



Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

Coronavirus Disease 2019 (COVID-19)

Healthcare Infection Prevention and Control FAQs for COVID-19

Updated April 19, 2020

Page Summary

This page was updated on April 12, 2020 to align with the revised [Interim Infection Prevention and Control Recommendations for Patients with Suspected or Confirmed Coronavirus Disease 2019 \(COVID-19\) in Healthcare Settings](#).

Who is this for: Healthcare personnel who may care for patients who are confirmed with or under investigation for COVID-19.

What is it for: This creates FAQs to support the existing [Healthcare Infection Prevention and Control Guidance for COVID-19](#).

How is it used: To assist healthcare facilities in preventing transmission of COVID-19 in healthcare settings.

During the COVID-19 pandemic, are there special considerations for aerosol-generating procedures (AGPs) in surgical and other procedural care settings?

As part of routine practices, all healthcare personnel (HCP) should be applying [Standard Precautions](#). HCP should always deliberately assess potential risks of exposure to infectious material before engaging in activities and procedures in healthcare delivery. Based on their risk assessment at the point of care, safe work practices including administrative controls, engineering controls that reduce the production or release of infectious material, and personal protective equipment (PPE) should be applied to the activity according to CDC guidelines and standards of practice.

To reduce SARS-CoV-2 exposure during the COVID-19 pandemic, CDC recommends that facilities:

- cancel or postpone elective surgery and procedures
- consider nonoperative approaches when feasible
- minimize the use of procedures or techniques that might produce infectious aerosols when feasible
- minimize the number of people in the operating or procedure room to reduce exposures

If surgery or procedures cannot be postponed, HCP caring for patients with suspected or confirmed COVID-19 should adhere to all [recommended infection prevention and control practices for COVID-19](#).

- This includes using all recommended PPE: an N95 or higher level respirator (or facemask if respirators are not available), eye protection, gloves, and a gown.
- If shortages exist, N95 or higher level respirators should be prioritized for procedures involving higher risk techniques (e.g., that generate potentially infectious aerosols) or that involve anatomic regions where viral loads might be higher (e.g., nose and throat, oropharynx, respiratory tract).
- As part of routine practice, HCP should also be using appropriate engineering controls for source control (e.g., smoke evacuation devices).

In the context of COVID-19, some infected individuals might not be identified based on clinical signs and symptoms.

- Depending on testing availability and how rapidly results are available, facilities can consider implementing pre-operative or pre-admission testing for COVID-19. However, limitations of this approach should be considered, including negative results from patients during their incubation period who could become infectious later.
- If testing is not available or cannot be provided in an actionable time period, facilities could consider using precautions specific to COVID-19 for all patients undergoing evaluation or treatment in a healthcare setting in regions experiencing high incidence of COVID-19 in the community. Data are not available to precisely define the threshold for determining high incidence. If healthcare facilities are unsure about their region's incidence, they could consult with their health department. In regions with high community COVID-19 incidence, N95 respirators could be prioritized for the care of all patients who are undergoing procedures that might pose higher risk (e.g., those generating infectious aerosols or involving anatomic regions where viral load might be higher), regardless of COVID-19 testing results.

Why does CDC continue to recommend respiratory protection equivalent or higher to the level provided by an N95 disposable filtering facepiece respirator for care of patients with known or suspected COVID-19?

CDC's guidance to use NIOSH-approved N95 disposable filtering facepiece or higher level respirators when providing care for patients with suspected or known COVID-19 is based on the current understanding of SARS-CoV-2 and related respiratory viruses.

Current data suggest that close-range aerosol transmission by droplet and inhalation, and contact followed by self-delivery to the eyes, nose, or mouth are likely routes of transmission. Long-range aerosol transmission, such as is seen with measles, has not been a feature of SARS-CoV-2.

Potential routes of close-range transmission include splashes and sprays of infectious material onto mucous membranes and inhalation of infectious virions exhaled by an infected person. The relative contribution of each of these is not known for SARS-CoV-2.

Facemasks commonly used during surgical procedures will provide barrier protection against droplet sprays contacting mucous membranes of the nose and mouth, but they are not designed to protect wearers from inhaling small particles. N95 and higher level respirators, such as other disposable filtering facepiece respirators, powered air-purifying respirators (PAPRs), and elastomeric respirators, provide both barrier and respiratory protection because of their tight fit and filtration characteristics.

Respirators should be used as part of a respiratory protection program that provides staff with medical evaluations, training, and fit testing.

Although facemasks are routinely used for the care of patients with common viral respiratory infections, N95 or higher level respirators are routinely recommended for emerging pathogens like SARS CoV-2, which have the potential for transmission via small particles, the ability to cause severe infections, and no specific treatments or vaccines.

CDC recommendations acknowledge the current challenges with limited supplies of N95s and other respirators. Facilities that do not have sufficient supplies of N95s and other respirators for all patient care should prioritize their use for activities and procedures that pose high risks of generating infectious aerosols and use facemasks for care that does not involve those activities or procedures. Detailed [strategies for optimizing the supply of N95 respirators](#) are available on the CDC website. Once availability of supplies is reestablished, the guidance states that the use of N95 and higher level respirators should resume.

What personal protective equipment (PPE) should be worn by individuals transporting patients who are confirmed with or under investigation for COVID-19 within a healthcare facility? For example, what PPE should be worn when transporting a patient to radiology for imaging that cannot be performed in the patient room?

In general, transport and movement of the patient outside of their room should be limited to medically essential purposes. If being transported outside of the room, such as to radiology, healthcare personnel (HCP) in the receiving area should be notified in advance of transporting the patient. For transport, the patient should wear a facemask or cloth face covering to contain secretions and be covered with a clean sheet.

If transport personnel must prepare the patient for transport (e.g., transfer them to the wheelchair or gurney), transport personnel should wear [all recommended PPE](#) (gloves, a gown, respiratory protection that is at least as protective as a fit tested NIOSH-certified disposable N95 filtering facepiece respirator or facemask—if a respirator is not available—and eye protection [i.e., goggles or disposable face shield that covers the front and sides of the face]). This recommendation is needed because these interactions typically involve close, often face-to-face, contact with the patient in an enclosed space (e.g., patient room). Once the patient has been transferred to the wheelchair or gurney (and prior to exiting the room), transporters should remove their gown, gloves, and eye protection and perform hand hygiene.

If the patient is wearing a facemask or cloth face covering, no recommendation for PPE is made typically for HCP transporting patients with a respiratory infection from the patient's room to the destination. However, given current limitations in knowledge regarding COVID-19 and following the currently cautious approach for [risk stratification and monitoring of healthcare personnel caring for patients with COVID-19](#), use of a facemask by the transporter is recommended for anything more than brief encounters with COVID-19 patients. Additional PPE should not be required unless there is an anticipated need to provide medical assistance during transport (e.g., helping the patient replace a dislodged facemask).

After arrival at their destination, receiving personnel (e.g., in radiology) and the transporter (if assisting with transfer) should perform hand hygiene and wear [all recommended PPE](#). If still wearing their original respirator or facemask, the transporter should take care to avoid self-contamination when donning the remainder of the recommended PPE. This cautious approach will be refined and updated as more information becomes available and as response needs change in the United States.

Interim guidance for EMS personnel transporting patients with confirmed or suspected COVID-19 is [available here](#). EMS personnel should wear all recommended PPE because they are providing direct medical care and in close contact with the patient for longer periods of time.

What PPE should be worn by HCP providing care to asymptomatic patients with a history of exposure to COVID-19 who are being evaluated for a non-infectious complaint (e.g., hypertension or hyperglycemia)?

Standard Precautions should be followed when caring for any patient, regardless of suspected or confirmed COVID-19. Patients with even mild symptoms¹ that might be consistent with COVID-19 (e.g., cough, sore throat, shortness of breath, muscle aches) should be cared for by HCP wearing [all recommended PPE](#) for the patient encounter (gloves, a gown, respiratory protection that is at least as protective as a fit tested NIOSH-certified disposable N95 filtering facepiece respirator or facemask—if a respirator is not available—and eye protection [i.e., goggles or disposable face shield that covers the front and sides of the face]).

Recent studies indicate that people who are infected but do not have symptoms likely also play a role in the spread of COVID-19. This underscores the importance of applying prevention practices to all patients including social distancing, hand hygiene, and surface decontamination. In addition, [universal source control](#)² is recommended by everyone entering a healthcare facility. If the patient is without even mild COVID-19 symptoms then [precautions specific to COVID-19](#) are not required but could be considered by regions experiencing high incidence of COVID-19 in the community.

¹ Note: In addition to cough and shortness of breath, nonspecific symptoms such as sore throat, myalgia, fatigue, nausea, and diarrhea have been noted as initial symptoms in some cases of COVID-19. These symptoms can have several alternative explanations; however, failure to identify and implement proper precautions in a healthcare setting for persons infected with the virus that causes COVID-19 can contribute to widespread transmission in that facility due to the presence of susceptible patients and close interactions with healthcare personnel. For this reason, a lower temperature of 100.0°F and the inclusion of mild and non-specific symptoms should be used by healthcare personnel evaluating these patients to increase the ability to detect even mild cases of COVID-19. Additional information about clinical presentation of patients with COVID-19 is [available](#).

² Cloth face coverings are not considered PPE because their capability to protect HCP is unknown. Facemasks, if available, should be reserved for HCP. For visitors and patients, a cloth face covering may be appropriate. If a visitor or patient arrives to the healthcare facility without a cloth face cover, a facemask may be used for source control if supplies are available.

What personal protective equipment (PPE) should be worn by environmental services (EVS) personnel who clean and disinfect rooms of hospitalized patients with COVID-19?

In general, only essential personnel should enter the room of patients with COVID-19. Healthcare facilities should consider assigning daily cleaning and disinfection of high-touch surfaces to nursing personnel who will already be in the room providing care to the patient. If this responsibility is assigned to EVS personnel, they should wear all [recommended PPE](#) when in the room. PPE should be removed upon leaving the room, immediately followed by performance of hand hygiene.

After discharge, terminal cleaning may be performed by EVS personnel. They should delay entry into the room until a [sufficient time has elapsed](#) for enough air changes to remove potentially infectious particles. We do not yet know how long SARS-CoV-2 remains infectious in the air. Regardless, EVS personnel should refrain from entering the 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](#)). After this time has elapsed, EVS personnel may enter the room and should wear a gown and gloves when performing terminal cleaning. A facemask (if not already wearing for source control) and eye protection should be added if splashes or sprays during cleaning and disinfection activities are anticipated or otherwise required based on the selected cleaning products. Shoe covers are not recommended at this time for personnel caring for patients with COVID-19.

Some procedures performed on patients are more likely to generate higher concentrations of infectious respiratory aerosols than coughing, sneezing, talking, or breathing. These aerosol generating procedures (AGPs) potentially put healthcare personnel and others at an increased risk for pathogen exposure and infection.

Development of a comprehensive list of AGPs for healthcare settings has not been possible, due to limitations in available data on which procedures may generate potentially infectious aerosols and the challenges in determining if reported transmissions during AGPs are due to aerosols or other exposures.

There is neither expert consensus, nor sufficient supporting data, to create a definitive and comprehensive list of AGPs for healthcare settings.

Commonly performed medical procedures that are often considered AGPs, or that create uncontrolled respiratory secretions, include:

- open suctioning of airways
- sputum induction
- cardiopulmonary resuscitation
- endotracheal intubation and extubation
- non-invasive ventilation (e.g., BiPAP, CPAP)
- bronchoscopy
- manual ventilation

Based on limited available data, it is uncertain whether aerosols generated from some procedures may be infectious, such as:

- nebulizer administration*
- high flow O2 delivery

*Aerosols generated by nebulizers are derived from medication in the nebulizer. It is uncertain whether potential associations between performing this common procedure and increased risk of infection might be due to aerosols generated by the procedure or due to increased contact between those administering the nebulized medication and infected patients.

References related to aerosol generating procedures:

Tran K, Cimon K, Severn M, Pessoa-Silva CL, Conly J (2012) Aerosol Generating Procedures and Risk of Transmission of Acute Respiratory Infections to Healthcare Workers: A Systematic Review. PLoS ONE 7(4); <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3338532/#!po=72.2222> .

Where should nasopharyngeal swabs be performed on a known or suspected COVID-19 patient, and with what PPE? —

The collection of nasopharyngeal (NP) swabs from patients with known or suspected COVID-19 can be performed in a regular examination room with the door closed. Use of an airborne infection isolation room for nasopharyngeal specimen collection is not required. HCP in the room should wear an N95 or higher-level respirator (or facemask if a respirator is not available), eye protection, gloves, and a gown. If respirators are not readily available, they should be prioritized for other procedures at higher risk for producing infectious aerosols (e.g., intubation), instead of for collecting NP swabs.

Do all patients with confirmed or suspected COVID-19 need to be placed in airborne infection isolation rooms? —

No. Updated [CDC Interim Infection Prevention and Control Recommendations for Patients with Suspected or Confirmed Coronavirus Disease 2019 \(COVID-19\) in Healthcare Settings](#) recommends placing patients in a regular examination room with the door closed. Airborne infection isolation rooms should be reserved for patients undergoing aerosol generating procedures or for diagnoses such as active tuberculosis.

How long does an examination room need to remain vacant after being occupied by a patient with confirmed or suspected COVID-19? —

Although spread of SARS-CoV-2 is believed to be primarily via respiratory droplets, the contribution of small respirable particles to close proximity transmission is currently uncertain. Airborne transmission from person-to-person over long distances is unlikely.

The amount of time that the air inside an examination room remains potentially infectious is not known and may depend on a number of factors including the size of the room, the number of air changes per hour, how long the patient was in the room, if the patient was coughing or sneezing, and if an aerosol-generating procedure was performed. Facilities will need to consider these factors when deciding when the vacated room can be entered by someone who is not wearing PPE.

For a patient who was not coughing or sneezing, did not undergo an aerosol-generating procedure, and occupied the room for a short period of time (e.g., a few minutes), any risk to HCP and subsequent patients likely dissipates over a matter of minutes. However, for a patient who was coughing and remained in the room for a longer period of time or underwent an aerosol-generating procedure, the risk period is likely longer.

For these higher risk scenarios, it is reasonable to apply a similar time period as that used for pathogens spread by the airborne route (e.g., measles, tuberculosis) and to restrict HCP and patients without PPE from entering the room until sufficient time has elapsed for enough air changes to remove potentially infectious particles.

General guidance on [clearance rates under differing ventilation conditions](#) is available.

In addition to ensuring sufficient time for enough air changes to remove potentially infectious particles, HCP should clean and disinfect environmental surfaces and shared equipment before the room is used for another patient.

My hospital is experiencing a shortage of isolation gowns. To preserve our supply, can we stop using gowns for the care of patients with methicillin-resistant *Staphylococcus aureus* (MRSA) and other endemic multidrug-resistant organisms (MDROs), and *Clostridioides difficile*?

CDC has released information about [strategies to optimize the supply of isolation gowns](#). Healthcare facilities should refer to that guidance and implement the recommended strategies to optimize their current supply of gowns. This includes shifting toward the use of washable cloth gowns, if feasible.

The use of gowns as part of Contact Precautions in the context of MDROs has been implemented primarily to reduce the risk of transmission to other patients rather than to protect healthcare personnel (HCP). Facilities with shortages could consider suspending the use of gowns for the care of patients with endemic MDROs, such as MRSA, VRE, and ESBL-producing Gram-negative bacilli except as required for [Standard Precautions](#). Facilities should assess their local epidemiology to determine which MDROs are considered endemic. Regardless of the use of gowns, HCP at facilities should continue to wear gloves for contact with these patients and their environment. Hand hygiene should continue to be emphasized. Facilities should also attempt to place patients colonized or infected with an MDRO in a private room, if available.

- **Caring for patients who have highly resistant Gram-negative organisms (e.g., carbapenem-resistant Enterobacteriaceae) and other MDROs (e.g., *Candida auris*) that are not considered endemic:** Rather than gowns being donned for every room entry, they should be reserved for use as part of [Standard Precautions](#) and also prioritized for high-contact patient care activities that pose highest risk for transfer of pathogens from the patient to HCP. Examples of such high-contact care activities include dressing, bathing/showering, transferring, providing hygiene, changing linens, changing briefs or assisting with toileting, device care or use (central line, urinary catheter, feeding tube, tracheostomy/ventilator), and wound care. To further preserve gowns, HCP are recommended to bundle high-contact care activities as part of individual care encounters. Regardless of the use of gowns, HCP at facilities should continue to wear gloves for contact with these patients and their environment. Hand hygiene should continue to be emphasized. Facilities should also attempt to place patients colonized or infected with an MDRO in a private room, if available.
- **Caring for patients with *Clostridioides difficile* infections (CDI):** Facilities should continue using Contact Precautions (putting on a gown and gloves upon entry into the patient's room and placing the patient in a private room) for the care of symptomatic patients with CDI. As part of a [supplemental strategy to prevent transmission of CDI](#), some facilities have implemented Contact Precautions for the care of patients at high risk for CDI who have asymptomatic carriage of *Clostridioides difficile*. There are limited data about the role of asymptomatic carriage in transmission of CDI. In this setting of a critical national shortage of gowns, facilities should consider suspending this approach until the shortage is addressed. Gowns should still be used as part of [Standard Precautions](#).