Controller’s Message

Spring is known as a time for transforming or making changes.

While public health in Kentucky is currently experiencing its own “transformation” we hope you enjoy this edition of The DOT, which highlights some of the KY TB Program’s spring transformations with the introduction of our new website, new staff, summary of the new TB screening method (QuantiFERON Gold Plus), and upcoming educational opportunities.

Emily Anderson, RN, BSN
TB Controller/Program Manager
EmilyA.Anderson@ky.gov
**Hot Topic: New Recommendations from NTCA and CDC**

For serial screening and testing for healthcare personnel, without latent tuberculosis infection (LTBI), please see the excerpt from the National TB Controllers Association (NTCA) Press Release (right). Per these new recommendations, Healthcare agencies will still need to assess which Healthcare Worker (HCW) job series are “at an increased occupational risk for TB exposure or in certain settings if transmission has occurred in the past. Such determinations should be individualized on the basis of factors that might include the number of patients with infectious pulmonary TB who are examined in these areas, whether delays in initiating airborne isolation occurred, or whether prior annual testing has revealed ongoing transmission. Consultation with the local or state health department is encouraged to assist in making these decisions.”

The current KY regulation 902 KAR 20:205 TB Testing for Healthcare Workers (see here) supports the new NTCA/CDC recommendation in that the identified HCW job series shall be listed in the agency TB Infection Control Plan (See Section 2). These individuals will continue to need both annual screening (TB Risk Assessment with a symptoms screen) and testing (by Tuberculin Skin Test (TST) or Blood Assay for *M. Tuberculosis* (BAMT)) (See Section 5).

Smyrna, GA – On May 16, 2019 the National Tuberculosis Controllers Association (NTCA), in partnership with the Centers for Disease Control and Prevention (CDC), released updates recommendations for tuberculosis (TB) screening, testing, and treatment for health care personnel. The updated recommendations are available online at [https://www.cdc.gov/mmwr/volumes/68/wr/mm6819a3.htm](https://www.cdc.gov/mmwr/volumes/68/wr/mm6819a3.htm)

These updated recommendations supplement the existing 2005 guidelines for preventing the transmission of TB in health care settings. NTCA members led the process that brought together public health, academia, infection control, and occupation health stakeholders in a national workgroup to update these important recommendations.

The new recommendations include:

1. TB screening with an individual risk assessment and symptom evaluation at baseline (preplacement)
2. TB testing with interferon-gamma release assays (IGRA) or a tuberculin skin test (TST) for persons without documented prior TB disease or latent TB infection (LTBI)
3. No routine serial TB testing at any interval after baseline in the absence of a known exposure or ongoing transmission
4. Encouragement or treatment for all health care personnel with untreated LTBI, unless treatment is contraindicated
5. Annual symptom screening for health care personnel with untreated LTBI
6. Annual TB education for all health care personnel

The KY TB Program encourages agencies to continue to practice not only *Standard*, but also *Transmission-Based* respiratory precautions in preventing transmission of infectious agents ([https://www.cdc.gov/infectioncontrol/guidelines/isolation/precautions.html](https://www.cdc.gov/infectioncontrol/guidelines/isolation/precautions.html))
Additional resources from CDC on these recommendations:

The MMWR with the updated recommendations are available online at [https://www.cdc.gov/mmwr/volumes/68/wr/mm6819a3.htm](https://www.cdc.gov/mmwr/volumes/68/wr/mm6819a3.htm).

An informational video detailing the updated recommendations is available on the CDC TB Facebook page at [https://www.facebook.com/CDCTB/videos/628328260985176/](https://www.facebook.com/CDCTB/videos/628328260985176/).
Meet our New Staff

Heather Cox joined the Kentucky TB Program as an Administrative Specialist in May 2019. She brings knowledge from a diverse healthcare background, including work at private physician offices, as an EMT, an x-ray technician, and experience with medical coding and billing, among others. Heather lives in Frankfort, KY with her husband Joe and two sons, Kolton and Lukas. She stays busy as a baseball mom. Her duties include – administrate assistant, latent tuberculosis infection (LEBI) data management, and EDN coordination.

Heather Cox
Administrative Specialist
heather.cox@ky.gov

Update from the TB Nurse Consultant

This April, the Kentucky TB Program attended the National TB Controllers Conference. Updated information related to the QuantiFERON-TB Gold Plus (QFT Plus) was presented at the conference. Note that the KY TB Program does not endorse the use of one brand of blood assay for M. tuberculosis (BMAT) over another.

The QFT-Plus identifies tuberculosis-specific antigens that elicit both CD8 and CD4 T-cell responses; this enables a more comprehensive assessment of cell-mediated immune response to TB infection.

QFT-Plus provides:
- Single visit testing blood draw
- Highly accurate and reproducible
- >97% specificity and >94% sensitivity
- Convenient and objective lab-based testing
- Flexible blood collection and scalable laboratory workflows

QFT-Plus utilizes four (4) tubes:
- **Mitogen – Positive Control:** Low response may indicate inability to generate IFN-γ
- **Nil – Negative Control:** Low response may indicate inability to generate IFN-γ
- **TB1 – Primarily detects CD4 T cell response**
- **TB2 – Optimized for detection of CD4 and CD8 T cell responses**

<table>
<thead>
<tr>
<th>QuantiFERON-TB Gold Plus Positive Threshold Values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test</strong></td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>QuantiFERON-TB Gold Plus</td>
</tr>
<tr>
<td>Nil</td>
</tr>
<tr>
<td>Mitogen-Nil</td>
</tr>
<tr>
<td>TB1 Ag-Nil</td>
</tr>
<tr>
<td>TB2 Ag-Nil</td>
</tr>
</tbody>
</table>

July 2019
All values are in IU/ml IFN-γ. Indeterminate results may relate to the immune status of the individual being tested, or may be related to technical factors (e.g., incomplete ELISA plate washing).

**Note:** diagnosing or excluding tuberculosis disease and assessing the probability of latent TB infection, requires a combination of epidemiological, historical, medical, and diagnostic findings that should be taken into account when interpreting QFT-Plus results. See chart below for the cut-offs regarding the reference ranges.

Tips to remember:
- Never quantify one test with another; a positive result should be treated for LTBI.
- If a physician has ordered both tests, clarify why and do them at the same time. You should also communicate that an individual who has a positive test should be treated for LTBI.
- If a TST has already been placed and interpreted as positive, and a BMAT is then ordered – per CDC guidelines – wait 4-6 weeks after the TST was placed to do the BMAT.
- As always, if you, or your physician, has any questions, please consult Southeastern National Tuberculosis Center at 1 (800) 482-4636.

### Interpretation of QuantiFERON-TB Gold Plus Test Results

<table>
<thead>
<tr>
<th>Nil (IU/ml)</th>
<th>TB1 minus Nil (IU/ml)</th>
<th>TB2 minus Nil (IU/ml)</th>
<th>Mitogen minus Nil (IU/ml)*</th>
<th>QFT-Plus Result</th>
<th>Report/Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 8.0</td>
<td>≥0.35 and ≥ 25% of Nil value</td>
<td>Any</td>
<td>Any</td>
<td>≥0.35 and ≥ 25% of Nil value</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td>Any</td>
<td>≥0.35 and ≥ 25% of Nil value</td>
<td>Any</td>
<td>≥0.35 and &lt;25% of Nil value</td>
<td>Negative</td>
</tr>
<tr>
<td></td>
<td>&lt;0.35 or ≥0.35 and &lt;25% of Nil value</td>
<td>&lt;0.35 or ≥0.35 and &lt;25% of Nil value</td>
<td>≥0.5</td>
<td>Negative</td>
<td>Likelihood of <em>M. tuberculosis infection cannot be determined</em></td>
</tr>
<tr>
<td>&gt; 8.0</td>
<td>Any</td>
<td>Any</td>
<td>Any</td>
<td>Any</td>
<td>Indeterminate</td>
</tr>
</tbody>
</table>

Responses to the Mitogen (positive control), and occasionally TB antigens, can be out of range of the microplate reader. This has no impact on test results; values >10 ml are reported by the QFT-Plus software as >10 IU/ml.

Source: [https://sntc.medicine.ufl.edu/home/index#/webinars/54](https://sntc.medicine.ufl.edu/home/index#/webinars/54)

Got TB Questions? Email them to: maria.lasley@ky.gov

Maria Lasley, RN, BSN, MA, MBA
Nurse Consultant
maria.lasley@ky.gov
World Tuberculosis (TB) Day is observed on March 24th each year in order to promote public awareness about the ongoing global epidemic of TB and highlight local, state, and global efforts to eliminate this disease. This day is significant because March 24th, 1882 is the day when Dr. Robert Koch accounted that he and a group of scientists at the University of Berlin’s Institute of Hygiene discovered the cause of TB – the TB bacillus.

The theme for World TB Day 2019 is “It’s Time...” - this allowed for TB programs throughout the world to add a unique ‘sub-theme’ in order to highlight efforts to promote TB awareness in their area. The Kentucky TB Program’s sub-theme was “It’s Time...to still think TB!”

In recognition of World TB Day, the Kentucky TB Program created a new promotional bulletin board in the Kentucky Department for Public Health building. Additionally, a press release was issued along with a proclamation - signed by Governor Matt Bevin - recognizing March as “TB Awareness Month” in Kentucky. Photos were taken at the Kentucky state capital floral clock in order to participate in social media challenges with the Centers for Disease Control and Prevention (CDC) and Southeastern Network of Tuberculosis Controller’s (SNTC).
TB Program Website Updates

The Cabinet for Health and Family Services recently unveiled their updated website. With this came changes to the Kentucky Department for Public Health webpages, including the Kentucky TB Program pages. The Kentucky TB Program now features three (3) separate webpages in order to better organize and display information often requested by local health departments and healthcare facilities. The main page (shown on the left) features a general description of the Kentucky TB Program and links to various online resources and additional information on TB.

The updated TB Data webpage (shown below) now features only the latest Kentucky TB data, including confirmed case data, confirmed and “suspected” case data, and 10-year trend data. The webpage also details information on how these data are collected, information on “preliminary” vs. “final” TB data, and instructions on how to calculate the burden of TB in each public health jurisdiction. Please feel free to direct any healthcare facilities requesting TB-related data to this webpage.

Finally, the Kentucky Tuberculosis Laws and Regulations webpage (shown lower, right) has been added to our collection of webpages. This page features links to all individual TB regulations and other resources, including the TB Regulation Toolkit, highlights/summaries, and FAQs. This page will better facilitate information on TB regulations to our local health departments, hospitals, long-term care facilities, and other medical facilities. We encourage all local health department TB staff and other providers to familiarize yourself with this page and bookmark it for future reference.

Link to Main Page: https://chfs.ky.gov/agencies/dph/dehp/idb/Pages/tuberculosis.aspx
Link to Data Page: https://chfs.ky.gov/agencies/dph/dehp/idb/Pages/tbdata.aspx
Link to Regulations Page: https://chfs.ky.gov/agencies/dph/dehp/idb/Pages/tbregs.aspx
In April, staff from the Kentucky TB Program attended the 2019 National Tuberculosis Controllers Association (NTCA) Conference in Atlanta, Georgia. This year, Susan Rice, TB Coordinator for the Barren River District Health Department and Katelyn Cox, Laboratory Scientist in the TB Lab, Division of Laboratory Services attended as well. This annual conference brings together federal, state, and local TB program staff to share best practices, lessons learned, and innovations in TB care, prevention, and control.

For the 2019 conference, the theme was “Innovate. Implement. Impact.” In the spirit of this theme, conference speakers discussed a variety of different topics – including global TB control efforts, implementation of whole genome sequencing, efforts to address LTBI in the context of long-term TB elimination, and the future of laboratory capacity for streamlined TB diagnostics and drug susceptibility testing.

This year, the Kentucky TB Program received the opportunity to present a poster titled “Comparative Analysis of Expired and Survived Cases of Tuberculosis – An Effort to Reduce TB-Related Mortality in Kentucky.” This study was initiated due to a recent increase in the number and proportion of TB cases expiring in Kentucky. The goal was to determine what variables – including demographic, laboratory, and risk factors – might be associated with expired cases. Our poster presented our initial findings based on simple analysis of all available Kentucky TB data (1993-2018). Based on these initial findings we were able to make recommendations for future awareness and education efforts to local TB case managers. We hope to continue this study with additional data and more advanced analysis in order to develop more poignant, comprehensive recommendations. This poster is available for your viewing on the following page (P. 7).

The 2020 NTCA Conference will take place May of 2020 in Minneapolis, Minnesota!
A Comparative Analysis of Expired and Survived Cases of Tuberculosis - An Effort to Reduce TB-Related Mortality in Kentucky

Charles H. Rhea, MPH; Emily Anderson, RN, BSN; Maria Lasley, RN, BSN, MA, MBA

Background

The burden of tuberculosis (TB) in Kentucky (KY) has decreased significantly since becoming a reportable condition in 1993. Available case data shows the number of TB cases in KY have declined by an estimated 85% in the last 25 years; similarly, the rate of TB case mortality has decreased by 82% (Figure 1). However, the number of TB cases expired in KY has increased recently. Between 2015-2018, the number of expired cases more than doubled from 5 to 13, with the proportion of expired cases increasing from 9.9% to 20.3% of total TB cases. TB is a treatable condition, even among difficult cases; making the increasing amount of TB cases expiring a concern. The Kentucky TB Program investigated this situation by analyzing differences and trends among TB case data to determine what characteristics are associated with expiring TB cases and what changes might have occurred recently to explain this increase.

Methods

Data collected electronically via the National Electronic Disease Surveillance System (NEISS) on TB cases between 1993-2018 by all 120 KY local health departments (LHDs) was used for this study. The 49-variable Report of Verified Case of Tuberculosis (RVCT) form was used for reporting cases that met the Council of State and Territorial Epidemiologists case definition for confirmed cases. All cases were categorized dichotomously as either ‘expired’ or ‘survived’. Cases were classified as ‘expired’ if their status at diagnosis was reported as ‘dead’ (RVCT variable #15) or if their reason for stopping TB treatment was reported as ‘died’ (RVCT variable #44); all others were categorized as ‘survived’. Simple analysis was conducted using frequency and contingency tables to compare case demographics, clinical characteristics, and risk factors between these two groups.

Results

Demographically, expired cases were found to be significantly older than survived cases (Figure 2). Between 1993-2018, expired cases were 22-years older than survived cases on average, with nearly three-quarters of all expired cases being age 65+ (73.4%). Most expired cases were U.S.-born (94.3%), white (82.3%), and non-Hispanic (96%). Common risk factors among expired cases include: HIV-positive (4.8%), diabetic (4.6%), or immunocompromised (non-HIV/AIDS) (3%). Nearly one-quarter of all expired cases resided in long-term care facilities (24.8%), and a slightly higher proportion of these cases had any type of drug resistance (7.8%) with the most common being Mono-INH (3.5%), Mono-PZA (2.6%), and MDR (2.2%), compared to survived cases.

Conclusions

KY’s medical providers and public health professionals need to be aware of the increasing number of expiring TB cases. Overall, the recent epidemiological trends of TB indicate that cases are becoming younger and more foreign-born. As a result, KY’s educational efforts have emphasized that providers focus on these populations. However, this study suggests that the vast majority of TB cases who expire are older and U.S.-born. It also suggests that individuals who are immunocompromised or are drug resistant are more likely to expire. These are vulnerable populations that are not always considered when thinking about those at risk for TB. It is important to promote these at-risk groups and urge KY’s medical providers and LHD staff to “think TB” and consider it when working with these groups, particularly when they have additional risk factors which could increase their likelihood of expiring with active TB disease.

References

On May 9, 2019, the Kentucky TB Program, in partnership with the Louisville-Metro Department of Public Health and Wellness (LMPHW), and the Southeastern National Tuberculosis Center (SNTC) hosted the annual Kentucky TB Update for Physicians and Clinicians. This event is designed to provide an update to medical professionals on all things TB in Kentucky. This year, we were able to host nearly 80 attendees from local health departments, hospitals, and other healthcare facilities from across the state. These attendees had the opportunity to hear from Charlie Rhea on Kentucky’s latest TB epidemiology trends. Additionally, Dr. Connie Haley (SNTC), Dr. Lori Caloia (LMPHW), and Jennifer Boone (Christian County) presented on challenging cases from the past year, and shared lessons learned from their experiences.
The annual TB Update for Physicians and Clinicians also allows us to recognize all of the hard work being done in case management at local health departments across the state. We are excited to award one local health department staff member with our Super “T” Award. This award recognizes an individual who makes a significant contribution toward improving public health through their work in the state’s TB prevention and control efforts.

This year, we received many well-deserving nominees, and we were proud to award the 2019 Super “T” award to:

Anita Johnson
Local TB Coordinator from the Franklin County Health Department.
Congratulations Anita – and thank you again for all you do!

Previous Super “T” Award winners:
2018 = Kathy Gifford,
Graves County Health Department
2017 = Wendy Keown,
Lincoln Trail District Health Department
September 9-13, 2019

**SNTC Comprehensive TB Course – Gainesville, FL**

SNTC presents a five-day intensive course for clinicians and healthcare workers covering all aspects of tuberculosis infection, disease, and clinical case. Please contact the Kentucky TB Program for more information.

October 2-3, 2019

**TB 101 Orientation, CHFS – Frankfort, KY**

The Kentucky TB Program presents a 2-day course for new local health department personnel. Pre-requisites required. Please contact the Kentucky TB Program for more information.

See the following pages for additional educational opportunities and resources:

- TB Nurse Case Management: Working Through the Process  
  P. 13
- Advanced Concepts in Pediatric TB  
  P. 14
- When TB is the Least of their Worries….  
  Webinar Series  
  P. 15
- Online TB Radiology Products  
  P. 16
- LTBI Patient Education Materials  
  P. 17
- Cultural Competency and Tuberculosis Control – County Guides  
  P. 18

For education and training questions, please contact **Emily Anderson, Program Manager/TB Controller** at EmilyA.Anderson@ky.gov or (502) 564-4276 ext. 4298
TB Nurse Case Management: Working Through the Process

What’s covered in this course?

- TB NCM Basics
- The Initial Report
- Interviewing the Client
- Managing the Case
- Monitoring Clinical Care
- Closing the Case

TB Nurse Case Management: Working through the Process is an online activity-based course consisting of six modules (badges) that guide the learner through the steps of managing a TB case. Each participant is paired with an expert coach to provide one-on-one guidance and support.

Questions about this course?

Contact Southeastern National Tuberculosis Center
SNTC@medicine.ufl.edu
352-273-7682
Advanced Concepts in Pediatric TB

Online Courses
http://sntc.medicine.ufl.edu/home/index#training

- This self-paced content is divided into three separate courses. You can take any or all of them, in any order you choose.
- Participants who complete these trainings will be able to recognize, evaluate, and manage Mycobacterium tuberculosis infections in children.
- CE credit is available for the successful completion of each course.
- Questions? Call 888-265-SNTC or email sntc@medicine.ufl.edu

Part 1 Topics
- Mycobacteriology, Pathogenesis, and Epidemiology
- Latent TB Infection
- Diagnosis - Old and New Tools & Challenges
3 CE credits

Part 2 Topics
- Clinical Disease and Evaluation
- TB and HIV
2 CE credits

Part 3 Topics
- Treatment of T3 Disease
- Infection Control, Source Case and Contact Investigation
- Pharmacotherapeutics of TB Drugs
3 CE credits
When TB is the Least of Their Worries . . .

WEBINAR SERIES

The webinar series is designed for physicians, nurses, pharmacists, and field staff who are interested in a multidisciplinary approach to tuberculosis (TB) care. The series examines the many challenges patients may encounter in conjunctions with tuberculosis. This series helps healthcare professionals identify those challenges and provide strategies for support and intervention.

Access Archived Webinars
1. TB and Corrections
2. TB and Opioids
3. TB and Unstably Housed
4. TB and Immigration
5. TB and Refugees
6. TB and Human Trafficking

https://sntc.medicine.ufl.edu/home/index#/webinars

Register for the Next Webinar

When TB is the Least of Their Worries... Hepatitis C Virus

Thursday, May 16, 2019 at 12:00 – 1:30 PM ET

https://us02web.zoom.us/j/37049871953

For more information, contact the SNTC at sntc@medicine.ufl.edu or 888-265-7682.

Southeastern National Tuberculosis Center (SNTC) • 888-265-7682 • http://sntc.medicine.ufl.edu
Available from Curry International Tuberculosis Center

2 Online TB Radiology Products!
Produced in collaboration with the Finland Northwest Tuberculosis Center

Tuberculosis Radiology Practice Cases

These brief, interactive self-study case studies allow you to practice locating areas of radiographic abnormalities using real-life clinical scenarios. Watch for more cases to be added.

http://www.currytbcenter.ucsf.edu/products/view/tuberculosis-radiology-practice-cases

Tuberculosis Radiology Image Library

An open-access resource library of radiographic images of tuberculosis. Individuals may use these images to gain an appreciation for the broad spectrum of radiographic manifestations of tuberculosis. The images are free to download and share for non-commercial educational purposes. To contribute radiographs and help us grow this site, submit images to the editors at CurryTBcenter@ucsf.edu.

http://www.currytbcenter.ucsf.edu/products/view/tuberculosis-radiology-image-library

Additional TB Radiology Products can be found on our Radiology Resource Page:
http://www.currytbcenter.ucsf.edu/products/view/tuberculosis-radiology-resource-page
LTBI Patient Education Materials
Translations

LTBI patient education materials are now available in additional languages to help healthcare professionals communicate with their patients regarding their TB care. These can be found on the SNTC website products page [http://sntc.medicine.ufl.edu/home/index#products](http://sntc.medicine.ufl.edu/home/index#products).

**Languages**
- Amharic
- Arabic
- Chukchee*
- Filipino
- French
- Haitian Creole
- Hindi
- Hmong
- Marshallese
- Russian
- Tagalog
- Vietnamese

*You Can Prevent Tuberculosis Handout only

**Handouts**

You Can Prevent Tuberculosis
This handout is available for download as a PDF. It is also available in English and Spanish, along with the You Can Prevent Tuberculosis patient educational video.

What You Need to Know About Your Medicine for Latent Tuberculosis Infection - Fact Sheet Series
- Rifampin
- Isoniazid
- Isoniazid and Rifapentine

These handouts are available for download as PDFs. They are also available in English and Spanish on the CDC TB resources page: [https://www.cdc.gov/tb/publications/factsheets/treatment.htm](https://www.cdc.gov/tb/publications/factsheets/treatment.htm)

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Southeastern National Tuberculosis Center (SNTC) • 888-265-7682 • [http://sntc.medicine.ufl.edu](http://sntc.medicine.ufl.edu)
The Southeastern National Tuberculosis Center (SNTC) in collaboration with the Lung Health Center at the University of Alabama at Birmingham developed this TB-specific cultural competency resource.

**Cultural Competency and Tuberculosis Control:**
Country Specific Guides for Health Professionals Working with Foreign-Born Clients

This guide is comprised of individual country-specific guides (or summaries) for the birth countries most commonly reported by foreign-born cases treated in the United States. Each country guide (or summary) provides epidemiological information for both TB and HIV in each country, nicknames for TB, common misperceptions surrounding the etiology, disease transmission, and cure for TB and HIV as well as the stigma surrounding these diseases. A portion of the guide also provides information regarding polite greetings to use when meeting a person from this country, verbal and non-verbal communication, naming customs, cultural values, and Internet links to translated educational materials for your clients. This information will enable you to employ a more culturally relativistic approach to client interviews, TB contact investigations, diagnostic procedures, and patient education and counseling regarding both TB and HIV.

Currently, there are nineteen country guides available – Cambodia, Dominican Republic, Ecuador, Honduras, India, Mexico, The Philippines, Somalia, Vietnam, Brazil, Myanmar, China, Colombia, El Salvador, Guatemala, Haiti, Nicaragua, Peru, and Korea.

Individual copies of each Country Guide, in PDF format, may be downloaded from the SNTC website at no cost.

The SNTC website address is [http://sntc.medicine.ufl.edu/Products.aspx](http://sntc.medicine.ufl.edu/Products.aspx)

**CONTACT US**
The SNTC is one of four national training and medical consultation centers within the United States, supported by the Centers for Disease Control and Prevention. The SNTC supports the education and training missions of TB programs throughout the southeast region and provides a source of expert medical consultation for healthcare providers caring for TB patients.

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