

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION
National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention
Division of Tuberculosis Elimination**



**Meeting of the
Advisory Council for the Elimination of Tuberculosis
December 12-13, 2016
Atlanta, Georgia**

Record of the Proceedings

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**ADVISORY COUNCIL FOR THE ELIMINATION OF TUBERCULOSIS
December 12-13, 2016
Atlanta, Georgia**

Minutes of the Meeting

The U.S. Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC), National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention (NCHHSTP), Division of Tuberculosis Elimination (DTBE) convened a meeting of the Advisory Council for the Elimination of Tuberculosis (ACET). The proceedings were held on December 12-13, 2016 at the CDC Corporate Square Campus, Building 8, Conference Room A/B/C, in Atlanta, Georgia.

ACET is formally chartered under the Federal Advisory Committee Act (FACA) to provide advice and recommendations to the HHS Secretary, HHS Assistant Secretary for Health, and CDC Director regarding the elimination of tuberculosis (TB). The charter authorizes ACET to make recommendations regarding policies, strategies, objectives and priorities; address the development and application of new technologies; provide guidance and review on CDC's TB Prevention Research portfolio and program priorities; and review the extent to which progress has been made toward TB elimination.

Information for the public to attend the ACET meeting in person or participate remotely via teleconference was published in the *Federal Register* in accordance with FACA regulations and rules. All sessions of the meeting were open to the public (*Attachment 1: Participants' Directory*).

Opening Session: December 12, 2016

Philip LoBue, MD

Director, Division of Tuberculosis Elimination
Centers for Disease Control and Prevention
ACET Designated Federal Official (DFO)

Dr. LoBue served as the DFO for the December 2016 ACET meeting in the absence of Dr. Hazel Dean. He conducted a roll call to confirm the attendance of the ACET voting members, *ex-officio* members and liaison representatives (or their alternates). He announced that ACET meetings are open to the public and all comments made during the proceedings are a matter of public record. He informed the ACET voting members of their responsibility to disclose any potential individual and/or institutional conflicts of interest for the public record and recuse themselves from voting or participating in these matters.

CONFLICT OF INTEREST DISCLOSURES

CHAC Voting Member (Institution/Organization)	Potential Conflict of Interest
Ana Alvarez, MD, FAAP (University of Florida College of Medicine)	No conflicts disclosed
Lisa Armitige, MD, PhD (Heartland National Tuberculosis Center)	No conflicts disclosed
Jennifer Cochran, MPH (Massachusetts Department of Public Health)	No conflicts disclosed
Barbara Cole, RN, MSN, PHN (Riverside County Department of Public Health)	No conflicts disclosed
Robert Horsburgh, Jr., MD, MUS (Boston University School of Public Health)	Member of a Data Safety Monitoring Board for pediatric pharmacokinetics studies of Delamanid
Eric Houpt, MD (University of Virginia)	No conflicts disclosed
Michael Lauzardo, MD, MSc (University of Florida College of Medicine)	No conflicts disclosed
Jeffrey Starke (Baylor College of Medicine)	Member of a Data Safety Monitoring Board for pediatric pharmacokinetics studies of Delamanid
James Sunstrum, MD (Wayne County, Michigan TB Clinic)	No conflicts disclosed
David Warshauer PhD, (ABMM) (Wisconsin State Laboratory of Hygiene)	Recipient of federal funding from the CDC TB Cooperative Agreement (CoAg)

Dr. LoBue confirmed that the 21 voting members and *ex-officio* members (or their alternates) in attendance constituted a quorum for ACET to conduct its business on December 12, 2016. He called the proceedings to order at 8:35 a.m. and welcomed the participants to day 1 of the ACET meeting.

Barbara Cole, RN, MSN, PHN, ACET Chair

TB Controller

Riverside County (California) Department of Public Health

Ms. Cole joined Dr. LoBue in welcoming the participants to day 1 of the ACET meeting. She looked forward to ACET's discussions and input on the informative presentations that CDC would make over the course of the meeting.

DTBE Director's Report

Philip LoBue, MD

Director, Division of Tuberculosis Elimination

Centers for Disease Control and Prevention

Dr. LoBue covered the following topics in his Director's report to ACET. CDC and all other federal agencies are operating under a continuing resolution (CR) through April 28, 2017. A CR serves as a bridge between the last and the new fiscal year (FY) and allows federal agencies to continue operating at their current level of funding with no disruption. Congress and the new President will determine and appropriate the FY2017 budgets of CDC and other federal agencies after the current CR ends in April 2017.

DTBE released several reports that are available on [CDC's Tuberculosis website](#). The most recent TB surveillance report, *Reported Tuberculosis in the United States, 2015*, includes an Executive Commentary, technical notes, 66 data tables, and a slide set that can be downloaded and used in presentations. For example, one of the data tables in the comprehensive surveillance report displays the number and rates of TB cases and deaths in the United States from 1953-2015.

The *National Tuberculosis Indicators: 2014 State Comparison* report describes various TB outcome and process measures for states, such as completion of TB treatment, latent TB infection (LTBI) and TB contacts. The report also includes a map and a graph to illustrate TB incidence in the United States in 2014.

- A state-by-state comparison of TB incidence

- A breakdown of states in three groups: states that met the 2020 target for TB incidence of $\leq 1.4/100,000$; states above the 2020 target, but still below the national average of $3.0/100,000$; and states above the national average
- TB rates of each individual state in comparison to the 2020 target and the national average

DTBE made several notable accomplishments in FY2016. Assistance was provided to develop and launch the National Action Plan for Combating Multidrug-Resistant TB (MDR-TB). DTBE served as the lead agency for domestic objectives and milestones in the National Action Plan. An emergency stockpile of TB drugs was established to provide a stopgap in the event of a manufacturer drug shortage at the national level. A three-year CoAg was awarded to Massachusetts in a competitive process to develop a feasible, scalable program to expand LTBI testing and treatment within a defined high-risk community.

Educational resources were created and disseminated to public health and healthcare provider (HCP) partners for the new U.S. Preventive Services Task Force (USPSTF) recommendation to screen at-risk adults for LTBI. The DTBE 2016-2010 Strategic Plan was released. The 2016 American Thoracic Society (ATS)/CDC/Infectious Diseases Society of America (IDSA) *Clinical Practice Guidelines: Treatment of Drug-Susceptible Tuberculosis* were released. The updated ATS/CDC/IDSA diagnostic guidelines for TB were issued as well.

The “Leveling of Tuberculosis Incidence—United States, 2013-2015” study was published in the *Morbidity and Mortality Weekly Report (MMWR)*. The article reported that after more than 20 years of decline, progress toward TB elimination in the United States has stalled at a case rate of $3.0/100,000$ and the first increase in TB cases recently was reported. The “Estimating Tuberculosis Cases and Their Economic Costs Averted in the United States Over the Past Two Decades” study was published. The paper reported that public health efforts prevented ~145,000-319,000 TB cases at an estimated cost-savings of \$6.7-\$14.5 billion.

The “Tuberculosis Infection in the United States: Prevalence Estimates from the National Health and Nutrition Examination Survey (NHANES), 2011-2012” study was published. The paper provided a national estimate of persons infected with TB disease. The findings indicated that up to 13 million persons in the United States have LTBI. The “Recent Transmission of Tuberculosis—United States, 2011-2014” study was published. The paper described the use of a novel genotype-based algorithm that estimates 14% of genotyped U.S. TB cases are attributable to recent transmission, while the remaining 86% of cases are due to reactivated LTBI.

The Tuberculosis Trials Consortium (TBTC) published Study 34 on the use of the Xpert® MTB/RIF assay in the initial evaluation of TB suspects in the United States. The TBTC data were instrumental in the U.S. Food and Drug Administration (FDA) approving the assay and publishing updated labeling on its use.

State partners and the Association of Public Health Laboratories (APHL) were engaged in a CDC-wide initiative, “Advanced Molecular Detection,” to build capacity for genotyping surveillance using whole-genome sequencing of *Mycobacterium tuberculosis* (*M.tb*) in five public health laboratories. The existing partnership with APHL was used to develop “Essentials for the Mycobacteriology Laboratory: Promoting Quality Practices.” This series of complimentary, interactive web-based training modules is targeted to laboratorians. The Molecular Detection of Drug Resistance (MDDR) Service managed a 15% increase in the submission of samples from January-June 2016.

DTBE’s other major accomplishment in 2016 was the initial enrollment of patients in Study 31 from TBTC and AIDS Clinical Trials Group (ACTG) sites throughout the world. The randomized clinical trial of four months of TB treatment reflects a partnership between CDC-funded TBTC sites and ACTG sites funded by the National Institutes of Health. Study 31 was designed with two major objectives.

First, the efficacy of a high-dose rifapentine (RPT)-containing regimen will be evaluated to determine whether the duration of treatment for drug-susceptible pulmonary TB could be reduced to four months (or 17 weeks) with a single substitution of RFP for rifampin (RIF). The 2PHEZE/ 2PH regimen will include two months of RPT, isoniazid (INH), pyrazinamide (PZA) and ethambutol (EMB) followed by two months of RPT and INH.

Second, the efficacy of a four-month regimen (or 17 weeks) will be evaluated with two substitutions (high-dose RPT for RIF and moxifloxacin (MOX) for EMB) to determine whether the reduced duration of treatment to four months is possible. The 2PHZM/2PHM regimen will include two months of RPT, INH, PZA and MOX followed by two months of RPT, INH and MOX.

The Study 31 schema includes screening patients to determine their eligibility, obtaining consent and enrolling patients, and randomizing patients to one of three arms at a 1:1:1 ratio. The control group will be given the standard 2RHZE/4RH regimen for 26 weeks. Investigational group 1 will be given the 2PHZE/2PH regimen for 17 weeks. Investigational group 2 will be given the 2PHZM/ 2PHM for 17 weeks. All three groups will be evaluated for the primary outcome of treatment failure or relapse at 12 months post-randomization. All treatments in Study 31 will be daily. Patients will be given a flat RPT dose of 1200 mg and a MOX dose of 400 mg. Patients will be instructed to take RPT with food and RIF without food.

As of October 14, 2016, 14 of the 16 TBTC/ACTG sites that were open for enrollment had enrolled at least one patient. The remaining 22 sites were not open for enrollment at that time. The number of patients enrolled in Study 31 each month increased from 57 in July 2016 to 101 in September 2016. However, the decrease to 56 enrolled patients in October 2016 was attributed to a hurricane in Haiti. The TBTC/ACTG sites expect to reach the goal of enrolling the entire study population of 2,500 patients by December 2018.

ACET DISCUSSION: DTBE DIRECTOR'S REPORT

ACET discussed two key topics during the question/answer session with Dr. LoBue.

- The future benefits of whole-genome sequencing.
- DTBE's surprisingly high estimate of attributing 14% of genotyped U.S. TB cases to recent transmission and potential strategies to reduce the incidence.

Dr. LoBue provided additional details in response to ACET's question on DTBE's plans to recommend changes to the three-month INH/RPT (3HP) regimen. DTBE's paper on self-administration of the 3HP regimen has been cleared by CDC and is ready to be submitted for publication. DTBE's next steps will be to review the data, formulate preliminary guidance, convene an external expert panel and develop interim recommendations. DTBE will issue "interim" guidance on 3HP to ensure harmonization with the larger ATS/IDSA effort to develop more comprehensive LTBI recommendations.

ACET advised CDC and its partners to shift to an online process to decrease the time among the development, clearance/approval and publication processes for joint guidelines. Moreover, guidelines in an online format can be more easily updated and rapidly released when new data are collected.

Dr. LoBue agreed that CDC and its partners should make better use of the "living document" approach in which online guidelines are reviewed approximately every two years and a decision is made on specific documents to update. However, he clarified that CDC might need to reconsider its longstanding practice of publishing joint guidelines with ATS because ATS is unwilling to shift to the living document approach with online documents.

ACET suggested a potential strategy for CDC to shift to the living document approach. ATS alone could publish guidelines with a focus on active TB disease, while CDC and IDSA could jointly publish LTBI guidelines.

Tuberculosis in Jails and Prisons: United States, 2002-2013

Lauren Lambert, MPH

Epidemiologist, Division of Tuberculosis Elimination
Centers for Disease Control and Prevention

Ms. Lambert reported that CDC published its study on TB in correctional settings in September 2016. The goals of the study were to describe persons incarcerated at the time of their TB diagnoses and estimate TB rates in this population. The study also served as an update to CDC's 2005 published paper, "An Unanswered Health Disparity: Tuberculosis Among

Correctional Inmates, 1993-2003.” The current study provides new information on correctional employees with TB, such as their age, gender and reasons for TB evaluation.

The study methods included the use of 2002-2013 data from the National TB Surveillance System to develop numerators: correctional employment within 12 months before diagnosis and persons incarcerated at TB diagnosis. U.S. Bureau of Justice Statistics data were used to develop denominators for the estimated annual TB incidence per 100,000 incarcerated persons. The Annual Survey of Jails provides mid-year statistics for local jails, while the National Prison Statistics Program provides year-end statistics for state and federal prisons.

From 2002-2013, 35 states reported 299 TB cases among correctional employees. Of these cases, 57% were U.S.-born and 27% were women. The median age was 44 years with a range of 20-82 years of age. Of 81 correctional employees with a reported TB diagnosis from 2009-2013, the reasons for an evaluation included TB symptoms (49%), incidental TB diagnosis (31%), TB screening or other occupational testing (11%), and contact investigation after a known TB exposure (9%).

CDC made a clear distinction in the study between “inmates” in jails/prisons and “detainees” in U.S. Immigration and Customs Enforcement (ICE) custody because persons in jails and ICE custody are not considered to be incarcerated. From 2002-2013, 48 states reported 5,579 TB cases among inmates/detainees. Vermont and Wyoming were the only two states that did not report any TB cases in correctional settings over this time period. California, Florida, New York and Texas accounted for 57% of cases, while Arizona and Georgia each reported >200 cases.

Women accounted for 9% of persons incarcerated at TB diagnosis. Local jails (54%) and state prisons (21%) reported the vast majority of TB cases among incarcerated women. Of 4,934 male inmates/detainees with TB from 2002-2013, local jails accounted for 48% of cases; state prisons accounted for 22% of cases; federal prisons accounted for 11% of cases, and ICE or other facilities accounted for 16% of cases. The estimated annual TB incidence among inmates at the time of diagnosis was 29/100,000 in local jails, 8/100,000 in state prisons and 25/100,000 in federal prisons. This incidence reflects annual medians from 2002-2013.

Of 5,579 TB cases among inmates/detainees from 2002-2013, men 18-64 years of age accounted for 4,934 cases. CDC conducted a sub-study on this cohort that excluded 495 incarcerated women, 84 incarcerated men >64 years of age, 40 incarcerated men <18 years of age, and 26 incarcerated men with no known age or country or birth.

By country of origin, the number of TB cases in foreign-born incarcerated men in the cohort has steadily increased since 2002 and surpassed U.S.-born incarcerated men in the cohort beginning in 2008. By country of origin and race/ethnicity, foreign-born incarcerated Hispanic men and U.S.-born incarcerated black men accounted for the highest number of TB cases in the cohort.

Foreign-born incarcerated men accounted for 46% (or 2,577) of TB cases in the cohort. Of 2,414 foreign-born men, 86% (or 2,073) had a U.S. arrival date. Of this subgroup, 52% had arrived in the United States within one year of their diagnoses. The top four countries of origin for foreign-born incarcerated men with TB were Mexico (58%), Honduras (11%), Guatemala (7%), and El Salvador (5%).

CDC identified several risk factors that were associated with incarceration at the time of TB diagnosis, particularly a previous diagnosis of TB and substance use. The Report of Verified Case of Tuberculosis (RVCT) reported TB/diabetes co-morbidity in 4% of male inmates from 2009-2013, but this rate was much lower than the national prevalence of ~16%. Homelessness 12 months prior to detention in a local jail was reported in 27% of U.S.-born men with TB and 15% of foreign-born men with TB.

The major conclusions of CDC's study on TB in correctional settings are highlighted as follows. Incarcerated persons continue to experience a higher incidence of TB than individuals in the general population. TB case detection procedures have been successful for foreign-born inmates who recently arrived to the United States. A great deal of progress has been made since the early 1990s because TB cases were not recognized during the intake process at that time.

Correctional facilities serve as an important setting for identifying persons with TB infection and offering treatment. The 3HP regimen remains a favorable option for correctional facilities and currently is the standard of care in the Federal Bureau of Prisons (BOP). Studies have shown that the 3HP regimen is associated with increased completion of therapy rates, lower hepatotoxicity among patients and cost-savings.

A recommendation was made in 2011 to scale up the 3HP regimen beyond correctional settings. Most notably, the Juarez-Reyes study reported that the 3HP regimen quadrupled completion of therapy rates in an urban jail. After baseline testing for *M.tb* infection is conducted, employees of correctional facilities that house substantial numbers of inmates with TB risk factors (e.g., HIV-positive and foreign-born persons/populations (FBPs)) should be screened for TB at least annually.

ACET DISCUSSION: TB IN CORRECTIONAL SETTINGS

ACET discussed the following topics during the question/answer session with Ms. Lambert.

- Ongoing efforts by the DTBE RVCT Workgroup to add new variables to the RVCT form to capture data on TB transmission in correctional settings.
- Potential reasons for relatively minor changes in the TB incidence in federal prisons from 2002-2013 versus more significant changes in local jails and state prisons.
- The critical need to immediately treat incarcerated persons with 3HP who are identified with LTBI during the intake process.
- DTBE's plans to increase genotyping of TB cases in correctional settings.

- The tremendous disparity in TB among incarcerated Hispanic men.
- The surprising study finding of TB/diabetes co-morbidity being nearly four times lower in male inmates than in the general U.S. population.
- The potential impact of decreases in state and local public health funding on TB testing and surveillance rates in correctional settings.
- The misclassification by health departments and correctional facilities of detainees who actually are or are not in “ICE custody.”
- The status of one of ACET’s previous recommendations to add “history of incarceration” as a new data variable to the next iteration of the RVCT form.

Update by the Essential Components Workgroup

Barbara Cole, RN, MSN, PHN, ACET Chair

TB Controller

Riverside County (California) Department of Public Health

Ms. Cole reported that the November 20, 2016 draft of the joint ACET/National Tuberculosis Controllers Association (NTCA) document, *Essential Components of a Public Health Tuberculosis Prevention, Control and Elimination Program*, was distributed to the members for review and input. During the discussion, she asked the members to limit their feedback to broad, overarching issues, such as major gaps or redundancies. She presented a detailed synopsis of the 2017 Essential Components draft document.

Several reasons have been identified to update the 1995 Essential Components document.

- Changes in the overall epidemiology of TB in the United States
- Availability of newer technologies for TB diagnosis, prevention, treatment and disease surveillance
- Shifts in the organizational structures and funding mechanisms of TB control programs
- Different contexts in which TB control activities are conducted in the United States

The 2017 Essential Components document will reflect numerous changes since the publication of the 1995 document.

- The inclusion of more recent data to capture the current epidemiology of TB in the United States
- A revised title to reflect “TB elimination”
- A new section on the role of health departments in TB control
- A new section on data collection, analysis and management
- An expanded section on laboratory and other tests to describe newer technologies
- An expanded section on the treatment of TB disease, drug resistance and MDR-TB

- A comprehensive section and appendix on training and educational resources
- A more up-to-date research section
- An expanded appendix to provide more details on LTBI regimens and LTBI treatment in special populations

The sections of the 2017 Essential Components document are listed below.

- Summary of Essential Components
- Role of the Health Department
- Purpose
- Rationale for Updating the 1995 Document
- Introduction
- Overall Planning and Policy
- Surveillance and Reporting of Persons with Suspect or Confirmed TB
- Data Collection, Analysis and Management
- Program Evaluation
- Laboratory and Other Tests
- Identification, Management and Treatment of Persons with TB Infection
- Identification, Management and Treatment of Persons with TB Disease
- Training and Education
- Research
- References
- Appendices

The workgroup has made strong efforts to maintain the focus on providing programmatic guidance, but clinical recommendations also are included in the appendices for new TB controllers. The workgroup is using the “living document” approach to more frequently update the appendices without an extensive revision of the entire document.

Ms. Cole summarized key components in the individual sections of the 2017 Essential Components document.

Key Strategies for TB Prevention and Control

- Identifying and ensuring completion of therapy to render persons with active TB as non-infectious.
- Locating and screening persons who have had contact with TB patients to rule in or rule out active TB or *M.tb* infection and providing appropriate treatment in either case.
- Screening, testing and treating other selected persons and populations at high risk for TB infection, and the subsequent progression to TB disease, to detect persons who can benefit the most from LTBI treatment.

Additional Strategies for Progressing Toward TB Elimination

- Recommending LTBI and suspect/active TB as reportable conditions.
- Providing directly observed therapy (DOT) to TB cases and selected persons with LTBI (e.g., contacts, high-risk contacts and household contacts).
- Engaging partners to broaden screening for LTBI and record results in a standardized manner. The recommended list of partners includes:
 - Private medical practitioners
 - Student health services
 - Employers of FBPs
 - Hospitalist physicians
 - Staff from non-TB health department programs
- Analyzing data of TB infection and cases at least annually to provide guidance and allow for targeting of subsequent testing and treatment efforts.

Appropriate Laws and Regulations

- Ensuring prompt, mandatory reporting of each confirmed and suspected case of TB.
- Protecting the health of the public by isolating and treating persons who have infectious TB.
- Rapidly detaining infectious persons who are unwilling or unable to complete treatment and are at risk for re-infection.
- Observing laws and regulations to protect patient confidentiality.

Appropriate Policies

- Ensuring the examination of persons at high risk for TB disease, their prescriptions and monitoring of appropriate treatment.
- Ensuring rapid laboratory examination of specimens and reporting results (including drug susceptibility test results and negative culture results) to appropriate health departments and requesting clinicians.
- Ensuring ongoing communications between providers and health departments for all hospitalized TB patients.
- Ensuring appropriate treatment to patients who have TB disease until cured. (The workgroup noted that this policy might require mandatory DOT.)
- Treating patients without consideration of their ability to pay.
- Encouraging healthcare facilities and congregate settings to apply recommended measures for infection control.

Surveillance and Reporting of Persons with Suspect or Confirmed TB

- Ensuring and facilitating the reporting of TB cases, suspect cases and LTBI cases where mandated.
- Monitoring the completeness of reports and the duration of time between diagnosis and reporting.
- Maintaining a registry of TB cases, suspects and contacts.

- Promptly entering data into the database of TB cases for analysis.

Data Collection, Analysis and Management

- Ensuring data security and confidentiality.
- Storing and transmitting TB data.
- Conducting TB drug resistance surveillance.
- Identifying epidemiologic links between TB cases.

Program Evaluation

- Recognizing the importance of evaluating the activities, expenditures and results of TB control programs.
- Conducting internal evaluations of TB control programs, including analyses of the National Tuberculosis Indicators Project and TB cohort/registry reviews as appropriate.
- Conducting external TB program evaluations.

Laboratory and Other Tests

- Providing details on laboratory and other tests that should be available to TB programs (Appendix 2).
- Providing detailed explanations on the use of tests in TB prevention and control (Appendix 2).

Identification, Management and Treatment of Persons with LTBI

- Understanding the importance of screening, testing and treating LTBI.
- Conducting a risk assessment, performing screening and applying various testing methods for LTBI.
- Providing guidance on selecting and interpreting specific tests (e.g., tuberculin skin test (TST) versus interferon gamma release assay (IGRA)).
- Identifying TB treatment regimens.

Identification, Management and Treatment of Persons with TB Disease

- Assuring the verification of TB disease, the extent of disease and drug susceptibility.
- Developing a medical management plan for each TB patient.
- Developing a case management treatment and monitoring plan for each TB patient, including adherence measures as indicated.
- Assuring that TB patients complete appropriate treatment for TB disease in a timely manner.
- Providing case management throughout treatment until the patient completes therapy.

Epidemiologic Investigations

- Conducting contact investigations.
- Conducting source case investigations.
- Detecting disease clusters and outbreaks.

Training, Education and Collaboration

- Providing education and training on the clinical and public health aspects of TB to all program staff.
- Providing and assuring comprehensive and tailored information on TB to public and private audiences (including HCPs) based on the TB epidemiology and needs at the local level.
- Providing TB education to patients and their families.

Research

- Emphasizing the importance of TB control programs participating in local, national and international research as appropriate.

Appendices

- Responsibilities of TB controllers and TB program managers.
- Inclusion of a resource by the World Health Organization (WHO), "Toward TB Elimination: An Action Framework for Low Incidence Countries."
- Laboratory tests used to assess TB infection and disease as well as to monitor the progression of TB treatment.
- List of educational and training resources.
- Current research questions.
- Core public health functions and essential services.

Ms. Cole described the workgroup's next steps and timeline to revise and finalize the 2017 Essential Components draft document. Input provided by ACET and other subject-matter experts will be reviewed. A form was circulated for the ACET members to document the line and page numbers of their written comments, suggestions and rationale for any proposed changes. The deadline for the submission of additional comments is January 4, 2017. The revised draft will be submitted to an NTCA graphic designer for formatting. The final draft will be placed on the floor for ACET's formal vote and adoption during the April 2017 meeting. The document will be submitted to the CDC clearance process in April or May 2017.

Ms. Cole thanked the workgroup members for their diligent efforts in drafting and revising multiple versions of the draft Essential Components document.

ACET DISCUSSION: 2017 ESSENTIAL COMPONENTS DOCUMENT

ACET commended the workgroup on developing a thorough and comprehensive document. The members agreed to use the form to submit their individual comments by the January 4, 2017 deadline. ACET's overarching input for the workgroup to consider in drafting the next iteration of the document is highlighted below.

- Consideration should be given to replacing "DOT" with "standard of care."
- More content should be included in the body of the document to emphasize the importance of TB control programs utilizing and partnering with laboratories.

- Opposition has been expressed to using certain terminology (e.g., “TB suspect” and “TB control”) that places a barrier between TB control programs and patients. The document should be reviewed to delete this language whenever possible. For example, “TB suspect” could be easily replaced with “suspected case of TB” to minimize the stigma of patients.
- A caveat should be added to the recommendation to use video DOT due to limited supporting data. None of the studies that have analyzed the feasibility of this technology showed efficacy at the two-year follow-up evaluation. TB control programs should be advised to evaluate whether their needs would be best met by video, standard or self-administered DOT.
- Broad statements should be included to better articulate the purpose of the document.
 - The mandate of public health to take all necessary actions to control the spread of communicable diseases should be emphasized.
 - Advocacy for TB prevention, control and elimination should be featured in the section on community partnerships.
 - The media should be highlighted as a key partner of TB control programs.
- Correctional facilities should be separated from, rather than integrated with, other congregate settings in the document. For example, TB control programs should be advised to designate a correctional liaison and provide support to correctional facilities to perform public health functions. Correctional facilities are publicly funded agencies that are required to operate as “mini-health departments” by diagnosing, treating and reporting TB cases as well as conducting contact investigations.
- New text should be added to address TB exposure in children <5 years of age who are part of a contact investigation, but should be treated while efforts are made to rule in or rule out LTBI.
- The Program Evaluation section should include more guidance on implementing a quality improvement (QI) process. With a pediatric TB case, for example, the TB control program would answer the following questions in the QI process: (1) What caused this case to occur? (2) What actions could have been taken to prevent this case?
- Table 1 (pages 26-27, lines 811-813) illustrates the significance of TST by target group, but the table should be revised to include other high-risk groups (e.g., TB/diabetes co-morbidity).
- New text on molecular surveillance should be added to the Epidemiologic Investigations section to strengthen guidance regarding the identification of epidemiologic links between TB cases.
- The Data Collection, Analysis and Management section should be reframed to advise TB control programs to gather and analyze data on an annual basis to better understand TB epidemiology in their local jurisdictions. This approach would help TB control programs to identify their priorities each year and guide QI program evaluations.
- Guidance to “identify epidemiologic links” is vague and lacks specificity. TB control programs should be advised to implement the gold standard of determining an epidemiologic link between TB cases by engaging an epidemiologist or a similar expert

to conduct investigations. These efforts should extend beyond reviewing laboratory test results.

- The Source Case Investigations section (page 35, line 1091) discusses the “limited yield” of these investigations, but this statement only applies to identifying TB disease. To date, five published studies have reported that source case investigations are effective in locating 30%-40% of persons with LTBI. This section should be revised to emphasize the need for TB control programs to engage partners in testing other family members after a young child is identified with LTBI.
- The document identifies children of foreign-born parents as a risk factor for TB screening, but this guidance will not be included in the 2018 *Report of the Committee on Infectious Diseases of the American Academy of Pediatrics* (AAP) (i.e., the Red Book). This language should be revised to be harmonized with the next edition of the AAP Red Book that will be published in 2018.
- A dedicated section on TB contact investigations should be added to the document.
- The Research section should be expanded to address more TB programmatic issues, such as INH-resistant TB.
- TB vaccination is briefly mentioned in the Research section only. New text should be added to the body of the document to provide a clearer context of this issue, particularly the rationale for the use of the bacillus Calmette-Guérin (BCG) vaccine in other countries, but not in the United States.

Overview of the CDC TB Emergency Drug Stockpile

Ann Cronin

Associate Director for Policy and Issues Management
Division of Tuberculosis Elimination
Centers for Disease Control and Prevention

Ms. Cronin presented an overview of the CDC TB emergency drug stockpile. CDC provided leadership for this effort due to serious concerns raised by the TB community regarding their ability to access TB drugs.

As background, CDC administered a national survey to TB control programs to obtain broader input on TB drug shortages in the field. Of the responding jurisdictions that reported at least one MDR-TB case, 81% experienced shortages of second-line drugs for TB treatment. Of all responding jurisdictions, 79% experienced difficulties in obtaining INH (i.e., an antibiotic used in the treatment of both LTBI and active TB disease). Of these jurisdictions, 15% had no INH at the time of the survey and 41% expected to have a shortage of INH within one month. The INH shortage has forced TB programs to change suppliers, prioritize high-risk patients, delay treatment of persons with LTBI, or shift to alternative LTBI treatment regimens.

DTBE was called upon to assist in developing and launching the National Action Plan for Combating MDR-TB, and served as the lead agency for the domestic objectives and milestones. The vision of the National Action Plan is for the United States to “work domestically and internationally to contribute to the prevention, detection and control of MDR-TB in an effort to avert TB-associated morbidity and mortality, and support a shared global vision of a world free of TB.”

The federal partners established three major goals for the National Action Plan: (1) strengthen domestic capacity to combat MDR-TB; (2) improve international capacity and collaboration to combat MDR-TB; and (3) accelerate basic and applied research and development to combat MDR-TB. To address concerns regarding the lack of an uninterrupted supply of TB drugs that can open the door to the development of drug-resistant bacteria, the National Action Plan called for the availability of an emergency stockpile in the event of a manufacturing shortage.

Congress appropriated \$160 million in FY2016 for CDC’s Antibiotic Resistance Solutions Initiative for public health partners to address antimicrobial resistance (AMR) and empower the U.S. response. CDC used \$1.9 million of its funds to establish the TB emergency drug stockpile. The protocol of the stockpile is described below.

- The state will alert DTBE about a TB drug shortage.
- DTBE will collaborate with FDA to confirm whether the shortage is nationwide due to the drug manufacturer.
- The state will investigate the needs of the TB program.
- The state will complete and submit a stockpile order form to DTBE.
- DTBE will use information from the state’s stockpile order form to place an order with the HHS Supply Service Center.
- DTBE will prioritize the need among active TB cases nationwide if necessary.
- The HHS Supply Service Center will deliver the requested TB drugs to the state point of contact.

The ATS/CDC Treatment Guidelines will be used if DTBE is required to prioritize patients. Priority 1 patients will include those who receive treatment for active TB disease. Priority 2 patients will include those who receive treatment for LTBI and are in one of the following categories: (1) diagnosed during contact tracing of contagious TB; (2) immunocompromised in any manner; or (3) less than 5 years of age.

The CDC TB emergency drug supply currently includes the following inventory to ensure that the treatment of patients with drug-susceptible TB, drug-resistant TB or LTBI is not interrupted.

TB DRUG	INVENTORY
First-Line Drugs	
Rifampin	40% of total doses
Isoniazid	40% of total doses <ul style="list-style-type: none"> • 300 mg for adult doses • 100 mg (scored) for pediatric doses • Purchased in bulk, then repackaged at the HHS Service Supply Center for cost-savings
Second-Line Drugs	
Capreomycin	5% of total doses
Amikacin	5% of total doses
LTBI Drug	
Rifapentine	10% of total doses

The roles and responsibilities of CDC’s partners have been clearly defined. FDA will verify the nationwide drug manufacturing shortage. NTCA will advise CDC on TB program needs, the distribution of drugs and ordering. The HHS Supply Service Center will receive funding via an interagency agreement to purchase, store, distribute and manage the inventory.

Ms. Cronin presented a series of slides to illustrate the order forms for states to request TB drugs from the emergency stockpile and categorize patients in either the “Priority 1” or “Priority 2” group. She reported that CDC’s next steps will be to ensure that TB Emergency Stockpile drugs are not wasted, and to make the stockpile sustainable over time. Additional appropriations from the Antibiotic Resistance Solutions Initiative are not guaranteed beyond the initial two-year funding period. CDC is exploring whether it is allowable and feasible to provide stockpile drugs prior to expiry in lieu of financial assistance, or enter into a manufacturer buyback program to rotate the supply.

ACET DISCUSSION: TB EMERGENCY DRUG STOCKPILE

ACET thanked CDC and its partners for establishing the TB emergency drug stockpile to address problems in the field with TB drug shortages. As chair of the TB Drug Supply Workgroup, Ms. Cochran confirmed that the members welcomed the opportunity to assist CDC in exploring strategies to address long-term sustainability and other issues.

NCHHSTP Director’s Report

Jonathan Mermin, MD, MPH

Director, National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention
Centers for Disease Control and Prevention

Dr. Mermin covered the following topics in his Director's report to ACET. At the agency level, the stopgap spending bill will extend government funding through April 28, 2017. The CR will fund programs in HR 34, including the 21st Century Cures Act.

CDC released a *Vitalsigns*TM report on November 29, 2016, "HIV and Injection Drug Use." The report showed that persons who inject drugs (PWID) accounted for only 9% of HIV diagnoses. Successful prevention efforts in this area over the past 20 years have resulted in a 50% decline in HIV diagnoses among black and Hispanic PWID and a 28% decline among white PWID. Whites still have the highest rates of syringe sharing. Syringe services programs (SSPs) have played a key role in lowering the risk of HIV.

CDC is continuing to address the impact of infectious diseases on the national opioid epidemic. CDC's vulnerability assessment model documented poor alignment between U.S. counties that are at highest risk for rapid dissemination of HIV and hepatitis C virus (HCV) infection among PWID and jurisdictions with existing SSPs. However, opportunities are available to expand the number of SSPs that offer comprehensive services, including the exchange of used injection equipment for sterile needles and syringes, HIV and hepatitis testing, linkage to HCV cure and HIV/hepatitis B virus treatment, access to naloxone to reverse overdoses, and substance use treatment.

At the National Center level, NCHHSTP filled two leadership positions: Dr. Kathleen Ethier (Director, Division of Adolescent and School Health) and Mr. Michael Melneck (Deputy Director, Management and Operations).

The [NCHHSTP Annual Report 2015](#) was published to provide information on CDC's HIV/AIDS, viral hepatitis, STD and TB prevention programs.

At the division level, DTBE issued the most recent TB surveillance report, *Reported Tuberculosis in the United States, 2015*. The 9,557 TB cases that were reported in the United States in 2015 represented a 1.6% increase from 2014 and the first increase in 23 years. The current TB incidence in the country is 3.0/100,000.

USPSTF published its recommendation on LTBI screening in the September 2016 edition of the *Journal of the American Medical Association (JAMA)*. USPSTF advised providers to test for LTBI in high-risk populations to increase efforts to locate and treat persons with LTBI. The new USPSTF recommendation can serve as an important step in achieving the national TB elimination goal.

DTBE launched a new [LTBI online hub](#) on the CDC.gov website that features information, guidance, fact sheets and other resources on LTBI.

The Division of HIV/AIDS Prevention (DHAP) recently released a surveillance report, "Diagnosis of HIV Infection in the United States and Dependent Areas, 2015." The document served as the first HIV surveillance report that presented diagnosis, death and prevalence data without

statistical adjustments for reporting delays. The report showed a decrease of ~9% in the annual numbers and rates of HIV diagnoses from 2010-2014.

The decline in HIV diagnoses primarily was observed in heterosexual men and women, African American women, PWID, and older gay/bisexual men regardless of race/ethnicity. Because fewer individuals are dying from HIV, HIV prevalence was at an all-time high at the end of 2014. The highest rates of HIV diagnoses in 2015 were among persons 25-29 years of age, particularly young Hispanic and African American gay/bisexual men.

DHAP recently released new [HIV fact sheets](#): “Living with HIV 101,” “Pre-Exposure Prophylaxis 101,” “HIV 101,” “Vaginal Sex and HIV Risk,” and “Anal Sex and HIV Risk.”

DHAP published its [2015 Annual Report](#) to highlight its efforts to deliver high-impact prevention, raise awareness about HIV, and advance HIV prevention research.

The Division of Adolescent and School Health (DASH) released a new Funding Opportunity Announcement (FOA) for several partners: National Association of County and City Health Officials, National Coalition of STD Directors, Advocates for Youth, and School-Based Health Alliance. The purpose of the FOA is to create national partnerships to promote efforts to reduce HIV, STDs, unintended pregnancy, and behaviors contributing to health risks for youth.

DASH published its [2015 Annual Report](#) to provide a comprehensive description of its activities and accomplishments, key projects and future directions.

The Division of STD Prevention (DSTDP) recently released the *Sexually Transmitted Disease Surveillance Report, 2015*. Key findings of the report are summarized as follows. The number of combined chlamydia, gonorrhea and syphilis cases in 2015 represented the highest number of STDs ever been reported in U.S. history. Men who have sex with men (MSM) accounted for the majority of new primary/secondary syphilis and gonorrhea cases. The 27% increase in syphilis among women since 2014 included a concomitant increase in congenital syphilis.

The Division of Viral Hepatitis (DVH) published an *MMWR* article that reported Kentucky's disproportionate impact of HCV and the highest acute HCV rate in the nation in 2014. DVH partnered with the Kentucky Department for Public Health and Shaping Our Appalachian Region to host an HCV town hall meeting in Hazard, Kentucky. The town hall participants proposed four major recommendations to decrease HCV rates in Kentucky: (1) identify resources to assist local efforts for HCV detection, prevention and education; (2) identify resources for SSPs; (3) improve data collection; and (4) build partnerships.

ACET DISCUSSION: NCHHSTP DIRECTOR'S REPORT

ACET extensively discussed the closure of multiple STD clinics across the country. Several members noted that the weakened STD infrastructure directly contributed to the highest number of STDs ever been reported in U.S. history in 2015.

ACET's comments and suggestions to improve NCHHSTP's TB activities are highlighted below.

- DASH should engage NTCA and other key partners to strengthen its focus on TB in youth and adolescents. For example, California has been consistently reporting at least one TB exposure in high school and college students on a weekly basis. The growing number of foreign-born students has contributed to the increase in TB in this population. The American College Health Association (ACHA) has issued recommendations and guidelines on TB screening and targeted testing of university/college students, but DASH should collaborate with a broader group of partners to conduct TB testing prior to school entry and initiate treatment if needed.
- DTBE should launch a national communications effort to publicize the new USPSTF recommendation on LTBI screening. The campaign should specifically target messages to describe the role of primary care providers (PCPs) in testing persons for LTBI.

Dr. Mermin responded to ACET's question on the reasons that NCHHSTP has not published a TB-focused *Vitalsigns*TM report to date. Dr. Thomas Frieden, Director of CDC, launched the *Vitalsigns*TM reports to serve as briefing documents for CDC's six Winnable Battles: healthcare-associated infections; HIV; motor vehicle injuries; obesity, nutrition and food safety; teens and unintended pregnancy; and tobacco. HIV is the only Winnable Battle that falls under NCHHSTP's purview.

Internal discussions are underway at NCHHSTP to apply the *Vitalsigns*TM model to identify opportunities and metrics beyond HIV. At the CDC level, for example, messaging in *Vitalsigns*TM reports has mobilized a diverse group of partners to take action, including practitioners, institutions, organizations and the public. At the NCHHSTP level, the *Vitalsigns*TM report on HIV and injection drug use generated 100 news media stories in only 72 hours. Although a TB-focused *Vitalsigns*TM report has not been published, TB is included in NCHHSTP's call for state teams to integrate their scientific, communications and policy expertise.

Dr. Mermin responded to ACET's comments regarding the actions that DTBE should take on the new USPSTF LTBI screening recommendation. NCHHSTP is aware that developing and disseminating a document would only reach ~5% of the target audience. As a result, DTBE is creating and distributing LTBI clinical decision support tools and modules that would be linked to electronic medical records (EMRs) to trigger clinicians to conduct appropriate testing.

DTBE also is establishing new collaborations with partners and practitioners who serve high-risk communities. For example, Asian Americans account for ~60% of HCV and ~50% of TB in the United States. These efforts could result in improving blood tests and enhancing EMRs by adding a "country of birth" data variable.

In terms of ACET's suggestion for DTBE to launch a national communications campaign to publicize the new USPSTF recommendation on LTBI screening, Dr. Mermin requested ACET's

guidance on activities that should be prioritized, particularly since targeted messaging would need to be developed in different languages for specific populations.

Dr. LoBue added that DTBE's new LTBI online hub features communication materials to raise awareness of the USPSTF LTBI screening recommendation. DTBE also is collaborating with professional societies and other external partners to ensure that appropriate messaging and tools are disseminated to clinicians. State and local TB programs have been encouraged to use DTBE's existing tools to closely partner with key providers in their communities. However, DTBE acknowledges that its direct efforts with impacted communities have been limited.

NCHHSTP Epidemiologic and Economic Modeling Agreement (NEEMA)

Patricia Dietz, DrPH, MPH

Associate Director, Program and Performance Improvement Office, NCHHSTP
Centers for Disease Control and Prevention

Dr. Dietz presented an overview of NEEMA. NCHHSTP released an FOA for grantees to develop strategies for more efficient expenditures of funding and time in preventing infections, reducing morbidity and mortality, and decreasing disparities. The five-year CoAg will end in September 2019. Staff from the NCHHSTP Office of the Director and all five divisions provide subject-matter expertise and are extensively involved with the activities of the three NEEMA grantees: Emory, Harvard and University of California, San Francisco (UCSF). Moreover, all three grantees have engaged a public health partner and additional researchers to support their projects.

The purpose of NEEMA is to identify the most cost-effective approaches to reducing HIV, viral hepatitis, STDs and TB in all settings, including schools. NEEMA aims to improve national, state and local approaches to prevention and interventions to reduce the incidence, morbidity, mortality and health disparities associated with these diseases.

NCHHSTP has increased NEEMA funding from \$3.5 million in year 1 to \$4.1 million in year 3. At this time, 30 projects are underway, including 12 new projects in year 3. The NEEMA projects have resulted in the development, acceptance or publication of 65 abstracts and manuscripts to date.

Preliminary findings of the NEEMA projects to date are highlighted as follows. Estimates of the population sizes of MSM in U.S. counties led to analyses of southern counties with the highest rates of HIV and STDs. Catch-up hepatitis A screening was not found to be cost-effective. This finding reaffirmed CDC's current recommendations. Systematic reviews of HIV, STD and teen pregnancy prevention programs in schools found only a few studies of poor quality.

The NEEMA grantees currently are exploring five key questions in their projects.

- What is the future course of the HIV and STD epidemics for MSM when modeling interlocking relationships between HIV prevention and STD transmission and treatment?
- Should every adult be screened for HCV or should the current recommendations continue (e.g., screening of “baby boomers” and high-risk groups)? “Baby boomers” include persons in the 1945-1965 birth cohort who account for 75% of HCV cases.
- What combination of interventions will reduce chlamydia, gonorrhea and syphilis?
- Is STD screening in schools cost-effective?
- When and how can TB be eliminated in the United States?

Suzanne Marks, MPH, MA

Epidemiologist, Division of Tuberculosis Elimination
Centers for Disease Control and Prevention

Ms. Marks presented preliminary results of TB modeling that was conducted for the NEEMA projects. In addition to the three grantees and DTBE staff, the other TB NEEMA partners include the CDC Center for Global Health, Tuberculosis Epidemiologic Studies Consortium (TBESC) and NTCA. DTBE hopes to include plenary and breakout sessions on NEEMA during the upcoming NTCA meeting. The grantees completed projects in three major categories in years 1 and 2 of the NEEMA CoAg.

- UCSF: Systematic reviews of targeted testing and treatment (TTT) of LTBI in hard-to-reach populations to obtain model inputs
- Harvard and UCSF: Cost-effectiveness of TTT in at-risk U.S.-based populations to identify the most cost-effective testing strategies and populations
- Creation and calibration of TB transmission modeling
 - Harvard: U.S. TB/LTBI projections and the impact of four U.S. TB control strategies
 - Emory: The contribution of four states (Florida, California, New York and Texas) to >50% of TB cases as well as TB/LTBI projections and demographic trends
 - UCSF: TB/LTBI projections and costs in California as well as TTT strategies among immigrants and persons with medical risk factors

The NEEMA projects in years 1 and 2 generated several results, including projections of TB/LTBI cases and rates; estimates of time to TB elimination; intervention costs; and the cost-effectiveness per case prevented and per quality-adjusted life-year (QALY) gained.

In the systematic reviews of TTT of hard-to-reach populations, separate literature reviews were conducted on TTT in recent immigrants to the United States, homeless persons, injection drug users, and immigrants in contact investigation studies. This category of projects also identified TTT care continuum outputs and costs. The grantees found only five published studies that described the full spectrum from the recruitment of patients through completion of treatment. Most publications focused on immigrants from Latin America and the Caribbean. This category of projects generated three posters that were presented at a national conference in 2016. CDC

has cleared or currently is clearing two papers. An additional three papers have been drafted as well.

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The five published studies on TTT included a total of 3,411 recruited immigrants. Of the entire study population, 73% were tested for TB. Of 2,489 immigrants who were tested, 34% tested positive for TB. Of 839 immigrants who tested positive for TB, 47% (or 391) completed treatment. The cumulative costs in 2014 dollars, including each preceding phase, were \$8.25 per person recruited; \$67 per person tested; and \$1,613 per person treated. TST was used as the testing strategy in four of the five published studies. Patients in all five studies were treated with INH.

The Harvard TTT cost-effectiveness analysis focused on the type of LTBI test used in FBPs; co-morbidities (e.g., HIV, diabetes, and end-stage renal disease); and serial testing. Self-administered 3HP was used as the treatment regimen. The preliminary analysis found that IGRAs were most cost-effective in FBPs with no co-morbidities or with HIV. TST followed by IGRAs were most cost-effective in FBPs with diabetes. No TTT strategy was found to be cost-effective in FBPs with end-stage renal disease. A poster on this NEEMA project was presented at an international conference in May 2016. The paper currently is undergoing the CDC clearance process.

The Harvard transmission modeling study projected that TB elimination would occur in FBPs after year 2100 in all scenarios and around 2100 in U.S.-born persons. TB incidence was estimated to decline to 14 cases/1 million by 2050. The current incidence of 30/1 million could be reduced by 77% by 2050 with intensified TB control efforts. The top four interventions that would be needed to achieve this goal include TTT of new legal immigrants and refugees, improved TTT in the United States, improved case detection, and improved TB treatment. A poster on this NEEMA project was presented at an international conference in 2016. The paper recently was cleared by CDC and has been submitted to a journal for publication.

Johns Hopkins University, a subcontractor of Emory University, calibrated four separate transmission models to the demography of each state (Florida, California, New York and Texas) that collectively account for >50% of TB cases. The models included age pyramids of U.S.-born persons and FBPs; TB incidence based on region of origin; and FBPs from Mexico, China,

India, Vietnam, Philippines, and remaining regions. The models, based on current trends, projected modest median annual declines in TB incidence to year 2025 that varied by state: 3.3% decline in Texas; 1.9% decline in New York; 1.7% decline in California; and 1.5% decline in Florida. A paper on this NEEMA project has been submitted to a journal for publication.

The UCSF TTT transmission modeling study focused on the prevalence of LTBI in California and the cost-effectiveness of TTT to reduce TB incidence. Cost-effectiveness was analyzed based on the type of test, treatment with nine months of daily INH (9H) versus 3HP, age, country or region of birth, and immigration status. TTT was evaluated among FBP from Mexico, the Philippines, India, Vietnam and China. Pre-elimination of TB to <10 cases/1 million was estimated to occur by 2066 with a 10-fold increase in TTT among FBPs and all those with medical risks as well as an increase from 4- to 10-fold in TTT of all California residents. Depending on the strategy implemented, the net intervention costs were estimated at a range of \$9 to \$26 billion. Posters were presented at international conferences in 2016. A paper on this NEEMA project also has been drafted.

Pre-elimination of TB to <10 cases/1 million was estimated to occur by 2066 with a 10-fold increase in TTT among FBPs and all those with medical risks as well as an increase from 4- to 10-fold in TTT in all California residents. Depending on the strategy implemented, the net costs were estimated at a range of \$9 to \$26 billion. Posters on the systematic review of LTBI reactivation rates and other posters were presented at national conferences in 2016. A paper on this NEEMA project also has been drafted.

The NEEMA grantees reached several conclusions in their modeling studies. TB elimination in the United States likely will not occur in the current century. The 3HP regimen by DOT or self-administration will be more cost-effective than 9H. FBPs and persons with medical risks are the most cost-effective populations to target.

The grantees are currently conducting several projects in year 3 of the NEEMA CoAg. Modeling of LTBI prevalence and TB incidence is continuing for the United States, California, and the four states that collectively account for >50% of TB cases. The impact and cost of interventions are being evaluated to expand TTT of FBPs in the United States. The impact of interventions is being modeled in countries with the highest contribution to the U.S. TB burden (e.g., Mexico, China, the Philippines, Vietnam and India).

The impact of the USPSTF recommendations is being modeled for primary care clinicians to conduct TTT among adults at risk for TB. Collaborations are being established to compare and contrast existing models and determine the best inputs, models and structures to create a single unified model for TB elimination in the United States.

Overall, the NEEMA grantees have completed systematic reviews for model inputs, but the degree to which these published data are representative of population-level data is

questionable. Various sources and methods have been used to estimate LTBI prevalence and reactivation. IGRA combined with the 3HP regimen by DOT or self-administration was estimated to be more cost-effective than the standard 9H regimen in nearly all populations examined. TTT for LTBI in persons with medical risks was estimated to be cost-effective.

TB elimination (<1 case/1 million) is not estimated to occur before 2100 in FBPs with current funding and activities, but might occur in U.S.-born persons. Intensified TB interventions could hasten achievement of pre-elimination of TB (<10 cases/1 million), but at a substantial cost. Additional modeling will be conducted in the TB NEEMA projects to examine the impact of the USPSTF recommendations and interventions in individual countries.

ACET DISCUSSION: NEEMA PROJECTS

- The grantees should consider undertaking the following efforts in the remaining years of the NEEMA CoAg.
 - The goals and objectives highlighted in the 2000 Institute of Medicine (IOM) report, *Ending Neglect: The Elimination of Tuberculosis in the United States*, should be revisited. Modeling should be performed to describe efforts that will be needed to reach the IOM goals and objectives.
 - The models should be designed to be more meaningful by accounting for the unraveling of the TB infrastructure since the 2000 IOM report, particularly increases in drug resistance and contacts of drug-resistant patients.
 - The models should be designed with a stronger focus on cost-savings and other benefits in preventing TB cases.
- The NEEMA projects found TTT to be a cost-effective strategy, but the literature included only five studies with full descriptions of TTT from the recruitment phase to completion of treatment. CDC's decreased TTT funding to states since 2005 has weakened the capacity of TB programs to develop new studies in this area. ACET should draft formal guidance to DTBE on specific mechanisms to pursue to restore funding to expand TTT. For example, DTBE initially could pilot TTT demonstration projects in various settings at the local level.
- ACET should assist CDC in developing a roadmap for the "first 100 days of TB in 2017." For example, one NEEMA project showed that the current incidence of 30/1 million could be reduced by 77% by 2050 with intensified TB control efforts. Achievement of this goal would save multiple lives and avert tremendous costs. Case management, drugs and all other aspects of TB consistently increase each year. The 2017 roadmap should identify new sources for additional funding because none of the TB goals described in the NEEMA projects can be met with the current level of funding. Moreover, the inability to scale up LTBI testing and treatment to prevent TB disease would be one of the most significant failures in the TB control community.
- Strong efforts should be made to identify commonalities between public health and legislative interests to ensure that TB funding is not cut. Instead of presenting complex modeling data, for example, legislators should be informed of actual deaths from TB in

their communities. Legislators also should be educated on the potential for undocumented immigrants to spread TB to their school-age children.

- The NEEMA projects validated the persistence of disparities in TB and LTBI between U.S.-born persons and FBPs. However, CDC, health departments, experts in the field and advocates should jointly develop clear and thoughtful messaging to ensure that TB is not used as a political argument to stigmatize or discriminate against undocumented immigrants and FBPs. For example, TTT should be promoted as a standard of care in FBPs. Leaders of communities that likely would be targeted based on their race/ethnicity or country of origin should be extensively engaged in these efforts.
- The NEEMA projects validated the persistence of disparities in TB and LTBI between U.S.-born persons and FBPs. However, CDC, health departments, experts in the field and advocates should jointly develop clear and thoughtful messaging to ensure that TB is not used as a political argument to stigmatize or discriminate against undocumented immigrants and FBPs. The terminology of “targeted” testing should not be used as a standard; other wording would be more desirable. Leaders of communities that likely would be targeted based on their race/ethnicity or country of origin should be extensively engaged in these efforts.
- The NEEMA grantees should explore the possibility of piloting a project in Canada. Most notably, FBPs comprise only 20% of the Canadian population, but account for 70% of 1,600 LTBI cases per year. Although Canada is a low-incidence country, discussions are underway to require systematic TB testing of migrants as part of the pre-arrival immigration medical examination process. Canada also is determining whether best practices should be implemented to educate local physicians on LTBI testing and treatment after migrants have settled in local provinces.
- ACET should reaffirm and resubmit its previous resolution to the new HHS Secretary. ACET recommended overseas TB screening and treatment of all visa holders (e.g., H, J, L and student visas) entering the United States and remaining in the country for ≥ 6 months. ACET also informed the HHS Secretary that industries importing labor to the United States should bear the cost of overseas TB screening and treatment.

Ms. Marks fully agreed with ACET’s comments on the critical need to avoid using the word “targeted” that might stigmatize or discriminate against FBPs and undocumented immigrants. To address this issue, CDC could recommend automatic TB testing for specific populations rather than publicly announcing the need for targeted testing of FBPs and undocumented immigrants.

Ms. Marks supported ACET’s suggestion to consider reaffirming or resubmitting its previous resolution to the new HHS Secretary on overseas screening and treatment of all visa holders. She reported that ACHA recommends TTT for incoming foreign-born college students at this time. However, estimates show that only ~50% of colleges currently are implementing ACHA’s voluntary guidelines.

Demonstration Project: Scale-Up of LTBI Testing and Treatment in Lynn, MA

Jennifer Cochran, MPH

Director, Division of Global Populations and Infectious Disease Prevention
Massachusetts Department of Public Health (MDPH)

Ms. Cochran presented an overview of the demonstration project in Lynn, Massachusetts to scale up LTBI testing and treatment. CDC issued the FOA in March 2016, "A Program to Expand Latent TB Testing and Treatment to High-Risk Communities," to build on existing activities of the TB CoAg. The purpose of the demonstration project is to develop a feasible, scalable program to expand LTBI testing and treatment within a defined high-risk community. The major aims of the demonstration project are to intensify efforts to locate and treat high-risk persons with LTBI and prevent future TB cases through TTT. The primary outcome of the three-year demonstration project is to achieve high rates of LTBI testing and completion of treatment.

CDC established ambitious targets for the demonstration project. Testing would be conducted on a total of 7,500 persons (or 2,500 persons per year for three years). Emphasis would be placed on high-risk populations with an LTBI prevalence rate of 20%. At least 500 persons with positive LTBI results would be identified each year. The evaluation and treatment targets would include a high treatment acceptance rate of 90% and a high treatment completion rate of 80%. Shorter regimens of 3HP by DOT or four months of self-administered RIF would be used for all persons enrolled in the demonstration project, but 3HP has been recommended as the preferred regimen.

In terms of state-level capacity to conduct the demonstration project, Massachusetts has 351 local public health departments, the largest number of local public health jurisdictions in the country. There are no county health departments. As a result, MDPH maintains active partnerships with Community Health Centers (CHCs), safety net hospitals and other hospitals to deliver TB and other public health services. Massachusetts implemented healthcare reform in 2006, currently insures >97% of its population, and makes tremendous investments in primary care in medical homes.

The Massachusetts Medical Advisory Committee for the Elimination of Tuberculosis (MACET) is taking initial steps to design and evaluate a pilot project to integrate TB services into primary care. MACET provided input to the MDPH TB capacity assessment, which was completed in 2015 to evaluate four key areas: (1) the readiness of CHCs to care for LTBI patients; (2) the interest of hospitals to continue to care for patients with TB disease; (3) the willingness of hospitals to continue to serve as an evaluation and capacity building resource to CHCs for LTBI; and (4) the availability of existing TB expertise in the public health/healthcare system. LTBI is reportable in Massachusetts, and MDPH uses the Massachusetts Virtual Epidemiologic Network

to support LTBI reporting and centralize its surveillance capacity.

In terms of the local priority population for the demonstration project, Lynn is a gateway community with >90,000 residents. FBPs account for ~33% of community residents. The TB case rate in Lynn consistently has been above the state average from 2011-2015 (e.g., 8.6/100,000 in Lynn versus 3.0/100,000 in Massachusetts). However, the TB case rate in Lynn is 24.6/100,000 among FBPs. Based on calculations with national data, the number of LTBI cases in Lynn is estimated at 5,994.

The Lynn Community Health Center (LCHC) is a Federally Qualified Health Center (FQHC) and serves as MDPH's key partner in the demonstration project. LCHC was established as a small mental health clinic in 1971, but is now the largest provider of primary care in Lynn. LCHC serves >39,000 patients in 18 locations throughout the city of Lynn. The LCHC patient population experiences the greatest barriers to care, including low-income persons, minorities, refugees and immigrants, children and their families, teens, frail or elderly persons, and persons with mental illness. Of the total LCHC patient population, 80% are minorities, >90% live at $\leq 200\%$ of the Federal Poverty Level, and >55% use a language other than English in the home.

LCHC's comprehensive healthcare programs include primary medical care, OB/GYN and family planning services, dental care, behavioral health services, substance use disorder treatment, eye care, pharmacy services, social services, case management, diagnostic services, school-based health centers, and women, infants and children services. LCHC also is a leader in the delivery of integrated care. Primary care/behavioral health teams co-manage patients and share the EMRs of patients.

Several key features demonstrate LCHC's readiness to scale up LTBI testing and treatment: (1) a physician champion at LCHC, Dr. Hanna Haptu; (2) an LCHC/MDPH partnership to establish a TB clinic with standard operating procedures; (3) available education and training capacity; (4) an initial focus on TB in refugees and TB/HIV co-morbidity; and (5) coordination with MDPH support. Moreover, MDPH launched a community engagement project to deliver TB/LTBI education to Lynn communities with a specific focus on FBPs. To further raise awareness of TB, an LCHC physician was diagnosed with TB; an article published in October 2016 focuses on his experience.

MDPH designed a framework for the demonstration project that identified the priority population (FBPs); geographic location (Lynn, MA); and key partners (LCHC, Massachusetts League of Community Health Centers, Institute for Community Health, Lynn Health Department, and community-based organizations (CBOs) serving refugees and immigrants). MDPH developed a logic model with four activities, five short-term outcomes, five mid-term outcomes and four long-term outcomes to guide the implementation of the demonstration project. MDPH's plans to conduct the four logic model activities are highlighted below.

Activity 1 will focus on increasing the capacity of LCHC. The onsite TB team at LCHC will be expanded to include a physician champion, nurse manager, project manager and community health workers. The MDPH Bureau of Infectious Disease and Laboratory Sciences, including the Division of Global Populations and the Office of Healthcare Planning, will provide support to facilitate system changes.

Activity 2 will focus on engaging, training and partnering with community stakeholders, HCPs and CBOs that serve refugees and immigrants. Existing relationships will be enhanced and support will be provided to a new Community Advisory Board. Community conversations will be facilitated to identify needs, better understand LTBI, form communication networks, and determine personal and health priorities. A needs assessment will be conducted to outreach to HCPs who have access to the priority population of FBPs. A communication and education plan will be developed for HCPs and staff at all levels. A community education campaign will be created and launched in various languages.

Activity 3 will focus on eliminating barriers to and increasing LTBI testing and treatment. EMRs will be modified and used to identify patients for LTBI testing, distribute practice and health maintenance alerts, and track LTBI testing and treatment outcomes. LTBI testing will be performed across LCHC teams, including the OB/GYN and behavioral health teams. The onsite TB team will be utilized for evaluation and follow-up. Barriers to engagement and retention in TB care will be eliminated by addressing issues related to insurance coverage, language, access to medications and appointment schedules.

The efficiency of EMRs will be improved at LCHC. Most notably, LCHC's EMRs currently do not capture the data variable of "country of origin." Data will be coded and transmitted from LCHC to MDPH. Analytics will be used to improve performance by integrating LTBI testing and treatment data into the Massachusetts League of CHCs central data repository. Multiple tools and resources will be developed and disseminated to LCHC, including an LTBI registry, scorecard, measure analyzer and visit planning report. Existing opportunities will be leveraged to facilitate system changes. For example, the OCHIN EPIC EMR is utilized by CHCs in 18 states. The Azara DRVS is an analytics and reporting platform that is used by 175 CHCs in 19 states.

Activity 4 will focus on performing a comprehensive evaluation of the demonstration project. The quantitative indicators will measure LCHC's performance in the entire care continuum, including LTBI testing, diagnosis and treatment. The qualitative indicators will measure LCHC's performance in four areas: (1) effectiveness of education and outreach based on a change in knowledge, attitudes and beliefs among HCPs and community stakeholders; (2) expansion of referral sources for LTBI; (3) effectiveness of the Community Advisory Board; and (4) reasons enrollees did not initiate or complete treatment. Short-cycle interventions also will be evaluated based on the plan/do/study/act model.

MDPH's initial efforts on the demonstration project include building onsite TB teams at LCHC and convening four workgroups: Provider/Community Education, Health Information Technology, Testing and Treatment, and Evaluation. MDPH welcomes input from ACET on its framework, logic model and overall approach of the demonstration project.

Ms. Cochran concluded her overview by revisiting a key point that ACET raised during the discussion on the NEEMA projects. ACET emphasized the importance of not using TB to stigmatize or discriminate against FBPs and undocumented immigrants. Massachusetts has taken initial steps in this area at the state level by eliminating the term "targeted testing" from its messaging, talking points and materials. CDC should take leadership at the national level by replacing the term "targeted testing" with "focused testing," "priority testing" or "partnerships for testing."

ACET DISCUSSION: MASSACHUSETTS LTBI DEMONSTRATION PROJECT

- LCHC appears to be a well-established, high-functioning and extremely informed CHC. However, MDPH should closely monitor LCHC's activities over the course of the demonstration project to ensure that the target of identifying 500 persons per year with positive LTBI results in the Lynn community is met.
- MDPH should review key outcome data from the Medicaid waiver project that Texas currently is conducting. Most notably, MDPH could benefit from the experiences and lessons learned by Texas in terms of LTBI treatment completion rates with the 3HP regimen and provider education on the TB care continuum.
- MDPH should design the evaluation to ensure that local LTBI data collected over the course of the demonstration project can be scaled up and used as a model at the national level.
- MDPH should consider replicating the California model that has added an LTBI risk assessment and/or testing question to the statewide immunization registry.

Ms. Cole concluded the discussion by confirming that Ms. Cochran would be placed on a future agenda to present preliminary results after MDPH completes year 1 or 2 of the demonstration project.

DTBE's Proposed Concept of Operations (ConOps) for LTBI Reporting

Lilia Manangan, RN, MPH

Epidemiologist

Surveillance, Epidemiology and Outbreak Investigations Branch, DTBE

Centers for Disease Control and Prevention

Ms. Manangan presented an overview of and requested ACET's advice on DTBE's proposed ConOps for LTBI reporting, the promotion of LTBI surveillance to TB partners and stakeholders, and the potential next steps in this effort.

Multiple factors have led to DTBE's proposed ConOps for LTBI reporting. NTCA administered a survey to TB programs in 2016 that demonstrated substantial support for LTBI reporting if resources were adequate and the reporting system was efficient and effective. ACET advised DTBE to develop an LTBI reporting system and provided extensive input on this issue in 2015. TBESC transitioned to the new Surveillance for TB Elimination Management System (STEMS) to improve LTBI reporting. STEMS is a clinic-based patient management system that is very useful in managing LTBI patients.

DTBE and its partners have made a great deal of progress to date in developing an LTBI reporting system. DTBE adopted a five-year goal in 2016 to implement a TB Latent Infection Surveillance System (TBLISS) by 2020. DTBE has been collaborating with TBESC on the development of STEMS and convening weekly TBLISS workgroup meetings. In response to NTCA's request, the Society for Epidemiology in TB Control (SETC) established an LTBI Reporting Workgroup that has been holding bimonthly meetings to articulate its vision and purpose and also to create an LTBI case definition.

DTBE condensed a pool of excellent ideas into a concrete, high-level description of an LTBI surveillance system that would serve as a basis for discussion. DTBE adopted the "ConOps" model and approach from the homeland security field. DTBE will aim to achieve consensus within the TB control community before substantial time and resources are committed to developing the LTBI reporting system.

The DTBE ConOps document includes an executive summary, introduction, list of stakeholders, illustration of the TBLISS logic model, and descriptions of the following components: gaps in capabilities to be addressed by TBLISS, data collection strategies and scenarios, data quality assurance processes, and data analysis and dissemination processes. Issues that are addressed in specific sections of the DTBE ConOps document are outlined below.

Partners and Stakeholders

- State/local TB control programs and clinics
- Private and public HCPs
- Clinical and diagnostic laboratories
- Policymakers
- Non-governmental organizations that serve at-risk populations
- EMR vendors

Data Quality Assurance Processes

- Case detection
- Data accuracy

- Data completeness
- Data timeliness
- Data security and confidentiality

Data Analysis and Dissemination Processes

- Annual LTBI reporting
- Publication of public LTBI datasets
- National TB program indicators
- LTBI research projects

DTBE expects TBLISS to track and report LTBI data in collaboration with strategic partners to monitor LTBI; identify gaps and needs in the current LTBI surveillance infrastructure; create baseline data, indicators and targets on LTBI prevalence; and monitor TB control program efforts to reduce LTBI prevalence. DTBE developed a TBLISS logic model with inputs, activities, outputs, and short-, mid- and long-term outcomes to guide the efforts of all partners in reaching the national TB elimination goal.

DTBE will use three key data sources for TBLISS to facilitate systematic and ongoing data collection to describe LTBI epidemiology in the United States. First, STEMS will provide clinic-based data directly to TBLISS following state TB program reviews. Second, existing state LTBI databases will be used for electronic messaging to CDC. Third, existing state paper-based LTBI records will be entered for use as online data entry forms. Data from all three sources will be entered into state TB program review reports. These data elements will be messaged to the CDC TB Data Warehouse and then transmitted to TBLISS to facilitate descriptive analytics, quality assurance and reporting to TB partners.

DTBE is exploring the possibility of utilizing other sources to collect LTBI surveillance data, but several issues must be addressed at the outset. For example, electronic laboratory reports (ELRs) are limited to IGRAs and do not have the capacity to confirm LTBI or rule out TB disease solely based on laboratory reports of IGRA results. Moreover, ELRs have extremely limited demographic and risk factor data.

EMRs potentially could serve as a comprehensive source of LTBI surveillance data, including clinical, demographic and risk factor data. However, EMRs are associated with substantial privacy concerns of personally identifiable information. Local public health reviews would need to be conducted to ensure the accuracy of EMR data before this information is entered into the national LTBI surveillance system. New strategies are needed to directly transmit data from EMRs to public health surveillance systems. DTBE hopes that experiences, lessons learned and key outcome data from the Massachusetts LTBI demonstration project will address issues related to the use of other sources for the collection of LTBI surveillance data.

DTBE and its partners have spent approximately one year on establishing standard data elements to facilitate the collection of LTBI data. The STEMS variable definitions will greatly

influence the TBLISS definitions. DTBE will ensure that the definitions for the variables collected on the RVCT form will be the same as those for TBLISS. DTBE recognizes the need to evaluate the capacity of potential reporting areas in submitting data using the TBLISS standard definitions. DTBE significantly decreased its initial draft list of 49 TBLISS data elements to the current proposed list of 16 variables.

- Reporting information: date and address*
- Patient referral information
- Primary reason for LTBI evaluation* (e.g., contact investigation, employment/student screening, admission to a long-term care facility (LTCF), or Class B immigrant)
- Date of birth
- Sex at birth
- Race/ethnicity
- Country of birth*
- TST/IGRA results*
- Chest radiograph results
- HIV status
- Homelessness, incarceration or LTCF residence
- Substance abuse
- Primary occupation
- Additional TB risk factors
- LTBI treatment information*
- Progression to TB disease*

DTBE agreed that the six proposed TBLISS data elements with an asterisk would serve as the core variables (i.e., the mandatory data elements for minimum participation in LTBI reporting).

The NTCA Executive Board provided three preliminary recommendations on DTBE's proposed ConOps for LTBI reporting. First, DTBE should use existing data sources, such as CDC's Electronic Disease Network (EDN), as the first step in developing the LTBI reporting system. Second, DTBE should leverage its existing partnership with SETC to create a unified vision of LTBI surveillance and develop an LTBI case definition. Third, DTBE should be cognizant of the burden of LTBI surveillance on TB control programs in the absence of additional dedicated funding to perform this task.

DTBE's next steps will be to compile LTBI data from existing sources: EDN, Aggregate Reports for Tuberculosis Program Evaluation (ARPEs) on contact investigations, and the Centers for Medicaid & Medicare (CMS) dataset. An annual LTBI report will be published with separate sections for each LTBI data source to describe the populations, methods and results. TB control programs that currently are conducting LTBI surveillance will be identified to establish collaborations. Representatives from experienced TB control programs will be invited to serve on a new workgroup to guide the refinement of the DTBE ConOps for LTBI reporting and

participate in the development and pilot testing of TBLISS. Long-term strategic goals for LBTI surveillance will be established.

Ms. Manangan concluded her overview by reiterating the critical need for ACET's guidance on DTBE's proposed ConOps for LTBI reporting. She announced that the proposal has not been well received by TB partners and stakeholders. At this time, only two non-TBESC sites have volunteered to conduct LTBI surveillance at the national level in a STEMS pilot project.

ACET DISCUSSION: DTBE CONOPS FOR LTBI REPORTING

- The variable of homelessness/incarceration/LTCF residence should be included as an additional core data element in TBLISS. This variable would provide extensive data on LTBI clusters and recent transmission in U.S.-born persons. For example, TBLISS data on incarceration might show that the disproportionate incarceration rates between African Americans and other race/ethnicities significantly contribute to LTBI disparities in correctional settings.
- DTBE's proposed ConOps does not appear to account for the limited TB budget at the federal level. DTBE should propose a stepwise process that is much more realistic: (1) describe the concept and approach of an ideal LTBI surveillance system; (2) determine the actual cost of the system; and (3) identify funding sources to develop and implement the system nationally.

Ms. Cole exercised the chair's prerogative and concluded ACET's limited discussion. However, she confirmed that the Business Session would be reorganized on the following day to allow for ACET's full discussion and input on DTBE's proposed ConOps for LTBI reporting.

Update on TBESC LTBI Research

Christine Ho, MD, MPH

TBESC Project Officer
Centers for Disease Control and Prevention

Dr. Ho presented an update on preliminary findings from TBESC's ongoing LTBI study. TBESC is a CDC-funded, 10-year collaboration with health departments and academic institutions. CDC funds 10 TBESC sites in the United States. The TBESC study analyzes the predictive value of diagnostic tests for LTBI and is designed to answer three key research questions.

- Which test or test combinations can best identify LTBI in specific high-risk populations in the United States?
- Can the test characteristics be improved by changing cutoff values or testing sequentially?
- Which test best predicts progression to TB disease?

TBESC used a prospective cohort study design and enrolled populations at high risk of LTBI. Each study participant was simultaneously tested for LTBI with three FDA-approved tests: QuantiFERON (QFT) blood test, T-SPOT blood test and TST. TBESC established the following eligibility criteria for the study: close contact of an individual with pulmonary TB; FBP from a high-incidence country; FBP from a medium-incidence country who relocated to the United States within the past five years; individual who spent ≥ 30 days in a high-incidence country within the last five years; or an individual in a population with a local LTBI prevalence $\geq 25\%$ (e.g., homeless).

TBESC implemented the following analytic approach in the study. Agreement of the tests was examined at different combinations of the IGRA test cutoff points. The latent class analysis (LCA) method was used to estimate the true prevalence of LTBI in the study population and also to determine the sensitivity and specificity of the tests. Clean data from July 2012-September 2014 were analyzed. The following cutoff points were established for positive test results.

TST

- 5 mm for HIV-infected persons and close contacts
- 10 mm for recent immigrants, persons <5 years of age and PWID

QFT

- ≥ 0.35 IU/ml

T-SPOT

- Positive = ≥ 8 spots (international cutoff)
- Borderline = 5-7 spots (U.S. cutoff)

Of 11,962 participants who were enrolled in the study from July 2012-September 2014, 53% were male, 81% were foreign-born, 53% reported BCG vaccination, 12% had HIV infection, and 4.3% were children <5 years of age. The median age of the participants was 31 years. The majority of participants (55.7%) had negative results for all three tests, while smaller percentages of participants had positive results for all three tests (14.4%), positive results for two tests (1.7%), or positive results for one test (2.4%). However, 17.8% of participants had positive TST results plus negative QFT/T-SPOT results.

An analysis of single test results by age among FBPs who were not close contacts showed that with IGRAs, LTBI prevalence increased with increasing age. This association was not observed with TST. An analysis of combined test results by age among FBPs who were not close contacts showed only TST-positive results in all children <2 years of age and most children 2-4 years of age. Positive results for all three tests increased with increasing age until 65 years of age.

TBESC incorporated LCA into the study analysis because this statistical method is used to evaluate diagnostic tests in the absence of a gold standard. The LCA method assumes that all tests are related to the presence or absence of an underlying condition, such as LTBI. The LCA method combines data from observable variables (e.g., test results) to indirectly measure unobservable (e.g., latent) conditions, such as LTBI. The LCA method is superior to using TB cases as the gold standard for measuring the sensitivity of tests.

In addition to LCA, TBESC also incorporated the Bayesian analysis into the study analysis. The analysis is a method of statistical inference in which the Bayes theorem is used to update the probability for a hypothesis as more evidence or information becomes available. The Bayesian analysis commonly is used for the d-dimers blood test in the diagnosis of pulmonary embolism. The method is most effective and accurate with large sample sizes.

The objectives of the LCA/Bayesian analysis were to improve the estimates of LTBI prevalence, calculate the sensitivity and specificity of the tests, and evaluate the performance of the tests in three groups: FBP versus U.S.-born persons, HIV-infected versus non-HIV-infected persons, and children <5 years of age versus persons ≥ 5 years of age.

In terms of single test results by age among HIV-negative FBPs, the LCA method estimated low LTBI prevalence (~4%) in children <5 years of age and much higher LTBI prevalence (37.9%) in persons ≥ 5 years of age. Among 8,018 FBPs ≥ 5 years of age, the sensitivity of the tests ranged from 70.3% (T-SPOT) to 74.8% (TST); the specificity of the tests ranged from 69.6% (TST) to 99.4% (T-SPOT); the positive predictive value (PPV) of the tests ranged from 60% (TST) to 98.6% (T-SPOT); and the negative predictive value of the tests ranged from 81.8% (TST) to 84.5% (T-SPOT).

TBESC illustrated the usefulness of the results from the LCA method in a hypothetical clinical scenario in which a Burmese woman 25 years of age with a positive TST result of 12 mm presented for prenatal care. The provider was a busy clinician in an FQHC who needed to rule in or rule out LTBI in the patient. The scenario also questioned whether the clinician's opinion would change with a positive QFT or T-SPOT result.

The LCA method was applied to a hypothetical cohort of 1,000 FBPs ≥ 5 years of age with an LTBI prevalence of 38%. Based on TST sensitivity of 75%, positive results would be detected in 285 of all 380 FBPs with LTBI. Based on TST specificity of 70%, negative results would be detected in 434 of all 620 FBPs without LTBI. Of 471 FBPs with positive TST results, 186 (or nearly 40%) would not have LTBI. Based on these outcomes, the PPV of TST would be 61%. Of all 380 FBPs with LTBI, 95 (or 25%) would be missed.

The LCA method was applied to the same hypothetical cohort, but IGRAs were used in this analysis. Based on IGRA sensitivity of 71%, positive results would be detected in 270 of all 380 FBPs with LTBI. Based on IGRA specificity of 99%, negative results would be detected in 614 of all 620 FBPs without LTBI. Of 276 FBPs with positive IGRA results, 6 (or 2%) would not have

LTBI. Based on these outcomes, the PPV of IGRAs would be 98%. Of all 380 FBPs with LTBI, 110 (or 29%) would be missed.

In a cohort of 463 foreign-born children <5 years of age, the LCA method estimated the LTBI prevalence at 4.2%. The sensitivity and specificity of TST and IGRAs were nearly the same as those in FBPs \geq 5 years of age. However, the PPVs in the foreign-born pediatric population were much lower: 10.2% (TST), 73.8% (QFT), and 71.9% (T-SPOT). Based on these outcomes, 9 out of 10 foreign-born children <5 years of age with a positive TST result would not have LTBI.

In a cohort of 1,230 U.S.-born HIV-infected persons \geq 5 years of age, the LCA method estimated the LTBI prevalence at 4.8%. The sensitivity of the three tests in this population was much lower than in FBPs \geq 5 years of age and ranged from 52% (TST) to 69.3% (QFT). The specificity of the three tests in this population remained high and ranged from 96.1% (QFT) to 99% (T-SPOT). The PPVs in the U.S.-born HIV-infected population \geq 5 years of age was much lower than in FBPs \geq 5 years of age: 42.7% (TST), 47.3% (QFT), and 75.3% (T-SPOT).

TBESC illustrated the impact of a small difference in the specificity of IGRAs on a low-prevalence population. A hypothetical cohort of 1,000 U.S.-born HIV-negative persons \geq 5 years of age with a 4% LTBI prevalence was used in this analysis. A sensitivity rate of 92% was used for both IGRAs, while the specificity rate was slightly modified. The small change resulted in a significant impact: PPV of 49% with 96% specificity for IGRA-1 versus PPV of 79% with 99% specificity for IGRA-2. Due to limited disease in a low-prevalence population, a positive result likely would be false-positive. Tests with higher specificity rates would be particularly relevant for U.S.-born NHANES populations, U.S.-born persons with HIV, but no other risk factors for exposure, and other low-risk groups.

Overall, TST was extremely limited in predicting LTBI in FBPs \geq 5 years of age. Both QFT (97.6%) and T-SPOT (98.6%) had high PPVs. The LCA method estimated LTBI prevalence at 4% in foreign-born children <5 years of age. The PPV was 10% with TST results \geq 10 mm. Nearly all positive TST results were false-positive. Based on these data, TBESC recommends either serial testing (TST followed by QFT/T-SPOT) or QFT/T-SPOT as the initial screening test in foreign-born children <5 years of age.

The LCA method estimated LTBI prevalence at 4.8% in U.S.-born HIV-infected persons \geq 5 years of age. This prevalence is slightly higher than the estimated prevalence of 2.8% in the general U.S.-born/NHANES population. The low PPVs for both TST and QFT might result in unnecessary treatment. T-SPOT had the highest specificity and PPV in this population. The low sensitivity of all three tests might result in missed diagnoses. These data highlight the need for better LTBI diagnostic tests and/or testing strategies.

Dr. Ho concluded her update by informing ACET of TBESC's next steps and other research initiatives.

- TBESC will continue to use the LCA/Bayesian analysis to determine whether changing the current cutoff points or performing sequential testing would have an impact on testing specific populations.
- The number of indeterminate or invalid results in the LTBI study was extremely low (~1%-2%), even in the pediatric and HIV-infected populations.
- TBESC's other ongoing research projects include determining the reproducibility of T-SPOT, continuing to develop STEMS, and conducting analyses to compare QFT-Plus to other tests. QFT-Plus is the fourth generation of QFT and already has been approved in Europe. The assay is pending FDA approval in the United States at this time.

ACET Discussion: TBESC LTBI RESEARCH

- TBESC's recommendation of serial testing with TST followed by IGRAs in foreign-born children <5 years of age is questionable. On the one hand, the LTBI study showed that TST only had a PPV of 10% and generated nearly all false-positive results in foreign-born children. On the other hand, the LTBI study demonstrated much stronger support for using IGRAs than any other guidelines that have been published to date. TBESC should use these data to recommend the use of IGRAs alone as the preferred option for LTBI testing over serial testing with TST followed by IGRAs. Moreover, cost-effectiveness analyses have shown that IGRAs are the primary strategy for LTBI testing in actual clinical practices. Unlike TST, IGRAs do not require a second patient visit to read test results. However, other ACET members noted that clear evidence has not been produced to date to show that IGRAs are superior to TST in low-risk and older populations.
- TBESC should consider publishing the pediatric and adult data of the LTBI study in separate journals. The publication of the study in a pediatric journal will be much more accessible and available to pediatricians, pediatric researchers, and developers of pediatric guidelines and policies.
- TBESC is still conducting the LTBI study, but follow-up activities should be considered at this time. Most notably, additional research might need to be conducted to produce a full paradigm shift. Providers have been extremely reluctant or unwilling to date to use IGRAs in children <5 years of age. Due to the expense and enormous scope of TBESC's LTBI study with ~12,000 participants at 13 U.S. sites, this research design is not likely to be replicated. However, a potential follow-up activity could be for NTCA and other partners to identify and compile existing databases from health departments, refugee programs and other sources to validate the TBESC findings.

Dr. Ho understood ACET's concerns regarding TBESC's recommendation of serial testing with TST followed by IGRAs. She clarified that this option was suggested to address realistic programmatic issues in the field. For example, the higher cost of IGRAs and other considerations might prohibit some TB programs from using these assays. She reiterated that TBESC would pilot the sequential testing strategy to determine its feasibility in TB programs.

Dr. Ho explained that TBESC’s recently published manuscript on the LTBI study includes all three populations. In response to ACET’s suggestion, she confirmed that TBESC would publish a separate pediatric manuscript because the number of children enrolled in the study has increased.

Day 1 Summary/Preparation for the ACET Business Session

Barbara Cole, RN, MSN, PHN, ACET Chair
 TB Controller
 Riverside County (California) Department of Public Health

Ms. Cole noted that based on the presentations on day 1, DTBE has been extremely responsive to ACET’s requests for overviews and updates to inform its decision-making and formal guidance. She thanked DTBE leadership and staff for their informative presentations.

Ms. Cole summarized the presentations and pointed out several items for ACET to consider placing on future agendas for additional discussion, updates and/or formal action if needed.

Current Agenda Item	Potential Future Agenda Item
DTBE Director’s Report	Overview of DTBE’s study on self-administration of the 3HP regimen.
	Update on the role of whole-genome sequencing in the 14% of genotyped U.S. TB cases that contributed to recent transmission.
	Periodic updates on TBTC Study 31 as preliminary data are collected and reported.
TB in Correctional Settings	ACET’s input to the DTBE RVCT Workgroup on potential new variables to add to the RVCT form to capture data on TB transmission in correctional settings, such as incarceration history.
TB in Correctional Settings	ACET’s discussion on TB/diabetes co-morbidity and the impact of decreased state and local public health funding on TB testing and surveillance rates.
Essential Components Workgroup	Update by the workgroup on revising and finalizing <i>Essential Components of a Public Health Tuberculosis Prevention, Control and Elimination Program</i> .
TB Emergency Drug Stockpile	Follow-up discussion by the TB Drug Supply Workgroup on various definitions of “drug shortages” (e.g., distribution versus manufacturing issues).

Current Agenda Item	Potential Future Agenda Item
NCHHSTP Director's Report	Update on DSTDP's efforts to decrease the enormously high STD rates, particularly the rise in syphilis among women that has led to an increase in congenital syphilis rates.
	ACET's discussion on potential strategies for DASH to engage new partners to increase its focus on TB in youth and adolescents.
	ACET's discussion on whether TB could be included in CDC's list of Winnable Battles to allow NCHHSTP to publish a TB-focused <i>Vitalsigns</i> TM report, including the current status of TB in the nation, past accomplishments and major gaps.
	Update on DTBE's ongoing efforts to develop and link LTBI clinical decision support tools to EMRs.
	ACET's discussion on its potential role in ensuring that state and local TB programs disseminate messaging and tools to clinicians and impacted communities.
	ACET's discussion on its potential role in assisting DTBE to launch a national communications campaign to publicize the new USPSTF recommendation on LTBI screening.
	NEEMA Projects
ACET's discussion on replacing "targeting testing" with other language in its recommendations and guidance documents to avoid stigmatizing or discriminating against FBPs and undocumented immigrants.	
ACET's discussion on potential strategies and messaging to increase the interest of legislators in TB, such as documenting the cost of the number of TB cases averted and describing TB-related deaths in their individual communities.	
ACET's discussion on whether the political climate is appropriate to reaffirm and resubmit its previous resolution to the new HHS Secretary on overseas TB screening and treatment of all visa holders.	
LTBI Demonstration Project	ACET's discussion on system changes and other approaches to facilitate national scale-up of the LTBI demonstration project in Lynn, Massachusetts.
ConOps for LTBI Reporting	ACET's follow-up discussion and formal guidance on DTBE's proposed approach.
TBESC LTBI Study	Periodic updates as additional data are collected and published.

With no further discussion or business brought before ACET, Ms. Cole recessed the meeting at 4:21 p.m. on December 12, 2016.

Opening Session: December 13, 2016

Dr. LoBue conducted a roll call to confirm the attendance of the ACET voting members, *ex-officio* members and liaison representatives (or their alternates). He announced that ACET meetings are open to the public and all comments made during the proceedings are a matter of public record.

Dr. LoBue reminded the ACET voting members of their responsibility to disclose any potential individual and/or institutional conflicts of interest for the public record and recuse themselves from voting or participating in these matters. None of the ACET voting members publicly disclosed any individual or institutional conflicts of interest for the record that were new or different than those declared on day 1 of the meeting.

Dr. LoBue confirmed that the 19 voting members and *ex-officio* members (or their alternates) in attendance constituted a quorum for ACET to conduct its business on December 13, 2016. He reconvened the proceedings at 8:30 a.m. and welcomed the participants to day 2 of the ACET meeting.

ACET BUSINESS SESSION

Barbara Cole, RN, MSN, PHN, ACET Chair

TB Controller

Riverside County (California) Department of Public Health

Ms. Cole opened the Business Session and facilitated a review of old and current business items that warranted ACET's formal action at this time or further discussion in the future.

Business Item 1: Approval of Previous ACET Meeting Minutes

A motion was properly placed on the floor by Dr. Jeffrey Starke and seconded by Dr. Lisa Armitige for ACET to approve the previous meeting minutes.

ACET unanimously approved the Draft August 24, 2016 Meeting Minutes with no further changes or discussion.

Business Item 2: ACET's Responses to CDC's Previous Requests for Advice

Ms. Cole announced that ACET has not responded to CDC's previous requests for advice on six key topics. She opened the floor for ACET's review, discussion and action steps on the six outstanding issues.

1. What are ACET's recommended strategies to monitor the impact of the Zika response on state and local jurisdictions?

ACET Discussion

- Several ACET members described the impact of the Zika response on their state and local TB programs.
 - Drs. Starke and Armitige announced that the first locally transmitted case of Zika recently was reported in Cameron County, Texas.
 - Dr. Lauzardo reported that the TB program in South Florida was required to make minimal staffing changes due to local transmission of Zika. Zika also had an impact on TB staff in the Southeastern National Tuberculosis Center because Puerto Rico is one of the catchment areas in the Regional Tuberculosis Training and Medical Consultation Center (RTMCC) that is housed at the University of Florida.
 - Dr. Ahuja reported that ~20 TB personnel from New York City routinely have been deployed to conduct emergency response activities related to Zika over the past 18 months. Trainees of CDC's two-year Public Health Associate Program who have been assigned to New York City also have been deployed to Puerto Rico and other jurisdictions to conduct Zika response activities.
 - Dr. Elson reported that ICE developed and regularly updates policies in accordance with CDC guidance. Most notably, CDC's screening algorithms are applied to pregnant women in ICE custody who have traveled to Zika-endemic areas.
 - Ms. Cole reported that she has been involved in Zika response activities as the CD Controller for Riverside County, California.
 - Some ACET members noted that laboratory staff has been shifted in certain jurisdictions to meet the demand for reference services and testing of Zika samples.

ACET Action Steps

- ACET will raise the following points in its 2017 report to the new HHS Secretary. Policymakers should be educated on the public health impact of globalization with a key message: "Infectious diseases do not respect borders." Surveillance should be increased and collaborations with international aid agencies should be strengthened. The United States will benefit from assisting other countries with their infectious

disease problems. MDR-TB should be included in the global health security agenda along with the Zika and Ebola viruses as an additional emerging global threat.

2. What are ACET's recommendations to improve the TB funding formula? For example, should LTBI be a part of the TB funding formula? (Ms. Cole limited the amount of time devoted to this topic. She noted that ACET would engage in an in-depth discussion on DTBE's request for advice on its proposed ConOps for LTBI reporting.)

ACET Discussion

- Dr. Davidson confirmed that the DTBE/NTCA Funding Formula Workgroup expects to submit its recommendations to CDC by August 2018 to become effective in January 2020. The workgroup has discussed and considered, but has not yet made a decision on whether LTBI should be a part of the TB funding formula. The workgroup might be in a position to present its preliminary recommendations to ACET by the April or August 2017 meeting. In the interim, NTCA has initiated a preliminary analysis of resources that would be required for systematic LTBI reporting, surveillance and follow-up.
- Dr. Ahuja added that NTCA currently is identifying case definitions and a practical data collection mechanism for LTBI reporting, particularly since reporting greatly varies across jurisdictions (e.g., full, partial or no LTBI reporting).

ACET Action Steps

- ACET will provide feedback on a more complete draft of the TB funding formula that will be presented during the December 2017 meeting.

3. What is ACET's advice on TB molecular testing?

ACET Discussion/Action Steps

- ACET noted that DTBE presented a comprehensive update on molecular testing during the August 2016 meeting. The update included details on DTBE's new study to better understand the implications of discordant results between molecular and growth-based testing on clinical decision-making.

ACET Action Steps

- ACET agreed that no formal action is needed on this topic at this time. DTBE expects to present preliminary results of its TB molecular testing study during the August 2017 ACET meeting.

4. What are ACET's recommendations regarding the inclusion of TB in the list of CDC's "Winnable Battles?"

ACET Discussion

- Some ACET members saw no purpose in addressing this topic at this time. Most notably, the list of Winnable Battles is an initiative that was developed by the current CDC Director. The new CDC Director might create an entirely new list of Winnable Battles or completely eliminate this initiative. ACET should revisit this issue and package thoughtful messaging after the official appointments of the new HHS Secretary and CDC Director.
- Other members were in favor of ACET promoting a global TB Winnable Battle regardless of CDC's new leadership. The prevention of childhood TB morbidity and mortality can be a winnable battle with current resources. CDC should maintain its global focus on treating children who are contacts of TB cases in high-burden countries.
- ACET should present scientific data and use the criteria that CDC has established to frame TB as a public health issue for a Winnable Battle. One, TB addresses the leading causes of death and disability. Two, TB is supported by solid evidence-based prevention and treatment interventions that can be broadly implemented, but this infectious disease also can be cured. Three, CDC's intensive focus and efforts can have a significant impact on TB in a "relatively" short period of time. ACET made a comparison between an existing Winnable Battle and TB to support its case. On the one hand, obesity is a long-term aspirational goal that will require behavioral changes and the availability of healthy foods. On the other hand, TB is an infectious disease that already is supported by solid prevention interventions and treatment.
- ACET should continue its efforts to include TB in CDC's list of Winnable Battles to increase advocacy, engage communities and galvanize support across the country. In the event that the new CDC Director does not support or maintain the Winnable Battles framework, however, ACET should direct its focus toward new TB funding, targets and priorities for 2017 and beyond (e.g., new TB tools, treatment and research/ development). ACET described two resources that should be used in its ongoing efforts to elevate the public profile of TB: (1) the National Action Plan for Combating MDR-TB to strengthen TB programs in all states and (2) the September 2016 USPSTF recommendation encouraging providers to test for LTBI in populations at increased risk.
- ACET should link TB to CDC's broader public health issues that are top priorities at this time, such as social determinants of health, healthy living, health promotion and AMR. In the broad "healthy living" framework, for example, diabetes can be used to establish a clear linkage between TB and obesity. Moreover, ACET should consider whether the prevention of MDR-TB and other domestic TB issues could benefit from the tremendous resources CDC is investing in AMR and healthcare-associated infections.

ACET Action Steps

- ACET will revisit this topic after the new CDC Director decides whether to retain, modify or eliminate the current list of Winnable Battles. ACET will determine its next steps at that time.

5. What are ACET's recommended strategies to monitor TB rates in U.S. territories?

ACET Discussion

- ACET agreed to table this topic until the April 2017 meeting.

ACET Action Steps

- None

6. What is ACET's advice regarding the future of the Affordable Care Act (ACA) and its potential impact on the USPSTF (Grade B) LTBI screening recommendation?

ACET Discussion

- ACET described several important issues that would need to be addressed before formal action could be taken on this topic.
 - January 1, 2017 is the effective date of the USPSTF recommendation and the removal of co-pays and deductibles.
 - The level of awareness of the USPSTF recommendation among PCPs and payers is uncertain at this time.
 - CDC already has issued a request to CMS to review and implement the USPSTF recommendation in Medicare/Medicaid populations beginning in 2017.
 - The ability to legally enforce the USPSTF recommendation might be limited due to timing issues. The effective date of the USPSTF recommendation is January 1, 2017, but payers might delay actual implementation until the new Administration makes a decision on the ACA.
 - Reimbursement for LTBI screening is questionable, particularly in non-Medicaid expansion states, if Congress redesigns Medicaid as a Block Grant Program.
- ACET's emphasis on the potential impact of changes in the ACA should focus on TB elimination rather than on the USPSTF recommendation. If changes in the ACA reduce the U.S. insured population by 20 million persons, for example, the national TB elimination goal would be much more difficult to achieve due to fewer opportunities for TB/LTBI testing and treatment.

ACET Action Steps

- ACET will revisit this topic after the incoming Administration announces its decision to retain, modify or repeal the ACA. ACET will determine its next steps at that time.

7. *Additional outstanding issue:* What is ACET's advice on improving overseas screening of TB and other diseases of public health significance, including persons with work or student visas as well as mandatory LTBI screening prior to U.S. entry?

ACET Discussion

- Dr. LoBue advised ACET to schedule an update by the CDC Division of Global Migration and Quarantine (DGMQ) on the April 2017 meeting agenda before taking formal action on this topic. He conveyed that plans are underway in DGMQ to revise the overseas TB technical instructions.
- ACET emphasized the need for CDC to engage other relevant federal partners in its efforts to improve overseas TB screening, particularly the Occupational Safety and Health Administration.

ACET Action Steps

Action	Description
Chair's call for a vote	Dr. Michael Lauzardo properly placed a motion on the floor for ACET to invite DGMQ to present an update during the April 2017 meeting, including the regulatory and legislative requirements involved in overseas screening of TB and other diseases of public health significance. Dr. Lisa Armitige seconded the motion.
Outcome of vote	The motion was unanimously passed by 10 ACET voting members.
Next steps	Ms. Cole will designate an ACET member to serve on the workgroup that DGMQ has established to revise the overseas TB technical instructions.

Business Item 3: ACET's Advice on the Proposed LTBI Reporting ConOps

Ms. Cole returned to DTBE's request on the previous day for ACET's feedback on the proposed ConOps for LTBI reporting, the promotion of LTBI surveillance to TB partners and stakeholders, and the potential next steps.

Prior to ACET's discussion, Dr. LoBue proposed an operational approach for LTBI reporting for the members to consider. DTBE would identify, clearly define and obtain consensus on a minimum core set of LTBI data variables to collect. The core set of data variables would serve as a minimum standard to ensure uniformity in LTBI reporting across the country. The national LTBI surveillance system housed at CDC would be designed to only accept data variables that meet DTBE's definitions and have a reasonable assurance of data completeness and quality. Jurisdictions would have the opportunity to submit LTBI data to CDC with STEMS or a completed short form of the core set of data variables.

ACET DISCUSSION: PROPOSED CONOPS FOR LTBI REPORTING

- ACET expressed strong support of the operational approach proposed by Dr. LoBue. However, several members conveyed that DTBE's close collaboration with partners should be a key component in designing the LTBI reporting system. Most notably, the Council of State and Territorial Epidemiologists (CSTE) releases the List of Nationally Notifiable Conditions each year. The LTBI case definition could be presented during the 2017 CSTE conference for consideration. Jurisdictions widely use the CSTE list to identify specific conditions that their health departments will report to CDC.
- ACET discussed the possibility of submitting a formal resolution in support of mandatory LTBI reporting. Some members noted that the existing evidence base would support this recommendation, but local capacity, expertise and multiple partners in diverse settings are not available at this time to actually implement mandatory LTBI reporting in the field. The members proposed an incremental, phased approach to overcome this barrier.
 - Phase 1 would be "recommended," "encouraged" or "optional" LTBI reporting with a standard case definition for a two-year period.
 - Phase 2 would be an evaluation of the phase 1 outcomes. Most notably, the types of LTBI data that were reported to CDC would be analyzed. The level of staff time, efforts and resources that were required to improve the quality of the data, make meaningful and informed decisions, and manage LTBI surveillance would be determined.
 - Phase 3 would be decision-making on the feasibility of mandatory LTBI reporting based on the phase 2 evaluation findings.
- DTBE and ACET should inform its decision-making on the ConOps for LTBI reporting by reviewing the [Global Consultation on the Programmatic Management of Latent Tuberculosis Infection report](#). WHO and its partners convened the global consultation in April 2016 in Seoul, Korea. The report includes several recommendations for national TB programs in low-burden countries, including:
 - Consider making LTBI a notifiable condition by assessing national legal and policy frameworks to ensure that LTBI cases are properly documented and reported, as well as to assess the impact of programmatic implementation.
 - Gather information about best practices from other low-burden countries to strengthen programmatic implementation. For example, consider the electronic surveillance used in the Netherlands, the use of surveillance officers in the Republic of Korea, and the cost-effectiveness analysis of screening immigrants for LTBI used in the United Kingdom.
- ACET acknowledged that national reporting does not play a role in improving or eliminating a disease. Instead, national reporting serves as a tool to initiate actions and measure progress in a particular disease or condition. As a result, DTBE's next steps in the ConOps for LTBI reporting should be to:

- Collect baseline data on the number of states that currently report LTBI data, but still need guidance and expertise in this area.
 - Determine resources that will be needed for TB programs to clean raw data for submission to a national LTBI reporting system.
 - Collaborate with professional societies to identify specific data elements for TB programs to effectively collect LTBI data.
 - Estimate the cost and burden of LTBI reporting on TB programs.
- DTBE's proposed ConOps for LTBI reporting appears to overlook an important interim step in TB elimination. Health departments should first be encouraged to track whether persons with TB infection in their communities are being identified, treated and cured. The focus should shift to mandatory or voluntary LTBI reporting only after these data have been collected. Several members proposed potential strategies to make progress in this area.
 - ACET should submit a formal resolution to CDC for states to gather this information. However, health departments would need a great deal of technical assistance from community partners to identify, reach and treat at-risk populations for TB at the local level.
 - TBESC will soon pilot a study at sentinel sites to enhance capacity to collect these types of data in communities.
 - The availability of IGRAs has led to positive changes in terms of analyzing LTBI data and shifting to a laboratory-based reporting framework that does not require the identification of TST results.
 - The Colorado Department of Public Health and Environment has implemented a successful model that funds local jurisdictions to adhere to a formula based on the number of active TB cases treated and the number of persons with LTBI who completed treatment. DTBE should determine whether the Colorado model could be scaled up nationally.
- ACET described two potential challenges or unintended consequences associated with mandatory LTBI reporting.
 - Mandatory LTBI reporting would burden correctional and detention facilities with a responsibility to screen large, highly mobile populations that are in custody. These facilities also are required to notify the receiving jurisdiction and perform specific follow-up activities after persons with LTBI are released from custody. Overall, correctional and detention facilities are not funded to conduct public health activities.
 - The purpose of a mandatory LTBI reporting system might be misunderstood or misused and possibly could lead to testing and treatment of low-risk, LTBI-negative persons. Most notably, LTBI treatment of individuals with false-positive test results could cause harm or adverse events. As CDC's group of external TB experts, ACET should provide ongoing advice and guidance on appropriate populations for LTBI testing and treatment.

- Compliance with current federal mandates for LTBI reporting is a condition of receiving TB CoAg funds. Most notably, LTBI is captured in ARPEs and other existing sources to evaluate the performance of programs in conducting contact investigations, such as diagnosing LTBI and ensuring the completion of therapy. LTBI prevalence is measured based on the proportion of contacts with LTBI who initiate and/or complete treatment. CDC's EDN includes a large LTBI reporting database and is used as a federal reporting mechanism for B notification of refugees. ACET should make a decision on whether the current federal mandates should be modified to collect LTBI data in a different, simpler, more streamlined and useful manner. For example, ACET should explore whether LTBI testing and reporting should be targeted to all residents of a state or FBPs only and if CDC should collect LTBI data from the public and/or private sector.
- LTBI reporting should be closely linked to CDC's screening recommendations, particularly to provide clear guidance to non-public health department professionals.
- Clear guidance, messaging and education should be developed and disseminated to engage and promote LTBI testing and reporting among PCPs.

Dr. LoBue responded to ACET's comments and suggestions in two key areas on DTBE's proposed ConOps for LTBI reporting. First, ACET advised DTBE to add LTBI to the CSTE List of Nationally Notifiable Conditions, but CSTE was not particularly enthusiastic about this approach in its previous discussions with DTBE. Based on ACET's suggestion, however, DTBE will revisit this issue with CSTE at this time.

Second, ACET's descriptions of potential difficulties, unintended consequences or new challenges will serve as excellent guidance if states shift to mandatory LTBI reporting. For example, the submission of "noisy" data to CDC (e.g., serial testing of healthcare workers or unnecessary LTBI testing in occupational settings) would be detrimental to a national LTBI surveillance system.

Ms. Cole concluded the discussion by describing ACET's next steps in providing advice on DTBE's proposed ConOps for LTBI reporting. ACET will gather additional information after NTCA presents its update during the April 2017 meeting. ACET will continue its discussion and make a decision at that time on whether a resolution or other formal action is warranted. ACET's comprehensive feedback provided during the current meeting will be revisited.

Business Item 4: ACET Workgroup Reports

Ms. Cole opened the floor for the ACET Workgroup chairs to present their reports.

Update by the TB Drug Supply Workgroup

Jennifer Cochran, MPH

Director, Division of Refugee Immigrant Health and Tuberculosis Prevention
Massachusetts Department of Public Health
ACET Member & Workgroup Chair

Ms. Cochran covered the following topics in her update to ACET on the workgroup's recent activities. The workgroup has been meeting since March 2016 to fulfill its charge of "developing recommendations that will address challenges related to ensuring an uninterrupted and affordable supply of essential drugs to treat TB/LTBI in the United States." The workgroup's discussions to date have focused on a high-level TB drug supply; the purchase and distribution of TB drugs at the programmatic level; and the pricing of and access to TB drugs.

The workgroup identified several challenges related to the TB drug supply. In terms of the management of the TB drug supply, manufacturers have stock-out vulnerabilities. In October 2014, for example, nine out of 15 standard TB drugs were only available through sole sources in the United States. In terms of the purchase of TB drugs, constraints have been reported in the public sector. The traditional practice of TB programs following state procurement processes can limit purchasing options. Moreover, just-in-time purchasing is a standard business practice. Allocation systems that are used in shortages can result in some programs receiving an extremely low or insufficient level of TB drugs.

The workgroup explored three major options to address current problems in the TB drug supply.

- CDC recently established a TB emergency drug stockpile, but the funding for this effort is for two years only.
- The Global Drug Facility (GDF) is available to supply FDA-approved TB drugs to the United States, but the workgroup emphasized the need to address logistical problems and explore potential opportunities to expand the GDF. The workgroup is considering two key questions in this regard. First, should U.S. distributors purchase approved drugs for the domestic market? Second, should support be provided to U.S. producers to sell TB drugs to the GDF?
- A centralized, non-governmental purchaser for the U.S. market could be designated to allow for a "rolling" stockpile and alleviate issues related to the importation of drugs. With this approach, however, TB programs would need to modify their ordering practices and implement pricing controls.

The workgroup engaged in an in-depth discussion on TB drug pricing. Access to the Health Resources and Services Administration's 340B Drug Discount Program for TB is connected to federal funding from the CDC TB CoAg, but state and local health departments must adhere to

extremely complex and daunting rules. Because GDF prices of TB drugs are much lower than those of the 340B Program, administrative burdens on state and local health departments might be alleviated if the GDF becomes an option. The workgroup raised the possibility of developing and facilitating group buying organizations to negotiate TB drug pricing. For example, the AIDS Crisis Task Force negotiates drug pricing with manufacturers for its member states through the AIDS Drug Assistance Program (ADAP).

The workgroup described several barriers to increasing access to TB drugs. Various settings offer TB care and treatment, including public health clinics, primary care settings and specialty care facilities. If health insurance is relied on to cover the cost of TB drugs, deductibles, co-pays and other out-of-pocket expenses could be significant and unpredictable. Federal and state formularies do not cover all TB drugs. The increasing demand for LTBI treatment is expected to have an impact on access to TB drugs.

The workgroup recently reviewed the October 2016 *JAMA* publication, “Pharmaceuticals and Public Health.” The discussion primarily focused on three options highlighted in the paper, but the workgroup agreed that options 1 and 2 likely would be most feasible for ACET’s purposes.

1. The federal government should allow a subset of payers to join together, commit to a broad treatment strategy as part of a public health campaign, and obtain lower prices. This option would require legislation that is similar to ADAP.
2. The federal government should conduct price negotiations and purchase large quantities of pharmaceuticals. This option would be similar to the Vaccines for Children Program.
3. The federal government should use its own facilities or commission other manufacturers to make pharmaceuticals without regard to manufacturer patents.

Ms. Cochran concluded her update by announcing that the workgroup will present its draft recommendations for ACET’s consideration during the August 2017 meeting. She thanked the workgroup members and CDC staff for contributing their valuable time and expertise to this process.

ACET DISCUSSION: TB DRUG SUPPLY WORKGROUP REPORT

Ms. Donna Wegener, Executive Director of NTCA, informed ACET that the Comprehensive Tuberculosis Elimination Act of 2008 has not been reauthorized to date. As a result, an opportunity exists at this time to propose legislative language that would allow for the establishment of a TB Drug Task Force and/or the development of an “ADAP-like” model for TB drugs. During informal discussions with NTCA, Congressional staff expressed an interest in reauthorizing the TB legislation.

To make further progress in this area, Ms. Wegener conveyed that NTCA will invite colleagues from ACET and the Treatment Action Group (TAG) to attend a Congressional briefing in February or March 2017 before the proposed legislative language is introduced in the spring of

2017. She requested ACET’s support and endorsement of NTCA’s plans to modify the Comprehensive Tuberculosis Elimination Act of 2008.

Some members were in favor of ACET going on record to express its formal support of increasing the availability of TB drugs and resolving problems related to TB drug pricing to improve national TB control efforts. Other members raised two important issues before Ms. Cole called for a vote.

- NTCA’s plan to propose new legislative language for the reauthorized Comprehensive Tuberculosis Elimination Act of 2008 that would call for the development of an “ADAP-like” model for TB drugs is commendable. However, ADAP accounts for \$1.7 billion of the Ryan White HIV/AIDS Program budget. The legislative and budgetary differences between HIV/AIDS and TB are major issues that need thoughtful consideration. ACET should take formal action on NCTA’s proposed legislative strategy after the Congressional briefing.
- ACET should not take formal action at this time on NTCA’s request for support of its legislative proposals for a new TB Drug Task Force and/or an “ADAP-like” model for TB drugs. ACET needs more time to fully review and consider the other options presented by the TB Drug Supply Workgroup. For example, the use of the GDF as a mechanism to allow for the importation of TB/LTBI drugs might be more amenable to the incoming Administration.

Action	Description
Chair’s call for a vote	Dr. Robert Horsburgh properly placed a motion on the floor for ACET to formally express its support of programs, such as ADAP, that have the ability to increase the availability of TB drugs and decrease their costs to ensure access by all patients in need. Dr. Ana Alvarez seconded the motion.
Outcome of vote	The motion was unanimously passed by 10 ACET voting members.

Update by the Congregate Settings Workgroup

Lisa Armitige, MD, PhD
 Medical Consultant, Heartland National Tuberculosis Center
 University of Texas Health Center at Tyler
 ACET Member & Workgroup Chair

Dr. Armitige covered the following topics in her update to ACET on the workgroup’s recent activities. The workgroup requested support for its CDC members to attend more national

meetings of organizations that serve homeless and corrections populations. Efforts are underway to increase representation on the workgroup from national organizations that represent these two groups.

The workgroup was pleased that CDC responded to its request to endorse the use of 3HP in correctional settings. The CDC.gov website does not provide guidance at this time on administering 3HP in correctional settings. The workgroup is now focusing on implementation activities in this regard, such as developing clear messaging and determining a process for correctional settings to administer 3HP.

The workgroup acknowledged that TB messaging is not fully reaching providers who serve homeless and corrections populations. For example, corrections webpages on the CDC.gov website include several helpful links to toolkits and other resources, but more user-friendly information and direct guidance for the provider community are still needed. The workgroup's next steps will be to propose new features to update and redesign CDC's corrections webpages.

The workgroup is now requesting ACET's feedback on its recommendation for CDC to play the lead role in coordinating large multi-state contact investigations for federal inmates. Multiple agencies and federal/non-federal correctional institutions are required to conduct multi-state contact investigations when the contacts of federal detainees with infectious active TB relocate to different areas throughout the country. The current process has led to confusion and limited oversight because no single public health agency is responsible for coordinating the entire investigation. CDC typically relies on BOP and ICE to coordinate multi-state contact investigations, but these agencies have no resources or authority to undertake this effort.

Dr. LoBue responded to the workgroup's recommendation and clarified that CDC has no authority, specific role or staff to "lead" contact investigations. He explained that CDC would continue to facilitate contact investigations in collaboration with individual states. For example, CDC maintains a list of TB program consultants in each state who serve as points of contact to distribute accurate information to TB programs to conduct contact investigations and perform any other necessary follow-up. He confirmed that CDC also has a clear role in assisting with the coordination of follow-up if the TB case is diagnosed in one state and the contacts relocate to other states.

Dr. LoBue reminded ACET that a TB Epi-Aids is limited to CDC's temporary site visit and assistance to identify and prioritize populations for testing. CDC is not involved with the major aspects of a contact investigation, such as performing TST and initiating LTBI treatment.

ACET DISCUSSION: CONGREGATE SETTINGS WORKGROUP REPORT

- Responsibility for contact investigations in correctional settings should be based on the specific setting. For example, state TB programs should be responsible for contact investigations in their individual states. State TB programs also should provide expertise

and guidance if contact investigations are initiated in local jails. However, states have no jurisdiction for contact investigations in federal facilities or a coordinating role for multi-state contact investigations.

- The suggestion to clearly define roles and responsibilities for contact investigations based on the type of correctional setting will be much more complex and problematic at the federal level. For example, non-federal correctional facilities that are privately owned and operated also house federal detainees. A federal agency could contract a state prison or local jail to manage TB in federal detainees, but these institutions are free to establish contractual agreements with private entities. Moreover, federal facilities have no legal authority to conduct contact investigations outside of their medical clinics. Due to this limitation, federal facilities have no jurisdiction to address TB or other occupational health issues of staff employed by non-federal, privately owned subcontracted entities.
- States should be solely responsible for coordinating and supervising contact investigations of federal detainees with TB. State health departments are obligated to protect the health of inmates in federal facilities that are housed in their states as well as citizens of the state who are employees.

Ms. Cole summarized the workgroup's next steps based on Dr. LoBue's clarifying remarks and ACET's feedback. The workgroup will modify its draft recommendation as follows: "CDC should play a facilitating role in coordinating large multi-state contact investigations for federal inmates." CDC's role would include notifying TB program consultants when state/local TB programs need to conduct contact investigations of corrections populations or perform any other necessary follow-up. States would ultimately be responsible for the public health of employees and citizens in their communities. The workgroup will proceed with its plans to advise CDC on updating and refining the corrections webpages on the CDC.gov website.

Update by the Child and Adolescent Workgroup

Jeffrey Starke, MD

Professor of Pediatrics, Baylor College of Medicine
Texas Children's Hospital
ACET Member & Workgroup Chair

Dr. Starke covered three topics in his update to ACET on the workgroup's recent activities. However, he pointed out that the minutes of the workgroup's teleconference on December 5, 2016 included much more details and were distributed to ACET for review.

Topic 1: The workgroup extensively discussed several key issues that would need to be considered in the use of IGRAs in children: at-risk children, particular tests to administer, specific pediatric populations to test, and TB risk factors in children. The workgroup reviewed

CDC data that showed 80% of U.S.-born children with TB disease have some type of international relationship. Because 30% of U.S.-born children currently have a foreign-born parent, the workgroup discussed the tremendous burden of characterizing a “foreign-born parent” as a risk factor to test children for TB infection.

The workgroup acknowledged that AAP has agreed not to include foreign-born parents in its algorithm to identify specific pediatric populations for IGRA testing. Moreover, no studies have been conducted to date to demonstrate the impact of expanding IGRA testing to include this population.

The workgroup noted that state, immigration, refugee and health maintenance organization programs throughout the country already have collected a wealth of data on IGRA testing in pediatric populations, including young children 2-4 years of age. The workgroup expressed an interest in compiling these existing datasets to determine the current evidence base. To advance toward implementation, the workgroup explored the possibility of using California’s existing data, resources and programs as a model to gather meaningful IGRA results in children of all ages. The workgroup is not requesting ACET’s formal advice and guidance on this new initiative at this time, but perspectives and insights by individual members would be welcome.

Topic 2: The workgroup raised several concerns regarding the limited availability of TB drug formulations in the United States for pediatric populations. Pediatric formulations that were spearheaded by the TB Alliance are now being adopted by numerous high-burden countries, but these U.S.-funded drugs are not available domestically. The major problem likely is due to efforts by two U.S. manufacturers to obtain active pharmaceutical ingredients from a company that is not licensed or certified by the FDA.

The workgroup discussed the ongoing trial of RPT pharmacokinetics in young children, but the members noted that this formulation also would not be available in the United States. The workgroup hopes to engage the TB Drug Supply Workgroup and TAG in its next steps to address the limited availability of TB drug formulations in the United States for pediatric populations.

Topic 3: The workgroup discussed the lack of uniformity across the country in addressing potential exposures to and outbreaks of TB infection and disease in child care and healthcare facilities. Due to the tremendous variation in conducting TB investigations of pediatric populations in neonatal intensive care units, schools and other settings, the workgroup raised the possibility of developing a standardized methodology, a core set of guiding principles or improved tools that would be helpful to state and local TB programs. The workgroup pointed out that the Heartland National Tuberculosis Center is developing a toolkit on childhood TB that will include information and forms related to outbreak and exposure investigations.

The workgroup acknowledges that new efforts might not be needed. Instead, existing tools and resources to address childhood TB might need to be refined and more widely publicized with a

stronger public health focus and an enhanced scientific evidence base. The workgroup's next steps will be to conduct an environmental scan to identify the current landscape of tools and resources to address childhood TB.

Dr. Ahuja informed the workgroup that New York City would soon publish data on its routine use of IGRAs in children <5 years of age. The workgroup is free to utilize this dataset as a resource in its ongoing research on IGRAs in pediatric populations.

Business Item 5: ACET 2017 Report to the HHS Secretary

Ms. Cole announced that an outline of ACET's 2017 report to the new HHS Secretary was distributed to the members for review, discussion and feedback. Based on the current outline, the report will be divided into six major topics.

- I. Introduction/Legal Basis of ACET
- II. Background of ACET's most recent areas of focus
- III. ACET's 2016 Accomplishments
- IV. ACET's Workgroups
- V. ACET's Priorities for TB Elimination
- VI. Summary (including a request to meet with the HHS Secretary or his/her deputy)

ACET commended Ms. Cole for drafting an excellent outline of its key activities and priorities over the past year. Several members believed that the six topic areas in the draft outline could be expanded to a comprehensive report to introduce ACET to the new HHS Secretary. The members proposed minor revisions to refine the draft outline.

- Section III, bullet 4: Change the language to "Requested at CDC to develop a plan for LTBI surveillance." The purpose of this revision is to broaden the language rather than focus on the legal implications of LTBI reporting.
- Section V, bullet 1: Replace "Maintaining" with "Strengthening" the Public Health Infrastructure. The purpose of this revision is to clearly emphasize the need to enhance the public health infrastructure to respond to emerging threats, such as the Ebola and Zika viruses.
- Section V, bullet 2: Replace "addressing intermittent drug shortages" with "ensuring access to TB drugs for all persons in need" per the Drug Supply Workgroup.
- Section V, bullet 6: Change the language to "Identifying, testing and treating...".
- Section VI, bullet 1: Change the bullet to clarify ACET's specific requests to the new HHS Secretary. The purpose of this revision is to provide more specificity than the current language that calls for a "recap of key points made."

Ms. Cole confirmed that she would review ACET's input and begin expanding the draft outline to develop a full report to the HHS Secretary. She anticipated presenting the draft report to ACET during the April 2017 meeting, but she reminded the members that the report must undergo the CDC clearance process before submission to the HHS Secretary.

In response to Ms. Cole's question, none of the ACET members were opposed to including the new bullet 5 in Section V, "Identifying, testing and treating individuals at risk for TB infection with emphasis on those at higher risk for progression of TB."

Business Item 6: Amended ACET Charter

Ms. Cole announced that CDC responded to ACET's request to amend its charter. The amended charter will allow a TB survivor or a parent of a child with TB to serve as an ACET voting member.

Dr. LoBue reported that in accordance with FACA rules and regulations, CDC published a draft of ACET's amended charter in the *Federal Register* for public comment. He was uncertain of the timeline to finalize the amended charter due to the transition to new leadership, but he did not anticipate any problems in the approval process. CDC would appoint a TB survivor or a parent of a child with TB to serve as a new voting member when a vacancy becomes available on ACET.

Business Item 7: Follow-up on Expanded TB Medical Consultation Services

Alfred Lardizabal, MD
Executive Director
Rutgers Global Tuberculosis Institute

Dr. Lardizabal joined the meeting via teleconference to make a follow-up presentation to ACET on expanded TB medical consultation services. NTCA and a group of RTMCCs formed a workgroup to develop a joint white paper on the need for a formalized approach to TB medical consultation services throughout the country. RTMCCs have a long history of providing TB expertise to TB programs and private clinicians. Over the past 2.5 years, however, RTMCCs have increasingly received requests for consultations on MDR-TB, extensively drug-resistant TB and the management of complex TB cases.

The workgroup identified needs in three areas that must be met to expand the current infrastructure of TB medical consultation services. The first set of needs is additional human resources (e.g., physicians, nurses and administrative support staff) to supplement existing resources. The workgroup compiled consultation data for the call category of “MDR-TB” and the variable of “linked calls” (i.e., multiple calls on the same patient). The workgroup found both of these variables to be strong indicators for longitudinal consultation and management.

Of 473 linked calls over the past 2.5 years that met the workgroup’s criteria, the median number of calls was 2 per patient. The number of all linked calls ranged from 2 to 33 per patient, but 90% of the calls ranged from 2 to 5-7 per patient. The data showed that the proportion of MDR-TB calls significantly increased. However, the workgroup acknowledges that the 473 linked calls included in the analysis might be an underestimate of the actual volume of calls requiring longitudinal consultation. Most notably, five RTMCCs logged in ~15,000 calls from January 2014-July 2016. Complex issues accounted for ~74% of calls that required more than one interaction, including adverse effects, diagnostics, laboratory issues, drug resistance, HIV/TB co-morbidity, MDR-TB, pharmacology issues and TB disease.

The workgroup used the California model of MDR consultation services and other complex TB cases to estimate additional human resources that would be needed to support an expanded consultation infrastructure. Based on projections of ~25 MDR-TB cases and ~15 complex TB cases per year, the workgroup recommended a 0.6 full-time equivalent (FTE) physician, a 0.9 FTE nurse, and a 0.4 FTE administrative staff. However, the volume of cases and cost would vary based on the specific region of the country.

The second set of needs is data and technology. The workgroup recommended a standardized data collection system with identifiers, data points over time, costs and outcomes. The existing database of RTMCCs was developed for tracking purposes only (e.g., the number and type of calls, providers and responses) and has no capacity to share data across sites in real time. The workgroup emphasized the need for the next consultation database to be designed to share EMRs, transfer data and share images.

The third set of needs is services. The workgroup recommended new efforts to identify and create an inventory of care and treatment facilities, including hospitals and laboratories, across the country. The inventory should serve as a national resource that would allow RTMCCs and TB programs to address complex TB cases in a more effective and efficient manner. The inventory also should describe the capabilities and specialties of each facility, such as MDR-TB capacity, surgical expertise and experience in the management of TB drug levels.

The workgroup conducted a literature review and found that no studies have been generated focusing on the cost-effectiveness of RTMCC consultation services. Evaluations conducted over the past 10 years have documented the acceptance and perceived value of RTMCCs among TB programs. Moreover, efforts have been made to analyze the Project ECHO

(Extension for Community Healthcare Outcomes) model in which PCPs use technology to provide consultation and education.

PCPs in New Mexico utilize the Project ECHO infrastructure to support and facilitate access to effective HCV antiviral treatment in underserved communities. These efforts have led to decreases in the lifetime incidence of cirrhosis, decompensated cirrhosis, hepatocellular carcinoma and liver death as well as increases in life expectancy and quality-adjusted life expectancy. Project ECHO is extremely cost-effective overall and has generated cost-savings in 35% of patients (or ~\$3,700 cost-savings per QALY). Additional studies of Project ECHO in other disease areas are necessary and warranted.

Ms. Cole exercised the chair's prerogative and tabled ACET's discussion on the joint NTCA/RTMCC white paper on expanded TB medical consultation services due to time constraints. ACET would make a determination during the April 2017 meeting on whether formal action is warranted on this topic.

Business Item 8: Other Issues

Ms. Cole announced that the CDC Office of Infectious Diseases Board of Scientific Counselors held its most recent meeting in September 2016. A one-page overview of the meeting was distributed to ACET for review.

Dr. Davidson announced that NTCA and Stop TB USA are jointly drafting a memorandum to the Trump Transition Team to highlight domestic TB needs. The memorandum specifically focuses on several key points.

- The need for research and development to improve current TB drug regimens
- A strong statement to support expanded overseas TB screening
- Support for the importation of TB drugs through the GDF
- The role of TB in ongoing AMR efforts

Dr. Davidson reported that a final draft of the memorandum would be circulated to ACET for review the week of December 19, 2016. However, he was aware that ACET could not respond to or take formal action on the draft memorandum until its next public meeting in April 2017. In the interim, he asked the members to consider whether ACET would be willing to draft and submit a similar statement to the new HHS Secretary. With this approach, harmonized messaging on domestic TB issues would be distributed to the Trump Transition Team (through the NTCA/Stop TB USA memorandum) and to the new HHS Secretary (through an ACET position statement).

Ms. Cole advised Dr. Davidson to provide her with key points to consider from the NTCA/Stop TB USA memorandum while she is drafting ACET's report to the HHS Secretary. She confirmed that this item would be placed on the April 2017 meeting agenda for ACET's discussion, input and formal action if warranted.

Business Item 9: Future Agenda Items

Ms. Cole confirmed that the Agenda Setting Workgroup would convene a teleconference to draft an agenda based on the topics ACET proposed over the course of the meeting. The draft agenda would be circulated to ACET for review in advance of the April 2017 meeting.

PRESENTER	AGENDA ITEM
ACET Membership	<p>ACET follow-up discussions, input and formal resolutions (if needed) on outstanding business items:</p> <p><i>April 2017 Meeting</i></p> <ul style="list-style-type: none"> • DTBE's proposed ConOps for LTBI reporting • Inclusion of TB in CDC's current list of Winnable Battles (ACET's next steps will depend on whether the new CDC Director decides to retain, modify or eliminate the Winnable Battles.) • Recommended strategies to monitor TB rates in U.S. territories • The future of the ACA and its impact on USPSTF TB screening recommendations (ACET's next steps will depend on whether the incoming Administration decides to retain, modify or repeal the ACA.) • ACET's 2017 draft report to the new HHS Secretary • Joint NTCA/RTMCC white paper on expanded TB medical consultation services <p><i>August 2017 Meeting</i></p> <ul style="list-style-type: none"> • Preliminary results of DTBE's TB molecular testing study • Draft recommendations by the TB Drug Supply Workgroup <p><i>December 2017 Meeting</i></p> <ul style="list-style-type: none"> • Draft TB Funding Formula
DGMQ	Update on global TB issues, including the regulatory and legislative
ACET Workgroup Chairs	Updates by the TB Drug Supply, LTBI, Congregate Settings, and

Public Comment Session

Peter Davidson, PhD

President

National Tuberculosis Controllers Association

Dr. Davidson made public comments as the NTCA President rather than as an ACET liaison representative. NTCA has longstanding and positive relationships with Congressional staff to address both domestic and global TB issues. NTCA, CDC leadership, and other TB partners and stakeholders participated in a Congressional briefing on December 6, 2016. The briefing was well attended with representation by 19 public health advocacy and policy partners from various organizations as well as 19 Congressional offices. The theme of the briefing was “TB Disease: Tip of the Iceberg.”

Closing Session

Ms. Cole announced the dates of the next three ACET meetings: April 5, 2017 (webinar); August 23, 2017 (webinar); and December 11-12, 2017 (in-person meeting).

The participants joined Ms. Cole in applauding Ms. Margie Scott-Cseh, the ACET Committee Management Specialist, and other NCHHSTP staff for their continued leadership and outstanding support in planning and organizing the ACET meetings.

With no further discussion or business brought before ACET, Ms. Cole adjourned the meeting at 11:53 a.m. on December 13, 2016.

I hereby certify that to the best of my knowledge, the foregoing Minutes of the proceedings are accurate and complete.

Date

Barbara Cole, RN, MSN, PHN
Chair, Advisory Council for the
Elimination of Tuberculosis



Attachment 1: Participants' Directory

ACET Members Present

Ms. Barbara Cole, Chair
 Dr. Ana Alvarez
 Dr. Lisa Armitige
 Ms. Jennifer Cochran
 Dr. Robert Horsburgh, Jr.
 Dr. Eric Houpt
 Dr. Michael Lauzardo
 Dr. Jeffrey Starke
 Dr. James Sunstrum
 Dr. David Warshauer

ACET Ex-Officio Members Present

Dr. Naomi Aronson
 Department of Defense

Dr. Amy Bloom
 U.S. Agency for International Development

Ms. Sarah Bur
 Federal Bureau of Prisons

Ms. Marla Clifton
 U.S. Department of Veteran Affairs
 (Alternate for Dr. Gary Roselle)

Ms. Kali Crosby
 Agency for Healthcare Research and
 Quality

Dr. Karen Elkins
 U.S. Food and Drug Administration

Dr. Diana Elson
 U.S. Department of Homeland Security
 Immigration and Customs Enforcement

Dr. Nadine Gracia
 Office of Minority Health
 U.S. Department of Health and Human
 Services

Dr. Mamodikoe Makhene
 National Institute of Allergy and Infectious
 Diseases,
 National Institutes of Health

Dr. Andrew Sanderson II
 Office of Minority Health
 U.S. Department of Health and Human
 Services
 (Alternate for Dr. Nadine Gracia on Day 2)

Dr. David Weissman
 National Institute for Occupational Safety
 and Health
 (Alternate for Mr. Stephen Martin)

Dr. David Yost
 Indian Health Service
 (Alternate for Dr. Sarah Linde)

ACET Ex-Officio Members Absent

Dr. Anthony Campbell
 Substance Abuse and Mental Health
 Services Administration

CDR Edward Chin
United States Marshals Service

Ms. Caroline Freeman
U.S. Department of Labor,
Occupational Safety and Health
Administration

Dr. Sarah Linde
Indian Health Service

Mr. Stephen Martin
National Institute for Occupational Safety
and Health

Dr. Gary Roselle
U.S. Department of Veteran Affairs

Dr. Bruce San Filippo
U.S. Section, U.S.-Mexico Border Health
Commission

**ACET Liaison Representatives
Present**

Dr. Shama Ahuja
Council of State and Territorial
Epidemiologists

Dr. Robert Benjamin
National Association of County and City
Health Officials

Mr. David Bryden
RESULTS

Dr. Peter Davidson
National Tuberculosis Controllers
Association

Dr. Mayleen Ekiek
Pacific Island Health Officers Association

Mr. Kenyon Farrow
Treatment Action Group

Mr. Suraj Madoori
Treatment Action Group
(Alternate for Mr. Kenyon Farrow on Day 2)

Dr. Robert Morris
National Commission on Correctional
Health

Dr. Howard Njoo
Public Health Agency of Canada

Dr. Ameer Patrawalla
American College of Chest Physicians

Ms. Susan Rappaport
American Lung Association

Dr. Susan Ray
Infectious Disease Society of America

Dr. Randall Reves
International Union Against TB and Lung
Disease

**ACET Liaison Representatives
Absent**

Dr. Fran du Melle
American Thoracic Society

Mr. Eddie Hedrick
Association for Professionals in Infection
Control and Epidemiology

Dr. Ilse Levin
American Medical Association

Mr. John Lozier
National Coalition for the Homeless

Dr. Jennifer Rakeman
Association of Public Health Laboratories

Dr. Gudelia Rangel
Mexico Section, U.S.-Mexico Border Health
Commission

Dr. Michael Tapper
Society for Healthcare Epidemiology of
America

Dr. Lornel Tompkins
National Medical Association

ACET Designated Federal Official

Dr. Philip LoBue
DTBE Director

CDC Representatives

Dr. Deron Burton
Ms. Ann Cronin
Dr. Patricia Dietz
Dr. Neela Goswami
Dr. Alexia Harrist
Dr. Christine Ho
Carla Jeffries, Esq.
Dr. Awal Khan
Ms. Maureen Kolasa
Ms. Kathryn Koski
Ms. Lauren Lambert
Dr. Adam Langer
Ms. Amanda Lankford (Student)
Dr. Rebecca Levine
Mr. Elvin Magee
Ms. Lilia Manangan

Ms. Suzanne Marks
Dr. Jonathan Mermin
Mr. Roque Miramontes
Dr. Thomas Navin
Mr. Robert Pratt
Ms. Margie Scott-Cseh
Ms. Clarisse Tsang
Ms. Thara Venkatappa
Dr. Andrew Vernon
Dr. Wanda Walton
Ms. Rachel Wingard
Dr. Carla Winston
Dr. Jonathan Wortham
Mr. Yanjue Wu

Members of the Public

Mr. Jeff Chrismon
Northrop Grumman (CDC Contractor)

Dr. Jennifer Flood
California Department of Public Health

Mike Sage
Stop TB USA

Ms. Judith Thigpen
California Tuberculosis Controllers
Association

Ms. Donna Wegener
National Tuberculosis Controllers
Association

Mr. Matthew Whipple
Northrop Grumman (CDC Contractor)



Attachment 2: Glossary of Acronyms

Acronym	Full Name
3HP	Three-Month Isoniazid/Rifapentine
9H	Nine-Month Daily Isoniazid
AAP	American Academy of Pediatrics
ACA	Affordable Care Act
ACET	Advisory Council for the Elimination of Tuberculosis
ACHA	American College Health Association
ACTG	AIDS Clinical Trials Group
ADAP	AIDS Drug Assistance Program
AMR	Antimicrobial Resistance
APHL	Association of Public Health Laboratories
ARPEs	Aggregate Reports for Tuberculosis Program Evaluation
ATS	American Thoracic Society
BCG	Bacillus Calmette-Guérin
BOP	Federal Bureau of Prisons
CBOs	Community-Based Organizations
CDC	Centers for Disease Control and Prevention
CHCs	Community Health Centers
CMS	Centers for Medicaid & Medicare
CoAg	Cooperative Agreement
ConOps	Concept of Operations
CR	Continuing Resolution
CSTE	Council of State and Territorial Epidemiologists
DASH	Division of Adolescent and School Health
DFO	Designated Federal Official
DHAP	Division of HIV/AIDS Prevention
DGMQ	Division of Global Migration and Quarantine
DOT	Directly Observed Therapy

Acronym	Full Name
DSTDP	Division of STD Prevention
DTBE	Division of Tuberculosis Elimination
DVH	Division of Viral Hepatitis
EDN	Electronic Disease Network
ELRs	Electronic Laboratory Reports
EMB	Ethambutol
EMRs	Electronic Medical Records
FACA	Federal Advisory Committee Act
F�Ps	Foreign-Born Persons/Populations
FDA	U.S. Food and Drug Administration
FOA	Funding Opportunity Announcement
FQHC	Federally Qualified Health Center
FTE	Full-Time Equivalent
FY	Fiscal Year
GDF	Global Drug Facility
HCP	Healthcare Provider
HCV	Hepatitis C Virus
HHS	U.S. Department of Health and Human Services
ICE	U.S. Immigration and Customs Enforcement
IDSA	Infectious Diseases Society of America
IGRA	Interferon Gamma Release Assay
INH	Isoniazid
IOM	Institute of Medicine
JAMA	<i>Journal of the American Medical Association</i>
LCA	Latent Class Analysis
LCHC	Lynn Community Health Center
LTBI	Latent TB Infection
LTCF	Long-Term Care Facility
<i>M.tb</i>	<i>Mycobacterium tuberculosis</i>
MACET	Massachusetts Medical Advisory Committee for the Elimination of Tuberculosis
MDDR	Molecular Detection of Drug Resistance
MDPH	Massachusetts Department of Public Health
MMWR	<i>Morbidity and Mortality Weekly Reports</i>
MOX	Moxifloxacin
MSM	Men Who Have Sex With Men

Acronym	Full Name
NCHHSTP	National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention
NEEMA	NCHHSTP Epidemiologic and Economic Modeling Agreement
NHANES	National Health and Nutrition Examination Survey
NTCA	National Tuberculosis Controllers Association
PCPs	Primary Care Providers
PPV	Positive Predictive Value
Project ECHO	Extension for Community Healthcare Outcomes
PWID	Persons Who Inject Drugs
PZA	Pyrazinamide
QALY	Quality-Adjusted Life-Year
QFT	QuantiFERON
QI	Quality Improvement
RIF	Rifampin
RPT	Rifapentine
RTMCC	Regional Tuberculosis Training and Medical Consultation Center
RVCT	Report of Verified Case of Tuberculosis
SETC	Society for Epidemiology in TB Control
SSPs	Syringe Services Programs
STEMS	Surveillance for TB Elimination Management System
TAG	Treatment Action Group
TB	Tuberculosis
TBESC	Tuberculosis Epidemiologic Studies Consortium
TBLISS	TB Latent Infection Surveillance System
TBTC	Tuberculosis Trials Consortium
TST	Tuberculin Skin Test
TTT	Targeted Testing and Treatment
UCSF	University of San Francisco, California
USPSTF	U.S. Preventive Services Task Force
WHO	World Health Organization