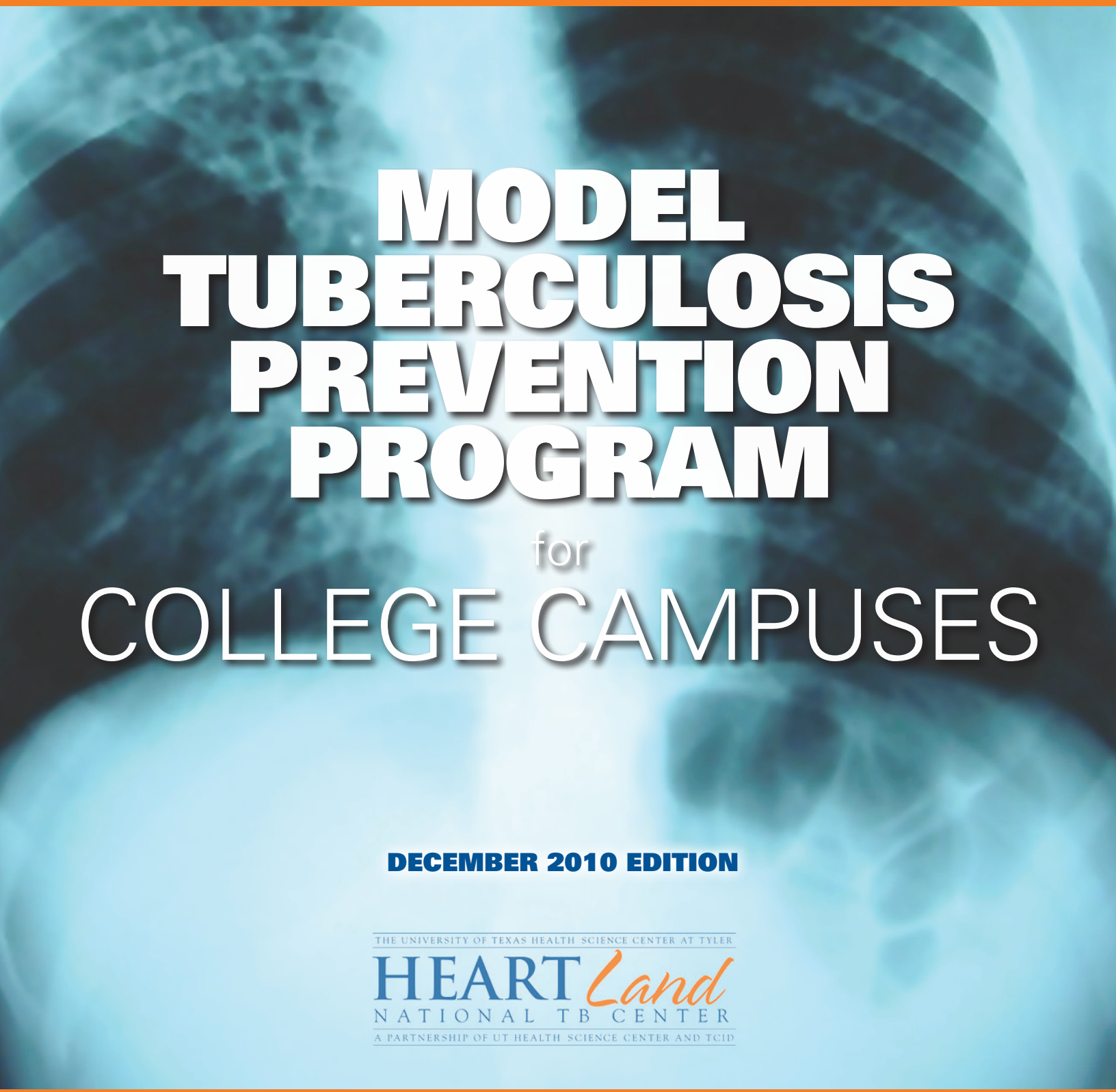

MODEL TUBERCULOSIS PREVENTION PROGRAM

for

COLLEGE CAMPUSES

DECEMBER 2010 EDITION

THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT TYLER
HEARTLand
NATIONAL TB CENTER
A PARTNERSHIP OF UT HEALTH SCIENCE CENTER AND TCID

EXCELLENCE | EXPERTISE | INNOVATION

This project was made possible by a grant through the Centers for Disease Control and Prevention.

THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT TYLER

HEARTLand NATIONAL TB CENTER

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HCPHP Heartland Center for Public Health Preparedness

MU SINCLAIR SCHOOL OF NURSING

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EXECUTIVE SUMMARY

Tuberculosis is not a disease we think much about in the United States. When compared to more common ailments like influenza, it barely registers on our radar screens. However, in other less developed countries, tuberculosis is a serious, often life-threatening and prevalent health problem. When people from these countries travel to, attend school or live in the United States, tuberculosis becomes a health issue that warrants ongoing attention.

Tuberculosis is a disease less common in the United States than in other countries and it often mimics other respiratory diseases. Consequently, it is frequently misdiagnosed. Delays in diagnosis increase the potential for transmission, particularly in a congregate setting such as a college campus. Promoting a tuberculosis control program on a campus and in the surrounding medical community gives physicians and health-care providers a top-of-mind awareness about tuberculosis as a potential diagnosis, an important intervention in controlling the spread of disease.

In addition to promoting awareness, having a tuberculosis control program in place is also helpful in protecting a campus from other respiratory diseases such as Severe Acute Respiratory Syndrome (SARS) and Avian Influenza. While these diseases are far less prevalent in the United States than globally, they have been widely publicized in the media. Campuses may face questions regarding control and prevention activities for these diseases, particularly if there are international students who live on campus and are from these areas of concern. The respiratory control procedures for tuberculosis in health-care settings can also be implemented to protect campuses from other respiratory diseases.

The guidance that follows will help student health centers promote accurate diagnosis of tuberculosis vs. other common and uncommon but highly publicized respiratory diseases.

Avoiding a tuberculosis outbreak should be a priority for higher education administrators. The goal of this document is to help you do exactly that. It explains the basics about tuberculosis, who is most at risk, and what screening and testing policies you can put into place to lower the chances of tuberculosis spreading on your campus. *The Model Tuberculosis Prevention Program for College Campuses* is a how-to manual that can be used by those on your campus who will be responsible for the practical development and implementation of a tuberculosis screening and testing policy. The manual is designed as a reference document and includes many helpful resources that can provide detailed information on different tuberculosis-related topics.

A TUBERCULOSIS PRIMER

(and reasons colleges should care)

What is tuberculosis?

Tuberculosis, commonly known as TB, is a disease that is most often found in the lungs, but can also be found in other parts of the body such as the lymph nodes, the pleura, the brain, the kidneys, or the bones. TB can cause serious illness.

Two stages of TB exist: latent tuberculosis infection and active tuberculosis disease.

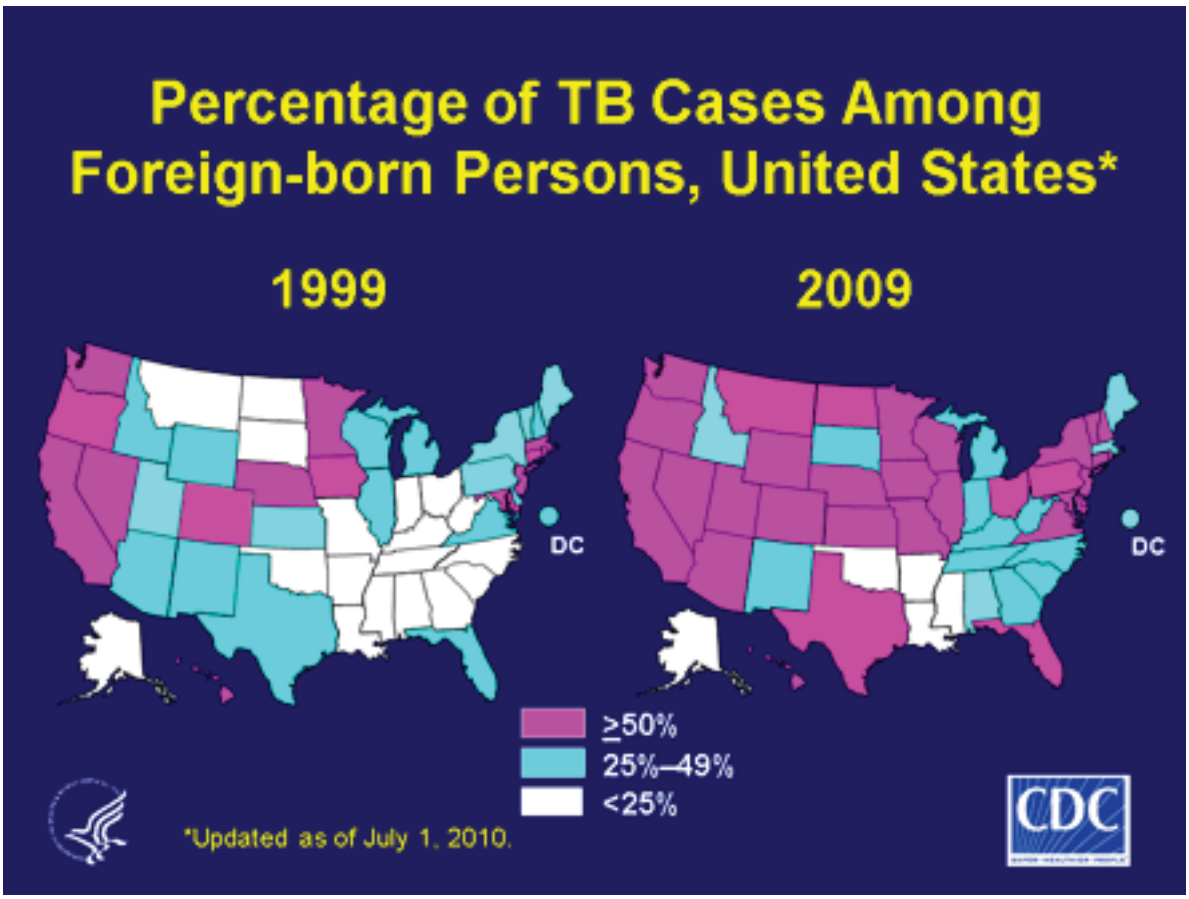
A person with latent tuberculosis infection…	*A person with active tuberculosis disease…*
• has tuberculosis bacteria in his body, but the bacteria are inactive • does not feel sick • is not contagious • has the potential to develop disease if the tuberculosis bacteria become active and multiply in his body • is treatable – so progression to TB disease can be prevented	• has active tuberculosis bacteria in his body • feels sick and experiences symptoms such as coughing, fever and weight loss • is capable of spreading the disease to others if the tuberculosis bacteria are active in the lungs or throat • is curable if diagnosed accurately and early

How is tuberculosis spread?

Tuberculosis is spread when a person with active, untreated tuberculosis germs in the lungs or throat expels those germs into the air by coughing, sneezing or even speaking. Only people who subsequently breathe these germs into their lungs may become infected. Those who breathe in tuberculosis germs usually have had very close, day-to-day contact with someone who has the disease. The close confines of classrooms and dormitories make the college campus an environment where tuberculosis germs can spread quickly.

Is tuberculosis a real threat in the United States?

Worldwide, tuberculosis infects more people than any other infectious disease. In fact, nearly one-third of the world's population is infected with tuberculosis, and roughly eight to 10 million new cases develop annually. The disease kills nearly two million people each year —more than AIDS, malaria and tropical diseases combined. While it is true tuberculosis does not occur in the United States at the epidemic level of some other countries, 10 to 15 million people in this country are infected with tuberculosis. The Centers for Disease Control and Prevention continues to make great progress in eliminating tuberculosis in people born in the United States. In fact, in recent years the cases of tuberculosis in the foreign- born have outnumbered those in U.S. - born.



More than half of the tuberculosis cases in the United States occur in foreign-born people; progress must be made in reducing the foreign-born cases of tuberculosis or U.S. citizens will remain at risk for tuberculosis.

Who is at risk on my campus?

Students from countries with a high incidence of tuberculosis are most at risk of recent exposure and infection with tuberculosis. Many of these international students come to the United States for their education by using student visas. Unlike standard visas issued for immigration, obtaining student visas does not require screening for any form of tuberculosis before a person can enter the country. This means they can arrive on campus with active tuberculosis disease or unknowingly harboring tuberculosis germs in the latent stage.

Also at risk are students born in the United States who have had recent contact with an active case of tuberculosis in the United States, have traveled to countries where tuberculosis is endemic or who have worked or lived in a situation where transmission of tuberculosis is more likely to occur. These students may have either latent tuberculosis infection or active tuberculosis disease and not realize it.

Once infected with tuberculosis, a person without other medical risk factors for progression has a 10 percent lifetime risk of developing active tuberculosis disease. At least 50 percent of this risk occurs within the first one to two years after infection.

Specific risks for your campus related to foreign-born students and visiting faculty will depend on their country of origin, as some countries have higher prevalence of tuberculosis than others. It naturally follows that students and faculty from those high-occurrence countries or U.S. - born students who have extended visits to those countries, are at a greater risk to be carrying the disease. While specific numbers of college students with latent tuberculosis infection or active tuberculosis disease are not included in state surveillance data, reports of campuses involved in tuberculosis outbreak responses are not uncommon.

What happens if someone on my campus develops active tuberculosis disease?

A major concern of having a student with a case of active tuberculosis disease is the potential for a delayed diagnosis and a delay in seeking treatment, both of which promote the spread of tuberculosis. As a result of academic pressures, a student with TB disease may put off seeking care until symptoms are absolutely intolerable or until there is a break in his/her school schedule. In addition, because physicians in the United States do not see many patients with tuberculosis, symptoms of coughing and fever may not be recognized as tuberculosis, delaying an accurate diagnosis. Consequently, there is ample opportunity to unwittingly expose others to the disease.

Once active tuberculosis disease is diagnosed, the recommendation is to notify and test all people who have come in close, regular contact with the infected person. This can have a domino effect on a college campus.

What can be done to prevent a tuberculosis outbreak on my campus?

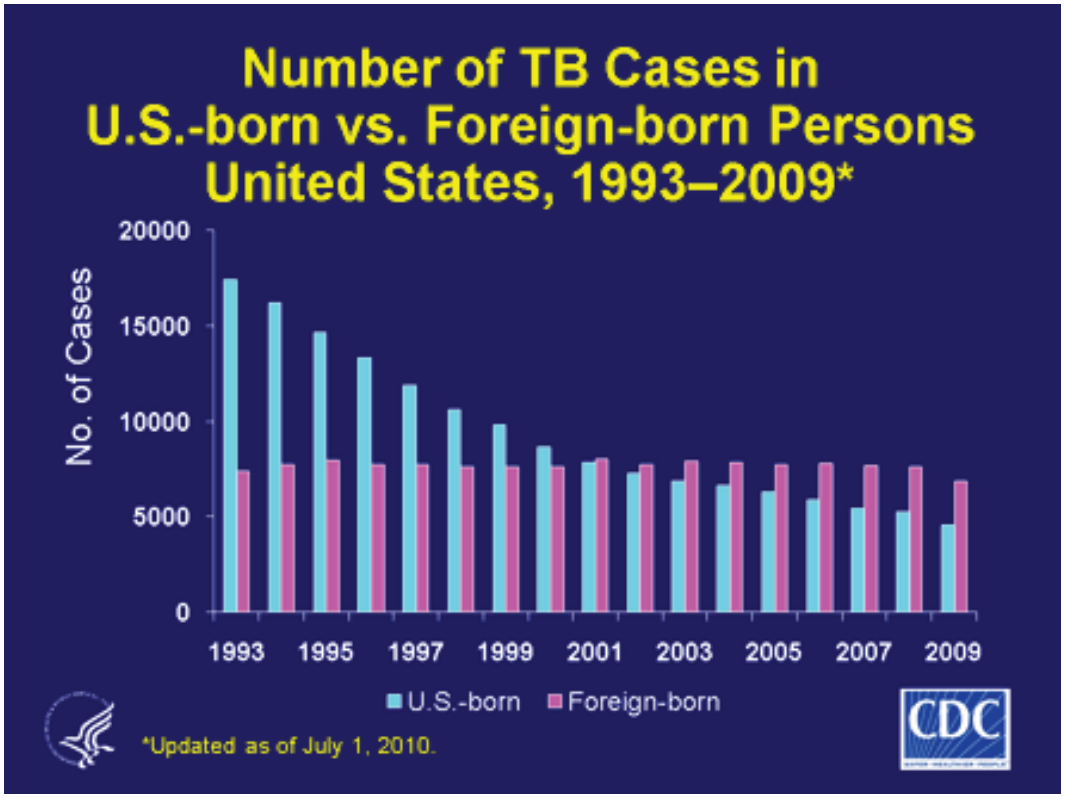
Preventing active tuberculosis disease on a college campus begins with a simple screening process in which students fill out a questionnaire to assess certain risk factors for tuberculosis. By screening all students for their risk, colleges have the opportunity to identify students with latent tuberculosis infection and offer them treatment before it progresses to active disease.

Many colleges already have a policy in place requiring students to have current immunizations for vaccine-preventable diseases, so a tuberculosis policy is a natural outgrowth of that disease prevention activity. The contents of *Model Tuberculosis Prevention Program for College Campuses* provide assistance for developing a tuberculosis policy and guidelines on how to then follow through with that policy.

How does the cost of implementing a tuberculosis policy compare to the benefits of doing so?

The bulk of implementing a tuberculosis policy involves screening students, a relatively simple and inexpensive process that involves the cost of paper for the screening questionnaire and minimal staff time to assess the screening forms once they are returned. Students who are identified as at-risk and require further testing and potentially treatment will create some additional expense, mostly in the staff time necessary to guide students through the process of being tested and potentially treated. Even in these instances, it is estimated that less than one staff person is necessary to fulfill these duties for a campus of 30,000 students.

College administrators are familiar with doing cost/benefit ratios, so how exactly do the costs discussed compare to the benefits of preventing an outbreak of a potentially deadly, contagious disease on a campus? Simply put, the costs are a quantifiable dollar figure, but the benefits are immeasurable. How do you measure the good will lost from students, their parents and the community when a case of active tuberculosis disease occurs on your campus and you had no measures in place to help prevent it? How do you put a price tag on failing to keep safe the very student body with which you have been trusted? Acting now to protect the health of your students is ultimately worth the cost and effort your college will put into implementing a tuberculosis policy.



How do I get started and how long will it take to put a policy in place?

Implementing a tuberculosis policy on a college campus is a fairly simple process, but it will mean involving various departments, from the registration office to the student health center/health administrator. *Model Tuberculosis Prevention Program for College Campuses* can be used to guide colleges through the process of developing and following through with a tuberculosis policy. This manual includes a checklist of processes for colleges to put in place before actual implementation of a tuberculosis policy can begin. Once a college is ready to implement its policy, the manual also provides detailed guidelines on how to navigate through the steps of screening, testing, diagnosis and treatment.

Although the length of time it takes to put a tuberculosis policy and procedure in place will vary, colleges can expect it to take an average of three to six months from the time it first begins to develop its policy until the time it is ready to implement it. Some colleges may implement a policy in as short as two to three months; others may choose a phase-in approach that takes up to a year to fully implement.

A student's fight against tuberculosis

For Chinese student Peijun Zheng, learning her visa had been granted and that she would be able to come to America to pursue her doctorate degree was a bittersweet moment. While her acceptance to the University of Alabama in Tuscaloosa fulfilled her dream of studying in the United States, the moment was marred by the knowledge that she must leave behind her mother, who had recently been diagnosed with colon cancer. Little did Peijun know that within three months of her arrival in America, she would learn that her mother was going to die, not from cancer but from tuberculosis.

Sadly, the news about her mother's tuberculosis was not a complete surprise to Peijun. In recent years, the disease had first ravaged her sister-in-law and then her brother. When her mother became infected with it after caring for her brother, Peijun was faced with a dilemma. Should she return to China to visit her mother one last time and risk being exposed to the multidrug resistant strain of the disease that had killed two family members and was about to kill a third?

Ultimately, Peijun elected to go home to say good-bye to her mother. Before leaving for China, she wanted to learn whether there were any preventive measures she could take. She visited the campus student health center, where her tuberculosis status was already being monitored closely because of her family history. She was told there was little she could do other than start proactive treatment for tuberculosis once she returned from China. Six weeks into that treatment, she was told she had active germs in her body.

Whether she was exposed to those germs during one of the two visits she made to her brother when he was dying from the disease or during her deathbed visit to her mother, Peijun will never know. Despite her family's experience with tuberculosis, she was taken aback by the news that she had active tuberculosis disease. "That was really a shock," recalls Peijun. "I knew it was possible I could get it, but I really wasn't exposed that much to my family."

Peijun had already been on treatment for six weeks. Three of the four drugs she had been taking were not working. This confirmed her fear that she, like her family, had the deadly multidrug resistant version of tuberculosis. A new regime was developed for her and for three months she made trips to the student health center five days a week to take her treatment. "The medicine was really strong," Peijun says. "I was sick all the time, stayed in bed for hours and vomited after most every dose. After a while, you look at the medicine and you know it's going to make you sick and you don't want to take it," she says. "I always tell people how much the care and support from the people in the clinic meant to me. I know the clinic staff really cared about me and I didn't want to let them down."

After 13 months of treatment, Peijun received both good news and bad news. The good news was that she was cured; the bad news was that she needed to continue treatment for five more months to ensure the tuberculosis didn't come back. In early June of 2003, she took her last treatment and celebrated her survival while mourning a mother, brother and sister-in-law who had not been so lucky.

She attributes much of that luck to the early medical intervention she received in America. Looking back, Peijun believes she was originally cleared to come to the United States with questionable test results. Chinese doctors found a small spot on her chest x-ray but chalked it up to a calcified scar from a childhood tuberculosis episode, even though Peijun insisted she did not remember ever having tuberculosis. When she completed the required tuberculosis screening upon her arrival at the University of Alabama in Tuskaloosa, she was flagged for additional testing because of her family history of the disease. When clinic staff saw the spot, they asked her to come back every three months so they could monitor it.

Peijun takes comfort in that thorough care, knowing that even without the early intervention created by her visit to her mother, clinic staff would have diagnosed her disease sooner rather than later, and that sooner gave her a new chance at life.

Setting A Tuberculosis Policy

SETTING A TUBERCULOSIS POLICY

The first step toward preventing an outbreak of tuberculosis on a college campus is establishing a policy to screen for tuberculosis risk. The term "screening for tuberculosis" should not be confused with "testing for tuberculosis." Screening is simply a tool to help identify which individuals on campus may be at risk for tuberculosis. When screening reveals an individual is at risk, testing can then be done to determine whether he does indeed have either latent tuberculosis infection or active tuberculosis disease.

This section will guide college administrators in establishing both a tuberculosis risk screening and tuberculosis testing policy for their campus. Recommendations are based on American College of Health Association (ACHA) guidelines.

The need for a screening policy

Tuberculosis is a potentially life-threatening disease that has the ability to spread quickly in the close confines of classrooms and dormitories on a college campus. It is much easier to prevent an outbreak than it is to control one once a case of active tuberculosis disease occurs. The simplest, most cost-effective way to prevent an outbreak is to screen all students for their risk of having tuberculosis. Putting a formal policy in place to institute tuberculosis risk screening is necessary to ensure that the risk screening occurs on a consistent basis. Strict adherence to the policy through consistent risk screening is critically important in accomplishing the goal of avoiding a tuberculosis outbreak. A basic tuberculosis risk screening policy should include guidelines on exactly who should be screened and how to best accomplish that screening.

Who should be screened

It is recommended that ALL students be screened for tuberculosis risk. For some colleges, a risk screening policy for faculty and staff may be necessary as well. For instance, if a college has a significant number of visiting foreign-born faculty or U.S. born faculty who frequently travel out of the country to countries with high tuberculosis prevalence, having a risk screening policy in place for faculty and staff is encouraged.

How to screen for tuberculosis risk

Screening for tuberculosis can be accomplished by completion of a simple questionnaire that assesses an individual's risk for tuberculosis. Is the student from a country where tuberculosis is common? Has the student traveled to a country where tuberculosis is common? Does the student have a chronic medical condition that impairs the immune system? Is the student a health-care worker or a volunteer or employee of a nursing home, prison or other residential institution? Has the student had contact with a person known to have active tuberculosis? Answering "yes" to any of these questions will necessitate that the individual undergo further evaluation and testing to ensure he/she does not have latent tuberculosis infection or active tuberculosis disease.

The risk screening tool should be based on guidelines from the American College of Health Association and Centers for Disease Control and Prevention. A sample screening questionnaire is found in the "Sample Forms" section of this manual.

When to screen for tuberculosis risk

Ideally, all students new to campus should complete the risk screening questionnaire at the beginning of their first academic term. Early screening will allow enough time for follow-up evaluation and testing, if deemed necessary, to be conducted before registration begins for the next academic term.

Colleges will need to determine the department on their campus that will be in charge of distributing the risk screening forms to new students and subsequently tracking and documenting the return of the forms. For some campuses, the logical choice for this task will be a department that is already involved with contacting students prior to their arrival on campus, such as the admissions or registration departments. Colleges already screening for compliance with vaccination requirements can easily adapt the process for tuberculosis. Example screening forms that include both vaccination and tuberculosis risk factor screening are found in the "Sample Forms" section of this manual.

Screening existing students

When a new risk screening policy is initiated on a campus, a college will have to make a decision about whether to screen existing students for their tuberculosis risk or phase the policy in by only screening new students. If the decision is made to screen existing students, the most efficient way to do this will vary from college to college. Sending risk screening questionnaires (along with pre addressed and stamped return envelopes) to the local addresses of existing students at the beginning of the academic term and asking them to complete and return the form within a designated time period is one approach to implementing the policy among existing students.

As with new students, colleges will need to assign a department to be in charge of distributing risk screening forms to existing students and then tracking and documenting compliance as well as the results of the screening.

Ensuring compliance

To ensure new and existing students complete and return the risk screening form, colleges must establish a meaningful consequence for those students not complying with the tuberculosis screening and testing policy requirement. For instance, a college could place an administrative hold on registration for subsequent academic terms until students return the form.

Tuberculosis testing policy

While less than 1 percent of U.S. born students who undergo the initial screening will be identified as being at risk for tuberculosis, the same cannot be said of foreign-born students. As many as 90 percent of this student population will answer "yes" to one or more questions on the questionnaire, thereby screening positive for being at high risk for tuberculosis. These students will need to undergo further evaluation and testing. The recommended protocol for evaluating and testing students who screen positive for being at high risk for tuberculosis is found in the sample policy included in this section. A college's tuberculosis policy should clearly outline the protocol to be followed in these cases. This policy should include provisions for:

- Coordination with the local public health department in the evaluation and treatment of students with latent infection or TB disease.
- Ensuring students who test positive for tuberculosis infection receive an annual signs and symptoms review should they decline or fail to complete treatment.
- Outlining circumstances when a student should be under respiratory isolation and prevented from attending class or other campus events.

Issues to consider in developing a thorough policy for your campus will be discussed in the Latent Tuberculosis Infection and Active Disease sections of this manual. An algorithm outlines the general protocol your college can use in implementing a tuberculosis policy.

A word on discrimination

A sound tuberculosis risk screening will avoid discriminating against any group by requiring risk screening for *all* students. Students who are found to be at-risk for tuberculosis will undergo further evaluation and testing, not based on their nationality or race, but because of their screening results. By initially risk screening *all* students, colleges will not only be conducting a thorough tuberculosis risk assessment but will also be avoiding any appearance of discrimination. Also, the sensitivity and specificity of the TST are not accurate enough to use it reliably in a low risk population. CDC recommends against using TSTs to screen low risk individuals. However, it is suggested colleges consult with their legal counsel before adopting any tuberculosis screening policy.

Developing a tuberculosis core team

When developing a tuberculosis policy for a campus, it is advisable to involve the areas that will be responsible for implementing the policy. Departments to consider involving and their potential roles include:

Department to involve	*Role*
Admissions	Sending/tracking risk screening forms
Registration	Enforcing registration restrictions for students who have not completed a risk screening form
Student health center	Coordinating testing and treatment protocols for tuberculosis policy
Fiscal administration	Identifying cost issues of policy
Public relations	Developing a plan for communicating the implementation of the new screening policy to students, parents, faculty and staff. Developing a communication plan to respond to questions/concerns in the event of an active tuberculosis case on campus, or when students have visible reactions to a tuberculosis skin test
Legal counsel	Ensuring policy is appropriate/non-discriminatory
International student groups	Consulting on logistics or potential issues of concern to international student population
Local or state public health representative	Technical assistance, resource for coordination of care issues

Creating a policy

A sample policy can be found to help colleges in creating a policy of their own. Two things should be noted:

- The sample policy is simply meant to be a template. Colleges will need to adapt it to fit the processes and departments that are applicable to their campuses. For instance, colleges without a student health center will need to designate an alternative department to take the lead in coordinating and documenting testing.

- For simplicity sake, the sample policy contains very broad guidelines on how to handle tuberculosis screening, testing and treatment. More detailed information on all of these aspects is included in the appropriate sections of this manual.

Setting The Stage For Implementation

SETTING THE STAGE FOR IMPLEMENTATION

Developing a policy to screen students for tuberculosis is an important first step toward protecting the health of all students and faculty on campus, as well as the health of the local community. However, to be completely successful, the effort cannot end there. Colleges must be prepared to follow up on the eventual consequences of the policy. The facts are as follows:

- Since so many parts of the world are tuberculosis-endemic, campuses can estimate that the majority of international students will fall into a high-risk category, particularly campuses that tend to enroll students from Eastern European, Asian, African or South American countries.

- An average of one-third of all international students will have a positive tuberculin skin test or positive blood test.

Following up on these screening and test results will be the challenging part of putting a tuberculosis policy in place. Laying the necessary groundwork — such as establishing testing and treatment protocols and developing a relationship with the local health department — is crucial to the ultimate success of the policy. How the stage is set before the policy becomes operational will vary from college to college, depending on the on-campus resources available, particularly whether a college has a student health center. For instance, colleges with a student health center may have trained medical personnel who can offer testing, diagnosis and treatment on site. Colleges without a student health center will need to focus their efforts on establishing relationships with agencies that can assist in coordinating that testing, diagnosis and treatment.

This section addresses the issues that colleges will need to consider as they establish procedures to follow through on positive risk screening results and positive tuberculin skin tests or positive blood tests. It is essential to have these protocols in place before implementing a tuberculosis risk screening policy on a college campus. For ease of use, there are two checklists — one for colleges with a student health center and one for colleges with no student health center. Colleges that have a student health center with limited resources may find it most beneficial to follow the latter checklist. A separate checklist is also provided for establishing a working relationship with a local health department, a necessity regardless of whether a college has a student health center.

CHECKLIST FOR COLLEGES *WITH* A STUDENT HEALTH CENTER

- ❑ Establish a partnership with the local health department. More information on developing this relationship is found later in this section.

- ❑ If medical personnel at the student health center will be offering testing, diagnosis and/or treatment, follow the guidelines in the Centers for Disease Control and Prevention's latest guidelines accessible at ***http://www.cdc.gov/tb*** to ensure standard protocols are being met.

- ❑ If medical personnel at the student health center will be offering skin testing, prepare and train staff to conduct and interpret Mantoux skin tests. The CDC's Mantoux Tuberculin Skin Test training video and booklet is one suggested resource for this training. The "Helpful Resources" section of this manual provides information on where to obtain a free copy of this video and booklet.

- ❑ If a blood based test will be used for screening, Interferon Gamma Release Assay (IGRA), consider staff training, specimen collection supplies, on-site processing, transportation to laboratory, patient education, materials, etc.

- ❑ If the student health center does not have equipment to perform chest x-rays, find out which medical facilities in the area (hospitals, radiology clinics, health departments) offer that test and will accept referred students.

- ❑ If medical personnel at the student health center will be offering treatment on site, develop a process for administering that treatment, particularly directly observed therapy (DOT). The goal of the process should be to make it as easy as possible for the student to receive treatment, while at the same time, allowing staff to monitor the student's adherence to the treatment regimen. In the "Sample Forms" section of this manual there is a student handout that colleges can use as an example of how they might handle the treatment process on their campus.

- ❑ Be prepared to answer and respond to students who have had the *Bacille Calmette Guerin* (BCG) vaccine and believe they are protected from tuberculosis.

- ❑ Be prepared to answer and respond to students who have had previous positive TB skin tests and/or a history of treated tuberculosis.

- ❑ Acquire patient education materials on tuberculosis that can be given to students. Materials should cover basics of tuberculosis, as well as testing and treatment protocols for tuberculosis. Have translated information on hand for students who do not speak English well. Some of these materials can be found in the "Patient Education" section of this manual.

- ❑ Prepare college fiscal staff and student health center staff to respond to students' questions about the costs they may incur for testing and treatment if they do not have health insurance. Explore availability of free care from public agencies for procedures such as chest x-rays and sputum cultures and the availability of free medication for treatment.

- ❑ If a college requires international students to purchase health insurance as part of enrollment, contact the college's affiliated insurer. Determine which medical expenses (chest x-rays, office visits, etc.) associated with the diagnosis of latent tuberculosis infection or active tuberculosis disease are covered under the policy.

- ❑ If the student health center is using IGRA, establish procedures and practices for coordinating and communicating results.

CHECKLIST FOR COLLEGES *WITHOUT* A STUDENT HEALTH CENTER OR LIMITED HEALTH SERVICES FOR STUDENTS

- ❑ Establish a partnership with the local health department. More information on developing this relationship is found later in this section.

- ❑ Prepare a list of names and numbers for medical providers who can perform tuberculosis testing. The list might include local family physicians, internists and nurse practitioners as well as any local health agencies and community clinics that offer skin testing or blood tests for tuberculosis. The local health department can assist in developing this list. Provide this list to students who screen positive for tuberculosis risk and need further testing to determine whether they have tuberculosis infection or disease.

- ❑ Prepare a list of names and numbers of medical facilities in the area that perform chest x-rays. The list might include local hospitals, radiology clinics and health agencies. The local health department can assist in developing this list.

Provide this list to students who have a positive tuberculin skin test or blood test and need a chest x-ray to determine whether they have active tuberculosis disease.

- ❑ Since students will be receiving testing, diagnosis and treatment from medical providers outside the college, a protocol must be established for those providers to report back to the college about the results of a student's tuberculosis testing, diagnosis and treatment.

- ❑ Be prepared to answer and respond to students who have had the *Bacille Calmette Guerin* (BCG) vaccine and believe they are protected from tuberculosis.

- ❑ Be prepared to answer and respond to students who have had previous positive TST's and/or a previous history of tuberculosis.

- ❑ Acquire patient education materials on tuberculosis that can be given to students as needed. Materials should cover basics of tuberculosis, as well as testing and treatment protocols for tuberculosis. Have translated information on hand for students who are not fluent in English. Some of these materials can be found in the "Patient Education" section of this manual.

- ❑ Prepare college fiscal staff to respond to students' questions about the costs they may incur for testing and treatment if they do not have health insurance. Explore availability of free care from public agencies for procedures such as chest x-rays and sputum cultures and the availability of free medication for treatment.

- ❑ If a college requires international students to purchase health insurance as part of enrollment, contact the college's affiliated insurer. Determine which medical expenses (IGRAs, chest x-rays, office visits, etc.) associated with the diagnosis of latent tuberculosis infection or active tuberculosis disease are covered under the policy.

HOW TO PARTNER WITH THE LOCAL HEALTH DEPARTMENT

Before planning and implementing a campus tuberculosis policy, it is vital to establish a partnership with the local health department. The college must become familiar with the assistance offered by the local health department as well as the public health requirements related to tuberculosis. Below are some issues to discuss when developing this relationship.

- ❑ Colleges without student health centers or medical personnel to administer diagnostic tuberculosis testing and/or chest x-rays should find out what kind of assistance the health department offers in these areas and what the charges are for these tests. If the department does not provide these services, seek guidance on other community resources that can help.

Important Questions:

- ❑ What reporting should be done to the health department when a college learns that a student has tested positive for tuberculosis in the past?

- ❑ What reporting should be done to the health department when a college learns that a student has a previous history of tuberculosis disease?

- ❑ What is the protocol for communicating to the health department medical information about students who test positive for active tuberculosis disease?

- ❑ Will the health department offer treatment for students who have been diagnosed with latent tuberculosis infection or active tuberculosis disease?

- ❑ In the event of an active case of tuberculosis disease, how does the health department want to partner with the college in managing the case? What assistance can the health department offer in contact investigation and identifying an appropriate place to isolate the student when isolation is necessary?

    - ❑ What patient education materials can the health department provide?

    - ❑ What free or low-cost services are available to students who need testing or treatment but do not have insurance or the financial means to pay for their medical care?

Tuberculosis Testing

TUBERCULOSIS TESTING

Students who answered "yes" to one or more questions on the screening questionnaire are at risk for having latent tuberculosis infection or active tuberculosis disease. To determine whether they have tuberculosis infection or have active tuberculosis disease, further evaluation and testing is necessary.

This section will guide colleges through the process of notifying students of their need to be tested and will provide direction, advice and resources on how to proceed with tuberculosis testing. How the testing process is handled will vary from college to college, depending on the on-campus resources available, particularly whether a college has a student health center. For instance, colleges with a student health center may have trained medical personnel who can offer testing on site. Colleges without a student health center will need to focus their efforts on establishing a relationship with the local health department for assistance with testing.

For ease of use, this section is divided into two parts — one for colleges with a student health center and one for colleges with no student health center or a student health center with limited resources.

TUBERCULOSIS TESTING GUIDELINES

To be followed by colleges with a student health center

STEP 1 Notify student of the need to be tested for tuberculosis
STEP 2 Respond to any questions student may have about the tuberculosis testing process
STEP 3 Conduct tuberculosis testing and clinical evaluation
STEP 4 Discuss test results with student and document results in student's file

STEP 1: Notify student of the need to be tested for tuberculosis

Once the screening questionnaire identifies a student as at-risk for tuberculosis, the college should notify the student about the need to be tested for tuberculosis. This communication should explain that the student requires testing as a result of the screening questionnaire and should provide information on how the student should proceed with getting tested. As part of this communication with the student, it is suggested that colleges include patient education handouts with information about tuberculosis and the testing process.

A sample letter is found in the "Sample Forms" section of this manual. Patient education information can be found in the "Patient Education" section of this manual.

STEP 2: Respond to any questions student may have about the tuberculosis testing process

Staff at the campus student health center should be prepared to respond to any questions or concerns a high-risk student may have about being tested. While most students will undergo tuberculosis testing willingly, some students may question their need to be tested. The "Patient Education" section of this manual contains handouts that can be given to students to help educate them about the process.

STEP 3: Conduct tuberculosis testing and clinical evaluation

To determine whether a student has tuberculosis, the Mantoux single-step skin test can be performed. The Mantoux skin test is performed by placing an intradermal (just under the skin) injection of purified protein derivative (PPD) tuberculin into the inner surface of the forearm. The student must return to the campus student health center within 48 to 72 hours after the injection to have the reaction to the Mantoux test read by a trained health-care worker. Being adequately trained in administering and reading Mantoux skin test results is crucial to yielding accurate results. When administering and reading the results of tuberculin skin tests, health-care workers should follow guidelines from the Centers for Disease Control and Prevention. A link to this guidance can be found in the resources section of the manual. Since the student is undergoing testing for identified risk factors, a result of 10mm or greater would always be considered positive, and in some situations a result of 5mm may be positive.

Tuberculosis testing also can be accomplished with a blood test known as the Interferon Gamma Release Assay (IGRA) tests. IGRAs are believed to more specific than the TST as these will not react in individuals that have undergone BCG vaccination. "Currently the CDC supports the use of IGRAs as an alternative to TSTs, but does not advocate using it as a confirmatory test for persons with a positive TST" (ACHA Guidelines). Colleges who want details on using IGRAs in place of skin testing can consult the CDC's Web site at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5905a1.htm?s_cid=rr5905a1_e

STEP 4: Discuss test results with student and document results in student's file

Once a student's test results are known, student health center staff should discuss with the student whether the TST or IGRA was positive or negative. Students who have a negative test and who do not have signs or symptoms of tuberculosis, do not have active tuberculosis disease or latent tuberculosis infection - no further testing is necessary. A positive test requires further evaluation and diagnosis. Details on conducting that assessment can be found in the "Tuberculosis Diagnosis" section of this manual.

The test results should be documented in the student's file. A sample form that documents this information is included in the "Sample Forms" section of this manual. Please refer to FERPA (Family Education Rights and Privacy Act) for guidelines on handling student medical records at http://www.ed.gov/policy/gen/guid/fpco/ferpa/index.html.

TUBERCULOSIS TESTING GUIDELINES

To be followed by colleges without a student health center or one with limited resources

STEP 1 Notify local health department of student's need to be tested
STEP 2 Notify student of the need to be tested and provide guidance on testing process
STEP 3 Document tuberculosis test results in student's file

STEP 1: Notify local health department of student's need to be tested

Most local health departments will be willing to conduct testing for those students whose screening questionnaire identifies them as at-risk for tuberculosis. Notifying the health department in advance of the student's need to be tested will help them coordinate the process so that they can track individual students and report test results back to the college.

STEP 2: Notify student of the need to be tested and provide guidance on testing process

Once the screening questionnaire identifies a student as at-risk for tuberculosis, the college should notify the student about the need to be tested. This communication should explain that the student needs to be tested because of risk factors identified on the screening questionairre. Inform the student that they should contact the local health department to arrange testing and should return documentation from the health department once the testing is complete.

As part of this communication with the student, colleges may choose to include patient education handouts with information about tuberculosis and the testing process. The "Patient Education" section of this manual contains handouts that can be given to students to help educate them about the process. Students who have further questions should be referred to the health department.

STEP 3: Document tuberculosis test results in student's file

The health department should provide the student with documentation of the test results. The student must then give that documentation to the college. A sample form that documents this information is included in the "Sample Forms" section of this manual.

Tuberculosis Diagnosis

TUBERCULOSIS DIAGNOSIS

Students who have a positive tuberculosis test result have likely been exposed to tuberculosis at some point in their life and are now infected with the bacteria that causes tuberculosis. A person can be infected with the bacteria that causes tuberculosis and not have active tuberculosis disease. This is known as latent tuberculosis infection and is not contagious. But at some point, latent tuberculosis infection can become active tuberculosis disease that is contagious. In fact, a person with latent infection has a 10 percent lifetime risk of developing active tuberculosis disease that risk increases in the presence of certain medical conditions, such as HIV infection, diabetes, etc. At least 50 percent of this risk occurs within the first one to two years after infection, and the remainder of the risk occurs during total lifespan. All persons diagnosed with TB disease or LTBI should be evaluated for HIV infection.

When a student has a positive tuberculosis test result, it is important to do further evaluation to determine whether they have latent tuberculosis infection or active tuberculosis disease. A normal chest radiograph in an asymptomatic person who tests positive by TST or IGRA reliably excludes TB disease opening the way for single drug treatment of LTBI.

This section will guide colleges through the process of diagnosing students who have a positive tuberculosis test result and will provide advice and resources on how to communicate with students about their need to diagnose their tuberculosis status. How the diagnostic process is handled will vary from college to college, depending on the campus resources available, particularly whether a college has a student health center. For instance, colleges with a student health center may have trained medical personnel who can provide clinical or medical examinations on site. Colleges without a student health center will need to focus their efforts on establishing a relationship with the local health department for assistance with diagnosis.

For ease of use, this section is divided into two parts — one for colleges with a student health center and one for colleges with no student health center or student health center with limited resources.

TUBERCULOSIS DIAGNOSIS GUIDELINES

To be followed by colleges ***with*** a student health center

STEP 1 Provide student with patient education about the meaning of a positive tuberculosis test
STEP 2 Discuss with student financial/insurance issues related to diagnosis
STEP 3 Schedule an appointment for the student to have a chest x-ray
STEP 4 Conduct a medical examination of the student
STEP 5 Discuss results of exam/chest x-ray with student and recommend how to proceed
STEP 6 Document the results of the diagnosis in student's file

STEP 1: Provide student with patient education about the meaning of a positive tuberculosis test

When a student has a positive tuberculosis test result, it is likely he/she will have many questions. These questions may be as basic as "what is tuberculosis" to more complicated questions about whether having the Bacille Calmette Guerin (BCG) vaccine protects him/her from tuberculosis. Staff at a college's student health center should have patient education materials available to give students to help answer these questions.

While it is impossible to anticipate all potential questions or issues students may raise, the "Patient Education" section of this manual provides answers to some of the more common issues that colleges may encounter.

STEP 2: Discuss with student financial/insurance issues related to diagnosis

During the diagnosis phase, it is necessary for students with a positive tuberculosis test result to have a chest x-ray and medical exam. Who pays for this medical care can become an issue for students who do not have health insurance.

College officials should be prepared to respond to these issues. The "Financial Implications" section of this manual can provide additional guidance in assisting students.

STEP 3: Schedule an appointment for the student to have a chest x-ray

The most effective diagnostic tool to determine whether a person's tuberculosis is latent infection or active disease is a chest x-ray. If a college's student health center has equipment to perform a chest x-ray on site, an appointment should be scheduled for the student to have the chest x-ray done. Most student health centers, however, will not have the radiological capabilities on site. In these cases, the student health center should make arrangements for the student to have the chest x-ray done at a qualified facility and have the results reported back to the student health center.

STEP 4: Conduct a medical examination of the student

In addition to a chest x-ray, a physician or other qualified health-care provider should get a medical history and do a physical examination of the student, checking for symptoms of tuberculosis. It is recommended that the physical examination be done after the student health center has the results of the student's chest x-ray so that the results of both the x-ray and medical exam can be discussed with the student at the same time. Guidance for conducting this examination can be found in the "Resources" section of this manual.

STEP 5: Discuss results of exam/chest x-ray with student and recommend how to proceed

Once results of the medical examination and chest x-ray are available, the physician should discuss with the student whether he/she has latent tuberculosis infection or whether it is possible he/she has active tuberculosis disease and needs further testing. Guidelines on recommendations to make to students with latent tuberculosis infection (LTBI) are found in the "LTBI" section of this manual. Guidelines on how to proceed with students who may have active tuberculosis are found in the "Active TB" section of this manual.

STEP 6: Document the results of the diagnosis in student's file

Once it is known whether the student has latent tuberculosis infection or whether it is possible the student has active tuberculosis disease and needs further testing, the tuberculosis status of the student should be noted in his file. How that diagnosis will affect the student's ability to register for courses also should be indicated.

TUBERCULOSIS DIAGNOSIS GUIDELINES

To be followed by colleges ***without*** a student health center or one with limited resources

STEP 1 Work with local health department to ensure student receives chest x-ray, medical exam and patient education
STEP 2 Discuss with student financial/insurance issues related to diagnosis
STEP 3 Document the results of the diagnosis in student's file

STEP 1: Work with local health department to ensure student receives chest x-ray, medical exam and patient education

The partnership between most colleges and health departments will involve the health department taking the lead in following up with students who have a positive tuberculosis test result. During this diagnostic phase, colleges can expect their partner health departments to coordinate chest x-rays and medical exams, as well as provide patient education and recommendations to students about what they need to do next based on the diagnosis they received. Colleges should work with the health department to determine the best way they can assist in these efforts.

STEP 2: Discuss with student financial/insurance issues related to diagnosis

During the diagnosis phase, the health department will arrange for students who have a positive tuberculosis test result to have a chest x-ray and medical exam. Who pays for this medical care can become an issue for students who do

not have health insurance. College officials should be prepared to respond to these issues. The "Financial Implications" section of this manual can provide additional guidance in assisting students.

STEP 3: Document the results of the diagnosis in student's file

Colleges should ensure there is a procedure in place with the local health department for receiving documentation about the tuberculosis status of students who have a positive tuberculosis test result. Whether they are diagnosed with latent tuberculosis infection or active tuberculosis disease — and how that diagnosis will affect their ability to register for courses — should be noted in their file.

TUBERCULOSIS AND OTHER RESPIRATORY ILLNESSES

Tuberculosis and pneumonia

Misdiagnosing tuberculosis as community acquired pneumonia (CAP) can be a real threat to controlling these two diseases on a college campus. Although CAP is more prevalent, tuberculosis should be suspected when a patient — particularly a patient with risk factors for tuberculosis and/or history of a positive skin test — presents with a persistent cough lasting greater than two to three weeks, fatigue, night sweats, weight loss, loss of appetite, hemoptysis and fever. The American Thoracic Society recommends that all patients suspected of having CAP receive a chest radiograph to confirm the diagnosis. A chest x-ray may help distinguish tuberculosis from CAP. Making an accurate diagnosis has become even more critical with the increased use of quinolones to treat CAP. Quinolones are effective against tuberculosis and are listed in the category of second-line drugs (e.g. levofloxacin, moxifloxacin, ciprofloxacin, etc.). Tuberculosis patients mistakenly diagnosed with CAP and placed on quinolone treatment will show improvement but will not be cured by this treatment alone. Repeated treatment with quinolones will potentially render the patient quinolone-resistant, causing the loss of an important second-line drug. See http://www.thoracic.org/sections/publications/statements/pages/mtpi/commacq1-25.html.

Persons with advanced HIV infection may have tuberculosis lung disease and be potentially contagious despite having normal chest radiographs. All HIV positive persons presenting with significant repiratory symptoms, with or without fever, should be assessed for the presence of tuberculosis lung disease under AFB isolation.

Latent Tuberculosis Infection Treatment

LATENT TUBERCULOSIS INFECTION TREATMENT

Usually, students who have a positive TST or IGRA, a normal chest x-ray and no signs or symptoms of tuberculosis will be diagnosed with latent tuberculosis infection, or LTBI. Having LTBI means a person has been exposed to tuberculosis at some point in his/her life and is now infected with the bacteria that cause the disease, but the disease remains dormant in the person's body and the person is not contagious. However, latent tuberculosis infection can become active tuberculosis disease that can be contagious. In fact, a person with latent infection has a 10 percent lifetime risk of developing active tuberculosis disease. That risk increases in the presence of certain medical conditions such as HIV infection or diabetes. At least 50 percent of this risk occurs within the first one to two years after infection, and the remainder of the risk occurs during total lifespan.

Therefore, the goal for students with LTBI is to treat them with medication that will rid their body of tuberculosis bacteria, thereby avoiding progression to active tuberculosis disease. Students with LTBI who are foreign-born are particularly crucial to treat because studies show that infected foreign-born persons are at higher risk for progressing to active disease within five years of arrival in the United States.

This section will guide colleges through the process of treating students with LTBI and will provide advice and resources on how to communicate with students about the advantages of having their tuberculosis infection treated. Colleges should be aware of the anxiety a tuberculosis diagnosis can create in international students, who may be particularly fearful the treatment will interfere with their plans to complete their studies in the United States. It is also important for colleges to recognize how difficult it can be for a student to complete treatment, which on average takes four to nine months depending on the regimen chosen. Providing support and encouragement to these students and making the process as easy as possible can be extremely helpful in raising treatment acceptance and completion rates on campus. For legal reasons, most colleges will not find it advisable to require treatment for LTBI, so this effort to support students and encourage acceptance and adherence to treatment is a critical component of a college's implementation of a tuberculosis policy.

How LTBI treatment is handled will vary from college to college, depending on the on-campus resources available, particularly whether a college has a student health center. For instance, colleges with a student health center may have trained medical personnel who can provide treatment on site. Colleges without a student health center will rely on the relationship they have established with the local health department to gain assistance with treatment.

For ease of use, this section is divided into two parts — one for colleges with a student health center and one for colleges with no student health center or student health center with limited resources.

LTBI TREATMENT GUIDELINES

To be followed by colleges with a student health center

STEP 1 Discuss with student financial/insurance issues related to treatment
STEP 2 Discuss with student the LTBI diagnosis and recommended treatment
STEP 3 Prepare to respond to student reluctance to take treatment
STEP 4 If student consents to treatment, explain treatment schedule and process
STEP 5 Document complete or incomplete treatment in student's file
STEP 6 If student refuses treatment, explain follow-up requirements and document refusal

STEP 1: Discuss with student financial/insurance issues related to treatment

Students who do not have health insurance may have concerns about who will pay for their medical treatment of latent tuberculosis infection (LTBI). College officials should be prepared to respond to this issue. Most states will provide the medication used to treat LTBI at no charge to patients, so colleges should check with their local health department about their state's policies. If coverage is not available, the "Financial Implications" section of this manual can provide guidance in assisting students.

STEP 2: Discuss with student the LTBI diagnosis and recommended treatment

Once a diagnosis of LTBI is made, discuss with the student the meaning of the diagnosis and recommended treatment to keep the latent tuberculosis infection from progressing to active tuberculosis disease. The recommended treatment for LTBI is either an intermittent regimen of two oral doses of isoniazid (INH) medication each week for nine months, or daily INH for nine months. The standard of care for intermittent regimens in tuberculosis calls for directly observed therapy (DOT) of the INH medication, which is accomplished by having students visit the student health center twice a week so that staff can observe them take their medicine. Many students prefer this treatment regimen because it involves taking fewer pills and taking them less frequently in comparison to a daily self-administered treatment regimen (discussed below). DOT facilitates a partnership with the student health center staff to encourage students through their lengthy treatment and ensures students do not forget any doses. Students undergoing twice a week DOT must allow 48 hours between doses of INH medication, and treatment should continue for nine months as this duration has been shown to be the most effective. However, given the academic calendar, six months may be an acceptable alternative. Monthly check-ups with a healthcare provider also are part of the DOT protocol.

While DOT is the preferred method of medication administration, it also is possible for students to self-administer treatment (SAT). SAT involves a daily oral dose of INH for nine months and monthly check-ups, patient education and medication refills with a health-care provider.

Student health center staff can find detailed guidelines for treatment at the Centers for Disease Control and Prevention's website at http://www.cdc.gov/tb/pubs/mmwr/maj-guide/default.htm.

STEP 3: Prepare to respond to student reluctance to take treatment

Colleges should expect many students with LTBI to be reluctant to take treatment and should be prepared to respond to concerns about being treated. The reasons for this reluctance often can be overcome simply by educating the student fully about the clinical consequences of refusing treatment. Staff at a college's student health center should have patient education material available to give students to help answer their questions and concerns about treatment.

When it is feasible, colleges may consider offering incentives to encourage students to seek treatment for LTBI and to follow through completely with that treatment. Lack of rapport, support or encouragement between clinics and LTBI patients can be a major factor in reducing completion rates. Tuberculosis control and prevention programs often use incentives and enablers to either reduce financial barriers that can influence the patient's ability to complete treatment, or help facilitate a positive relationship between the clinic staff and the patient. These small and inexpensive gestures may be important strategies in building rapport with international students in particular, who often are skeptical about the need for LTBI treatment. Incentives and enablers may range from bus tokens to small rewards for completion milestones. Campuses have used bookstore coupons, small treats or gifts such as hats and gloves in the winter, candy and pizza coupons. One student health center had a cake and ice cream party when each student completed treatment. Other enablers for students who take self-administered therapy may include calendars, blister packs of pills, reminders and counseling at monthly follow-up appointments. More suggestions for using incentives and enablers can be found in the "Helpful Resources" section of this manual.

STEP 4: If student consents to treatment, explain treatment schedule and process

Once a student consents to receiving treatment for LTBI, student health center staff should go over in detail how the treatment process will work. Using a handout similar to the one included in the "Sample Forms" section of this manual may help allay concerns a student has about the process. Whether a student's therapy is directly observed or self-administered, the student should be advised of the need to receive monthly monitoring. Student health center staff should emphasize the importance of following the medication regimen and should explain what to do if a dose is missed. Staff also should explain adverse drug reactions to the medicine and what the student should do if any signs or symptoms of these reactions occur. It is also important for the site to have a trackingt system in place to identify and follow-up with students who fail to keep DOT or monthly monitoring appointments.

STEP 5: Document complete or incomplete treatment in student's file

Success or failure in completing LTBI treatment should be noted in their file. As part of the overall tuberculosis policy, campuses should require students with LTBI who refuse treatment or start but do not complete treatment to undergo an annual symptom evaluation by a medical professional familiar with tuberculosis before registering for courses for subsequent academic terms, and this requirement should be indicated in their file.

STEP 6: If student refuses treatment, explain follow-up requirements and document refusal

Despite a college's best efforts, some students with LTBI will refuse to receive treatment. Most colleges will not find it advisable to require treatment, but they should require a student with LTBI to have an annual symptom evaluation by a medical professional familiar with tuberculosis before the student can register for courses for subsequent academic terms. In addition, these students should be given patient education information about the signs and symptoms of LTBI progression to active tuberculosis disease. Students should be advised to seek immediate medical attention if they begin experiencing any of those symptoms.

Students who decline treatment must complete a refusal of treatment form, and that documentation, along with the annual medical evaluation requirement, should be noted in their file. A sample refusal of treatment form and an annual health evaluation update form are found in the "Sample Forms" section of this manual.

LTBI TREATMENT GUIDELINES

To be followed by colleges without a student health center or one with limited resources

STEP 1 Work with local health department to ensure student receives information
STEP 2 Discuss with student financial/insurance issues related to treatment
STEP 3 If student consents to treatment, document complete or incomplete treatment in file
STEP 4 If student refuses treatment, explain follow-up requirements and document refusal

STEP 1: Work with local health department to ensure student receives information

The partnership between most colleges and health departments will involve the health department taking the lead in following up with students who are diagnosed with latent tuberculosis infection (LTBI). During this stage, colleges can expect their partner health departments to provide students with patient education and recommendations on receiving treatment for their LTBI. Most health departments also will be able to provide students with the medication used to treat LTBI. If the health department cannot provide this treatment on site, it can coordinate care with another local provider. Colleges should work with the health department to determine the best way they can assist in these efforts.

STEP 2: Discuss with student financial/insurance issues related to treatment

Students who do not have health insurance may have concerns about who will pay for their medical treatment of latent tuberculosis infection (LTBI). College officials should be prepared to respond to this issue. Most states will provide the isoniazid (INH) medication used to treat LTBI at no charge to patients, so colleges should check with their local health department about their state's policies. If coverage is not available, the "Financial Implications" section of this manual can provide guidance in assisting students.

STEP 3: If student consents to treatment, document complete or incomplete treatment in file

Colleges should ensure there is a procedure in place for receiving documentation about the treatment status of students who have LTBI. Whether students with LTBI complete treatment should be noted in their file. Students with LTBI who refuse treatment or start but do not complete treatment should be required to undergo an annual symptom evaluation by a medical professional familiar with tuberculosis before registering for courses for subsequent academic terms, and this should be indicated in their file.

"Completion" of LTBI treatment relates to the percentage of self supervised doses received in proportion to the number of prescribed. LTBI treatment interruptions of > 2 months require reassessment for active TB disease. 6 months of INH or more provides measurable benefit where as less than 6 months of INH does not.

Sample forms that document an annual symptom check and the status of a student's LTBI treatment are included in the "Sample Forms" section of this manual.

For DOT or SAT of LTBI, the student health center should issue a "Treatment Completion Card" to the student in addition to recording treatment completion in the student's health records.

STEP 4: If student refuses treatment, explain follow-up requirements and document refusal

During the treatment stage, colleges can expect their partner health departments to provide patient education to students about why treatment is recommended for their LTBI. Despite these efforts, some students with LTBI will refuse to receive treatment.

Most colleges will not find it advisable to require treatment, but they should require a student with LTBI to have an annual symptom evaluation by a medical professional familiar with tuberculosis before the student can register for courses for subsequent academic terms. In addition, the health department should give these students patient education information about the signs and symptoms that indicate LTBI might be progressing to active tuberculosis disease. Students should be advised to seek immediate medical attention if they begin experiencing any of those symptoms.

Students who decline treatment must complete a refusal of treatment form, and that documentation, along with the annual evaluation requirement, should be noted in their file. Colleges should ensure there is a procedure in place for receiving this documentation from the health department. A sample refusal of treatment form and an annual health evaluation update form are found in the "Sample Forms" section of this manual.

Active
Tuberculosis

ACTIVE TUBERCULOSIS

Students who have a positive TST or IGRA, abnormal chest x-ray and/or signs and symptoms consistent with tuberculosis may have active tuberculosis disease and should be considered tuberculosis suspects. Further testing will need to be done to confirm active tuberculosis disease. In these instances where the TST or IGRA is positive and the chest x-ray is abnormal, colleges should notify the local health department if it is not already involved in the case. The local health department will determine the extent and duration of isolation for those students suspected of having active tuberculosis disease.

The health department will be able to provide guidance on further evaluation of the student, which typically involves getting sputum samples to be examined by smear and culture. Colleges with a student health center prepared to assume the responsibility of gathering a sputum sample from the student should coordinate their efforts with the local health department. Sputum and other specimens should be shipped to the state's tuberculosis lab for examination unless the state advises some alternative.

Colleges can expect the results of the sputum examinatin and medical evaluation to lead to one of the following two scenarios:

- The student does not have active tuberculosis disease, meaning the chest x-ray is abnormal for some other reason. However, because the TST or IGRA is positive, it is assumed the student has latent tuberculosis infection (LTBI). In these instances, treatment for LTBI is recommended and the student may continue attending classes. For these students, colleges should follow the protocols outlined in the "LTBI" section of this manual.

- The student is diagnosed with active tuberculosis disease. In conjunction with the local health department, the student should be isolated and prescribed a treatment regimen and cannot return to classes until a local health department has certified him/her as non-contagious and adherent to directly observed treatment. To further understand this process, refer to the algorithm found at the end of the "Tuberculosis Policy" section of this manual.

This section will guide colleges through the process of handling an active case of tuberculosis disease on campus.

GUIDELINES FOR ACTIVE TUBERCULOSIS

STEP 1 Transfer care of student with suspected or confirmed TB disease to local health department
STEP 2 Establish a location to isolate student with suspected or confirmed TB disease during treatment
STEP 3 Determine who has come in contact with the student with suspected or confirmed TB disease and provide the health department with a list so they can arrange testing for those individuals
STEP 4 Prepare public relations materials to address the issue with campus community and public
STEP 5 Discuss with student financial/insurance issues related to treatment
STEP 6 Document treatment status in student's file

STEP 1: Transfer care of student with suspected or confirmed TB disease to local health department

Regardless of whether a campus has a student health center, if a student is diagnosed with active tuberculosis disease, a college must immediately report the case to the local health department and should transfer care of the student to the local health department. Active, contagious tuberculosis disease can be deadly and can spread relatively easily if it is not contained. Health department staff will be trained and experienced in handling the situation. In some cases, students may be co-managed by the college's student health center and the local health department. In other situations, it will be necessary for the health department to take over all aspects of the student's care, from educating the student on what

having active tuberculosis means to outlining the treatement necessary to cure the disease. Colleges should work with the health department to determine the best way they can assist in these efforts.

STEP 2: Establish a location to isolate the student with confirmed or suspected TB disease during treatment

Students who are diagnosed with active, contagious tuberculosis disease will probably not be hospitalized during their entire contagious period but will need to be isolated from unprotected contact with other people. In all likelihood, that means they will not be able to stay in their campus dorm. In most instances, a college and health department can work together to identify a place the student can stay in isolation while undergoing treatment. The student should remain in isolation until no longer contagious, which typically means meeting the following criteria:

- The student has a negligible likelihood of multidrug-resistant tuberculosis (e.g. no known exposure to multidrug-resistant tuberculosis and no history of non-adherence with prior treatment of TB disease).
- The student is receiving standard multidrug antituberculosis therapy and is adherent with treatment.
- The student has demonstrated clinical improvement.
- The student has provided three consecutive AFB-smear negative sputum specimens, collected 8 to 24 hours apart, with at least one morning specimen.
- Close contacts have been identified and evaluated.

The local health department will determine when the student is no longer contagious and can be released from isolation.

STEP 3: Determine who has come in contact with the student confirmed or suspected of TB disease and provide the health department with a list so they can arrange testing for those individuals

A student infected with active, contagious tuberculosis disease has the potential to expose a large number of people to the disease. Those exposed are primarily limited to people who have had close, regular contact with the infected person, such as time spent together in a living space or classroom. It is important to identify as many of those contacts as possible through a contact investigation. The health department, college and student with confirmed or suspected TB disease should work together to determine who may have been exposed. Once those contacts have been determined, the college should provide the health department with the list of names and locating information so it can arrange for those individuals to receive testing to determine if they have been infected during their contact with the student. Due to patient confidentiality issues, it is illegal to publicize the student's name and to ask people who have had contact with the student to come forward for testing. The investigation of tuberculosis contacts varies from case to case depending on the student's living situation and level of activity. For example, all students who attended class in a small classroom with a highly infectious student may need to be tested. However, it is unlikely that everyone in the student's dormitory would need testing; instead testing would be done only on people with whom the student reported having close, personal contact.

STEP 4: Prepare public relations materials to address the issue with students and public

When a case of active, contagious tuberculosis disease occurs on a college campus, it will almost immediately become news. Students, their parents, faculty and the local community will all have a need for information. Colleges should be prepared ahead of time to manage the dissemination of that information in an honest, forthright and proactive manner that at all times protects the identity of the student with confirmed or suspected TB disease. Preparing press kits containing basic information about tuberculosis will help educate those reporters who are covering the story. Identify one campus spokesperson to address questions about how the college is handling the situation and develop talking points for the spokesperson. It is advisable to leave the medical-related questions to the local health department to answer.

Although every situation is different, a sample press release and talking points are included in the "Sample Forms" section of the this manual. Colleges can use these as a template for developing their own material specific to their situation. Basic information about tuberculosis can be found in the "Patient Education" section of this manual. Much of the information in this section can be adapted for dissemination to different audiences.

STEP 5: Discuss with student financial/insurance issues related to treatment

Students who do not have insurance may have concerns about who will pay for their diagnostic tests and medical treatment for active tuberculosis disease. College officials should be prepared to respond to this issue. Most states will provide the medication used to treat active tuberculosis disease at no charge to patients, so colleges should check with their local health department about their state's policies. If coverage is not available, the "Financial Implications" section of this manual can provide guidance in assisting students.

STEP 6: Document treatment status in student's file

Colleges should ensure there is a procedure in place for receiving documentation from the health department on the student's treatment status. Once the local health department has provided the college with documentation that the student is non-contagious and adhering to treatment, the student may return to class and may continue with coursework as long as treatment is maintained. If at any time the health department notifies the college that the student is not adhering to treatment, the student will not be allowed to continue enrollment at the college.

Public Relations Talking Points

In the event a student on campus is diagnosed with active tuberculosis disease, designate a single spokesperson from the college to speak to the media about the actions being taken to ensure the health of the student with confirmed or suspected TB disease and others on campus. It is recommended the college spokesperson defer medical questions regarding tuberculosis to the local health department.

While the details will vary with every case of active tuberculosis disease, below are some basic talking points the college spokesperson can use when communicating with the media, students, faculty and the local community. A sample press release is available in the "Sample Forms" section of this manual.

Basic Talking Points:

- There is a student with active tuberculosis disease on our college campus.
- Since this case of active tuberculosis disease is contagious, we are following public health guidelines that call for the isolation of the person with confirmed or suspected TB disease.
- This student's tuberculosis was discovered as a result of a tuberculosis screening and testing policy the college has in place.
- Without the policy in place, it likely would have taken much longer to diagnose the student with tuberculosis, which means the student's health probably would have deteriorated and in the process would have exposed many more students and faculty to the disease.
- The student will be allowed to return to class once the local public health agency deems the student is adhering to treatment and is no longer contagious.
- A contact investigation is occurring and students, faculty and staff who are at risk of exposure have been identified and notified by the local public health agency. Furhter evaluation of these individuals is underway. No additional cases of TB disease have identified to date.

Financial Implications

FINANCIAL IMPLICATIONS

Implementing a tuberculosis policy on a college campus has financial implications for both the college and its students. This section addresses those expenses and provides guidance to colleges on ways to handle them.

Implications for colleges

The primary financial expense colleges will incur is in staff resources. A certain amount of staff time will need to be dedicated each academic term to assessing screening forms returned by incoming students new to the college. For students who are identified as at-risk for tuberculosis, staff time also will need to be allotted to guiding and tracking those students through the process of getting tested and, if necessary, treated.

The staff time necessary to ensure the policy is appropriately implemented will likely be split between different areas of campus. For instance, the initial assessment of screening forms might be done by a staff person in the admissions or registration department. Testing of students for tuberculosis might be done by a staff member of a college's student health center.

Colleges who have implemented a tuberculosis policy on their campus have found that they were able to do so with existing staff by sharing the implementation responsibilities among several staff members. Of course every college will be different, but as an example, the University of Missouri-Columbia used the equivalent of less than one staff person to fully implement its tuberculosis policy on its campus of 27,000 students.

Implications for students

For colleges that enforce student visa requirements for international students to have health insurance, the financial implications to students will be few, if any, because most insurance plans will cover the costs associated with testing for tuberculosis and treatment medications.

Colleges that do not enforce the student visa requirement for health insurance should be prepared to assist students who may not have the financial resources to pay for testing and treatment that results from the tuberculosis policy's implementation. While medical costs will vary in different parts of the country, in general, students can expect the following costs associated with testing and treating tuberculosis.

Skin test	$0-$15
IGRA	$45-$75
Chest x-ray	$75-$150
Doctor visit to diagnose TB status	$50-$250
Isoniazid (INH) medication	$10-$20 for nine months of treatment

Colleges can assist uninsured students who do not have the ability to pay for these medical expenses, primarily in two ways.

- Identify medical providers or public agencies that will offer testing and treatment to uninsured students for free or at a reduced cost. If the local health department does not offer these reduced cost services, seek its assistance in finding other area providers that might.
- Identify insurance providers who will insure the student at an affordable rate. There are several companies that focus on offering insurance to college students, with some of them insuring only international students.

Program Evaluation

PROGRAM EVALUATION

Once colleges have fully implemented a tuberculosis risk screening and tuberculosis testing policy, they may want to consider an evaluation of the program. It is likely that this type of evaluation will necessitate a database tracking system, which at a minimum should include the following parameters to be collected for each student:

- Student name
- Date of birth
- Country of origin
- Year of arrival
- Address
- Phone number
- Date tested
- Date skin test read or IGRA result reported
- Mm reading of skin test or IGRA result (negative, positive, indeterminate)
- Reason tested (risk factors)
- Chest x-ray results
- Treatment
- Completion of treatment
- If treatment not completed, cite reason (adverse event, patient chose not to complete, etc.)

Once the information above is gathered for each student and is entered into a database system, data can be analyzed in aggregate. Local health departments may have LTBI tracking systems readily available for use to accomplish this level of evaluation. It is highly recommended that campuses coordinate closely with health departments before developing a surveillance system. Surveillance data needed for evaluation, at a minimum, should include the following:

- Number of students tested
- Number of students evaluated (include students completing tuberculin skin tests or blood tests plus students with positive tuberculin skin tests or blood tests who complete chest x-rays and physical exams)
- Number of cases of active tuberculosis disease
- Number of cases of latent tuberculosis infection
- Number of students eligible for treatment
- Number of students starting treatment
- Number of students completing treatment
- If treatment not completed, cite reason (adverse event, patient chose not to complete, etc.)

Collecting these surveillance data will assist college administrators in evaluating the outcome of having the tuberculosis risk screening and tuberculosis testing policy in place for their campuses. In addition, the data may generate the desire for further study, such as evaluating the reasons or barriers to initiating treatment or completion of treatment. Delving into these issues will involve more process-oriented evaluation questions and should be implemented under the guidance of specialized expertise either at the state or local health department or expertise on campus. For more information on evaluating targeted testing sites, please review the following Web site: http://www.cdc.gov/nchstp/tb/pubs/PDF/ARPEs_manual.pdf.

Sample
Forms

SAMPLE TUBERCULOSIS POLICY

POLICY PURPOSE

To help avoid an outbreak of tuberculosis on campus, the following policy concerning risk screening and testing for tuberculosis is in place for (COLLEGE NAME).

RISK SCREENING POLICY

All new students are required to complete a screening questionnaire to assess their risk factors for tuberculosis.

Administering risk screening questionnaire for new students

The risk screening questionnaire will be sent to students accepted to (COLLEGE NAME) with all other forms students are required to complete. The risk screening questionnaire must be completed within the first two weeks of a student's first academic term at (COLLEGE NAME). The (DEPARTMENT NAME) is responsible for ensuring that the questionnaire is sent to all newly accepted students.

Evaluation of risk screening questionnaires

Completed questionnaires will be sent to the (DEPARTMENT NAME). The (DEPARTMENT NAME) is responsible for documenting the return of the form and the initial evaluation of each completed questionnaire. The following information should be indicated in each student's file:

- Date the questionnaire was received and evaluated
- The number of "yes" responses checked in the questionnaire
- Copy of completed questionnaire

Students whose questionnaires contained all "no" responses are deemed NOT to be at risk for tuberculosis. These students do NOT need to be tested for tuberculosis and will be allowed to register for courses. This should be noted in their file.

Students whose questionnaires contained one or more "yes" responses must undergo further evaluation and testing to determine if they have tuberculosis. These questionnaires should be sent to the Student Health Center for further action. These students will NOT be allowed to register for courses for the next academic term until further testing has been completed, and that restriction will be noted in their file. It is the responsibility of the (DEPARTMENT NAME) to initially notify students that they need to undergo further testing for tuberculosis and that a registration restriction has been placed on their file until that testing is completed. Follow-up contact to arrange testing will be made by the Student Health Center (see below).

TESTING POLICY

All students who answered "yes" to one or more questions on the risk screening questionnaire are required to undergo further evaluation and testing to determine whether they have tuberculosis, unless they have documented negative results of a tuberculin skin test done in the United States in the last year and did not indicate any risk factors. Students who have a history of positive tuberculin skin tests or previous tuberculosis disease should provide documentation of appropriate evaluation. The Student Health Center is responsible for notifying students of their need for further testing and should do so within the first two weeks of the current academic term. Students who need further testing must complete the evaluation process as soon as possible. (Policy note to colleges: A policy concerning the evaluation should be practical for your campus but must be stringent enough to ensure prompt compliance by the student. For example, students who fail to comply within the time frame established in the policy may be administratively dropped from classes and/or may have registrations held for future academic terms.)

Testing protocol
The following testing protocol should be followed for all students who answered "yes" to one or more questions on the screening questionnaire.

Step 1 — tuberculosis testing
All students who answered "yes" to one or more questions on the screening questionnaire are required to be tested for tuberculosis, unless there is evidence of a previous documented negative skin test result from the United States done in the last year and no risk factors were indicated. The Student Health Center is responsible for administering this test or coordinating the test with an agency/health-care provider for students who are not currently on campus. Once notified of their need to be tested for tuberculosis, students have two weeks to be tested.

Students whose tuberculosis test is NEGATIVE and have not indicated any risk factors, are deemed NOT to be infected with tuberculosis and no further testing is needed. These students will be allowed to register for the subsequent academic term. It is the responsibility of the Student Health Center to notify the student of the negative finding and to notify the (DEPARTMENT NAME) that the student's course registration restriction is lifted; it is the responsibility of the (DEPARTMENT NAME) to ensure this update is made in the student's file.

Students whose tuberculosis test is POSITIVE must undergo a chest x-ray and clinical evaluation to assess signs and symptoms of tuberculosis. It is the responsibility of the Student Health Center to notify the student of the positive test result and the need for a chest x-ray.

Step 2 — chest x-ray and diagnosis
All students whose tuberculosis test is POSITIVE or are symptomatic for active tuberculosis disease must undergo a chest x-ray and physical exam with emphasis on signs and symptoms of tuberculosis. The Student Health Center will make arrangements for these students to have a chest x-ray done at a qualified facility as soon as possible. Results of the chest x-ray must be provided to the Student Health Center by a certified health provider within one week of learning of a positive tuberculosis test result.

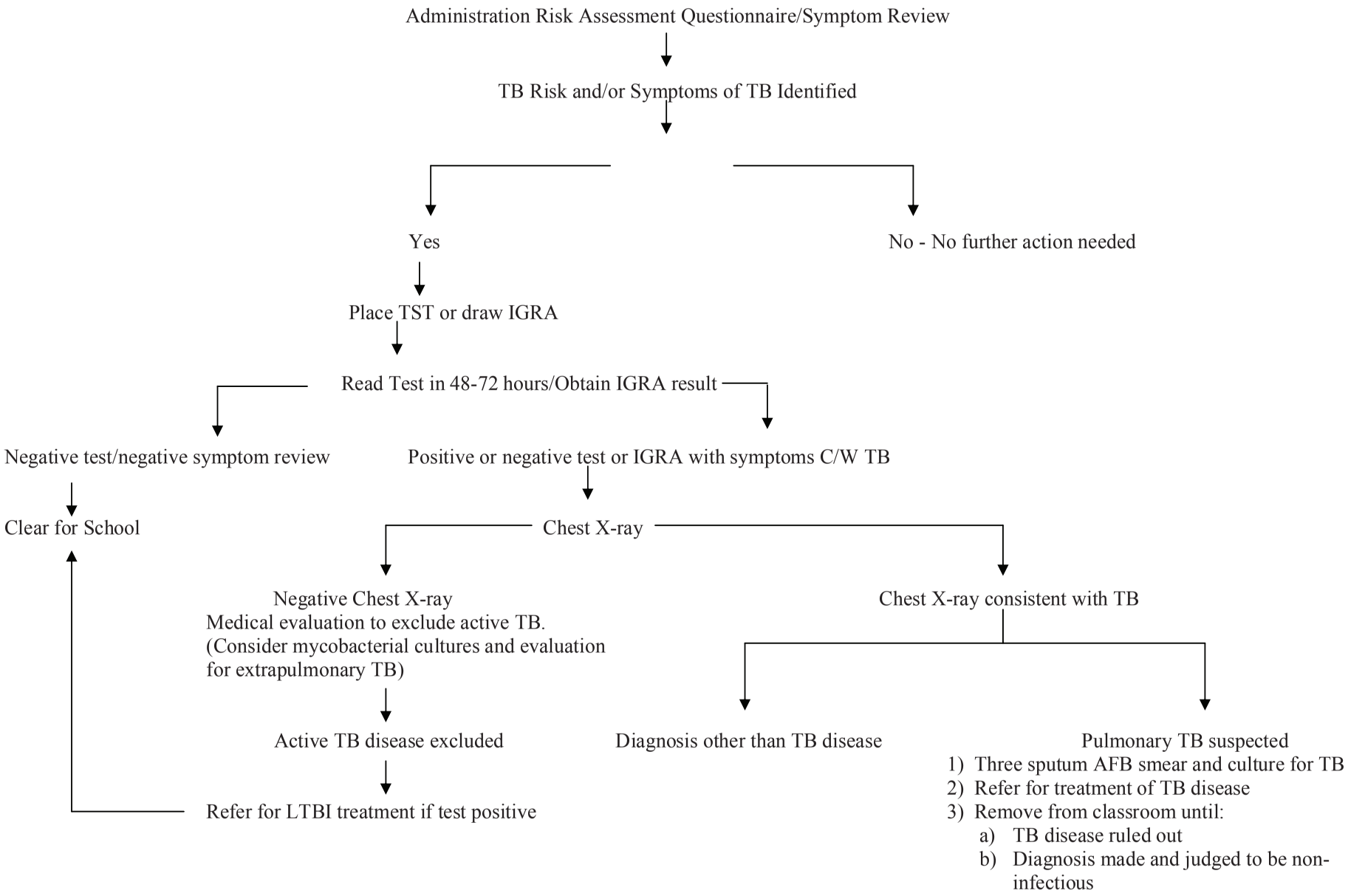
Students whose tuberculosis test is POSITIVE, chest x-rays are NORMAL and have a negative physical exam do not have active tuberculosis disease but meet the diagnostic criteria for latent tuberculosis infection. It is recommended that these students undergo treatment. It is the responsibility of the Student Health Center to coordinate and document whether a student completes treatment. It is also the responsibility of the Student Health Center to document if a student begins treatment but does not complete it, or if a student refuses treatment altogether. In these instances, the student should be required to receive an annual symptom evaluation by a medical professional familiar with tuberculosis before being allowed to register for subsequent academic terms.

Students whose chest x-rays are ABNORMAL or students who have signs and symptoms of TB need further testing to determine whether they have active tuberculosis disease. It is the responsibility of the Student Health Center to notify the local health department that a student has a positive tuberculosis test result and an abnormal chest x-ray and to seek its guidance on further evaluation. One of the following three scenarios can be expected:

If upon further testing it is determined a student does not have active tuberculosis disease, a diagnosis of latent tuberculosis infection is assumed. It is recommended that these students undergo treatment. It is the responsibility of the Student Health Center to coordinate and document whether a student completes treatment. It is also the responsibility of the Student Health Center to document if a student begins treatment but does not complete it, or if a student refuses treatment altogether. In these instances, the student is required to receive an annual symptom evaluation by a medical professional familiar with tuberculosis before being allowed to register for subsequent academic terms.

If upon further testing a student is diagnosed with active tuberculosis disease that is non-contagious (as determined by the local health department), the student must undergo treatment to remain enrolled at (COLLEGE NAME). The student may continue to attend classes as long as he adheres to treatment. It is the responsibility of the Student Health Center to document that a student has completed treatment for non-contagious active tuberculosis disease.

If upon further testing a student is diagnosed with active tuberculosis disease that is contagious, the Student Health Center will work closely with the local health department to isolate and treat the infected student and to identify and test people who have come in contact with the infected student. The (COLLEGE NAME) will implement appropriate communication efforts with students, parents and the community to inform them of the diagnosis of active tuberculosis disease on the (COLLEGE NAME) campus. All students who have been diagnosed with active tuberculosis disease must be certified by the local health department as non-contagious and in adherence with their treatment before they are allowed to return to campus. The Student Health Center is responsible for documenting this in the student's file.


Administration Risk Assessment Questionnaire/Symptom Review
TB Risk and/or Symptoms of TB Identified
Yes
No - No further action needed
Place TST or draw IGRA
Read Test in 48-72 hours/Obtain IGRA result
Negative test/negative symptom review
Positive or negative test or IGRA with symptoms C/W TB
Clear for School
Chest X-ray
Negative Chest X-ray
Medical evaluation to exclude active TB.
(Consider mycobacterial cultures and evaluation for extrapulmonary TB)
Chest X-ray consistent with TB
Active TB disease excluded
Diagnosis other than TB disease
Pulmonary TB suspected
1) Three sputum AFB smear and culture for TB
2) Refer for treatment of TB disease
3) Remove from classroom until:
a) TB disease ruled out
b) Diagnosis made and judged to be non-infectious
Refer for LTBI treatment if test positive

APPENDIX B

Tool for Institutional Use to be Completed by Incoming Students

Tuberculosis (TB) Screening Questionnaire

Please answer the following questions:

Have you ever had a positive TB skin test? ☐Yes ☐No

Have you ever had close contact with anyone who was sick with TB? ☐Yes ☐No

Were you born in one of the countries listed below and arrived in the U.S. within the past 5 years? * (If yes, please CIRCLE the country) ☐Yes ☐No

Have you ever traveled** to/in one or more of the countries listed below? (If yes, please CHECK the country/ies) ☐Yes ☐No

Have you ever been vaccinated with BCG? ☐Yes ☐No

**future CDC updates may eliminate the 5 year time frame*

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

Afghanistan	Congo DR	Kenya	New Caledonia	Sri Lanka
Algeria	Cote d'Ivoire	Kiribati	Nicaragua	Sudan
Angola	Croatia	Korea-DPR	Niger	Suriname
Anguilla	Djibouti	Korea-Republic	Nigeria	Syrian Arab Republic
Argentina	Dominican Republic	Kuwait	Niue	Swaziland
Armenia	Ecuador	Kyrgyzstan	N. Mariana Islands	Tajikistan
Azerbaijan	Egypt	Lao PDR	Pakistan	Tanzania-UR
Bahamas	El Salvador	Latvia	Palau	Thailand
Bahrain	Equatorial Guinea	Lesotho	Panama	Timor-Leste
Bangladesh	Eritrea	Liberia	Papua New Guinea	Togo
Belarus	Estonia	Lithuania	Paraguay	Tokelau
Belize	Ethiopia	Macedonia-TFYR	Peru	Tonga
Benin	Fiji	Madagascar	Philippines	Tunisia
Bhutan	French Polynesia	Malawi	Poland	Turkey
Bolivia	Gabon	Malaysia	Portugal	Turkmenistan
Bosnia & Herzegovina	Gambia	Maldives	Qatar	Tuvalu
Botswana	Georgia	Mali	Romania	Uganda
Brazil	Ghana	Marshall Islands	Russian Federation	Ukraine
Brunei Darussalam	Guam	Mauritania	Rwanda	Uruguay
Bulgaria	Guatemala	Mauritius	St. Vincent &	Uzbekistan
Burkina Faso	Guinea	Mexico	The Grenadines	Vanuatu
Burundi	Guinea-Bissau	Micronesia	Sao Tome & Principe	Venezuela
Cambodia	Guyana	Moldova-Rep.	Saudi Arabia	Viet Nam
Cameroon	Haiti	Mongolia	Senegal	Wallis & Futuna Islands
Cape Verde	Honduras	Montenegro	Seychelles	W. Bank & Gaza Strip
Central African Rep.	India	Morocco	Sierra Leone	Yemen
Chad	Indonesia	Mozambique	Singapore	Zambia
China	Iran	Myanmar	Solomon Islands	Zimbabwe
Colombia	Iraq	Namibia	Somalia	Sri Lanka
Comoros	Japan	Nauru	South Africa	Sudan
Congo	Kazakhstan	Nepal	Spain	Suriname

Source: World Health Organization Global Tuberculosis Control, WHO Report 2006, Countries with Tuberculosis incidence rates of > 20 cases per 100,000 population. For future updates, refer to www.who.int/globalatlas/dataQuery/default.asp

If the answer is YES to any of the above questions, [insert your college/university name] requires that a health care provider complete a tuberculosis risk assessment (to be completed within 6 months prior to the start of classes).

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

APPENDIX C

Tool for Use by Health Care Provider in the Clinical Setting
Tuberculosis (TB) Risk Assessment

Persons with any of the following are candidates for either Mantoux tuberculin skin test (TST) or Interferon Gamma Release Assay (IGRA), unless a previous positive test has been documented:

Risk Factor	
Recent close contact with someone with infectious TB disease	☐ Yes ☐ No
Foreign-born from (or travel* to/in) a high-prevalence area (e.g., Africa, Asia, Eastern Europe, or Central or South America)	☐ Yes ☐ No
Fibrotic changes on a prior chest x-ray suggesting inactive or past TB disease	☐ Yes ☐ No
HIV/AIDS	☐ Yes ☐ No
Organ transplant recipient	☐ Yes ☐ No
Immunosuppressed (equivalent of > 15 mg/day of prednisone for >1 month or TNF-α antagonist)	☐ Yes ☐ No
History of illicit drug use	☐ Yes ☐ No
Resident, employee, or volunteer in a high-risk congregate setting (e.g., correctional facilities, nursing homes, homeless shelters, hospitals, and other health care facilities)	☐ Yes ☐ No
Medical condition associated with increased risk of progressing to TB disease if infected [e.g., diabetes mellitus, silicosis, head, neck, or lung cancer, hematologic or reticuloendothelial disease such as Hodgkin's disease or leukemia, end stage renal disease, intestinal bypass or gastrectomy, chronic malabsorption syndrome, low body weight (i.e., 10% or more below ideal for the given population)]	☐ Yes ☐ No

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

1. Does the student have signs or symptoms of active tuberculosis disease? Yes _____ No _____
If No, proceed to 2 or 3. If Yes, proceed with additional evaluation to exclude active tuberculosis disease including tuberculin skin testing, chest x-ray, and sputum evaluation as indicated.

2. 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: ____/____/____ (M D Y) Date Read: ____/____/____ (M D Y)

Result: _____ mm of induration **Interpretation: positive____ negative____

Date Given: ____/____/____ (M D Y) Date Read: ____/____/____ (M D Y)

Result: _____ mm of induration **Interpretation: positive____ negative____

3. Interferon Gamma Release Assay (IGRA)

Date Obtained: ____/___/___ (specify method) QFT-G QFT-GIT other_____
M D Y

Result: Negative___ Positive___ Intermediate___

Date Obtained: ____/___/___ (specify method) QFT-G QFT-GIT other_____
M D Y

Result: Negative___ Positive___ Intermediate___

4. Chest x-ray: (Required if TST or IGRA is positive)

Date of chest x-ray: ____/____/____ Result: normal____ abnormal_____
M D Y

****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
- Immunosuppressed persons: taking > 15 mg/d of prednisone for > 1 month; taking a TNF-α antagonist
- Persons with HIV/AIDS

>10 mm is positive:

- Persons born in a high prevalence country or who resided in one for a significant* amount of time
- History of illicit drug use
- Mycobacteriology laboratory personnel
- History of resident, worker or volunteer in high-risk congregate settings
- Persons with the following clinical conditions: silicosis, diabetes mellitus, chronic renal failure, leukemias and lymphomas, head, neck or lung cancer, low body weight (>10% below ideal), gastrectomy or intestinal bypass, chronic malabsorption syndromes

>15 mm is positive:

- Persons with no known risk factors for TB disease

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

END of SAMPLE FORM

If reproduced for use by a college or university health center, please insert your health center's contact information.
This form should not be returned to ACHA.

Prepared by ACHA's Tuberculosis Guidelines Task Force

American College Health Association
P.O. Box 28937
Baltimore, MD 21240-8937
(410) 859-1500
www.acha.org

Sample letter notifying Students of their need to be tested for Tuberculosis

The results of the tuberculosis screening questionnaire you completed indicate you are at risk for tuberculosis. To determine whether you have been exposed to the disease, further testing is necessary. Please contact the campus student health center at (insert phone number here) to schedule a time for you to receive a tuberculin skin test. The skin test must be completed within two weeks of receiving this letter. It is the policy of (insert College name here) that all students must be tested for tuberculosis if their screening questionnaire indicates they are at risk for the disease. Students who do not comply with this policy will not be able to register for classes next semester.

Information about tuberculosis and the testing process are included with this letter. If you have additional questions, you may contact a physician or nurse at the student health center by calling (insert phone number here).

Your cooperation in this matter is appreciated.

Sincerely,

Name
Title

Sample

Initiation of DOT (Daily)
Prevention Nurse Checklist

☐ Date treatment started _____ ☐ Date treatment stopped _____
☐ Treatment completed _____ ☐ Treatment DC'd reason _____
☐ Provider _____ ☐ Weight at start of treatment _____
☐ Chest x-ray date taken _____ ☐ Chest x-ray result _____
☐ Baseline Labs drawn LFT CBC Platelets Uric Acid ☐ Date _____
☐ Baseline Lab result reviewed WNL, redraw PRN ☐ Redraw in _____ months
☐ Refer back to provider; reason _____
☐ Allergies _____
☐ Review of current medications _____
☐ Review of chronic medical conditions _____
☐ Pregnant or attempting to become pregnant Yes or No ☐ Breastfeeding Yes or No
☐ Prescribed meds ☐ INH + Vit B6 for 6 / 9 months SOT ☐ Rifampin / PZA for 2 months SOT ☐ RIF / INH for 4 months SOT

Review with patient

How to Take Medicine

☐ Full 8 oz. water
☐ On an empty stomach; 1 hour before and 2 hours after eating
☐ Every day, at least 24 hours apart
☐ No more than 1 dose per day
☐ What to do if dose is missed or taken late: Review missed dose section of medication fact sheet

How to get Medicine

☐ Can ony release 1 month of medication
OR
☐ Appointment with Prevention Nurse monthly
OR
☐ Talk to nurse if questions or problems

☐ 2 months = 60 doses (must complete within 3 months)
☐ 4 months = 120 doses (must complete within 6 months)
☐ 6 months = 180 doses (must complete within 9 months)
☐ 9 months = 270 doses (must complete within 12 months)

Medication / Food Interactions / Side Effects

☐ Review interaction section of medication fact sheet
☐ Instruct patient to report **any** side effects **before** taking next dose
☐ Most common side effects
☐ Some side effects may subside / decrease over time

Other Points of Interest

☐ Review other things needed to know on medication fact sheet
☐ Alcohol avoidance
☐ Incentive program
☐ Literature given in English and native language _____
☐ What to do if questions arise
☐ Contact information; phone numbers / email (give Prevention Nurse's business card)

Reassurance / Clarification

☐ Confidentiality
☐ **Recommended**, not required
☐ Will not affect ability to attend classes or stay in U.S.
☐ Clarification of active vs in active (disease vs Latent TB infection)
☐ Signs / symptoms of active TB
☐ Medication intended to kill current infection, once off medication can become re-infected
☐ Fees (SHC visits, CXR, lab work, medication)

Completed by _____ Date _____

Sample

Initiation of DOT (Daily)
Prevention Nurse Checklist

☐ Date treatment started _____ ☐ Date treatment stopped _____
☐ Treatment completed _____ ☐ Treatment DC'd reason _____
☐ Provider _____ ☐ Weight at start of treatment _____
☐ Chest x-ray date taken _____ ☐ Chest x-ray result _____
☐ Baseline Labs drawn LFT CBC Platelets Uric Acid ☐ Date _____
☐ Baseline Lab result reviewed WNL, redraw PRN ☐ Redraw in _____ months
☐ Refer back to provider; reason _____
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☐ Review of current medications _____
☐ Review of chronic medical conditions _____
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☐ Signs / symptoms of active TB
☐ Medication intended to kill current infection, once off medication can become re-infected
☐ Fees (SHC visits, CXR, lab work, medication)

Completed by _____ Date _____

LTBI Monitoring Form – SAT

Length of Tx: 6 mo / 9 mo
Allergies: NKDA / _____

Date										
Month #										
INH_____ mg daily Rx										
B6_____ mg daily Rx										
Other_____ mg daily Rx										
Weight										
Liver Panel Collected (Y/N)										
Adverse Effects (Y/N)										
Fatigue										
Weakness										
Loss of appetite										
Nausea										
Vomiting										
Diarrhea										
Abdominal pain										
Dark Urine										
Jaundice										
Peripheral neuropathy										
Vision problems										
Rash, itching										
Fever										
Joint pain										
Medications										
Adherence to regimen? (Y/N)										
S & S of TB? (Y/N)										
Alcohol use in past mo? (Y/N)										
Adverse effects reviewed? (Y/N)										
Return Appointment Date										

Initials / Signature_____ Initials / Signature_____ Initials / Signature _____

LTBI Monitoring Form – DOT

Length of Tx: 6 mo / 9 mo
Allergies: NKDA / _____

Symptom Review Date										
INH_____ mg 2X/wk Rx										
B6_____ mg 2X/wk Rx										
Weight										
Liver Panel Collected (Y/N)										
Adverse Effects (Y/N)										
Fatigue										
Weakness										
Loss of appetite										
Nausea										
Vomiting										
Diarrhea										
Abdominal pain										
Dark Urine										
Jaundice										
Peripheral neuropathy										
Vision problems										
Rash, itching										
Fever										
Joint pain										
Medications										
Adherence to regimen? (Y/N)										
S & S of TB? (Y/N)										
Alcohol use in past mo? (Y/N)										
Adverse effects reviewed? (Y/N)										

Signature_____

LTBI Monitoring Form – DOT

Length of Tx: 6 mo / 9 mo
Allergies: NKDA / _____

Date												
Dose #	1	2	3	4	5	6	7	8	9	10	11	12	13
INH_____ mg 2X/wk													
B6_____ mg 2X/wk													
Symptom Review (Y/N)													
Initials													
Date													
Dose #	14	15	16	17	18	19	20	21	22	23	24	25	26
INH_____ mg 2X/wk													
B6_____ mg 2X/wk													
Symptom Review (Y/N)													
Initials													
Date													
Dose #	27	28	29	30	31	32	33	34	35	36	37	38	39
INH_____ mg 2X/wk													
B6_____ mg 2X/wk													
Symptom Review (Y/N)													
Initials													
Date													
Dose #	40	41	42	43	44	45	46	47	48	49	50	51	52
INH_____ mg 2X/wk													
B6_____ mg 2X/wk													
Symptom Review (Y/N)													
Initials													
Date													
Dose #	53	54	55	56	57	58	59	60	61	62	63	64	65
INH_____ mg 2X/wk													
B6_____ mg 2X/wk													
Symptom Review (Y/N)													
Initials													
Date													
Dose #	66	67	68	69	70	71	72	73	74	75	76		
INH_____ mg 2X/wk													
B6_____ mg 2X/wk													
Symptom Review (Y/N)													
Initials													

Initials / Signature_____ Initials / Signature_____ Initials / Signature _____

(Insert school name and address here)

Refusal of Treatment for Latent Tuberculosis Infection

You have been identified as being infected with tuberculosis. As explained to you earlier, you have a lifetime risk of developing tuberculosis disease. Your healthcare provider has suggested a course of treatment with isoniazid INH or Rifampin. Treatment with this drug will prevent the disease in most individuals who complete a recommended course of this drug. The medication and the appropriate nursing supervision would be provided to you at no cost.

Without INH or Rifampin, in approximately 10% of persons with normal immune systems who are infected with TB, TB disease will develop. Some medical conditions increase the risk that latent TB infection will progress to active TB disease.

I have read the information on this form about treatment of my latent TB infection. I believe I understand the potential benefit of treatment for latent TB infection and risk of progression for disease. I have had an opportunity to ask questions, which were answered to my satisfaction.

The (insert college) has offered to provide me with the medication and the nursing supervision in order to decrease my risk for developing tuberculosis disease. However, I have chosen not to take the medication as recommended. If I should have a change of mind in my intention to take the medication, I understand that the Prevention Nurse at (insert name of college here) will be available to advise me on this matter.

Reason for refusal _____

_____

_____

Should I develop any of the following symptoms, I understand it is recommended to seek immediate medical attention:

Easy Fatigability	Appetite Loss
Cough lasting longer than 2-3 weeks	Unexplained fever
Night sweats	Unexplained weight loss
Coughing up blood	Chest pain
Chills	Respiratory difficulty

Signature of Person Refusing Treatment _____ Date _____

Provider / Nurse Signature _____ Date _____

Name _____

Student ID# _____

Date of Birth _____

Annual Statement for Tuberculin Reactors

Tuberculin reactors are persons with latent tuberculosis infection (LTBI). Persons with LTBI have a positive reaction to a tuberculin skin test, a chest x-ray which is negative for active tuberculosis, and do not have symptoms of active tuberculosis. Even if you have completed treatment, we want to check on the status of your health annually by reviewing the symptoms of tuberculosis disease and inquiring whether you are experiencing any symptoms at this time.

If you choose not to receive treatment for your LTBI, we would like to again offer treatment to you. There is no charge for the medication and nursing supervision is provided by the Student Health Center. LTBI treatment is recommended for the following groups:

Persons who have arrived in the U.S. (within the past 5 years) from countries with a high prevalence of tuberculosis

- Persons who convert from negative to positive on a tuberculin skin test within a 2 year period
- Persons who are a recent contact to a person with active tuberculosis
- Persons with an abnormal chest x-ray consistent with old TB who have never been previously treated after active TB is excluded
- HIV positive persons and other persons who are immunosuppressed (e.g., persons with organ transplants or taking immunosuppressive drugs or treatments)
- Persons working or training in high-risk settings (e.g., hospitals and other health care facilities)
- Persons with chronic medical conditions
- Persons who are injection drug users

As part of our campus TB Prevention Program, we would like you to complete the following survey

Daytime Phone Number _____

Have you completed six to nine months of treatment for LTBI? Yes or No

If no, are you interested in starting treatment at this time? Yes or No

Please circle Yes or No next to each question below. Add comments for any item circled “Yes”.

Symptoms of active tuberculosis			
Chest pain	Yes	No	_____
Chills	Yes	No	_____
Cough lasting more than 3 weeks2-3 weeks	Yes	No	_____
Coughing up blood	Yes	No	_____
Fatigue	Yes	No	_____
Unexplained fever	Yes	No	_____
Loss of appetite	Yes	No	_____
Night sweats	Yes	No	_____
Productive cough (coughing up sputum)	Yes	No	_____
Respiratory difficulty (shortness of breath)	Yes	No	_____
Unexplained weight loss	Yes	No	_____
Weakness	Yes	No	

If you circled “Yes” for any of these symptoms, please make an appointment with a Student Health Center provider as soon as possible by calling (insert phone number here). If you circled “No” for all items, you currently have no symptoms of active tuberculosis. If at any time you develop any of these symptoms, please seek prompt medical attention.

If you have any questions, or would like to talk to a nurse about treatment for LTBI, please schedule an appointment with the TB Nurse at (insert phone number here).

Please sign and date this statement. If returning this statement by mail, please place it in the enclosed envelope and mail to the (insert address here).

Thank You. Prevention Team, Student Health Center

Student Signature _____ Date _____

For Clinic Use Only. Reviewed by _____ Date _____

SAMPLE PRESS RELEASE

For more information, contact:
(CONTACT NAME HERE)
(CONTACT PHONE NUMBER HERE)

(DATE OF RELEASE)
FOR IMMEDIATE RELEASE

(COLLEGE NAME) Student Diagnosed With Active Tuberculosis Disease

(CITY, STATE) — A student at (COLLEGE NAME) has been diagnosed with active tuberculosis disease and has been temporarily isolated from unprotected contact with others while undergoing treatment for the disease.

Tuberculosis, commonly known as TB, is a disease that can damage a person's lungs or other parts of the body, causing serious illness. It is spread when a person with active, untreated tuberculosis germs in the lungs or throat expels those germs into the air by coughing, sneezing or speaking. Only people who breathe these germs into their lungs can become infected. Usually people who have had very close, day-to-day contact with the infected person are the only persons who are at a higher risk of contracting the illness. TB is less contagious than measles, mumps, chicken pox and influenza.

While the college is not naming the student for confidentiality reasons, college officials are working with the student and the local health department to identify those people who are known to have had close, regular contact with the student. Those people are being contacted and asked to come in for testing to determine whether they have been exposed to the disease.

"Because the close confines of classrooms and dormitories make the college campus an environment where tuberculosis can spread quickly, (COLLEGE NAME) follows the public health recommendation to isolate any student with active tuberculosis disease," said (NAME), (TITLE) at (COLLEGE NAME). "Once a public health agency deems the student is improving and is no longer contagious, the student will be able to return to class."

The diagnosis of a case of active tuberculosis disease came as a direct result of a tuberculosis screening and testing policy that (COLLEGE NAME) implemented in (YEAR). The policy mandates that all students new to campus complete a questionnaire that screens them for their risk of tuberculosis. Students who screen positive must undergo a skin or blood test to determine whether they have been exposed to the disease. Those whose skin or blood tests are positive undergo further testing to determine whether they have latent tuberculosis infection or active tuberculosis disease. Students with latent tuberculosis infection have tuberculosis germs in their bodies but the germs are inactive and are not contagious. These students are encouraged to receive treatment to prevent their tuberculosis germs from becoming active. According to the policy, students who are diagnosed with active tuberculosis disease must undergo treatment even if their disease is deemed non-contagious. All contagious active tuberculosis disease cases require isolation and treatment.

According to college officials, since implementing the policy (NUMBER) cases of latent tuberculosis infection have been diagnosed, but this is the first case of active tuberculosis disease identified. "The good news is that we were able to identify this person and get treatment started a lot sooner than we might have otherwise since most tuberculosis symptoms like coughing, fatigue and fever mimic other illnesses," said (LAST NAME OF SPOKESPERSON). "Without the policy in place, this person's health likely would have deteriorated before an accurate diagnosis was made, and in the process hundreds more students and faculty could have been exposed."

Patient Education

ISONIAZID (INH) FACT SHEET

WHAT IS ISONIAZID (INH)?

Isoniazid (INH) is an antibiotic for the treatment of tuberculosis. It may be used along with at least one other drug to treat active disease. It may also be used to treat latent tuberculosis infection (LTBI), an inactive infection in which dormant tuberculosis mycobacteria are present in the body but do not cause disease. *A person with LTBI is not sick, has no symptoms of tuberculosis, and is not infectious.*

Treatment of LTBI prevents the progression to active disease in >90% of persons who complete treatment. Treatment regimens for active tuberculosis which include INH last for at least six months but may be extended for up to one year. Treatment for LTBI should continue for nine months to give maximum protection.

HOW DO I TAKE INH?

INH should be taken on an empty stomach. If stomach upset occurs, INH can be taken with a small snack. Antacids should not be taken along with INH as they interfere with its absorption. If antacids are needed, they should be taken at least one hour after the dose of INH. When the INH dose consists of more than one tablet, all INH tablets should be taken together at the same time. INH should be taken daily unless a directly observed treatment (DOT) regimen is given in which case treatment may be daily or twice weekly.

WHAT IF I MISS A DOSE OF INH?

If a dose is missed, identify this to your health care provider (physician or nurse) at your next monthly appointment. Do not take the extra dose. No more than one dose of medication should be taken in a twenty-four hour period. Missed doses will be added to the end of the treatment regimen. This will extend the duration of therapy by the number of days that treatment was missed.

WHAT ELSE SHOULD I BE AWARE OF?

Drug – drug interactions occur with several other medications and INH. Tell your doctor about any medication you are taking. This includes herbal supplements and other over the counter medications such as Tylenol. If you are taking seizure medications, blood thinners, anti-anxiety medications, Tylenol or others, the dose of that medication may need to be changed or additional monitoring for adverse effects be done.

WHAT ARE THE SIDE EFFECTS OR TOXICITIES OF INH?

You may experience some stomach upset such as nausea or bloating with the initial doses of INH. These effects usually improve or disappear after several doses.
Other *rare side effects* are:

- joint aches, dizziness,
- rash, headache,
- change in sleep patterns, and
- changes in several blood tests.

Although most of these effects disappear after several doses, it is important to let your physician or nurse know about any that persist more than several days at the beginning of treatment or that develop later during your treatment.

Serious toxicity due to INH is uncommon. Drug induced hepatitis (inflammation of the liver) occurs in less than 1% of younger individuals. Higher rates of hepatitis occur in older populations or others with additional medical risk factors for hepatitis. Drug induced hepatitis is more common in persons who have underlying liver disease such as viral hepatitis or who use alcohol during treatment with INH. Women who are pregnant or in the first four months postpartum also have an increased risk of drug induced hepatitis. Persons who have chronic medical conditions or are on chronic medical therapy may have an increased risk. Discuss any medical conditions you have with your physician prior to starting INH.

A pregnancy test will usually be given prior to the start of therapy. Let your physician know if you become pregnant during treatment. INH is safe for mothers and babies during pregnancy but extra monitoring for drug induced hepatitis is needed.

Rarely INH may cause irritation in the nerves (neuropathy) of your hands or feet. You may experience tingling, numbness or difficulty grasping objects with your hands. These changes in your nerves are more common in persons who have poor nutrition, diabetes, chronic kidney disease, take seizure medications, are pregnant or nursing, or who use alcohol each day. Vitamin B6 usually helps to prevent this problem.

WHAT ARE THE SYMPTOMS OF DRUG INDUCED HEPATITIS AND WHAT SHOULD I DO IF THEY OCCUR?

Early symptoms of hepatitis include fatigue, rash, mild abdominal discomfort and bloating. Later symptoms include nausea, vomiting, dark urine, clay colored stools, itching or fever. **If any early or later symptoms develop, STOP taking your INH and call your health care provider.** Usually your doctor will want to do blood tests to check your liver enzymes right away and will have you wait until the results of the tests are available before wanting you to restart the INH. If the liver enzymes are increased, your INH will be held or stopped. This decision will be made by your doctor based on your risk of TB, laboratory results, and your medical history. If INH is stopped, another drug may be recommended for treatment of LTBI.

Helpful Resources

Incentives and Enablers

Enablers increase the opportunity for adherence to the prescribed drug regimen. Some ideas for enablers are:

- Transportation vouchers or Transportation provided by staff
- Bus or subway fare
- Taxi fare
- Flexibility with regimen

Incentives provide rewards for the adherence to a prescribed drug regimen. Some ideas for incentives are:

- Food & Drink
  - Pizza coupons
  - Sweets
  - Soda
- Gift cards
  - School store
  - Movies
  - Bookstore
- Tickets to sporting or entertainment events
- Cosmetics
- School supplies
- School Spirit Items
  - T-shirts
  - Hats
  - Key chains
- Holiday baskets
  - Easter baskets
  - Halloween treats
  - Birthday cake and cards

Centers for Disease Control and Prevention

TB Elimination Program
http://www.cdc.gov/tb/

Information on the BCG vaccine
http://www.cdc.gov/tb/pubs/tbfactsheets/bcg.htm

Treatment Guidelines for TB
http://www.cdc.gov/tb/pubs/mmwr/maj_guide.htm.

TB Skin Test Training Video
http://www.cdc.gov/tb/pubs/videos.htm

International Resources

World Health Organization

General Website: http://www.who.int

TB Specific: http://www.who.int/tb/en/

Worldwide Tuberculosis Epidemiology
http://www.stoptb.org/

State TB Control Offices

ALABAMA
Alabama Department of Public Health
RSA Tower, Suite 1450
201 Monroe Street
Montgomery, AL 36130-3017
Tel: 334-206-5330
Fax: 334-206-5931

ALASKA
Alaska Department of Health & Social Services
3601 "C" Street, Suite 540
Anchorage, AK 99503-5949
Tel: 907-269-8000
Fax: 907-562-7802

ARIZONA
Arizona Department of Health Services
150 North 18th Avenue
Phoenix, AZ 85007-3237
Tel: 602-364-4750
Fax: 602-364-3267

ARKANSAS
Arkansas Department of Health
4815 West Markham Street, Slot 45
Little Rock, AR 72203
Tel: 501-661-2152
Fax: 501-661-2759

CALIFORNIA
California Department of Health Services
850 Marina Bay Parkway
Building P, 2nd Floor
Richmond, CA 94804-6403
Tel: 510-620-3000
Fax: 510-620-3034

COLORADO
Colorado Department of Public Health
& Environment TB Program
4300 Cherry Creek Drive South
Denver, CO 80246-1530
Tel: 303-692-2638
Fax: 303-759-5538

CONNECTICUT
Connecticut Department of Public Health
410 Capitol Avenue, MS-11TUB
Hartford, CT 06134
Tel: 860-509-7722
Fax: 860-509-7743

DELAWARE
Delaware Department of Health & Social Sevices
TB Control Program
Thomas Collins Bldg, Suite 12, D620P
540 S, Dupont Hwy
Dover, DE 19901
Tel: 302-744-1050
Fax: 302-739-2548

DISTRICT of COLUMBIA
District of Columbia Department of Health
1900 Massachusetts Ave.
Bldg 15
Washington, D.C. 20003
Tel: 202-671-4900
Fax: 202-724-2363

FLORIDA
Florida Department of Health
4052 Bald Cypress Way, BIN #A20
Prather Building, Room 240-N
Tallahassee, FL 32399-1717
Tel: 850-245-4350
Fax: 850-921-9906

GEORGIA

Georgia Division of Public Health Tuberculosis Program
2 Peachtree St., NW, Suite 12-493
Atlanta, GA 30303-2558
Tel: 404-657-2634
Fax: 404 463-3460

HAWAII

Hawaii Department of Health
1700 Lanakila Avenue
Honolulu, HI 96817-2199
Tel: 808-832-5737
Fax: 808-832-5846

IDAHO

Idaho Department of Health & Welfare
450 West State Street, 4th Floor
Boise, ID 83720-0036
Tel: 208-334-5939
Fax: 208-332-7307

ILLINOIS

Illinois Department of Public Health
525 West Jefferson Street, 1st Floor
Springfield, IL 62761-0001
Tel: 217 785-5371
Fax: 217 524-4515

INDIANA

Indiana Department of Health
2 North Meridian Street, 6th Floor
Indianapolis, IN 46204
Tel: 317-233-7420
Fax: 317-233-7747

IOWA

Iowa Department of Public Health
Lucas State Office Building
321 East 12th Street
Des Moines, IA 50319-0075
Tel: 515-281-7504
Fax: 515-281-4570

KANSAS

Kansas Department of Health & Environment
1000 Southwest Jackson Street Suite 210
Topeka, KS 66612
Tel: 785-296-8893
Fax: 785-291-3732

KENTUCKY

Kentucky Department for Public Health
275 East Main Street
Frankfort, KY 40621
Tel: 502-564-7243
Fax: 502-564-0542

LOUISIANA

Louisiana Department of Health & Hospitals Office of Public Health – TB Control
1010 Common Street, Suite 1134
New Orleans, LA 70112
Tel: 504-568-5015
Fax: 504-568-5016

MAINE

Maine Department of Human Services
State House Station #1
286 Water Street, 8th Floor
Augusta, ME 04333-0011
Tel: 207-287-5194
Fax: 1-800-293-7534

MARYLAND

Maryland Department of Health
201 West Preston Street, Room 307A
Baltimore, MD 21201
Tel: 410-767-6696
Fax: 410-669-4215

MASSACHUSETTS

Massachusetts Department of Public Health
305 South Street
Boston, MA 02130-3515
Tel: 617-983-6970
Fax: 617-983-6990

MICHIGAN

Michigan Department of Community Health
3423 North Martin Luthur King, Jr. Boulevard
Lansing, MI 48909
Tel: 517-335-8165
Fax: 517-335-8121

MINNESOTA

Minnesota Department of Health
Freeman Office Building
625 N. Robert St. (street address)
P.O. Box 64975 (mailing address)
St. Paul, MN 55164-0975
Tel: 651-201-5414
Fax: 651-201-5500

MISSISSIPPI

Mississippi State Department of Health
P.O. Box 1700
Jackson, MS 39215-1700
Tel: 601-576-7700
Fax: 601-576-7520

MISSOURI

Missouri Department of Health
930 Wildwood Drive
Jefferson City, MO 65102
Tel: 573-751-6122
Fax: 573-526-0235

MONTANA

Montana Department of Public Health and Human Services
Cogswell Building, Room C216
1400 Broadway Avenue
Helena, MT 59620
Tel: 406-444-0275
Fax: 406-444-0272

NEBRASKA

Nebraska Department of Health & Human Services
301 Centennial Mall South, 3rd Floor
Lincoln, NE 68509
Tel: 402-471-2937
Fax: 402-471-3601

NEVADA

Bureau of Community Health
Nevada State Health Division
4150 Technology Way, Suite 101
Carson City, NV 89706
Tel: 775-684-5900
Fax: 775-684-4056

NEW HAMPSHIRE

New Hampshire Department of Health & Human Services
Health & Welfare Building
29 Hazen Drive
Concord NH 03301-6504
Tel: 603-271-4496
Fax: 603-271-0545

NEW JERSEY

New Jersey Department of Health and Senior Services
P.O. Box 369
Trenton, NJ 08625-0369
Tel: 609-588-7522
Fax: 609-588-7431

NEW MEXICO

New Mexico Department of Health
1190 Saint Francis Drive, Room S1150
Santa Fe, NM 87502
Tel: 505-827-2471
Fax: 505-827-0163

NEW YORK

New York State Department of Health
Empire State Plaze
Corning Tower, Room 840
Albany, NY 12237-0669
Tel: 518-474-7000
Fax: 518-473-6164

NORTH CAROLINA

North Carolina Department of Health & Human Services
1200 Front Street, Suite 101
Raleigh, NC 27609
Tel: 919-733-7286
Fax: 919-733-0084

NORTH DAKOTA

North Dakota Department of Health
State Capitol
600 East Boulevard, Dept. 301
Bismarck, ND 58505-0200
Tel: 701-328-2377
Fax: 701-328-2499

OHIO

Ohio Department of Health Bureau of Infectious Disease and Control
35 E Chestnut Street, 7th floor
Columbus, OH 43215
Tel: 614-387-0652
Fax: 614-387-2132

OKLAHOMA

Oklahoma State Department of Health
1000 NE 10th Street, Room 608
Oklahoma City, OK 73117-1299
Tel: 405-271-4060
Fax: 405-271-6680

OREGON

Oregon Public Health Division
800 NE Oregon, Suite 1105
Portland, OR 97232
Tel: 5971-673-0174
Fax: 971-673-0178

PENNSYLVANIA

Pennsylvania Department of Health
625 Forester Street, Room 103
Harrisburg, PA 17120
Tel: 717-787-6267
Fax: 717-772-4309

RHODE ISLAND

Rhode Island Department of Health
3 Capitol Hill, Room 106
Providence, RI 02908
Tel: 401-222-2577
Fax: 401-222-2488

SOUTH CAROLINA

South Carolina Department of Health and Environmental Control
Mills/Jarrett Complex, Box 101106
1751 Calhoun Street
Columbia, SC 29201
Tel: 803-898-0558
Fax: 803-898–0685

SOUTH DAKOTA

South Dakota Department of Health
615 East 4th Street
Pierre, SD 57501
Tel: 605-773-4784
Fax: 605-773-5509

TENNESSEE

Tennessee Department of Health
Cordell Hull Building, 1st Floor
425 5th Avenue North
Nashville, TN 37243-0001
Tel: 615-741-7247
Fax: 615-253-1370

TEXAS

Texas Department of State Health Services
1100 West 49th Street
Austin, TX 78756
Tel: 512-458-7455
Fax: 512-458-7601

UTAH

Utah Department of Health
TB Control and Bureau of Epidemiology
Box 142105
Salt Lake City, UT 84114-2105
Tel: 801-538-6191
Fax: 801-538-9913

VERMONT

Vermont Department of Health
PO Box 70, Drawer 41
108 Cherry Street
Burlington, VT 05401
Tel: 802-863-9962
Fax: 802-865-7701

WASHINGTON

Washington State Department of Health
111 Israel Rd, S.E.
P.O. Box 47837
Olympia, WA 98504-7837
Tel: 360-236-3447
Fax: 360-236-3405

VIRGINIA

Virginia Department of Health
109 Governor Street, 3rd floor
Richmond, VA 23219
Tel: 804-864-7906
Fax: 804-371-0248

WEST VIRGINIA

West Virginia Department of Health
& Human Resources
350 Capitol Street Room 125
Charleston, WV 25301-1417
Tel: 304-558-3669
Fax: 304-558-1825

WISCONSIN

Wisconsin Department of Health & Family Services
1 West Wilson Street, Room 318
Madison, WI 53702
Tel: 608-261-6319
Fax: 608-266-0049

WYOMING

Wyoming Department of Health
Quest Building, Suite 510
6101 Yellowstone Road
Cheyenne, WY 82002
Tel: 307-777-5658
Fax: 307-777-5402 or 777-5573

AMERICAN SAMOA

Department of Health
American Samoa Government
Department of Health
LBJ Tropical Medical Center
PO Box F
Pago Pago, AS 96799
Tel: 011-684-633-2243
Fax: 011-684-633-5379

FEDERATED STATES OF MICRONESIA

Department of Health, Education & Social Affairs
Federated States of Micronesia
P.O. Box PS-70
Kolonia, Pohnpei, FM 96941
Tel: 011-691-320-2619
Fax: 011-691-320-5263

GUAM

Department of Public Health & Social Services
National TB Control Program
123 Chalan Kareta, Route 10
Manailao, GU 96923
Tel: 011-671-735-7145 or 7157
Fax: 011-671-735-7318

NORTHERN MARIANA ISLANDS

CNMI TB Control Program
Department of Public Health & Commonwealth
Health Center
P.O. Box 500409 CK
Saipan, MP 96950-0409
Tel: 670-234-8950 Ext. 3514
Fax: 670-236-8736

PUERTO RICO

Puerto Rico Department of Health
P.O. Box 70184
San Juan, PR 00936
Tel: 787-274-5553
Fax: 787-274-5554

REPUBLIC OF MARSHALL ISLANDS

National TB Control Program
Ministry of Health
P.O. Box 16
Majuro Hospital
Majuro, MH 96960-0016
Tel: 011-692-625-3355
Fax: 011-692-625-4372

REPUBLIC OF PALAU

Palau Ministry of Health
Republic of Palau
P.O. Box 6027
Koror, Republic of Palau 96940-0845
Tel: 011-680-488-1757
Fax: 011-680-488-3115

VIRGIN ISLANDS

Virgin Islands Department of Health
Old Municipal Hospital, Building 1
Knud Hansen Complex
St. Thomas, VI 00802
Tel: 340-774-9000
Fax: 340-776-5466

Diagnosis of Tuberculosis Disease

When Should You Suspect Tuberculosis (TB)?

TB is a disease caused by *Mycobacterium tuberculosis*. TB disease should be suspected in persons who have the following symptoms:

- Unexplained weight loss
- Loss of appetite
- Night sweats
- Fever
- Fatigue

If TB disease is in the lungs (pulmonary), symptoms may include:

- Coughing for ≥ 3 weeks
- Hemoptysis (coughing up blood)
- Chest pain

If TB disease is in other parts of the body (extrapulmonary), symptoms will depend on the area affected.

How Do You Evaluate Persons Suspected of Having TB Disease?

A complete medical evaluation for TB includes the following:

1. Medical History

Clinicians should ask about the patient's history of TB exposure, infection, or disease. It is also important to consider demographic factors (e.g., country of origin, age, ethnic or racial group, occupation) that may increase the patient's risk for exposure to TB or to drug-resistant TB. Also, clinicians should determine whether the patient has medical conditions, especially HIV infection, that increase the risk of latent TB infection progressing to TB disease.

2. Physical Examination

A physical exam can provide valuable information about the patient's overall condition and other factors that may affect how TB is treated, such as HIV infection or other illnesses.

3. Test for TB Infection

The Mantoux tuberculin skin test (TST) or the special TB blood test can be used to test for *M. tuberculosis* infection. Additional tests are required to confirm TB disease. The Mantoux tuberculin skin test is performed by injecting a small amount of fluid called tuberculin into the skin in the lower part of the arm. The test is read within 48 to 72 hours by a trained health care worker, who looks for a reaction (induration) on the arm.

The special TB blood test measures the patient's immune system reaction to *M. tuberculosis*.

4. Chest Radiograph

A posterior-anterior chest radiograph is used to detect chest abnormalities. Lesions may appear anywhere in the lungs and may differ in size, shape, density, and cavitation. These abnormalities may suggest TB, but cannot be used to definitively diagnose TB. However, a chest radiograph may be used to rule out the possibility of pulmonary TB in a person who has had a positive reaction to a TST or special TB blood test and no symptoms of disease.

5. Diagnostic Microbiology

The presence of acid-fast-bacilli (AFB) on a **sputum smear** or other specimen often indicates TB disease. Acid-fast microscopy is easy and quick, but it does not confirm a diagnosis of TB because some acid-fast-bacilli are not *M. tuberculosis*. Therefore, a **culture** is done on all initial samples to confirm the diagnosis. (However, a positive culture is not always necessary to begin or continue treatment for TB.) A positive culture for *M. tuberculosi*s confirms the diagnosis of TB disease. Culture examinations should be completed on all specimens, regardless of AFB smear results. Laboratories should report positive results on smears and cultures within 24 hours by telephone or fax to the primary health care provider and to the state or local TB control program, as required by law.

6. Drug Resistance

For all patients, the initial *M. tuberculosis* isolate should be tested for drug resistance. It is crucial to identify drug resistance as early as possible to ensure effective treatment. Drug susceptibility patterns should be repeated for patients who do not respond adequately to treatment or who have positive culture results despite 3 months of therapy. Susceptibility results from laboratories should be promptly reported to the primary health care provider and the state or local TB control program.

Additional Information

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Glossary

Acronyms and Glossary of terms

This section includes a list of common acronyms and abbreviations used throughout *Model Tuberculosis Prevention Program for College Campuses*. Definitions from each of these acronyms can be found within the glossary of terms, also found in this section.

Acronyms and abbreviations

ACHA: American College of Health Association
BCG: Vaccine: Bacille Calmette Guerin vaccine
DOT: Directly Observed Therapy
CDC: Centers for Disease Control
INH: Isoniazid
LTBI: Latent Tuberculosis Infection
PPD: Purified Protein Derivative
SAT: Self-administered Therapy
TB: Tuberculosis

Glossary of Terms

Active tuberculosis disease: Tuberculosis that involves active germs within the infected person. An infected person whose tuberculosis has progressed to active disease may experience symptoms such as coughing, fever, and weight loss and is capable of spreading the disease to others if the tuberculosis germs are active in the lungs or throat.

Bacille Calmette Guerin (BCG) vaccine: A vaccine routinely administered to infants and younger children in countries with high incidence of tuberculosis to prevent disseminated and meningeal TB disease.

Core Curriculum on Tuberculosis: Information provided by the Centers for Disease Control and Prevention that outlines testing and treatment protocols for tuberculosis. Primarily directed at medical clinicians, the core curriculum document is available both as a printed book and an up-to-date document on the CDC's website.

Centers for Disease Control and Prevention (CDC): The centers are the U.S. Public Health Service's national agencies for control of infectious and other preventable diseases. They work with state and health departments to provide specialized services that the states are unable to maintain on an everyday basis.

Directly observed therapy (DOT): Treatment for latent tuberculosis infection or active tuberculosis disease that involves the infected person taking medication in the presence of a health professional to ensure the person does not miss any doses and to create a partnership between the patient and health-care provider. The standard of care for intermittent regimens in tuberculosis calls for directly observed therapy.

Interferon Gamma Release Assay (IGRA): A blood test for LTBI.

Endemic countries: Countries with high incidences of tuberculosis.

Isoniazid: The drug that is most often used to treat latent tuberculosis infection and also used to treat active tuberculosis disease; although it is relatively safe it may cause hepatitis and other adverse reactions in some patients.

Latent Tuberculosis infection (LTBI): Tuberculosis that involves a person who is infected with tuberculosis germs, but the germs are not active in the infected person's body. The infected person is not symptomatic but has the potential to develop tuberculosis disease if the tuberculosis germs become active and multiply in the body. A person with latent tuberculosis infection cannot spread the infection to others unless the germs become active in the lungs or throat.

Mantoux tuberculin skin test: The preferred method of testing for tuberculosis infection; done by using a needle and syringe to inject 0.1ml of 5 tuberculin units of liquid tuberculin between the layers of the skin (intradermally), usually on the forearm; the reaction to this test, usually a small raised area (induration), is measured 48 to72 hours after the injection and is classified as positive or negative depending on the size of the reaction and the patient's risk factors for tuberculosis.

Purified protein derivative (PPD) tuberculin: A type of tuberculin used in the Mantoux skin test, which is injected between the layers of the skin (intradermally), to measure the immune reactivity to the tuberculin.

QuantiFERON-TB Gold test: An in-vitro blood test approved by the Food and Drug Administration in 2005 that measures the immune reactivity to mycobacterium tuberculosis.

Respiratory isolation: As it relates to tuberculosis, separating a person infected with active tuberculosis disease to an area of unshared breathing space to prevent the spread of tuberculosis germs to others.

Risk screening: As it relates to tuberculosis, assessing a person's risk factors for exposure to tuberculosis. Risk factors include living or traveling to a country where tuberculosis is common, having a chronic medical condition that impairs the immune system, coming in contact with a person known to have active tuberculosis, and being a health-care worker, volunteer, or employee of a nursing home, prison or other residential institution.

Self-administered therapy (SAT): Treatment for latent tuberculosis infection or active tuberculosis disease that involves the infected person taking a daily oral dose of medication (generally for nine months) and receiving monthly check-ups with a health-care provider.

Tuberculosis (TB): An infectious disease caused by mycobacterium tuberculosis, can lead to serious illness and even death.

TB suspect: A person who is suspected of having tuberculosis disease due to one or all of the following medical factors: the presence of symptoms, the result of their tuberculin skin test, risk factors for tuberculosis, and/or findings on an abnormal chest x-ray. To confirm or rule out a diagnosis of tuberculosis, sputum specimens are collected and examined for mycobacterium tuberculosis.

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