

## **MAJOR PROGRAM POINTS**

# **"GUARDING AGAINST TUBERCULOSIS IN INSTITUTIONAL FACILITIES"**

**Training For  
THE CDC "TUBERCULOSIS PREVENTION GUIDELINES"**

**"Quality Safety and Health Products, for Today...and Tomorrow"**

# **Outline of Major Points Covered in the "Guarding Against Tuberculosis in Institutional Environments" Course**

The following outline summarizes the major points of information presented in the Course on Guarding Against Tuberculosis in Institutional Environments. The outline can be used to survey the Course before taking it on a computer, as well as to review the Course when a computer is not available.

- **Over the last 60 years, modern medical practices have reduced the spread of many diseases.**
  - Until recently Tuberculosis was one of them.
  - It was even hoped that TB would be eliminated from the United States by the early 21st Century.
- **Unfortunately, Tuberculosis has once again become a major health problem... one that we have to pay attention to.**
- **We need to understand why cases of Tuberculosis are on the rise.**
  - People with HIV (AIDS) have difficulty fighting TB bacteria.
  - IV drug abusers also have a higher risk of developing TB (because they often have diseases such as AIDS, that weaken the immune system).
  - People immigrating from countries with high levels of active TB have also contributed to its increase.
- **Another problem is that people with active TB often end up in crowded living environments, where bacteria can easily spread.**
  - Prisons.
  - Homeless Shelters.
  - Care Facilities for the Elderly.
  - Other Institutional Environments.
- **These factors have been made worse because many facilities don't have adequate Tuberculosis Control Programs.**

- **Over the last 10 years these factors have resulted in a major resurgence of Tuberculosis.**
  - Across the country, 10-15 million people now carry "Latent TB".
  - In the past several years, over 20,000 cases of "Latent TB" have become "Active" annually.
  
- **On a worldwide scale the problem is even worse.**
  - TB is the leading cause of death by infectious disease (killing over three million people a year).
  - Approximately one-third of the world's population carries the TB bacteria.
  - Approximately eight million new cases of TB occur each year.
  
- **In recent years several government agencies have moved to address the TB problem.**
  - In 1990 the Centers for Disease Control and Prevention (CDC) set up Guidelines for "Preventing the Transmission of Tuberculosis" (which were revised in 1994 and again in 1996).
  - The Occupational Safety and Health Administration (OSHA) is also working on its own regulation.
  - Until their regulation is completed, OSHA is enforcing the CDC Guidelines.
  
- **Both the CDC Guidelines and drafts of OSHA's TB regulations focus on the same major areas.**
  - Employee Training.
  - A Written TB Control Plan.
  - Administrative Controls.
  - Engineering Controls.
  - Personal Protective Equipment.
  
- **Training, such as this program, plays a major role in understanding these guidelines by:**
  - Helping to show you how to protect yourself from possible infection.
  - Covering the nature, extent and specific TB transmission hazards.
  - Discussing the incidence of TB at your facility.
  - Reviewing what steps you can take to keep TB transmission down.

- **TB is a contagious disease, which is caused by the Mycobacterium Tuberculosis.**
  - The bacterium is spread through the air in microscopic droplets.
  - Droplets are generated whenever an infected person coughs, sneezes or otherwise exhales.
- **Droplets can also be produced during "high hazard medical procedures" like Bronchoscopies and Intubation.**
- **The probability of TB infection depends on the concentration of droplets in the air.**
  - Concentrations can be especially dangerous in enclosed or poorly ventilated spaces.
- **Tuberculosis infection occurs in two stages. In the first stage:**
  - The TB bacteria are inhaled and begin to spread throughout the body.
  - A healthy immune system will surround the bacteria and render it "inactive".
  - This will usually occur within two to ten weeks.
- **When the body keeps the TB bacteria in check, the infection is known as "Latent TB".**
  - People with Latent TB do not suffer any adverse effects.
  - Latent TB carriers are not contagious.
  - Approximately 10% of people with "Latent TB" will develop "Active TB".
- **"Active TB" strikes when a person's immune system is too weak to control the TB organism.**
  - Groups whose defenses are normally low are more at risk.
  - Higher risk groups include the elderly, chemotherapy patients and people infected with the HIV virus.
- **People with Active TB are contagious.**
  - Once a diagnosis is made, they should be isolated from the general population.
  - They should be given special medical attention.
  - Patients will remain in the hospital until the "active" disease is under control.

- **Active TB can usually be cured with a six month treatment of antibiotics.**
  - Once treatment is started, most patients are no longer contagious after two to four weeks.
  - Once patients are non-contagious, they can complete their therapy as an outpatient.
  
- **Unfortunately, 50% of TB patients interrupt or fail to complete their treatment.**
  - This is very dangerous.
  - It contributes to the further spread of TB infection.
  - It also often leads to the development of "Drug Resistant TB".
  
- **When strains of TB bacteria are only partially destroyed by a drug, they develop a resistance to it.**
  - The drug is then no longer effective.
  - "MDR TB" (Multi-Drug Resistant) can easily spread to others.
  - Cases of MDR TB have been reported in 40 states.
  
- **Drug resistant strains of TB are much harder to kill off.**
  - Adds to the upsurge in TB infections.
  - Treatment time increases to 18–24 months.
  - The cure rate falls from 100% to 60% (or less).
  - When Active TB is not cured, it often leads to death.
  
- **Remember, treatment with appropriate medication is the best way to fight off an active TB infection.**
  - Do your best to ensure that patients continue and complete their therapy.
  
- **Once you know how Tuberculosis is transmitted you can better understand your facility's Exposure Control Plan.**
  - One of the first steps in the Plan is to identify people who could have TB.
  
- **The most obvious symptom is a "productive cough".**
  - Where the patient spits up blood or other fluid.

- **To determine if the person has any other symptoms, you may need to consult their medical chart or ask if they have experienced:**
  - Weight Loss.
  - Lack of appetite.
  - Lethargy or weakness.
  - Night sweats.
  - Fever.
  
- **Anyone suspected of having TB should be tested to determine if they have an active case.**
  - There are three testing procedures for TB.
  - They are usually performed in the following order.
  
- **The first test is the Mantoux Skin Test.**
  - A purified protein derivative (PPD) is injected under the skin of the forearm.
  - Results from the injection should be read between 48 to 72 hours after the test.
  - A positive reaction may indicate a TB infection.
  - To determine whether the infection is active, further tests are needed.
  
- **The second test, a chest X-ray, will show lung damage if someone has a TB infection.**
  
- **The third, and only conclusive diagnostic procedure is to test the sputum.**
  - Sputum is a mucus-like substance deep within the lung.
  - The sputum will contain Mycobacterium Tuberculosis if there is an active infection.
  
- **If any of the tests indicate that a patient has TB:**
  - They should be kept in isolation.
  - Further evaluation should be conducted.
  - A drug therapy treatment should be prescribed, if necessary.
  
- **On the job, workers who encounter people with Active TB have a higher risk of infection.**

- **People who work in the following types of environments need to exercise extra caution:**
  - Healthcare Facilities.
  - Correctional Institutions.
  - Long-term Care Facilities for the Elderly.
  - Homeless Shelters.
  - Drug Treatment Centers.
  - Emergency Medical Services.
  - Home Health Services.
  
- **The Exposure Controls used in your work areas have been designed by infection control experts.**
  - They help to ensure that you have as little exposure to TB as possible.
  
- **Most Exposure Control Plans begin with "Administrative Controls".**
  - These are designed to limit and keep track of TB exposures.
  
- **The first of these controls is a "Medical Surveillance Program".**
  - This program is required by law and provided free of charge for employees who are at risk of TB infection.
  
- **One of the initial steps in the Surveillance Program is a "Pre-placement Evaluation". It:**
  - Determines whether you are susceptible to Tuberculosis infection.
  - Includes a skin test that establishes a "baseline" for future tests.
  
- **Depending on the risk you face, retesting will occur every 6 or 12 months.**
  - Retesting will also be done after any unprotected exposure to TB.
  - Your employer will interpret your test results for you.
  - All incidents of positive skin tests should be reported to the local Health Department.
  - Instances of employee infection should also be recorded in your facility's Injury Report Log.

- **If a test shows that you have been infected, you will be evaluated for preventative therapy.**
  - Effective treatment can prevent a Latent TB infection from becoming an active one.
  
- **Individuals having (or suspected of having) Active TB should be placed in special Isolation Rooms.**
  - They should remain there until they are no longer contagious.
  
- **It is in the Isolation Room environment where Engineering Controls can be used most effectively.**
  - These controls are designed to prevent the concentration and spread of TB bacteria in the air.
  - They are set up to contain infectious bacteria within the room.
  
- **To do this, air is directed into the Isolation Room at a rate of about 100 feet per minute.**
  - Inward air flow creates "negative pressure" in the room.
  - This prevents airborne bacteria from escaping from the room.
  
- **To maintain negative air flow, doors should not be left open while the room is in use.**
  - Signs should be posted outside the room regarding proper procedures.
  
- **According to CDC Guidelines, to remove airborne contaminants within an Isolation Room:**
  - The air must be replaced at a minimum of six times per hour in existing facilities.
  - The air must be changed at a minimum of 12 times an hour in new or renovated facilities.
  - The higher the number of air changes, the quicker the TB bacteria will be cleared from the room.
  
- **Exhausted air should be vented outside (away from air intake valves).**
  - If outside exhausting is impossible, the air should be filtered through a HEPA (High Efficiency Particulate Air) filter.

- **Even after removing and diluting the air in an Isolation Room, bacteria may still remain.**
  - Remaining contaminants can be removed by "cleaning" the air.
- **There are two major methods that are used to clean Isolation Room air:**
  - Air Filtration.
  - Ultraviolet Germicidal Irradiation.
- **Facilities that lack proper Isolation Room environments should transfer their TB patients to an appropriately equipped healthcare facility.**
- **Patients can also take several measures to limit the spread of TB bacteria.**
  - Cover their nose and mouth with a tissue when coughing or sneezing.
  - Wear a surgical mask or other protection when outside the Isolation Room.
- **In addition to Administrative and Engineering Controls, Personal Protective Equipment also plays an important role in guarding against exposure.**
  - Since Tuberculosis is an airborne pathogen, a respirator is what you will need.
  - Respirators must have filters with a NIOSH designation of N95 or higher.
  - Research shows that dust/mist or dust/mist/fume filters are usually not effective in removing TB bacteria.
- **Your facility will put a general Respiratory Protection Program in place as part of its Exposure Control Plan.**
  - A program is required in any environment where respirators are used.
  - You need to be familiar with this program.
- **To begin with, everyone who may be exposed to TB in their jobs will undergo medical tests.**
  - One thing the test determines is whether or not they can safely wear a respirator.
  - Tests are provided free of charge.

- **A thorough physical examination will also be performed.**
  - May include questions about your medical history.
  - Will also discuss results of your initial skin testing.
  - It is important to be completely candid and honest.
- **X-rays may be taken to determine if you have any lung obstructions.**
  - These could make it difficult to breath wearing a respirator.
- **You may also be given a Pulmonary Function Test.**
  - Measures the capacity of your lungs.
- **If the doctor feels that you can safely wear a respirator, you will get the "okay" to work.**
- **At that point, you will need to determine what type of HEPA respirator you should use.**
  - Disposable.
  - Reusable.
  - What type/model.
- **No matter what type of respirator you select, you will need to undergo a "fit test".**
  - It ensures that your respirator is the right size and shape for you.
  - Gaps between the respirator and your face can allow you to inhale TB bacilli.
- **"Fit-testing" can be performed in two different ways.**
  - Qualitative.
  - Quantitative.
- **"Qualitative" Testing:**
  - Is conducted by spraying "irritant" smoke in the air.
  - If the smoke's odor can't be detected, you have a good fit.
  - This is a "subjective" test, since it relies on your sense of smell.

- **"Quantitative" Testing:**
  - Provides a more accurate assessment.
  - Uses a special machine to measure the exact amount of material that leaks into a respirator.
  
- **In addition to going through fit-testing, you will be shown how to properly use your respirator.**
  - Look for wear and tear.
  - Both "disposable" and "reusable" respirators can be reused, as long as there is no structural damage.
  
- **Always inspect your respirator before each use.**
  - Dispose of damaged respirators or cartridges.
  - Talk to your supervisor if you have any questions.
  
- **There are three types of situations where workers are required to wear respirators:**
  - Entering a room containing a patient suspected or confirmed to have Active TB.
  - When performing "high hazard medical procedures" on patients with suspected or confirmed Active TB.
  - When First Responders transport someone with a suspected or confirmed case of Active TB.
  
- **The key to preventing the spread of Tuberculosis is early identification and treatment.**
  - Learn to spot the symptoms.
  - Use the right Engineering Controls and respirators to protect yourself and others.
  - Keep people isolated until you know they are not contagious.
  - Make sure patients with TB complete their therapy.
  
- **Following these guidelines and completing this training session will help limit the spread of Tuberculosis... and keep you safe.**