



**STANFORD**

HOSPITAL & CLINICS

*Stanford University Medical Center*

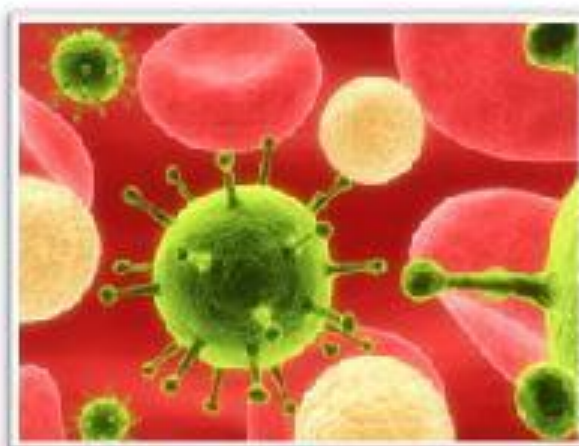
# Prevention of Respiratory Diseases

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

# Course Topics

This course contains 3 topics:

- Topic 1: Respiratory Precautions
- Topic 2: Droplet Precautions
- Topic 3: Tuberculosis

## Topic 1. Respiratory Precautions

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 suspended 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 **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



# Topic 1. Respiratory Precautions

## 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.

**RESPIRATORY PRECAUTIONS**

**YOU MUST:**

1. BE ALLOWED BY AN INCHARGE NURSE TO BE DISCHARGED FROM AND LEAVE THE ROOM
2. REMOVE MASK WHEN ENTERING THE ROOM
3. ONLY HEALTH PERSONNEL SHOULD ENTER THE ROOM TO:
4. USE AND FILTER REPLACES AS A PRECAUTION. INSTRUCTIONS ARE IN EACH SPITUM COLLECTION ADDITIONAL INSTRUCTIONS:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

REMOVE GOWN, GLOVES, AND MASK

PATIENTS TO WEAR A MASK AT ALL TIMES WHEN LEAVING THE ROOM

PLEASE KEEP THE DOOR CLOSED

IF YOU HAVE ANY QUESTIONS, PLEASE VISIT THE NURSING



# 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**.



# Topic 1. Respiratory Precautions

## 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.





## Topic 2. Droplet Precautions

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:

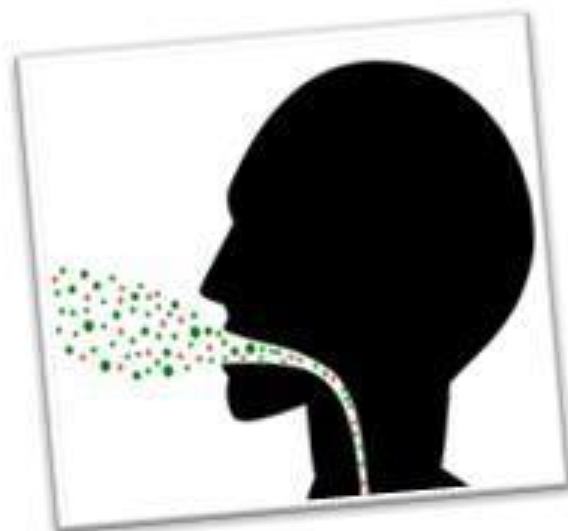
- When an infected person talks, sneezes or coughs
- During procedures such as suctioning, cough induction or bronchoscopy

## 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.

## Topic 2. 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**.



## Topic 2. Droplet Precautions

### 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.



## Topic 3. Tuberculosis (TB)

*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.

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

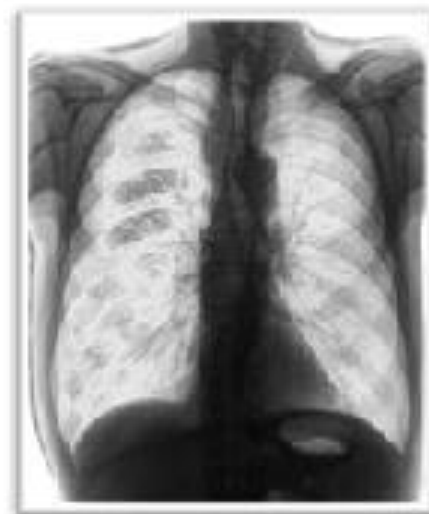
## Topic 3. Tuberculosis (TB)

### 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.



## Topic 3. Tuberculosis (TB)

### Ways to Prevent Transmission

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

Respiratory hygiene/etiquette includes:

- Patients are asked to **cover their coughs**.
- If unable to cover cough, a **surgical mask** is used.



## Topic 3. Tuberculosis (TB)

### 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.

## Topic 3. Tuberculosis (TB)

### 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.

## Topic 3. Tuberculosis (TB)

### 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





## Course Summary

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:**

<http://portal.stanfordmed.org/policies/InfectionControlManual/Documents/5.40RespiratoryPrecautions.pdf>

### **Policy 5.41 Droplet Precautions/Isolation:**

<http://portal.stanfordmed.org/policies/InfectionControlManual/Documents/5.41DropletPrecautions.pdf>

### **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

