NEBRASKA

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DEPT. OF HEALTH AND HUMAN SERVICES

Nebraska Department of Health and Human Services
Technical Guidelines (TBTG)

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PART 1: INFECTION CONTROL

The Nebraska Department of Health and Human Services (DHHS) Tuberculosis (TB) Program infection control plan is designed to support:

- Prompt detection of infectious TB patients,
- Reduction of transmission, and
- Treatment of people who have suspected or confirmed TB disease.

Three levels of the infection control plan include:

- Administrative
- Environmental
- Respiratory

Administrative

- Assign responsibility of TB infection control in health care settings:
    - The Centers for Disease Control and Prevention (CDC) 2005 MMWR Guidelines for preventing the transmission of Mycobacterium tuberculosis in health-care settings has a variety of guidance for various settings. https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm (Accessed October 2023)
    - Questions and concerns can be directed to the DHHS TB Program Specialist RN at (402) 471-6441 or email at Kristin.bertrang@nebraska.gov.
- Complete a TB risk assessment.
    - CDC Baseline Individual TB Risk Assessment can be found at https://www.cdc.gov/tb/topic/infectioncontrol/pdf/healthCareSettings-assessment.pdf
    - DHHS TB Program will provide TB statistics, for Nebraska, on an annual basis. This report can be used to assist health care facilities with TB risk assessments as well. This report can be found at https://dhhs.ne.gov/Pages/Tuberculosis.aspx.
- Ensure the availability of needed laboratory processing, testing, and reporting of results.
- Implement workplace practices and patient case management:
    - https://www.cdc.gov/tb/education/ssmodules/pdfs/Modules6-508.pdf
- Safeguard proper cleaning, sterilization, or disinfection of equipment that might be contaminated.
- Provide education, training, and counseling for health care personnel, patients, and visitors about TB infection and TB disease.
- Deliver screening, testing, and evaluation of personnel who are at risk for exposure to TB disease. https://www.cdc.gov/tb/topic/testing/healthcareworkers.htm

CDC and National Tuberculosis Controllers Association for TB screening of personnel (2019)

Category	2019 Recommendation
Baseline (preplacement) screening and testing	TB screening of all health care personnel (HCP), including a symptom evaluation and TST (IGRA or TST) for those without documented prior TB disease or latent TB infection (LTBI); individual TB risk assessment
Postexposure screening and testing	Symptom evaluation for all HCP when an exposure happens. For HCP with a negative baseline with no TB disease or LTBI, perform a test (IGRA or TST) when the exposure is identified. If that test is negative, do another test 8-10 weeks after the last exposure.
Serial Screening and testing for HCP without LTBI	Not routinely recommended; May consider select HCP groups; recommend annual TB education for all HCP including exposure risks for all HCP
Evaluation and treatment of positive results	Treatment is encouraged for all HCP with untreated LTBI, unless medically contraindicated.

- Apply epidemiology-based prevention, including the use of setting-related TB infection control-data.
- Utilize visual tools to remind patients of proper cough etiquette (covering mouth when coughing). Download https://www.cdc.gov/oralhealth/infectioncontrol/faqs/respiratory-hygiene.html#:~:text=Cover%20your%20mouth%20and%20nose,touch%20your%20mouth%20or%20nose.
- Coordinate efforts between local or state health departments and high-risk healthcare and congregate settings.

Environmental

- Primary environmental controls consist of controlling the source of infection by using local exhaust ventilation and dilution and removing contaminated air by using general ventilation.
- Secondary environmental controls consist of controlling the flow of air in areas adjacent to the source airborne infection isolation (AII) rooms; and cleaning the air using high efficiency particulate air (HEPA) filtration, or ultraviolet germicidal irradiation.

Respiratory

- Use respiratory protection equipment,
- Implement a respiratory protection program,
- Train health care personnel on respiratory protection, and
- Educate patients on respiratory hygiene and cough etiquette.

PART 2: TESTING INFORMATION

SECTION 1: Tuberculin Skin Test (TST)

Administration

- Injection 0.1 ml of 5 tuberculin units of purified protein derivative (PPD) solution intradermally into the volar surface of the forearm using a 27-gauge needle with a tuberculin syringe.
- Obtain all previous results of TSTs or TB blood tests. Written documentation must be obtained for history to be applicable.
- Avoid areas of skin with veins, rashes, or excess hair.
- Cleanse the area with alcohol, allow area to dry, and inject all antigen just below the surface of the skin, on the volar surface of the forearm. This should form a 6-10mm wheal.
- If no wheal forms, or less than 6mm of induration, the test should be repeated right away approximately 2 inches from the original site or on the other arm.
- If bleeding occurs, dab injection site with cotton swab.
- Avoid covering area with a bandage or applying pressure.
- Record date, time, and location of TST administration
- Medical staff should encourage the patient not to scratch. Suggest a cool compress to relieve any itching or swelling.
- Inform patient they must return for a reading with 48-72 hours.

Measurement

- Measure the induration (hard bump) rather than the redness.
- Palpate area with fingertips, measuring the diameter of induration.
- Use ballpoint pen to mark edges of induration.
- Use TST ruler to measure distance between the two points.

Recording and Documentation

- Record date TST was administered.
- Record the brand name of PPD solution, lot number, manufacturer, and expiration date on patient record.
- Record result in millimeters of induration (0mm if there is no induration).
- Record date and time or reading and name of person reading TST.

Storage and Handling

- PPD solution must be kept refrigerated at 36▫ -46◦ F.
- Do not store in refrigerator door-please keep in cooler if transporting.
- Syringes must be filled immediately prior to administration.
- Store and transport the tuberculin the dark as much as possible; avoid exposure to light (i.e., cooler).
- Avoid storing with other testing solution that could be mistaken for tuberculin.

Interpretation

Interpretation is dependent on 1) the measurement in millimeters (mm) of the induration and 2) the person's risk of being infected with TB or progression to disease if infected.

<u>≥5 mm of induration is considered a positive reaction in:</u>

- People living with human Immunodeficiency virus (HIV),
- Recent contacts of people with infectious TB,
- People with chest x-ray findings suggestive of previous TB disease,
- People with organ transplants, and
- Other immunosuppressed patients.

<u>≥10 mm of induration is considered a positive reaction in:</u>

- People born in countries where TB disease is common,
- People who abuse drugs,
- Mycobacteriology lab workers,
- People who live or work in high-risk congregate settings,

- People with Low body weight (<90% of ideal body weight), and
- Children younger than 5 years of age.
- Infants, children, and adolescents exposed to adults in high-risk categories.

≥15 mm of induration is considered a positive reaction:

- Persons with no known risk factors for Tuberculosis

Nebraska State Guidance:

Administration-Medical aid must be administered by a licensed/registered health care provider, who is certified to conduct such activities under their scope of practice.

Interpretation: Appropriate licensed/registered health care provider may interpret with a proper medical provider protocol in place.

For further questions—please reach out to the DHHS TB Program or Licensure Unit.

- TB Program: (402) 471-6441
- Licensure Unit: (402) 471-2115

SECTION 2: Interferon Gamma Release Assays (IGRA)

IGRA is a blood test that is encouraged for LTBI screening. Please keep in mind a few considerations when determining which test to use.

Blood tests are preferred for:

- Groups of people who are less likely to return for TST reading and interpretation,
- People who have received the bacille Calmette- Guerin (BCG) vaccine,
- People who are likely to be infected with *M. tuberculosis* and are at a low risk to progression of TB disease,
- People who are unlikely to be infected with *M. tuberculosis*, or
- Children and infants.

Current guidance suggests not to screen with both TST and blood tests; however, there may be certain situations where it may be useful. This would include patients who have received the BCG vaccine, pregnant women, contacts, health care personnel, and patients with HIV. Please reach out to the DHHS TB Program Specialist, RN, with any questions.

SECTION 3: Genotyping

TB genotyping is a laboratory-based method that can determine the strain of *M. tuberculosis* that causes TB disease. Each strain has a specific genetic pattern, or genotype. Therefore, genotyping is done primarily for culture-positive cases of TB disease. During the early stages of a contact investigation, TB genotyping will not be available but can serve as a valuable indicator for specific TB strains that can be shared among patients. The DHHS TB Program recommends the TB Genotyping Management System (TB GIMS).

References:

Centers for Disease Control and Prevention (CDC). IGRAs-Blood Tests for TB Infection Fact Sheet. https://www.cdc.gov/tb/publications/factsheets/testing/igra.htm (Accessed April 2024).

Centers for Disease Control and Prevention (CDC). Self-Study Modules on Tuberculosis. Module 8: Contact Investigations for Tuberculosis: https://www.cdc.gov/tb/education/ssmodules/pdfs/Modules8-508.pdf#:~:text=A%20TB%20contact%20investigation%20is%20a%20TB%20control,in%20communities%20and%20help%20prevent%20outbreaks%20of%20TB. (Accessed April 2024).

Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Health-Care Settings, 2005. Morbidity and Mortality Weekly Report (MMWR), December 30, 2005/54 (RR17); 1-141. https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm (AccessedApril 2024).

PART 3: LABORATORY GUIDELINES

Policy: DHHS TB Program and LHD staff follow laboratory guidelines established by the Nebraska Public Health Lab (NPHL).

Procedure: Support providers and LHDs through diagnosis, treatment, and contact investigations.

NPHL supports the DHHS TB Program by providing the appropriate laboratory services, offering specimen analysis, and providing technical assistance to safeguard proper specimen collection, storage, documentation, and submission.

New patient TB sputum samples:

- Collect three (3) early morning sputum specimens and submit to the lab or via courier, along with correct paperwork.
- Enter patient information into NULIRT.
- Samples need to be collected at least eight (8) hours apart or on three (3) different days.
- Containers with sputum should be stored in the refrigerator if not taken to the lab right away.
- Containers with sputum should be labeled with the following:
    - patient's name,
    - date of birth,
    - collection date, and
    - collection time.
- Lab results will be available in NULIRT. NULIRT is the NPHL electronic ordering system. NULIRT also provides results in an online database for local health department staff to use for sputum samples.
- If a new rule out case; order Amplified TB probe (limitations: should not undergo treatment with Anti-tuberculin therapy). If it is for release of isolation, the two (2) Amplified TB probes may be ordered.

Follow-up patient TB sputum samples:

- Collect one (1) early morning sputum specimen and submit to the lab or via courier.
- Wait until results are confirmed before collecting another sample.
- If first sample is positive, please wait two (2) weeks before collecting another sputum sample.
- If first sample returns negative, collect a second early morning sputum sample, and submit to the lab or via courier.

- If second sample is positive, wait two (2) weeks before collecting another sputum sample.
- If second sample is negative, collect a third early morning sample and submit to the lab or via courier.
- If third sample is positive, wait two (2) weeks before collecting another sputum sample.
- If third sample is negative, patient will have three (3) consecutive negatives samples and may be cleared out of isolation.
- Lab results will be available in NULIRT.
- Provider should request AFB culture and Smear.

Please note, it is important to wait for results on follow up sputum samples, so that the DHHS TB Program can support testing supplies, in addition this reduces the risk of exposure to laboratory staff.

The DHHS TB Program encourages the use of the NPHL and Regional Pathology Services (RPS) for TB testing. The below links can assist with collection, ordering, result interpretation, administrative, and RPS Information.

Nebraska Public Health Lab TB Directory

Please use below links for test directory which has synonym, method, availability, specimen, collection device, volume, storage transport, specimen stability, reference interval, reportable disease, and comments for further clarification.

- AFB Mycobacterium tuberculosis Direct Susceptibility Test
  https://www.nphl.org/index.cfm/testing-results/?testlink=91

- AFB/Mycobacterium Identification
  https://www.nphl.org/index.cfm/testing-results/?testlink=40

- AFB Culture, Blood
  https://www.nphl.org/index.cfm/testing-results/?testlink=94

- AFB Culture w/Smear
  https://www.nphl.org/index.cfm/testing-results/?testlink=95

- AFB Molecular Drug Detection Resistance (MDDR) Susceptibility Testing
  https://www.nphl.org/index.cfm/testing-results/?testlink=92

- AFB Mycobacterium tuberculosis Amplified Direct Detection
  https://www.nphl.org/index.cfm/search/

- AFB Mycobacterium tuberculosis Direct Susceptibility Test
  https://www.nphl.org/index.cfm/testing-results/?testlink=91

- Mycobacterium TB Genotyping
  https://www.nphl.org/index.cfm/testing-results/?testlink=137

- Mycobacterium tuberculosis DNA Amplified Direct Detection
  https://www.nphl.org/index.cfm/testing-results/?testlink=93

- TB Interferon Antigen Response
  https://www.nphl.org/index.cfm/testing-results/?testlink=138

Lab Forms

If a provider needs forms to submit sputum and/or IGRA samples, please contact the DHHS TB Program. The Mycobacterium tuberculosis (MTB) Supplemental Form and NPHL Test Request Form will need to be completed for processing.

Courier services are located across the state. Providers can reach out to NPHL at 1-800-334-0459 to identify the nearest location or with any courier questions.

PART 4: CLASS B TB ARRIVALS

TB Classifications

All classifications are determined by a panel of physicians who work overseas and perform physical examinations to clear refugees and other immigrants for travel to the United States. Please see the CDC refugee screening guidance listed below.

- **Class B0:** The individual was diagnosed with TB by the panel physician (or presented to the panel physician while on TB treatment) and has successfully completed Division of Global Migration and Quarantine (DGMQ) physical exam.
- **Class B1 TB, Pulmonary**: Applicants who have signs or symptoms, physical exam, or chest x-ray findings suggestive of tuberculosis disease, or have known HIV infection, but have negative AFB sputum smears and cultures and are not diagnosed with TB disease.
- **Class B1 TB, Extrapulmonary**: Applicants diagnosed with extrapulmonary TB with normal chest x-ray findings and negative sputum AFB smear results and cultures.
- **Class B2 TB, LTBI**: Applicants who have a positive IGRA or TST but otherwise have a negative evaluation for TB. Documentation of IGRA or TST Results, LTBI treatment status, medications used should be documented. Contacts with a positive IGRA or TST ≥5mm will receive B2 classification in addition to a Class B3.
- **Class B3 TB, Contact Evaluation**: Applicants who are a recent contact of a known TB disease case, regardless of the IGRA or TST results. If the IGRA of TST is positive and there is no evidence of TB disease, there will be two classifications B2 and B3: if negative, B3 only.
- **No TB Classification**: The individual does not have any TB classification identified from overseas.

Class B TB arrivals need follow-up evaluation for TB and LTBI. It is recommended to have an evaluation completed within 30 days after arrival in the U.S.

Nebraska State Guidance

The DHHS TB Program encourages patient follow-up by the local health department (LHD) for a TB evaluation. Please contact DHHS TB Program Specialist, RN for the following:

- If the patient needs financial assistance, or
- If there are questions regarding the TB follow up worksheet.

LHD staff with access to Electronic Disease Notification (EDN) should receive electronic notifications. LHD staff without EDN access, will be notified by the DHHS TB Program. New refugee arrivals, with class B TB arrivals, will have initial health screening overseen by a refugee

resettlement agency and the DHHS Refugee Health Program.
https://dhhs.ne.gov/Documents/Refugee-Health-Screening-Policy-and-Procedures.pdf

Class B1

- Evaluate for signs/symptoms of TB disease that may have developed since the pre-departure exam.
- Administer a tuberculin skin test (TST) or Interferon Gamma Release Assay (IGRA) such as a QFT® or T-Spot® regardless of BCG history, unless the person has a reliable history of previous treatment for TB or reliable documentation of a previous positive test.
- Do a chest X-Ray regardless of TST/IGRA result.
- Verify any previous treatment for TB via pre-departure exam or by patient report.
- Do additional tests (e.g., sputa for AFB, etc.), as indicated to determine TB diagnosis (i.e., latent TB infection [LTBI] or active TB disease).

Class B2

- Evaluate for signs/symptoms of TB disease that may have developed since their pre-departure exam.
- If the previous results are unreliable or unavailable, repeat Interferon Gamma Release Assay (IGRA) or a tuberculin skin test (TST) to confirm or rule out LTBI diagnosis.
- Do a chest X-Ray unless patient had repeated chest x-rays overseas showing improvement or stability and the most recent chest x-ray was done less than 3 months ago.
- Do a chest X-Ray for those who are HIV+ or who have signs and symptoms compatible with TB disease, regardless of previous results.
- Do additional tests (e.g., sputa for AFB, etc.), as indicated to determine TB diagnosis (i.e., latent TB infection [LTBI] or active TB disease).

Class B3

- Evaluate for signs/symptoms of TB disease that may have developed since their pre-departure exam.
- Administer a tuberculin skin test (TST) or Interferon Gamma Release Assay (IGRA) such as a QFT® or T-Spot® regardless of BCG history.
- Do a chest X-Ray for patients with a positive IGRA or TST, or with symptoms compatible with TB disease, regardless of TST/IGRA result.
- Do additional tests (e.g., sputa for AFB, etc.), as indicated to determine TB diagnosis (i.e., latent TB infection [LTBI] or active TB disease).

The CDC's EDN Tuberculosis Follow-up Worksheet is provided here:

https://www.dshs.texas.gov/sites/default/files/IDCU/disease/tb/forms/PDFS/EDNTBWorksheet.pdf

Providers with questions or concerns can contact the DHHS TB Program Specialist, RN or the DHHS Refugee Health Program. Please note that any information sent to Nebraska Department of Health and Human Services should be sent via secure email or fax or entered in EDN (if accessible).

References:

Centers for Disease Control and Prevention: Guidance for Screening for Tuberculosis Infection and Disease during the Domestic Medical Examination for Newly Arrived Refugees-Tuberculosis: https://www.cdc.gov/immigrantrefugeehealth/guidelines/domestic/tuberculosis-guidelines.html (Accessed March 2024).

Minnesota Department of Health, TB Class B Arrivals: The Role of Local Public Health. https://www.health.state.mn.us/diseases/tb/lph/lphclassb.html (Accessed March 2024).

Nebraska Department of Health and Human Services. Refugee Health Screening Policy and Procedures. https://dhhs.ne.gov/Documents/Refugee-Health-Screening-Policy-and-Procedures.pdf (Accessed March 2024).