Coronavirus Disease 2019 (COVID-19)

Interim Infection Prevention and Control Recommendations for Patients with Confirmed Coronavirus Disease 2019 (COVID-19) or Persons Under Investigation for COVID-19 in Healthcare Settings

Updated February 21, 2020

Background

Frequently Asked Questions: Healthcare Infection Prevention and Control

Infection control procedures including administrative rules and engineering controls, environmental hygiene, correct work practices, and appropriate use of personal protective equipment (PPE) are all necessary to prevent infections from spreading during healthcare delivery. Prompt detection and effective triage and isolation of potentially infectious patients are essential to prevent unnecessary exposures among patients, healthcare personnel, and visitors at the facility. All healthcare facilities must ensure that their personnel are correctly trained and capable of implementing infection control procedures; individual healthcare personnel should ensure they understand and can adhere to infection control requirements.

This guidance is based on the currently limited information available about coronavirus disease 2019 related to disease severity, transmission efficiency, and shedding duration. This cautious approach will be refined and updated as more information becomes available and as response needs change in the United States. This guidance is applicable to all U.S. healthcare settings. **This guidance is not intended for non-healthcare settings (e.g., schools) OR to persons outside of healthcare settings.** For recommendations regarding clinical management, air or ground medical transport, or laboratory settings, refer to the main CDC COVID-19 website.

Definition of Healthcare Personnel (HCP) – For the purposes of this guidance, HCP refers to all persons, paid and unpaid, working in healthcare settings engaged in patient care activities, including: patient assessment for triage, entering examination rooms or patient rooms to provide care or clean and disinfect the environment, obtaining clinical specimens, handling soiled medical supplies or equipment, and coming in contact with potentially contaminated environmental surfaces.

Recommendations

1. 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, and throughout the duration of the affected patient's presence in the healthcare setting.

- **Before Arrival**
  - When scheduling appointments, instruct patients and persons who accompany them to call ahead or inform HCP upon arrival if they have symptoms of any respiratory infection (e.g., cough, runny nose, fever1) and to take appropriate preventive actions (e.g., wear a facemask upon entry to contain cough, follow triage procedures).
  - If a patient is arriving via transport by emergency medical services (EMS), the driver should contact the receiving emergency department (ED) or healthcare facility and follow previously agreed upon local or regional transport protocols. This will allow the healthcare facility to prepare for receipt of the patient.
- **Upon Arrival and During the Visit**
  - Take steps to ensure all persons with symptoms of suspected COVID-19 or other respiratory infection (e.g., fever, cough) adhere to respiratory hygiene and cough etiquette, hand hygiene, and triage procedures throughout the

duration of the visit. Consider posting visual alerts (e.g., signs, posters) at the entrance and in strategic places (e.g., waiting areas, elevators, cafeterias) to provide patients and HCP with instructions (in appropriate languages) about hand hygiene, respiratory hygiene, and cough etiquette. Instructions should include how to use facemasks (See definition of facemask in Appendix) or tissues to cover nose and mouth when coughing or sneezing, to dispose of tissues and contaminated items in waste receptacles, and how and when to perform hand hygiene.

- Ensure that patients with symptoms of suspected COVID-19 or other respiratory infection (e.g., fever, cough) are not allowed to wait among other patients seeking care. Identify a separate, well-ventilated space that allows waiting patients to be separated by 6 or more feet, with easy access to respiratory hygiene supplies. In some settings, medically-stable patients might opt to wait in a personal vehicle or outside the healthcare facility where they can be contacted by mobile phone when it is their turn to be evaluated.
- Ensure rapid triage and isolation of patients with symptoms of suspected COVID-19 or other respiratory infection (e.g., fever, cough):
  - Identify patients at risk for having COVID-19 infection before or immediately upon arrival to the healthcare facility.
    - Implement triage procedures to detect persons under investigation (PUI) for COVID-19 during or before patient triage or registration (e.g., at the time of patient check-in) and ensure that all patients are asked about the presence of symptoms of a respiratory infection and history of travel to areas experiencing transmission of SARS-CoV-2, the virus that causes COVID-19, or contact with possible COVID-19 patients.
  - Implement respiratory hygiene and cough etiquette (i.e., placing a facemask over the patient's nose and mouth if that has not already been done) and isolate the PUI for COVID-19 in an Airborne Infection Isolation Room (AIIR), if available. See recommendations for "Patient Placement" below. Additional guidance for evaluating patients in U.S. for COVID-19 infection can be found on the CDC COVID-19 website.
  - Inform infection prevention and control services, local and state public health authorities, and other healthcare facility staff as appropriate about the presence of a person under investigation for COVID-19.
- Provide supplies for respiratory hygiene and cough etiquette, including 60%-95% alcohol-based hand sanitizer (ABHS), tissues, no touch receptacles for disposal, and facemasks at healthcare facility entrances, waiting rooms, patient check-ins, etc.

2. Adherence to Standard, Contact, and Airborne Precautions, Including the Use of Eye Protection

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 those caused by COVID-19, are summarized below. Attention should be paid to training on correct use, proper donning (putting on) and doffing (taking off), and disposal of any PPE. This document does not emphasize all aspects of Standard Precautions (e.g., injection safety) that are required for all patient care; the full description is provided in the Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings. All HCP (see section 3 for measures for non-HCP visitors) who enter the room of a patient with known or suspected COVID-19 (i.e., PUI) should adhere to Standard, Contact, and Airborne Precautions, including the following:

- **Patient Placement**
  - Place a patient with known or suspected COVID-19 (i.e., PUI) in an AIIR that has been constructed and maintained in accordance with current guidelines.
    - AIIRs are single patient rooms at negative pressure relative to the surrounding areas, and with a minimum of 6 air changes per hour (12 air changes per hour are recommended for new construction or renovation). Air from these rooms should be exhausted directly to the outside or be filtered through a high-efficiency particulate air (HEPA) filter before recirculation. Room doors should be kept closed except when entering or leaving the room, and entry and exit should be minimized. Facilities should monitor and document the proper negative-pressure function of these rooms.
    - If an AIIR is not available, patients who require hospitalization should be transferred as soon as is feasible to a facility where an AIIR is available. If the patient does not require hospitalization they can be discharged to home (in consultation with state or local public health authorities) if deemed medically and socially appropriate. Pending transfer or discharge, place a facemask on the patient and isolate him/her in an examination room with the door closed. Ideally, the patient should not be placed in any room where room exhaust is recirculated within the building without HEPA filtration.
  - Once in an AIIR, the patient's facemask may be removed. Limit transport and movement of the patient outside of

the AIIR to medically-essential purposes. When not in an AIIR (e.g., during transport or if an AIIR is not available), patients should wear a facemask to contain secretions.
    - Personnel entering the room should use PPE, including respiratory protection, as described below.
    - Only essential personnel should enter the room. Implement staffing policies to minimize the number of HCP who enter the room.
        - Facilities should consider caring for these patients with dedicated HCP to minimize risk of transmission and exposure to other patients and other HCP.
    - Facilities should keep a log of all persons who care for or enter the rooms or care area of these patients.
    - Use dedicated or disposable noncritical patient-care equipment (e.g., blood pressure cuffs). If equipment will be used for more than one patient, clean and disinfect such equipment before use on another patient according to manufacturer's instructions.
    - HCP entering the room soon after a patient vacates the room should use respiratory protection. (See personal protective equipment section below) Standard practice for pathogens spread by the airborne route (e.g., measles, tuberculosis) is to restrict unprotected individuals, including HCP, from entering a vacated room until sufficient time has elapsed for enough air changes to remove potentially infectious particles (more information on clearance rates under differing ventilation conditions is available). We do not yet know how long COVID-19 remains infectious in the air. In the interim, it is reasonable to apply a similar time period before entering the room without respiratory protection as used for pathogens spread by the airborne route (e.g., measles, tuberculosis). In addition, the room should undergo appropriate cleaning and surface disinfection before it is returned to routine use.
- **Hand Hygiene**
    - HCP should perform hand hygiene using ABHS before and after all patient contact, contact with potentially infectious material, and before putting on and upon removal of PPE, including gloves. Hand hygiene in healthcare settings also can be performed by washing with soap and water for at least 20 seconds. If hands are visibly soiled, use soap and water before returning to ABHS.
    - Healthcare facilities should ensure that hand hygiene supplies are readily available in every care location.
- **Personal Protective Equipment**
  Employers should select appropriate PPE and provide it to HCP in accordance with OSHA's PPE standards (29 CFR 1910 Subpart I) . 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; and 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:
    - **Gloves**
        - Perform hand hygiene, then 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.
    - **Gowns**
        - Put on a clean isolation gown upon entry into the patient room or area. Change the gown if it becomes soiled. Remove and discard the gown in a dedicated container for waste or linen before leaving the patient room or care area. Disposable gowns should be discarded after use. Cloth gowns should be laundered after each use.
    - **Respiratory Protection**
        - Use respiratory protection (i.e., a respirator) that is at least as protective as a fit-tested NIOSH-certified disposable N95 filtering facepiece respirator before entry into the patient room or care area. See appendix for respirator definition.
        - Disposable respirators should be removed and discarded after exiting the patient's room or care area and closing the door. Perform hand hygiene after discarding the respirator.
        - If reusable respirators (e.g., powered air purifying respirator/PAPR) are used, they must be cleaned and disinfected according to manufacturer's reprocessing instructions prior to re-use.
        - Respirator use must be in the context of a complete respiratory protection program in accordance with Occupational Safety and Health Administration (OSHA) Respiratory Protection standard (29 CFR 1910.134). Staff should be medically cleared and fit-tested if using respirators with tight-fitting facepieces (e.g., a NIOSH-certified disposable N95) and trained in the proper use of respirators, safe removal and disposal, and medical contraindications to respirator use.
    - **Eye Protection**

        - Put on eye protection (e.g., goggles, a disposable face shield that covers the front and sides of the face) upon entry to the patient room or care area. 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.
- **Use Caution When Performing Aerosol-Generating Procedures**
    - Some procedures performed on COVID-19 patients could generate infectious aerosols. In particular, procedures that are likely to induce coughing (e.g., sputum induction, open suctioning of airways) should be performed cautiously and avoided if possible.
    - If performed, these procedures should take place in an AIIR and personnel should use respiratory protection as described above. In addition:
        - Limit the number of HCP present during the procedure to only those essential for patient care and procedural support.
        - Clean and disinfect procedure room surfaces promptly as described in the section on environmental infection control below.
- **Diagnostic Respiratory Specimen Collection**
    - Collecting diagnostic respiratory specimens (e.g., nasopharyngeal swab) are likely to induce coughing or sneezing. Individuals in the room during the procedure should, ideally, be limited to the patient and the healthcare provider obtaining the specimen.
    - HCP collecting specimens for testing for SARS-CoV-2, the virus that causes COVID-19, from patients with known or suspected COVID-19 (i.e., PUI) should adhere to Standard, Contact, and Airborne Precautions, including the use of eye protection.
    - These procedures should take place in an AIIR or in an examination room with the door closed. Ideally, the patient should not be placed in any room where room exhaust is recirculated within the building without HEPA filtration.
- **Duration of Isolation Precautions for PUIs and confirmed COVID-19 patients**
    - Until information is available regarding viral shedding after clinical improvement, discontinuation of isolation precautions should be determined on a case-by-case basis, in conjunction with local, state, and federal health authorities.
    - Factors that should be considered include: presence of symptoms related to COVID-19 infection, date symptoms resolved, other conditions that would require specific precautions (e.g., tuberculosis, *Clostridioides difficile),* other laboratory information reflecting clinical status, alternatives to inpatient isolation, such as the possibility of safe recovery at home.
    - For additional information refer to the Interim Considerations for Disposition of Hospitalized Patients with COVID-19.

3. Manage Visitor Access and Movement Within the Facility

- Establish procedures for monitoring, managing and training visitors.
- Restrict visitors from entering the room of known or suspected COVID-19 patients (i.e., PUI). Alternative mechanisms for patient and visitor interactions, such as video-call applications on cell phones or tablets should be explored. Facilities can consider exceptions based on end-of-life situations or when a visitor is essential for the patient's emotional well-being and care.
- Visitors to patients with known or suspected COVID-19 (i.e., PUI) should be scheduled and controlled to allow for:
    - Screening visitors for symptoms of acute respiratory illness before entering the healthcare facility.
    - Facilities should evaluate risk to the health of the visitor (e.g., visitor might have underlying illness putting them at higher risk for COVID-19) and ability to comply with precautions.
    - Facilities should provide instruction, before visitors enter patients' rooms, on hand hygiene, limiting surfaces touched, and use of PPE according to current facility policy while in the patient's room.
    - Facilities should maintain a record (e.g., log book) of all visitors who enter patient rooms.
    - Visitors should not be present during aerosol-generating procedures.
    - Visitors should be instructed to limit their movement within the facility.
    - Exposed visitors (e.g., contact with COVID-19 patient prior to admission) should be advised to report any signs and symptoms of acute illness to their health care provider for a period of at least 14 days after the last known exposure to the sick patient.
- All visitors should follow respiratory hygiene and cough etiquette precautions while in the common areas of the facility.

4. Implement Engineering Controls

- Consider designing and installing 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, closed suctioning systems for airway suctioning for intubated patients, as well as appropriate air-handling systems (with appropriate directionality, filtration, exchange rate, etc.) that are installed and properly maintained.

5. Monitor and Manage Ill and Exposed Healthcare Personnel

- Movement and monitoring decisions for HCP with exposure to COVID-19 should be made in consultation with public health authorities. Refer to the Interim U.S. Guidance for Risk Assessment and Public Health Management of Healthcare Personnel with Potential Exposure in a Healthcare Setting to Patients with Coronavirus Disease 2019 (COVID-19) for additional information.
- Facilities and organizations providing healthcare should implement sick leave policies for HCP that are non-punitive, flexible, and consistent with public health guidance.

6. Train and Educate Healthcare Personnel

- Provide HCP with job- or task-specific education and training on preventing transmission of infectious agents, including refresher training.
- HCP must be medically cleared, trained, and fit tested for respiratory protection device use (e.g., N95 filtering facepiece respirators), or medically cleared and trained in the use of an alternative respiratory protection device (e.g., Powered Air-Purifying Respirator, PAPR) whenever respirators are required. OSHA has a number of respiratory training videos .
- 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 environment during the process of removing such equipment.

7. Implement Environmental Infection Control

- Dedicated medical equipment should be used for patient care.
- 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 COVID-19 in healthcare settings, including those patient-care areas in which aerosol-generating procedures are performed. Products with EPA-approved emerging viral pathogens claims are recommended for use against COVID-19. These products can be identified by the following claim:
  - "[Product name] has demonstrated effectiveness against viruses similar to COVID-19 on hard non-porous surfaces. Therefore, this product can be used against COVID-19 when used in accordance with the directions for use against [name of supporting virus] on hard, non-porous surfaces."
  - This claim or a similar claim, will be made only through the following communications outlets: technical literature distributed exclusively to health care facilities, physicians, nurses and public health officials, "1-800" consumer information services, social media sites and company websites (non-label related). Specific claims for "COVID-19" will not appear on the product or master label.
  - See additional information about EPA-approved emerging viral pathogens claims .
  - If there are no available EPA-registered products that have an approved emerging viral pathogen claim for COVID-19, products with label claims against human coronaviruses should be used according to label instructions.
- Management of laundry, food service utensils, and medical waste should also be performed in accordance with routine procedures.
- Detailed information on environmental infection control in healthcare settings can be found in CDC's Guidelines for Environmental Infection Control in Health-Care Facilities and Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings [section IV.F. Care of the environment].

8. Establish Reporting within Healthcare Facilities and to Public Health Authorities

- Implement mechanisms and policies that promptly alert key facility staff including infection control, healthcare epidemiology, facility leadership, occupational health, clinical laboratory, and frontline staff about known or suspected COVID-19 patients (i.e., PUI).
- Communicate and collaborate with public health authorities.
  - Promptly notify state or local public health authorities of patients with known or suspected COVID-19 (i.e., PUI). Facilities should designate specific persons within the healthcare facility who are responsible for communication with public health officials and dissemination of information to HCP.

Appendix: Additional Information about Respirators and Facemasks:

Information about Respirators:

- 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 the CDC/NIOSH, including those intended for use in healthcare.
- Respirator use must be in the context of a complete respiratory protection program in accordance with OSHA Respiratory Protection standard (29 CFR 1910.134). HCP should be medically cleared and fit-tested if using respirators with tight-fitting facepieces (e.g., a NIOSH-approved N95 respirator) and trained in the proper use of respirators, safe removal and disposal, and medical contraindications to respirator use.
- NIOSH information about respirators
- OSHA Respiratory Protection eTool

Filtering Facepiece Respirators (FFR) including N95 Respirators

- A commonly used respirator is a filtering facepiece respirator (commonly referred to as an N95). Filtering facepiece respirators are disposable half facepiece respirators that filter out particles.
- To work properly, FFRs must be worn throughout the period of exposure and be specially fitted for each person who wears one (this is called "fit-testing" and is usually done in a workplace where respirators are used).
- Three key factors for an N95 respirator to be effective
- FFR users should also perform a user seal check to ensure proper fit each time an FFR is used.
- More information on how to perform a user seal check

See a list of NIOSH-approved N95 respirators

Powered Air-Purifying Respirators (PAPRs)

- Powered air-purifying respirators (PAPRs) have a battery-powered blower that pulls air through attached filters, canisters, or cartridges. They provide protection against gases, vapors, or particles, when equipped with the appropriate cartridge, canister, or filter.
- Loose-fitting PAPRs do not require fit testing and can be used with facial hair.
- A list of NIOSH-approved PAPRs is located on the NIOSH Certified Equipment List

Information about Facemasks:

- If worn properly, a facemask helps block respiratory secretions produced by the wearer from contaminating other persons and surfaces (often called source control).
- Facemasks are cleared by the U.S. Food and Drug Administration (FDA) for use as medical devices. Facemasks should be used once and then thrown away in the trash.

Interim Guidance for Implementing Home Care of People Not Requiring Hospitalization for Coronavirus Disease 2019 (COVID-19)

CDC has developed interim guidance for staff at local and state health departments, infection prevention and control professionals, healthcare providers, and healthcare workers who are coordinating the home care and isolation of people who are confirmed to have, or being evaluated for coronavirus disease 2019 (COVID-19) (see Criteria to Guide Evaluation of Persons Under Investigation (PUI) for COVID-19).

Interim Guidance for Implementing Home Care of People Not Requiring Hospitalization for Coronavirus Disease 2019 (COVID-19)

Important Links and Additional Infection Control Resources

- World Health Organization (WHO) Coronavirus Disease 2019 (COVID-19) technical guidance
- Respirator Trusted-Source Information
- Respirator Fact Sheet

Footnote

1. Fever may not be present in some patients, such as those who are very young, elderly, immunosuppressed, or taking certain medications. Clinical judgement should be used to guide testing of patients in such situations.

Page last reviewed: February 21, 2020