Prevention of Respiratory Diseases

Preventing the Transmission of Diseases Spread by the Respiratory or Droplet Route
Introduction

This course reviews the respiratory and droplet precautions/isolation used in SHC when a patient is suspected or diagnosed with a disease that is transmitted by the respiratory (airborne) or droplet route.

In addition, tuberculosis infection/disease transmission and prevention are also reviewed in this course.
Learning Objectives

When you complete this 20-minute online course, you will be able to:

- Describe the features of transmissible respiratory and droplet diseases
- Identify respiratory and droplet precautions
- Recognize transmission and prevention of Tuberculosis
This course contains 3 topics:

- Topic 1: Respiratory Precautions
- Topic 2: Droplet Precautions
- Topic 3: Tuberculosis
Some infections are spread easily from person to person by infectious particles that stay suspended in the air.

Person-to-person transmission happens because of infectious droplet nuclei that are <5 microns in size. The droplet can evaporate, but the nuclei remain suspend in the air.

These organisms can stay suspended in the air for up to 2 hours. And they can travel long distances on air currents.

A susceptible person acquired the disease by inhaling infectious particles.
Topic 1. Respiratory Precautions

Preventing Inhaling Infectious Particles

- **N95 masks** must be worn when taking care of this type of patient.
- Place the patient in a **negative airflow room** with an **anteroom**.
- Keep the door closed to maintain the negative airflow.
- Use **Stanford Precautions** as well.
Topic 1. Respiratory Precautions

Who Needs To Be on Respiratory Precautions?

Conditions most commonly seen at SHC that require Respiratory Precautions are:

- Active or Rule Out Pulmonary Tuberculosis
- Chickenpox (Varicella)
- Disseminated Herpes Zoster
Putting a Patient in Respiratory Precautions

Place the patient in a **negative airflow room** with an **anteroom**. The door must remain closed. (See the Infection Control manual **Policy 5.40** for a list of negative airflow rooms.)

If a negative airflow room is not available, a **portable HEPA filtration** unit can be used until a negative airflow room is available.
Topic 1. Respiratory Precautions

Putting a Patient in Respiratory Precautions

For Active/Rule Out TB patients:

All staff are required to wear **N95 masks** every time the room is entered, regardless of the task.

Place a **blue Respiratory Precautions sign** on the door.

For patients with Chickenpox or Disseminated Herpes Zoster:

All staff must wear **gowns** and **gloves** and follow **Contact Precautions** as well as Respiratory Precautions.

You must wear **N95 masks** even if you are immune to chickenpox. (If you are not immune to chickenpox, please do **not** enter the room if staff permits. Wear N95 if you absolutely must enter the room).

Place a **blue Respiratory Precautions sign** and **yellow Contact Precautions sign** on the door.
Topic 1. Respiratory Precautions

Transporting Respiratory Precaution Patients

Take special actions when taking patients on respiratory precautions to other departments:

- Tell the department where the patient is going about the patient's condition so that correct personnel can be assigned and Respiratory Precautions can be maintained.
- When the patient leaves the room he/she must wear a surgical style mask. When the patient takes off the mask, then the staff must put on N95 masks.
Stopping Respiratory Precautions

Certain actions must occur when stopping respiratory precautions:

- The Infection Control Department must approve the stopping of respiratory precautions.
- Stop Precautions for TB when the patient has 3 negative sputum smears for Acid Fast Bacilli (AFB).
- Stop Precautions for Disseminated Herpes Zoster or Chickenpox when all lesions are completely crusted over.
- Routine cleaning procedures should be followed for patients with active disease.
- Continue Respiratory Precautions with the door closed for 20 minutes after the patient is discharged.
Topic 1. Respiratory Precautions

Cleaning the Room

Special steps need to be taken when cleaning a room that was under respiratory precautions:

1. Staff cleaning the room must wear an **N95 mask** if they are in the room during the 20 minute period.
2. Housekeeping personnel will notify the nurse that the room has been cleaned.
3. The nurse will then **remove** the Respiratory Precautions **sign** from the door.
Spreading infections with droplets is different than respiratory infections. Unlike infectious droplet nuclei that are formed when respiratory droplets evaporate, bacteria must be suspended in droplets to be propelled.

Bacteria are in droplets that can be propelled up to 3 feet and are then deposited on the conjunctiva, nasal mucosa or mouth.

Some diseases can be spread by droplets:
- When an infected person talks, sneezes or coughs
- During procedures such as suctioning, cough induction or bronchoscopy
Topic 2. Droplet Precautions

Who Needs To Be on Droplet Precautions?

Conditions commonly seen at SHC that require droplet Precautions are:

- Influenza A or B
- Bacterial Meningitis caused by Neisseria meningitides or Haemophilus influenzae
Topic 2. Droplet Precautions

Putting a Patient in Droplet Precautions

Place the patient in a private room without an anteroom. If a private room is not available, cohort patients with like diseases.

A negative airflow room is not needed because the droplets do not remain suspended in the air.

The door may be left open. Place a pink Droplet Precautions sign on the door.
Topic 2. Droplet Precautions

Putting a Patient in Droplet Precautions

To take care of patients in Droplet Precautions:

All staff must wear a **regular surgical type mask** whenever entering the room. You should also instruct visitors to wear surgical type masks.

You need to teach the patient to **cover** his/her nose and mouth when coughing.

Use good **Hand Hygiene** and **Standard Precautions** in addition to Droplet Precautions.
Transporting Droplet Precaution Patients

Take special actions when taking patients on droplet precautions to other departments:

- Tell the department where the patient is going about the patient's condition so that correct personnel can be assigned and Droplet Precautions can be maintained.
- The patient wears a surgical mask during the transport.
- When the patient takes off his or her mask, the staff must wear surgical masks.
**Stopping Droplet Precautions**

Certain actions must occur when stopping droplet precautions:

- Stop droplet precautions for influenza - **7 days after the onset of the symptoms.**
- Stop droplet precautions for Neisseria meningitis - **after the patient has been on appropriate antibiotics for 24 hours.**
- **Routine cleaning** procedures are followed.
- A mask does **not** need to be worn while cleaning the room.
Mycobacterium tuberculosis causes both **latent TB infection** and **active TB disease**. People with either TB infection or TB disease have been exposed to the TB bacterium and usually test positive on PPD (tuberculin purified protein) skin test.

<table>
<thead>
<tr>
<th>A person with TB Infection</th>
<th>A person with TB Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carries the TB bacterium in a live, but <strong>inactive</strong> state</td>
<td>Carries the TB bacterium in a <em>live, active</em> state</td>
</tr>
<tr>
<td>Does <strong>not</strong> have any <strong>symptoms</strong> and does <strong>not</strong> feel sick</td>
<td><strong>Has symptoms</strong> (cough, fever, night sweats, weight loss, etc)</td>
</tr>
<tr>
<td>Has a <strong>normal</strong> chest x-ray and <strong>negative</strong> sputum smear</td>
<td><strong>May</strong> have an <strong>abnormal</strong> chest x-ray and a <strong>positive</strong> sputum smear</td>
</tr>
<tr>
<td><strong>Cannot</strong> spread TB to others</td>
<td><strong>Can</strong> spread TB to others</td>
</tr>
<tr>
<td><strong>May</strong> develop active TB at a later time, if infection not treated</td>
<td><strong>May</strong> die, if TB disease not treated</td>
</tr>
</tbody>
</table>
Topic 3. Tuberculosis (TB)

TB Transmission

TB is spread by the airborne route when a person with active disease coughs, sneezes, sings, etc. Those having prolonged, close contact are at greatest risk of exposure.

Populations at risk for TB disease include:
- Foreign-born persons from high prevalence countries
- Persons with HIV disease
- Persons in close contact with known infectious TB cases
- Residents of long-term facilities such as correctional facilities and nursing homes
- Recent conversion

Healthcare-associated transmission occurs at a low rate in US hospitals. It can be prevented by following policies for prevention.
Ways to Prevent Transmission

Respiratory hygiene/etiquette, which is part of Standard Precautions, should be used on ALL patients at ALL times.

Respiratory hygiene/etiquette includes:
- Patients are asked to cover their coughs.
- If unable to cover cough, a surgical mask is used.
Putting a Patient with TB in Respiratory Precautions

For Active/Rule Out TB patients:

Place the patient in a **negative airflow room** with an **anteroom**. If a negative airflow room is not available, a **portable HEPA filtration unit** can be used until a negative airflow room is available. Negative airflow in the room will be checked by Engineering on a daily basis.

All staff are required to wear **N95 masks** every time the room is entered, regardless of the task. Visitors wear surgical masks.

Place a **blue Respiratory Precautions sign** on the door.

Precautions may be **discontinued** when there are 3 **negative sputum smears** taken 8 hours apart with at least one sputum being an early morning induced sputum.
Discharging a Patient with TB

Patient with TB (Pulmonary or Extrapulmonary) on anti-TB medications, must be approved for discharge by the Santa Clara Health Department.

Notify Infection Control at least 48 hours before you discharge the patient with TB.
Topic 3. Tuberculosis (TB)

Wearing Respiratory Protective Devices

A properly fitted **N-95 mask** is to be worn by personnel in the following situations:

- When entering the **isolation room** of a patient with suspected or confirmed TB.
- When **caring for an unmasked patient** with suspected or confirmed TB.
- When entering a room where a **high-risk medical procedure** is being performed on a patient with suspected or confirmed TB.

A **PAPR** (Positive Air Purifying Respirator) is to be worn by the person doing the procedure in the following situations:

- When performing a **high-risk medical procedure** on a patient with suspected or confirmed TB (Bronchoscopy, Sputum Induction, Intubation).
- When **performing sputum induction or other diagnostic procedures** to determine active disease.
Topic 3. Tuberculosis (TB)

Respiratory Fit Testing Program

Fit testing is done by Occupational Health Department. All staff using N95 respiratory protection are to be fit tested:

- Prior to initial use
- Let Occupational Health Services know if there is a change in your health status or if you develop a health condition that might either affect your ability to wear or alter the fit of your respirator. An example would be you had a change in weight, developed heart disease, or had facial surgery.

Prior to entering a Respiratory Isolation room fit check your N95 mask as instructed.

If a staff member assists with high risk medical procedures on a patient with suspected or confirmed TB that requires Respiratory Isolation, or cannot wear a N-95 mask, instructions will be provided for using a PAPR.
Employee TB Screening

All personnel are screened for active TB pre-employment and on an annual basis.

**Pre-Employment Screening**
- Quantiferon blood test or two-step Tuberculin Skin Test (PPD)
- Chest x-ray for previously positive or positive Quantiferon test

**Annual Screening**
- For previously negative personnel:
  - Quantiferon blood test or Tuberculin Skin Test (PPD)
  - Symptom questionnaire
- For previously positive personnel:
  - Symptom questionnaire

**Post Exposure Screening**
- At time of exposure to TB on the job (if not current with annual screening)
- At 12 weeks after exposure
This course reviewed the **respiratory** and **droplet** precautions/isolation used in SHC when a patient is suspected or diagnosed with a disease that is transmitted by the respiratory (airborne) or droplet route. In addition, **tuberculosis** infection/disease transmission and prevention were also reviewed.

Now you should be able to:

- Describe the features of transmissible respiratory and droplet diseases
- Identify respiratory and droplet precautions
- Recognize transmission and prevention of Tuberculosis
Resources

Policy 5.40 Respiratory Precautions/Isolation:

Policy 5.41 Droplet Precautions/Isolation:

Infection Control Manual:
http://portal.stanfordmed.org/policies/InfectionControlManual/Pages/default.aspx

Infection Prevention & Control & Department:
http://portal.stanfordmed.org/depts/infection-control/Pages/default.aspx
Questions?

Infection Prevention & Control Department is available to help you.

Contact us at:

- Phone: (650) 725-1106, (650) 723-8222