

Transmission-Based Precautions



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Learning Objectives

Describe the different types of Transmission-Based Precautions

Determine what types of practices and personal protective equipment (PPE) are appropriate based on method of disease transmission

Apply this knowledge in patient care settings



Standard Vs. Transmission-Based Precautions

Standard Precautions: apply to ALL care activities regardless of suspected or confirmed infection status

Transmission-Based Precautions: added measures to prevent the spread of disease from patients with known or suspected disease

(Siegel JD et al., CDC Guidelines for Isolation Precaution, 2007)



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2011 Guidelines for the Prevention of Intravascular Catheter-Related Infections




2011 Norovirus Guidelines

2008 Disinfection & Sterilization Guideline

► **Guideline for Isolation Precautions 2007**

- Executive Summary
- Part I: Review of Scientific Data Regarding Transmission of Infectious Agents in Healthcare Settings
- Part II: Fundamental elements needed to prevent transmission of infectious agents in healthcare settings
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2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings

Notice

The recommendations in this guideline for **Ebola Virus Disease** have been superseded by CDC's **Infection Prevention and Control Recommendations for Hospitalized Patients with Known or Suspected Ebola Virus Disease in U.S. Hospitals**.

This information is in **Appendix A**. Click here for current information on **how Ebola virus is transmitted**.

The recommendations in this guideline for **Measles** have been superseded by CDC's **Immunization of Healthcare Personnel: Recommendations of the Advisory Committee on Immunization Practices (ACIP)** [PDF - 1,909 KB].

Download the complete PDF version [Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings 2007](#) [PDF (3.80 MB / 225 pages)]


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Suggested citation: Siegel JD, Rhinehart E, Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee, 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings



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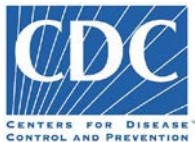
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Types of Transmission-Based Precautions

- Contact Precautions
- Droplet Precautions
- Airborne Infection Isolation



(CDC, *Transmission-Based Precautions*, https://www.cdc.gov/infectioncontrol/basics/transmission-based-precautions.html#anchor_1564058318)



Contact Precautions

Methods used to contain diseases that are spread by

- **Direct Contact:** Contact with the patient
- **Indirect Contact:** Contact with the patient's environment



Known or suspected infection or others that are “epidemiologically important”

Patients at risk of contaminating their environment

(Siegel JD et al., CDC Guidelines for Isolation Precaution, 2007)



PPE for Contact Precautions

Gown and gloves at entry point, before contact with a patient or patient's environment

Potentially contaminated objects include:

- Objects, such as tray tables and bedrails
- Medical equipment (e.g. Blood Pressure cuff)

Dedicated patient equipment is preferred

PPE removed at the point of exit, prompt hand hygiene

(Siegel JD et al., CDC Guidelines for Isolation Precaution, 2007)



Droplet Precautions

Prevents transmission of diseases spread by large respiratory droplets through coughing, sneezing, or talking

Examples of conditions requiring Droplet Precautions include seasonal influenza and *B. pertussis*



(Siegel JD et al., CDC Guidelines for Isolation Precaution, 2007; Image from CDC, Brian Judd, 2009)



PPE for Droplet Precautions

A face mask is worn upon entry into the patient room

Use Standard Precautions when handling items contaminated with respiratory secretions

PPE must be removed at the point of exit; do not reuse face masks

Hand hygiene follows PPE removal

(Siegel JD et al., CDC Guidelines for Isolation Precaution, 2007)



Airborne Infection Isolation

Prevents transmission of infectious agents that are very small and remain viable and suspended in the air over long distances

Examples include measles, *M. tuberculosis*, chicken pox

Patient placed into a negative pressure isolation room

(Siegel JD et al., CDC Guidelines for Isolation Precaution, 2007)



PPE for Airborne Infection Isolation

Particulate respirator (e.g. N95) or powered air purifying respirator (PAPR) worn before entry

With a particulate respirator, perform a fit-check before entering an area where they may be airborne infectious disease



(Siegel JD et al., *CDC Guidelines for Isolation Precaution*, 2007; National Institute for Occupational Safety and Health. Hospital Respiratory Protection Program Toolkit 2015; Image Credited to Martin Levesque)



Patient Transport

For all isolation types:

Limit transport and movement of patients outside of their room

Any infected areas must be contained/covered

PPE is not worn during patient transport

When patients must leave their room there must be good hand-off communication among staff

(Berends C and Walesa B, APIC Text, 2013)



Scenario 1

You are a nurse working in the triage area of the Emergency Department. A patient reports a cough with blood-streaked sputum for almost two months with night sweats and an unintended 20-lb weight loss. You suspect tuberculosis (TB). What type of precautions would be appropriate?

- a) Contact
- b) Droplet
- c) Airborne
- d) Contact & Droplet



Scenario 2

A previously healthy 35 year-old woman is admitted to your medical unit with fever, cough, and body aches for two days. She tests positive for seasonal influenza. What type of precautions would be appropriate?

- a) Contact
- b) Droplet
- c) Airborne
- d) Standard



Scenario 3

You are assisting in the admissions process for a patient being directly admitted to your hospital. A 75 year-old male patient presents with his daughter who tells you he's had a large draining wound on his hip that's difficult to keep covered and draining onto his linens. You confirm this and suggest to the nurse the patient be placed into:

- a) Contact Precautions
- b) Standard Precautions
- c) Droplet Precautions
- d) Airborne Isolation Precautions



Key Messages

Transmission-Based Precautions include Contact, Droplet and Airborne Isolation

In general, appropriate PPE is based upon how an organism can be transmitted

Standard Precautions should be used for all patients in addition to their Transmission-Based Precautions



References

Berends C, Walesa B. Isolation Precautions (Transmission-based Precautions). Association of Infection Control and Epidemiology Text. 2013.

Hospital Respiratory Protection Program Toolkit 2015. National Institute for Occupational Safety and Health. <https://www.osha.gov/Publications/OSHA3767.pdf>

Sequencing for Personal Protective Equipment (PPE). Centers for Disease Control and Prevention; CS250672-E. Available at <http://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf>

Siegel JD, Rhinehart E, Jackson M, et al. 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings. Centers for Disease Control and Prevention. Available at <http://www.cdc.gov/hicpac/pdf/isolation/isolation2007.pdf>



Speaker Notes



Speaker Notes: Slide 1

Hello, and welcome to the second module of the Personal Protective Equipment course. This module will discuss Transmission-Based Precautions, which are infection prevention measures taken in addition to Standard Precautions to prevent the spread of disease.



Speaker Notes: Slide 2

This module was developed by national infection prevention experts devoted to improving patient safety and infection prevention efforts.



Speaker Notes: Slide 3

Upon viewing this module, you should be able to describe the different types of Transmission-Based Precautions; determine what types of practices and personal protective equipment or PPE would be appropriate based on the method of disease transmission; and apply this knowledge whether you work with patients at the bedside or support those who do.



Speaker Notes: Slide 4

Before we go into more detail about Transmission-Based Precautions it's important to recall the definition of Standard Precautions. Standard Precautions are infection prevention practices that apply to all care activities, regardless of suspected or confirmed infection status. In contrast, Transmission-Based Precautions are added measures for infection prevention strategies to prevent the spread of specific diseases. Patients who have confirmed or suspected disease that can be spread beyond what Standard Precautions can prevent, should have Transmission-Based Precautions in place.



Speaker Notes: Slide 4 Continued

Remember that Standard Precautions will always be used. This means that a patient could have a diagnosis of influenza and be in Droplet Precautions, but health care personnel will continue to follow Standard Precautions when performing a blood draw. For additional information on Standard Precaution, please view Personal Protective Equipment module 1, The Basics of Standard Precautions.



Speaker Notes: Slide 5

CDCs IPC guidelines are informed by the Healthcare Infection Control Practices Advisory Committee. Those guidelines inform policy and practices for infection control departments, health care epidemiologists, administrators, nurses and others who are responsible for developing, implementing and evaluating infection control programs for health care settings across the continuum of care. The 2007 HICPAC guidelines for Isolation Precautions can be accessed through the CDC website indicated on the slide shown.



Speaker Notes: Slide 6

The types of Transmission-Based Precautions are listed here. We will go into greater detail in following slides.

The Chain of Infection was discussed in the Standard Precautions module; here we'll talk more about how different types of pathogens spread, and why different types of Transmission-Based Precautions are important. Contact Precautions refers to precautions used for diseases that can be transmitted during contact with the patient or patient's environment. Other harmful microbes can be passed along by large respiratory droplets, requiring Droplet Precautions.



Speaker Notes: Slide 6 Continued

And still others are passed along through the air and require Airborne Precaution Isolation – pathogens are very small and remain suspended in the air. Patients should be placed into appropriate precautions as soon as possible (i.e. while awaiting confirmation of a suspected diagnosis) to prevent unintended exposure to health care personnel and other patients, families and visitors.



Speaker Notes: Slide 7

Contact Precautions are used when patients have an infection that can be spread by contact with the patient's skin including mucous membranes, feces, vomit, urine, wound drainage or other body fluids. These are examples of coming into **direct contact** with the patient.

Indirect contact occurs when health care personnel are in the patient's environment or surroundings that may be contaminated. Contact with a patient's surroundings may be overlooked as a means of spreading infection. Health care facilities will have policies and protocols that describe which specific diseases or conditions warrant Contact Precautions.



Speaker Notes: Slide 7 Continued

Patients with known or suspected infections caused by pathogens that can be passed by contact are placed into Contact Precautions. An example is *Clostridioides difficile*. Epidemiologically important pathogens include organisms that have resistance to first line antimicrobial therapy or have unusual resistance patterns to antibiotics. They are often difficult to treat. The decision to include specific pathogens might be facility-specific and you should review which pathogens are of particular concern within your health care setting.

Patients that are at high risk of contaminating their environment, e.g. with fecal incontinence, uncontrolled wound drainage or other excretions or secretions, should be placed into Contact Precautions.



Speaker Notes: Slide 8

Health care personnel caring for patients on Contact Precautions must wear a gown and gloves for all interactions that involve contact with the patient and the patient environment. PPE should be donned prior to room entry and doffed at the point of exit. For patients on Contact Precautions, a single-patient room is preferred. If two patients are being cohorted, or placed in a shared room with the same infection, this should be discussed with infection prevention and control personnel to understand potential risks. If patients are cohorted, PPE must be changed between the care of each patient. Donning and doffing of PPE was discussed in the Standard Precautions module; as a reminder, hand hygiene must always follow PPE removal.



Speaker Notes: Slide 9

Droplet Precautions are used to prevent the spread of pathogens that are passed through respiratory secretions and do not survive for long in transit. These droplets are relatively large particles that cannot travel through the air very far. They are transmitted through coughing, sneezing, and talking. Although a single-patient room is preferred, patients may be cohorted after consulting with infection prevention and control personnel. Maintaining a spatial separation of three feet or more and keeping curtains drawn between patients is recommended.



Speaker Notes: Slide 9 Continued

You may have seen a similar photo of a sneeze to demonstrate the distance and amount of secretions. We as health care personnel certainly hope that others can contain sneezing and coughing to prevent distribution of these secretions. As described in PPE Module 1, respiratory hygiene should be part of Standard Precautions.



Speaker Notes: Slide 10

Health care personnel caring for patients on Droplet Precautions must wear a face mask for close patient contact, considered to be within six feet or less or in the room of the patient. Taking a blood pressure, listening to lung sounds and administering medication would all require staff to wear a face mask. A respirator or N95 face mask is NOT necessary but can be used for the care of a patient on Droplet Precautions. Remember, that you should continue to use Standard Precautions during patient care in addition to Droplet Precautions.



Speaker Notes: Slide 10 Continued

This includes handling items contaminated with the patient's respiratory secretions. PPE, including the face mask, should be removed at the point of exit and not worn in corridors or when caring for other patients. For some infections, eye protection might be necessary as well (e.g. Influenza). Lastly, remember to perform hand hygiene using soap and water or alcohol-based hand rub after removing all PPE.



Speaker Notes: Slide 11

Airborne infection isolation or Airborne Precautions prevent the transmission of infectious agents that remain viable and suspended in the air over long distances. Examples of these are rubeola virus or measles, varicella virus or chickenpox, and *Mycobacterium tuberculosis*. These patients should be promptly placed into an airborne isolation room that contains special air handling and ventilation. This air handling and ventilation capacity includes a monitored system that provides negative pressure relative to surrounding area (such as the hallway). The air is exchanged at a rate faster than other areas in the health care setting with exhaust directed to the outside and/or HEPA filtered.



Speaker Notes: Slide 12

A particulate respirator must be worn by anyone entering the patient's room that is on airborne precautions. This may be an N95 respirator or powered air purifying respirator or PAPR. Respirators are specifically designed to provide respiratory protection by efficiently filtering out airborne particles. An N95 respirator requires appropriate fit-testing done by trained personnel. A fit-test will ensure the face mask has a tight seal against the face. A PAPR consists of a battery operated blower and HEPA filter, connected by a tube to a covered face piece, as in the photo.



Speaker Notes: Slide 12 Continued

PAPRs may be selected if an N95 respirator does not fit, or the employee has facial hair or a facial shape that would interfere with mask-to-face seal. Occupational health services will be able to provide details on what types of respiratory protection they have available, how employees obtain fit testing and proper use of the respirator.



Speaker Notes: Slide 13

Moving patients out of their isolation room should only occur when necessary. For patients on Contact Precautions, any infected areas must be covered or contained. PPE should not be worn by health care providers or transporters while moving the patient. Clean PPE should be used at the destination point.



Speaker Notes: Slide 13 Continued

If on Droplet Precautions, the patient should wear a surgical-type face mask and follow cough etiquette when outside of their room. For patients in airborne infection isolation, the patient should also wear a surgical face mask and follow cough etiquette. Patients and transport personnel do not need to wear respirators when transporting patients. When patients must leave their room and travel to another department or area, there must be good hand-off communication among staff about the type of isolation precautions. This may include verbal, written and/or electronic notifications.



Speaker Notes: Slide 14

Now we'll do a couple of case scenarios to test your knowledge. You are a nurse working in the triage area of the emergency department. A patient reports a cough with blood-streaked sputum for almost two months with night sweats and an unintended 20-lb weight loss. You suspect tuberculosis (TB). What type of precautions would be appropriate?

The correct answer is C, Airborne Isolation Precautions. A surgical type face mask should be placed on the patient and he should be moved to a negative-pressure room as soon as possible. If an AIIR is not immediately available, you should be promptly placed in a private room while awaiting the AIIR. Staff caring for the patient must wear appropriate respiratory protection such as an N95 respirator or PAPR.



Speaker Notes: Slide 15

In this next example a previously healthy 35 year-old woman is admitted to your medical unit with fever, cough and body aches for two days. She tests positive for seasonal influenza. What type of precautions would be appropriate?

The correct answer is B, Droplet Precautions. These precautions need to be instituted before lab confirmation of illness. Some facilities have enhanced or extended Droplet Precautions, but all should be based on the Droplet Precautions concepts we covered in this module. This includes health care personnel wearing a surgical-type face mask when coming into close contact with the patient, use of a private room and limiting movement within the facility.



Speaker Notes: Slide 16

In our last example you are assisting in the admissions process for a patient being directly admitted to your health care facility. A 75 year-old male patient presents with his daughter who tells you he's had a large draining wound on his hip that's difficult to keep covered and draining onto his clothing. You confirm this and suggest to the nurse the patient be placed into:

The correct answer is A, Contact Precautions. Contact Precautions should be considered when a patient has a draining, wound. It should also be considered for patients with uncontrollable diarrhea and other instances when the environment may become contaminated.



Speaker Notes: Slide 17

Transmission-Based Precautions are used when a patient has a known infection, such as one that's been laboratory-diagnosed, or a suspected infection while awaiting confirmation. Patients should be placed into precautions as soon as possible to prevent exposure to health care personnel and other patients. All health care personnel caring for patients in Transmission-Based Precautions should be aware of the correct PPE and work practices needed to provide care safely. Awareness of how diseases are spread is important for health care personnel. Finally, don't forget to always use Standard Precautions along with any Transmission-Based Precautions needed for a patient.



Speaker Notes: Slide 18

No notes.

