

State of Kuwait  
Ministry of Health  
Infection Control Directorate



## Title: Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings

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## 1. Introduction

Isolation guidelines respond to changes in healthcare delivery and addresses new concerns about transmission of infectious agents to patients, healthcare workers and visitors using appropriate control precautions.

## 2. Objectives

- 2.1. Provide infection control recommendations for all components of the healthcare delivery system, including hospitals, long-term care facilities, ambulatory care services.
- 2.2. Affirm standard precautions as the foundation for preventing transmission during patient care in all healthcare settings.
- 2.3. Ensure the importance of implementing transmission-based precautions based on the clinical presentation or syndrome and likely pathogens until the infectious etiology has been determined.
- 2.4. Provide epidemiologically sound and, whenever possible, evidence-based recommendations to reduce transmission of infections.

## 3. Definitions

- 3.1 **Airborne infection isolation room (AIIR):** Formerly, negative pressure isolation room is a single-occupancy patient-care room used to isolate persons with a suspected or confirmed airborne infectious disease.
- 3.2 **Cohorting:** The practice of grouping patients infected or colonized with the same infectious agent together to confine their care to one area and prevent contact with susceptible patients (patients cohorting). During outbreaks, dedicated healthcare workers (HCWs) may be assigned to infected patients to further limit opportunities for transmission (staff cohorting).
- 3.3 **Colonization:** Proliferation of microorganisms on or within body sites without detectable immune response, cellular damage, or clinical expression. The presence of a microorganism with a host may occur with varying duration, but may become a source of potential transmission. In many instances, colonization and carriage are synonymous.
- 3.4 **Healthcare associated infection (HAI):** An infection that develops in a patient who is cared

for in any setting where healthcare is delivered (e.g., acute care hospital, chronic care facility, ambulatory clinic, dialysis center, surgical centers) and is related to receiving healthcare in which the date of infection occurs on or after the third calendar day of admission. In ambulatory and home settings, HAI would apply to any infection that is associated with a medical or surgical intervention.

- 3.5 Hematopoietic stem cell transplantation (HSCT):** Any transplantation of blood or bone marrow-derived hematopoietic stem cells, regardless of donor type (e.g., allogeneic or autologous) or cell source (e.g., bone marrow, peripheral blood, or placental/umbilical cord blood); associated with periods of severe immunosuppression that vary with the source of the cells, the intensity of chemotherapy required, and the presence of graft versus host disease.
- 3.6 Multidrug-resistant organisms (MDROs):** In general, bacteria that are resistant to one or more classes of antimicrobial agents and usually are resistant to all but one or two commercially available antimicrobial agents (e.g., mecithilin resistant *staphylococcus aureus* (MRSA), vancomycin resistant *Enterococci* (VRE), extended spectrum beta-lactamase [ESBL]-producing or intrinsically resistant gram-negative bacilli).
- 3.7 Protective Environment (PE):** A specialized patient-care area, usually in a hospital, that has a positive air flow relative to the corridor to create an environment that can safely accommodate patients with a severely compromised immune system (e.g., those who have received allogeneic HSCT) and to decrease the risk of exposure to spores produced by environmental fungi.

## **4. Procedures**

### **4.1 Administrative Responsibilities**

Healthcare organization administrators should ensure the implementation of recommendations in this section.

**4.1.1** Incorporate preventing transmission of infectious agents into the objectives of the organization's patient and occupational safety programs.

**4.1.2** Make preventing transmission of infectious agents a priority for the healthcare organization by providing administrative support, including financial and human resources for maintaining infection control programs:

- a.** Assure that individuals with training in infection control are employed full time to all healthcare facilities so that the infection control program is managed by one or more qualified individuals.
- b.** Include prevention of HAIs as one determinant of bedside nurse staffing levels and composition, especially in high risk units.
- c.** Delegate authority to infection control personnel or their designees (e.g., patient care unit charge nurses) for making infection control decisions concerning patient placement and assignment of transmission-based precautions.
- d.** Involve infection control personnel in decisions on facility construction and design, determination of AIIR and PEcapacity needs and environmental assessments.
- e.** Involve infection control personnel in the selection and post-implementation evaluation of medical equipment and supplies and changes in practice that could affect the risk of HAIs.
- f.** Ensure availability of human and financial resources to provide clinical microbiology laboratory support.
- g.** In all areas where healthcare is delivered, provide supplies and equipment necessary for the consistent observance of standard precautions, including hand hygiene products and personal protective equipment (PPE) (e.g., gloves, gowns, face and eye protection).
- h.** Develop and implement policies and procedures to ensure that reusable patient care equipment is cleaned and reprocessed , appropriately before use on another patient.

**4.1.3** Develop and implement processes to ensure oversight of infection control activities appropriate to the healthcare setting and assign responsibility for oversight of infection control activities to an individual or group within the healthcare organization that is knowledgeable about infection control ( e.g., infection control committee members, infection control link nurse).

**4.1.4** Develop and implement systems for early detection and management (e.g., use of appropriate infection control measures, including isolation precautions, PPE) of potentially infectious persons at initial points of patient encounter in outpatient settings (e.g., triage areas, emergency departments, outpatient clinics, physician offices) and at the time of admission to hospitals and long-term care facilities.

**4.1.5** Develop and implement policies and procedures to limit patient visitation by persons with signs or symptoms of a communicable infection. Refrain visitors and HCWs with possible infection from high-risk patient care areas (e.g., oncology units, HSCT units, intensive care units, other severely immunocompromised patients) .

**4.1.6** Identify performance indicators of the effectiveness of organization-specific measures to prevent transmission of infectious agents (standard and transmission-based precautions), establish processes to monitor adherence to those performance measures and provide feedback to staff members.

## **4.2 Education and Training**

**4.2.1** Provide job- or task-specific education and training on preventing transmission of infectious agents associated with healthcare during orientation to the healthcare facility and periodically during ongoing education programs.

**4.2.2** Target all HCWs for education and training, including but not limited to medical, nursing, clinical technicians, laboratory staff, students, housekeeping, laundry, maintenance, catering and contract workers.

**4.2.3** Provide instructional materials for patients and visitors on recommended hand hygiene and respiratory hygiene/cough etiquette practices and the application of transmission-based precautions.

## **4.3 Surveillance**

**4.3.1** Monitor the incidence of epidemiologically-important organisms and targeted HAIs that have substantial impact on outcome and for which effective preventive interventions are available.

**4.3.2** Use information collected through surveillance of high-risk populations, procedures, devices and highly transmissible infectious agents to detect transmission of infectious agents in the healthcare facility.

**4.3.3** Provide these informations to the appropriate HCWs and organization administrators.

#### **4.4 Standard Precautions**

- Assume that every person is potentially infected or colonized with an organism that could be transmitted in the healthcare setting and apply the following infection control practices during the delivery of healthcare.
- Standard precautions is based on the principle that all blood, body fluids, secretions, excretions except sweat, nonintact skin, and mucous membranes may contain transmissible infectious agents (For summary of standard precautions refer to Appendix 1).

##### **4.4.1 Hand Hygiene**

- During the delivery of healthcare, avoid unnecessary touching of surfaces in close proximity to the patient to prevent both contamination of clean hands from environmental surfaces and transmission of pathogens from contaminated hands to surfaces.
- HCWs should apply “My 5 moments for hand hygiene”:
  1. Before touching a patient.
  2. Before any clean or aseptic procedure.
  3. After body fluid exposure risk.
  4. After touching a patient.
  5. After touching a patient’s surroundings.
- Wash hands with soap and water when hands are visibly dirty or visibly soiled with blood or other body fluids or after the toilet.
- If hands are not visibly soiled, the preferred method of hand decontamination is with an alcohol-based hand rub.
- If exposure to potential spore-forming pathogens is strongly suspected or proven, including outbreaks of clostridium difficile, hand washing with soap and water is the preferred mean.
- Do not wear artificial fingernails or extenders if duties include direct contact with patients.

##### **4.4.2 Personal protective equipment (PPE)**

- Observe the following principles:
  - Wear PPE when the nature of the anticipated patient interaction indicates that contact with blood or body fluids may occur.

- Prevent contamination of clothing and skin during the process of removing PPE.
- Before leaving the patient's room or cubicle, remove and discard PPE (Refer to the sequence of donning and doffing of PPE in Appendix 2 and 3).

**a) Gloves**

- Wear gloves when contact with blood or other potentially infectious materials, mucous membranes, nonintact skin, or potentially contaminated intact skin (e.g., of a patient incontinent of stool or urine).
- Wear gloves with fit and durability appropriate to the task.
  - Wear disposable medical examination gloves for providing direct patient care.
  - Wear disposable medical examination gloves or reusable utility gloves for cleaning the environment or medical equipment.
- Remove gloves after contact with a patient and/or the surrounding environment (including medical equipment) using proper technique to prevent hand contamination.
- Do not wear the same pair of gloves for the care of more than one patient.
- Do not wash gloves for the purpose of reuse since this practice has been associated with transmission of pathogens.
- Change gloves during patient care if the hands will move from a contaminated body site to a clean body site.

**b) Gowns**

- Wear a gown, that is appropriate to the task, to protect skin and prevent soiling or contamination of clothing during procedures and patient-care activities when contact with blood, body fluids, secretions, or excretions is anticipated.
- Wear a gown for direct patient contact if the patient has uncontained secretions or excretions.
- Remove gown and perform hand hygiene before leaving the patient's zone.
- Do not reuse gowns, even for repeated contacts with the same patient.
- Routine donning of gowns upon entrance into a high risk unit (e.g., intensive care unit (ICU), neonatal intensive care unit (NICU), HSCT unit) is not indicated.

### **c) Mouth, nose, eye protection**

- Use PPE to protect the 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.
- Select masks, goggles, face shields, and combinations of each according to the need anticipated by the task performed.

### **4.4.3 Respiratory hygiene/cough etiquette**

- It is a combination of measures designed to minimize the transmission of respiratory pathogens via droplet or airborne routes in healthcare settings.
- These measures are targeted to all patients with symptoms of respiratory infection and their accompanying family members or friends beginning at the point of initial encounter with a healthcare setting (e.g., reception/triage in emergency departments, ambulatory clinics, HCWs)
- The components of respiratory hygiene/cough etiquette are:
  1. Covering the mouth and nose during coughing and sneezing.
  2. Using tissues to contain respiratory secretions with prompt disposal into a no touch receptacle.
  3. Offering a surgical mask to persons who are coughing to decrease contamination of the surrounding environment.
  4. Turning the head away from others and maintaining spatial separation, ideally 1 meter, when coughing.
- Educate HCWs on the importance of source control measures to contain respiratory secretions to prevent droplet and fomite transmission of respiratory pathogens, especially during seasonal outbreaks of viral respiratory tract infections (e.g., influenza, respiratory syncytial virus (RSV), adenovirus, parainfluenza virus).
- Implement the following measures to contain respiratory secretions in patients and accompanying individuals who have signs and symptoms of a respiratory infection:
  1. Post sign at entrances and in strategic places (e.g., elevators, cafeterias) within ambulatory and inpatient settings with instructions to patients and other persons with

symptoms of a respiratory infection to cover their mouths/noses when coughing or sneezing, use and dispose of tissues, and perform hand hygiene after hands have been in contact with respiratory secretions.

2. Provide tissues and no-touch receptacles (e.g., foot-pedal-operated lid or open, plastic-lined waste basket) for disposal of tissues.
3. Provide resources and instructions for performing hand hygiene in or near waiting areas in ambulatory and inpatient settings; provide conveniently-located dispensers of alcohol-based hand rubs and, soaps where sinks are available, supplies for handwashing.
4. During periods of increased prevalence of respiratory infections in the community (e.g., as indicated by increased school absenteeism, increased number of patients seeking care for a respiratory infection), offer masks to coughing patients and other symptomatic persons upon entry into the facility or medical office and encourage them to maintain special separation, ideally a distance of at least 1 meter, from others in common waiting areas.

#### **4.4.4 Patient placement**

- Include the potential for transmission of infectious agents in patient-placement decisions.
- Place patients who pose a risk for transmission to others (e.g., uncontained secretions, excretions or wound drainage; infants with suspected viral respiratory or gastrointestinal infections) in a single-patient room when available.

#### **4.4.5 Patient-care equipment and instruments/devices**

- Establish policies and procedures for containing, transporting, and handling patient-care equipment and instruments/devices that may be contaminated with blood or body fluids.
- Wear PPE (e.g., gloves, gown), according to the level of anticipated contamination, when handling patient-care equipment and instruments/devices that is visibly soiled or may have been in contact with blood or body fluids.
- Remove organic material from critical and semi-critical instrument/devices, using recommended cleaning agents before high level disinfection and sterilization to enable effective

disinfection and sterilization processes (For details refer to "Decontamination of healthcare equipment prior to servicing, repair, investigation or inspection" policy).

#### **4.4.6 Care of the environment**

- Establish policies and procedures for routine and targeted cleaning of environmental surfaces as indicated by the level of patient contact and degree of soiling.
- Clean and disinfect surfaces that are likely to be contaminated with pathogens, including those that are in close proximity to the patient (e.g., bed rails, over bed tables) and frequently-touched surfaces in the patient care environment (e.g., door knobs, surfaces in and surrounding toilets in patients' rooms) on a more frequent schedule compared to that for other surfaces (e.g., horizontal surfaces in waiting rooms)
- Use ministry approved disinfectants that have microbiocidal (i.e., killing) activity against the pathogens most likely to contaminate the patient-care environment. Use in accordance with manufacturer's instructions.
- Review the efficacy of in-use disinfectants when evidence of continuing transmission of an infectious agent (e.g., rotavirus, *C. difficile*, norovirus) may indicate resistance to the in-use product and change to a more effective disinfectant as indicated.
- In facilities that provide healthcare to pediatric patients or have waiting areas with child play toys (e.g., obstetric/gynecology offices and clinics), follow the policies and procedures for cleaning and disinfecting toys at regular intervals using the following principles:
  - Select play toys that can be easily cleaned and disinfected.
  - Do not permit use of stuffed furry toys if they will be shared.
  - Clean and disinfect large stationary toys (e.g., climbing equipment) at least weekly and whenever visibly soiled.
  - If toys are likely to be mouthed, rinse with water after disinfection; alternatively wash in a dishwasher.
  - When a toy requires cleaning and disinfection, do so immediately or store in a designated labeled container separate from toys that are clean and ready for use.
- Include multi-use electronic equipment in policies and procedures for preventing contamination and for cleaning and disinfection, especially those items that are used by

patients, those used during delivery of patient care, and mobile devices that are moved in and out of patient rooms frequently (e.g., daily). No recommendation for use of removable protective covers or washable keyboards.

- The combination of hot water and detergents used in dishwashers is sufficient to decontaminate dishware and eating utensils. Therefore, no special precautions are needed for dishware (e.g., dishes, glasses, cups) or eating utensils; reusable dishware and utensils may be used for patients requiring transmission-based precautions.
- Waste disposal:
  - Ensure safe waste management.
  - Treat waste contaminated with blood, body fluids, secretions and excretions as clinical waste, in accordance with local regulations.
  - Human tissues and laboratory waste that is directly associated with specimen processing should also be treated as clinical waste

#### **4.4.7 Textiles and laundry**

- Handle used textiles and fabrics with minimum agitation to avoid contamination of air, surfaces and persons.
- If laundry chutes are used, ensure that they are properly designed, maintained, and used in a manner to minimize dispersion of aerosols from contaminated laundry.

#### **4.4.8 Safe injection practices**

The following recommendations apply to the use of needles, cannulas that replace needles, and, where applicable intravenous delivery systems:

- Use aseptic technique to avoid contamination of sterile injection equipment.
- Do not administer medications from a syringe to multiple patients, even if the needle or cannula on the syringe is changed.
- Needles, cannulae and syringes are sterile, single-use items; they should not be reused for another patient nor to access a medication or solution that might be used for a subsequent patient.

- Use fluid infusion and administration sets (i.e., intravenous bags, tubing and connectors) for one patient only and dispose appropriately after use.
- Consider a syringe or needle/cannula contaminated once it has been used to enter or connect to a patient's intravenous infusion bag or administration set.
- Do not administer medications from single-dose vials or ampules to multiple patients or combine leftover contents for later use.
- If multidose vials must be used, both the needle or cannula and syringe used to access the multidose vial must be sterile.
- Do not keep multidose vials in the immediate patient treatment area and store in accordance with the manufacturer's recommendations; discard if sterility is compromised or questionable.
- Do not use bags or bottles of intravenous solution as a common source of supply for multiple patients.

#### **4.4.9 Safe work practices to prevent HCW exposure to bloodborne pathogens**

##### **1. Prevention of needlesticks and other sharps-related injuries**

- These include measures to handle needles and other sharp devices in a manner that will prevent injury to the user and to others who may encounter the device during or after a procedure during routine patient care.
- The implementation and evaluation of a comprehensive sharps injury prevention program.

##### **2. Prevention of mucous membrane contact**

- Safe work practices, in addition to wearing PPE, are used to protect mucous membranes and non-intact skin from contact with potentially infectious material.
- These include keeping gloved and ungloved hands that are contaminated from touching the mouth, nose, eyes, or face; positioning patients to direct sprays and splatter away from the face of the caregiver; careful placement of PPE before patient contact to avoid the need to make PPE adjustments and possible face or mucous membrane contamination during use.
- In areas where the need for resuscitation is unpredictable, mouthpieces, pocket resuscitation masks with one-way valves, and other ventilation devices provide an alternative to mouth-to-mouth resuscitation, preventing exposure of the caregiver's nose and mouth to oral and respiratory fluids during the procedure.

#### **4.4.10 Precautions during aerosol-generating procedures**

- The performance of some procedures such as bronchoscopy, endotracheal intubation, and open suctioning of the respiratory tract can generate small particle aerosols.
- Protection of the eyes, nose and mouth, in addition to gown and gloves, is recommended during performance of these procedures in accordance with standard precautions.
- For patients who are not suspected of being infected with an agent for which respiratory protection is otherwise recommended, wear one of the following: a face shield that fully covers the front and sides of the face, a mask with attached shield, or a mask and goggles (in addition to gloves and gown).
- Use of a particulate respirator is recommended during aerosol-generating procedures when respiratory protection is recommended (e.g., *M. tuberculosis*, Severe acute respiratory syndrome (SARS-CoV), avian or pandemic influenza).

#### **4.4.11 Infection control practices for special lumbar puncture (LP) procedures**

Wear a surgical 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)

### **4.5 Transmission-Based Precautions**

#### **4.5.1 General principles**

- In addition to standard precautions, use transmission-based precautions for patients with documented or suspected infection or colonization with highly transmissible or epidemiologically-important pathogens for which additional precautions are needed to prevent transmission.
- Extend duration of transmission-based precautions, (e.g., droplet, contact) for immunosuppressed patients with viral infections due to prolonged shedding of viral agents that may be transmitted to others.

#### 4.5.2 Contact Precautions

- **Direct contact transmission:** direct transmission occurs when microorganisms are transferred from one infected person to another person without a contaminated intermediate object or person.
- Blood or other blood-containing body fluids from a patient directly enters a caregiver's body through contact with a mucous membrane or breaks (i.e., cuts, abrasions) in the skin.
- **Indirect contact transmission:** involves the transfer of an infectious agent through a contaminated intermediate object or person. Contaminated hands of HCWs are important contributors to indirect contact transmission. Other opportunities include:
  - Contaminated Patient-care devices (e.g., thermometers, glucose monitoring devices).
  - Shared toys may become a vehicle for transmitting respiratory pathogens (e.g., RSV, *Pseudomonas aeruginosa*) among pediatric patients.
- **Contact Precautions** are intended to prevent transmission of infectious agents, including epidemiologically important microorganisms, which are spread by direct or indirect contact with the patient or the patient's environment.
- Contact precautions also apply where the presence of excessive wound drainage, fecal incontinence, or other discharges from the body suggest an increased potential for extensive environmental contamination and risk of transmission.
- Use contact precautions as recommended in Appendix (4) for patients with known or suspected infections or evidence of syndromes that represent an increased risk for contact transmission.
  - a) Patient placement**
  - Post sign of contact precautions on the entrance of patient room or bed (see Appendix 5).
  - In acute care hospitals, place patients who require contact precautions in a single-patient room when available. When single-patient rooms are in short supply, apply the following principles for making decisions on patient placement:
    - Prioritize patients with conditions that may facilitate transmission (e.g., uncontained drainage, stool incontinence) for single-patient room placement.
    - Place together in the same room (cohort) patients who are infected or colonized with the same pathogen and are suitable roommates.

- If it becomes necessary to place a patient who requires contact precautions in a room with a patient who is not infected or colonized with the same infectious agent.
  - Avoid placing patients on contact precautions in the same room with patients who have conditions that may increase the risk of adverse outcome from infection or that may facilitate transmission (e.g., those who are immunocompromised, have open wounds, or have anticipated prolonged lengths of stay).
  - Ensure that patients are physically separated (i.e., 1 meter apart) from each other. Draw the privacy curtain between beds to minimize opportunities for direct contact.
  - Change protective attire and perform hand hygiene between contact with patients in the same room, regardless of whether one or both patients are on contact precautions.
- In long-term care and other residential settings, make decisions regarding patient placement on a case-by-case basis, balancing infection risks to other patients in the room, the presence of risk factors that increase the likelihood of transmission, and the potential adverse psychological impact on the infected or colonized patient.
  - In ambulatory settings, place patients who require contact precautions in an examination room or cubicle as soon as possible.

**b) Use of PPE**

**1. Gloves**

- Wear gloves whenever touching the patient's intact skin or surfaces and articles in close proximity to the patient (e.g., medical equipment, bed rails) .
- Don gloves upon entry into the room or cubicle.

**2. Gowns**

- Wear a gown whenever anticipating that clothing will have direct contact with the patient or potentially contaminated environmental surfaces or equipment in close proximity to the patient.
- Don gown upon entry into the room or cubicle.
- Remove gown and observe hand hygiene before leaving the patient-care zone.
- After gown removal, ensure that clothing and skin do not contact potentially contaminated environmental surfaces that could result in possible transfer of microorganism to other patients or environmental surfaces.

**c) Patient transport**

- Limit transport and movement of patients outside of the room to medically-necessary purposes.
- When transport or movement in any healthcare setting is necessary, ensure that infected or colonized areas of the patient's body are contained and covered.
- Remove and dispose of contaminated PPE and perform hand hygiene prior to transporting patients on contact precautions.
- Don clean PPE to handle the patient at the transport destination.

**d) Patient-care equipment and instruments/devices**

- Handle patient-care equipment and instruments/devices according to standard precautions.
- In acute care hospitals and long-term care and other residential settings, use disposable noncritical patient-care equipment (e.g., blood pressure cuffs) or implement patient-dedicated use of such equipment. If common use of equipment for multiple patients is unavoidable, clean and disinfect such equipment before use on another patient.
- In ambulatory settings, place contaminated reusable noncritical patient-care equipment in a plastic bag for transport to a soiled utility area for reprocessing.

**e) Environmental measures**

Ensure that rooms of patients on contact precautions are prioritized for frequent cleaning and disinfection with a focus on frequently-touched surfaces (e.g., bed rails, overbed table, bedside commode, lavatory surfaces in patient bathrooms, doorknobs) and equipment in the immediate vicinity of the patient.

**f) Duration**

Discontinue contact precautions after signs and symptoms of the infection have resolved or according to pathogen-specific recommendations in Appendix 4.

**g) Visitors**

- Visitors of patients with MRSA, VRE or with gram negative microorganisms, such as carbapenem resistant Enterobacteriaceae (CRE) and klebsiella pneumonia

carbapenemase (KPC), should follow contact precautions to help prevent transference of pathogens to guests.

- Intestinal pathogens, such as clostridium difficile and norovirus, are potentially harmful to visitors and have low prevalence in the community so contact precautions should be in place.

#### **4.5.3. Droplet Precautions**

- **Droplet transmission** when respiratory droplets carrying infectious pathogens travel directly from the respiratory tract of the infectious individual to susceptible mucosal surfaces of the recipient, generally over short distances, necessitating facial protection.
- Respiratory droplets are generated when an infected person coughs, sneezes, or talks or during procedures such as suctioning, endotracheal intubation, cough induction by chest physiotherapy and cardiopulmonary resuscitation.
- **Droplet Precautions** intended to prevent transmission of pathogens spread through close respiratory or mucous membrane contact with respiratory secretions.
- Because these pathogens do not remain infectious over long distances in a healthcare facility, special air handling and ventilation are not required to prevent droplet transmission.
- Use droplet precautions as recommended in Appendix (4) for patients known or suspected to be infected with pathogens transmitted by respiratory droplets (i.e., large-particle droplets  $>5\mu$  in size) that are generated by a patient who is coughing, sneezing or talking.

##### **a) Patient placement**

- Post sign of droplet precautions on the entrance of patient room or bed (see Appendix 6)
- In acute care hospitals, place patients who require droplet precautions in a single-patient room when available .When single-patient rooms are in short supply, apply the following principles for making decisions on patient placement:
  - Prioritize patients who have excessive cough and sputum production for single-patient room placement.

- Place together in the same room (cohort) patients who are infected with the same pathogen and are suitable roommates.
  - If it becomes necessary to place patients who require droplet precautions in a room with a patient who does not have the same infection , avoid placing patients on droplet precautions in the same room with patients who have conditions that may increase the risk of adverse outcome from infection or that may facilitate transmission (e.g., those who are immunocompromised, have or have anticipated prolonged lengths of stay).
  - Ensure that patients are physically separated (i.e., 1 meter apart) from each other. Draw the privacy curtain between beds to minimize opportunities for close contact.
  - Change protective attire and perform hand hygiene between contact with patients in the same room, regardless of whether one patient or both patients are on droplet precautions.
- In long-term care and other residential settings, make decisions regarding patient placement on a case-by-case basis after considering infection risks to other patients in the room and available alternatives.
  - In ambulatory settings, place patients who require droplet precautions in an examination room or cubicle as soon as possible. Instruct patients to follow recommendations for respiratory hygiene/cough Etiquette.

**b) Use of PPE**

- Don a mask upon entry into the patient room or cubicle.
- No recommendation for routinely wearing eye protection (e.g., goggle or face shield), in addition to a mask, for close contact with patients who require droplet precautions.

**c) Patient transport**

- In acute care hospitals and long-term care and other residential settings, limit transport and movement of patients outside of the room to medically-necessary purposes.
- If transport or movement in any healthcare setting is necessary, instruct patient to wear a mask and follow respiratory hygiene/cough etiquette.
- No mask is required for persons transporting patients on droplet precautions.

**d) Duration**

Discontinue droplet precautions after signs and symptoms have resolved or according to pathogen-specific recommendations in Appendix 4.

**e) Visitors**

Visitors to rooms with droplet precautions (i.e. pertussis) should use surgical masks.

**4.5.4 Airborne Precautions**

- **Airborne transmission:** occurs by dissemination of either airborne droplet nuclei or small particles in the respirable size range containing infectious agents that remain infective over time and distance (e.g., spores of *Aspergillus* spp, and *Mycobacterium tuberculosis*).
- Microorganisms carried in this manner may be dispersed over long distances by air currents and may be inhaled by susceptible individuals who have not had face-to-face contact with (or been in the same room with) the infectious individual.
- **Airborne Precautions** prevent transmission of infectious agents which remain infectious over long distances when suspended in the air.
- Use airborne precautions as recommended in Appendix (4) for patients known or suspected to be infected with infectious agents transmitted person-to-person by the airborne route (e.g., *M tuberculosis*, measles, chickenpox, disseminated herpes zoster).

**a) Patient placement**

- Post sign of airborne precautions on the entrance of patient room or bed (see Appendix 7).
- In acute care hospitals and long-term care settings, place patients who require airborne precautions in an AIIR that has been constructed as in Appendix 8.
- Keep the AIIR door closed when not required for entry and exit.
- When an AIIR is not available, transfer the patient to a facility that has an available AIIR.
- In the event of an outbreak or exposure involving large numbers of patients who require airborne precautions:
  - Consult infection control professionals before patient placement to determine the safety of alternative room that do not meet engineering requirements for an AIIR.
  - Place together (cohort) patients who are presumed to have the same infection (based on clinical presentation and diagnosis when known) in areas of the facility that are

away from other patients, especially patients who are at increased risk for infection (e.g., immunocompromised patients).

- Use temporary portable solutions (e.g., exhaust fan) to create a negative pressure environment in the converted area of the facility. Discharge air directly to the outside, away from people and air intakes, or direct all the air through HEPA filters before it is introduced to other air spaces.
- In ambulatory settings:
  - Develop systems (e.g., triage, signage) to identify patients with known or suspected infections that require airborne precautions upon entry into ambulatory settings.
  - Place the patient in an AIIR as soon as possible. If an AIIR is not available, place a surgical mask on the patient and place him/her in an examination room. Once the patient leaves, the room should remain vacant for the appropriate time, generally one hour, to allow for a full exchange of air.
  - Instruct patients with a known or suspected airborne infection to wear a surgical mask and observe respiratory hygiene/cough etiquette. Once in an AIIR, the mask may be removed; the mask should remain on if the patient is not in an AIIR.

**b) HCWs restrictions**

Restrict susceptible HCWs from entering the rooms of patients known or suspected to have measles (rubeola), varicella (chickenpox), disseminated zoster, or smallpox if other immune HCWs are available

**c) Use of PPE**

- Wear N95 equivalent or higher level respirator for respiratory protection when entering the room or home of a patient when the following diseases are suspected or confirmed: infectious pulmonary or laryngeal tuberculosis or when infectious tuberculosis skin lesions are present and procedures that would aerosolize viable organisms (e.g., irrigation, incision and drainage, whirlpool treatments) are performed.
- HCWs should test the respirator for proper face fitting (see Appendix 9).
- No recommendation is made regarding the use of PPE by HCWs who are presumed to be immune to measles (rubeola) or varicella-zoster based on history of disease, vaccine, or serologic testing when caring for an individual with known or suspected measles, chickenpox or disseminated zoster.

- No recommendation is made regarding the type of PPE (i.e., surgical mask or respiratory protection with a N95 or higher respirator) to be worn by susceptible HCWs who must have contact with patients with known or suspected measles, chickenpox or disseminated herpes zoster.

**d) Patient transport**

- Limit transport and movement of patients outside of the room to medically-necessary purposes.
- If transport or movement outside an AIIR is necessary, instruct patients to wear a surgical mask, if possible, and observe respiratory hygiene/cough etiquette.
- For patients with skin lesions associated with varicella or smallpox or draining skin lesions caused by *M. tuberculosis*, cover the affected areas to prevent aerosolization or contact with the infectious agent in skin lesions.
- HCWs 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 skin lesions are covered.

**e) Exposure management**

- Contact the preventive medicine department as soon as possible following unprotected contact (i.e., exposed) to a patient with measles, varicella or smallpox.
- The suggested exposure management is as follow:
  - Administer measles vaccine to exposed susceptible persons within 72 hours after the exposure or administer immune globulin within six days of the exposure event for high-risk persons in whom vaccine is contraindicated.
  - Administer varicella vaccine to exposed susceptible persons within 120 hours after the exposure or administer varicella immune globulin (VZIG or alternative product), when available, within 96 hours for high-risk persons in whom vaccine is contraindicated (e.g., immunocompromised patients, pregnant women, newborns whose mother's varicella onset was <5 days before or within 48 hours after delivery).
  - Administer smallpox vaccine to exposed susceptible persons within 4 days after exposure.

**f) Duration**

Discontinue airborne precautions according to pathogen-specific recommendations in Appendix 4.

**g) Visitors**

Visitors to rooms with airborne precautions (i.e. tuberculosis) should use surgical masks. N95 respirators are an alternative best used with training and fit testing.

**4.6 Protective Environment (PE)**

- Place allogeneic HSCT patients in a PE except for required diagnostic or therapeutic procedures that cannot be performed in the room, e.g. radiology, operating room.
- No recommendation for placing patients with other medical conditions that are associated with increased risk for environmental fungal infections (e.g., aspergillosis) in a PE.
- For patients who require a PE, implement the engineering controls as shown in Appendix 10.
- Use of standard and transmission-based precautions in a PE.
  - Use standard precautions as recommended for all patient interactions.
  - Barrier precautions, (e.g., masks, gowns, gloves) are not required for HCWs in the absence of suspected or confirmed infection in the patient or if they are not indicated according to standard precautions.
  - Implement transmission-based precautions if recommended for diseases listed in Appendix 4. Transmission-based precautions for viral infections may need to be prolonged because of the patient's immunocompromised state and prolonged shedding of viruses.
- Minimize the length of time that patients who require a PE are outside their rooms for diagnostic procedures and other activities.
- During periods of construction, to prevent inhalation of respirable particles that could contain infectious spores, provide respiratory protection (e.g., N95 respirator) to patients who are medically fit to tolerate a respirator when they are required to leave the PE.
  - No recommendation for fit-testing of patients who are using respirators.
  - No recommendation for use of particulate respirators when leaving the PE in the absence of construction.

- For patients who require a PE, implement the following environmental controls:
  - Lower dust levels by using smooth, nonporous surfaces and finishes that can be scrubbed, rather than textured material (e.g., upholstery).
  - Daily wet-dusting of horizontal surfaces using cloths moistened with ministry registered hospital disinfectant/detergent and routinely clean crevices and sprinkler heads.
  - Avoid carpeting in hallways and patient rooms' area.
  - Use vacuum cleaner equipped with HEPA filters when vacuum cleaning is necessary
  - Prohibit dried and fresh flowers and potted plants in PE rooms or areas.
- Use an anteroom to further support the appropriate air-balance of the PE.
  - The anteroom shall provide space for persons to don PPE -if required- before entering the patient room.
  - It may be used for hand hygiene and for storage of PPE and clean equipment
- Implement airborne precautions for patients who require a PE room and who also have an airborne infectious disease (e.g., pulmonary or laryngeal tuberculosis, acute varicella-zoster) (for engineering control, see Appendix 10)

## 5. Appendices

### Appendix 1

#### **Recommendations for Application of Standard Precautions for the Care of All Patients in All Healthcare Settings**

<b>Component</b>	<b>Recommendations</b>
<b>Hand hygiene</b>	As per 5 moments of hand hygiene.
<b>PPE</b>	
Gloves	For touching blood, body fluids, secretions, excretions, contaminated items; for touching mucous membranes and nonintact skin.
Gown	During procedures and patient-care activities when contact of clothing/exposed skin with blood/body fluids, secretions, and excretions is anticipated.
Mask, eye protection (goggles), face shield*	During procedures and patient-care activities likely to generate splashes or sprays of blood, body fluids, secretions, especially suctioning, endotracheal intubation
<b>Soiled patient-care equipment</b>	Handle in a manner that prevents transfer of microorganisms to others and to the environment; wear gloves if visibly contaminated; perform hand hygiene.
<b>Environmental control</b>	Develop procedures for routine care, cleaning, and disinfection of environmental surfaces, especially frequently touched surfaces in patient-care areas.
<b>Textiles and laundry</b>	Handle in a manner that prevents transfer of microorganisms to others and to the environment
<b>Needles and other sharps</b>	Do not recap, bend, break, or hand-manipulate used needles; if recapping is required, use a one-handed scoop technique only; use safety features when available; place used sharps in puncture-resistant container
<b>Patient resuscitation</b>	Use mouthpiece, resuscitation bag, other ventilation devices to prevent contact with mouth and oral secretions
<b>Patient placement</b>	Prioritize for single-patient room if patient is at increased risk of transmission, is likely to contaminate the environment, does not maintain appropriate hygiene, or is at increased risk of acquiring infection or developing adverse outcome following infection.
<b>Respiratory hygiene/cough etiquette</b> (source containment of infectious respiratory secretions in symptomatic patients, beginning at initial point of encounter e.g., triage and reception areas in emergency departments and physician offices)	Instruct symptomatic persons to cover mouth/nose when sneezing/coughing; use tissues and dispose in no-touch receptacle; observe hand hygiene after soiling of hands with respiratory secretions; wear surgical mask if tolerated or maintain spatial separation, 1 meter if possible.

\* During aerosol-generating procedures on patients with suspected or proven infections transmitted by respiratory aerosols (e.g., SARS), wear a fit-tested N95 or higher respirator in addition to gloves, gown, and face/eye protection

## Appendix 2: Donning of PPE

### Putting on Personal Protective Equipment

**1. Wash Hands**

- Perform proper Hand Hygiene.



**2. GOWN**

- Fully cover torso from neck to knees, arms to end of wrist, and wrap around the back.
- Fasten in back at neck and waist.



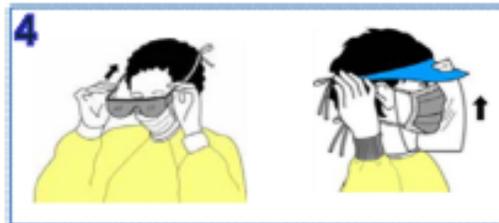
**3. MASK OR RESPIRATOR**

- Secure ties or elastic band at middle of head and neck.
- Fit flexible band to nasal bridge.
- Fit snug to face and below chin.
- Fit-check respirator.



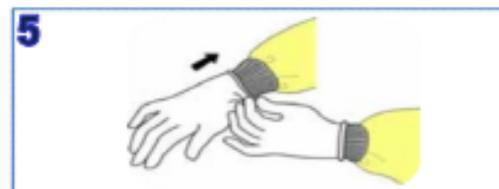
**4. GOGGLES/FACE SHIELD**

- Put on the face and eyes and adjust to fit.



**5. GLOVES**

- Use non-sterile for isolation.
- Select according to hand size.
- Extend to cover wrist of isolation gown.



#### SAFE WORK PRACTICES

- Keep hands away from face.
- Limit surfaces touched.
- Work from clean to dirty.
- Change when torn or heavily contaminated.

## Appendix 3: Doffing of PPE

### Tacking off Personal Protective Equipment

1. PPE should be removed in an order that minimizes the potential for cross-contamination.
2. Except for respirator, remove PPE at doorway or in anteroom.
3. Remove respirator after leaving patient room and closing door.

#### 1. **GLOVES**

- Outside of gloves are contaminated.
- Grasp outside of glove with opposite gloved hand; peel off.
- Hold removed glove in gloved hand.
- Slide fingers of ungloved hand under remaining glove at wrist.
- Peel glove off over first glove
- Discard gloves in waste container.



#### 2. **GOGGLES/FACE SHIELD**

- Outside of goggles or face shield are contaminated!
- To remove, handle by "clean" head band or ear pieces
- Place in designated receptacle for reprocessing or in waste container.



#### 3. **GOWN**

- Gown front and sleeves are contaminated!
- Unfasten neck, then waist ties.
- Remove gown using a peeling motion; pull gown from each shoulder toward the same hand.
- Gown will turn inside out.
- Hold removed gown away from body, roll into a bundle and discard into waste or linen receptacle.



#### 4. **MASK OR RESPIRATOR**

- Front of mask/respirator is contaminated – DO NOT TOUCH!
- Grasp ONLY bottom then top ties/elastics and remove.
- Discard in waste container.



#### 5. **HAND HYGIENE**

- Perform hand hygiene immediately after removing all PPE!



## Appendix 4

### Type and Duration of Precautions Recommended for Selected Infections and Conditions

Infection/Condition	Precautions		
	Type*	Duration**	Comments
Abscess -Draining, major	C	DI	-No dressing or containment of drainage; until drainage stops or can be contained by dressing
-Draining, minor or limited	S		-Dressing covers and contains drainage
Acquired human immunodeficiency syndrome (HIV)	S		Post-exposure chemoprophylaxis for some blood exposures
Actinomycosis	S		Not transmitted from person to person
Adenovirus infection (see agent-specific guidance under gastroenteritis, conjunctivitis, pneumonia)			
Amebiasis	S		Person to person transmission is rare. Transmission in settings for the mentally challenged and in a family group has been reported. Use care when handling diapered infants and mentally challenged persons
<u>Anthrax</u> -Cutaneous	S		-Infected patients do not generally pose a transmission risk.
	S		-Transmission through non-intact skin contact with draining lesions possible, therefore use <b>contact precautions</b> if large amount of uncontained drainage. Hand washing with soap and water preferable to use of waterless alcohol based antiseptics since alcohol does not have sporicidal activity
-Pulmonary	S		-Not transmitted from person to person
-Environmental: aerosolizable spore-containing powder or other substance		DE	-Until decontamination of environment complete. Wear respirator (N95 mask or PAPRs), protective clothing; decontaminate persons with powder on them. <b>Hand hygiene:</b> Hand washing for 30-60 seconds with soap and water or 2% chlorhexidene gluconate after spore contact (alcohol hand rubs inactive against spores). <b>Post-exposure prophylaxis following environmental exposure:</b> 60 days of antimicrobials (either doxycycline, ciprofloxacin, or levofloxacin) and post-exposure vaccine.

<b>Infection/Condition</b>			<b>Precautions</b>
	<b>Type*</b>	<b>Duration**</b>	<b>Comments</b>
Antibiotic-associated colitis (see <i>Clostridium difficile</i> )			
Arthropod-borne viral encephalitides (eastern, western, Venezuelan equine encephalomyelitis; St Louis, California encephalitis; West Nile Virus) and viral fevers (dengue, yellow fever, Colorado tick fever)	S		Not transmitted from person to person except rarely by transfusion, and for West Nile virus by organ transplant, breast milk or transplacentally. Install screens in windows and doors in endemic areas. Use DEET-containing mosquito repellants and clothing to cover extremities.
Ascariasis	S		Not transmitted from person to person
Aspergillosis	S		Contact precautions and airborne Precautions if massive soft tissue infection with copious drainage and repeated irrigations required
Avian influenza (see influenza, avian below)			
Babesiosis	S		Not transmitted from person to person except rarely by transfusion,
Blastomycosis, North American, cutaneous or pulmonary	S		Not transmitted from person to person
Botulism	S		Not transmitted from person to person
Bronchiolitis (see respiratory infections in infants and young children)	C	DI	Use mask according to standard precautions.
Brucellosis (undulant, Malta, Mediterranean fever)	S		Not transmitted from person to person except rarely banked spermatozoa and sexual contact. Provide antimicrobial prophylaxis following laboratory exposure.
<i>Campylobacter</i> gastroenteritis (see gastroenteritis)			
Candidiasis, all forms including mucocutaneous	S		
Cat-scratch fever (benign inoculation lymphoreticulosis)	S		Not transmitted from person to person
Cellulitis	S		
Chancroid (soft chancre) ( <i>H. ducreyi</i> )	S		Transmitted sexually from person to person
Chickenpox (see varicella)			

Infection/Condition	Type*	Duration**	Precautions Comments
<u>Chlamydia trachomatis</u> -Conjunctivitis -Genital (lymphogranulomavenereum) -Pneumonia (infants < 3 mos. of age)	S S S		
<u>Chlamydia pneumonia</u> Cholera (see gastroenteritis)	S		Outbreaks in institutionalized populations reported, rarely
<u>Closed-cavity infection</u> -Open drain in place; limited or minor drainage	S		Contact precautions if there is copious uncontained drainage
-No drain or closed drainage system in place	S		
<u>Clostridium</u> - <i>C. botulinum</i> - <i>C. difficile</i> (see Gastroenteritis, <i>C. difficile</i> )  - <i>C. perfringens</i> Food poisoning  Gas gangrene	S C  S  S	DI	Not transmitted from person to person  Not transmitted from person to person  Transmission from person to person rare; one outbreak in a surgical setting reported. Use contact precautions if wound drainage is extensive.
<u>Coccidioidomycosis (valley fever)</u> -Draining lesions  -Pneumonia	S  S		Not transmitted from person to person except under extraordinary circumstances because the infectious arthroconidial form of <i>Coccidioides immitis</i> not produced in humans  Not transmitted from person to person except under extraordinary circumstances, (e.g., inhalation of aerosolized tissue phase endospores during necropsy, transplantation of infected lung) because the infectious arthroconidial form of <i>Coccidioides immitis</i> not produced in humans

Infection/Condition	Type*	Duration**	Precautions Comments
Colorado tick fever	S		Not transmitted from person to person
Congenital rubella	C	Until 1 yr of age	Standard precautions if nasopharyngeal and urine cultures repeatedly negative after 3 months of age
<u>Conjunctivitis</u> -Acute bacterial - <i>Chlamydia</i> -Gonococcal - Acute viral (acute hemorrhagic)	S S S C	DI	Adenovirus most common; enterovirus, Coxsackie virus A24) also associated with community outbreaks. Highly contagious; outbreaks in eye clinics, pediatric and neonatal settings, institutional settings reported. Eye clinics should follow Standard precautions when handling patients with conjunctivitis. Routine use of infection control measures in the handling of instruments and equipment will prevent the occurrence of outbreaks in this and other settings.
Corona virus associated with SARS (SARS-CoV) (see severe acute respiratory syndrome)			
Coxsackie virus disease (see enteroviral infection)			
Creutzfeldt-Jakob disease CJD, vCJD	S		Use disposable instruments or special sterilization/disinfection for surfaces, objects contaminated with neural tissue if CJD or vCJD suspected and has not been ruled out; No special burial procedures
Croup (see respiratory infections in infants and young children)			
Crimean-Congo Fever (see Viral Hemorrhagic Fever)	S		
Cryptococcosis	S		Not transmitted from person to person, except rarely via tissue and corneal transplant
Cryptosporidiosis (see gastroenteritis)			
Cysticercosis	S		Not transmitted from person to person

Infection/Condition	Type*	Duration**	Precautions Comments
Cytomegalovirus infection, including in neonates and immunosuppressed patients	S		No additional precautions for pregnant HCWs
Decubitus ulcer (see Pressure ulcer)			
Dengue fever	S		Not transmitted from person to person
Diarrhea, acute-infective etiology suspected (see gastroenteritis)			
Diphtheria			
-Cutaneous	C	CN	Until 2 cultures taken 24 hrs. apart negative
-Pharyngeal	D	CN	Until 2 cultures taken 24 hrs. apart negative
Ebola virus(see Viral hemorrhagicfevers)	C ,D	Variable (determined on a case-by- case basis)	Inaerosol generating procedures, airborne precautions should be taken including particulate respirators e.g. N95, or equivalent. <b>In case of bioterrorism:</b> standard, contact and airborne precautions should be used.
Echinococcosis (hydatidosis)	S		Not transmitted from person to person
Echovirus (see enteroviral infection)			
Encephalitis or encephalomyelitis (see specific etiologic agents)			
Endometritis (endomyometritis)	S		
Enterobiasis (pinworm disease, oxyuriasis)	S		
<i>Enterococcus</i> species (see multidrug-resistant organisms if epidemiologically significant or vancomycin resistant)			
Enterocolitis, <i>C. difficile</i> (see <i>C. difficile</i> , gastroenteritis)			
Enteroviral infections (i.e., Group A and B Coxsackie viruses and Echo viruses) (excludes polio virus)	S		Use contact precautions for diapered or incontinent children for duration of illness and to control institutional outbreaks
Epiglottitis, due to <i>Haemophilusinfluenza</i> type b	D	U 24 hrs	See specific disease agents for epiglottitis due to other etiologies)

Infection/Condition	Type*	Duration**	Precautions Comments
Epstein-Barr virus infection, including infectious mononucleosis	S		
Erythema infectiosum (also see Parvovirus B19)			
<i>Escherichia coli</i> gastroenteritis (see gastroenteritis)			
<u>Food poisoning</u>			
-Botulism	S		Not transmitted from person to person
- <i>C. perfringens</i> or <i>welchii</i>	S		Not transmitted from person to person
-Staphylococcal	S		Not transmitted from person to person
Furunculosis, staphylococcal	S		Contactif drainage not controlled. Follow institutional policies if MRSA
-Infants and young children	C	DI	
Gangrene (gas gangrene)	S		Not transmitted from person to person
<u>Gastroenteritis</u>	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks for gastroenteritis caused by all of the agents below
Adenovirus	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
<i>Campylobacter</i> species	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Cholera ( <i>Vibrio cholerae</i> )	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
<i>C. difficile</i>	C	DI	Discontinue antibiotics if appropriate. Do not share electronic thermometers ; ensure consistent environmental cleaning and disinfection. Hypochlorite solutions may be required for cleaning if transmission continues. Handwashing with soap and water preferred because of the absence of sporicidal activity of alcohol in waterless antiseptic handrubs
<i>Cryptosporidium</i> species	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks

<b>Infection/Condition</b>			<b>Precautions</b>
	<b>Type*</b>	<b>Duration**</b>	<b>Comments</b>
<i>E. coli</i>			
-Enteropathogenic O157:H7 and other shiga toxin-producing Strains	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
-Other species	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
<i>Giardia lamblia</i>	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Noroviruses	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks. Persons who clean areas heavily contaminated with feces or vomitus may benefit from wearing masks since virus can be aerosolized from these body substances; ensure consistent environmental cleaning and disinfection with focus on restrooms even when apparently unsoiled). Hypochlorite solutions may be required when there is continued transmission. Alcohol is less active, but there is no evidence that alcohol antiseptic hand rubs are not effective for hand decontamination. Cohorting of affected patients to separate airspaces and toilet facilities may help interrupt transmission during outbreaks.
Rotavirus	C	DI	Ensure consistent environmental cleaning and disinfection and frequent removal of soiled diapers. Prolonged shedding may occur in both immunocompetent and immunocompromised children and the elderly
<i>Salmonella</i> species (including <i>S. typhi</i> )	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
<i>Shigella</i> species (Bacillary dysentery)	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
<i>Vibrio parahaemolyticus</i>	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Viral (if not covered elsewhere)	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Rotavirus	C	DI	Ensure consistent environmental cleaning and disinfection and frequent removal of soiled diapers. Prolonged shedding may occur in both immunocompetent and immunocompromised children and the elderly

<b>Infection/Condition</b>			<b>Precautions</b>
	<b>Type*</b>	<b>Duration**</b>	<b>Comments</b>
<i>Salmonella</i> species (including <i>S. typhi</i> )	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
<i>Shigella</i> species (Bacillary dysentery)	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
<i>Vibrio parahaemolyticus</i>	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
Viral (if not covered elsewhere)	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
<i>Yersinia enterocolitica</i>	S		Use contact precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks
German measles (see rubella; see congenital rubella)			
Giardiasis (see gastroenteritis)			
Gonococcalophthalmia neonatorum (gonorrhoealophthalmia, acute conjunctivitis of newborn)	S		
Gonorrhea	S		
Granuloma inguinale (Donovanosis, granuloma venereum)	S		
Guillain-Barré' syndrome	S		Not an infectious condition
<i>Haemophilus influenzae</i> (see disease-specific recommendations)			
Hand, foot, and mouth disease (see enteroviral infection)			
Hansen's Disease (see Leprosy)			
Hantavirus pulmonary syndrome	S		Not transmitted from person to person
<i>Helicobacter pylori</i>	S		

Infection/Condition	Type*	Duration**	Precautions Comments
<u>Hepatitis, viral</u>			
-Type A	S		Provide hepatitis A vaccine post-exposure as recommended
Diapered or incontinent patients	C		-Maintain Contact precautions in infants and children <3 years of age for duration of hospitalization; for children 3-14 yrs. of age for 2 weeks after onset of symptoms; >14 yrs. of age for 1 week after onset of symptoms
-Type B-HBsAg positive; acute or chronic	S		-See specific recommendations for care of patients in hemodialysiscenters
-Type C and other unspecified non-A, non-B	S		-See specific recommendations for care of patients in hemodialysiscenters
-Type D (seen only with hepatitis B)	S		
-Type E	S		
-Type G	S		Use contact precautions for diapered/ incontinent individual for duration of illness
Herpangina (see enteroviral infection)	S		
Hookworm	S		
<u>Herpes simplex (Herpesvirushominis)</u>			
-Encephalitis	S		
-Mucocutaneous, disseminated or primary, severe	C	Until lesions dry and crusted	
-Mucocutaneous, recurrent (skin, oral, genital)	S		
-Neonatal	C	Until lesions dry and crusted	Also, for asymptomatic, exposed infants delivered vaginally or by C-section and if mother has active infection and membranes have been ruptured for more than 4 to 6 hrs until infant surface cultures obtained at 24-36 hrs. of age negative after 48 hrs incubation
<u>Herpes zoster (varicella-zoster) (shingles)</u>			
-Disseminated disease in any patient Localized disease in immunocompromised patient until disseminated infection ruled out	A,C	DI	Susceptible HCWs should not enter room if immune caregivers are available; no recommendation for protection of immune HCWs; no recommendation for type of protection, i.e. surgical mask or respirator; for susceptible HCWs.
-Localized in patient with intact immune system with lesions that can be contained/covered	S	DI	Susceptible HCWs should not provide direct patient care when other immune caregivers are available.
Histoplasmosis	S		Not transmitted from person to person
Human immunodeficiency virus (HIV)	S		Post-exposure chemoprophylaxis for some blood exposures

<b>Infection/Condition</b>			<b>Precautions</b>
	<b>Type*</b>	<b>Duration**</b>	<b>Comments</b>
Human metapneumovirus	C	DI	HAI reported, but route of transmission not established . Assumed to be contact transmission as for RSV since the viruses are closely related and have similar clinical manifestations and epidemiology. Wear masks according to standard precautions
Impetigo	C	U 24 hrs	
Infectious mononucleosis	S		
Influenza -Human (seasonal influenza)	D	7 days or until 24 hrs after the resolution of fever and respiratory symptoms whichever is longer	-Annual vaccination is recommended unless contraindicated (vaccinate all people aged 6 months and older, including HCPs, patients and residents of long-term care facilities. -HCP who develop fever and respiratory symptoms should be instructed to stop patient care activities and notify their supervisor and preventive medicine department.
-Avian (e.g., H5N1, H7, H9 strains)	A, C	-Adults (>12 years):7 days after fever resolution -children (<12 years): 21 days after onset of illness	Notify the Infection Control Department and preventive medicine department about any suspected, probable or confirmed case immediately.
-Pandemic influenza (also a human influenza virus)	D		

<b>Infection/Condition</b>			<b>Precautions</b>
	<b>Type*</b>	<b>Duration**</b>	<b>Comments</b>
Kawasaki syndrome	S		Not an infectious condition
Lassa fever (see viral hemorrhagic fevers)			
Legionnaires' disease	S		Not transmitted from person to person
Leprosy	S		
Leptospirosis	S		Not transmitted from person to person
<u>Lice</u>	S	U 24 hrs	-Transmitted person to person through infested clothing. Wear gown and gloves when removing clothing; bag and wash clothes.  -Transmitted person to person through sexual contact
-Head (pediculosis)	C		
-Body	S		
-Pubic	S		
Listeriosis (listeria monocytogenes)	S		Person-to-person ,transmission rare; cross-transmission in neonatal settings reported
Lyme disease	S		Not transmitted from person to person
Lymphocytic choriomeningitis	S		Not transmitted from person to person
Lymphogranulomavenereum	S		
Malaria	S		Not transmitted from person to person except through transfusion rarely and through a failure to follow standard precautions during patient care. Install screens in windows and doors in endemic areas. Use DEET-containing mosquito repellants and clothing to cover extremities
Marburg virus disease (see viral hemorrhagic fevers)			
Measles (rubeola)	A	4 days after onset of rash; DI, in immune compromised	Susceptible HCWs should not enter room if immune care providers are available; no recommendation for face protection for immune HCW; no recommendation for type of face protection for susceptible HCWs, i.e., mask or respirator. For exposed susceptible post-exposure vaccine within 72 hrs. or immune globulin within 6 days when available. Place exposed susceptible patients on airborne precautions and exclude susceptible HCWs from duty from day 5 after first exposure to day 21 after last exposure, regardless of post-exposure vaccine
Melioidosis, all forms	S		Not transmitted from person to person

Infection/Condition	Type*	Duration**	Precautions Comments
<u>Meningitis</u>			
-Aseptic (nonbacterial or viral; also see enteroviral infections)	S		Contact for infants and young children
-Bacterial, gram-ve enteric, neonates	S		
-Fungal	S		
- <i>Haemophilus influenzae</i> , type b known or suspected	D	U 24 hrs	
- <i>Listeria monocytogenes</i> (See Listeriosis)	S		
- <i>Neisseria meningitidis</i> (meningococcal) known or suspected	D	U 24 hrs	See meningococcal disease below
- <i>Streptococcus pneumoniae</i>	S		
- <i>M. tuberculosis</i>	S		Concurrent, active pulmonary disease or draining cutaneous lesions may necessitate addition of contact and/or airborne precautions; For children, airborne precautions until active tuberculosis ruled out in visiting family members (see tuberculosis below)
Other diagnosed bacterial	S		
Meningococcal disease: sepsis, pneumonia, meningitis	D	U 24 hrs	Postexposure chemoprophylaxis for household contacts, HCWs exposed to respiratory secretions; postexposure vaccine only to control outbreaks
<i>Molluscum contagiosum</i>	S		
Monkeypox	A,C	A-Until confirmed, smallpox excluded C-Until lesions crusted	Transmission in hospital settings unlikely. Pre-and post-exposure smallpox vaccine recommended for exposed HCWs
Mucormycosis	S		
Multidrug-resistant organisms (MDROs), infection or colonization (e.g., MRSA, VRE, vancomycin intermediate staphylococcus aureus (VISA)/vancomycin resistant staphylococcus aureus (VRSA), ESBLs, resistant <i>S.pneumoniae</i> )	S/C		MDROs judged by the infection control program, based on local, state, regional, or national recommendations, to be of clinical and epidemiologic significance. Contact precautions recommended in settings with evidence of ongoing transmission, acute care settings with increased risk for transmission or wounds that cannot be contained by dressings.

<b>Infection/Condition</b>			<b>Precautions</b>
	<b>Type*</b>	<b>Duration**</b>	<b>Comments</b>
Mumps (infectious parotitis)	D	U 9 days	After onset of swelling; susceptible HCWs should not provide care if immune caregivers are available. Note: (Recent assessment of outbreaks in healthy 18-24 year olds has indicated that salivary viral shedding occurred early in the course of illness and that 5 days of isolation after onset of parotitis may be appropriate in community settings; however the implications for HCWs and high-risk patient populations remain to be clarified.)
<u>Mycobacteria, nontuberculosis (atypical)</u>			Not transmitted person-to-person
-Pulmonary	S		
-Wound	S		
<i>Mycoplasma pneumonia</i>	D	DI	
Necrotizing enterocolitis	S		Contact precautions when cases clustered temporally
Nocardiosis, draining lesions, or other presentations	S		Not transmitted person-to-person
Norovirus (see gastroenteritis)			
Norwalk agent gastroenteritis (see gastroenteritis)			
Orf	S		
Parainfluenza virus infection, respiratory in infants and young children	C	DI	Viral shedding may be prolonged in immunosuppressed patients. Reliability of antigen testing to determine when to remove patients with prolonged hospitalizations from contact precautions uncertain.
Parvovirus B19 (Erythema infectiosum)	D		Maintain precautions for duration of hospitalization when chronic disease occurs in an immunocompromised patient. For patients with transient aplastic crisis or red-cell crisis, maintain precautions for 7 days. Duration of precautions for immunosuppressed patients with persistently positive PCR not defined, but transmission has occurred
Pediculosis (lice)	C	U 24 hrs after treatment	

Infection/Condition	Type*	Duration**	Precautions Comments
Pertussis (whooping cough)	D	U 5 days	Single patient room preferred. Cohorting an option. Post-exposure chemoprophylaxis for household contacts <sup>863</sup> and HCWs with prolonged exposure to respiratory secretions. Recommendations for Tdapvaccine in adults under development.
Pinworm infection (Enterobiasis)	S		
<u>Plague (<i>Yersinia pestis</i>)</u>			
-Bubonic	S		
-Pneumonic	D	U 48 hrs	Antimicrobial prophylaxis for exposed HCW
<u>Pneumonia</u>			
-Adenovirus	D, C	DI	Outbreaks in pediatric and institutional settings reported. In immunocompromised hosts, extend duration of Droplet and Contact Precautions due to prolonged shedding of virus
-Bacterial not listed elsewhere (including gram-negative bacterial)	S		
- <i>B. Cepacia</i> in patients with Cystic Fibrosis (CF), including respiratory tract colonization	C	Unknown	Avoid exposure to other persons with cystic fibrosis; private room preferred.
- <i>B. Cepacia</i> in patients without CF (see Multidrug-resistant organisms)			
- <i>Chlamydia</i>	S		
-Fungal	S		
- <i>Haemophilus influenzae</i> , type b			
Adults	S		
Infants and children	D	U 24 hrs	
- <i>Legionella spp</i>	S		See Legionnaires' disease
-Meningococcal	D	U 24 hrs	See meningococcal disease above
-Multidrug-resistant bacterial (see multidrug-resistant organisms)			
- <i>Mycoplasma</i> (primary atypical pneumonia)	D	DI	
-Pneumococcal pneumonia	S		Use droplet precautions if evidence of transmission within a patient care unit or facility

Infection/Condition	Type*	Duration**	Precautions Comments
- <i>Pneumocystis jirovecii</i> ( <i>Pneumocystis carinii</i> )	S		Avoid placement in the same room with an immunocompromised patient.
- <i>Staphylococcus aureus</i>	S		For MRSA, see MDROs
- <i>Streptococcus</i> , group A			
Adults	D	U 24 hrs	See streptococcal disease (group A streptococcus) below contact precautions if skin lesions present
Infants and young children	D	U 24 hrs	Contact precautions if skin lesions present
-Varicella-zoster (See Varicella-Zoster)			
-Viral			
Adults	S		
Infants and young children (see respiratory infectious disease, acute, or specific viral agent)			
Poliomyelitis	C	DI	
<u>Pressure ulcer (decubitus ulcer, pressure sore) infected</u>			
-Major	C	DI	If no dressing or containment of drainage; until drainage stops or can be contained by dressing
-Minor or limited	S		If dressing covers and contains drainage
Prion disease (See Creutzfeld-Jacob Disease)			
Psittacosis (ornithosis) ( <i>Chlamydia psittaci</i> )	S		Not transmitted from person to person
Q fever	S		
Rabies	S		Person to person transmission rare; transmission via corneal, tissue and organ transplants has been reported. If patient has bitten another individual or saliva has contaminated an open wound or mucous membrane, wash exposed area thoroughly and administer postexposure prophylaxis
Rat-bite fever ( <i>Streptobacillus moniliformis</i> disease, <i>Spirillum minus</i> disease)	S		Not transmitted from person to person
Relapsing fever	S		Not transmitted from person to person

<b>Infection/Condition</b>			<b>Precautions</b>
	<b>Type*</b>	<b>Duration**</b>	<b>Comments</b>
Resistant bacterial infection or colonization (see multidrug-resistant organisms)			
Respiratory infectious disease, acute (if not covered elsewhere)			
-Adults	S		
-Infants and young children	C	DI	Also see syndromes or conditions listed in Table 2
Respiratory syncytial virus infection, in infants young children and immunocompromised adults	C	DI	Wear mask according to standard precautions. In immunocompromised patients, extend the duration of contact precautions due to prolonged shedding . Reliability of antigen testing to determine when to remove patients with prolonged hospitalizations from contact precautions uncertain.
Reye's syndrome	S		Not an infectious condition
Rheumatic fever	S		Not an infectious condition
Rhinovirus	D	DI	Droplet most important route of transmission. Outbreaks have occurred in Neonatal intensive care units (NICUs) and long term care facilities (LTCFs),. Add contact precautions if copious moist secretions and close contact likely to occur (e.g., young infants)
Rickettsial fevers, tickborne (Rocky Mountain spotted fever, tickbornetyphus fever)	S		Not transmitted from person to person except through transfusion, rarely
Rickettsialpox (vesicular rickettsiosis)	S		Not transmitted from person to person
Ringworm (dermatophytosis, dermatomycosis, tinea)	S		Rarely, outbreaks have occurred in healthcare settings, (e.g., NICU, rehabilitation hospital). Use Contact Precautions for outbreak.
Ritter's disease (staphylococcal scalded skin syndrome)	C	DI	See staphylococcal disease, scalded skin syndrome below
Rocky Mountain spotted fever	S		Not transmitted from person to person except through transfusion, rarely
Roseolainfantum (exanthemsubitum; caused by HHV-6)	S		
Rotavirus infection (see gastroenteritis)			

<b>Infection/Condition</b>			<b>Precautions</b>
	<b>Type*</b>	<b>Duration**</b>	<b>Comments</b>
Rubella (German measles) ( also see congenital rubella)	D	U 7 days after onset of rash	Susceptible HCWs should not enter room if immune caregivers are available. No recommendation for wearing face protection (e.g., a surgical mask) if immune. Pregnant women who are not immune should not care for these patients. Administer vaccine within three days of exposure to non-pregnant susceptible individuals. Place exposed susceptible patients on droplet precautions; exclude susceptible HCWs from duty from day 5 after first exposure to day 21 after last exposure, regardless of post-exposure vaccine.
Rubeola (see measles)			
Salmonellosis (see gastroenteritis)			
Scabies	C	U 24	bedding and clothing worn or used next to the skin anytime during the 3 days before treatment should be machine washed and dried using the hot water and hot dryer cycles or be dry cleaned. Items that cannot be dry cleaned or laundered can be disinfested by storing in a closed plastic bag for several days to a week.
Scalded skin syndrome, staphylococcal	C	DI	See staphylococcal disease, scalded skin syndrome below)
Schistosomiasis (bilharziasis)	S		
Severe acute respiratory syndrome (SARS)	A, D,C	DI plus 10 days after resolution offever, provided respiratory symptoms are absent or improving	Airborne precautions preferred; D if AIIR unavailable. N95 or higher respiratory protection; surgical mask if N95 unavailable; eye protection (goggles, face shield); aerosol-generating procedures and “supershedders” highest risk for transmission via small droplet nucleiand large droplets. Vigilant environmental disinfection.
Shigellosis (see gastroenteritis)			
Smallpox (variola; see vaccinia for management of vaccinated persons)	A,C	DI	Until all scabs have crusted and separated (3-4 weeks). Non-vaccinated HCWs should not provide care when immune HCWsare available; N95 or higher respiratory protection for susceptible and successfully vaccinated individuals; postexposure vaccine within 4 days of exposure protective.
Sporotrichosis	S		

<b>Infection/Condition</b>			<b>Precautions</b>
	<b>Type*</b>	<b>Duration**</b>	<b>Comments</b>
<i>Spirillum minor</i> disease (rat-bite fever)	S		Not transmitted from person to person
<u>Staphylococcal disease (<i>S aureus</i>)</u>			
-Skin, wound, or burn			
Major	C	DI	No dressing or dressing does not contain drainage adequately
Minor or limited	S		Dressing covers and contains drainage adequately
-Enterocolitis	S		Use contact precautions for diapered or incontinent children for duration of illness
-Multidrug-resistant (see multidrug-resistant organisms)			
-Pneumonia	S		
-Scalded skin syndrome	C	DI	Consider HCWs as potential source of nursery, NICU outbreak
-Toxic shock syndrome	S		
<i>Streptobacillus moniliformis</i> disease (rat-bite fever)	S		Not transmitted from person to person
<u>Streptococcal disease (group A strept)</u>			
-Skin, wound, or burn			
Major	C,D	U 24 hrs	No dressing or dressing does not contain drainage adequately
Minor or limited	S		Dressing covers and contains drainage adequately
-Endometritis (puerperal sepsis)	S		
-Pharyngitis in infants and young children	D	U 24 hrs	
-Pneumonia	D	U 24 hrs	
-Scarlet fever in infants, young children	D	U 24 hrs	
-Serious invasive disease	D	U24hrs	Outbreaks of serious invasive disease have occurred secondary to transmission among patients and HCP. Contact precautions for draining wound as above; follow recommendations for antimicrobial prophylaxis in selected conditions
Streptococcal disease (group B streptococcus), neonatal	S		

Infection/Condition	Type*	Duration**	Precautions Comments
Streptococcal disease (not group A or B) unless covered elsewhere	S		
Multidrug-resistant Streptococcal disease (see multidrug-resistant organisms)			
Strongyloidiasis	S		
<u>Syphilis</u>			
-Latent (tertiary) and seropositivity without lesions	S		
-Skin and mucous membrane (congenital, primary, secondary)	S		
<u>Tapeworm disease</u>			Not transmitted from person to person
- <i>Hymenolepis nana</i>	S		
- <i>Taeniasolium</i> (pork)	S		
-Other	S		
Tetanus	S		Not transmitted from person to person
Tinea (e.g., dermatophytosis, dermatomycosis, ringworm)	S		Rare episodes of person-to-person transmission
Toxoplasmosis	S		Transmission from person to person is rare; vertical transmission from mother to child, transmission through organs and blood transfusion rare
Toxic shock syndrome (staphylococcal disease, streptococcal disease)	S		Droplet precautions for the first 24 hours after implementation of antibiotic therapy if Group A streptococcus is a likely etiology
Trachoma, acute	S		
Transmissible spongiform encephalopathy (see Creutzfeld-Jacob disease (CJD), vCJD)			
Trench mouth (Vincent's angina)	S		
Trichinosis	S		
Trichomoniasis	S		
Trichuriasis (whipworm disease)	S		

<b>Infection/Condition</b>			<b>Precautions</b>
	<b>Type*</b>	<b>Duration**</b>	<b>Comments</b>
<u>Tuberculosis (<i>M. tuberculosis</i>)</u> -Extrapulmonary, draining lesion)	A,C		-Discontinue precautions only when patient is improving clinically, and drainage has ceased or there are three consecutive negative cultures of continued drainage. Examine for evidence of active pulmonary tuberculosis.
-Extrapulmonary, no draining lesion, meningitis	S		Examine for evidence of pulmonary tuberculosis. For infants and children, use airborne precautions until active pulmonary tuberculosis in visiting family members ruled out
-Pulmonary or laryngeal disease, confirmed	A		Discontinue precautions only when patient on effective therapy is improving clinically and has three consecutive sputum smears negative for acid-fast bacilli collected on separate days.
-Pulmonary or laryngeal disease, suspected	A		Discontinue precautions only when the likelihood of infectious TB disease is deemed negligible, and either 1) there is another diagnosis that explains the clinical syndrome or 2) the results of three sputum smears for AFB are negative. Each of the three sputum specimens should be collected 8-24 hours apart, and at least one should be an early morning specimen
-Skin-test positive with no evidence of current active disease	S		
<u>Tularemia</u> -Draining lesion	S		Not transmitted from person to person Laboratory workers who encounter/handle cultures of this organism are at high risk for disease if exposed.
-Pulmonary	S		
Typhoid ( <i>Salmonella typhi</i> ) fever (see gastroenteritis)			
<u>Typhus</u> - <i>Rickettsia prowazekii</i> (Epidemic or Louse-borne typhus)	S		-Transmitted from person to person through close personal or clothing contact
- <i>Rickettsia typhi</i>	S		-Not transmitted from person to person
Urinary tract infection (including pyelonephritis), with or without urinary catheter	S		

<b>Infection/Condition</b>			<b>Precautions</b>
	<b>Type*</b>	<b>Duration**</b>	<b>Comments</b>
<u>Vaccinia (vaccination site, adverse events following vaccination)</u>			Only vaccinated HCWs have contact with active vaccination sites and care for persons with adverse vaccinia events; if unvaccinated, only HCWs without contraindications to vaccine may provide care.
-Vaccination site care (including autoinoculated areas)	S		Vaccination recommended for vaccinators; for newly vaccinated HCWs: semi-permeable dressing over gauze until scab separates, with dressing change as fluid accumulates, ~3-5 days; gloves, hand hygiene for dressing change; vaccinated HCW or HCW without contraindication to vaccine for dressing changes
-Eczema vaccinatum	C	Until lesions dry and crusted, scabs separated	For contact with virus-containing lesions and exudative material
-Generalized vaccinia	C		Use contact precautions if there is copious drainage
-Progressive vaccinia	C		
-Postvaccinia encephalitis	S		
-Blepharitis or conjunctivitis	S/C		
-Iritis or keratitis	S		
-Vaccinia-associated erythema multiforme (Stevens Johnson Syndrome)	S		
-Secondary bacterial infection (e.g., <i>S. aureus</i> , group A B hemolytic streptococcus)	S/C		Follow organism-specific recommendations (strep, staph most frequent) and consider magnitude of drainage.

<b>Infection/Condition</b>			<b>Precautions</b>
	<b>Type*</b>	<b>Duration**</b>	<b>Comments</b>
Varicella Zoster	A,C	Until lesions dry and crusted	<p>Susceptible HCWs should not enter room if immune caregivers are available; no recommendation for face protection of immune HCWs; no recommendation for type of protection, i.e. surgical mask or respirator for susceptible HCWs.</p> <p>In immunocompromised host with varicella pneumonia, prolong duration of precautions for duration of illness.</p> <p>Post-exposure prophylaxis: provide post-exposure vaccine as soon as possible but within 120 hours; for susceptible exposed persons for whom vaccine is contraindicated (immunocompromised persons, pregnant women, newborns whose mother's varicella onset is &lt;5days before delivery or within 48 hrs after delivery) provide Varicella Zoster Immunoglobulins (VZIG), when available, within 96 hours; if unavailable, use IVIG.</p> <p>Use airborne precautions for exposed susceptible persons and exclude exposed susceptible healthcare workers beginning 8 days after first exposure until 21 days after last exposure or 28 if received VZIG, regardless of postexposure vaccination.</p>
Variola (see smallpox)			
<i>Vibrio</i> parahaemolyticus (see gastroenteritis)			
Vincent's angina (trench mouth)	S		
Viral hemorrhagic fevers due to Lassa, Ebola, Marburg, Crimean-Congo fever viruses	S, D, C	DI	<p>Single-patient room preferred. Emphasize: 1) use of sharps safety devices and safe work practices, 2) hand hygiene; 3) barrier protection against blood/body fluids upon entry into room (single gloves and fluid-resistant or impermeable gown, face/eye protection with masks, goggles or face shields); 4) appropriate waste handling.</p> <p>Use N95 or higher respirators when performing aerosol-generating procedures. Largest viral load in final stages of illness when hemorrhage may occur; additional PPE, including double gloves, leg and shoe coverings may be used, especially in resource-limited settings where options for cleaning and laundry are limited.</p> <p>If Ebola is suspected, notify public health officials immediately (including preventive medicine and infection control departments).</p>

Infection/Condition	Type*	Duration**	Precautions Comments
<u>Viral respiratory diseases (not covered elsewhere)</u> -Adults -Infants and young children (see respiratory infectious disease, acute)	S C		
Whooping cough (see pertussis)			
<u>Wound infections</u> -Major -Minor or limited	C S	DI	-No dressing or dressing does not contain drainage adequately -Dressing covers and contains drainage adequately
<i>Yersinia enterocolitica</i> gastroenteritis (see gastroenteritis)			
Zoster (varicella-zoster)(see herpes zoster)			
Zygomycosis (phycomycosis, mucormycosis)	S		Not transmitted from person-to-person

\* Type of Precautions: A, airborne precautions; C, Contact; D, Droplet; S, Standard; when A, C, and D are specified, also use S.

\*\* Duration of precautions:

**CN:** until off antimicrobial treatment and culture-negative

**DI:** duration of illness (with wound lesions, DI means until wounds stop draining)

**DE:** until environment completely decontaminated

**U:** until time specified in hours (hrs) after initiation of effective therapy

**Unknown:** criteria for establishing eradication of pathogen has not been determined

**Appendix 5: Post sign of contact precautions**



**Appendix 6: Post sign of droplet precautions**



**Appendix 7: Post sign of airborne precautions**

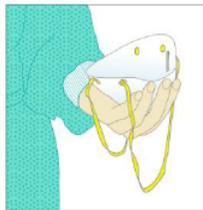


## **Appendix 8: Recommendations of airborne infection isolation room (AIIR)**

In acute care hospitals and long-term care settings, place patients who require airborne precautions in an AIIR that has been constructed in accordance with the following:

- Negative pressure with direct exhaust of air to the outside. If it is not possible to exhaust air from an AIIR directly to the outside, the air may be returned to the air-handling system or adjacent spaces if all air is directed through HEPA filters.
- Pressure differential of 2.5 Pa (0.01 in water gauge).
- Air flow volume differential >125-cfm exhaust versus supply
- Provision of air changes per hour of at least 6 in existing facility or 12 in renovation or new construction.
- Clean to dirty air flow.
- Sealed room, approximately 0.5 sq. ft. leakage.
- Whenever an AIIR is in use for a patient on airborne precautions, monitor air pressure daily with visual indicators (e.g., smoke tubes, flutter strips), regardless of the presence of differential pressure sensing devices (e.g., manometers)
- The AIIR door should be kept closed when not required for entry and exit.
- An anteroom should always be present to any AIIR.

## Appendix 9: Steps for particulate respirator fit test



1. Cup the respirator in your hand with the nosepiece at your fingertips allowing the headbands to hang freely below your hand.



2. Position the respirator under your chin with the nosepiece up.



3. Pull the top strap over your head resting it high at the back of your head. Pull the bottom strap over your head and position it around the neck below the ears.



4. Place fingertips of both hands at the top of the metal nosepiece.

Mould the nosepiece (USING TWO FINGERS OF EACH HAND) to the shape of your nose. Pinching the nosepiece using one hand may result in less effective respirator performance



5. Cover the front of the respirator with both hands, being careful not to disturb the position of respirator

### 5A Positive seal check

-Exhale sharply. A positive pressure inside the respirator= no leakage. If leakage, adjust position and/or tension straps. Retest the seal.

-Repeat the steps until respirator is sealed properly

### 5B Negative seal check

- Inhale deeply. If no leakage, negative pressure will make respirator cling to your face.

- Leakage will result in loss of negative pressure in the respirator due to air entering through gaps in the seal.

## **Appendix 10: Engineering control for protective environment**

### **Protective environment room**

- Filter incoming air using central or point-of-use high efficiency particulate (HEPA) filters capable of removing 99.97% of particles >0.3 µm in diameter.
- Direct room airflow with the air supply on one side of the room that moves air across the patient bed and out through an exhaust on the opposite side of the room.
- Positive air pressure in room relative to the corridor. Pressure differential of >2.5 Pa [0.01” water gauge]
- Provide at least 12 air changes per hour.
- Monitor and document results of air flow patterns daily using visual methods (e.g., flutter strips, smoke tubes) or a hand held pressure gauge
- Ensure well-sealed rooms that prevent infiltration of outside air by:
  - Proper construction of windows, doors, and intake and exhaust ports
  - Ceilings: smooth, free of fissures, open joints, crevices
  - Walls sealed above and below the ceiling
  - If leakage detected, locate source and make necessary repairs
  - Self-closing door on all room exits
- Maintain back-up ventilation equipment (e.g., portable units for fans or filters) for emergency provision of ventilation requirements for PE areas and take immediate steps to restore the fixed ventilation system.

### **Combination airborne infection isolation/ protective environment (AII/PE) room**

- It is used for patients who require a PE room and airborne precautions.
- Hospitals with PE rooms shall include atleast one combination AII/PE room.
- Ensure that the PE is designed to maintain positive pressure.
- Use an anteroom to further support the appropriate air-balance relative to the corridor and the PE.
- All doors to the anteroom shall have self closing devices.
- If an anteroom is not available, place the patient in an AIIR and use portable, industrial-grade HEPA filters in the room to enhance filtration of spores.
- Provide independent exhaust of contaminated air to the outside or place a HEPA filter in the exhaust duct if the return air must be recirculated.

## Appendix 11

### Clinical Syndromes or Conditions Warranting Empiric Transmission-Based Precautions Including Standard Precautions

Clinical Syndrome or Condition†	Potential Pathogens‡	Empiric Precautions (Always includes standard precautions)
<b>Diarrhea</b> Acute diarrhea with a likely infectious cause in an incontinent or diapered patient	Enteric pathogens #	Contact precautions (pediatrics and adult)
<b>Meningitis</b>	<i>Neisseria meningitides</i>	Droplet precautions for first 24 hrs of antimicrobial therapy; mask and face protection for intubation
	Enteroviruses	Contact precautions for infants and children
	<i>M. tuberculosis</i>	Airborne precautions if pulmonary infiltrate airborne precautions plus contact precautions if potentially infectious draining body fluid present
<b>Rash or Exanthems, Generalized, Etiology Unknown</b> -Petechial/ecchymotic with fever -general -If positive history of travel to an area with an ongoing outbreak of viral hemorrhagic fever in the 10 days before onset of fever -Vesicular -Maculopapular with cough, coryza and fever	<i>Neisseria meningitides</i>	Droplet precautions for first 24 hrs of antimicrobial therapy
	Ebola, Lassa, Marburg viruses	Droplet precautions plus contact precautions, with face/eye protection, emphasizing safety sharps and barrier precautions when blood exposure likely. Use N95 or higher respiratory protection when aerosol-generating procedure performed
	Varicella-zoster, <i>herpes simplex</i> , variola (smallpox), vaccinia viruses	Airborne plus contact precautions; contact precautions only if <i>herpes simplex</i> , localized zoster in an immunocompetent host or vaccinia viruses most likely
	Rubeola (measles) virus	Airborne precautions
<b>Respiratory Infections</b> Cough/fever/upper lobe pulmonary infiltrate in an HIV-negative patient or a patient at low risk for human immunodeficiency virus (HIV) infection	<i>M. tuberculosis</i> , Respiratory viruses, <i>S. pneumoniae</i> , <i>S. aureus</i> (MSSA or MRSA)	Airborne precautions plus contact precautions

Clinical Syndrome or Condition†	Potential Pathogens‡	Empiric Precautions (Always includes standard precautions)
Cough/fever/pulmonary infiltrate in any lung location in an HIV-infected patient or a patient at high risk for HIV infection	<i>M. tuberculosis</i> , Respiratory viruses, <i>S. pneumoniae</i> , <i>S. aureus</i> (including MRSA)	Airborne precautions plus contact precautions Use eye/face protection if aerosol-generating procedure performed or contact with respiratory secretions anticipated. If tuberculosis is unlikely and there are no AIIRs and/or respirators available, use droplet precautions instead of airborne precautions Tuberculosis more likely in HIV-infected individual than in HIV negative individual
Cough/fever/pulmonary infiltrate in any lung location in a patient with a history of recent travel(10-21 days) to countries with active outbreaks of SARS, avian influenza	<i>M. tuberculosis</i> , SARS- CoV, avian influenza	Airborne plus contact precautions plus eye protection. If SARS and tuberculosis unlikely, use droplet precautions instead of airborne precautions.
Respiratory infections, particularly bronchiolitis and pneumonia, in infants and young children	Respiratory syncytial virus parainfluenza virus, adenovirus, influenza virus, Human metapneumovirus	Contact plus droplet precautions; droplet precautions may, be discontinued when adenovirus and influenza have been ruled out
<b>Skin or Wound Infection</b> Abscess or draining wound that cannot be covered	<i>Staphylococcus aureus</i> (including MRSA), group A streptococcus	Contact precautions. Add droplet precautions for the first 24 hours of appropriate antimicrobial therapy if invasive Group A streptococcal disease is suspected

† Patients with the syndromes or conditions listed below may present with atypical signs or symptoms (e.g. neonates and adults with pertussis may not have paroxysmal or severe cough). The clinician's index of suspicion should be guided by the prevalence of specific conditions in the community, as well as clinical judgment.

‡ The organisms listed under the column "Potential Pathogens" are not intended to represent the complete, or even most likely, diagnoses, but rather possible etiologic agents that require additional precautions beyond standard precautions until they can be ruled out.

# These pathogens include enterohemorrhagic *Escherichia coli* O157:H7, *Shigella spp*, hepatitis A virus, noroviruses, rotavirus, *C. difficile*.

## 6. References

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