

# Isolation Precautions: Droplet (Ambulatory) - CE

## ALERT

**Avoid physical contact with the patient before donning appropriate personal protective equipment (PPE).<sup>1</sup>**

**Perform hand hygiene with soap and water or use an alcohol-based hand rub (ABHR) immediately after removing all PPE.**

**Don appropriate PPE based on the patient's signs and symptoms and indications for isolation precautions.**

## OVERVIEW

Infection prevention and control measures help to ensure the protection of patients, in a range of settings, who may be vulnerable to acquiring an infection both in the general community and when receiving care because of health problems.

Infection-control practices that reduce and eliminate sources of infection transmission help to protect patients and health care personnel from disease. The health care team member is responsible for educating the patient about infection control. Knowledge of the infectious process, disease transmission, and critical-thinking skills associated with use of aseptic techniques and barrier protection is essential for both health care team members and patients.

Droplet transmission is a form of contact transmission when some form of infectious agent is transmitted by droplet route (direct or indirect contact). However, in contrast to contact transmission, respiratory droplets carrying infectious pathogens transmit infection when they travel directly from the infectious person's respiratory tract (e.g., coughing, sneezing, talking) to the recipient's susceptible mucosal surfaces, generally over short distances.<sup>3</sup>

Health care team members working with patients who have an illness that can be transmitted via droplet route (e.g., influenza) should don a mask when within 1.8 to 3 m (6 to 10 ft) of the patient or upon entry into the patient's room.<sup>3</sup> The difference between droplet precautions and airborne precautions is related to the size of the particle. With droplet-transmitted pathogens, the particle is greater than 5 micrometers<sup>3</sup> and does not hang suspended in air. Airborne-transmitted pathogens are less than 5 micrometers<sup>3</sup> and are able to hang suspended in the air for long periods of time. Airborne precautions require special air handling and ventilation.<sup>3</sup>

Standard (tier 1) precautions, assume that every patient is potentially infected or colonized with an organism that could be transmitted in the health care setting. The health care team member should apply standard precautions when caring for patients ([Box 1](#)).<sup>3</sup> Standard precautions are the primary strategies for preventing infection transmission and apply to contact with blood, bodily fluids, nonintact skin, and mucous membranes, as well as equipment or surfaces contaminated with potentially infectious materials. The strategy for respiratory hygiene and cough etiquette applies to any person with signs of respiratory infection (e.g., cough, congestion, rhinorrhea, increased production of respiratory secretions) when entering a health care facility.

Tier 2 precautions include measures designed for the care of a patient who is known to be or suspected of being infected or colonized with highly transmissible or epidemiologically

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important pathogens for which additional precautions are needed to prevent transmission ([Table 1](#)).<sup>3</sup> Organisms may be transmitted by the contact, droplet, or airborne route or by contact with contaminated surfaces. The three types of transmission-based precautions—airborne, droplet, and contact—may be combined for diseases that have multiple routes of transmission (e.g., chickenpox) ([Table 1](#)).<sup>3</sup> Tier 2 precautions should be used with standard precautions. Additional more stringent precautions may be applied to specific outbreaks of a virus or bacteria.

Health care team members must participate in and practice rigorous training of current PPE recommendations, which include the systematic donning and doffing of PPE. Once in the patient's room, health care team members must keep PPE in place and continue to wear it correctly. A breach may include skin exposure, a needlestick, or a tear in the PPE. The doffing process is a time of high risk, and a systematic procedure must be followed.<sup>1</sup>

### EDUCATION

- Explain the purpose of the isolation to the patient.
- Teach the patient appropriate use of barrier techniques for home care, as applicable.
- Provide developmentally and culturally appropriate education based on the desire for knowledge, readiness to learn, and overall neurologic and psychosocial state.
- Encourage questions and answer them as they arise.

### PROCEDURE

1. Perform hand hygiene.
2. Verify the correct patient using two identifiers.
3. Review the patient's medical history (if available) for possible indications and risk factors for illnesses associated with droplet isolation precautions (e.g., influenza, adenovirus, rhinovirus).
4. Review the precautions for the specific isolation criteria, including appropriate PPE to apply ([Box 1](#)) ([Table 1](#)).
5. Review the patient's laboratory test results, if applicable.
6. Determine whether the patient has a known latex allergy.
7. Provide proper PPE access and signage as needed.
8. Prevent extra trips in and out of the room; gather all needed equipment and supplies before entering the room.
9. Dedicate medical equipment (i.e., stethoscope, blood pressure cuff, and thermometer) to be used only with the patient.<sup>3</sup>
10. Choose a barrier protection that is appropriate for the type of isolation used and the organization's practice ([Box 1](#)) ([Table 1](#)).
  - a. Contact precautions: Standard precautions plus gloves and gown
  - b. Droplet precautions: Standard precautions plus a mask
  - c. Airborne precautions: Standard precautions plus an N95 respirator or powered air-purifying respirator (PAPR)
11. Perform hand hygiene.
12. Don an isolation gown.

a. Ensure that the gown covers the torso from the neck to the knees and from the arms to the end of the wrists and that it wraps around the back.

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- b. Pull the sleeves of the gown down to the wrists.
- c. Fasten the gown securely at the back of the neck and the waist.

Rationale: Donning a gown properly prevents the transmission of infection and provides protection if the patient has excessive drainage or discharge.

13. Don a procedure mask or face shield around the mouth and nose.

- a. Secure the ties at the middle of the head and neck.
- b. Fit the flexible band to the nose bridge.
- c. Ensure that the mask fits snugly on the face and below the chin.

14. Don eye protection (goggles or face shield), if needed, around the face and eyes. Adjust to fit.

Rationale: Donning eye protection properly reduces the risk of exposure to microorganisms that may occur from splashing fluids.

15. Don gloves, bringing the glove cuffs over the edge of the gown sleeves.

16. Enter the patient's room and arrange the supplies.

17. Introduce yourself to the patient.

18. Verify the correct patient using two identifiers.

19. Explain the procedure to the patient and ensure that he or she agrees to treatment.

20. Ensure that evaluation findings are communicated to the clinical team leader per the organization's practice.

21. Provide designated care to the patient while maintaining precautions.

- a. Keep hands away from own face.
- b. Limit touching surfaces in the room.
- c. Remove gloves when torn or heavily contaminated, perform hand hygiene, and don clean gloves.
- d. If supplies are needed, enlist another health care team member to hand in new supplies without entering the room.

22. Administer medications as ordered while maintaining precautions.

a. Provide oral medication in a wrapper or cup and then discard the wrapper or cup in the proper trash receptacle within the patient's room.

b. Wear gloves when administering injections.

Rationale: Gloves act as a barrier to reduce the risk of exposure to blood.

c. Discard disposable syringes and uncapped or sheathed needles in the proper sharps receptacle in the patient's room.

d. Place the reusable plastic syringe holder in a clean glove or, if used, on a paper towel for eventual removal and disinfection after leaving the patient's room.

23. Collect any ordered specimens.

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- a. In the presence of the patient, label the specimen per the organization's practice.<sup>2</sup>
- b. Prepare the specimen for transport and transport it to the laboratory immediately per the organization's practice.

24. Inform the patient when you plan to return to the room. Ask whether the patient requires any personal care items or has any questions.

25. Discard supplies.

### **Option 1: Removal of PPE, if Using a Nondisposable or Disposable Gown**

- a. Remove gloves.

**If hands become contaminated during glove removal, immediately perform hand hygiene with soap and water or use an ABHR.**

- i. Using a gloved hand, grasp the palm area of the other gloved hand and peel off the first glove.
- ii. Hold the removed glove in the gloved hand.
- iii. Slide the fingers of the ungloved hand under the remaining glove at the wrist.
- iv. Peel the second glove off over the first glove.

Rationale: Properly removing gloves prevents contact with the contaminated gloves' outer surface.

- b. Discard gloves in the proper receptacle.
- c. Remove the gown.

- i. Unfasten the gown's neck ties and waist ties, taking care that the sleeves do not make contact with the body when reaching for the ties.
- ii. Pull the gown away from the neck and shoulders, touching only the inside of the gown.
- iii. Turn the gown inside-out and fold it into a bundle.

Rationale: The front of the gown and sleeves are contaminated. Removing the gown as described prevents contact with the contaminated front of the gown.

- d. Place the gown directly into a designated gown receptacle.
- e. Remove the eye protection and mask or face shield. Untie the bottom of the mask or face shield first, untie the top of the mask or face shield next, then pull the mask or face shield away from the face.

**Do not touch the outer surface of the mask or face shield.**

Rationale: The front of the mask is contaminated. Touching only the elastic or mask strings protects ungloved hands from contamination. Untying the bottom mask string first prevents the top part of the mask from falling down over the health care team member's uniform.

- f. Discard the eye protection and mask or face shield in the proper receptacle or place it in an appropriate container for disinfection.
- g. Perform hand hygiene.

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## ***Option 2: Removal of PPE, if Using a Disposable Gown***

a. Remove gown and gloves.

**If hands become contaminated during glove removal, immediately perform hand hygiene with soap and water or use an ABHR.**

- i. Grasp the gown in the front and pull it away from the body so that the ties break. Touch only the outside of the gown with gloved hands.
- ii. While removing the gown, fold or roll it inside-out into a bundle, peeling off the gloves at the same time. Touch only the inside of the gloves and gown with bare hands.

Rationale: The front of the gown and sleeves are contaminated. Removing the gown as described prevents contact with the contaminated front of the gown.

- b. Discard the gown and gloves in the proper receptacle.
- c. Remove eye protection and mask or face shield. Untie the bottom of the mask or face shield first, untie the top of the mask or face shield next, then pull the mask or face shield away from the face.

**Do not touch the outer surface of the mask or face shield.**

Rationale: The front of the mask is contaminated. Touching only the elastic or mask strings protects ungloved hands from contamination. Untying the bottom mask string first prevents the top part of the mask from falling down over the health care team member's uniform.

- d. Discard the eye protection and mask and or face shield in the proper receptacle or place it in an appropriate container for disinfection.
- e. Perform hand hygiene.

26. Transport the specimen to the laboratory per the organization's practice.
27. Perform hand hygiene.
28. Document the procedure in the patient's record.

## **EXPECTED OUTCOMES**

- Patient can explain purpose of isolation and cooperates with precautions.
- No evidence of suspected breach of isolation precautions exists.
- Health care team members are free from infection.
- Health care team members perform donning and doffing correctly.

## **UNEXPECTED OUTCOMES**

- Patient does not cooperate with precautions.
- Evidence of suspected breach of isolation precautions exists.
- Health care team member contracts an infection.
- Health care team members do not perform donning and doffing correctly.

## **DOCUMENTATION**

- Patient education

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- Procedures performed
- Evidence or suspected breach of isolation precautions
- Unexpected outcomes and related interventions
- Evaluation findings communicated to the clinical team leader per the organization's practice

### PEDIATRIC CONSIDERATIONS

- Isolation creates a sense of separation from family and the loss of control. A strange environment may add to any confusion the child feels during isolation. A preschool-age child is unable to understand the cause-and-effect relationship for isolation. Older children may be able to understand cause, but they still may be frightened.
- All barrier precautions should be shown to the child. The family should be actively involved in any explanations. Health care team members should let the child see their faces before applying the mask so that the child does not become frightened.

### OLDER ADULT CONSIDERATIONS

- Older adults may become confused when they are confronted with a health care team member using barrier precautions or when left in a room with the door closed. The need for closing the door (negative-pressure airborne isolation infection room [AIIR]), along with the patient's safety and additional safety measures, should be evaluated.

### REFERENCES

1. Centers for Disease Control and Prevention (CDC). (2015). Guide to infection prevention for outpatient settings: Minimum expectations for safe care. Retrieved March 12, 2020, from [https://www.cdc.gov/hai/pdfs/guidelines/ambulatory-carechecklist\\_508\\_11\\_2015.pdf](https://www.cdc.gov/hai/pdfs/guidelines/ambulatory-carechecklist_508_11_2015.pdf) (Level VII)
2. Joint Commission, The. (2020). National patient safety goals: Ambulatory health care accreditation program. Retrieved March 12, 2020, from [https://www.jointcommission.org/assets/1/6/NPSG\\_Chapter\\_AHC\\_Jan2019.pdf](https://www.jointcommission.org/assets/1/6/NPSG_Chapter_AHC_Jan2019.pdf) (Level VII)
3. Siegel, J.D. and others. (2007, updated 2019). 2007 Guideline for isolation precautions: Preventing transmission of infectious agents in healthcare settings. Retrieved March 12, 2020, from <https://www.cdc.gov/infectioncontrol/pdf/guidelines/isolation-guidelines-H.pdf> (Level VII)

#### Elsevier Skills Levels of Evidence

- **Level I** - Systematic review of all relevant randomized controlled trials
- **Level II** - At least one well-designed randomized controlled trial
- **Level III** - Well-designed controlled trials without randomization
- **Level IV** - Well-designed case-controlled or cohort studies
- **Level V** - Descriptive or qualitative studies
- **Level VI** - Single descriptive or qualitative study
- **Level VII** - Authority opinion or expert committee reports

### Supplies

- Dedicated medical equipment (i.e., stethoscope, blood pressure cuff, thermometer)
- Isolation signage as needed

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- Gloves
- Isolation gown
- Procedural mask and eye protection (goggles or face shield)
- Specimen collection supplies as needed

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Published: March 2020

### **Box 1** Centers for Disease Control and Prevention Isolation Guidelines Standard Precautions (Tier 1) for Use with All Patients

Standard precautions apply to blood, blood products, all bodily fluids, secretions, excretions (except sweat), nonintact skin, and mucous membranes.

- Perform hand hygiene before direct contact with patients and after direct contact with a patient's skin.
- Perform hand hygiene after contact with blood, bodily fluids, secretions, or excretions; after contact with surfaces medical equipment in the immediate vicinity of the patient; and immediately after gloves are removed.
- Perform hand hygiene with either a nonantimicrobial soap and water or an antimicrobial soap and water when hands are visibly soiled or contaminated with blood or bodily fluids.
- Perform hand hygiene using an alcohol-based hand rub when hands are not visibly soiled or contaminated with blood or bodily fluids to decontaminate the hands or wash hands with an antimicrobial soap and water.
- Perform hand hygiene with nonantimicrobial soap and water or an antimicrobial soap and water if contact with spores (e.g., *Clostridium difficile*) is likely to have occurred. Alcohols, chlorhexidine, iodophors, and other antiseptic agents have poor activity against spores.
- Do not wear artificial fingernails or extenders if duties include direct contact with patients at high risk for infection and associated adverse outcomes (e.g., ICU, OR settings).
- Wear gloves when it is likely that contact with blood, bodily fluids, secretions, excretions, nonintact skin, mucous membranes, or contaminated intact skin (e.g., patient incontinent of stool or urine) or items or surfaces is likely. Remove gloves and perform hand hygiene between patient care encounters and when going from a contaminated to a clean body site (e.g., face).
- Wear a gown when it is likely that contact with blood, body fluids, secretions, excretions, nonintact skin, mucous membranes, or contaminated intact skin or items or surfaces could occur.
- Remove gown and perform hand hygiene between patient care encounters. Do not reuse gowns, even for repeated contacts with the same patient.

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- Routine donning of gowns upon entrance into high risk units is not indicated.
- Wear mouth, nose, and eye protection when the anticipated patient care activities that are likely to generate splashes or sprays of blood or bodily fluids, secretions, and excretions.
- Select masks, goggles, face shields, and combinations of each based on the task performed and the agent the patient is suspected of being infected (e.g., *M. tuberculosis*, SARS or hemorrhagic fever viruses).
- Respiratory hygiene and cough etiquette—have patients and accompanying individuals:
  - Cover the nose and mouth, or both when coughing or sneezing.
  - Use tissues to contain respiratory secretions and dispose in nearest no-touch waste container.
  - Perform hand hygiene after contacting respiratory secretions and contaminated objects or materials.
  - Contain respiratory secretions with procedure or procedure mask for coughing or other symptomatic patients.
  - Sit at least 91.4 cm (3 ft) away from others if coughing.
- Wear PPE (e.g., gloves, gown), according to the level of anticipated contamination, when handling patient care equipment and instruments/devices that are visibly soiled or may have been in contact with blood or body fluids.
- Discard all contaminated sharp instruments and needles in a puncture-resistant container. Health care agencies must make available needleless devices. Any needles should be disposed of uncapped, or a mechanical safety device must be activated for recapping.
- Infection control practices for special lumbar puncture procedures. Wear a procedure mask when placing a catheter or injecting material into the spinal canal or subdural space (i.e., during myelograms, lumbar puncture and spinal or epidural anesthesia).

See next page for Table 1: Centers for Disease Control and Prevention Isolation Guidelines  
Transmission-Based Precautions (Tier Two) for Use with Specific Types of Patients

**Table 1: Centers for Disease Control and Prevention Isolation Guidelines  
Transmission-Based Precautions (Tier 2) for Use with Specific Types of Patients**

| Category | Infection or condition | Barrier protection |
|----------|------------------------|--------------------|
|----------|------------------------|--------------------|



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|--|---|--|
| <p>Airborne precautions (droplet nuclei smaller than 5 microns)</p>  | <p>Measles, chickenpox (varicella), disseminated varicella zoster, pulmonary or laryngeal tuberculosis</p>  | <p>Negative-pressure airflow of at least 6 to 12 exchanges per hour via HEPA filtration</p> <p>Wear a fit-tested NIOSH-approved N95 or higher-level respirator for respiratory protection when entering the room or home of a patient when these diseases are suspected or confirmed: infectious or laryngeal tuberculosis, smallpox.</p> <p>Private room or cohort patients with same isolation precautions or infection.</p> <p>Patients may be transported out of room for procedures or therapy if necessary; patient to don a procedural mask and follow respiratory hygiene and cough etiquette. For patients with skin lesions associated with varicella or smallpox or draining skin lesions caused by <i>M. tuberculosis</i>, cover the affected area to prevent aerosolization or contact with the infectious agent in the skin lesion.</p> <p>Health care team members transporting patients who are on Airborne Precautions do not need to wear a mask or respirator during transport if the patient is wearing a mask and infectious lesions are covered.</p> |
| <p>Droplet precautions (respiratory droplets larger than 5 micrometers that are generated by a patient who is coughing, sneezing or talking)</p> | <p>Diphtheria (pharyngeal), rubella, streptococcal pharyngitis, pneumonia or scarlet fever in infants and young children, pertussis, mumps, mycoplasma pneumonia, meningococcal pneumonia or sepsis, pneumonic plague</p> | <p>Mask or respirator required depending on condition per the organization's practice</p> <p>Private room or cohort patients with same isolation precautions or infection.</p>   |

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## Isolation Precautions: Droplet (Ambulatory) - CE

### Transmission-Based Precautions (Tier Two) for Use with Specific Types of Patients

| Category  | Infection or condition   | Barrier protection  |
|---|--|---|
| Contact precautions (direct patient or environmental contact) | Colonization or infection with multidrug-resistant organisms such as VRE and MRSA, <i>Clostridium difficile</i> , <i>Shigella</i> , and other enteric pathogens; major wound infections; herpes simplex; scabies; varicella zoster (disseminated); respiratory syncytial virus in infants, young children, or immunocompromised adults | Mask if splashing will occur<br><br>Private room or cohort patients with same isolation precautions or infection.   |
| Protective environment  | Allogeneic hematopoietic stem cell transplants   | Positive airflow with 12 or more air exchanges per hour; HEPA filtration for incoming air; mask to be worn by patient when in public environments   |
| Ebola precautions   | Patients suspected of or diagnosed with Ebola  | Negative-pressure airflow of at least six to 12 exchanges per hour via HEPA filtration; mask or respiratory protection device (N95 respirator or PAPR) required; waterproof PPE; no skin exposed when inside patient's room |

HEPA, high-efficiency particulate air; MRSA, methicillin-resistant *Staphylococcus aureus*; PAPR, powered air-purifying respirator; PPE, personal protective equipment; VRE, vancomycin-resistant enterococcus

(Modified from Siegel, J.D. and others. [2007, updated 2019]. 2007 Guideline for isolation precautions: Preventing transmission of infectious agents in healthcare settings. Retrieved March 11, 2020, from <https://www.cdc.gov/infectioncontrol/pdf/guidelines/isolation-guidelines-H.pdf>)