

Tuberculosis Prevention and Control Guidelines for Homeless Service Agencies in Seattle & King County, Washington

Updated online: May 2019

*First Edition Endorsed by the Seattle-King County Homelessness & Tuberculosis Coalition on
March 30, 2004.*

Second Edition published on October 28, 2005. Third Edition published on May 8, 2008

Fourth Edition published on June 30, 2010

Converted to an online 'living document' in November 2015

For emergency shelters, day centers, safe havens, supportive housing programs, SROs, and other programs that work with people experiencing homelessness.

A Publication of:

Public Health—Seattle & King County

Prevention Division - Tuberculosis Control Program

Community Health Services Division - Health Care for the Homeless Network

Public Health
Seattle & King County 

ACKNOWLEDGEMENTS

Public Health—Seattle & King County would like to thank the following for their assistance in developing the first edition of the guidelines:

Seattle-King County Tuberculosis & Homeless Coalition
Seattle-King County Coalition for the Homeless
Public Health Seattle & King County - Health Care for the Homeless Network (HCHN) Public Health Seattle & King County - TB Control Program
Washington State Department of Health - TB Program
American Lung Association of Washington
Homeless Health Care Los Angeles
San Francisco Department of Public Health
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EXECUTIVE SUMMARY

The objective of the Seattle-King County Tuberculosis (TB) Prevention and Control Guidelines for Homeless Service Agencies is ultimately to reduce the transmission of TB among people experiencing homelessness in the Seattle-King County area. If untreated, TB can be fatal. Public Health needs the support of homeless service and housing agencies to help control TB in our community. Agencies play a key role in this effort by assessing their agency's degree of TB risk, putting in place measures to reduce those risks, and helping link clients with possible active TB to a health care provider/system. At the time of preparation of the first edition (March 2004), Seattle-King County faced a challenge with a large outbreak of TB among the homeless population. We are grateful to the community partners for the successful containment of the outbreak over the past decade. However we must remain vigilant as each homeless TB case can trigger another wave of TB transmission. This document is now converted to a 'living document' so that necessary updates can be made online. The readers are encouraged to check our website periodically to confirm that it is the most updated version.

KEY GUIDELINES

1. Assess your agency's degree of TB risk. How easily might TB transmission occur, given the type of program, your target population, and the physical environment? Use these guidelines to learn about what can put your program at higher or lower risk for TB transmission.
2. Develop and implement a TB Policy that is appropriate for your type of agency.

Working with Agency Staff & Volunteers

- Ensure that prospective employees understand the nature of TB and other communicable disease risks in your homeless agency and are provided with information about conditions (e.g., HIV/AIDS) that put people at higher risk of developing TB disease.
- Require TB training for all staff & volunteers– at hire & annual refreshers.
- Require that all staff and volunteers be tested for TB at hire. Annual testing may be necessary based on risk of transmission at your site.

Consider Your Environment

- Keep legible, dated attendance logs for at least 3 months, preferably 6 months.
- Consider creating a bed map to help identify clients exposed to a TB case.
- Promote good ventilation & air circulation – open windows, or use your air conditioning or heating as recommended. Monitor and clean ventilation systems as appropriate.
- Instruct clients/tenants to cover their cough. Provide tissues and masks for clients and staff. Post signs advertising availability of tissues and/or masks.
- For overnight shelters, allow as much space as possible between beds/mats and position clients head to toe.

Working with Clients and Tenants

- Educate clients and tenants to be aware of TB symptoms.
- Actively assess clients for TB symptoms on intake and ask clients periodically if they have developed symptoms (e.g., cough, night sweats, weight loss) at any time during their stay.
- Institute a "Cough Alert" policy: listen for chronic coughers & take action.
- Link coughing clients/tenants to health care.

Working with Public Health – Seattle & King County

- If you are unsure or have concerns about how to deal with a particular situation, or if you need help with training or supplies, contact the TB Control program or Health Care for the Homeless Network.
- If a case of TB disease is identified at your agency, work with Public Health staff. You may be asked to share attendance logs or assist in locating people who need to be evaluated for TB.

Glossary of Terms Related to TB

Chest x-ray - A picture of the inside of your chest. It can show if TB bacteria have damaged your lungs.

Contact - A person who has spent time with a person with infectious TB.

Directly Observed Therapy (DOT) - A method of helping patients take their medicines for TB. If you get DOT, you will meet with a health care worker every day or several times a week. You will meet at a place you both agree on. This can be the TB program, the shelter, under the freeway or any other location.

Extra-pulmonary TB - TB disease in any part of the body other than the lungs (like the spine, brain, kidney or lymph nodes).

Interferon-gamma release assay (IGRA) – A simple blood test that is often used to detect TB infection. The two IGRAs available are the QuantiFERON (QFT) and T-Spot. Prior BCG vaccine does not cause a false-positive IGRA test result and IGRA doesn't require two-step testing for baseline.

Isoniazid (INH) - A drug used to prevent TB disease in people who have TB infection. Treatment duration is 9 months.

Isoniazid and Rifapentine (3HP) – Drugs used to prevent TB disease in people who have TB infection. Treatment duration is 3 months.

Multidrug-resistant TB (MDR-TB) - TB disease caused by bacteria that are resistant to at least two major TB medications. It is very difficult to cure MDR-TB and needs at least 18-24 months of treatment.

M. tuberculosis - bacteria that cause latent TB infection and TB disease.

Negative - usually refers to a test result. If you have a negative TB skin test reaction or TB blood test, you probably do not have latent TB infection.

Positive - usually refers to a test result. If you have a positive TB skin test reaction or TB blood test, you probably have latent TB infection.

Pulmonary TB - TB disease that occurs in the lungs, usually producing a cough that lasts longer than 2 weeks. Most TB disease is pulmonary.

Rifampin (RIF) – A drug used to prevent TB disease in people who have TB infection. Treatment duration is 4 months.

Sputum - Fluid from lungs which is tested to see whether there are TB bacteria present.

TB Disease - An illness in which TB bacteria are multiplying and attacking different parts of the body. The symptoms of TB disease include weakness, weight loss, fever, no appetite, chills, and sweating at night. Other symptoms of TB disease depend on where in the body the bacteria are growing. If TB disease is in the lungs (pulmonary TB), the symptoms may include a bad cough, pain in the chest, and coughing up blood.

TB Infection - A condition in which TB bacteria are alive but inactive in the body. People with TB infection have no symptoms, do not feel sick, cannot spread TB to others, and usually have a positive skin

test reaction or blood test. However, they may develop TB disease later in life if they do not receive preventive therapy.

TB Skin Test (TST) - A test that is often used to detect TB infection. If you have a positive reaction to this test, you probably have TB infection. Also known as a PPD or Mantoux test.

Tuberculin - a liquid that is injected under the skin on the lower part of your arm during a TB skin test. If you have TB infection, you will probably have a positive reaction to the tuberculin.

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SECTION 1: Purpose

A. Why Are Tuberculosis (TB) Guidelines Needed?

This document provides information about TB for homeless-serving agencies in King County and promotes a standard set of guidelines designed to reduce the ongoing transmission of TB among homeless people in Seattle-King County.

Guidelines are important because TB, if untreated, can kill people. If people who take medications for TB do not complete the medications, it may lead to forms of TB that are resistant to drugs. Because TB is frequently a disease of poverty and overcrowded living conditions, people living homeless are at especially high risk for tuberculosis.

The guidelines are designed to support your agency in giving you the tools you need to:

- Identify clients who may have TB symptoms
- Know how to refer people with TB symptoms to health care providers
- Ensure TB screening of agency staff and volunteers
- Ensure that you do not unnecessarily exclude clients from service due to unfounded fears about TB
- Do an agency self-assessment of the level of TB risk at your agency and identify ways to minimize risk
- Establish a TB Policy for your agency that covers the above topics

B. Who Should Use These Guidelines?

The guidelines are written for directors and staff of agencies that work with homeless people. TB guidelines are important for all homeless-serving agencies, including shelters, day centers, feeding programs, housing programs, and more. Information is provided to help you assess the level of TB risk for your staff and clients, and this in turn will help you establish reasonable TB policies for your programs.

Technical assistance on implementing these guidelines is available from either the Public Health—Seattle & King County TB Control Program or Health Care for the Homeless Network.

SECTION 2: Understanding TB

A. What is TB?

Tuberculosis, also called TB, is an infectious disease caused by bacteria called *Mycobacterium tuberculosis*. TB usually affects the lungs (pulmonary TB) but can infect almost any organ in the body, including the kidneys, brain, or lymphatic system. TB is almost always curable with antibiotics that are readily available in the United States.

TB was once the leading cause of death in the United States. This was in large part due to poverty and overcrowded living situations that were common in the early 1900s. The incidence of TB declined significantly with improved living conditions and the discovery of an effective treatment for the disease in

the 1940s. However, with the rise in immigration, homelessness, health conditions that weaken the immune system, and deterioration of TB program infrastructure in the nation due to reduced funding, the disease re-emerged as a significant public health threat in the late 1980s.

About 1.6 million people a year die from TB worldwide. If untreated, 50% of patients with active tuberculosis disease die. However, due to the availability of effective TB medications, death from TB is rare in the United States, and, in King County the cure rate is higher than 95 percent.

B. How is TB spread?

TB is spread through the air from one person to another. It spreads when someone who has pulmonary TB coughs, talks, sings, or sneezes. TB bacteria from that person's lungs are then expelled into the air, and may be inhaled into the lungs of another person. Exposure to TB bacteria does not always result in TB infection.

TB is much more difficult to catch than the common cold. To catch TB, a person typically has to spend quite a bit of time with someone who has pulmonary TB. People with TB disease are most likely to spread it to people they spend time with every day, including family members, friends, and coworkers.

It is not possible to get TB from sharing a glass with a person with TB, or touching a doorknob after someone with TB has used it. You cannot get TB from hugging, shaking hands or having sex with an infected person or from using a public toilet, shower or swimming pool. Mosquitoes and other insects do not transmit TB. Also, once a person with TB disease is on medication he or she becomes non-contagious—it may take from two weeks to many months to be non-contagious.

Once released by their medical providers, people on medication can quickly resume their normal patterns of life without fear of spreading TB to others.

C. Latent TB Infection vs. TB Disease

There is a big difference between TB infection and TB disease. It is important to understand the difference between the two in order to provide accurate information to other staff and clients and to reduce unnecessary fears about TB.

Latent TB Infection

In most people who breathe in TB bacteria and become infected, the body is able to fight the bacteria to stop them from growing. This is called latent TB infection ('LTBI'). The germ that causes TB is inside the person's body, but the person is not sick or contagious because the bacteria are inactive or dormant.

Many people who have latent TB infection never develop active TB disease. In these people, the TB bacteria remain inactive for a lifetime without causing disease. But in other people, especially people who have weak immune systems, the bacteria become active and cause active TB disease. To kill these sleeping bacteria and to prevent the development of active disease, persons with latent TB infection are often advised to take several months of treatment, usually with one or two medications.

Active TB Disease

Someone has active TB disease (or just ‘TB disease’) when TB bacteria become active in the lungs (or other part of the body) because the immune system can't stop them from growing. Some people develop active TB disease soon after becoming infected, before their immune system can fight the TB bacteria. Other people may develop active TB disease later, when their immune system becomes weak for some reason.

People with active TB disease are made sick by the bacteria being active in their body. Often they have several symptoms of active TB disease like persistent cough, fever and weight loss. If the disease is in their lungs they can give the disease to other people. Permanent damage and death can result from this disease. Medications to cure active TB disease are almost always effective.

The Difference Between Latent TB Infection & TB Disease	
LATENT TB INFECTION	TB DISEASE
There are TB germs in the body.	There are TB germs in the body.
Positive skin or blood test.	TB skin or blood test is not useful for identifying TB disease, because up to 20-25% of people with TB disease will have a <i>negative</i> (normal) skin or blood test.
Normal chest x-ray.	Abnormal chest x-ray.
No symptoms.	There may be symptoms that may include: Coughing (for more than 3 weeks) Coughing up blood Weakness or fatigue Weight loss Night sweats Fever
NOT contagious.	Contagious if there is TB in the lungs and it is not properly treated.
At risk for developing TB disease in the future.	TB disease is already active in the lungs or another part of the body.
Generally one antibiotic is prescribed for 3-9 months to prevent TB disease in	A combination of antibiotics will be prescribed for at least 6 months.

This table has been adapted, with permission, from the *Tuberculosis Prevention Guide for Homeless Service Providers*, prepared by Homeless Health Care Los Angeles, 2002.

D. TB & HIV

Tuberculosis is particularly dangerous for people with HIV. Globally, TB is the leading cause of death for people with HIV – over 10% of people with AIDS worldwide die of tuberculosis.

Because HIV infection weakens the immune system, people with HIV infection are at very high risk of developing TB disease once they have been infected with TB bacteria. People with HIV infection are 10 times more likely to develop TB disease than people who do not have HIV. They are also more likely to develop extra-pulmonary TB (TB outside of the lungs) than people with a healthy immune system.

HIV infection affects the likelihood that a person will get TB disease and it also affects the TB skin or blood testing and treatment process. People with HIV/AIDS may have a negative TB skin or blood test even if they have TB infection. Because of complex interaction of HIV treatment with TB medications, medical providers who take care of people co-infected with HIV and TB must take this into account and consider the best option for the particular patient. Because of the risk factor for developing TB disease, medical providers often recommend that people co-infected with HIV and TB infection (i.e. positive TB skin or blood test) undergo preventive therapy.

Though more complicated to treat in people with HIV, TB is still curable and it is important for people with HIV who are exposed to TB bacteria to get screened and discuss preventive treatment options.

E. Tests to Determine TB

The TB skin test, also known as a PPD or Tuberculin Skin Test (TST), or an IGRA, also known as QFT or T-Spot, is the most common way to find out if you have TB infection. You can get a skin or blood test at Public Health Clinics or at your doctor's office. The TB skin test is performed by injecting a small amount of testing liquid (called Tuberculin) into the skin of the forearm. The test needs to be read 48 to 72 hours later by someone trained in reading skin tests. Persons with suppressed immune systems may not react to the TB test, so other tests are often needed.

If you have a positive reaction to the skin or blood test, your doctor or nurse may do other tests to see if you have active TB disease. These tests usually include a chest x-ray and occasionally a test of the phlegm you cough up. Because the TB bacteria may be found somewhere besides your lungs, your doctor or nurse may also check your blood or urine, or perform other tests. If you have active TB disease, you will need to take medicine to cure the disease.

F. What Are the Signs and Symptoms of TB (active TB disease)?

TB symptoms usually develop gradually over a period of weeks. The most common symptoms are:

A bad cough that lasts longer than 3 weeks
Coughing up blood
Fever

Although most TB cases in Seattle-King County are among adults, children and youth can get TB as well. Children often do not have the same TB symptoms as adults. In general, be aware of kids who are not feeling well, especially for more than 10 days, or who are not thriving. Help them access a health care provider.

G. Treatment of Active TB Disease

There is good news for people with TB disease: TB disease can almost always be cured with medicine. But the medicine must be taken exactly as instructed by a health care provider. To treat TB, several antibiotics need to be taken together over a period of 6 months to a year. It is vital that these medications are taken regularly and that the full treatment course is completed. Lengthy treatment is necessary because the bacteria grow very slowly and are persistent despite a long term use of antibiotics.

People with TB disease of the lungs are usually infectious and should stay away from shelters, day centers, work, school, or other public places so that the TB bacteria are not spread to other people. After taking TB medicine for a few weeks, people feel better and a test by their medical provider will determine when they are no longer contagious. Even after starting to feel better, one must keep taking the medication until directed otherwise by a health care provider.

People with TB disease of the lungs will have their TB medications provided with Directly Observed Therapy (DOT). DOT consists of a health care worker meeting with a person and observing them swallowing their TB medication which may need to be daily. DOT is an extremely effective treatment method that allows careful monitoring to ensure that treatment is completed and to observe any side effects of the medication.

TB treatment is available, regardless of insurance status, at the TB Clinic at Harborview Medical Center. The TB Control Program supports people who are homeless and undergoing TB treatment by providing them with directly observed therapy, food, and a motel room while they are infectious.

H. Who is At Risk for TB?

Some people have a higher risk of getting TB disease. They include:

- People with HIV/AIDS
- People who became infected with TB bacteria in the last 2 years
- Babies and young children (younger than five years old)
- People who inject illegal drugs
- People who are sick with other diseases or conditions that weaken the immune system
(Such as diabetes, cancer, malnutrition, kidney disease)
- People on immunosuppressive treatments, such as long-term oral steroids or TNF- α antagonists
- Elderly people
- People who were not treated correctly for TB in the past

Some people have a higher risk of having TB infection, which can progress to active TB disease.

- People who are enduring homelessness and other underserved populations
- People who come from or travel to countries with a high incidence of TB disease.

I. Environmental Risk Factors for TB

Several factors in the homeless shelter/day center/SRO environment influence the likelihood of TB transmission. The following describes the major environmental factors that affect the spread of TB in a facility.

Population density

The number and population density of persons sharing the same breathing space is an important transmission factor in facilities serving homeless people. If all other factors are constant, the size of the shelter population is directly proportional to the likelihood that someone with infectious TB will be present and that someone else will become infected. Conversely, the less crowded the shelter, the lower the risk.

Close proximity of beds/mats in residential settings

The risk of disease transmission increases when beds/mats are placed very close together or when clients are sleeping head-to-head, as it means clients are more likely to share the same air space.

Poor air circulation due to inadequate ventilation

The probability of transmission is also affected by building ventilation. During periods of peak occupancy, it may be difficult for homeless facilities to provide ventilation at adequate levels. Adequate ventilation requires the constant circulation of air - old air must be vented out of the building and fresh air must be pumped in from outside of the building. In some buildings, opening windows is a simple way to improve air quality and ventilation in enclosed spaces.

Inadequate agency infection control methods

TB transmission is more likely if homeless agency staff is not trained to recognize the signs and symptoms of TB. It is more likely that TB will be spread if agency staff and volunteers are not screened annually and clients are not closely monitored and encouraged to cover their mouths when sneezing or coughing, and get medical evaluations when they show TB symptoms.

SECTION 3: Creating a TB-Free Environment at Your Agency

A. Assess the TB Risk at Your Facility

The risk of TB transmission depends on how many people occupy the space, the physical environment, and other infection control measures. PHSKC TB Program can assist in your assessment of risk. Facilities that serve clients in a communal setting are likely to have clients breathing the same air increasing the risk of TB transmission. For example, a crowded single adult shelter where people sleep on mats is far more conducive to spreading TB than is a family shelter where households each have a separate living unit. There are populations of clients which are more likely to develop TB disease: people with medical conditions such as HIV/AIDS, diabetes, and cancer; people who inject IV street drugs; and people from countries where TB is common.

Listed below are key features to help you assess your agency’s level of risk for TB transmission. You may have the ability to influence some of these factors. It is important to assess and understand the level of risk in your agency, and take appropriate steps in response.

Higher Risk of TB Transmission	Lower Risk of TB Transmission
Crowded conditions; clients sleep close together	Separate dwelling units
Clients spend a lot of time in close quarters	Clients are in and out of the program quickly
Poor ventilation/closed windows or incorrect use of ventilation system	Good ventilation & environmental controls
Staff not well informed/trained about TB	Management requires regular TB trainings
Clients not well informed about TB	Clients receive information/education about TB
Clients not encouraged/asked to cover coughs	Clients use masks & tissues to cover coughs
Program serves high risk groups	Program serves low risk groups
No TB Policy	Agency implements a TB policy
Presence of an undiagnosed person with active TB disease in the environment	

SROs, Supportive Housing Programs, and Transitional Housing Program

Keep in mind that staff, tenants, and case managers of single-room occupancy (SRO) and supportive housing programs are at risk for TB exposure, even though clients may have separate units. Conditions in these facilities can still be quite crowded. Tenants and staff may spend time in crowded TV or computer lounges, lobbies, meal areas, and other common rooms. The populations tend to be formerly homeless people, many with serious health, mental health, and substance abuse issues. It is essential that these facilities—like shelters and day centers—implement TB prevention and control measures.

B. Create & Enforce an Agency TB Policy

The most effective way to promote a TB-free environment at your homeless service agency is to have a clear TB Policy. Your TB Policy should address the following:

1. Staff TB training/education requirements
2. Staff TB screening requirements
3. Environmental measures to reduce risk of TB transmission
4. Procedures for client and tenant health screening
5. Management and referral of sick clients, including implementation of a “Cough Alert” policy.

A sample TB Policy for Homeless Agencies is provided in the Resource section. It can and should be tailored to your agency. Technical assistance is available to your agency to help establish a TB policy.

C. Review the Physical Layout of Your Facility & Options for Isolation of Sick Clients

In overnight facilities, increasing the space between clients will aid in decreasing the spread of TB. Shelters should do what they can to increase the space between mats or beds, balancing the need to help people off the streets with the need to minimize the spread of TB, flu, and colds.

No specific distances between beds/mats are recommended either by Washington State or the Centers for Disease Control at this time. Beds/mats should also be positioned so that clients are sleeping head-to-toe, thus minimizing the amount of shared air that the clients breathe.

If clients are coughing or appear to be ill, agencies should try to separate those clients from others. While this may not be possible in all facilities, a separate room that isolates sick clients from healthy clients is optimum. If clients' health is assessed upon arrival at the program, they can be subtly directed to alternative beds/mats based on this assessment.

D. Offer Respiratory Protection

Providing coughing clients/tenants with paper masks (either the blue surgical style masks or the flat pleated) that cover the mouth and nose is an effective TB control strategy. If a person who is coughing wears a mask, it serves as a useful tool to prevent the spread of germs because it captures germs before they enter the environment. In other words, wearing this kind of a mask helps prevent a sick person from spreading germs to others.

Wearing these kinds of masks does not, however, prevent a person from inhaling contaminated air. So, for example, wearing a mask will not prevent your staff or clients from breathing in TB germs that are already moving through the environment.

Masks: the New Look of Respiratory Etiquette

The TB Control Program and Health Care for the Homeless understand that in many homeless service settings, clients may refuse to wear a mask. Stigma, cultural norms, concerns about what others will think or say, mental illness, substance use, comfort, and personal style may all come into play. However, agencies—especially those where TB risks are high—are encouraged to start with a small supply of masks and give it a try. Over time, a cultural shift could occur in some organizations. With new infectious diseases emerging around the globe, the use of masks in public and in health care setting is becoming more and more common. It is important that homeless agencies take steps to begin to introduce the use of masks, especially in crowded shelters and day centers where clients share the same breathing space. Share your experiences with TB Control and HCHN so that they can learn about what's working and what is not.

If clients are unwilling to wear them or if masks are not available, clients should be encouraged to cover their mouths when coughing. Tissues should be readily accessible for use by both clients and staff. In addition to helping prevent the spread of TB, the use of masks and tissues helps stop the spread of viral infections such as colds and the flu.

Respiratory Protection Recommendations for Homeless-Serving Agencies

- a) Coughing clients, tenants, and staff of homeless-serving agencies should be encouraged to wear a mask or cough into a tissue to help prevent the spread of TB. This also helps prevent the spread of

colds and flu. Clients who are actively coughing should be referred to a medical provider for evaluation and treatment as necessary.

- b) Staff who is ill should not return to work until free of infection.
- c) It is recommended that each facility post sign(s) for client/tenant awareness and cough monitoring.
- d) Mask use is encouraged, but will be left to the discretion of agency staff and management. Each facility should have a stock of blue surgical masks on hand. Masks can be purchased through medical supply catalogues and generally cost anywhere from 10 to 50 cents per mask.
- e) To be effective, masks must be positioned to cover the nose and mouth. Masks that become wet or soiled are ineffective and should be thrown away. It is not possible to catch TB from handling a used mask, but staff should wear gloves when handling used masks and tissues to help prevent the spread of other diseases such as the flu and the common cold.
- f) Homeless agencies should have frequent, plastic-lined wastebaskets placed throughout the organization for the disposal of used masks and tissues.

E. Educate Your Clients and Tenants

Educate your clients about TB symptoms:

- 1. Post signs in your facility reminding coughing clients/tenants to cover their coughs, and listing the symptoms of TB.
- 2. Make TB a topic for a house meeting. If you hold such meetings with clients, consider asking a nurse from Health Care for the Homeless or the TB Control Program to attend so that they can answer clients' questions.
- 3. Provide brochures about TB in your agency. Information is available in the Resource section.

As appropriate, you may want to educate a given client or tenant on what to expect if they have TB symptoms or active disease. Because you may have a trusting relationship with a client, your assurances can help convince a client to see a health care provider and to follow-through with treatment.

- 1. Reassure clients that TB is treatable and curable, and that treatment will be at no cost to the client.
- 2. Public Health will ensure that clients being treated for TB have a place to live and have their basic needs met.
- 3. During the time clients with TB disease are contagious, they cannot stay at a shelter or visit day centers because they may expose others to TB. They will also need to stop going to public places like the library, coffee shops or bars as well other locations where they might expose their friends and the general public. Their health care provider will determine when they are no longer contagious, and will help clients understand where it is and is not safe for them to go.
- 4. Encourage clients to follow the instructions of their health care provider, and to comply with all instructions regarding taking medications.

F. Work with Public Health if a TB case is identified at Your Agency

If a case of TB is associated with your agency, it is important that you cooperate with Public Health.

1. Clients with infectious TB disease must immediately be removed from a shelter or day center setting. They are contagious and need daily treatment. Public Health will provide housing and case management, in addition to treatment, for these clients.
2. Public Health may begin “contact investigations” to learn who the individual spent time with – those people need to be tested for TB. We may ask for your help in locating specific clients.
3. If your agency is involved in helping locate close contacts because one of your clients has active TB, Public Health will be able to share with agency management the name of the individual who has TB.
4. Public Health may ask to see attendance logs and bed maps of clients and staff: please cooperate by sharing the logs with Public Health TB Control Program staff when asked to do so. The logs are absolutely critical in helping prevent further spread of disease. Washington Administrative Code (WAC) 246-101-425 specifies that “Members of the general public shall cooperate with public health authorities in the investigation of cases or suspected cases, or outbreaks and suspected outbreaks of notifiable conditions or other communicable diseases...”
5. In certain circumstances, Public Health may wish to perform more extensive tests at or near your agency, including skin or blood tests, sputum collection, chest x-rays, and more.

G. Assess Your Ventilation and Engineering Controls

Whether you are an existing program, planning a remodel, or building a new facility, technical assistance is available to help ensure you are doing everything possible with ventilation and engineering controls to help prevent the spread of TB. Three types of engineering controls are used to prevent the transmission of TB in homeless facilities: ventilation, ultraviolet germicidal irradiation (UVGI), and high-efficiency particulate air (HEPA) filtration. All engineering controls should be used in conjunction with an established TB policy and other infection control measures. Each of these controls varies in cost and the level of complexity in implementation.

Ventilation

Adequate ventilation and controlling the direction of airflow is pivotal to improving air quality and decreasing the spread of tuberculosis. Ventilation is the movement of air to achieve dilution and air exchange in a specific area. Fresh air flow into a room or space is necessary for ventilation to be effective because re-circulating air in a room does not improve air quality in a way that prevents the spread of TB.

The simplest and least expensive ventilation technique is to dilute and exchange air by maximizing natural ventilation through the opening of windows and doors. More complex and costly methods involve mechanical ventilation through the use of fans or exhaust systems.

With mechanical ventilation, it is important to use equipment with sufficient power to facilitate air entry into, and exhaust from, the room or area. All kinds of ventilation systems should be evaluated regularly to determine if they are functioning properly.

Ventilation systems need to be monitored and cleaned on a regular basis to ensure that they are effective. Ventilation system outlets, such as exhaust grilles, should be cleaned free of dust and lint every month so as to increase the amount of air movement. In mechanical air filtration systems, filters need to be changed at least 2 times per year or per directions provided by the manufacturer.

Ultraviolet Germicidal Irradiation (UVGI)

Laboratory experiments have shown that sufficient exposure to ultraviolet light kills TB bacteria. Homeless facilities can install UVGI lighting or make use of portable floor units as a supplement to ventilation. One of the benefits of UV lighting is it is effective at killing regular and drug-resistant TB.

UVGI can have negative short-term health effects on skin and eyes, so a safety plan should be in effect when used. There are a few reports on potential effectiveness of UVGI. The Pine Street Inn shelter in Boston installed ultraviolet light fixtures in the early 1980s. While no study was associated with the installation of the UVGI lights, the shelter reports that they have never had another case of TB among the staff since the UV lights were installed. In addition, during a TB outbreak among the homeless during 1986-1987 in Seattle, UVGI was installed in some shelters as a part of the TB control effort.

High-Efficiency Particulate Air (HEPA) Filtration

HEPA filter units can be a useful alternative to the installation of costly mechanical ventilation or UVGI lighting systems. The units can be free-standing or may be permanently attached to floors or ceilings. HEPA filtration units are high-efficiency air filtration units often used in hospitals, medical facilities, and other commercial settings. HEPA filters filter much smaller particles than other filtration systems and they are effective at filtering bacteria out of the air. HEPA filtration units are especially effective in high-density areas where there is little or no natural ventilation.

What Should Your Agency Do?

Making engineering improvements to a homeless facility may be cost prohibitive for many organizations. Agencies should implement engineering controls that are accessible and affordable. However, for new construction or as facility remodels and/or maintenance take place, engineering improvements should and in some cases must be incorporated into the design process.

If you would like assistance in assessing your current environmental controls, contact Health Care for the Homeless Network at (206)-296-5091 or the TB Control Program at (206) 744-4579. They can refer you to appropriate resources. When planning for construction or facility updates, an environmental consultant can make recommendations for air filtration systems that will be most effective given the number of individuals occupying the facility.

Environmental recommendations need to be incorporated into the design process and an assessment should be done very early on in construction or remodel planning. It is important to locate an architect and contractor familiar in designing and constructing facilities that will provide the necessary ventilation to prevent the spread of TB.

For further information regarding ventilation, see the publication titled “Tuberculosis Infection Control: A Practical Manual for Preventing TB” from the Curry International TB Center at <http://www.currytbcenter.ucsf.edu/products/view/tuberculosis-infection-control-practical-manual-preventing-tb-cd-rom>

If you want help with a TB risk assessment, call Health Care for the Homeless Network, 206-263-5091.

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