Infection Control

**Definitions**

**“Healthcare Personnel (HCP)”** - HCP refers to all paid and unpaid persons serving in healthcare settings who have the potential for direct or indirect exposure to patients or infectious materials, including body substances (e.g., blood, tissue, and specific body fluids); contaminated medical supplies, devices, and equipment; contaminated environmental surfaces; or contaminated air. HCP include, but are not limited to, emergency medical service personnel, nurses, nursing assistants, home healthcare personnel, physicians, technicians, therapists, phlebotomists, pharmacists, dental healthcare personnel, students and trainees, contractual staff not employed by the healthcare facility, and persons not directly involved in patient care, but who could be exposed to infectious agents that can be transmitted in the healthcare setting (e.g., clerical, dietary, environmental services, laundry, security, engineering and facilities management, administrative, billing, and volunteer personnel).

**“Healthcare Settings”** - Places where healthcare is delivered and includes, but is not limited to, acute care facilities, long-term acute-care facilities, inpatient rehabilitation facilities, nursing homes, home healthcare, vehicles where healthcare is delivered (e.g., mobile clinics), and outpatient facilities, such as dialysis centers, physician offices, dental offices, and others.

**“Source Control”** - Use of respirators, well-fitting facemasks, or well-fitting cloth masks to cover a person’s mouth and nose to prevent spread of respiratory secretions when they are breathing, talking, sneezing, or coughing. Source control devices should not be placed on children under age 2, anyone who cannot wear one safely, such as someone who has a disability or an underlying medical condition that precludes wearing one safely, or anyone who is unconscious, incapacitated, or otherwise unable to remove their source control device without assistance. Face shields alone are not recommended for source control.

**“Cloth Mask”** - Textile (cloth) covers that are intended primarily for source control in the community. **They are not personal protective equipment (PPE) appropriate for use by healthcare personnel.** Guidance on design, use, and maintenance of cloth masks is [available](https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html).

**“Facemask”** - OSHA defines facemasks as “a surgical, medical procedure, dental, or isolation mask that is FDA-cleared, authorized by an FDA EUA, or offered or distributed as described in an FDA enforcement policy. Facemasks may also be referred to as ‘medical procedure masks.”  Facemasks should be used according to product labeling and local, state, and federal requirements. FDA-cleared surgical masks are designed to protect against splashes and sprays and are prioritized for use when such exposures are anticipated, including surgical procedures. Other facemasks, such as some procedure masks, which are typically used for isolation purposes, may not provide protection against splashes and sprays.

**“Respirator”** - A respirator is a personal protective device that is worn on the face, covers at least the nose and mouth, and is used to reduce the wearer’s risk of inhaling hazardous airborne particles (including dust particles and infectious agents), gases, or vapors. Respirators are certified by CDC/NIOSH, including those intended for use in healthcare.

**“Fully Vaccinated”** - is defined in [Interim Public Health Recommendations for Fully Vaccinated People | CDC](https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated-guidance.html)

**“Unvaccinated”** - A person who does not fit the definition of “fully vaccinated,” including people whose vaccination status is not known, for the purposes of this guidance.

**“Immunocompromised”** - For the purposes of this guidance, moderate to severely immunocompromising conditions include, but might not be limited to, those defined in the [Interim Clinical Considerations for Use of COVID-19 Vaccines | CDC](https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fvaccines%2Fcovid-19%2Finfo-by-product%2Fclinical-considerations.html)

* Other factors, such as end-stage renal disease, may pose a lower degree of immunocompromise and not clearly affect decisions about need for or duration of Transmission-Based Precautions if the individual had close contact with someone with SARS-CoV-2 infection. However, fully vaccinated people in this category should consider continuing to practice physical distancing and use of source control while in a healthcare facility, even when not otherwise recommended for fully vaccinated individuals.
* Ultimately, the degree of immunocompromise for the patient is determined by the treating provider, and preventive actions are tailored to each individual and situation.

**“Close Contact” -** Being within 6 feet for a cumulative total of 15 minutes or more over a 24-hour period with someone with SARS-CoV-2 infection.

**“Mild Illness**” - Individuals who have any of the various signs and symptoms of COVID-19 (e.g., fever, cough, sore throat, malaise, headache, muscle pain) without shortness of breath, dyspnea, or abnormal chest imaging.

**“Moderate Illness**” - Individuals who have evidence of lower respiratory disease by clinical assessment or imaging, and a saturation of oxygen (SpO2) ≥94% on room air at sea level.

**“Severe Illness**” - Individuals who have respiratory frequency >30 breaths per minute, SpO2 <94% on room air at sea level (or, for patients with chronic hypoxemia, a decrease from baseline of >3%), ratio of arterial partial pressure of oxygen to fraction of inspired oxygen (PaO2/FiO2) <300 mmHg, or lung infiltrates >50%.

**“Critical Illness**” - Individuals who have respiratory failure, septic shock, and/or multiple organ dysfunction.

In pediatric patients, radiographic abnormalities are common and, for the most part, should not be used as the sole criteria to define Covid-19 illness category. Normal values for respiratory rate also vary with age in children, thus hypoxia should be the primary criterion to define severe illness, especially in younger children.

**CDC Recommendations**

**Minimize Chance for Exposures**

Ensure facility policies and practices are in place to minimize exposures to respiratory pathogens including SARS-CoV-2, the virus that causes Covid-19. Measures should be implemented before patient arrival, upon arrival, throughout the duration of the patient’s visit, and until the patient’s room is cleaned and disinfected. It is particularly important to protect individuals at increased risk for adverse outcomes from Covid-19 (e.g., older individuals with comorbid conditions), including HCP who are in a recognized risk category.

**Universal Source Control**

Continued community transmission has increased the number of individuals potentially exposed to and infectious with Covid-19. Fever and symptom screening have proven to be relatively ineffective in identifying all infected individuals, including HCP. Symptom screening also will not identify individuals who are infected but otherwise asymptomatic or pre-symptomatic; additional interventions are needed to limit the unrecognized introduction of Covid-19 into healthcare settings by these individuals. As part of aggressive source control measures, healthcare facilities should consider implementing policies requiring everyone entering the facility to wear a cloth face covering (if tolerated) while in the building, regardless of symptoms. This approach is consistent with a [recommendation to the general public](https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html) advising them to wear a cloth face covering whenever they must leave their home.

**Patient and Visitors**

Patients and visitors should, ideally, be wearing their own cloth face covering upon arrival to the facility. If not, they should be offered a facemask or cloth face covering as supplies allow, which should be worn while they are in the facility (if tolerated). They should also be instructed that if they must touch or adjust their cloth face covering they should perform hand hygiene immediately before and after. Facemasks and cloth face coverings should not be placed on young children under age 2, anyone who has trouble breathing, or anyone who is unconscious, incapacitated or otherwise unable to remove the mask without assistance. Patients may remove their cloth face covering when in their rooms but should put them back on when leaving their room or when others (e.g., HCP, visitors) enter the room. Screening for symptoms and appropriate triage, evaluation, and isolation of individuals who report symptoms should still occur.

**Healthcare Personnel**

As part of source control efforts, HCP should wear a facemask at all times while they are in the healthcare facility. When available, facemasks are generally preferred over cloth face coverings for HCP as facemasks offer both source control and protection for the wearer against exposure to splashes and sprays of infectious material from others. **If there are anticipated shortages of facemasks, facemasks should be prioritized for HCP and then for patients with symptoms of COVID-19 (as supply allows).** **Cloth face coverings should NOT be worn instead of a respirator or facemask if more than source control is required.**

Some HCP whose job duties do not require PPE (e.g., clerical personnel) might continue to wear their cloth face covering for source control while in the healthcare facility. Other HCP (e.g., nurses, physicians) might wear their cloth face covering for part of the day when not engaged in direct patient care activities, only switching to a respirator or facemask when PPE is required. To avoid risking self-contamination, HCP should consider continuing to wear their respirator or facemask ([extended use](https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html)) instead of intermittently switching back to their cloth face covering. Of note, N95s with an exhaust valve might not provide source control. HCP should remove their respirator or facemask and put on their cloth face covering when leaving the facility at the end of their shift.  They should also be instructed that if they must touch or adjust their facemask or cloth face covering they should perform hand hygiene immediately before and after.

HCP should have received job-specific training on PPE and demonstrated competency with selection and proper use (e.g., putting on and removing without self-contamination).

Because cloth face coverings can become saturated with respiratory secretions, care should be taken to prevent self-contamination. They should be changed if they become soiled, damp, or hard to breathe through, laundered regularly (e.g., daily and when soiled), and, hand hygiene should be performed immediately before and after any contact with the cloth face covering.  Facilities should also provide training about when, how, and where cloth face coverings can be used (e.g., frequency of laundering, guidance on when to replace, circumstances when they can be worn in the facility, importance of hand hygiene to prevent contamination).

**Before Arrival**

When scheduling appointments for routine medical care, instruct patients to call ahead and discuss the need to reschedule their appointment if they develop fever or symptoms of Covid-19 on the day they are scheduled to be seen. Advise them that they should put on their own cloth face covering, regardless of symptoms, before entering the facility.

When scheduling appointments for patients requesting evaluation for possible Covid-19, use triage protocols to determine if an appointment is necessary or if the patient can be managed from home.

* If the patient must come in for an appointment, instruct them to call beforehand to inform personnel that they have symptoms of Covid-19 and to take appropriate preventive actions (e.g., follow triage procedures, put on their own cloth face covering prior to entry and throughout their visit or, if a cloth face covering cannot be tolerated, hold a tissue against their mouth and nose to contain respiratory secretions).

**Upon Arrival and During the Visit**

Limit and monitor points of entry to the facility.

Advise patients and visitors entering the facility, regardless of symptoms, to put on a cloth face covering or facemask before entering the building and await screening for fever and symptoms of Covid-19.

Take steps to ensure everyone adheres to respiratory hygiene and cough etiquette, hand hygiene, and all patients follow triage procedures throughout the duration of the visit.

* Post [visual alerts](https://www.cdc.gov/flu/pdf/protect/cdc_cough.pdf) (e.g., signs, posters) at the entrance and in strategic places (e.g., waiting areas, elevators, cafeterias) to provide instructions (in appropriate languages) about hand hygiene and respiratory hygiene and cough etiquette. Instructions should include wearing a cloth face covering or facemask for source control, and how and when to perform hand hygiene.
* Provide supplies for respiratory hygiene and cough etiquette, including alcohol-based hand rub (ABHR) with 60-95% alcohol, tissues, and no-touch receptacles for disposal, at healthcare facility entrances, waiting rooms, and patient check-ins.
* Install physical barriers (e.g., glass or plastic windows) at reception areas to limit close contact between triage personnel and potentially infectious patients.
* Consider establishing triage stations outside the facility to screen individuals before they enter.

Incorporate questions about new onset of Covid-19 symptoms into daily assessments of all admitted patients. Monitor for and evaluate all new fevers and symptoms consistent with Covid-19 among patients. Place any patient with unexplained fever or symptoms of Covid-19 on appropriate Transmission-Based Precautions and evaluate.

**Additional Strategies to Minimize Chances for Exposure**

The need for additional strategies will be dependent on factors including the level of Covid-19 transmission in the community, the number of patients with Covid-19 being cared for at the facility and if healthcare-associated transmission is occurring, and any current or anticipated PPE or staffing shortages. Factors may change over time and will vary by practice type, setting, and the potential for patient harm if care is deferred. Examples of strategies might include:

* Cancelling or modifying in-person group healthcare activities (e.g., group therapy, recreational activities) by implementing virtual methods (e.g., video format for group therapy) or scheduling smaller in-person group sessions while having patients sit at least 6 feet apart and wear a cloth face covering.

**Adhere to Standard and Transmission-Based Precautions**

Standard Precautions assume that every person is potentially infected or colonized with a pathogen that could be transmitted in the healthcare setting. Elements of Standard Precautions that apply to patients with respiratory infections, including Covid-19, are summarized below. Attention should be paid to training and proper donning (putting on), doffing (taking off), and disposal of any PPE.

**Hand Hygiene**

HCP should perform hand hygiene before and after all patient contact, contact with potentially infectious material, and before putting on and after removing PPE, including gloves. Hand hygiene after removing PPE is particularly important to remove any pathogens that might have been transferred to bare hands during the removal process.

HCP should perform hand hygiene by using ABHR with 60-95% alcohol or washing hands with soap and water for at least 20 seconds. If hands are visibly soiled, use soap and water before returning to ABHR.

Healthcare facilities should ensure that hand hygiene supplies are readily available to all personnel in every care location.

**Personal Protective Equipment**

Employers should select appropriate PPE and provide it to HCP in accordance with [OSHA PPE standards (29 CFR 1910 Subpart I)](https://www.osha.gov/laws-regs/regulations/standardnumber/1910) . HCP must receive training on and demonstrate an understanding of:

* When to use PPE
* What PPE is necessary
* How to properly don, use, and doff PPE in a manner to prevent self-contamination
* How to properly dispose of or disinfect and maintain PPE
* The limitations of PPE.

Any reusable PPE must be properly cleaned, decontaminated, and maintained after and between uses. Facilities should have policies and procedures describing a recommended sequence for safely donning and doffing PPE. The PPE recommended when caring for a patient with known or suspected Covid-19 includes:

**Respirator or Facemask** ***(Cloth face coverings are NOT PPE and should not be worn for the care of patients with known or suspected COVID-19 or other situations where a respirator or facemask is warranted)***

Put on an N95 respirator (or higher level respirator) or facemask (if a respirator is not available) before entry into the patient room or care area, if not already wearing one as part of extended use or reuse [strategies to optimize PPE supply](https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html). Higher level respirators include other disposable filtering facepiece respirators, PAPRs, or elastomeric respirators.

N95 respirators or respirators that offer a higher level of protection should be used instead of a facemask when performing or present for an aerosol generating procedure (See Section 4). See appendix for respirator definition. Disposable respirators and facemasks should be removed and discarded after exiting the patient’s room or care area and closing the door unless implementing extended use or reuse. Perform hand hygiene after removing the respirator or facemask.

* If reusable respirators (e.g., powered air-purifying respirators [PAPRs]) are used, they must be cleaned and disinfected according to manufacturer’s reprocessing instructions prior to re-use.

When the supply chain is restored, facilities with a respiratory protection program should return to use of respirators for patients with known or suspected Covid-19. Those that do not currently have a respiratory protection program, but care for patients with pathogens for which a respirator is recommended, should implement a respiratory protection program.

**Eye Protection**

Put on eye protection (i.e., goggles or a disposable face shield that covers the front and sides of the face) upon entry to the patient room or care area, if not already wearing as part of extended use or reuse [strategies to optimize PPE supply](https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/eye-protection.html). Personal eyeglasses and contact lenses are NOT considered adequate eye protection.

Remove eye protection before leaving the patient room or care area.

Reusable eye protection (e.g., goggles) must be cleaned and disinfected according to manufacturer’s reprocessing instructions prior to re-use. Disposable eye protection should be discarded after use unless following protocols for extended use or reuse.

**Gloves**

Put on clean, non-sterile gloves upon entry into the patient room or care area.

* Change gloves if they become torn or heavily contaminated.

Remove and discard gloves when leaving the patient room or care area, and immediately perform hand hygiene.

**Manage Visitor Access and Movement Within the Facility**

Limit visitors to the facility to only those essential for the patient’s physical or emotional well-being and care (e.g., care partners).

Encourage use of alternative mechanisms for patient and visitor interactions such as video-call applications on cell phones or tablets.

Limit points of entry to the facility and visitation hours to allow screening of all potential visitors.

Actively assess all visitors for fever and Covid-19 symptoms upon entry to the facility. If fever or COVID-19 symptoms are present, the visitor should not be allowed entry into the facility.

Establish procedures for monitoring, managing, and training all visitors, which should include:

* All visitors should be instructed to wear a facemask or cloth face covering at all times while in the facility, perform frequent hand hygiene, and restrict their visit to the patient’s room or other area designated by the facility.
* Informing visitors about appropriate PPE use according to current facility visitor policy.

**Implement Engineering Controls**

Design and install engineering controls to reduce or eliminate exposures by shielding HCP and other patients from infected individuals. Examples of engineering controls include:

* Physical barriers or partitions to guide patients through triage areas
* Curtains between patients in shared areas
* Air-handling systems (with appropriate directionality, filtration, exchange rate, etc.) that are properly installed and maintained

**Monitor and Manage Healthcare Personnel**

Facilities and organizations providing healthcare should implement sick leave policies for HCP that are non-punitive, flexible, and consistent with public health guidance.

Sick leave options for healthcare personnel should encourage reporting of potentially infectious exposures or illnesses, appropriate use of sick leave, and adherence to work restrictions.

As part of routine practice, HCP should be asked to regularly monitor themselves for fever and symptoms of Covid-19.

* HCP should be reminded to stay home when they are ill.
* If HCP develop fever (T≥100.0oF) or symptoms consistent with Covid-19\* while at work they should keep their cloth face covering or facemask on, inform their supervisor, and leave the workplace.

Screen all HCP at the beginning of their shift for fever and symptoms consistent with COVID-19\*

* Actively take their temperature and document absence of symptoms consistent with Covid-19\*. If they are ill, have them keep their cloth face covering or facemask on and leave the workplace.
* \*Fever is either measured temperature >100.0oF or subjective fever. Note that fever may be intermittent or may not be present in some individuals, such as those who are elderly, immunosuppressed, or taking certain medications (e.g., NSAIDs). Clinical judgement should be used to guide testing of patients in such situations. Respiratory symptoms consistent with COVID-19 include cough, shortness of breath, and sore throat. Medical evaluation may be recommended for lower temperatures (<100.0oF) or other symptoms consistent with COVID-19 based on assessment by occupational health.

Information about when HCP with confirmed or suspected COVID-19 may return to work is available in the [Interim Guidance on Criteria for Return to Work for Healthcare Personnel with Confirmed or Suspected COVID-19](https://www.cdc.gov/coronavirus/2019-ncov/healthcare-facilities/hcp-return-work.html).

**Train and Educate Healthcare Personnel**

Provide HCP with job- or task-specific education and training on preventing transmission of infectious agents, including refresher training.

Ensure that HCP are educated, trained, and have practiced the appropriate use of PPE prior to caring for a patient, including attention to correct use of PPE and prevention of contamination of clothing, skin, and the environment during the process of removing such equipment.

**Implement Environmental Infection Control**

Dedicated medical equipment should be used when caring for patients with known or suspected Covid-19.

* All non-dedicated, non-disposable medical equipment used for patient care should be cleaned and disinfected according to manufacturer’s instructions and facility policies.

Ensure that environmental cleaning and disinfection procedures are followed consistently and correctly.

Routine cleaning and disinfection procedures (e.g., using cleaners and water to pre-clean surfaces prior to applying an EPA-registered, hospital-grade disinfectant to frequently touched surfaces or objects for appropriate contact times as indicated on the product’s label) are appropriate for SARS-CoV-2 in healthcare settings, including those patient-care areas in which aerosol generating procedures are performed.

* Refer to [List](https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2)  on the EPA website for EPA-registered disinfectants that have qualified under EPA’s emerging viral pathogens program for use against SARS-CoV-2.

Management of laundry, food service utensils, and medical waste should also be performed in accordance with routine procedures.

Additional information about recommended practices for terminal cleaning of rooms and PPE to be worn by environmental services personnel is available in the [Healthcare Infection Prevention and Control FAQs for COVID-19](https://www.cdc.gov/coronavirus/2019-ncov/infection-control/infection-prevention-control-faq.html)

**Establish Reporting within and between Healthcare Facilities and to Public Health Authorities**

Implement mechanisms and policies that promote situational awareness for facility staff including infection control, healthcare epidemiology, facility leadership, occupational health, clinical laboratory, and frontline staff about patients with known or suspected Covid-19 and facility plans for response.

Communicate and collaborate with public health authorities.

* Facilities should designate specific persons within the healthcare facility who are responsible for communication with public health officials and dissemination of information to HCP.
* Communicate information about patients with known or suspected Covid-19 to appropriate personnel before transferring them to other departments in the facility (e.g., radiology) and to other healthcare facilities.

**Reference**

Centers for Disease Control and Prevention

Covid-19 Infection Control