ACHA Guidelines

Tuberculosis Screening and Targeted Testing of College and University Students

**Purpose**

Screening and targeted testing for tuberculosis (TB) is a key strategy for controlling and preventing infection on college and university campuses. Early detection provides an opportunity to promote the health of affected individuals through prompt diagnosis and treatment while preventing potential spread to others. Implementation of a screening and targeted testing program not only addresses this public health concern in campus communities but also contributes to the larger public health goal of reducing the burden of TB in the United States.

The intent of this document is to provide guidelines for screening the incoming student population, targeting those at increased risk for TB testing, and reviewing appropriate follow-up care for students diagnosed with latent TB infection (LTBI) or TB disease.

**Definitions**

In this document, “screening” refers to the process of identifying persons at high risk for TB infection and disease. Screening is conducted through a questionnaire where the student identifies any risk factors for TB infection and disease. “Testing” refers to the testing procedure for diagnosing LTBI, i.e., interferon gamma release assay (IGRA) or Mantoux tuberculin skin test (TST).

Risks for exposure to and/or infection with M. tuberculosis have been identified through epidemiological and population-based studies (see Table 1). A sample screening questionnaire has been developed based on these risk factors (see Appendix B). It is designed for use by institutions for the incoming student population, in order to appropriately target students at risk for TB who would benefit from testing.

Refer to Table 2 for those factors that place an individual who is infected with TB at higher risk for progressing to active disease. Typically, factors are identified in individuals by health care providers in the clinic setting. Those at risk for exposure should be tested and if positive, are high priorities for treatment.

**Whom to Screen**

All incoming students should be screened for risk factors for TB through a screening questionnaire. The United States is primarily a low-incidence country, so most U.S.-born incoming students will not have risk factors for TB and will not need TB testing. However, international students arriving from countries or territories with an increased incidence of TB should be tested because this subpopulation has been identified epidemiologically as having a higher incidence of LTBI and an increased risk for developing active TB disease. While all incoming students should be screened, only those students with identifiable risk factors for exposure to TB and/or for TB disease should be tested. Incoming students at low risk should not be tested for TB. Students with a documented previous positive test should not be retested but may benefit from a review of their situation with a college health provider.

High-incidence areas are defined as countries or territories with an annual incidence of TB disease of greater than or equal to 20 cases per 100,000 population. Most countries in Africa, Asia, Central America, Eastern Europe, and South America are included in this group. See Appendix A for a current list of low-incidence countries and territories, as identified by the World Health Organization (WHO) Global Health Observatory.

While national trends indicate a decline in the overall number of TB cases since 1993, active disease transmission continues to occur. It is important to focus on local epidemiology to identify trends in individual states or regions. The epidemiology of TB among foreign-born populations differs considerably from area to area. To tailor TB-control efforts to local needs, TB-control programs should develop epidemiologic profiles to identify groups of persons in their jurisdictions who are at higher risk for TB. In 2009, approximately 60% of TB cases in the United States occurred in foreign-born individuals. For a list of high burden countries and their profiles, see WHO Tuberculosis Country Profiles at [www.who.int/tb/country/data/profiles/en/](http://www.who.int/tb/country/data/profiles/en/).

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TABLE 1: Persons at Higher Risk for Exposure to and/or Infection with *M. tuberculosis*

- Close contacts of persons known or suspected to have active TB disease
- Foreign-born persons from areas that have a high incidence of active TB disease
- Persons who visit areas with a high prevalence of TB disease, especially if visits are frequent or prolonged
- Residents and employees of high-risk congregate settings (e.g., correctional facilities, long-term care facilities, and homeless shelters)
- Health care workers who serve clients who are at increased risk for active TB disease
- Populations defined locally as having an increased incidence of latent *M. tuberculosis* infection or active TB disease, possibly including medically underserved, low-income populations, or persons who abuse drugs or alcohol
- Infants, children, and adolescents exposed to adults who are at increased risk for latent tuberculosis infection or active TB disease


TABLE 2: Persons at Increased Risk for Progression of LTBI to TB Disease

- Persons infected with HIV
- Children younger than 5 years of age
- Persons who were recently infected with *M. tuberculosis* (within the past 2 years)
- Persons with a history of untreated or inadequately treated TB disease, including persons with fibrotic changes on chest radiograph consistent with prior TB disease
- Persons who are receiving immunosuppressive therapy such as tumor necrosis factor-alpha (TNF) antagonists, systemic corticosteroids equivalent to/greater than 15 mg of prednisone per day, or immunosuppressive drug therapy following organ transplantation
- Persons with silicosis, diabetes mellitus, chronic renal failure, leukemia, or cancer of the head, neck, or lung
- Persons who have had a gastrectomy or jejunooileal bypass
- Persons who weigh less than 90% of their ideal body weight
- Cigarette smokers and persons who abuse drugs and/or alcohol
- Populations defined locally as having an increased incidence of disease due to *M. tuberculosis*, including medically underserved, low-income populations.


Continuing students should be tested only when their activities place them at risk for a new infection or to meet an academic programmatic requirement. While it would be welcomed, no evidence-based data exists that identifies the amount of time spent in a given high-risk country that constitutes significant exposure. Students should discuss the specific travel circumstances with a health care provider who can determine the appropriate evaluation.² Activities that may result in increased risk of exposure to TB may include, but are not limited to, volunteering, conducting research, mentoring, studying abroad, traveling, visiting relatives, or employment which may involve close contact with individuals in areas with increased incidence of TB whether

domestically or internationally. Sponsors of these programs or health care providers caring for these students prior to the activity should educate students of this risk and recommend testing 8 to 10 weeks after leaving the high-incidence area.

TB screening of all health care personnel (HCP), including health profession students, includes a symptom evaluation and test (IGRA or TST) for those without documented prior TB disease or LTBI and an individual TB risk assessment to help guide decisions when interpreting test results.3

**When to Screen and Test**

TB screening should occur by questionnaire prior to arrival on campus in conjunction with verification of pre-matriculation immunization requirements. TB testing of high-risk students only should take place no sooner than six months prior to the start of the first semester and should be completed by the second quarter/semester registration.

**How to Test**

In most situations relevant to college health, the preferred method for testing for TB infection is an interferon-γ release assay (IGRA) rather than a tuberculin skin test (TST). A TST is an acceptable alternative, especially in situations where an IGRA is not available, too costly, or too burdensome. Importantly, persons at low risk for TB infection and disease progression are NOT recommended to be tested for TB infection. However, if testing of low risk students is required for administrative reasons, such as health professions program requirements, despite guidelines to the contrary, a confirmatory test is recommended if the initial test result is positive. The confirmatory test may be either an IGRA or a TST. When such testing is performed, the person is considered infected only if both tests are positive.

**What to Do When the IGRA or TST Is Positive**

Persons with a positive IGRA or TST must undergo chest radiography and medical exam to exclude active TB disease. For asymptomatic individuals, a posterior-anterior radiograph of the chest is the standard view used for the detection of TB-related chest abnormalities. In some cases, especially in children, a lateral view may be helpful. In some instances, a computerized tomography (CT) scan may provide additional information.4 Any findings suggestive of active TB warrant further evaluation before treatment decisions can be made. In the absence of active TB disease, the diagnosis of LTBI is made using information gathered from the medical history, IGRA or TST result, chest radiograph, and physical examination.5

**Whether to Treat LTBI**

From a public health perspective, treatment of LTBI is essential to controlling and eliminating TB disease in the United States.6 In deciding whether to recommend treatment of LTBI to individual patients, the clinician should weigh the likelihood of infection, the likelihood of progression to tuberculosis if infected, and the benefit of therapy. See ISDA LTBI treatment evaluation paradigm in Figure 1, below, for more information in making this important decision.

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4 CDC. Core Curriculum on Tuberculosis, Sixth Edition, 2013. Chapter 4, p 82.


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Figure 1.
How to Treat LTBI

Short-course (3- to 4-month) rifamycin-based treatment regimens are preferred over longer-course (6–9 month) isoniazid monotherapy for treatment of LTBI because of their effectiveness, safety, and high treatment completion rates. These preferred regimens include

- 3 months of isoniazid plus rifapentine given once weekly (directly observed therapy)
- 4 months of rifampin given daily
- 3 months of isoniazid plus rifampin given daily

Note: 6 or 9 months of isoniazid monotherapy is efficacious but has higher toxicity risk and lower treatment completion rates than shorter rifamycin-based regimens.

Individual considerations, including comorbidities and medication interactions, should guide treatment decisions.7

Once initiated, completion of treatment should be a high priority and should be supported by providing education in the student's primary language, insuring confidentiality, offering incentives to mark treatment milestones, and case management by a culturally competent health care provider to build trust and gain buy-in.

Post-treatment follow-up should include providing the student documentation of IGRA or TST results, chest radiograph results, and the dosage and duration of medication treatment. Students who have completed LTBI therapy, as well as those who elected not to take therapy, should be educated regarding signs and symptoms of TB disease and instructed to seek medical care immediately upon developing any of the signs or symptoms of TB.

Additional Resources

(in addtion to footnotes)

ATS/CDC/IDSA. Treatment of Tuberculosis. MMWR June 2003; 52 (No. RR-11).

Francis J. Curry National Tuberculosis Center. TB Program Manual Template: www.currytbccenter.ucsf.edu/products/tuberculosis-program-manual-template


ACHA TB Screening Guidelines

Workgroup

These guidelines were prepared originally by ACHA’s Tuberculosis Guidelines Task Force and revised by the ACHA Emerging Public Health Threats and Emergency Response Coalition. A special thanks to the following coalition members who worked on this latest revision: Thevy S. Chai, MD; Susan Even, MD, FACHA; Sharon McMullen, RN, MPH, FACHA; and Craig Roberts, MS, PA-C, FACHA.
**APPENDIX A**

“Low Incidence” Areas with Estimated or Reported Tuberculosis Incidence, 2018

“Low Incidence” areas are defined as areas with reported or estimated incidence of <20 cases per 100,000 population.

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APPENDIX B

Tool for Institutional Use

Part I: Tuberculosis (TB) Screening Questionnaire (to be completed by incoming students)

Please answer the following questions:

Have you ever had close contact with persons known or suspected to have active TB disease?  □ Yes  □ No

Were you born in one of the countries or territories listed below that have a high incidence of active TB disease?  (If yes, please CIRCLE the country, below.)  □ Yes  □ No

Afghanistan  China, Macao SAR  Honduras  Myanmar  South Africa
Algeria  Colombia  India  Namibia  South Sudan
Angola  Comoros  Indonesia  Nauru  Sri Lanka
Anguilla  Congo  Iraq  Nepal  Sudan
Argentina  Democratic People's Republic of Korea  Kazakhstan  Nicaragua  Suriname
Armenia  Democratic Republic of the Congo  Kenya  Niger  Tajikistan
Azerbaijan  Dominican Republic  Kiribati  Nigeria  Thailand
Bangladesh  Ecuador  Kuwait  Niue  Timor-Leste
Belarus  Djibouti  Kyrgyzstan  Northern Mariana Islands  Togo
Belize  Dominican Republic  Lao People's Democratic Republic  Pakistan  Tokelau
Benin  Equatorial Guinea  Latvia  Palau  Trinidad and Tobago
Bhutan  Eritrea  Lesotho  Papua New Guinea  Tuvalu
Bolivia (Plurinational State of)  Eswatini  Liberia  Paraguay  Tunisia
 Bosnia and Herzegovina  Ethiopia  Libya  Peru  Turkmenistan
Botswana  Fiji  Lithuania  Philippines  Tuvalu
Brazil  French Polynesia  Madagascar  Portugal  United Republic of Tanzania
Brunei Darussalam  Gabon  Malawi  Qatar  Uruguay
Bulgaria  Gambia  Malaysia  Republic of Korea  Uzbekistan
Burkina Faso  Georgia  Maldives  Republic of Moldova  Vanuatu
Burundi  Ghana  Mali  Romania  Venezuela (Bolivarian Republic of)
Côte d'Ivoire  Greenland  Marshall Islands  Russian Federation  Viet Nam
Cabo Verde  Guam  Mauritania  Rwanda  Yemen
Cambodia  Guatemala  Mexico  Sao Tome and Principe  Zambia
Cameroon  Guinea  Micronesia (Federated States of)  Senegal  Zimbabwe
Central African Republic  Guinea-Bissau  Mongolia  Sierra Leone
Chad  Guyana  Morocco  Singapore
China  Haiti  Mozambique  Solomon Islands
China, Hong Kong SAR


Have you had frequent or prolonged visits* to one or more of the countries or territories listed above with a high prevalence of TB disease?  (If yes, CHECK the countries or territories, above)  □ Yes  □ No

Have you been a resident, volunteer, and/or employee of high-risk congregate settings (e.g., correctional facilities, long-term care facilities, and homeless shelters)?  □ Yes  □ No

Have you been a volunteer or health care worker who served clients who are at increased risk for active TB disease?  □ Yes  □ No

Have you ever been a member of any of the following groups that may have an increased incidence of latent M. tuberculosis infection or active TB disease: medically underserved, low-income, or abusing drugs or alcohol?  □ Yes  □ No

If the answer is YES to any of the above questions, [insert your college/university name] requires that you receive TB testing as soon as possible but at least prior to the start of the subsequent semester.

If the answer to all the above questions is NO, no further testing or further action is required.

*The significance of the travel exposure should be discussed with a health care provider and evaluated.
Part II. Clinical Assessment by Health Care Provider

Clinicians should review and verify the information in Part I. Persons answering YES to any of the questions in Part I are candidates for either Mantoux tuberculin skin test (TST) or Interferon Gamma Release Assay (IGRA), unless a previous positive test has been documented.

History of a positive TB skin test or IGRA blood test? (If yes, document below)   Yes______ No ______

History of BCG vaccination? (If yes, consider IGRA if possible.) Yes______ No ______

1. TB Symptom Check

Does the student have signs or symptoms of active pulmonary tuberculosis disease? Yes _____No _____

If No, proceed to 2 or 3.

If yes, check below:

☐ Cough (especially if lasting for 3 weeks or longer) with or without sputum production
☐ Coughing up blood (hemoptysis)
☐ Chest pain
☐ Loss of appetite
☐ Unexplained weight loss
☐ Night sweats
☐ Fever

Proceed with additional evaluation to exclude active tuberculosis disease including chest x-ray (PA and lateral) and sputum evaluation as indicated.

2. Interferon Gamma Release Assay (IGRA)

Date Obtained: _____/_____/______ (specify method)  QFT-GIT  T-Spot  other__________

M       D       Y

Result: negative___  positive___  indeterminate___  borderline___ (T-Spot only)

Date Obtained: _____/_____/______ (specify method)  QFT-GIT  T-Spot  other__________

M       D       Y

Result: negative___  positive___  indeterminate___  borderline___ (T-Spot only)

3. Tuberculin Skin Test (TST)

(TST result should be recorded as actual millimeters (mm) of induration, transverse diameter; if no induration, write “0”. The TST interpretation should be based on mm of induration as well as risk factors.)**

Date Given: _____/_____/______    Date Read: _____/_____/______

M       D       Y

Result: ___mm of induration    **Interpretation: positive______negative______

Date Given: _____/_____/______    Date Read: _____/_____/______

M       D       Y

Result: ___mm of induration    **Interpretation: positive______negative______
**Interpretation guidelines:**

>5 mm is positive:
- Recent close contacts of an individual with infectious TB
- Persons with fibrotic changes on a prior chest x-ray, consistent with past TB disease
- Organ transplant recipients and other immunosuppressed persons (including receiving equivalent of >15 mg/d of prednisone for >1 month.)
- HIV-infected persons

>10 mm is positive:
- Foreign born or travelers to the U.S. from high prevalence areas or who resided in one for a significant* amount of time
- Injection drug users
- Mycobacteriology laboratory personnel
- Residents, employees, or volunteers in high-risk congregate settings
- Persons with medical conditions that increase the risk of progression to TB disease including silicosis, diabetes mellitus, chronic renal failure, certain types of cancer (leukemias and lymphomas, cancers of the head, neck, or lung), gastrectomy or jejunoileal bypass and weight loss of at least 10% below ideal body weight.

>15 mm is positive:
- Persons with no known risk factors for TB who, except for certain testing programs required by law or regulation, would otherwise not be tested.

* The significance of the travel exposure should be discussed with a health care provider and evaluated.

4. Chest x-ray: (Required if IGRA or TST is positive. Note: a single PA view is indicated in the absence of symptoms)

   Date of chest x-ray: ________/_______/_______ Result: normal_____ abnormal____

M         D         Y

Part III. Management of Positive IGRA or TST

In deciding whether to recommend treatment of LTBI to individual patients, the clinician should weigh the likelihood of infection, the likelihood of progression to active tuberculosis infection, and the benefit of therapy. Students in the following groups are at increased risk of progression from LTBI to active TB disease and should be prioritized to begin treatment as soon as possible.

- Infected with HIV
- Recently infected with *M. tuberculosis* (within the past 2 years)
- History of untreated or inadequately treated TB disease, including persons with fibrotic changes on chest radiograph consistent with prior TB disease
- Receiving immunosuppressive therapy such as tumor necrosis factor-alpha (TNF) antagonists, systemic corticosteroids equivalent to/greater than 15 mg of prednisone per day, or immunosuppressive drug therapy following organ transplantation
- Diagnosed with silicosis, diabetes mellitus, chronic renal failure, leukemia, or cancer of the head, neck, or lung
- Have had a gastrectomy or jejunoileal bypass
- Weigh less than 90% of their ideal body weight
- Cigarette and e-cigarette smokers and persons who abuse drugs and/or alcohol

END OF SAMPLE FORM

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