TUBERCULOSIS

Abstract

Basic knowledge of disease transmission and the proper use of infection control procedures are needed when caring for a patient with tuberculosis. The important points for the Certified Nursing Assistant (CNA) to remember are that tuberculosis is transmitted by the respiratory route, there is no risk if developing tuberculosis if proper infection control techniques correctly and consistently, and caring for a patient who has tuberculosis requires the practice of standard precautions, use of an N95 respirator correctly and consistently, and understanding and observing respiratory isolation techniques.

Learning Goals:

1. Identify the different forms of tuberculosis.
2. Identify the signs and symptoms of tuberculosis and how is diagnosed.
3. Describe infection control procedures that are used for patients who have tuberculosis.
4. Describe a CNA's responsibilities of patient care when a patient has tuberculosis.

Introduction

Providing care for a patient who has tuberculosis requires basic knowledge of disease transmission and the proper use of infection control procedures. Tuberculosis is transmitted by the respiratory route. The proper use of infection control techniques protects the healthcare worker from the risk of developing tuberculosis. Caring for a patient who has tuberculosis requires that a healthcare worker practice standard precautions, use an N95 respirator correctly and consistently, and understand and observe respiratory isolation techniques.

Tuberculosis: Definition and Statistics

Tuberculosis is an infectious disease that primarily affects the lungs, and it is one of the oldest known communicable diseases. Tuberculosis is caused by bacteria and it is transmitted by the respiratory route. When someone is infected with tuberculosis, coughs, sneezes, or talks, droplets of moisture that contain the tuberculosis bacteria enter the air and may be inhaled.

Most healthy adults must have considerable exposure to an infected person before they become infected. Certain populations are more vulnerable because of a compromised immune system, such as the elderly, or human immunodeficiency virus (HIV)-infected individuals.

In most cases, when the tuberculosis bacteria reach the lungs they are contained but not eliminated by the body’s immune system. These individuals are said to have latent tuberculosis. A majority of active tuberculosis cases are latent tuberculosis that have re-activated.

Because tuberculosis affects the lungs the signs and symptoms are typically respiratory, such as cough and dyspnea.

Treatment of tuberculosis focuses on drug therapy, infection control procedures to prevent the disease from spreading, and supportive care. If the proper treatments are done conscientiously, most cases of tuberculosis can be cured. Infection control, especially the use of respiratory precautions, is particularly important when caring for a patient who has tuberculosis.

Incidence of Tuberculosis

Tuberculosis is a common disease in many parts of the world. The rate of infection with tuberculosis is very high in parts of Africa, Asia, and Europe and it has been estimated that worldwide more than one in every three people is infected with tuberculosis. In 2010, the World Health Organization (WHO) reported that there were 8.8 million active cases of tuberculosis.

In the United States, the number of cases of tuberculosis and the number of deaths from the disease that are reported each year have been declining for several decades. Death from tuberculosis is very uncommon. In 2013, the Centers for Disease Control and Prevention (CDC) reported a total of 9582 cases of tuberculosis in the United States, and the tuberculosis death rate statistics in 2011 was listed as 536 total.

The statistics also mentioned infections with tuberculosis and active disease. Someone can be infected with a bacterium or a virus but may not develop the disease that the micro-organism is known to cause.

For example, someone can have the tuberculosis bacteria in the lungs but that person may not develop the disease of tuberculosis.

Transmission of Tuberculosis

Tuberculosis is transmitted from person to person by the respiratory route. The tuberculosis bacteria are attached to droplets of moisture in the lungs and when someone who has tuberculosis coughs, exhales, sneezes, or talks, these infected droplets are spread into the air. Anyone who is in close contact may inhale the infected droplets into the lungs and is then at risk for infection with tuberculosis.

How easily does tuberculosis move from person to person? There is no definitive answer to this question but there are certain factors that increase the risk of transmission. Factors that increase the risk of transmission include:

- Concentration:

  If there is a large number of bacteria in the infected droplets the risk of transmission is probably increased.
- Proximity:

  The closer to someone who has active tuberculosis the greater the risk of becoming infected.
- Duration:

  The greater the amount of time spent with someone who has active tuberculosis the greater the risk of becoming infected. The infected droplets can remain suspended in the air for several hours after they have been exhaled.
- Personal Health:

If someone has a compromised immune system, an infection with HIV, is < 5 years of age, has diabetes mellitus, or any of a wide variety of medical conditions, the risk of transmission of tuberculosis is increased.

Proximity and duration are significant risk factors for transmission of tuberculosis. An estimated 20% of people who live with someone who has active tuberculosis will become infected.

The term *active* tuberculosis mentioned previously is a condition in which someone who is infected with tuberculosis has the signs and symptoms of the disease and needs treatment. These persons are infectious. Most people who have a tuberculosis infection do not have the active form of the disease. They have a condition called *latent tuberculosis* and this form of the disease is *not* infectious.

Tuberculosis can be spread by contact with infected body fluids and by other routes of transmission but these situations are very rare. Tuberculosis is not transmitted by casual contact, kissing, through food or water, contact with blood, or touching personal objects used by someone who has tuberculosis.

Exposure to Tuberculosis

The great majority of tuberculosis-infected droplets that are inhaled do not reach the lungs. They are trapped in the nasal passages, the throat, and the upper airway structures and they are expelled when a person exhales or coughs. However, some of the infected droplets do occasionally travel to the deepest parts of the lungs, into the alveoli. If this happens, one of three clinical conditions will occur.

1. *Clearance*

   The patient's immune system can provide a strong defense and the tuberculosis bacteria are eradicated.

2. *Primary tuberculosis*

   The tuberculosis bacteria that reach the alveoli cause an active infection and the patient develops signs and symptoms of tuberculosis soon after the exposure. Primary tuberculosis happens in approximately 5% of all tuberculosis infections, primarily to children or to people who have a weakened immune system.

3. *Latent Tuberculosis*

   The body's immune system traps and "walls off" the tuberculosis bacteria in shells that are called granulomas. This condition is called latent tuberculosis and it is the most common of these three clinical outcomes. When someone has latent tuberculosis a percentage of the bacteria inside a granuloma is killed but some of the bacteria can survive and live inside the granulomas for years.

   In a majority of cases of latent tuberculosis, the bacteria remain safely encapsulated in the granulomas and active tuberculosis does not occur. However, approximately 5%-10% of people who have this form of tuberculosis will develop an active disease. The bacteria will escape from the granulomas and multiply. The patient suffers damage to the lungs and becomes infectious. This is called *re-activated latent tuberculosis* and most cases of active tuberculosis infections are re-activated latent tuberculosis infections. Re-activated latent infections are more common in

people who have certain health conditions such as diabetes mellitus, infection with HIV, or a compromised immune system.

Once an active infection has started in the lungs, the pulmonary tissue gradually becomes damaged and normal breathing becomes impossible. If the infection cannot be successfully treated the patient will die of respiratory failure. Tuberculosis can also develop into *multi-drug resistant tuberculosis* or *extensively drug-resistant tuberculosis*.

A small percentage of people who are infected with tuberculosis will develop the disease in other parts of the body; the bones, the eyes, the heart, the lymph nodes, the genito-urinary tract, and other organ systems can become infected with tuberculosis. These forms of the disease are called *extra-pulmonary tuberculosis* and represent a very small percentage of tuberculosis infection (not discussed here).

Risk Factors for Developing Tuberculosis

The risk of developing tuberculosis or re-activated latent tuberculosis are increased for certain populations. Tables 1 and 2 provide information on some of the common risk factors for developing tuberculosis and for re-activation of latent tuberculosis.

Table 1: Risk Factors for Tuberculosis

Advanced age
Babies and infants
Cancer

Compromised immune system
Exposure to someone who active disease
HIV infection
Intravenous (IV) drug use
Malnutrition
Travel to an area where tuberculosis is common

Table 2: Risk factors for Re-Activation of Latent Tuberculosis

Alcoholism
Cancer of the head and neck
Children < 5 years of age
Cigarette smoking
Conversion of a screening test to positive within a two year span
Diabetes mellitus
End-stage renal disease
Gastrectomy (stomach) or jejeunal (small bowel) bypass surgery
Head and neck cancers
HIV infection
Immunosuppressive therapy
IV drug abuse
Low body weight
Organ transplantation

An infection with HIV can increase the risk of contracting tuberculosis and increase the risk of latent re-activation. A co-infection with HIV and tuberculosis can be very harmful, which will be discussed later.

Tuberculosis Signs and Symptoms

The most commonly observed signs and symptoms of active tuberculosis are:

- Chest pain
- Dyspnea
- Fatigue
- Fever
- Hemoptysis (coughing up blood)
- Night sweats
- Productive cough
- Weight loss

A productive cough is one in which large amounts of mucous or sputum are consistently produced. Sputum is different than mucous. Sputum is thick, viscous, and green, yellow, or dense white in color. Mucous is thin, watery, and clear. Mucous in the respiratory tract is normal but the presence of sputum often means that the patient has an infection, such as tuberculosis.

These signs and symptoms are non-specific, such as cough, dyspnea, fever, *etc.*, and can be caused by a wide variety of infections and illnesses. However, in many cases of tuberculosis, it becomes clear that infection with tuberculosis is the most likely cause of the patient's complaints because the patient has risk factors for exposure to the disease, or risk factors that increase the chances of developing the tuberculosis, which is called a *high index of suspicion*.

Diagnosis of Active Tuberculosis

Tuberculosis is diagnosed by examining the patient for the classic signs and symptoms of the disease, by determining the patient's risk

for the disease (the index of suspicion), by obtaining a chest X-ray, and by examination of a sputum sample.

Examining a sputum sample is the definitive test for tuberculosis because the bacteria can be seen. Three sputum samples collected on three separate occasions must be examined before a diagnosis of tuberculosis can be made. The sputum sample is also tested to determine susceptibility of the bacteria to antibiotics.

The process of obtaining a sputum sample, testing it for the presence of tuberculosis, and determining antibiotic susceptibility of the bacteria is called a *sputum smear* and *culture*.

Latent Tuberculosis

Latent tuberculosis is much more common than the active form of the disease and, as mentioned previously, the majority of the cases of active tuberculosis are re-activated latent infections. Patients who have latent tuberculosis are asymptomatic and there is no way that latent tuberculosis can be *directly* identified. However, latent tuberculosis can be detected by using either the Mantoux skin test or a blood test.

The Mantoux skin test is done by injecting a small amount of non-infectious material from the tuberculosis bacteria immediately under the surface of the skin on the forearm. When individuals have latent tuberculosis, their immune system will have produced antibodies against the tuberculosis bacteria. These antibodies will detect the test material as actual bacteria and cause a skin reaction at the injection area.

For a positive TB skin test, at the injection area, the skin will become red, sore, and enlarged. The injection site is examined and measured 48-72 hours after the test was done and the reaction is classified as follows:

1. ≥ 5 mm: if the width of the skin reaction is ≥ 5 mm, this is a positive reaction in the following circumstances:
    a. if the patient is HIV-positive
    b. if the patient has had recent contact with someone who has active tuberculosis
    c. if the patient's x-ray detects tuberculosis
    d. if the patient has had an organ transplant, is immunosuppressed, or has been receiving a drug such as prednisone (5 mm is width is equal to a bit less than ¼ of an inch)

2. ≥ 10 mm: if the width of the skin reaction is ≥ 10 mm this is a positive reaction in the following circumstances:
    a. if the patient is a recent immigrant from an area where tuberculosis is common
    b. if the patient is an HIV- negative intravenous (IV) drug user
    c. if the patient works in laboratory that processes tuberculosis specimens
    d. if the patient is incarcerated, lives in a homeless shelter, is hospitalized, or lives in a long-term care facility
    e. if the patient is at risk for reactivation of latent TB
    f. if the patient is < 4 years of age or is an infant, child or adolescent who has been exposed to a high-risk adult

3. ≥ 15 mm: if the width of the skin reaction is ≥ 15 this is a positive reaction.

The above test result varies based on the size of the reaction *and* the patient's age, medical status, and risk factors.

The Mantoux skin test is commonly used but it has limitations. It cannot predict which patients will re-activate and develop active disease. It cannot distinguish between latent tuberculosis and active tuberculosis. In certain patients, the test will be positive but latent tuberculosis is *not* present and the opposite is true, as well.

Evaluating the test area is somewhat subjective, and the area of injection must be examined in the proper timeframe or the result is unreliable. Also, the Mantoux skin test cannot be used to determine how long someone has had latent tuberculosis, and if someone has had this form of the disease for many years the test may be falsely negative. Finally, a false positive is possible if someone received the anti-tuberculosis BCG vaccine.

It is not possible to develop tuberculosis from a Mantoux test. The material that is used is not infectious; it only provokes an immune response.

There is a specific blood test that can be used to detect the presence of latent tuberculosis. The IRGA measures the anti-tuberculosis antibodies in the blood and because it is a direct measurement it is more sensitive and specific than the Mantoux skin test. There are also

fewer limitations on its accuracy when it is compared to the Mantoux skin test.

Screening for Latent Tuberculosis

Latent tuberculosis is the most common form of the disease, and it would seem logical to screen people for it and then treat them to prevent development of the active disease. However, routine screening for latent tuberculosis is usually done only if: 1) the person has an HIV infection, 2) someone has a high risk for re-activation (see Table 2), or 3) the person is a healthcare worker who has direct patient contact.

Many authorities recommend that healthcare workers be screened by first using the two-step process and then with annual screening. The two step-process is: 1) A skin test is applied. If it is positive the healthcare worker would be considered to have latent tuberculosis; and, 2) If the test is negative, the test is re-done one to three weeks later.

A repeat skin test is needed because if someone has had latent tuberculosis for many years the initial tuberculosis material that is injected may not be enough to cause a skin reaction. The second injection, however, will be sufficient to cause a reaction in this group of people. Once a person's tuberculosis status has been determined, he or she should be tested annually. For people who are not healthcare workers either the Mantoux skin test or the IRGA can be used. Patient characteristics and other factors will determine which test is best. Not all healthcare facilities will perform the annual testing and, if circumstances dictate, testing may be done more frequently than once

a year. Some healthcare facilities do use the IRGA test to screen their employees.

Multi-drug and Extensively Drug Resistant Tuberculosis

Most cases of tuberculosis can be cured by using the commonly prescribed medication regimens but the tuberculosis bacteria can be resistant to standard drug therapies. This form of the disease is called drug-resistant tuberculosis and there are two types.

1. *Multi-drug-Resistant Tuberculosis*

   Multi-drug-resistant tuberculosis cannot be effectively treated with isoniazid (INH) and rifampin, which are the two drugs that are the cornerstone of anti-tuberculosis drug therapy.
2. *Extensive Drug-resistant Tuberculosis*

   Extensive drug-resistant tuberculosis cannot be treated with INH, rifampin or with the antibiotics fluoroquinilone, amikacin, capreomycin, or kanamycin.

Drug-resistant tuberculosis can occur for several reasons: an infected person does not take his or her anti-tuberculosis drugs as prescribed; anti-tuberculosis drugs are incorrectly prescribed; or a person susceptible to the disease is exposed to someone who has drug-resistant tuberculosis.

In the Unites States, drug-resistant tuberculosis is uncommon. Less than 2% of the active cases of tuberculosis in this country have been the multi-drug-resistant type and only 63 cases of extensive drug-resistant tuberculosis were reported in the United States in the period of 1993 to 2011. The drug-resistant forms of tuberculosis produce the

same signs and symptoms and are diagnosed in the same way as drug-susceptible tuberculosis. The terms *totally drug-resistant* or *extremely drug-resistant* tuberculosis may occasionally be seen. At this point, the diagnostic criteria for this form of the disease are not clearly defined, and totally drug-resistant tuberculosis is extremely rare. There are no reported cases in the United States. New treatments are being developed that may be effective for these strains of the bacteria.

Prevention of Tuberculosis

Tuberculosis can be prevented with good healthcare and public sanitation. Prevention of tuberculosis by vaccination is also possible to a limited degree by use of the BCG vaccine. The BCG vaccine is prescribed quite often in areas of the world where tuberculosis is common. It is primarily used to prevent children from contracting extra-pulmonary tuberculosis; *i.e.*, tuberculous meningitis. The BCG vaccine is not used in the United States because the rate of infection with tuberculosis in this country is very low and the BCG vaccine is not highly effective at preventing adults from developing pulmonary tuberculosis. The BCG vaccine can also interfere with the Mantoux skin test. In certain situations, the BCG vaccine may be given to healthcare workers.

Treatment of Tuberculosis

Tuberculosis can usually be cured. The duration of treatment is comparatively long but if the right drugs are taken in the right way the success rate is very good. Tuberculosis is treated by using a combination of: 1) drug therapy, 2) directly observed therapy, 3) infection control, and 4) supportive care. Infection control is an

issue that particularly affects healthcare workers who provide direct patient care so it will be covered in a separate section.

Drug Therapy

Drug therapy for treating tuberculosis is a long process and multiple medications must be taken but it is very effective. The drugs that are used are listed below.

- Ethambutol: Ethambutol is classified as an anti-tubercular
- Isoniazid: Isoniazid is classified as an anti-tubercular
- Pyrazinamide: Pyrazinamide is classified as an anti-tubercular
- Rifampin: Rifampin is an antibiotic

Anti-tuberculosis drugs are sometimes referred to as antibiotics. This is a reasonable way to refer to these medications but ethambutol, INH, and pyrazinamide are technically not antibiotics.

There are four basic regimens with which these drugs can be used. These drugs are given by a two-step process. One such regimen would be as follows.

1. *Bacterial Phase*

   The bacterial phase usually lasts for two months and the goal is to decrease the number of tuberculosis bacteria to a point at which the patient is not infectious. The drugs used in this phase are INH, rifampin, pyrazinamide, and ethambutol. These medications (and occasionally a fifth) are taken for two months.

The daily or weekly dosing schedule will vary from patient to patient.

2. *Continuation Phase*

   The continuation phase, which is sometimes called the sterilization phase, typically lasts for 18 weeks. During this phase, the treatment is intended to eliminate any bacteria that are still present after the bacterial phase of treatment. The continuation phase must be continued for 18 weeks because the tuberculosis bacteria can live in parts of the body that are difficult for the drugs to reach.

The drug regimen outlined here is an example of one of the four regimens and it is a commonly used method. The regimens used can be adapted for the individual patient's needs. The drugs that are given, the daily or weekly dosing schedule, and the duration of the treatment vary depending on the circumstances. Latent tuberculosis is treated with some of the same four drugs but patients typically require fewer medications and in some of the regimens they may only have to take the medications several times a week.

Tuberculosis and HIV have an influence on each other that can be very harmful. Someone infected with HIV has a higher risk of latent tuberculosis re-activation. An HIV infection also increases someone's risk of developing active tuberculosis.

An HIV infection increases the risk of dying from tuberculosis, and a tuberculosis infection increases the risk of dying from HIV. Despite these issues, someone who has an HIV infection and requires

treatment for tuberculosis is treated with the standard drug regimens, along with closer monitoring, and if the drug therapy is done correctly the outlook is usually good.

The most common adverse effects from the anti-tuberculosis drugs are liver damage and relapse. Relapse is an infection with tuberculosis that happens after a patient has completed drug therapy. Relapses are usually caused by infection with a new strain of bacteria or a re-infection from the same strain that caused the first infection.

Directly Observed Therapy

The most common reason why drug therapy fails to cure tuberculosis is *poor patient compliance.* Multiple drugs must be taken every day for almost nine months, occasionally longer. As with all drugs, there are unpleasant side effects from tuberculosis drug therapy. Because of the demands of this course of treatment some patients do not consistently take the medications as prescribed, and some patients stop taking them altogether.

Directly observed therapy was developed in response to this problem and it has been shown to be an effective way of increasing patient compliance and attaining high cure rates for tuberculosis. In many situations, it is considered mandatory and it is the standard of care. In directly observed therapy the patient takes the anti-tubercular medications under the direct observation and supervision of a healthcare worker. Directly observed therapy may be used for just the first few months of treatment or longer.

Supportive Care

Patients who are being treated for a tuberculosis infection should be encouraged to maintain a healthy diet and a good fluid intake. Patients should be encouraged to exercise as tolerated.

Infection Control and Patient Care

Infection control is one of the most important aspects of patient care when working with someone who has tuberculosis. The correct use of infection control practices will protect the caregiver, the patient, and other patients in the facility. It is vital that a healthcare worker knows the proper infection control procedures and uses them consistently.

Infection control procedures for tuberculosis are initiated if a patient has signs and symptoms of tuberculosis *or* if the patient has a documented case of the disease and has not completed the drug therapy. Infection control for tuberculosis involves: 1) respiratory isolation, 2) respiratory protection controls, and 3) standard precautions.

Respiratory Isolation

A patient who has tuberculosis should ideally be in a private, airborne infection isolation room. An airborne infection isolation room has a special ventilation system that prevents contamination of the surrounding area and other adjacent rooms. There should be clearly visible signs outside the room that indicate to healthcare workers and visitors that the patient has tuberculosis and that specific respiratory isolation and infection control precautions are in place. Except when entering or leaving the room, the door to the room should be closed.

Respiratory Protection Controls

Tuberculosis is transmitted by inhaling airborne infected droplets so respiratory protection is a vital part of infection control when caring for a patient who has tuberculosis. Once the patient has been placed in an airborne infection isolation room then he or she does not need to wear a surgical mask or other respiratory protective device. However, the patient should be instructed in the techniques of *respiratory and cough etiquette*, which include:

- Cover the mouth and nose with a tissue when coughing or sneezing
- Dispose of the tissue in the nearest waste receptacle
- Wash hands with soap and water or an alcohol-based hand scrub as the last step or if there is skin contact with respiratory secretions.

Everyone who enters an airborne isolation, healthcare worker or visitor, must wear a respirator. The N95 respirator is the most common but other respirators may be used.

The N95 respirator is an easy to wear, disposable, one-time use respiratory protective device. The N95 covers the chin, mouth, and nose, it is held in place with elastic straps. It resembles a paper, surgical face mask. However, the N95 respirator provides more protection against airborne infectious diseases than a surgical mask, and the N95 or its equivalent is the respiratory protection device that the CDC recommends for everyone who provides direct care for a patient who has tuberculosis.

The N95 is a simple device but safety instruction and training are necessary for it to be used effectively and safely. This section will not

provide detailed information on the use of the N95; however, some principles about the N95 that are important to know are listed.

Fit Test

A fit test is done to determine the right size and fit of the N95 for an individual. The fit test should be performed by someone trained to do it, and it is considered mandatory before a healthcare worker can use an N95 during patient care. A fit test should also be performed once a year after the initial fit test.

Inspection

Healthcare workers should inspect the N95 before putting it on, and to make sure it is intact.

Seal Checking

Seal checking should be done each time the N95 is applied. Seal checking ensures that the N95 is properly covering the face. The *basic* seal check is performed after the N95 respirator has been donned. The person covers the N95 with both hands and exhales. If the mask is sealed correctly, no air should leak out from the edges of the respirator.

A seal check is simple and the information provided here is intended to be an overview. In all cases, a healthcare worker must follow the written instructions for a "seal test" provided with the mask. These instructions should be provided by a supervisor or someone from the infectious disease department.

Removal

Remove an N95 respirator by using the elastic straps that hold it in place. Do not touch the outside of the respirator or allow the outside of the respirator to contact any part of the skin or clothing.

Disposal

Dispose of the N95 in a receptacle that is designated for hazardous waste. Do not dispose of an N95 in an ordinary trash receptacle.

Hand-washing

After removing the N95 respirator, wash the hands with soap and water or an alcohol-based hand scrub.

Other

Do not wear the same N95 respirator for different patients. Each patient cared for requires the healthcare worker to don a new N95 mask.

A surgical mask and an N95 respirator do not provide the same level of protection. A surgical mask prevents the spread of *exhaled* infected droplets but does not filter out small particles from the ambient air and it does not provide complete face protection when someone inhales. A surgical mask should never be used when providing direct care to a patient who has tuberculosis.

The N95 respirators are usually considered disposable and they cannot be cleaned or sterilized. However, in certain situations the N95 may be re-used; healthcare workers should follow the guidelines provided by the place of employment. An N95 respirator should never be re-used if it is damaged or visibly soiled with blood or other body fluids, and the N95 should not be shared.

If possible, any diagnostic or therapeutic procedures should be done in the patient's room, and patient travel outside of the room should be limited as much as practical. If a patient must be transferred, or transported to another department for testing, the patient should wear a disposable surgical mask. A patient should not need to wear an N95 respirator in these situations because the surgical mask is sufficient to trap any infected droplets that are exhaled.

Standard Precautions

All CNAs should be familiar with standard precautions. In brief, standard precautions are the basic techniques that are used to prevent the transmission of infectious diseases.

Standard precautions consist of the following steps.

- Hand hygiene
- The use of personal protective equipment (PPE) such as face masks, hair covers, gloves, gowns, masks, respirators, and shoe covers
- Safe injection practices

- Handling potentially contaminated equipment and surfaces
- Respiratory and cough etiquette

When caring for a patient who has, or is suspected of having tuberculosis, hand hygiene should be done before and after performing patient care and after taking off an N95 respirator. During "routine" patient care, gloves and the N95 are the only personal protective equipment (PPE) that are needed. However, the use of PPE should always be adjusted to fit the needs or risks of each situation.

Tuberculosis is not transmitted by contact with blood but the safe injection practices of standard precautions dictate that blood should always be considered potentially infectious, so safe handling of blood or any items contaminated, or potentially contaminated by blood is required. All items that might be contaminated with respiratory secretions should be handled and disposed of properly. Tuberculosis is not transmitted by contact with an environmental surface but the patient's room and re-usable medical equipment should be cleaned using the healthcare facility's protocols.

Discontinuing Respiratory Precautions

Respiratory precautions can be discontinued if a patient suspected of having tuberculosis has been diagnosed with another illness and does not have tuberculosis; or if a patient who has tuberculosis has three separate sputum samples that do not reveal the presence of tuberculosis bacteria, and the patient has received at least two weeks of standard drug therapy for tuberculosis and has clinically improved.

Summary

Providing care for a patient requires basic knowledge of disease transmission and the proper use of infection control procedures. The important points for CNAs to remember are that tuberculosis is transmitted by the respiratory route, there is no risk if developing tuberculosis if proper infection control techniques correctly and consistently, and caring for a patient who has tuberculosis requires the practice of standard precautions, use of an N95 respirator correctly and consistently, and understanding and observing respiratory isolation techniques.