DEPARTMENT OF HEALTH & HUMAN SERVICES Public Health Service

Centers for Disease Control
and Prevention (CDC)
Atlanta GA 30333

TB Notes
No. 3, 2013

Dear Colleague:

As you should already be aware, Dr. Ken Castro, Director, Division of Tuberculosis Elimination (DTBE), has accepted a request from the leadership of the National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP) to serve as Acting Director of the Division of HIV/AIDS Prevention (DHAP), until a permanent Director for DHAP is found. This is the result of Dr. Jonathan Mermin, former Director of DHAP, being selected as the new Director of NCHHSTP. Dr. Castro agreed to work in this capacity on a time-limited basis, and started on August 19. In addition, Phil Talboy, DTBE Deputy Director, is on a temporary detail to the Field Services Office, Office of State, Tribal, Local, and Territorial Support (OSTLTS), until January 2014 to help DTBE and other divisions in NCHHSTP re-build the crucial Public Health Advisor pipeline of the future. In the interim, I have agreed to serve as Acting Director, DTBE. While I am serving in this capacity, Dr. John Jereb, Field Services and Evaluation Branch (FSEB) medical officer, has agreed to serve as the DTBE Acting Associate Director for Science. Kathryn Koski is serving as Acting Deputy Director, and Lee Ann Ramsey is serving as Acting Associate Director for Management and Operations, DTBE. Dr. Castro and I both appreciate your support of these individuals as they carry out these important duties.

In April 2013, DTBE issued a notification via the CDC Health Alert Network (HAN) regarding nationwide shortages of Tubersol and Aplisol, the only U.S. Food and Drug Administration–approved purified protein derivative (PPD) solutions for use in performing tuberculin skin tests (TSTs). In September 2013, DTBE issued an updated health alert. This stated that “although supplies were restored in early June 2013, Tubersol is in shortage again until at least the middle of October 2013. At the current time, the 5 tuberculin unit/0.1 mL, 5 mL (50-test) multiple dose vials are unavailable. The 5 tuberculin unit/0.1 mL, 1 mL (10-test) multiple dose vials are in limited supply.”

CDC recommends any of three general approaches for addressing the shortages of tuberculin skin test antigens:
1. Substitute IGRA blood tests for TSTs.
2. Substitute APLISOL for TUBERSOL for skin testing if APLISOL is available.
3. Allocate TSTs to priority usages, such as TB contact investigations, as determined by public health authorities.

Some surveillance programs for TB infection control rely on routine serial TSTs. Switching products or methods might make serial changes in test results difficult to interpret. The apparent conversions of results from negative to positive or reversions from positive to negative could be caused by inherent inter-product or inter-method

discordance. In settings with a low likelihood of TB exposure, the deferment of routine serial testing should be considered in consultation with public health and occupational health authorities.

Please see the official health update at http://emergency.cdc.gov/HAN/han00355.asp for further details and discussion of the recommendations above.

Updates about the shortages of tuberculin skin test solutions are posted by the FDA Center for Biologics Evaluation and Research at http://www.fda.gov/BiologicsBloodVaccines/SafetyAvailability/Shortages/ucm351921.htm.

As one additional update, Sanofi Pasteur reports that the supply of Tubersol has improved and will steadily improve for the remainder of the year. Existing Sanofi Pasteur customers can purchase directly from Sanofi Pasteur by visiting VaccineShoppe.com® or by calling 1-800-VACCINE (1-800-822-2463). In addition, limited quantities of Tubersol Diagnostic Antigen are available through the wholesaler/ distributer channel. Customers who normally order through this channel should work with their preferred wholesaler/distributor to better understand Tubersol Diagnostic Antigen quantities that may be available to them. If you are a new customer or have inquiries regarding the availability of Tubersol Diagnostic Antigen, you should contact Sanofi Pasteur at 1-800-VACCINE (1-800-822-2463), or your wholesaler/distributor.

On July 19, a number of DTBE staff members were recognized at the NCHHSTP Honor Awards Ceremony. Please see the article in this issue about the awards won by our staff for their important work.

Philip LoBue, MD, FACP, FCCP
Acting Director
Division of Tuberculosis Elimination
National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention

In This Issue

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

HIGHLIGHTS FROM STATE AND LOCAL PROGRAMS

San Antonio's TB Chest Clinic Hosts Eastern European Medical Professionals

On January 11, 2013, San Antonio Metro Health TB staff hosted several medical professional visitors from Eastern Europe. The visitors were in town as guests of the Heartland National TB Training Center. Representatives were from the countries of Moldova, Georgia, and Ukraine. Also present was a CDC representative who is working with these countries to address their TB challenges, Dr. Patrick Moonan of DTBE. These medical professionals visited with Metro Health's TB staff to learn more about how our TB staff perform contact investigations, conduct surveillance, and use directly observed therapy for patient care as well as for managing latent TB infections. The group had a Russian language interpreter who facilitated the discussion, which lasted several hours.

Eastern Europe has significant challenges with drug-resistant TB. In the past, countries of this region have not investigated potential exposures

and treated asymptomatic patients with drugs to prevent future progression to disease. CDC is partnering with officials of these Eastern European countries to develop a study to enhance the contact investigation, diagnosis, and treatment of exposed persons. It is expected that these improvements will lead to less exportation of TB and drug resistance through immigration, and hopefully will reduce the overall disease burden experienced in these countries from this devastating disease.

—Reported by Carlos Alcantara
CDC PHA, San Antonio Metropolitan Health District

DTBE Winners of 2013 NCHHSTP Honor Awards

On Friday, July 19, 2013, CDC's NCHHSTP recognized the employees in its divisions for their valuable contributions. DTBE was well represented at the ceremony. Following are the DTBE recipients of these awards. (Please note: in several categories, the recipients included staff of other divisions as well; we have only included DTBE staff).

TB Notes is a quarterly publication of the Division of TB Elimination (DTBE) of the National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP), Centers for Disease Control and Prevention (CDC). This material is in the public domain, and duplication is encouraged. For information, contact

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Visit DTBE's Internet home page,
http://www.cdc.gov/tb,
for other publications, information, and resources available from DTBE.

Excellence in Frontline Public Health Service - Domestic

Donato Ruggiero

For exemplary leadership to DTBE by filling multiple significant gaps during numerous staff reductions.

Excellence in Laboratory Research

Laboratory Branch and CDC Global Laboratory Activity
Lauren Cowan
Lois Diem
Denise Hartline
Dorothy Kaminski
Kim McCarthy
Beverly Metchock
Glenn Morlock
Bonnie Plikaytis
Jamie Posey
David Sikes
David Temporado
Sean Toney

For traveling to domestic and international laboratories affiliated with the Tuberculosis Trials Consortium sites, assessing procedures, and sharing knowledge and expertise to strengthen public health research collaboration.

Excellence in Program Delivery

NCHHSTP U.S.-Affiliated Pacific Islands Workgroup
Alstead Forbes
Andrew Heetderks
Angela Starks

For exemplary leadership and support to the U.S.-affiliated Pacific Islands through Program Collaboration and Service Integration.

Excellence in Public Health Protection Award

Sundari Mase

In the face of repeat shortages and other problems that hinder access to second-line drugs (SLD), Dr. Mase has led the medical operations team in DTBE in responding to the SLD shortages.

CDC Director's Award for Efficiency

TB Outbreak Response Group
Sandy Althomsons
Lori Armstrong
Christopher Etchells
Tracie Gardner
Juliana Grant
Anne Marie France
Maryam Haddad
Carla Jeffries
Lauren Lambert
Lilia Manangan
Kiren Mitruka
Sapna Morris
Melissa Pagoa
Krista Powell
Courtney Yuen

For collaborative spirit and creation of an efficient outbreak response workforce.

Excellence in Human Capital Management – Employee Development (James Virgil Peavy Award)

NCHHSTP Workforce Development Champions Workgroup
Kathryn Koski
Linda Leary
For exceptional leadership and innovation in developing key workforce development and work-life balance initiatives.

Excellence in Information Technology
NCHHSTP ATLAS Steering Committee
Carla Jeffries
For exemplary leadership and innovation of NCHHSTP's Atlas through Program Collaboration & Service Integration.

Excellence in Volunteer Service Award
Lee Ann Ramsey
For exemplary leadership and support of inclusion-based Girl Scouting.

CDC Director's Award for Efficiency
NCHHSTP Policy Award for Center and Division Policy Leadership
Ann Cronin
For exemplary critical thinking and thoughtful analyses, vital to the successful implementation of NCHHSTP's programs.

Healthy People 2020 Progress Review

The Burden of TB and Infectious Diseases in the U.S. and Abroad

Overview

On July 30, 2013, Dr. Kenneth Castro, Director, DTBE, joined other public health leaders in a *Healthy People 2020* progress review. This *Healthy People* progress review included, for the first time, a presentation by a nonfederal partner, Ed Zuroweste, MD, Chief Medical Officer, Migrant Clinicians' Network. Howard Koh, MD, Department of Health and Human Services (HHS) Assistant Secretary for Health, served as moderator. Other participants included Irma Arispe, PhD, Associate Director, National Center for Health Statistics (NCHS); Tom Kenyon, MD, Director, CDC's Center for Global Health (CGH); and Craig Shapiro, MD, HHS Director, Office of the Americas, Office of Global Affairs (OGA). The review was conducted in Washington, DC, as a webinar, and had an estimated audience of 500 viewers. An underlying theme throughout the progress review was our need to continue to align domestic elimination efforts with the global fight against TB.

What Is *Healthy People*?

Healthy People is a collaborative U.S. initiative that provides science-based, 10-year national objectives for promoting health and preventing disease, to improve the health of all Americans. The project is managed overall by the HHS Office of Disease Prevention and Health Promotion (ODPHP). It consists of goals and objectives, with targets that are designed to guide national health promotion and disease prevention efforts. *Healthy People 2020,* the current version of this ongoing effort, covers 42 topic areas, and includes 1,200 objectives or measures.

Data Overview: National Center for Health Statistics

Dr. Irma Arispe (NCHS) reported that in an earlier era, TB was a leading cause of death—not just in other parts of the world, but in the United States as well. In 1900, TB was the second leading cause of death in this country. As recently as 1950, it was the seventh leading cause of death. Today we have pushed TB off the list of leading causes of death in this country. However, TB remains a serious challenge to global health. Worldwide, it is the leading cause of death among persons with HIV. It is also the second leading cause of death from a single infectious agent.

Global Leading Causes of Death, 2008

	Global	Low-Income Countries	Middle-Income Countries	High-Income Countries
1	Heart disease	Pneumonia	Heart disease	Heart disease
2	Stroke	Diarrheal diseases	Stroke	Stroke
3	Pneumonia	HIV/AIDS	Chronic lung disease	Lung cancer
4	Chronic lung disease	Heart disease	Pneumonia	Alzheimer's disease
5	Diarrheal diseases	Malaria	Diarrheal diseases	Pneumonia
6	HIV/AIDS	Stroke	HIV/AIDS	Chronic lung disease
7	Lung cancer	Tuberculosis	Road traffic accidents	Colon cancer
8	Tuberculosis	Premature birth	Tuberculosis	Diabetes
9	Diabetes	Birth trauma	Diabetes	Heart failure
10	Road traffic accidents	Neonatal infections	Heart failure	Breast cancer

Dr. Arispe summarized her key points as follows: overall, U.S. TB rates are decreasing. However, disparities persist for racial and ethnic minorities and those born outside the United States. In addition, TB remains an urgent public health problem in Asia and Africa. Health issues abroad can directly impact health in the United States.

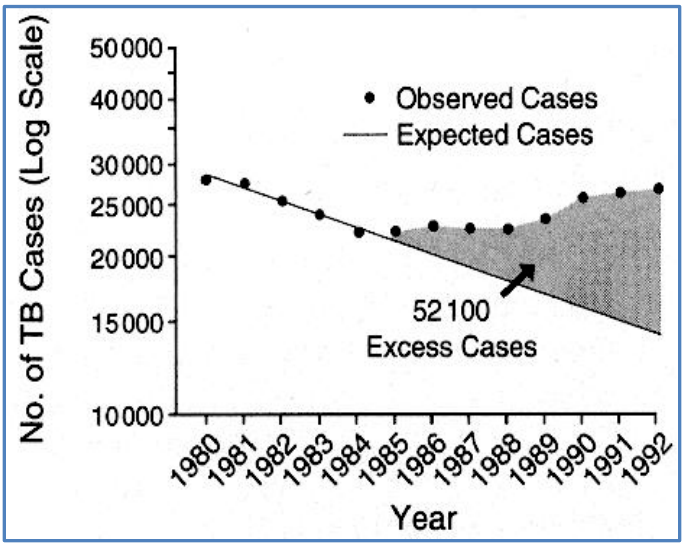
Tuberculosis: Domestic Overview

Speaking next, Dr. Castro described DTBE as the equivalent of the National TB Program for the United States. DTBE funds state and local TB programs, as well as two consortia that carry out program-relevant research: the TB Trials Consortium (TBTC) and the TB Epidemiologic Studies Consortium (TBESC). CDC also provides technical assistance in 22 countries, in partnership with the U.S. Agency for International Development (USAID), the World Health Organization (WHO), and others.

To explain recent trends, Dr. Castro discussed the 1985–1992 U.S. resurgence of TB following decades of decline. The causes: first, the dismantling of TB clinical services after funding disappeared in the late 1970s and early 1980s. Other causes included the emerging HIV epidemic, immigration from countries where TB was common, spread of TB in institutions, and emergence of multidrug-resistant (MDR) TB.

Excess TB Cases, U.S. 1985–1992

The resurgence, which caused an estimated 52,100 excess TB cases, prompted action. New resources were made available, and funds were quickly mobilized. These were used to hire staff and to focus on training and education. The funding increases also allowed the U.S. to improve the detection of TB cases, upgrade state laboratories for early diagnosis and recognition of drug resistance, update treatment and infection control recommendations, pay for the broad-scale use of directly observed therapy, and emphasize the need for ongoing program evaluation.



JAMA 1994; 272: 536.

These steps paid off, and TB began decreasing in both U.S.-born and foreign-born persons in the United States. The decreases in TB in U.S.-born persons have been substantive. However, in comparison, TB decreases for the foreign-born persons have been so modest as to remain relatively stable; thus, the proportion of U.S. TB cases that they account for rose from 28% in 1991 to 62% by 2011. Rates in 2011 were nearly 12 times higher for foreign-born persons than for U.S.-born persons and were still above the Healthy People 2020 target of 14.0 per 100,000 population.

TB: Global Overview

Based on this changing epidemiology, the Institute of Medicine[2] urged the U.S. to become directly engaged in the global fight against TB. CDC and other U.S. agencies now collaborate closely with many international partners in this

global effort. Global TB control work here at CDC spans three Centers and four divisions; yet, it is highly collaborative and synergistic.

Investment Upfront Leads to Big Dividends for TB Control

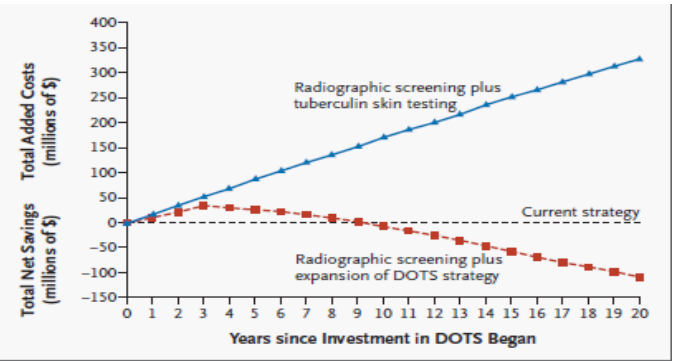


Figure 1. Net Savings or Added Costs of Implementing a Strategy of Radiographic Screening plus Either Expansion of the DOTS Program or Tuberculin Skin Testing over a 20-Year Period among Migrants from Mexico to the United States.

NEJM 2005; 353: 1008-20.

Moreover, there is potential for enormous return on investment in TB control programs in countries from which most of our foreign-born TB patients originate. Dr. Castro shared the example that an investment in screening U.S.-bound immigrants and implementing directly observed therapy, short-course (DOTS) in Mexico could result in remarkable reductions in TB incidence among this population. A $35 million U.S. investment in Mexico's TB program would result in fewer cases of TB in the United States, fewer deaths from the disease, and net discounted savings of $108 million over 20 years.

Dr. Castro's key takeaway messages were as follows: there remain many challenges to U.S. elimination of TB. Funding gaps are again leading to inadequate human resources, limited access to diagnosis and treatment services, and limited surveillance to document burden and impact. Combating TB among foreign-born persons will remain the key to any progress toward elimination. MDR TB and HIV-associated TB, here and abroad, pose a threat to our ability to fight this disease. The complacency that comes with a successful program may ironically lead to the disinvestment in these programs, loss of clinical expertise and of capacity to respond to outbreaks, and concentration of the epidemic in the most vulnerable groups.

Yet there is good news: the trend of decreasing U.S. TB incidence as a result of concerted efforts provides a remarkable success story: cases have declined more than 60.5% from the 1992 peak. However, as with many other communicable diseases, TB prevention and control requires building the best international partnerships to help meet domestic needs. Recent research developments are yielding results that are being translated into program improvements.

Overview: Center for Global Health

Viewers next heard from Dr. Tom Kenyon (CGH). His key points were that there is a continuing need to strengthen public health systems worldwide and assure global health security. Efforts to address global TB control are underway, but they need to be enhanced—including providing technical support, strengthening surveillance and laboratory systems, building in-country capacity, and contributing to the evidence base for implementation of effective TB control strategies. He stated that TB elimination in the United States is not possible without addressing TB among foreign-born persons—both in their country of origin and here. Continued U.S. investment in TB control in other countries saves lives, protects Americans at home and abroad, and makes economic sense.

U.S.-Mexico Border Region Issues

Dr. Craig Shapiro followed with a talk about TB in the U.S.-Mexico border region. His key points were that TB rates are higher in the U.S.-Mexico border region than in other areas of United States. Major challenges in the area include continuity of care and harmonizing treatment protocols across state and national lines. Efforts of the U.S.-Mexico Border Health Commission are aimed at promoting binational collaboration (federal, state, and local levels) and cross-border

sharing of information and resources for prevention and treatment.

Migrant Clinicians Network: Case Study

Dr. Ed Zuroweste reported on the Migrant Clinicians Network, whose physicians provide care for migrants and foreign-born workers in the Unites States. He gave an example of a complicated but ultimately successful case involving a migrant who traveled extensively across the U.S. but eventually completed treatment for TB.

—Reported by Carla Jeffries, JD, MPH and Ann Lanner
Div of TB Elimination

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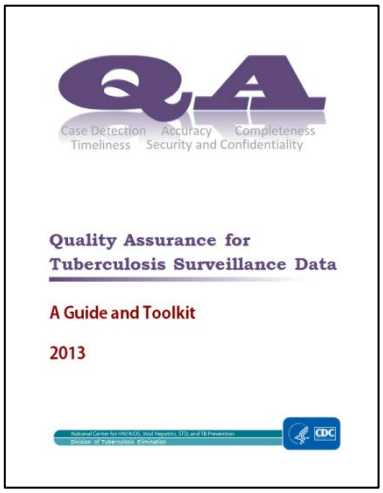
Blast from the Past -- *TB Today!* 1990

While going through old files in preparation for DTBE's move to building 12 here at Corporate Square, Dr. Wanda Walton, Chief, Communications, Education, and Behavioral Studies Branch, found this photo (see next page) of participants from the November 26–30, 1990, *TB Today!* class. Do you recognize anyone in the photo? Names of participants are listed below alphabetically. A few are missing from the photo.

—Reported by Wanda Walton, PhD, and Ann Lanner
Div of TB Elimination

Suzanne A. Banda
Linda S. Barnett
Cheryl L. Baughman
Lesley-Anne T. Behan
Elaine C. Benjamin
Stanley R. Bissell
Rosa Black
Sheryl V. Butler
Hilda Castillo
Anita Chesney
William L. Coggin
Beverly E. DeVoe
Rosamond R. Dewart
Marie S. Dorsinville
Sheryl A. Gonzalez
Lon S. Gross
Mary Ann Hawley
Bonnie L. Jameson
John A. Jereb
Marion S. Johnson
Katherine A. McLeod
Michael F. Kelley
Ken K. Komatsu
James E. Lynch
Kathleen M. Martin
Stephen S. Martin
Ann D. McBride
Robyn McDermott
Phyllis C. McGuire
Kathleen S. Moser
Barbara A. Mullin
Donald G. Myers
Edwin A. Paz
Linda J. Perry
Edwin M. Rodriguez
Kathleen E. Russell
Dorothy M. Schadl
Stephanie M. Steinbart
Vicky S. Stevens
Michelle C. Thomas
Vic Tomlinson
Dawn M. Tuckey
Gary E. Voccio
Victoria Webb

Hot Off the Press! Quality Assurance for Tuberculosis Surveillance Data: A Guide and Toolkit – 2013



Background

Quality assurance (QA) is a critical part of any successful surveillance system. QA is a continuous cycle of monitoring, evaluating, and improving data quality.

The National Tuberculosis Surveillance System (NTSS), located in the Division of Tuberculosis Elimination (DTBE), CDC, is the national repository of tuberculosis (TB) disease surveillance data in the United States. CDC receives data on TB cases from reporting jurisdictions through a standardized data collection form, the Report of Verified Case of Tuberculosis (RVCT).

The RVCT is revised periodically as the epidemiology of TB in the United States changes. The most recent revision was implemented in 2009. As part of that revision, data collection and reporting transitioned into web-based systems. An interdisciplinary DTBE team collaborated with key national partners, state public health officials, and other local healthcare professionals to develop and launch a national training program on the new RVCT. As a logical follow-up to the RVCT trainings, the DTBE staff began working individually with state public health partners to develop the QA guide and toolkit.

DTBE wants to ensure that data are collected as uniformly as possible across all jurisdictions, whether large or small. The RVCT QA training team, in collaboration with key partners, developed the QA guide and toolkit to provide standardized methodologies, skill development, and tools to enhance the capacity for QA. The team used the systematic health education approach to develop training materials: this included needs assessment, development, pilot testing, implementation, and outcome evaluation.

How to Access the Materials

A limited number of copies of the QA Guide and Toolkit have been printed. Each reporting jurisdiction will receive at least one hard copy with a CD that includes the toolkit.

To view or download the "Quality Assurance for Tuberculosis Surveillance Data: A Guide and Toolkit," please visit the CDC website or the RVCT ftp site listed below.

- http://www.cdc.gov/tb/programs/rvct/default.htm (Available late fall 2013)
- ftp://ftp.cdc.gov/pub/Software/TIMS/2009 RVCT Documentation/RVCT Training Materials/

(Note the spaces in the FTP URL)

Quality Assurance Components

The QA process is based on the 2014 CDC Tuberculosis Elimination and Laboratory cooperative agreement and the results of a QA needs assessment conducted with 11 of the 60 reporting jurisdictions. The process includes five components as shown in the figure below.

Five Quality Assurance Components for TB Surveillance Data

QA Components

QA Components	Definition
Case Detection	Detection of one instance of a specific disease or exposure, e.g., TB. A front-line surveillance activity, it is typically accomplished as a by-product of routine medical or veterinary care, or laboratory work, or via an astute observer such as a health care worker.
Data Accuracy	The data submitted match patient records maintained at the point of care. The recorded data in the surveillance system are consistent with what activities happened in a clinical encounter, whether or not they were clinically appropriate.
Data Completeness	A measure that indicates whether the information submitted contains the complete set of data items.
Data Timeliness	Prompt reporting of surveillance data to health authorities.
Data Security and Confidentiality	Data security is the protection of public health data and information systems to prevent unauthorized release of identifying information and accidental loss of data or damage to the systems. Data confidentiality is the protection of personal information collected by public health organizations. The right to such protection is based on the principle that personal information should not be released without the consent of the person involved except as necessary to protect public health.

Goal

The goal for the QA manual is to help improve the quality of TB surveillance data by providing TB surveillance reporting jurisdictions with

- A standardized process for QA, and
- Tools that can be used and adapted for QA.

Objectives

After using this guide and toolkit, the user should be able to

- Describe the five components of the QA process,
- Access various QA tools for TB surveillance data, and
- Describe what to include in a written QA protocol as required by the cooperative agreement.

About the Guide

- The guide includes a set of nine chapters and four appendices. A description of the chapters and appendices is shown in the table below.

Description of Chapters and Appendices

Chap.	Title	Description
1	Introduction to the Guide and Toolkit	Background, goals and objectives, target audience, and how to use the guide and toolkit
2	National TB Surveillance System Data Flow	Data flow structure from the jurisdictions to CDC
3	Overview of the QA Process	Definition of QA, factors influencing data quality, cooperative agreement, QA component definitions, and tools
QA components that provide the main content		
4	Case Detection	Purpose, definitions, process, and tools
5	Data Accuracy	Purpose, definitions, process, NTSS data validation, laboratory data accuracy, data validation pilot project, and tools
6	Data Completeness	Purpose, definitions, process, missing and unknown, data completeness, accuracy study, and tools
7	Data Timeliness	Purpose, definitions, process, case count process, and tools
8	Data Security and Confidentiality	Purpose, definitions, process, data security and confidentiality guidelines, and tools
9	Quality Assurance Cross-cutting Systems and Process: NTIP, TB GIMS, and Cohort Review	Examples of systems and a process that can be used for improving at least three of the five QA components (e.g., accuracy, completeness, and timeliness). These include the National TB Indicators Project, the TB Genotyping Information Management System, and cohort review.
10	Toolkit for Quality Assurance	Examples of the tools that can be easily adapted for local use. Tools are grouped by chapter and content topic (e.g., Chapter 3: Overview of the Quality Assurance Process).

App.	Title	Description
A	References	List of all references used in the development of this guide
B	Glossary	Compilation of all the definitions provided in this guide
C	Quality Assurance Process Slides	Set of slides that describe the QA process
D	Report of Verified Case of Tuberculosis (RVCT) Questions and Clarifications	Compilation of questions and clarifications since the 2009 publication of the RVCT instructions. Updated periodically and is available at http://www.cdc.gov/tb/programs/rvct/default.htm.
E	Answers to the Exercises	Discussions of answers to exercises included in this guide

About the Toolkit

Staff from CDC and various jurisdictions developed approximately 50 QA tools that include tables, charts, graphs, processes, and templates. The tools are available in commonly used software so that they can be easily used or adapted to a jurisdiction's setting.

Additional Information

For additional information about QA for Tuberculosis Surveillance Data, please contact the RVCT/QA Training Team at rvctqualityassurance@cdc.gov.

—Reported by DTBE's RVCT QA Training Team:
Lilia Manangan (lmanangan@cdc.gov),
Elvin Magee (emagee@cdc.gov),
and Cheryl Tryon (ctryon@cdc.gov)
Division of TB Elimination

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TB EDUCATION AND TRAINING NETWORK UPDATE

TB ETN Webinar

The TB Education and Training Network (TB ETN) was formed to bring together TB professionals to network, share resources, and build education and training skills. TB ETN 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. The TB ETN hosted its first webinar on June 20, 2013, "Using Social Media to Expand the Reach and Effectiveness of Public Health." This 1-hour webinar was broadcast using *Ready Talk* software to 200 registered participants across the United States. The participants could submit questions using the "chat" function available through *Ready Talk*.

The theme of social media and public health was chosen from topics submitted by TB ETN members and 2012 TB ETN Conference attendees. The invited speaker was Dr. Rosemary Thackeray, a professor in the Department of Health Science at Brigham Young University (BYU) in Provo, Utah. She has published several articles on social marketing and social media which have appeared in *Health Promotion Practice, The American Journal of Health Promotion, Social Marketing Quarterly,* and *the Journal of Medical Internet Research.* Before coming to BYU, Dr. Thackeray worked for the Utah Department of Health for 9 years. During a sabbatical from 2006 to 2007, she worked at CDC, in what was then the National Center for Health Marketing.

The objectives of the webinar were that, by the end, participants could-

1. Describe at least four ways that social media has been be used to further public health work,
2. List the five factors to consider when deciding whether to use social media as part of a public health program, and
3. Explain at least two ways to apply social media to their own TB-related endeavors.

Results of an evaluation immediately after the webinar indicate that a majority of participants rated the presentation positively:

- 95% of respondents agreed or strongly agreed with the following statement: *The content of the webinar was relevant to the learning objectives*.

- 98% of respondents agreed or strongly agreed with the following statement: *The speaker communicated the content effectively.*

- 92% of respondents agreed or strongly agreed with the following statement: *If given an opportunity, I can apply knowledge gained as a result of this activity.*

A sample of feedback from webinar participants included the following:

- *"I'm a new user of social media and this webinar gave a very good overview of what's out there and its applicability. Short, but very much on point. Dr. Thackeray did a marvelous job!"*
- *"The instructor was incredibly knowledgeable and interesting. She gave me more insight into social media and reinforced the need for me to become more engaged and apply these methods to TB activities where appropriate."*
- *"I thought that the inclusion of examples from a wide variety of fields, not just public health and more specifically TB, was useful. It helps me to think creatively and evaluate strategies outside my field to see if I can borrow or adapt what others are doing."*
- *"I felt the speaker was excellent. There was a lot of information, but it flowed very well and she kept me engaged throughout the presentation."*

This webinar is archived and is available for viewing at Using Social Media to Expand the Reach and Effectiveness of Public Health Webinar. (https://cc.readytalk.com/cc/playback/Playback.do?id=7g2gjy). If you have any questions about TB ETN or about the webinar, you can e-mail Peri Hopkins at phopkins@cdc.gov or call 404-639-8988.

A second TB ETN webinar is being planned for November 2013. The webinar, "Best Practices for Training Using Technology," is scheduled for November 7, 2013, from 1 pm until 2:30 pm EST.

—Reported by Peri Hopkins, MPH
Div of TB Elimination

TB PROGRAM EVALUATION NETWORK UPDATE

Evaluation of Sputum Culture Conversion in Illinois

Background

The Illinois Department of Public Health (IDPH) Tuberculosis (TB) Control Program serves Illinois, excluding the city of Chicago. The TB program is responsible for statewide TB surveillance, management of the Illinois TB case registry, and oversight of the TB prevention and control activities conducted by local programs. Local programs in Illinois are county or sub-county programs that are independently funded and operated, and they provide direct TB prevention and control services within their jurisdictions.

A goal of the TB program is to ensure all patients are monitored for their response to treatment. One measure of response to treatment is documented conversion of a TB patient's sputum culture. In 2009, the TB program noted that having incomplete or inaccurate data related to sputum culture conversion was a long-standing problem in Illinois, and it appeared the problem was worsening. The percentage of patients for whom we had documentation of culture conversion within 60 days had been decreasing steadily, from 57.5 percent in 2004 to 37.1 percent in 2008. In addition, in 2008, Illinois implemented a new web-based surveillance system, which may have reduced the speed, completeness, and accuracy of reporting.

Purpose

The TB Program created an evaluation team in 2009, which consisted of the IDPH TB nurse consultants, the IDPH TB surveillance coordinator, and the TB Nurse at the American Lung Association of Illinois (ALAI), to conduct a program evaluation to fully assess this issue. The evaluation project described here was the evaluation team's first formal project. The purpose of this evaluation project was to improve patient outcome data by increasing the percentage of sputum culture–positive TB cases with documented culture conversion within 60 days. This project included 1) analysis of data to determine the scope and nature of the problem and 2) exploration of strategies to improve the program's performance on this indicator of the effectiveness of TB case management, to ensure response to treatment. The primary role of the ALAI nurse was to schedule and facilitate team meetings and assure that the team met its objectives and deadlines.

Objectives

The evaluation team set the following objectives:

1. By December 31, 2009, collect data, and by May 31, 2010, analyze data to identify the nature and scope of the problem and identify contributing factors and barriers.

2. By August 30, 2010, the evaluation team will meet to review the data analysis, and identify and develop strategies to increase documentation of sputum culture conversion within 60 days of treatment initiation.

3. Increase the percentage of sputum culture positive TB patients with documentation of sputum culture conversion within 60 days to 50 percent by 2015 (national target 61.5 percent).

Activities

The surveillance coordinator developed a new electronic report, and the surveillance coordinator and the IDPH TB Nurse Consultant designated as the TB program evaluation focal point analyzed the data. The evaluation team revised the case review form to enhance data collection related to sputum conversion and to include the reason sputum conversion is not reported. Regional nurses reviewed reports and collected data from local programs; for new cases, nurses collected data during case reviews.

The evaluation team held quarterly meetings via conference call. The team developed several strategies: 1) revising the case and cohort review tools, 2) emphasizing sputum culture conversion in case and cohort reviews, 3) consulting with local program staff, 4) providing education about sputum culture conversion at regional meetings, 5) calling local program staff to collect data by telephone, 6) reminding local program staff to collect sputum and document culture conversion, and 7) monitoring surveillance data for completeness on an ongoing basis.

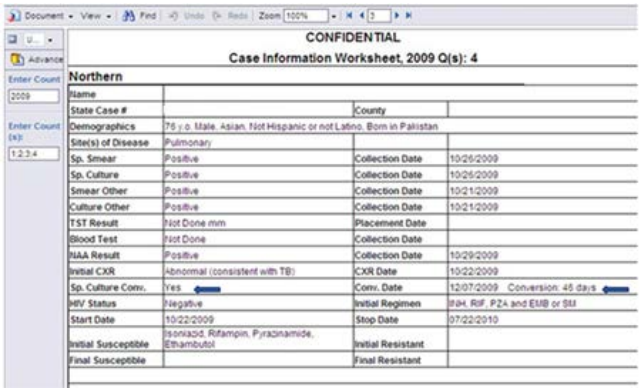
Sputum culture conversion data, by county

County	Sputum + Cases	Convert ≤ 60 days	% Convert ≤ 60 days
1	2	1	50
2	1	0	0
3	4	4	100
4	1	0	0
5	1	0	0
6	14	10	71.4
7	1	1	100
8	1	1	100
9	6	4	66.7
10	1	0	0
11	1	0	0
12	4	2	50
13	1	1	100
14	1	0	0
15	1	0	0
16	2	1	50
17	1	1	100
18	1	0	0
19	1	0	0
20	3	2	66.7
21	1	0	0
22	1	1	100
23	1	1	100
24	6	5	83.3
25	1	1	100
26	48	29	60.4
Total	106	65	61.3

Revised case review form – sputum culture conversion

Local Case Number	Sputum Culture	Date Therapy Started	Date of first negative culture	Conversion Days	Reason for not documenting culture conversion
	Positive	03/10/2009	04/10/2009	31	
	Positive	12/04/2009	02/08/2010	66	
SP Culture Pos:	2	SP Conversion <= 60:	1		
		SP Conversion <= 60 Pct:	50.00%		
	Positive	07/13/2009	07/28/2009	15	
	Negative	09/28/2009		NA	
	Not Done			NA	
	Not Done	09/27/2008		NA	
	Positive	05/14/2009	06/20/2009	37	
	Positive	05/22/2009	07/11/2009	50	
	Negative	12/04/2008		NA	
	Positive	05/29/2009	07/08/2009	40	
	Not Done	05/06/2009		NA	
SP Culture Pos:	4	SP Conversion <= 60:	4		
		SP Conversion <= 60 Pct:	100.00%		
	Positive	04/07/2009		Doc.: No	Lost
SP Culture Pos:	1	SP Conversion <= 60:	0		
		SP Conversion <= 60 Pct:	0.0%		
	Not Done	10/28/2009		NA	
SP Culture Pos:	0	SP Conversion <= 60:	0		
		SP Conversion <= 60 Pct:	0.0%		
	Positive	08/30/2009	11/16/2009	78	

Case or cohort review form



CONFIDENTIAL

Case Information Worksheet, 2009 Q(s): 4

Northern

Name			
State Case #		County	
Demographics	76 y.o. Male, Asian, Not Hispanic or not Latino, Born in Pakistan		
Site(s) of Disease	Pulmonary		
Sp. Smear	Positive	Collection Date	10/26/2009
Sp. Culture	Positive	Collection Date	10/26/2009
Smear Other	Positive	Collection Date	10/21/2009
Culture Other	Positive	Collection Date	10/21/2009
TST Result	Not Done mm	Placement Date	
Blood Test	Not Done	Collection Date	
NAA Result	Positive	Collection Date	10/29/2009
Initial CXR	Abnormal (consistent with TB)	CXR Date	10/22/2009
Sp. Culture Conv.	Yes	Conv. Date	12/07/2009 Conversion: 46 days
HIV Status	Negative	Initial Regimen	INH, RIF, PZA and EMB or Stl
Start Date	10/22/2009	Stop Date	07/22/2010
Initial Susceptible	Isoniazid, Rifampin, Pyrazinamide, Ethambutol	Initial Resistant	
Final Susceptible		Final Resistant	

Results

Original data from 2008 cases revealed that one third of patients had a sputum-culture conversion within 60 days, one third in more than 60 days, and one third lacked any documentation. Problems with accuracy of data included documentation of smear rather than culture conversion and use of laboratory result report dates rather than specimen collection dates. In general, counties with the largest numbers of cases and counties with TB clinics had better performance than counties with few cases and counties with all or most cases managed by private healthcare providers.

After the TB nurse consultants provided education for local program staff and implemented the new strategies with case and cohort review, documentation of sputum culture conversion improved.

Percent Sputum Culture Conversion in 60 Days

Year	Original Data	Final Data	National Target
2008	37.1	50.2	61.5
2009		61.3	61.5
2010		67.4	61.5
2011		66.2	61.5

Local program staff reported better understanding of the reason for documenting sputum culture conversion. Counties with low incidence improved performance from 45 percent to 75 percent in 2009.

Conclusion

Absent, late, or incorrect documentation rather than poor clinical practice or inadequate case management was responsible for the low percentage of cases with sputum-culture conversion within 60 days. Owing to the increased focus on the reporting of sputum culture conversion results generated by the evaluation project, documented performance improved substantially. The activities were completed and the evaluation objectives were met and exceeded more quickly than originally anticipated. It was determined that further progress was unlikely, because of remaining barriers such as delayed sputum culture conversion in patients with extensive disease and limited capacity to enter data more quickly. After consultation with our CDC program and evaluation consultants, the IDPH TB Program decided to change its evaluation focus to a different performance area in 2011.

For more information, contact Carrie Storrs at 217-278-5928 or carrie.storrs@illinois.gov

—Submitted by Carrie Storrs, RN, MPH, CPH
Illinois Department of Public Health

CLINICAL RESEARCH BRANCH UPDATE

Results of TBESC Task Order 27: Health-System Benefits and Cost-Effectiveness of Using Mycobacterium Tuberculosis Direct Nucleic Acid Amplification Testing to Diagnose Tuberculosis Disease in the United States

Final results of the Tuberculosis Epidemiologic Studies Consortium's Task Order 27 have been published in the journal Clinical Infectious Diseases.[1] Investigators ascertained the health-system benefits and cost-effectiveness of using the *Mycobacterium Tuberculosis* Direct (MTD) nucleic acid amplification test (NAAT) (Hologic Gen-Probe Incorporated, San Diego, CA) to diagnose TB disease. Participating sites included metropolitan Atlanta, Georgia; the states of Hawaii and Massachusetts; and four areas of Maryland. The sites represented the diverse patterns of TB diagnosis in the United States, with nearly all patients being hospitalized in Atlanta, a small portion being hospitalized in Hawaii, and mixed reliance on inpatient and outpatient diagnosis in Maryland and Massachusetts. The study's results will help improve CDC guidelines for the NAAT and its efficient use, and they also will serve as a baseline for newer NAAT assays such as the Xpert MTB/RIF assay (Cepheid, Sunnyvale, California).

In countries without uniform access to laboratories with capacity for mycobacteriology cultures, improvements in diagnosis of TB disease have been needed, because sputum-smear microscopy for acid-fast bacilli detects less than half of TB cases.[2] NAATs can provide results that inform diagnosis of pulmonary TB disease within 24–48 hours of submission to a laboratory for analysis. CDC recommended in 1996 that NAAT be used on at least one respiratory specimen if the result of sputum-smear microscopy is positive, for each patient being examined for pulmonary TB.[3] The enhanced version of the MTD NAAT was approved by the Food and Drug Administration (FDA) in 1999, and CDC recommended its use in 2009 on at least one (preferably the first) respiratory specimen (regardless of result from sputum-smear microscopy) of all patients suspected of pulmonary TB.[4] However, anecdotal reports suggested that the use of NAATs was not widespread, for the presumed reason that it did not displace the need for any standard TB diagnostic tool and was technically demanding to perform. Moreover, individual providers and the directors of hospitals and laboratories determine whether to adopt NAAT, based on their own decision criteria. In addition, only one U.S. study has evaluated the cost-effectiveness of MTD NAAT, and only in a hospital setting. That study found the use of NAAT not cost-effective for

exclusion of TB in smear-positive patients who have suspected TB disease.[5] A more representative, comprehensive study of programmatic benefits and cost-effectiveness was needed to show that NAAT usage could be advantageous.

The purpose of Task Order 27 was to evaluate the MTD NAAT use, effectiveness, health-system benefits, and cost-effectiveness in the largest-ever multisite cohort of patients with suspected pulmonary TB disease. Methods included data analysis from provider initial suspicion of TB disease (which we defined as the earliest of the following events: respiratory isolation, laboratory result with positive results from sputum-smear microscopy, TB treatment start, report of a suspected case of TB, or TB diagnosis) through final TB determination (TB confirmation or definitive exclusion). The multisite study consisted of retrospective reviews of inpatient and outpatient medical records of a cohort of 2,140 patients suspected of having pulmonary TB reported to local jurisdictions during 2008–2010.

Of study patients, 40% had one or more specimens with positive results on sputum-smear microscopy and 60% had all specimens with negative results on microscopy. MTD NAAT was used for 43% of study patients, more for those with positive microscopy results (80%) than for those with negative results (19%). Thirty-seven percent of patients in the study had TB disease confirmed by culture isolation of *M. tuberculosis*, that is, 2.7 suspected cases per each confirmed case. Foreign-born patients were significantly more likely to have TB disease, but they were less likely to have had their specimens tested by NAAT when the sputum-smear microscopy results were negative. The study also found that public health laboratories (versus private laboratories) reported that they had protocols in place for use of MTD NAAT.

Compared with no MTD NAAT use, study investigators found that use of MTD NAAT

- Improved diagnostic accuracy (i.e., detected a higher proportion of true positives among all positives, true negatives among all negatives, and true positives among all those with TB) among all subpopulations of patients. It was also more specific (i.e., detected a higher proportion of true negatives among all those without TB), in all subpopulations except patients experiencing homelessness.

- Reduced time to TB diagnosis for patients who had positive results from both sputum-smear microscopy and MTD.

- Reduced the number of medical procedures (biopsies, bronchoscopies, computed tomographies) and the usage of respiratory isolation for patients with positive smears and negative MTD results but without TB.

- Resulted in an average 1.5 fewer months of unnecessary and potentially toxic TB medications in MTD-negative patients without TB.

- Resulted in fewer contact investigations initiated for patients who had positive smears and negative MTD results, and who ultimately did not have TB.

- Showed health system cost savings per additional patient who is HIV infected or homeless with TB diagnosed or excluded regardless of sputum-smear microscopy. Cost savings also occurred, per additional patient having a history of substance abuse with TB excluded and negative results on sputum-smear microscopy.

MTD NAAT improved diagnostic accuracy and shortened turn-around time for an initial result, and it reduced unnecessary respiratory isolation, treatment, and contact investigations. In multivariable analysis, providers used MTD

NAAT results to significantly reduce time to confirm TB disease.

In light of the experience from Task Order 27 and many other studies, using MTD NAAT is clearly more accurate[6] than using sputum-smear microscopy as the determining factor in rapid TB disease diagnosis. In addition, Task Order 27 provides data showing cost savings if NAAT is targeted to persons living with HIV, homelessness, or substance abuse (patients who are more likely to be hospitalized during TB evaluation.)

The study serves as an incentive for providers and/or laboratories to adopt NAAT where it is not currently being used. The National Institutes of Health has recommended use of the NAAT for TB diagnosis in HIV-infected adults and adolescents with advanced immunodeficiency, because of their risk for rapid clinical progression to TB and risk of early death from TB, because NAAT has a high positive predictive value (proportion of true positives among all positives) for sputum specimens with positive smear microscopy results and acceptable sensitivity (proportion of true positives among al those with TB) for specimens with negative microscopy results.[7] The Xpert MTB/RIF NAAT (which, compared to MTD NAAT, is less technically demanding, less prone to error, can concurrently diagnose potential multidrug-resistant TB, and is less expensive internationally) received FDA approval in July 2013. This will significantly contribute to prompt, accurate TB diagnosis, and it will possibly save lives.

—Reported by Suzanne M. Marks, MPH, MA
Div of TB Elimination
Epidemiologist, Principal Investigator for TBESC
Task Order 27

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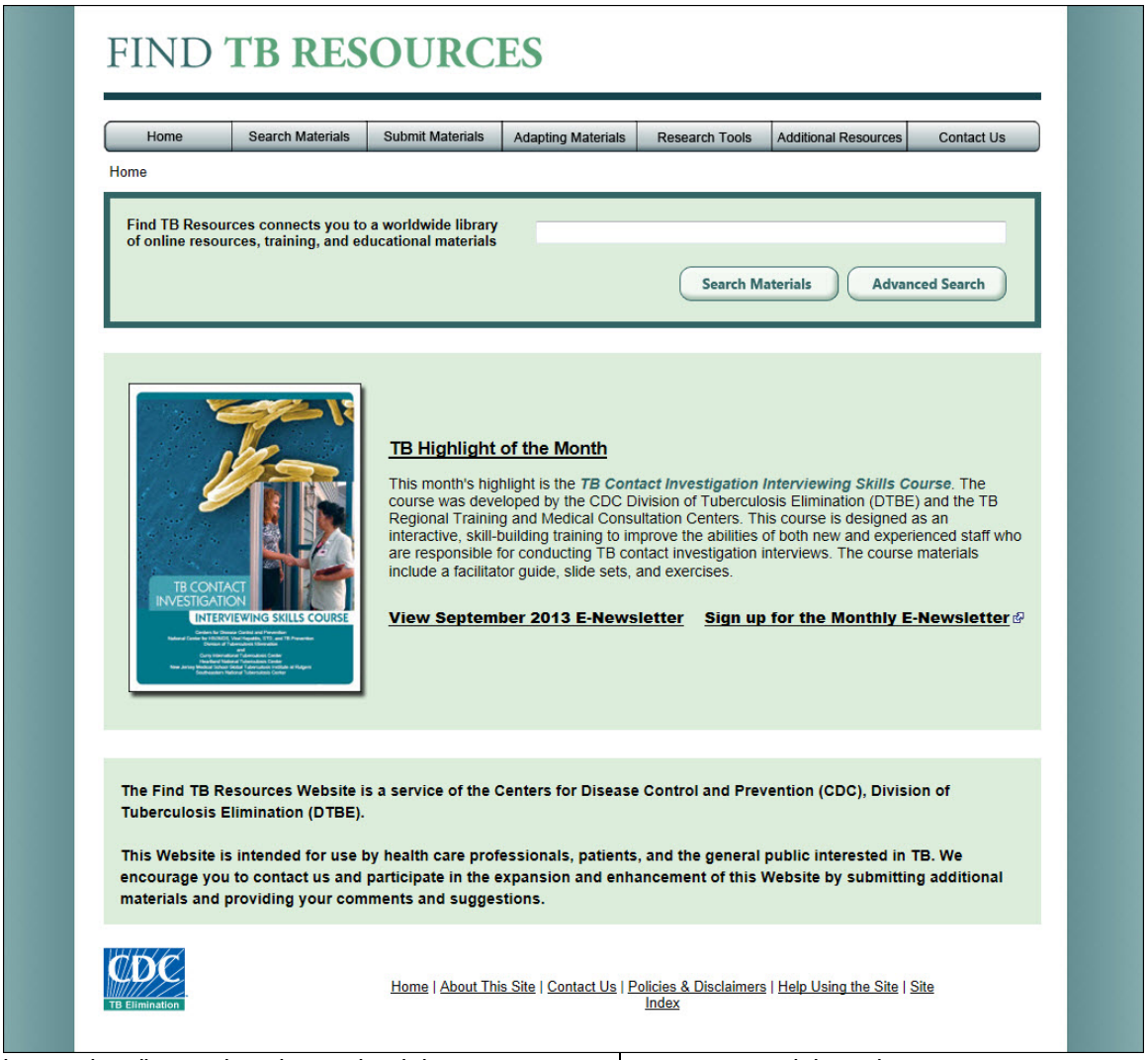
COMMUNICATIONS, EDUCATION, AND BEHAVIORAL STUDIES BRANCH UPDATE

Celebrating 10 Years of Find TB Resources.org!

Launched in October 2003 by CDC's Division of Tuberculosis Elimination, the *Find TB Resources* website (www.findtbresources.org) is a one-stop site for finding and sharing TB resources. The website was created to offer a wealth of easily accessible CDC and non-CDC (domestic and



international) TB education and training resources for TB health care professionals including physicians, nurses, outreach workers, and health educators, in addition to providing access to materials for the general public.

The *Find TB Resources* website has continued to grow and evolve since its creation. After undergoing usability testing, a redesigned *Find TB Resources* Website was launched in September 2011. Some of the features of the redesigned website include a top navigation bar, additional search instructions, thumbnail images of materials, and an enhanced Research section that includes two new pages, the Translating Research into Practice (TRiP) page and the Program Evaluation Tools and Resources page.

New materials and resources are constantly added to the website. It has more than 2,000 resources in its database. Visitors to the website are invited to share their organization's TB-related educational and training materials. Thanks to marketing efforts and the abundance of materials available on the website, *Find TB Resources* receives visitors from all around the world. In addition, the website continues to offer visitors information on submitting TB materials, tips for adapting materials, funding opportunities, TB organizations, TB mailing lists, and TB images.

Each month, the Find TB Resources E-Newsletter is sent to more than 3,800 subscribers. This monthly newsletter informs readers about the featured Highlight of the

Month, additional helpful resources in the database, and other updates to the website. To subscribe to the E-newsletter, please visit www.findtbresources.org/newsletter.aspx.

Please continue to visit and use the *Find TB Resources* Website!

—Submitted by Allison Maiuri, MPH, CHES
Division of Tuberculosis Elimination

LABORATORY BRANCH UPDATES

Julie Tans-Kersten Wins the NTCA 2013 Ed Desmond Laboratorian of the Year Award

Julie Tans-Kersten, Advanced Microbiologist, State TB Laboratory Program Coordinator, Wisconsin State Laboratory of Hygiene, won the 2013 National Tuberculosis Controllers Association (NTCA) Laboratorian of the Year Award. Julie was nominated by Lorna Will, RN, MA, Director, Respiratory and International Health Unit, in the Wisconsin Division of Public Health. Julie has been the Wisconsin Laboratory Tuberculosis Program Coordinator since 2004.

Lorna writes of Julie in her nomination: "Julie never ceases to amaze me with her knowledge and professionalism. The population of Wisconsin has the extreme good fortune of having Julie as our Tuberculosis Program Coordinator at the State Laboratory of Hygiene. She is not only conscientious, efficient, and extremely knowledgeable, but she holds impeccable standards when it comes to her work in the laboratory, as well as with other professionals. Julie often acts as advisor and guide to not only laboratories around Wisconsin, but also throughout the country. She was one of the distinguished speakers at the 2011 NTCA conference in Atlanta. She is an invaluable asset to public health departments and clinicians throughout our state.

"Julie often acts as an advocate for the State Tuberculosis Program as well as for the patients, by monitoring requests and testing results. She fosters the development of technical skills and provides crucial support and guidance to local laboratories within the state and to local health department staff by coordinating an annual training for local laboratories, public health partners, and healthcare providers. Her dedication alone is commendable. Julie often spends her nights and weekends working on projects that will better her department, her staff, and the Wisconsin Tuberculosis Program."

Dave Warshauer, Deputy Director, Communicable Disease Division at Wisconsin State Laboratory of Hygiene, provided this introduction to Julie's award: "[Julie] has established a strong and respected relationship with our state TB Controllers and maintains a state TB laboratory network that provides quality laboratory services to the citizens of Wisconsin. The Wisconsin Mycobacteriology Laboratory Network is recognized as a model for the country under her leadership. Julie is recognized as a leader in the TB laboratory community by the Association of Public Health Laboratories (APHL) and has participated in many activities and projects that contributed to TB elimination efforts and the advancement quality laboratory services. She is dedicated to her work and constantly strives to improve our laboratory and TB control efforts. She's a pleasure to work with and I congratulate her on accomplishments and on her recognition as winner of the Ed Desmond Award."

The DTBE Laboratory Branch congratulates Julie Tans-Kersten on this well-deserved honor!

—Submitted by Frances Tyrrell, MPH, MT (ASCP), SM
Div of TB Elimination

Unveiling the Mysteries of TB Laboratory Testing: A Laboratory Education Toolkit Designed for TB Field Staff

The day-to-day business of TB control depends on the collection of specimens for laboratory testing and the reviewing of laboratory results. Programmatic decisions, like reporting a TB case to the state, prioritizing a contact investigation, or changing a patient's TB medication regimen, use laboratory results as a guide. The importance of laboratory results is clear—but how many TB field staff (TB control workers in state and local TB control programs) truly understand the specific tests or prerequisites for producing these results?

For the past year, staff from the City of Houston's Bureau of TB Control and Public Health Laboratory have worked side by side to unveil the mysteries of the laboratory for field staff. TB control staff toured the TB laboratory with subject matter experts to get a start-to-finish overview of testing. The TB field staff met several times to take photos of laboratory equipment, such as the MGIT 960 or HPLC, and to further refine their understanding of sputum testing procedures. They consulted with state and local TB laboratory subject matter experts to learn about proper methods for collecting specimens in community settings outside of clinics, as well.

As a result of their collaborative efforts, the team created a multiphase laboratory education toolkit. Recently presented at this year's National TB Conference, the first phase includes a number of handouts, which include

- *What You Need to Know About QuantiFERON-Gold (QFT),*
- *What You Need to Know About Collecting Sputum, and*
- The series, *What You Need to Know About Testing Sputum*:
  - Acid-fast Bacilli (AFB) Direct Smear
  - Nucleic Acid Amplification Testing (NAAT)
  - Culture Media Inoculation
  - Growth Detection on Culture Media
  - Culture Identification
  - TB Drug Susceptibility Testing

Each handout takes a comprehensive view of commonly collected specimens for TB testing. The material describes the specimen, the purpose of the test, tips to help collect a high-quality specimen, and how it is processed in the laboratory. This straight-forward approach is designed with TB field staff in mind. The material reinforces the importance of quality specimen collection by explaining how the laboratory results assist in TB control program day-to-day functions, while providing insight into the laboratory's complex testing procedures.

Currently, this team has begun work on the second phase of the toolkit. In this phase, they will develop a variety of visual media and lesson plans to accompany the handouts. These additional features will make it easier to incorporate the toolkit into formal group trainings. Local, state, and federal partners will be able to download the toolkit once the team launches its new website, as well. Be on the lookout for these new developments in 2014!

By implementing this tool in your program's training, your TB field staff can gain a big-picture view of the procedures for specimen collection, in addition to understanding the rationale behind each test. TB field staff will be better prepared to collect high quality specimens. If you would like to receive more information about the laboratory education toolkit, please contact Nydia Palacios (nydia.palacios@houstontx.gov). Copies of the Phase One laboratory handouts are available upon e-mail request to Nydia.

—Reported by Gregory R. Dufour, MPH, Microbiologist Supervisor;
Nydia Palacios, Public Health Advisor, CDC/DTBE
Houston Department of Health and Human Services

SURVEILLANCE, EPIDEMIOLOGY, AND OUTBREAK INVESTIGATIONS BRANCH UPDATES

Developing a Surveillance Definition for Binational Tuberculosis Cases

Background

Successful treatment of persons with tuberculosis who cross international borders during their infectious or treatment periods requires significant collaborative efforts among TB programs in more than one country. Particularly with patients who go between the U.S. and Mexico, the relationship between border crossing and the impact on TB control in U.S. border states has been documented.[1,2] TB patients who travel or move to another country require staff time and resources above and beyond what is typically provided for TB patients who receive all of their care and treatment in one country.[2] However, owing to the lack of a uniformly applied surveillance definition for binational TB cases, there are currently no data that measure either the extent of the binational burden or the epidemiologic trends.

In 1999, the Tuberculosis Along the U.S.-Mexico Border Work Group, made up of staff from CDC and 17 state and local programs in Arizona, California, New Mexico, and Texas, proposed a binational TB case definition and recommended development of a registry for binational TB cases.[2] More recently, the U.S.-Mexico Binational Commission has developed a set of guidelines for cross-border coordination of public health events, such as infectious disease outbreaks, which includes a proposed general definition for a binational case that can be applied to all notifiable diseases.[3] While these proposed definitions may be useful for programmatic purposes, they may not necessarily meet the needs of TB surveillance in the United States.

Objective

The objective of this project is to develop a TB-specific surveillance definition that is easy to apply and interpret uniformly across reporting jurisdictions using routinely collected data that may or may not be currently reported to CDC. An effective and useful surveillance definition will be TB-specific as well as easy to apply and interpret, and will minimize inconvenience on TB programs by using information that is already being collected. In addition, the definition should be consistent with other binational definitions, and it should not detract from federal, state, or local TB control program activities.

Summary of Recent Activities

Estimating Binational TB Case Burden in Select Border Counties, California and Texas

During October 2012–April 2013, epidemiologists from CDC's DTBE interviewed key informants, including staff associated with binational treatment programs, at the state, regional, and county levels. They sought to describe systems of case management for binational cases and the collection and reporting of binational information. Data on binational patient characteristics were abstracted from medical or clinic records in four border counties to make an inventory of information currently being collected that could help in creating a standard surveillance definition for a binational TB case. Medical records for patients who met the following criteria were included in the review: 1) patient had a verified case of TB, 2) case was reported to the CDC National Tuberculosis Surveillance System in 2011, and 3) patient was born in the United States or Mexico.

Binational characteristics abstracted from the records included TB treatment in Mexico, contact investigation in Mexico, travel to Mexico during infectious period, travel to Mexico during treatment, contacts elicited in Mexico, and epidemiologically linked cases diagnosed in Mexico. This information was obtained from a combination of treatment forms, contact

investigation forms, patient interview forms, and case manager notes. Across all four counties, an average of 17% of TB cases that were reviewed either received treatment in Mexico or had a contact investigation done in Mexico, and 42% had at least one of the binational characteristics specified above.

U.S.-Mexico Tuberculosis Summit
DTBE staff held a half-day summit during the 2013 National TB Conference. The purpose of the summit was to discuss key demographic, social, and risk factor data to be incorporated in a surveillance definition for a binational TB case. Invited speakers from federal, state, and local TB and border health programs presented their activities related to management and surveillance of binational TB cases and key data elements used to ascertain binational cases locally.

In addition to DTBE staff, summit attendees included program staff from Arizona, California, New Mexico, and Texas, members of CDC's Division of Global Migration and Quarantine, panel physicians (physicians who provide required medical examinations to persons applying for entry to the United States) from Mexico, and staff from Mexico's National Tuberculosis Control Program. Attendees agreed that it is important to develop and pilot a surveillance definition for binational TB cases.

Developing and Piloting a Surveillance Definition
Data elements discussed during the NTCA U.S.-Mexico TB Summit were summarized and used to create a draft surveillance definition for binational TB cases. A pilot project to implement the proposed definitions in at least six jurisdictions in areas along the U.S.-Mexico border, as well as at least one jurisdiction not located on the U.S.-Mexico border, is under development. Pilot sites will collect data on a standardized form and will send completed forms to CDC for data entry and analysis. An evaluation of the sensitivity and specificity of the proposed surveillance definition for binational TB cases will follow the pilot project.

Conclusions
There is a need for a national surveillance definition for binational TB cases in the United States that is TB-specific, easy to apply and interpret, and based on data that are already being routinely collected. The definition developed for surveillance purposes will not affect federal, state, or local TB control activities. The primary purpose of developing a surveillance definition is to quantify the burden and monitor trends in binational TB cases. Using the data to educate policy makers and partners in TB control will be helpful to promote investments in systems for prevention and control. For more information about the collaborative effort to develop a national surveillance definition for binational TB cases, please contact Rachel Yelk Woodruff by e-mail at zex5@cdc.gov or by telephone at 404-639-6018.

—Reported by Rachel Yelk Woodruff, Courtney Yuen, Mark Miner, Andy Heetderks, & Roque Miramontes
Div of TB Elimination

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NEW CDC PUBLICATIONS

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PERSONNEL NOTES

Deborah Bedell left DTBE earlier this year for a position as a Project Officer with CDC's Division of Viral Hepatitis. In 1982 she began her public health career as a case manager with the Alabama Sexually Transmitted Disease (STD) program. In 1989, she joined CDC's Division of STD/HIV Prevention (now the Division of STD Prevention) as a public health advisor (PHA) stationed in Alabama, and in 2003, she left CDC and returned to the Alabama STD program. In 2008, Deborah returned to CDC and joined DTBE as a PHA assigned to the Florida TB control program in Tallahassee, Florida. Among her accomplishments there, she co-authored *Mr. Tuber's Coloring Book* in collaboration with the Florida Bureau of TB and Refugee Health colleagues. This product was later adopted by the TB control program in Sidney, Australia, and by CDC's TB Education and Training Network (TB ETN). She went on a 90-day temporary detail to help investigate a TB outbreak in a small rural town in Florida involving a family with more than four generations of TB disease. At the 2010 Southeastern Regional TB Meeting, she presented findings from this investigation in "Addressing TB in African-American Communities: The Gadsden County Experience." She won a 2009 CDC honor award for Excellence in Surveillance and Health Monitoring as part of the Decline in Reported TB Working Group, and later she was a co-author on the MMWR reporting an investigation of the decrease in reported TB.

In August 2010, she accepted a DTBE assignment with the TB control program in South Carolina. Among her accomplishments there, she wrote South Carolina's first Program Evaluation Plan. In 2011 she had a poster as well as an oral presentation, "Monitoring the Tuberculosis Case Evaluation Process for Immigrants and Refugees: The South Carolina Experience" at the TB Program Evaluation Network (TB PEN) meeting. She was selected to participate in a temporary duty assignment in Denver, Colorado, for the response to a high school TB outbreak, where she was involved in the cutting-edge use of TB's new 12-dose drug treatment for latent TB infection. This contribution led to Deborah's winning the February 2013 NCHHSTP Director's Recognition Award along with Maria Galvis, who also assisted with the response. Deborah served as co-author on the MMWR article describing the Colorado outbreak and the successes achieved with the new treatment regimen.

Deborah writes that, in her new position, she is able to apply the knowledge and experience acquired from DTBE. She credits DTBE with having a remarkable staff with unbelievably great support for their field staff. She gives special thanks to Dan Ruggiero and Gail Burns-Grant for the excellent job they did in preparing her for newer challenges, such as teaching her leadership skills that she states will always be an asset to her career with CDC. We thank Deborah for all her contributions to DTBE, and we wish her much luck in her new position!

Emily Bloss, PhD, was the worthy recipient of the DTBE Director's Quarterly Recognition Award for the Fourth Quarter of 2013. Emily was nominated for her work over the past 2 years with the World Health Organization (WHO) Global Task Force on Impact Measurement for outstanding international collaboration and leadership in strengthening national TB surveillance systems, leading and supporting the development of guidance documents and tools, and supporting prevalence surveys in multiple countries.

Specifically, Emily has contributed to the development of international guidelines for national TB prevalence surveys and inventory studies for assessing underreporting, in which she helped define methods used for conducting these large studies. She also helped lead the development of internationally applied standards and benchmarks for TB surveillance. These WHO documents are used globally to measure impact of TB control strategies and strengthen national TB surveillance systems. With support

from others in DTBE, Emily is currently helping to develop a handbook that national TB program staff in high burden settings can use to more effectively analyze TB surveillance data.

Emily has demonstrated exceptional skill in gaining the confidence and cooperation of partners through her 50% secondment with the Global TB Program at the World Health Organization. In this role, she has exceeded expectations by successfully and efficiently responding to the needs of both DTBE and WHO and facilitated collaboration and communication between the two organizations. Emily is commended for her leadership, innovation and collaboration in these areas.

In addition to her work on the Task Force, Emily has continued to successfully work on a variety of complex and unique activities in IRPB and has proven to be versatile and innovative in her broad scope of work, which has spanned across 14 different countries. For example, currently Emily is finishing up the fourth and final module of a USAID funded operations research course in Uganda where, despite consistent bureaucratic roadblocks, staff turn-over, and poor infrastructure, she has continued to maintain her sense of humor and cheerfulness when coordinating, teaching, and mentoring TB program staff as they learn to conduct their own epidemiologic studies.

Zyrus Campbell has been helping DTBE as a webmaster. A native of Maryland, Zyrus earned his B.S. degree in 2001 from the University of Maryland, University College. He has worked as an independent consultant, developing websites for government agencies, small businesses, and nonprofit organizations; assessing Internet audiences for website usage; and creating Web graphics and other design elements. In addition to his IT interests, Zyrus also has an M.A. degree in religious studies from Howard University.

Stephanie Chan, PhD, has joined DTBE and SEOIB as a Prevention Effectiveness Fellow and will be with us until 2015. During her time here, she will work on several cost-effectiveness projects related to screening options, outbreak investigations, and TB genotyping. Such analyses can help policymakers see more clearly the impact of TB prevention efforts and the trade-offs of their decisions on how much and where to allocate resources. Prior to coming to CDC, Stephanie graduated from the Pardee RAND Graduate School with a degree in Policy Analysis; her dissertation project was titled "Fighting Obesity in the U.S. with State Legislation." She also worked on a variety of health projects at the RAND Corporation in Santa Monica, CA, and managed the Medicaid budget for the New York City Office of Management and Budget.

Allison DeFer has joined CEBSB and will be working with DTBE as a web developer. She received her Bachelor of Science degree in Information Systems Management from Auburn University. Prior to coming to CDC, Allison worked for Engauge, GE, MailChimp, and CareerBuilder in several capacities. She worked most recently with AutoTrader as an email developer.

Alstead (Al) Forbes has left DTBE for a position with CDC's Center for Global Health. His last day with DTBE was August 24. Al began his CDC career in February 1993 as a Public Health Associate with the New York City (NYC) Department of Health Bureau of Tuberculosis Control. In 1997, he was promoted and transferred to the New Jersey Department of Health and Senior Services Tuberculosis Program, where he served as the assistant to the DTBE senior PHA. In 1999, Al was selected as DTBE's assistant project manager for the Tuberculosis Information Management System (TIMS) in Atlanta. In this position, he provided technical assistance and training to TIMS users nationwide. He worked closely with the Surveillance Branch regarding the interface of TB surveillance data and with the Field Services and Evaluation Branch (FSEB) program consultants

regarding resource needs and management problems. In 2001, he became a Program Consultant and assumed the duties of overseeing DTBE's cooperative agreement activities and providing guidance and consultation to the Mid-Atlantic region. On September 18, 2005, he began serving in the Miami, Florida, PHA position, and returned to Atlanta in June 2007 as a TB Program Consultant. Since his return, he has provided guidance and program consultation not only to the Mid-Atlantic region but to the Pacific Island territories as well. A few highlights of other projects include the following: in 2009, as part of the RVCT Training Team, Al received the DTBE Director's Recognition Award for development of updated training materials for the revised RVCT. In 2011, he was one of the recipients of an NCHHSTP group honor award for Excellence in Emergency Response (International) as part of the Haiti Responders Group. In addition, he was a co-author on an MMWR article that was one of the 2012 CDC World TB Day features, Tuberculosis Control Activities Before and After Hurricane Sandy — Northeast and Mid-Atlantic States, 2012. We will certainly miss Al, and we wish him all the best in his new position.

Tom Kenyon, MD, MPH, is the Director of the Center for Global Health (CGH) at CDC. Dr. Kenyon most recently served as Country Director for CDC in Ethiopia from 2009 to 2013, where he played a major role in expanding partnerships with the Ethiopian Government in maternal child health, health systems strengthening, strategic information, TB, malaria, pandemic influenza, HIV prevention in key populations, and comprehensive HIV/AIDS care and treatment.

His career with CDC began in 1994 as an Epidemic Intelligence Service Officer in the Division of Tuberculosis Elimination. From 1996 to 2002, he served as the CDC Country Director in Botswana where he led numerous studies in HIV/TB and developed a wide range of initiatives in HIV/AIDS prevention with the Ministry of Health and partners from civil society. From 2002 to 2006, Dr. Kenyon began CDC's operations in Namibia in partnership with the Ministry of Health where he led US Government efforts under the President's Emergency Plan for AIDS Relief (PEPFAR) to establish the national antiretroviral therapy (ART) program, prevention of mother-to-child transmission (PMTCT), HIV surveillance, and comprehensive programs in HIV prevention and care. He returned to Washington, DC and served from 2006 to 2008 in the Office of the Global AIDS Coordinator, Department of State, as Principal Deputy Global AIDS Coordinator and Chief Medical Officer for PEPFAR. During his tenure as Principal Deputy, PEPFAR established systems of accountability, achieved major program expansion, and reached critical targets in HIV prevention, care, and treatment.

Dr. Kenyon also previously served as Communicable Disease Director for the Chicago Department of Health and as a pediatrician and program director for Project HOPE in Grenada, West Indies, Swaziland, and Malawi. He graduated with a Bachelor of Science in Zoology from Indiana University and a Masters in Public Health with a focus on international health from the Johns Hopkins School of Hygiene and Public Health. He completed medical school at the University of Missouri-Columbia and subsequently completed a 3-year residency in pediatrics at the University of Arizona Health Sciences Center in Tucson.

Katherine Klein, MPH, M(ASCP), has joined the Laboratory Capacity Team (LCT) of the Laboratory Branch as an Oak Ridge Institute for Science and Education (ORISE) fellow. Kate will be assisting LCT and the Global Laboratory Activity (GLA) with providing consultation and technical assistance to TB laboratories and TB programs in the United States and overseas. She will assist with educational activities, such as workshops on the laboratory diagnosis of TB, and she will design and manage a project to build laboratory capacity in TB high-priority countries. Kate earned her BS in Microbiology and BA in Physiology from the University of Minnesota in

2005. From 2005 to 2011 she worked in the Mycology/Mycobacteriology laboratory at the Mayo Clinic in Rochester, MN, first as a bench technologist and then as a Quality Specialist. She became certified in clinical microbiology through ASCP in 2008. While at Mayo, Kate volunteered with the Minnesota Interlaboratory Microbiology Association, the Rochester Healthy Communities Partnership, United Way, and the Rochester World TB Day group. In May, Kate graduated with an MPH degree in Hospital and Molecular Epidemiology and a Certificate in Global Health from the University of Michigan in Ann Arbor, MI. While at the University of Michigan, she volunteered with the Blue Mountain Project in Hagley Gap, Jamaica, and completed an internship with the TB program at the Michigan Department of Community Health (MDCH). During her internship at MDCH, Kate participated in education and outreach activities and in analyzing demographic and clinical characteristics of TB cases in Michigan.

Margaret Patterson has left DTBE for a position as a Project Officer with CDC's Division of Viral Hepatitis. Margaret joined CDC in 2001 and was assigned to the Washington, DC, STD Program. At that time, she already had several years of public health experience, working mostly in the South Carolina STD Program. In April 2003, she joined the DTBE Field Services Branch as a Public Health Advisor (PHA) assigned to the West Palm Beach, Florida, TB Program. In 2004, she accepted a DTBE assignment with the South Carolina TB control program, and in 2009, she transferred to the Kentucky TB control program.

As the Assistant TB Program Manager and CDC liaison to the Commonwealth of Kentucky, Margaret facilitated the local health department response to TB outbreaks. In one instance, she assisted DTBE's Outbreak Investigations Team with a unique TB genotype cluster occurring in six communities, while simultaneously assisting with a CDC epidemiological technical assist assignment involving correctional facilities and homeless shelters in the Louisville area. Working with the Southeastern National Tuberculosis Center, she served as one of the Lead PHAs on the pilot for DTBE's Enhanced Contact Investigation Course. She organized Kentucky's first Cohort Review, and she developed Kentucky's first quality assurance and improvement review tool. She coordinated multiple testing and screening activities within the homeless shelters in Louisville, and she submitted an abstract of these activities entitled, "*Investigation of Mycobacterium Tuberculosis genotype cluster: PCR-2118_KY011 Louisville Metro County Health Department, 2000-2009*." This was presented as a poster at the 2010 National Tuberculosis Conference and won first place.

In South Carolina, Margaret collaborated with the University of South Carolina's Institutes for Family Services to address TB in the African American Community, serving as Project Director of the CDC demonstration project, "*Intensification of TB Prevention, Control and Elimination Activities in African American Communities in the Southeastern United States*." She contributed to the report, "*Understanding the Social and Cultural Determinants of Tuberculosis: African Americans and Tuberculosis in South Carolina,"* which revealed TB rates among persons of racial or ethnic minorities were 5 to 10 times higher those among white persons in the same region. At the 38th World Conference on Lung Health, Cape Town, South Africa, she served as co-author for an abstract and poster presentation entitled, "*Tuberculosis PhotoVoice: Mobilization and Empowerment in the Communities"* for four PhotoVoice sites: El Paso, TX; Chiang Mai, Thailand; Rio de Janeiro, Brazil; and South Carolina. She also represented both CDC and South Carolina on a panel at that meeting.

In addition, she served as evaluation coach as part of TB ESC'S *Task Order 15: Enhancing Tuberculosis Programs' Capacity for Evaluation: Testing New Tools and Developing an Evaluation Toolkit*, a project that responded directly to CDC's and DTBE's commitment to facilitating the

self-evaluation of TB programs. She also had a temporary duty assignment in New Orleans, LA, helping with the Hurricane Katrina Disaster Relief efforts for CDC. We thank Margaret for her many contributions to TB control over the past 10 years, and we wish her all the best in her new position!

Brandy Peterson, MPH, MCHES, has left DTBE and has joined the Division of STD Prevention, Health Systems Research and Evaluation Branch, Program Evaluation Team, as of August 26. Beginning January 3, 2010, Brandy worked for the Program Evaluation Team in DTBE's Field Services and Evaluation Branch (FSEB) as a Health Scientist. During her tenure with the FSEB Program Evaluation Team, Brandy did an exceptional job of coordinating the TB Program Evaluation Network (TB PEN) Steering Committee, assisting program evaluation capacity building for TB PEN focal points (state and local staff serving as points of contact for TB PEN). Brandy convened the TB PEN conference planning committee and worked with the TB ETN in organizing and successfully implementing the annual TB Education, Training, and Evaluation Conference. She provided technical assistance and guidance to public health officials in 25 TB programs in planning and implementing evaluation activities. Brandy oversaw the collection and management of data for the Aggregate Reports for TB Program Evaluation (ARPEs) and served as a project officer for this project. She took part in an evaluation project in SEOIB in collaboration with Dr. Brian Baker. She also worked with IRPB colleagues on an evaluation of TB/HIV collaborative activities in Guyana, leading the qualitative assessment with more than 50 interviews of clinic staff and patients. Brandy's many contributions are greatly appreciated. Her work ethic, dependability, and collaborative spirit made her an irreplaceable asset to FSEB. Brandy will be missed, and we wish her the best as she begins her new position in the STD program.

Erik Reaves, DO, is one of the new EIS officers who joined DTBE this year. He has joined the SEOIB Outbreak Investigations and Molecular Epidemiology Activity teams. Erik is a Preventive Medicine Officer, having served most recently as Deputy Director of the Department of Emerging Infections at the Naval Medical Research Unit 6 in Lima, Peru. He is board certified in preventive medicine. Erik earned his undergraduate degree in Biological Sciences from Ohio University and was commissioned in the U.S. Navy. He earned his medical degree from Ohio University College of Osteopathic Medicine in 2003 and began his active duty naval career. Erik completed his postgraduate internship medical training at the Naval Medical Center in San Diego, California, in 2004 and medical residency training in August 2008. From September 2008 to June 2010, Erik served as a Preventive Medicine Officer and medical epidemiologist at the Navy Environmental and Preventive Medicine Unit 6 in Pearl Harbor, Hawaii. He led disease surveillance activities for the U.S. Pacific Command Navy and Marine Corps operational forces and provided medical care in the travel and preventive medicine clinic at the Naval Health Clinic in Hawaii.

Aditya Sharma, MD, is one of the new EIS officers in DTBE this year; he has joined the International Research and Programs Branch. Aditya completed his undergraduate studies at the University of Delaware, medical school at Yale University, and residency training in family medicine at Contra Costa (CA) Regional Medical Center. During his medical school education, he wrote a thesis on the cost-effectiveness of Hepatitis A and B vaccination in jail inmates. Aditya is board certified in family medicine. He became interested in public health while serving as a physician in volunteer positions in Nepal and South Sudan. After completing an internship in emergency medicine, he volunteered with Nyaya Health; in this position, he worked with a group of physicians and epidemiologists in the U.S. and in the remote district of Achham in Nepal to help develop sustainable health care services for a

population of 250,000. In addition, after completing a residency in family medicine, he worked as a medical doctor in South Sudan with Doctors without Borders.

Tyson Volkmann, PhD, MPH, is one of the new EIS officers in DTBE and has joined the International Research and Programs Branch. Tyson recently completed his doctoral work at the University of California, San Diego, and San Diego State University, researching substance use and HIV prevention. As an NIH-supported Pre-Doctoral Fellow during 2009-2012, he worked in the U.S.-Mexico border region, focusing on populations at high risk for transmission of HIV and TB, such as injection drug users, female sex workers and their male clients, and migrants. He is currently a Fellow in the Interdisciplinary Research Training Institute, which is supported by the National Hispanic Science Network on Drug Abuse at the University of Southern California. Tyson's global public health experiences include projects in Mexico, Ethiopia, and Brazil. He holds an MPH degree from the University of Alabama, Birmingham, where he worked in public health preparedness for several years.

Jonathan Wortham, MD, Lieutenant Commander, U.S. Public Health Service, has joined the Outbreak Investigations Team of SEOIB, DTBE. Jonathan joined CDC in 2011 as an Epidemic Intelligence Service (EIS) Officer with the Respiratory Diseases Branch in the National Center for Immunization and Respiratory Diseases. There, he led several Legionella outbreak investigations and performed analyses of both racial disparities in invasive pneumococcal disease and antibiotic prescribing for community-acquired pneumonia. Jonathan completed medical school and residency at Baylor College of Medicine and is board certified in pediatrics. Having a strong interest in field work and analytic investigations, Jonathan is excited about his new role in DTBE.

CALENDAR OF EVENTS

October 30–November 3, 2013
44th UNION World Conference on Lung Health
Paris, France
The Union

November 2–6, 2013
141st APHA Annual Meeting
Boston, MA
American Public Health Association

December 2–6, 2013
Pacific Island TB Controllers Association (PITCA) Meeting
Honolulu, HI

December 3, 2013
Advisory Council for the Elimination of Tuberculosis (ACET) Webinar
Atlanta, GA
Margie Scott-Cseh