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# Standard Precautions

*Kirsten Thomsen*

## PROCEDURE GOALS AND OBJECTIVES

**Goal:** To use and understand the importance of standard precautions when interacting with a patient.

**Objectives:** The student will be able to ...

- Describe the indications, contraindications, and rationale for adhering to standard precautions.
- Identify and describe common problems associated with adhering to standard precautions.
- Describe the essential infectious disease principles associated with standard precautions.
- Identify the materials necessary for adhering to standard precautions and their proper use.

## BACKGROUND AND HISTORY

The concept of isolating patients with infectious diseases in separate facilities, which became known as infectious disease hospitals, was introduced in a published hospital handbook as early as 1877. Although infected and non-infected patients were separated, nosocomial transmission continued, largely because of the lack of minimal aseptic procedures, coupled with the fact that infected patients were not separated from each other by disease. By 1890 to 1900, nursing textbooks discussed recommendations for practicing aseptic procedures and designating separate floors or wards for patients with similar diseases, thereby beginning to solve the problems of nosocomial transmission (Lynch, 1949).

Shortly thereafter, the cubicle system of isolation changed U.S. hospital isolation procedures as patients were placed in multiple-bed wards. “Barrier nursing” practices, consisting of the use of aseptic solutions, hand washing between patient contacts, disinfecting patient-contaminated objects, and separate gown use, were developed to decrease pathogenic organism transmission to other patients and personnel. These practices were used in U.S. infectious disease hospitals. By the 1960s, the designation of specifically designed single- or multiple-patient isolation rooms in general hospitals and outpatient treatment for tuberculosis caused these specialized hospitals (which since the 1950s had housed tuberculosis patients almost exclusively) to close (Garner, 1996).

The lack of consistent infectious patient isolation policies and procedures noted by the Centers for Disease Control (CDC) investigators in the 1960s led to the CDC publication in 1970 of a detailed isolation precautions manual entitled *Isolation Techniques for Use in Hospitals*, designed to assist large metropolitan medical centers as well as small hospitals with limited budgets.

After revision in 1983, the manual was renamed the *CDC Guidelines for Isolation Precautions in Hospitals*. These new guidelines encouraged hospital infection control decision making with respect to developing isolation systems specific to the hospital environment and circumstances or choosing to select between category-specific or disease-specific isolation precautions. Decisions regarding individual patient precautions were to be based on factors such as patient age, mental status, or possible need to prevent sharing of contaminated articles and were to be determined by the individual who placed the patient on isolation status. Decisions regarding the need for decreasing exposure to infected material by wearing masks, gloves, or gown were to be left to the patient caregiver (Garner, 1984; Haley, 1985).

Issues of overisolation of some patients surfaced using the 1983 categories of isolation, which included strict isolation, contact isolation, respiratory isolation, tuberculosis (acid-fast bacilli) isolation, enteric precautions, drainage-secretion precautions, and blood and body fluid precautions. In using the disease-specific isolation precautions, the issue of mistakes in applying the precautions arose if the patient carried a disease not often seen or treated in the hospital (Garner, 1984; Haley, 1985), if the diagnosis was delayed, or if a misdiagnosis occurred. This happened even if additional

training of personnel was encouraged. These factors, coupled with increased knowledge of epidemiologic patterns of disease, led to subsequent updates of portions of the CDC reports:

- Recommendations for the management of patients with suspected hemorrhagic fever published in 1988 (CDC, 1988)
- Recommendations for respiratory isolation for human parvovirus B19 infection specific to patients who were immunodeficient and had chronic human parvovirus B19 infection or were in transient aplastic crisis (CDC, 1989)
- Recommendations for the management of tuberculosis, which stemmed from increasing concern for multidrug-resistant tuberculosis, especially in human immunodeficiency virus (HIV)-infected patients in care facilities (CDC, 1990)
- Recommendations for hantavirus infection risk reduction (CDC, 1994)
- Expansion of recommendations for the prevention and control of hepatitis C virus (HCV) infection and hepatitis C virus-related chronic disease (CDC, 1998)
- Occupational exposure recommendations and postexposure management for hepatitis B virus (HBV), HCV, and HIV (CDC, 2001)
- Recommendations for infection control of avian influenza and management of exposure to severe acute respiratory syndrome-associated coronavirus (SARS-CoV) in the healthcare setting (CDC, 2004; CDC, 2005)

## **BODY SUBSTANCE ISOLATION**

An entirely different approach to isolation, called *body substance isolation* (BSI), was developed in 1984 by Lynch and colleagues (1987, 1990) and required personnel, regardless of patient infection status, to apply clean gloves immediately before all patient contact with mucous membranes or nonintact skin, and to wear gloves if a likelihood existed of contact with any moist body substances. An apron or other barrier was also to be worn to keep the provider's own clothing and skin clean. It was recommended also that personnel be immunized if proof of immunity could not be documented when barriers, such as masks, could not prevent transmission by airborne routes (e.g., rubella, chickenpox). Additionally, when immunity was not possible, as with pulmonary tuberculosis, masks were to be worn during all patient contact. Goggles or glasses, hair covers, and shoe covers were also used as barriers. Careful handling of all used sharps, recapping of needles without using the hands, and the disposal of used items in rigid puncture-resistant containers were stressed. Trash and soiled linen from all patients were bagged and handled in the same manner. This approach sought to protect the patient from contracting nosocomial infections and the provider from bacterial or viral pathogens that might originate with the patient.

## UNIVERSAL PRECAUTIONS

In response to increasing concerns by health care workers and others about occupational exposure and the risk of transmission of human immunodeficiency virus, HBV, and other blood-borne pathogens during provision of health care and first aid, the CDC, in 1987, defined a set of precautions that considered blood and certain body fluids from all patients to be potential sources of infection for human immunodeficiency virus, HBV, and other blood-borne pathogens. These recommendations became known as universal precautions (UP) and have subsequently been integrated into the *Recommendations for Isolation Precautions in Hospitals, 1996*, which includes the current standard precautions (SP) (Table 2-1).

**Table 2.1 Recommendations for Isolation Precautions in Hospitals, Hospital Infection Control Practices Advisory Committee, 1996**

### STANDARD PRECAUTIONS

Use Standard Precautions, or the equivalent, for the care of all patients.

#### **HAND WASHING**

Wash hands after touching blood, body fluids, secretions, excretions, and contaminated items, whether or not gloves are worn. Wash hands immediately after gloves are removed, between patient contacts, and when otherwise indicated to avoid transfer of microorganisms to other patients or environments. It may be necessary to wash hands between tasks and procedures on the same patient to prevent cross-contamination of different body sites.

Use a plain (nonantimicrobial) soap for routine hand washing.

Use an antimicrobial agent or a waterless antiseptic agent for specific circumstances (e.g., control of outbreaks or hyperendemic infections), as defined by the infection control program. (See “Contact Precautions” for additional recommendations on using antimicrobial and antiseptic agents.)

#### **GLOVES**

Wear gloves (clean, nonsterile gloves are adequate) when touching blood, body fluids, secretions, excretions, and contaminated items. Put on clean gloves just before touching mucous membranes and nonintact skin. Change gloves between tasks and procedures on the same patient after contact with material that may contain a high concentration of microorganisms. Remove gloves promptly after use, before touching noncontaminated items and environmental surfaces, and before going to another patient, and wash hands immediately to avoid transfer of microorganisms to other patients or environments.

#### **MASK, EYE PROTECTION, FACE SHIELD**

Wear a mask and eye protection or a face shield to protect mucous membranes of the eyes, nose, and mouth during procedures and patient care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.

#### **GOWN**

Wear a gown (a clean, nonsterile gown is adequate) to protect skin and to prevent soiling of clothing during procedures and patient care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions. Select a gown that is appropriate for the activity and amount of fluid likely to be encountered. Remove a soiled gown as promptly as possible, and wash hands to avoid transfer of microorganisms to other patients or environments.

#### **PATIENT CARE EQUIPMENT**

Handle used patient care equipment soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures, contamination of clothing,

**Table 2.1 Recommendations for Isolation Precautions in Hospitals, Hospital Infection Control Practices Advisory Committee, 1996—cont'd**

and transfer of microorganisms to other patients and environments. Ensure that reusable equipment is not used for the care of another patient until it has been cleaned and reprocessed appropriately. Ensure that single-use items are discarded properly.

**ENVIRONMENTAL CONTROL**

Ensure that the hospital has adequate procedures for the routine care, cleaning, and disinfection of environmental surfaces, beds, bed rails, bedside equipment, and other frequently touched surfaces, and ensure that these procedures are being followed.

**LINEN**

Handle, transport, and process used linen soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures and contamination of clothing, and that avoids transfer of microorganisms to other patients and environments.

**OCCUPATIONAL HEALTH AND BLOOD-BORNE PATHOGENS**

Take care to prevent injuries when using needles, scalpels, and other sharp instruments or devices; when handling sharp instruments after procedures; when cleaning used instruments; and when disposing of used needles. Never recap used needles, or otherwise manipulate them using both hands, or use any other technique that involves directing the point of a needle toward any part of the body; rather, use either a one-handed “scoop” technique or a mechanical device designed for holding the needle sheath. Do not remove used needles from disposable syringes by hand, and do not bend, break, or otherwise manipulate used needles by hand. Place used disposable syringes and needles, scalpel blades, and other sharp items in appropriate puncture-resistant containers, which are located as close as is practical to the area in which the items were used, and place reusable syringes and needles in a puncture-resistant container for transport to the reprocessing area.

Use mouthpieces, resuscitation bags, or other ventilation devices as an alternative to mouth-to-mouth resuscitation methods in areas where the need for resuscitation is predictable.

**PATIENT PLACEMENT**

Place a patient who contaminates the environment or who does not (or cannot be expected to) assist in maintaining appropriate hygiene or environmental control in a private room. If a private room is not available, consult with infection control professionals regarding patient placement or other alternatives.

**AIRBORNE PRECAUTIONS**

In addition to standard precautions, use airborne precautions, or the equivalent, for patients known or suspected to be infected with microorganisms transmitted by airborne droplet nuclei (small-particle residue [ $5\ \mu\text{m}$  or smaller in size] of evaporated droplets containing microorganisms that remain suspended in the air and that can be dispersed widely by air currents within a room or over a long distance).

**PATIENT PLACEMENT**

Place the patient in a private room that has (1) monitored negative air pressure in relation to the surrounding area, (2) six to twelve air changes per hour, and (3) appropriate discharge of air outdoors or monitored high-efficiency filtration of room air before the air is circulated to other areas in the hospital. Keep the room door closed and the patient in the room. When a private room is not available, place the patient in a room with a patient who has active infection with the same microorganism, unless otherwise recommended, but with no other infection. When a private room is not available and cohorting is not desirable, consultation with infection control professionals is advised before patient placement.

**RESPIRATORY PROTECTION**

Wear respiratory protection when entering the room of a patient with known or suspected infectious pulmonary tuberculosis. Susceptible persons should not enter the room of patients known or suspected to have measles (rubeola) or varicella (chickenpox) if other, immune caregivers are available. If susceptible persons must enter the room of a patient known or

*continued*

**Table 2.1 Recommendations for Isolation Precautions in Hospitals, Hospital Infection Control Practices Advisory Committee, 1996—cont'd**

suspected to have measles (rubeola) or varicella, they should wear respiratory protection. Persons immune to measles (rubeola) or varicella need not wear respiratory protection.

**PATIENT TRANSPORT**

Limit the movement and transport of the patient from the room to essential purposes only. If transport or movement is necessary, minimize patient dispersal of droplet nuclei by placing a surgical mask on the patient, if possible.

**ADDITIONAL PRECAUTIONS FOR PREVENTING TRANSMISSION OF TUBERCULOSIS**

Consult CDC *Guidelines for Preventing the Transmission of Tuberculosis in Health Care Facilities* for additional prevention strategies.

**DROPLET PRECAUTIONS**

In addition to standard precautions, use droplet precautions, or the equivalent, for a patient known or suspected to be infected with microorganisms transmitted by droplets (large-particle droplets [larger than 5  $\mu\text{m}$  in size] that can be generated by the patient during coughing, sneezing, talking, or the performance of procedures).

**PATIENT PLACEMENT**

Place the patient in a private room. When a private room is not available, place the patient in a room with a patient(s) who has active infection with the same microorganism but with no other infection (cohorting). When a private room is not available and cohorting is not achievable, maintain spatial separation of at least 3 feet between the infected patient and other patients and visitors. Special air handling and ventilation are not necessary, and the door may remain open.

**MASK**

In addition to standard precautions, wear a mask when working within 3 feet of the patient. (Logistically, some hospitals may want to implement the wearing of a mask to enter the room.)

**PATIENT TRANSPORT**

Limit the movement and transport of the patient from the room to essential purposes only. If transport or movement is necessary, minimize patient dispersal of droplets by masking the patient, if possible.

**CONTACT PRECAUTIONS**

In addition to standard precautions, use contact precautions, or the equivalent, for specified patients known or suspected to be infected or colonized with epidemiologically important microorganisms that can be transmitted by direct contact with the patient (hand or skin-to-skin contact that occurs when performing patient care activities that require touching the patient's dry skin) or indirect contact (touching) with environmental surfaces or patient care items in the patient's environment.

**PATIENT PLACEMENT**

Place the patient in a private room. When a private room is not available, place the patient in a room with a patient(s) who has active infection with the same microorganism but with no other infection (cohorting). When a private room is not available and cohorting is not achievable, consider the epidemiology of the microorganism and the patient population when determining patient placement. Consultation with infection control professionals is advised before patient placement.

**GLOVES AND HAND WASHING**

In addition to wearing gloves as outlined under "Standard Precautions," wear gloves (clean, nonsterile gloves are adequate) when entering the room. During the course of providing care for a patient, change gloves after having contact with infective material that may contain high concentrations of microorganisms (fecal material and wound drainage). Remove gloves before leaving the patient's environment and wash hands immediately with an antimicrobial agent or

**Table 2.1 Recommendations for Isolation Precautions in Hospitals, Hospital Infection Control Practices Advisory Committee, 1996—cont'd**

a waterless antiseptic agent. After glove removal and hand washing, ensure that hands do not touch potentially contaminated environmental surfaces or items in the patient's room to avoid transfer of microorganisms to other patients or environments.

**GOWN**

In addition to wearing a gown as outlined under “Standard Precautions,” wear a gown (a clean, nonsterile gown is adequate) when entering the room if you anticipate that your clothing will have substantial contact with the patient, environmental surfaces, or items in the patient's room, or if the patient is incontinent or has diarrhea, an ileostomy, a colostomy, or wound drainage not contained by a dressing. Remove the gown before leaving the patient's environment. After gown removal, ensure that clothing does not contact potentially contaminated environmental surfaces to avoid transfer of microorganisms to other patients or environments.

**PATIENT TRANSPORT**

Limit the movement and transport of the patient from the room to essential purposes only. If the patient is transported out of the room, ensure that precautions are maintained to minimize the risk of transmission of microorganisms to other patients and contamination of environmental surfaces or equipment.

**PATIENT CARE EQUIPMENT**

When possible, dedicate the use of noncritical patient care equipment to a single patient (or cohort of patients infected or colonized with the pathogen requiring precautions) to avoid sharing between patients. If use of common equipment or items is unavoidable, adequately clean and disinfect them before use for another patient.

**ADDITIONAL PRECAUTIONS FOR PREVENTING THE SPREAD OF VANCOMYCIN RESISTANCE**

Consult the HICPAC report on preventing the spread of vancomycin resistance for additional prevention strategies.

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HICPAC, Hospital Infection Control Practices Advisory Committee.

From Centers for Disease Control and Prevention: Recommendations for Isolation Precautions in Hospitals, 1996. Available at: <http://www.cdc.gov/ncidod/hip/isolat/isopart1.htm> and [www.cdc.gov/ncidod/hip/isolat/isopart2.htm](http://www.cdc.gov/ncidod/hip/isolat/isopart2.htm)

## STANDARD PRECAUTIONS

Although universal precautions were designed to address the transmission of blood-borne infections through blood and certain body fluids, they do not address other routes of disease transmission, which were addressed at the time by body substance isolation guidelines. Additionally, confusion developed as to whether one should use universal precautions and body substance isolation guidelines, because both guidelines dealt with similar circumstances but offered conflicting recommendations. The guideline for isolation precautions in hospitals was revised in 1996 by the CDC and the Hospital Infection Control Practices Advisory Committee (HICPAC), which had been established in 1991 to serve in a guiding and advisory capacity to the Secretary of the Department of Health and Human Services (DHHS), the Assistant Secretary of Health of the DHHS, the Director of the CDC, and the Director of the National Center for Infectious Diseases with respect to hospital infection



control practices and U.S. hospital surveillance, prevention, and control strategies for nosocomial infections. The CDC guideline revision was designed to include the following objectives:

*(1) to be epidemiologically sound; (2) to recognize the importance of all body fluids, secretions, and excretions in the transmission of nosocomial pathogens; (3) to contain adequate precautions for infections transmitted by the airborne, droplet, and contact routes of transmission; (4) to be as simple and user friendly as possible; and (5) to use new terms to avoid confusion with existing infection control and isolation systems.*

(Garner, 1996)

The new guidelines were designed to supersede universal precautions and body substance isolation guidelines and in essence combined parts of both these previous guidelines. This synthesis of guidelines allows patients who were previously covered under disease-specific guidelines to now fall under standard precautions, a single set of recommendations. For patients who require additional precautions (defined as *transmission-based precautions*, for use when additional transmission risk exists [e.g., from airborne or droplet contamination]), additional guidelines have been developed to go above and beyond those of standard precautions (Garner, 1996) (see Table 2-1).

## **GLOVES, GOWNS, MASKS, AND OTHER PROTECTIVE BARRIERS AS PART OF UNIVERSAL PRECAUTIONS**

All health care workers should routinely use appropriate barrier precautions to prevent skin and mucous membrane exposure during contact with any patient's blood or body fluids that require universal precautions.

Gloves should be worn as follows:

- For touching blood and body fluids requiring universal precautions, mucous membranes, or nonintact skin of all patients
- For handling items or surfaces soiled with blood or body fluids to which universal precautions apply

Gloves should be changed after contact with each patient. Hands and other skin surfaces should be washed immediately or as soon as patient safety permits if contaminated with blood or body fluids requiring universal precautions. Hands should be washed immediately after gloves are removed. Gloves should reduce the incidence of blood contamination of hands during phlebotomy, but they cannot prevent penetrating injuries caused by needles or other sharp instruments. Institutions that judge routine gloving for all phlebotomies as not necessary should periodically re-evaluate their policy. Gloves should always be available to health care workers who wish to use them for phlebotomy. In addition, the following general guidelines apply:

- Use gloves for performing phlebotomy when the health care worker has cuts, scratches, or other breaks in the skin.

- Use gloves in situations in which the health care worker judges that hand contamination with blood may occur; for example, when performing phlebotomy in an uncooperative patient.
- Use gloves for performing finger or heel sticks, or both, in infants and children.
- Use gloves when persons are receiving training in phlebotomy.

Masks and protective eyewear or face shields should be worn by health care workers to prevent exposure of mucous membranes of the mouth, nose, and eyes during procedures that are likely to generate droplets of blood or body fluids requiring universal precautions. Gowns or aprons should be worn during procedures that are likely to generate splashes of blood or body fluids requiring universal precautions.

All health care workers should take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices during procedures; when cleaning used instruments; during disposal of used needles; and when handling sharp instruments after procedures. To prevent needlestick injuries, needles should not be recapped by hand, purposely bent or broken by hand, removed from disposable syringes, or otherwise manipulated by hand. After they are used, disposable syringes and needles, scalpel blades, and other sharp items should be placed in puncture-resistant containers for disposal. The puncture-resistant containers should be located as close as is practical to the area of use. All reusable needles should be placed in puncture-resistant containers for transport to the reprocessing area.

General infection control practices should further minimize the already minute risk for salivary transmission of human immunodeficiency virus. These infection control practices include the use of gloves for digital examination of mucous membranes and endotracheal suctioning, hand washing after exposure to saliva, and minimizing the need for emergency mouth-to-mouth resuscitation by making mouthpieces and other ventilation devices available for use in areas where the need for resuscitation is predictable.

## **THE APPLICATION OF STANDARD PRECAUTIONS IN CLINICAL PROCEDURES**

Standard precautions should be followed when performing any procedure in which exposure to, or transmission of, infectious agents is possible. These guidelines attempt to minimize exposure to infectious body fluids. Because it is not always possible to determine in advance whether a specific patient is infectious, these precautions should be followed routinely for all patients. The nature of performing clinical procedures often results in exposure to body fluids. Consequently, as practitioners involved in performing clinical procedures, it is imperative that we attempt to anticipate potential exposures and implement preventive guidelines to reduce exposure risks.

Additionally, it is important that the practitioner assess the health status of each patient to determine if additional precautions are warranted and, if so, apply the necessary transmission-based precautions as described in Table 2-1. Standard precautions are the current recommended behaviors designed to prevent the transmission of pathogens from patient to practitioner or practitioner to patient. It is imperative that all providers be knowledgeable about standard precautions and transmission-based precautions and how to practice them competently and consistently.

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