

Tuberculosis

Purpose

To educate workers at risk on the exposures, control measures and personal protective equipment necessary to provide optimum protection from exposure to the tuberculosis bacterium (TB).

Objective

At the conclusion of this safety training program, high risk work environments will be identified, and workers at risk will understand administrative controls, engineering controls, and types of personal protective equipment required to reduce/eliminate their risk factors in the workplace.

Introduction

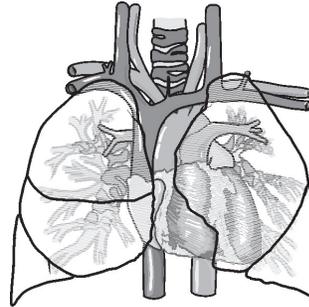
Tuberculosis is a highly communicable disease caused by the tubercle bacillus, which is characterized by toxic symptoms that primarily affect the lungs (respiratory system). The Centers for Disease Control (CDC) reports that the rates of TB cases have decreased after a rise in reported cases from 1985 to 1992. The number of cases has declined from 26,673 cases in 1992 to 16,377 cases in 2000, but TB is still a leading cause of death. Worldwide, TB kills 8,000 people per day. It is the biggest killer of young people and adults in the world today. One third of the world's population is infected with TB. If a person is sick with TB that person is likely to infect another 10 to 15 people in just one year.

Recently, drug-resistant and multi-drug-resistant strains of the TB bacterium have become a concern. Cases exhibiting organisms resistant to at least one of the two most effective drugs have been reported in 9 percent of the cases identified and have occurred in most states. When the organisms are resistant to both drugs, the course of treatment increases from six months to 24 months.

Because of increased hazards posed by tuberculosis, including drug-resistant strains, OSHA has issued enforcement guidelines to protect workers against exposures.

Employees in the following work environments have an increased risk of exposure to TB:

- healthcare settings
- correctional institutions
- homeless shelters



- long-term care facilities for the elderly

- drug treatment centers

Other high-risk groups that have individuals with active TB are people from the areas of the world with high infection rates of TB (e.g., Asia, Africa, the Caribbean, and Latin America);

medically underserved populations (e.g., African Americans, Hispanics, Asians, Pacific Islanders, American Indians and Alaskan Natives); homeless persons; current or former correctional facility inmates; alcoholics; intravenous drug users; and the elderly. People between the ages of 25 and 44 years of age are in the highest risk age group. People with weak immune systems due to illness or medication also have a greater risk of becoming infected with TB.

The potential for contracting TB in the workplace depends on the concentration of airborne bacteria, duration of exposure, and a worker's ability to fight the bacteria once deposited in the lungs. Someone infected with TB spreads the bacterium by coughing, speaking, sneezing, singing, or spitting.

Workers may be exposed to the bacterium, yet never contract the disease. After exposure, the bacteria can remain latent within the body for up to 10 years. Those who become infected have a 10 percent chance of developing the disease.

The Occupational Safety and Health Administration (OSHA), Centers for Disease Control (CDC), and National Institute for Occupational Safety and Health (NIOSH), have established controls designed to decrease the chances of contracting TB in the work environment.

Guidelines for Control

An effective control program requires the early detection of TB and the prompt isolation and treatment of persons with TB. The hierarchy of controls, as recommended by the Centers for Disease Control (CDC), is:

- Administrative Measures
- Engineering Controls
- Personal Protective Equipment (PPE).

The first level of control measures is administrative measures that, according to the CDC, should include the following:

- Developing and implementing effective written policies and

protocols to ensure the rapid identification, isolation, diagnostic evaluation, and treatment of persons likely to have TB.

- Implementing effective work practices among workers (e.g. correctly wearing respiratory protection and keeping doors to isolation room closed)
- Educating, training, and counseling workers about TB
- Screening workers for TB infection and disease.

The second level of controlling TB is engineering controls that prevent the spread and reduce the concentration of droplet nuclei (airborne particles). These controls include the following:

- Negative-pressure isolation rooms
- Ventilation and exhaust systems during cough-inducing or aerosol-generating procedures
- Special curtains or rooms in settings such as emergency medical services, or other environments where exposure is possible.

Implementation

Implementation methods begin with administrative controls by assigning supervisory responsibility for a TB infection-control program. The responsible individual shall conduct a risk assessment in each area of the workplace to determine the potential risk for TB transmission.

A written TB infection-control plan shall then be developed based on risk-assessment findings. This program shall include, yet not be limited to

- initial screening of patients or clients for active TB,
- periodic medical evaluations on all workers who have the potential for exposure,
- baseline screening before employment,
- screening employees in high-risk areas every six months,
- annual retesting for all employees,
- immediate isolation of the individual who has TB, and
- treatment for the affected individual.

All workers shall receive training to ensure they understand how the disease is transmitted, its signs and symptoms, medical surveillance and therapy, and site specific protocols. Training shall be provided for all current and new workers. Documentation of completed training shall be placed in the permanent personnel file of the worker and retained in accordance with OSHA requirements.

Implementation of engineering controls is the most effective approach to isolate and contain exposures, e.g., negative pressure isolation rooms, ventilation and exhaust systems.

PPE in the form of respirators, used with engineering controls, provides workers additional protection from exposure to droplet nuclei (airborne particles).

This protection is recommended for workers entering isolation rooms; during cough-inducing or aerosol-generating procedures; and in settings such as emergency medical services, or other environments where exposure is possible.

Respiratory protection shall be made available by the employer and must meet all requirements of the OSHA Respiratory Standard 29 CFR 1910.134.

At a minimum, the respiratory protection program shall contain

- definition of appropriate types of respiratory protection based on possible exposures,
- fit testing to ensure proper protection,
- equipment maintenance, and
- medical screening to ensure ability to wear protection.

Consult the referenced OSHA standard and CDC guidelines to design and implement an effective respiratory program.

The goal of the CDC recommendations and OSHA regulations is to inform workers of the risks of the disease and through education and the identified control measures, decrease and ultimately eliminate the spread of this communicable disease.

Review Questions

Please note there may be more than one correct answer to multiple choice questions.

1. Work environments at greatest risk for TB are
 - a. retail environments
 - b. homeless shelters
 - c. day-care settings
 - d. long-term care for the elderly and healthcare settings
2. The age group at highest risk for TB is 50 to 75.

True False
3. The disease can spread from an infected individual by
 - a. coughing, sneezing, spitting, singing
 - b. eating from the same utensils
 - c. shaking hands
 - d. wearing the same clothes

4. The part of the human body affected by the TB bacillus is the lungs.

True False

5. Respirator programs should include

- a. care and maintenance of the equipment
- b. health screening
- c. fit testing
- d. all of the above
- e. b and c above

Answer Key:

1. d; 2. False, age group 25 to 44; 3. a; 4. True; 5. d

Resources

The Texas Department of Insurance, Division of Workers' Compensation (TDI/DWC) Resource Center offers a workers' health and safety video tape library. Call (512) 804-4620 for more information or visit our web site at www.tdi.state.tx.us.

Disclaimer: Information contained in this training program is considered accurate at time of publication. For additional information, contact the American Lung Association and the Centers for Disease Control.