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## Infection Control: Tuberculosis

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After reading the newsletter, the home health aide should be able to:

1. Identify mode of transmission, signs/symptoms, and risk factors for TB.
2. Differentiate between infection with TB bacteria and active disease.
3. Discuss care of the client with TB, including infection control measures, importance of taking prescribed medication, and nutritional needs.

Ana, the home health aide, arrived for her usual visit with the Chen family. They introduced her to their cousin Li, who had recently arrived from China. Ana noticed that Li was coughing a lot, was short of breath, and looked very thin. After the visit, Ana reported this information to the nurse, who talked to the Chens by phone and put them in touch with the local health department. Li was diagnosed with tuberculosis and received effective treatment. Ana was tested for TB and did not contract the infection. Ana's sharp observations prevented the family members, household visitors, and other healthcare providers from contracting this infectious lung disease.



This newsletter will discuss tuberculosis, including incidence, risk factors, types, transmission, signs and symptoms, and treatment. The role of the home health aide in working with affected clients and preventing infection will also be covered.

### Incidence and Risk Factors

Due to increased awareness, screening and treatment, rates of tuberculosis (TB) in the US have decreased dramatically in the past 25 years. The rate has dropped from 9.2 to 2.8 cases per 100,000 people. Throughout the world, however, one out of four people is infected with TB

and 1.3 million die each year. TB is the leading cause of death due to infection worldwide, causing more deaths than HIV/AIDS. The majority of TB cases in the US, 70%, occur in people who were not born in this country. Areas of the world where TB is currently most common include India, China, Southeast Asia, Africa, and Russia.

People at increased risk for TB include those who are homeless, live in prisons, abuse alcohol or drugs, have regular contact with an infectious person, or who are from or travel to countries with a high rate of TB. People with weakened immune systems from HIV/AIDS, organ transplants, substance abuse, diabetes, or other conditions are also at increased risk. Regardless of risk groups, anyone, from any background, can contract TB.

### Transmission and Infection

Tuberculosis is caused by *Mycobacterium tuberculosis*, which is a type of bacteria transmitted by the airborne route. This disease is spread when someone with TB coughs, sneezes or talks. Bacteria are expelled into the air, and a person who inhales them may contract TB. The main site of infection with TB is usually the lungs, but the spine, brain, kidneys, GI tract and other organs can also be affected.



When a person inhales the TB bacteria, illness may or may not occur. In a small percentage of people, inhaling the bacteria results in an active infection, and the person becomes ill with tuberculosis. In the majority, however, the body's own defenses act to "wall off" the bacteria in the lungs. This results in "latent" TB. This person is infected with the bacteria, but does not develop tuberculosis. Since the bacteria are walled off, there are no symptoms of illness and the infection does not spread to others. The danger of this type of infection is that, in the future, the bacteria may be reactivated, developing into an active case of TB. Over 80% of cases in the US result from reactivation of latent TB.

When active TB infection develops, common signs and symptoms include:

- persistent cough
- chills and fever
- chest pain
- night sweats
- bloody sputum
- weakness
- loss of appetite
- weight loss

### **Diagnosis and Treatment**

To screen for TB, a skin test or blood test is performed. With the skin test, a firm lump on the skin 48-72 hours later usually indicates a positive reaction. The blood test can detect that exposure to TB bacteria has occurred. With both tests, this means only that the person is likely to have been infected with the TB bacteria. It does not indicate whether active TB is present. Further testing, such as chest X-ray and sputum smears and cultures, helps to determine if the person has active TB.

Without treatment, active TB causes progressive lung damage, possibly leading to death. Most cases of TB are easily cured with a combination of drugs that includes isoniazid, rifampin, and others. Treatment is also prescribed for latent TB, to rid the body of the bacteria before it becomes active. Treatment must be continued for 3 months for latent TB, and for 6-9 months for active TB. It is extremely important that medication be taken as prescribed for as long as directed. If not, the TB bacteria can develop resistance to the drugs. This type of TB (multi-drug resistant TB) can be very difficult to cure, and requires different drugs. The disease is also more likely to spread to others.



### **Care of the Client**

When you are assigned to care for a client with TB, talk to the nurse about the client's condition.

Does he have active TB, or is he being given preventive treatment to clear latent TB? If his disease is active, is he still contagious? Or have sputum tests shown that he is no longer infectious? Following are some areas of care that may be important for your client with TB:

**Infection Control:** Airborne Precautions are necessary if your client is still infectious. While in the home, healthcare providers must wear a specially fitted mask (respirator) that is approved for use with TB bacteria. A regular surgical mask cannot be used, as this does not provide adequate protection. Mask use can be discontinued once the client is no longer infectious. This is determined by negative sputum smears (cells viewed under the microscope). Instruct the client to cover the mouth and nose with tissues when coughing or sneezing. Provide a plastic bag for disposal of used tissues. Good ventilation in the home helps to decrease the number of airborne bacteria, so open windows whenever the weather permits. TB is not spread by direct or indirect contact, so no special cleaning of dishes, utensils or other items is necessary.



**Medication:** Make sure that your client takes his or her TB medication exactly as ordered. Notify the nurse if the client misses a dose or refuses to take it. This can be very dangerous for the client, as well as for those around him. Also notify the nurse if the client has yellowish skin, dark urine, or begins to feel worse while taking the medication. These could be signs of a serious medication reaction.

**Breathing:** If your client has difficulty breathing, she will probably be more comfortable with her head elevated. Oxygen may be ordered. If so, observe all safety precautions, such as no smoking or open flames in the room.

**Nutrition:** Clients with TB are often malnourished, and have poor appetites. The client may prefer frequent, small meals. Offer nutritious, high-calorie foods... milk shakes and peanut butter crackers are good snack choices.

**Activity Level:** If your client is weak, space out activities according to the client's ability. Plan several rest periods for the client during the day.

Most clients with TB make a full recovery. Your knowledge and care can help your client to recover as quickly as possible, while protecting yourself and others.



## Infection Control: Tuberculosis

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

Directions: Place the letter of the one best answer in the space provided.

- \_\_\_\_1. The number of tuberculosis (TB) cases that occur in the US each year has been steadily increasing over the past 20 years.
  - A. True
  - B. False
  
- \_\_\_\_2. The majority of TB cases in the US occur in people who:
  - A. have vacationed in other countries
  - B. are of Hispanic heritage
  - C. have bone marrow disease
  - D. were not born in the US
  
- \_\_\_\_3. Which of the following countries have high rates of TB?
  - A. China
  - B. Russia
  - C. Africa
  - D. all of the above
  
- \_\_\_\_4. Tuberculosis is most commonly spread by:
  - A. sexual contact
  - B. direct contact, such as shaking hands
  - C. use of infected eating utensils
  - D. coughing, sneezing or talking
  
- \_\_\_\_5. The main site of tuberculosis infection is usually the:
  - A. kidneys
  - B. spine
  - C. lungs
  - D. heart

- \_\_\_6. Most people who are infected with tuberculosis bacteria develop active tuberculosis disease.
- A. True
  - B. False
- \_\_\_7. Mr. Curtis is a client who was screened for TB during his last doctor's visit. He developed a large, firm lump at the test site. This most likely indicates that Mr. Curtis:
- A. has active TB disease, and could spread it to others
  - B. has never had contact with the TB bacteria
  - C. has been infected at some time with the TB bacteria
  - D. had an unexpected side effect, and should have the test repeated
- \_\_\_8. Which one of the following is a common sign/symptom of TB?
- A. weight gain
  - B. night sweats
  - C. swelling
  - D. nausea and vomiting
- \_\_\_9. When caring for a client with TB who is still infectious, the home health aide must take which of the following precautions?
- A. wear gloves at all times in the home
  - B. keep all of the windows closed
  - C. use an approved respirator at all times
  - D. wear a surgical mask and gown while providing direct care
- \_\_\_10. Which of the following is NOT normally included in the care of a client with TB?
- A. serve low-fat, low-calorie meals to prevent weight gain
  - B. notify the nurse promptly if the client has yellowish skin or dark urine
  - C. elevate the client's head if shortness of breath occurs
  - D. space out rest periods and activity, to help save the client's energy

