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TB NOTES

TB Notes 12017

Notes from the Director

Dear Colleague:

Welcome to a new year and new opportunities to prevent, control, and work toward the elimination of tuberculosis. This time of year, the Division of Tuberculosis Elimination (DTBE) participates in two important annual events that raise awareness and advance our efforts of TB prevention and control.

Many DTBE staff presented at the 2017 Annual Conference of the International Union Against Tuberculosis and Lung Disease – North American Region in Vancouver, Canada. A full list of authors and presentation titles is included in this issue.

At the end of March, we will observe one of the most important annual events for people working in TB control, World TB Day. For the second year, CDC will join the global Stop TB Partnership in adopting the 2017 World TB Day theme "Unite to End TB." The DTBE World TB Day Website(https://www.cdc.gov/tb/worldtbday/default.htm) has resources and materials(https://www.cdc.gov/tb/worldtbday/resources.htm) to help in your own efforts to raise awareness. Partners planning a World TB Day event can add activities to an online(https://www.cdc.gov/tb/worldtbday/2017/activities.htm) map.

We welcome these opportunities, and others throughout the TB community, to continue our work of TB prevention and control in 2017.

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

Highlights from State and Local Programs

Calling All TB Corrections Liaisons!

Are you a TB Corrections Liaison or does your TB work take you into correctional facilities? Want to learn more about controlling TB within correctional settings? If so, join the Corrections Liaison Partnership Workgroup (CLPW). The CLPW meets quarterly by conference call to discuss challenges and best practices for addressing TB in correctional settings. All who have an interest in controlling TB behind bars are welcome to join – including corrections staff (medical, administration, custody, and classification), public health staff, and others, especially those who fill the role of Corrections Liaison within their TB program.

This committee seeks to strengthen collaboration and communication between public health programs and those who work in corrections. These quarterly calls include case discussions surrounding all the aspects of controlling TB within the confines of jails, prisons, detention centers, and other congregate corrections facilities. Issues of infection control, isolation, testing, employee health, and managing cases and outbreaks are often discussed, with a focus on understanding the culture of corrections and how best to work within strict security rules. Topics also include coordination of inmate releases to the community and safe transfers between facilities. As a reference, we often refer to the *TB Core Competencies for Public Health Corrections Liaisons* which is available on the National Tuberculosis Controllers Association (NTCA) website. Our workgroup participants have varying levels of expertise and work experience which means our brainstorming sessions produce lively conversation and valuable tips to address challenges. Main goals include fostering collaboration between public health and corrections, and facilitating open communication between all agencies involved.

The CLPW is a subcommittee of the NTCA/ National Tuberculosis Nurse Coalition (NTNC) Corrections Committee. The NTCA/NTNC Corrections Committee's mission is to raise the awareness for public health and corrections regarding TB within this setting. The CWLP is currently led by Ellen Murray, PhD, BSN, RN, a former Infection Control Coordinator in a large county jail (5,700 inmates), and a former State TB Nurse Consultant.

To join our next call on April 25, 2017, please contact Ellen Murray at ellen.murray@medicine.ufl.edu or 352-273-9385.

Submitted by Ellen Murray, PhD, BSN, RN, Southeastern National Tuberculosis Center

DTBE Staff Present at the 2017 Annual Conference of the International Union against Tuberculosis and Lung Disease – North American Region

The2017 Annual Conference of the International Union against Tuberculosis and Lung Disease – North American Region was held this month in Vancouver, Canada. DTBE contributed to the program by delivering the following presentations:

Evaluation of the TB Regional Training and Medical Consultation Centers

Sarah Segerlind

Developing a Toolkit for TB Programs to implement eDOT
Peri Hopkins

Outcomes and Cost for Multidrug-Resistant Tuberculosis Outpatient-Only Care in the U.S
Suzanne Marks

Educational Opportunities for Mycobacteriology Testing Practices
Stephanie Johnston

Temporal Distribution of Acquired Resistance to Fluoroquinolones during Treatment of Multidrug-Resistant TB
Kate Klein

Surveillance for Bedaquiline Resistance in Multidrug-Resistant *Mycobacterium Tuberculosis* Isolates Obtained From Tuberculosis Patients in the United States
Sheila Akinyi Okoth

Using Reduced *Mycobacterium Tuberculosis* Inoculum Densities in MGIT Pyrazinamide Susceptibility Testing to Prevent False-Resistant Results and Improve Accuracy: A Multi-Center Evaluation
Glenn Morlock

Adverse Events (Hospitalization or Death) Associated With Treatment for Latent Tuberculosis Infection, United States, 2004–2016
Lilia Manangan

Isoniazid-Monoresistance among Tuberculosis Patients, National Tuberculosis Surveillance System — United States, 1993–2014
Shareen Iqbal

Evaluation of the Completeness of Non-countable Tuberculosis Case Reporting, National Tuberculosis Surveillance
Robert Pratt

Risk Factors for Recent Transmission of Tuberculosis among Foreign-Born Persons in the United States, 2011–2015
Kala Marks

A Comparison of Methods for Detecting Tuberculosis Transmission — United States, 2014–2015
Clinton McDaniel

Prioritizing Tuberculosis Genotype Clusters for Public Health Action in the United States

Smita Ghosh

Increase in Proportion of Foreign-Born Persons with Tuberculosis who have Lived in the United States ≥ 10 Years, 1993–2015
Clarisse Tsang

Combining Three Tests to Measure Prevalence of Latent Tuberculosis Infection in 11,000 High Risk Persons in the United States
Christine Ho

Strategies to Improve Detection of Outbreaks of Tuberculosis Involving Pediatric Cases — United States, 2015
Alexia Harrist

Smoldering TB: Immunology and Host Response; Post Graduate Course on MDR TB
Neha Shah

TB in the Global North - Caring for Those in Remote and Indigenous Communities
David Yost

Utilization of 3HP among Indian Health Service Providers
Bunie Nwana

TB and New Technologies: PCR-based Diagnostics in the Pacific Islands
Sapna Bamrah Morris

TB Trials Consortium (TBTC) Updates

The Latest News from the TB Trials Consortium

TBTC Study 31(also known as ACTG A5349; Rifapentine-containing treatment shortening regimens for pulmonary tuberculosis: A randomized, open-label, controlled phase 3 clinical trial) continues to enroll. As of February 8, 2017, the study had a total of 596 participants. The AIDS Clinical Trials Group (ACTG) network is collaborating with TBTC, contributing substantially to enrollment.

TBTC Study 31 PK/PD (Population pharmacokinetic (PK) and pharmacodynamics (PD) study of efficacy and safety of high-dose rifapentine and moxifloxacin for treatment of tuberculosis in the Study 31 treatment trial: intensive PK sampling) continues to enroll at a subset of TBTC sites participating in Study 31. As of February 3, 2017, the study had enrolled a total of 25 participants who had completed intensive PK sampling; the target study enrollment is 60 evaluable participants with intensive PK sampling.

TBTC Study 32 (Prospective, randomized, blinded Phase 2 pharmacokinetic/pharmacodynamic study of the efficacy and tolerability of levofloxacin in combination with optimized background regimen [OBR] for the treatment of MDR TB; Opti-Q) has concluded enrollment at sites in Cape Town, South Africa, and in Lima, Peru. It has reached its goal to enroll 62 evaluable participants with complete follow-up for inclusion in

the primary efficacy analysis. An additional 16 participants remain on study treatment or in follow-up, which should allow the study to meet its target for secondary safety analysis. This study is a collaboration with Boston University and the National Institute of Allergy and Infectious Diseases- National Institutes of Health.

TBTC Study 33(An evaluation of adherence to latent TB infection (LTBI) treatment with 12 doses of once weekly rifapentine and isoniazid given as self-administered versus directly-observed therapy: iAdhere) has been presented in several venues, including IUATLD's 2014 World Lung Health Conference, ATS 2015, and CROI 2015. The final study report has completed CDC clearance and has been submitted for publication to a peer-reviewed journal.

TBTC Study 36 (Platform for Assessment of TB Treatment Outcomes -- An Observational Study of Individuals Treated for Pulmonary Tuberculosis) has accrued 357 participants who have informed improvements in consortium methods including recruitment and retention of participants, data collection, laboratory methods, and monitoring procedures. Many of these participants were also enrolled in sub-studies and provided samples of blood, urine, and/or sputum to facilitate development of new diagnostics and biomarkers. Enrollment in this study was temporarily suspended on Sept. 13, 2016 to promote enrollment in TBTC Study 31.

TBTC Study 36A (TBTC Study 36A: Biobank Substudy -- An Observational Study of Individuals Treated for Pulmonary Tuberculosis) is being conducted in collaboration with the Global Alliance for TB Drug Development. The goal of the collaboration is to obtain high quality blood, urine, and respiratory samples from 250 patients with confirmed pulmonary tuberculosis at specified time points during TB treatment and follow-up that can be used to facilitate development of new diagnostics and biomarkers. The majority of participants have been enrolled under TBTC Study 36, with plans to enroll an additional 34 participants under TBTC Study 31.

Upcoming TBTC Studies

The protocol for TBTC Study 35 (Phase I/II dose finding and safety study of rifapentine and isoniazid in HIV-infected and HIV-uninfected children with latent tuberculosis infection) is under review at the South African Medicines Control Council (MCC) and local institutional review boards (IRB) at two TBTC sites in South Africa. The protocol team, Data and Coordinating Center staff, and Sanofi staff are working toward an investigational new drug (IND) application to the U.S. Food and Drug Administration (FDA) for the new child-friendly rifapentine formulation to be used in Study 35.

TBTC is partnering with TB Epidemiologic Studies Consortium(https://www.cdc.gov/tb/topic/research/tbesc/default.htm) and Medical Research Council (United Kingdom) to launch a new international, multicenter, 3400-patient, open-label, randomized controlled trial TBTC Study 37 (ASTERoiD: Assessment of the Safety, Tolerability, and Effectiveness of Rifapentine given Daily for LTBI) to evaluate novel ultra-short (6 weeks) LTBI treatment regimen. The study protocol has been approved by the partners and is been submitted to the CDC IRB and the FDA. TBTC aims to start enrollment into the trial in the late fall of 2017.

On May 15-17, 2017, TBTC will hold its 39th semiannual meeting in Atlanta. Those interested in attending should contact Ms. Barbara DeCausey via email or phone at 404-639-5330.

Submitted by Barbara DeCausey, MPH, MBA, DTBE

Communications, Education, and Behavioral Studies Branch Updates

World TB Day 2017

Each year we recognize World TB Day on March 24 to commemorate the date Dr. Robert Koch announced his discovery of the bacillus that causes TB. For the second year, CDC will join the Global Stop TB Partnership in promoting the 2017 World TB Day theme "Unite to End TB."

The DTBE World TB Day Website(https://www.cdc.gov/tb/worldtbday/default.htm) has resources and materials(https://www.cdc.gov/tb/worldtbday/resources.htm) to help raise awareness about TB-related problems and solutions, and to support worldwide TB-control efforts. Partners planning a World TB Day event can also add activities(https://www.cdc.gov/tb/worldtbday/2017/activities.htm) to the online map. The website will continue to be updated with 2017 World TB Day information. If you have

questions, please contact Leeanna Allen at lallen1@cdc.gov.

Submitted by Leeanna Allen, MPH, DTBE

Laboratory Branch Updates

Recently, DTBE's Laboratory Branch and Data Management, Statistics, and Evaluation Branch collaborated to publish "Trends in testing for *Mycobacterium tuberculosis* complex from US public health laboratories, 2009–2013" in Public Health Reports. The study, funded in part through the CDC TB Elimination and Laboratory Cooperative Agreement, provided an aggregate view of 2009–2013 national workload and turnaround time data reported by U.S. public health laboratories. Trends and challenges in meeting national TB laboratory benchmarks and performance targets were analyzed.

While the number of specimens and patients identified by culture and further tested by drug susceptibility tests declined during the time frame examined, the volume of testing for rapid detection of *Mycobacterium tuberculosis* complex by nucleic acid amplification increased. Although public health laboratories achieved turnaround time benchmarks for acid-fast bacilli smear and identification from culture, achieving benchmark turnaround times for drug susceptibility testing remained a challenge. The study also demonstrated the high degree to which public health laboratories contributed to TB control and prevention efforts.

To read the full article, please visit: **Tyrrell F**, **Stafford C**, **Yakrus M**, **Youngblood M**, **Hill A**, **Johnston S**. Trends in testing for *Mycobacterium tuberculosis* complex from US public health laboratories, 2009–2013. Public Health Rep 2017;132:56–64.

Submitted by Monica Youngblood, MPH, M(ASCP), DTBE

Surveillance Epidemiology and Outbreak Investigations Branch Updates

Forging Links with Asian-American Community Health Organizations to Strengthen TB Prevention Efforts

The Tuberculosis Epidemiologic Studies Consortium (TBESC), a CDC-funded joint effort with TB programs and academic institutions in 11 states, seeks to identify ways to establish links between local health departments and community health providers to increase latent TB infection (LTBI) screening and treatment among high-risk populations. As a first effort, TBESC reached out to organizations that advocate for and serve Asians. Asians have the highest prevalence of LTBI among foreign-born persons in the United States (29%), according to the 2011-2012 NHANES survey. Foreign-born Asians in the United States also have the highest TB rates of any racial group (28.2/100,000; *Morbidity and Mortality Weekly Report*, March 25, 2016, 65(11); 273–278). Mathematical models show that identification and treatment of persons with LTBI will have the greatest impact on reaching TB elimination.

In September 2016, TBESC representatives met in San Francisco with representatives from the California TB control program, medical facilities that serve Asian populations, and Asian-American community health organizations to identify roadblocks and opportunities to prevent

TB among Asian-Americans. Participants included Thomas Navin, MD, chief of the Surveillance, Epidemiology, and Outbreak Investigations Branch of CDC's Division of Tuberculosis Elimination; Jeff Caballero, Executive Director of the Association of Asian Pacific Community Health Organizations (AAPCHO); John Iyanrick, Senior Policy Strategist for the Asian and Pacific Islander American Health Forum (APIAHF); Jerry Jew, MD, Medical Director of North East Medical Services in San Francisco, a major provider of health services to Asian residents; Caitlin Reed, Medical Director of the inpatient TB unit at UCLA Medical Center; and Jenny Flood, MD, Chief of the Tuberculosis Control Branch at the California Department of Public Health.

AAPCHO, which provides advocacy, research, and technical assistance on behalf of 35 health care and human services organizations, described its past efforts to improve Hepatitis B control. Efforts included partnering with pharmaceutical companies, federal agencies, and provider groups to develop demand for testing and treatment and expand coverage for testing.

Participants exchanged ideas about successful strategies for collaboration between health departments, clinics, and federally qualified health centers (FQHCs). TBESC members asked how advocacy agencies decide what issues to focus on; how LTBI screening might be included in requirements for re-competition among FQHCs; and how to involve faith-based communities.

Recommendations from participants included:

- Technology upgrades to permit different electronic tracking, surveillance, and medical records systems to integrate information on LTBI testing and treatment seamlessly;
- Use of storytelling and personal stories for direct marketing to those groups at high risk; and
- Creation of CDC-branded clear, short messages for providers and patients to clarify who should be tested and treated.

TBESC is in the 6th year of a 10-year consortium focus on LTBI. Its first study, nearing completion, assessed the characteristics of the three available tests for LTBI: QuantiFERON®–TB Gold In-Tube test (QFT-GIT), T-SPOT® TB test, and tuberculin skin test (TST). Its next phase focuses on the TB Prevention Cascade to Cure, which identifies points along the continuum where patients are lost to care; from LTBI testing to treatment completion. Activities include development of a model to estimate local LTBI prevalence among high-risk persons; identification of providers who serve high-risk populations and development of techniques for outreach; assessment of interventions to improve LTBI treatment completion; and participation in a clinical trial of ultra-short therapy for LTBI.

Submitted by Kiana Woods, SEOIB, DTBE

New CDC Publications

November 2016

Mindra G, Wortham JM, Haddad MB, Salinas JL, Powell KM, Armstrong LR. Tuberculosis

Among Incarcerated Hispanic Persons in the United States, 1993-2014. J Immigr Minor Health. 2016 Nov 29. PMID: 27900592. [Epub ahead of print].

December 2016

Garzan A, Willby MJ, Green KD, Gajadeera CS, Hou C, Tsodikov OV, Posey JE, Garneau-Tsodikova S. Sulfonamide-Based Inhibitors of Aminoglycoside Acetyltransferase Eis Abolish Resistance to Kanamycin in Mycobacterium tuberculosis. J Med Chem. 2016 Dec 8;59(23):10619-10628. PMID: 27933949.

Lewinsohn DM, Leonard MK, LoBue PA, Cohn DL, Daley CL, Desmond E, Keane J, Lewinsohn DA, Loeffler AM, Mazurek GH, O'Brien RJ, Pai M, Richeldi L, Salfinger M, Shinnick TM, Sterling TR, Warshauer DM, Woods GL. Official American Thoracic Society/Infectious Diseases Society of America/Centers for Disease Control and Prevention Clinical Practice Guidelines: Diagnosis of Tuberculosis in Adults and Children. Clin Infect Dis. 2016 Dec 8. pii: ciw694. [Epub ahead of print]. PMID: 27932390.

Mitruka K, Volkmann T, Pratt RH, Kammerer JS. Disparities in Tuberculosis Treatment Completion by Incarceration Status, U.S., 1999-2011. Am J Prev Med. 2016 Dec 21. pii: S0749-3797(16)30571-2. doi: 10.1016/j.amepre.2016.10.035. PMID: 28012812. [Epub ahead of print.]

Modi S, Cavanaugh JS, Shiraishi RW, Alexander HL, McCarthy KD, Burmen B, Muttai H, Heilig CM, Nakashima AK, Cain KP. Performance of Clinical Screening Algorithms for Tuberculosis Intensified Case Finding among People Living with HIV in Western Kenya. PLoS One. 2016 Dec 9;11(12):e0167685. doi: 10.1371/journal.pone.0167685. PMID: 27936146.

Nandi P, Worrell MC, Andrews T, Sales RM, McMichael J, Hampton KH, Goswami ND. Engaging homeless service providers in educational efforts during a tuberculosis outbreak in Atlanta. J Ga Public Health Assoc 2016; 6(2):279-82. https://doi.org/10.21633/jgpha.6.2s14.

Trinidad RM, Brostrom R, Morello MI, Montgomery D, Thein CC, Gajitos ML, Heetderks A, Chorba T. Tuberculosis screening at a diabetes clinic in the Republic of the Marshall Islands. Journal of Clinical Tuberculosis and Other Mycobacterial Diseases. 2016 Dec; 5;4-7. http://dx.doi.org/10.1016/j.jctube.2016.10.001.

Tyrrell F, Stafford C, Yakrus M, Youngblood M, Hill A, Johnston S. Trends in Testing for Mycobacterium tuberculosis Complex from US Public Health Laboratories, 2009-2013. Public Health Rep. 2017 Jan/Feb;132(1):56-64. doi: 10.1177/0033354916679989. PMID: 28005481. Epub 2016 Dec 12.

Volkmann T, Okelloh D, Agaya J, Cain K, Ooko B, Malika T, Burton D. Pilot implementation of a contact tracing intervention for tuberculosis case detection in Kisumu County, Kenya. Public Health Action. 2016 Dec 21:6(4):217-219. doi: 10.5588/pha.16.0032.

January 2017

Castro KG, Marks SM, Hill AN, Chen MP, Miramontes R, Winston CA, LoBue PA. In reply. Int J Tuberc Lung Dis. 2017 Jan 1;21(1):120-121. doi: 10.5588/ijtld.16.0708-2. No abstract

available. PMID: 28157476.

Mindra G, Wortham JM, Haddad MB, Powell KM. Tuberculosis Outbreaks in the United States, 2009-2015. Public Health Rep. 2017 Jan 1:33354916688270. doi: 10.1177/0033354916688270. [Epub ahead of print]. PMID: 28147211

Savic RM, Weiner M, Mac Kenzie WR, Engle M, Whitworth WC, Johnson JL, Nsubuga P, Nahid P, Nguyen NV, Peloquin CA, Dooley KE, Dorman SE; Tuberculosis Trials Consortium of the Centers for Disease Control and Prevention. Defining the Optimal Dose of Rifapentine for Pulmonary Tuberculosis: Exposure-Response Relations From Two Phase 2 Clinical Trials. Clin Pharmacol Ther. 2017 Jan 25. doi: 10.1002/cpt.634. [Epub ahead of print]. PMID: 28124478.

Tupasi T, Garfin AM, Mangan JM, Orillaza-Chi R, Naval LC, Balane GI, Basilio R, Golubkov A, Joson ES, Lew WJ, Lofranco V, Mantala M, Pancho S, Sarol JN, Blumberg A, Burt D, Kurbatova EV. Multidrug-resistant tuberculosis patients' views of interventions to reduce treatment loss to follow-up. Int J Tuberc Lung Dis. 2017 Jan 1;21(1):23-31. doi: 10.5588/ijtld.16.0433. PMID: 28157461