDC
- World Health Organization, Tuberculosis
- American Lung Association
- Division of Global Migration & Quarantine, CDC
- Global Health Facts on TB
- International Union against Tuberculosis and Lung Disease
- National Information Prevention Network—TB, CDC
- Tuberculosis Research Today

Click on a picture to go directly to that Center's website

Upcoming Trainings

- *Heartland National TB Center—2008 Trainings*

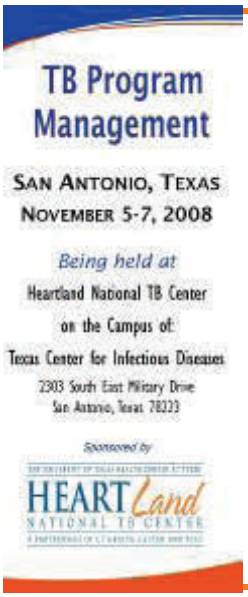
Date	Course	Location
October 15	TB Update: Genotyping and Research	St. Paul, Minnesota
October 27	TB Update: Contact Interviewing	Flagstaff, Arizona
November 5-7	TB Program Management	San Antonio, Texas
November 13	Tuberculosis Updates for the Clinician	San Antonio, Texas
December 2-4	TB Intensive	Tyler, Texas

Please go to http://www.heartlandntbc.org/training.asp for course information, staff contact information and on-line registration forms for each course. Proposed topics and dates are subject to change; check website for the latest updates.

- *Heartland National TB Center—Proposed 2009 Trainings*

We are developing our training calendar for 2009. The following are tentative topics, dates and locations. Please refer to our NEW Heartland Training Calendar for the latest updates as we confirm dates and locations for 2009:

Date	Course	Location
March 2009	TB 101 Teach Back	Phoenix, Arizona
March 31-April 2, 2009	TB Nurse Case Management	Wisconsin
April 3, 2009	MDR Primer	Wisconsin
April 27-May 1, 2009	TB Nurse Case Management	Minnesota
Spring 2009	TB Program Management	Kansas
Spring 2009	TB Nurse Case Management	San Antonio, Texas
Spring 2009	TB in Corrections	Collinsville, Illinois
June 2009	TB & Health Disparities in US Born	Chicago, Illinois
June 2009	TB Intensive	Tyler, Texas
September 2009	TB Nurse Case Management	Nebraska
2009	TB Updates for the Physician	Mayo Clinic, Minnesota
Fall 2009	TB Nurse Case Management	Kansas
Winter 2009	TB Intensive	Houston, Texas
Winter 2009	Pediatric TB Intensive	Houston, Texas



In the Works

Heartland National TB Center has been working with representatives from the region to develop a *TB Program Management* course. We are pleased to announce the first offering of what will become an annual Heartland training targeted to public health TB program managers who are actively engaged in the day-to-day responsibilities of supervising and managing a TB program at the local or regional level. November 5-7, 2008 at Heartland in San Antonio; faculty from the region will present topics on TB management structure, budgeting, CDC surveillance and data management, evaluating program performance, supervising the nursing and field staff, staffing your TB program, recruitment and retention of staff, emergency planning for TB control, Legal Authority Model Law Program, infection control, field safety, the TB pharmacy, the laboratory as a key component of TB control, asset mapping your resources and training your TB staff. Registration is now open, go to our website to apply.

TB*it*

New Issue of *TB Notes* Now Available!

TB Notes

Centers for Disease Control and Prevention
Atlanta, Georgia 30333
Division of Tuberculosis Elimination ♦
National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention

Number 3, 2008

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Note: The use of trade names in this issue is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

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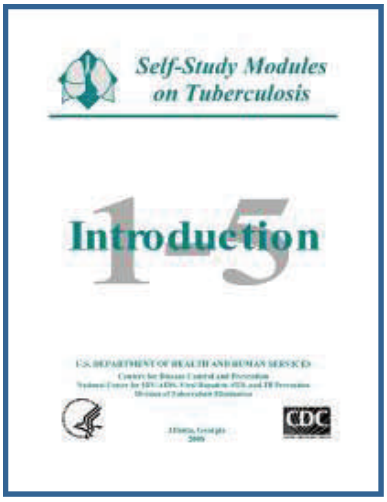

Introducing

New October 6, 2008

Self-Study Modules on Tuberculosis

The Centers for Disease Control and Prevention, Division of TB Elimination has updated the standard tuberculosis learning tool—the definitive *Self Study Modules on Tuberculosis, 1-5* (Course #SS3035). They are available as downloadable and printable PDF files (see links below) or the print version can be ordered directly from the CDC using the TB Educational and Training Materials Order Form.

Self-Study Modules on Tuberculosis: 1 - 5

- Introduction (PDF ~ 153 KB)
- Module 1: Transmission and Pathogenesis of Tuberculosis (PDF ~ 1.67 MB)
- Module 2: Epidemiology of Tuberculosis (PDF ~ 517 KB)
- Module 3: Targeted Testing and the Diagnosis of Latent Tuberculosis Infection and Tuberculosis Disease (PDF ~ 714 KB)
- Module 4: Treatment of Latent Tuberculosis Infection and Disease Tuberculosis (PDF ~ 1.01 MB)
- Module 5: Infectiousness and Infection Control (PDF ~ 1.01 MB)
- Glossary (PDF ~ 210 KB)

Case Presentation

Hookah Smoking: A Rising Tuberculosis Health Risk Behavior

Case History:

A 20 year old Russian university student, who had entered the United States 2 ½ years earlier, was diagnosed with extremely drug resistant tuberculosis (XDR TB). She noted travel back to Russia 6 months prior to the onset of symptoms. She denied any previous history of tuberculosis (TB) or exposure to anyone with TB. She noted a "large red swelling" at the site of a TB skin test which she received prior to entry into the United States. She presented to an emergency room with fever, chills, and night sweats which had worsened over the previous week. She also noted a 2 ½ month history of cough, a six month history of fatigue, and weight loss of 10 pounds. In the week prior to admission she received antibiotics for a presumed community acquired pneumonia but her symptoms and chest radiograph worsened. She was admitted to the hospital and underwent bronchiolaviolar lavage which was positive on nucleic acid amplification for *M. tuberculosis (TB)* and Klebsiella, a bacterial pathogen which can cause severe pneumonia. Treatment with the standard four drug regimen of isoniazid, rifampin, ethambutol, and pyrazinamide was started along with broad spectrum antibiotics. She had resolution of her fever, but persistence of systemic symptoms of weight loss, fatigue and cough. Her culture grew *M. tuberculosis* which was resistant to isoniazid, ethambutol, rifampin, streptomycin, ethionamide, kanamycin, rifabutine, ofloxacin, levofloxacin, amikacin, and PAS and susceptible to capreomycin, ethambutol (on agar only), linezolid, clofazamine, and cycloserine; intermediate susceptibility to moxifloxacin at an MIC of 1.0ug/ml was noted. This resistance pattern met the World Health Organization (WHO) definition of XDR-TB: TB that is resistant to isoniazid, rifampin, a fluoroquinolone, and at least one of the three second-line injectable drugs (amikacin, kanamycin, or capreomycin). Medical consultants from Heartland recommended hospitalization for isolation and initiation of therapy. After eight weeks of treatment with capreomycin, linezolid, moxifloxacin, clofazamine, and cycloserine, she converted her cultures to negative. She has tolerated the regimen very well and at least 24 months of treatment is planned for completion of therapy.

A contact investigation was initiated using both a concentric circle approach and a thorough social history and assessment. The patient in this case study was cooperative with the contact investigation interview, but was not able to provide last names of many individuals. Contacts identified included traditional contacts such as classmates, persons from her study groups, co-workers, household, family, and close social contacts. Recognition of social activities and the varying educational and volunteer activities which a university student may participate in is critical when conducting a contact investigation in a university setting. She provided additional information on a large variety of activities she was involved in, places of socialization, cell phone contacts, and Facebook contacts. She noted membership in a modeling club including a day long road trip with four other members to attend a function. She volunteered in a variety of university sponsored activities, and some of her class work included contact with young children. She also reported water pipe smoking at a local hookah bar. Recently another university student with multiple drug resistant tuberculosis noted a history of socializing in a hookah bar.

The risk of exposure and transmission in non-traditional activities is often uncertain, thus it is essential to identify and investigate all information elicited from the patient. Contact investigation is a critical component in controlling and eliminating tuberculosis, and serves to identify persons who have been exposed to active tuberculosis disease.[1] Non-traditional activities should be explored thoroughly as they might be a previously unknown conduit for transmission. In addition such activities may need to be identified as emerging health risk behaviors.

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Case Presentation *continued from Page 7*

Hookah Background:

Hookah bars are an increasingly common site of socialization for young people, especially university students from middle and upper income families. Hookah involves a water pipe with multiple attached hoses and a number of individuals who gather at a hookah bar to smoke flavored tobacco. A single mouthpiece is shared between persons to inhale smoke from the apparatus. The water pipe (hookah) has an attached water bowl that is filled halfway with water. A hose is connected to the top of the water bowl and on the opposite side is a mouthpiece from which the smoker inhales. The smoke passes through the water before being inhaled through the mouthpiece.[2] When hookah bubbles through water at the base of a hookah pipe, it cools the smoke. This cooling process forces a hookah smoker to inhale twice as deeply as a cigarette smoker, which causes the smoke to penetrate deeper into the lungs. Additionally, when mouthpieces are shared there is an added risk of acquiring a variety of respiratory infections including viruses, oral bacteria infections, and tuberculosis.[3] Researchers note that second-hand smoke and the spread of infectious diseases such as tuberculosis and herpes make hookah use a growing public health concern.[4]

Teaching Points:

- The World Health Organization (WHO) defines XDR-TB as TB that is resistant to isoniazid, rifampin, a fluoroquinolone, and at least one of three injectable second-line drugs (amikacin, kanamycin, or capreomycin).
- A contact investigation is an essential component in controlling and eliminating tuberculosis, and it serves to identify persons who have been exposed to someone with active tuberculosis disease.
- Recognition of social activities and the varying educational and volunteer activities available to university students is critical when conducting a contact investigation with a student.
- The hookah bar is an increasingly common site of socialization for young people, especially university students from middle and upper income families.
- When mouthpieces of Hookah pipes are shared the risk of getting colds, viruses, oral bacteria infections, and other communicable diseases like tuberculosis is increased.
- Researchers say that second-hand smoke and the spread of infectious diseases such as tuberculosis and herpes make hookah use a growing public health concern.
- More research is needed to identify the relationship of the transmission of TB and Hookah bars.

Researched by: Alysia Thomas, Heartland National TB Center
Written by: Debbie Onofre, Heartland National TB Center

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Case Presentation *continued from Page 8*

FOOTNOTES:

[1]*Guidelines for the Investigation of Contacts of Persons with Infectious Tuberculosis*. MMWR 2005; 54 (RR-15, 1-37).

[2]WHO Study Group on Tobacco Product Regulation (TobReg). *Waterpipe Tobacco Smoking: Health Effects, Research Needs and Recommended Actions by Regulators.* WHO, Geneva. 2005.

[3]Nuwayhid, I., Yamout, B., Azar, G., and Kambris, M. *Narghile (Hubble-Bubble) Smoking, Low Birth Weight and Other Pregnancy Outcomes.* American Journal of Epidemiology. 1998: V 48, No. 4. pp: 375-383.

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