

# CORONAVIRUS DISEASE 2019 (COVID-19)

## Infection Prevention and Control (IPC) Overview for COVID-19 in Health Care Settings



**Audience:** All Colleagues, All health ministry settings: THMG, Acute Care, Continuing Care, National Health Ministries

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**COVID-19 Response Team Owner:** Clinical and Operations

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**UNIVERSAL: This guide should be used for all COVID patients regardless of Ministry COVID Levels**

**What's Updated:** Deleted content related to mini-Respiratory Protection Standard and replaced details on use of PPE with a link to the PPE Guidebook

### Transmission

SARS-CoV-2 is transmitted when an infected person breathes out droplets and very small particles that contain the virus. These droplets and particles can be breathed in by other people in close proximity or land on their eyes, noses, or mouth. In some circumstances, they may contaminate surfaces they touch. People who are closer than 6 feet or less from the infected person are at higher risk of infection .

The mechanisms for transmission of SARS-CoV-2 are:

- Breathing in air when close to an infected person who is exhaling small droplets and particles that contain the virus. Risk of transmission is greatest within six feet or less of an infected person where the concentration of these very fine droplets and particles is greatest. Those with infection who have symptoms like coughing and sneezing also release higher concentration of virus into the air albeit transmission from those who are asymptomatic also has been documented.
- Having these small droplets and particles that contain virus land on the eyes, nose, or mouth, especially through splashes and sprays like a cough or sneeze. Risk of transmission is likewise greatest close to an infectious source where the concentration of these exhaled droplets and particles is greatest.
- Touching eyes, nose, or mouth with hands that have the virus on them after direct contact or indirect contact (meaning touching a surface that is contaminated with the virus). The risk for this mechanism of transmission is less likely compared to the other two dynamics of transmission above.

With increasing distance from the source person with infection, the risk of inhalation of virus decreases . Although infections through inhalation at distances greater than six feet from an infectious source are less likely than at closer distances, transmission has been observed. Transmission over larger distance has involved the presence of an infectious person exhaling virus indoors for an extended time (more than 15 minutes and in some cases hours) can lead to virus concentrations in the air space sufficient to transmit infections to people more than 6 feet away. The efficiency and

effectiveness of heating, ventilation and air conditioning (HVAC) also plays an important role in lessening risk. If the HVAC in a space is less optimal or efficient there is higher likelihood of transmission of infection. This has been reported from investigations of clusters of infection wherein secondary cases have been identified from source person with infection even after leaving the shared space several minutes later – especially in buildings that have poor HVAC. Factors that increase the risk of SARS-CoV-2 infection under these circumstances include:

- **Enclosed spaces with inadequate ventilation or air handling** within which the concentration of exhaled respiratory fluids, especially very fine droplets and aerosol particles, can build-up in the air space.
- **Increased exhalation** of respiratory fluids if the infectious person has a persistent cough or is engaged in physical exertion or raises their voice (e.g., exercising, shouting, singing).
- **Prolonged exposure** to these conditions, typically more than 15 minutes.

Existing interventions to prevent the spread of SARS-CoV-2 appear sufficient to address transmission both through close contact and under the special circumstances favorable to potential airborne transmission. More details on use of these interventions, such as, telehealth, engineering controls, administrative controls, physical distancing, physical barriers, use of facemasks, hand hygiene, and surface cleaning and disinfection are provided below.

#### **Monitoring Rates of Transmission of SARS-CoV-2 Among Communities Served:**

Several of the IPC measures (e.g., use of source control, screening testing) are escalated when COVID-19 community transmission rates in the county in which a ministry is located is high. CDC provides ongoing, updated community transmission rates / 100,000 population by county; [COVID-19 Data Tracker](#) . [Ministries should monitor rates as several System guides vary when this rate is high compared to not high.](#)

### **Incubation period**

The incubation period for COVID-19 ranges between 2-14 days, with a median time of 4-5 days from exposure to symptoms onset in the person exposed. One study reported that 97.5% of people with COVID-19 who have symptoms will do so within 11.5 days of SARS-CoV-2 infection. The median incubation period also can vary for some variants, e.g. for Omicron variant it is approximately 3 days.

### **Asymptomatic and Pre-symptomatic Infection**

Several studies have documented infection and transmission from those with SARS-CoV-2 in patients who never have symptoms (asymptomatic) and in patients not yet symptomatic (pre-symptomatic). Since people who are asymptomatic are not always tested, the prevalence of asymptomatic infection and detection of pre-symptomatic infection is not yet well understood. Current data, based on reverse transcription-polymerase chain reaction (RT-PCR) testing for SARS-CoV-2 and on serologic studies, suggest asymptomatic infections can be common and that the total number of infections is likely greater than the number of cases reported. Patients may have abnormalities on chest imaging before the onset of symptoms.

### **Symptoms**

People with COVID-19 have had a wide range of symptoms reported – ranging from mild symptoms to severe illness. Symptoms may appear 2-14 days after exposure to the virus. People with these symptoms may have COVID-19:

<b>COVID-19 Symptoms</b>		
Fever or chills	Cough	Shortness of breath or Difficulty breathing
Fatigue	Muscle or body aches	Headache
New loss of taste or smell	Sore throat	Congestion/Runny Nose

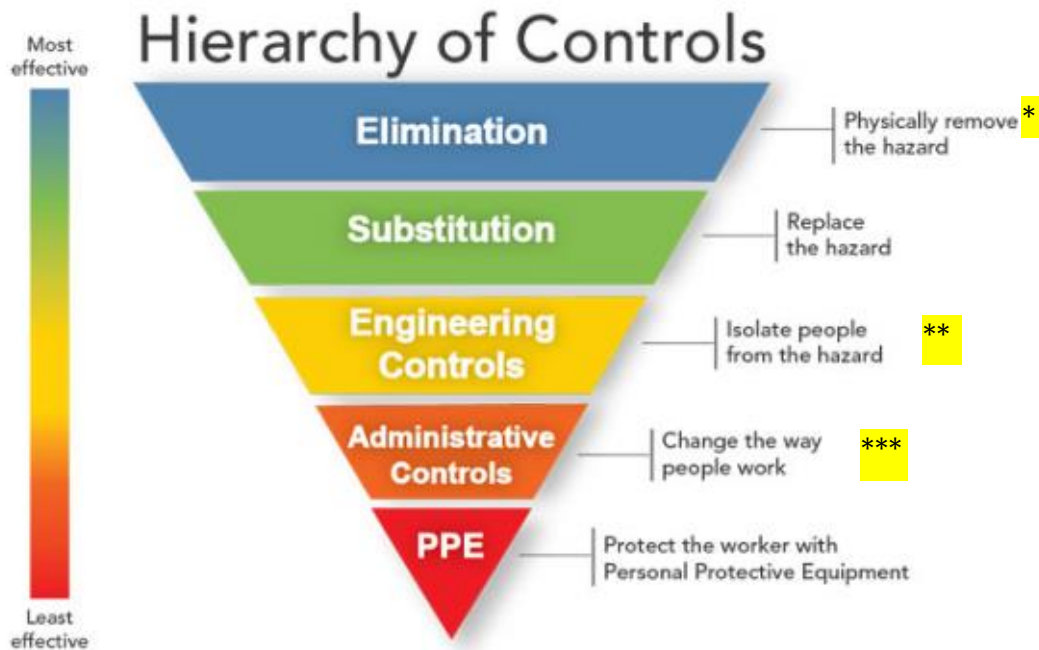
Nausea or vomiting	Diarrhea	
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This list does not include all possible symptoms. CDC will continue to update [this list](#) as we learn more about COVID-19. Recent studies have suggested that COVID-19 may be spread by people who are not showing symptoms.

## Infection Prevention & Control for COVID-19:

**Reduce risk of exposure / transmission using a hierarchy of controls:**

- Refer to [CDC/NIOSH Hierarchy of Controls](#). The hierarchy model suggests the control methods at the top of graphic are potentially more effective and protective than those at the bottom. Following this hierarchy normally leads to the implementation of inherently safer systems, where the risk of transmission, exposure and infection has been substantially reduced.



- Administrative & Work Practice Controls**

- When scheduling appointments,
  - \*Encourage use of telehealth, where appropriate (this is an example of physically removing the exposure hazard). See [Digital Visit Guidance](#) for more detail regarding both Primary and Specialty Telehealth.
  - \*\*\* Instruct patients and persons who accompany them:
    - To use source control (e.g. wearing well-fitting facemask) upon entry to the ministry based on the [ppe-guide-booklet.pdf \(trinity-health.org\)](#)
    - To call ahead or inform colleagues in the facility upon their arrival if they have symptoms of acute respiratory infection (e.g., fever, cough, difficulty breathing) or the most recent potential symptoms of COVID-19 listed in this document
- Take measures to limit crowding in communal spaces, such as scheduling appointments to limit the number of patients in waiting rooms or treatment areas..

- Engineering Controls**

- Provide the patient a face covering to wear upon entry to contain cough and move as soon as possible to a private room with adequate heating, ventilation and air conditioning (HVAC), or if available and AGPs are anticipated, an airborne infection isolation room (AIIR)\*\*.
- If providing ground transportation to patients or others at the ministry facility, e.g. Trinity Health Program of All-inclusive Care for the Elderly (TH PACE), and the patients have symptoms of acute respiratory

infection, ask them to call ahead to alert the care team. See [universal-transportation-services-guide.pdf \(trinity-health.org\)](#) guide for additional details.

3. Educate patients, visitors, and HCP about the importance of performing hand hygiene immediately before and after any contact with their face mask or other type of face covering. Use of respiratory hygiene (covering coughs and use of facial tissue for sneezes) also is helpful to prevent transmission of SARS-CoV-2 as well as other viral respiratory pathogens.

- **Screening Persons Entering Ministries for Possible COVID-19 or Close Contact Exposure**

Post visual alerts (e.g., signs, posters) at entrances to ministries and in strategic places (e.g., waiting areas, elevators, cafeterias). These alerts should include instructions about current IPC recommendations (e.g., when to use source control and perform hand hygiene). Dating these alerts can help ensure people know that they reflect current recommendations.

- Use alerts/notices to provide passive screening of patients, visitors and others entering ministries to make everyone entering the ministry aware of recommended actions to prevent transmission to others if they have any of the following three criteria:
  1. a recent positive viral test for SARS-CoV-2
  2. symptoms of COVID-19, or
  3. Recent (prior 10 days) close contact with someone with SARS-CoV-2 infection See also: [THSO 1006678801 CDC facilities screening 11x17 10-17-22.pdf \(trinity-health.org\)](#)

- **Health screening of Colleagues Prior to Work**

All colleagues and clinicians are to follow passive screening for symptoms, close contact exposure or recent positive test for SARS-CoV-2 prior to starting their shift.

- **Standard and Transmission-Based Precautions.**

Assure policies, procedures, and work practices adhere to Standard and Transmission-Based Precautions in accordance with CDC's "Guidelines for Isolation Precautions".

- **Universal Source Control Measures**

Source control refers to use of well-fitting facemasks, other face coverings or respirators to cover a person's mouth and nose to prevent spread of respiratory secretions when they are breathing, talking, sneezing, or coughing. In addition to providing source control, these also offer varying levels of protection for the wearer against exposure to infectious droplets and particles produced by infected people.

- i. Ensuring proper fit, meaning covering the nose and mouth, is important to optimize both the source control and protection offered. Because of the potential for asymptomatic and pre-symptomatic transmission, source control measures are required for everyone in a healthcare facility, even if they do not have symptoms of COVID-19.
- ii. CDC defines Source control options for HCP to include:
  1. A NIOSH-approved N95 or equivalent or higher-level respirator\* OR
  2. A respirator approved under standards used in other countries that are similar to NIOSH-approved N95 filtering facepiece respirators, i.e. KN95 masks provided by Supply Chain, OR
  3. A well-fitting facemask
    - i. Only use KN95 masks provided by the ministry's Supply Chain as these have been independently tested and found to be equivalent to a

procedure facemask. KN95s sourced elsewhere off uncertain filtration and protection.

Refer to [ppe-guide-booklet.pdf \(trinity-health.org\)](#) for additional details.

- Vendors who assist with direct patient care are to follow requirements in PPE Guidebook
- Use respiratory hygiene and cough etiquette with notices at points of entry and products to facilitate their use, including facial tissues and alcohol-based hand-rub (ABHR)
- Encourage use of alternative mechanisms for patient and visitor interactions such as video-call applications on cell phones or tablets.

### ***Isolate symptomatic patients as soon as possible***

- Promptly triage/assess persons under investigation (PUI) or those with confirmed COVID-19 and place in private rooms with the door closed and with private bathrooms (if available). For semi-occupancy rooms do not place non-PUI/COVID-19 with PUI/COVID-19 infected.
  1. See [bed management guidelines](#) for directions on use of airborne infection isolation rooms (AIIRs) and other strategies
  2. See System guide on when transmission-based isolation precautions can be discontinued for the patient; [discontinuation-of-isolation-for-a-covid-19-patient.pdf \(trinity-health.org\)](#)

### ***Optimize the Use of Engineering Controls and Indoor Air Quality***

- Optimize the use of engineering controls to reduce or eliminate exposures by shielding HCP and other patients from infected individuals (e.g., physical barriers at reception / triage locations and dedicated pathways to guide symptomatic patients through waiting rooms and triage areas). Engage ministry Facilities Management team for their expertise on optimizing HVAC and use of physical barriers. Barriers can interfere with efficiency of HVAC systems and their use should follow recommendations from Facilities Management team.
- Take measures to limit crowding in communal spaces, such as scheduling appointments to limit the number of patients in waiting rooms or treatment areas.
- Explore options, in consultation with ministry HVAC engineers, to improve ventilation delivery and indoor air quality in patient rooms and all shared spaces.
  - **See also:** [air-quality-guidelines.pdf \(trinity-health.org\)](#) [patient-unit-ventilation.pdf \(trinity-health.org\)](#)

### ***Protecting healthcare personnel (HCP)***

- Perform hand hygiene & use Personal Protective Equipment (PPE) appropriately.
  1. Hand hygiene products including alcohol-based hand rub that is at least 60% alcohol and soap, methods to dry hands and readily accessible hand washing facilities are provided throughout the ministry.
- ***Vaccination against COVID-19.***
  1. Trinity Health and its ministries requires all colleagues and clinicians receive primary series of COVID-19 vaccine and strongly recommends receipt of booster dose(s) as recommended by CDC's Advisory Committee on Immunization Practices (ACIP)
  2. Trinity Health follows CDC's ACIP recommendations, vaccine manufacturer's instructions and applicable FDA requirements for administration of COVID-19 vaccines.
  3. Refer to Vaccine Guidebook for additional details: [Vaccine Guidebook \(trinity-health.org\)](#)

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

As community transmission levels increase, the potential for encountering asymptomatic or pre-symptomatic patients with SARS-CoV-2 infection also likely increases. In these circumstances, the PPE Guidebook calls for broader use of respirators and eye protection by HCP during patient care encounters. Ministries located in counties where [Community Transmission](#) is high are to follow use of PPE as described in the PPE Guidebook. The Guidebook describes the following:

- NIOSH-approved particulate respirators with N95 filters or higher used for:
  - All aerosol-generating procedures (AGPs)
  - All surgical procedures that might pose higher risk for transmission if the patient has SARS-CoV-2 infection (e.g., that generate potentially infectious aerosols or involving anatomic regions where viral loads might be higher, such as the nose and throat, oropharynx, respiratory tract).
  - If healthcare-associated SARS-CoV-2 transmission is identified and universal respirator use by HCP working in affected areas is not already in place.
  - In specific units or areas of the facility at higher risk for SARS-CoV-2 transmission.
- Recommend use of eye protection (i.e., goggles or a face shield that covers the front and sides of the face) worn during all direct patient care.

**PPE for Care of Patients with Suspected or Confirmed COVID-19 Who are Under Isolation Precautions:**  
Refer to [ppe-guide-booklet.pdf \(trinity-health.org\)](#)

- **Eye protection** - Face shield or protective eyewear
  - Ensure colleagues and clinicians are provided disinfectant wipes to clean/disinfect reusable eye protection
- **Respiratory protection** - Respirators - e.g. N95 respirator or equivalent
- **Other PPE**
  - gown and gloves and other protective clothing as applicable for the work

***Aerosol-generating procedures (AGPs) for a person with suspect/confirmed COVID-19***

- When an AGP is performed on a person with suspected or confirmed COVID-19:
  - (1) Limit the number of HCP present during the procedure to only those essential for patient care and procedure support.
  - (2) HCP providing the AGP will wear PPE as described in [ppe-guide-booklet.pdf \(trinity-health.org\)](#)
  - (3) Perform in an airborne infection isolation room (AIIR), if available.



(4) After the procedure is completed, HCP are to clean and disinfect high frequency touch surfaces, equipment, and other surfaces with possible contamination in the room or area where the procedure was performed.

- Use dedicated or disposable noncritical patient-care equipment (e.g., stethoscope, blood pressure cuff) if available.
- If reusable equipment can't be dedicated to the patient in isolation clean and disinfect equipment before use on another patient according to manufacturer's instructions and ministry policy

### ***Cleaning and disinfection***

- In patient care areas, resident rooms, and for medical devices and equipment, the ministry must follow standard practices for cleaning and disinfection of surfaces and equipment in accordance with CDC's "COVID-19 Infection Prevention and Control Recommendations" and CDC's "Guidelines for Environmental Infection Control," pp. 86–103, 147–149.<sup>3,7</sup>
- See [disinfection-of-inanimate-surfaces-and-equipment.pdf \(trinity-health.org\)](#) for additional details.
- See also [List N Advanced Search Page: Disinfectants for Coronavirus \(COVID-19\) | US EPA](#)
- In all other areas:
- Clean/disinfect high-touch surfaces and equipment at least once a day, following manufacturers' instructions for use on application of disinfectants and other cleaners

### ***Other Topics: Patient/Resident Linen, Food Services, and waste management***

- Follow routine procedures for management of used linen/laundry, food service trays/utensils, regular and medical waste.
  1. Disposable food trays are not needed – hot water and soap used in Food Services to clean used dishware, utensils, drinking glasses, etc., kills the virus that causes COVID-19.

### ***Ventilation***

- Ministries that own or control buildings or structures with an existing heating, ventilation, and air conditioning (HVAC) system(s) will adhere to the following System guide [air-quality-guidelines.pdf \(trinity-health.org\)](#)

### ***Setting-specific considerations***

#### **Dialysis Facilities**

##### Considerations for Patient Placement

- Patients on dialysis with suspected or confirmed SARS-CoV-2 infection or who have reported close contact should be dialyzed in a separate room with the door closed.
  - Hepatitis B isolation rooms can be used if: 1) the patient is hepatitis B surface antigen-positive or 2) the facility has no patients on the census with hepatitis B infection who would require treatment in the isolation room.
- If a separate room is not available, patients with confirmed SARS-CoV-2 infection should be cohorted to a specific well-ventilated unit or shift (e.g., consider the last shift of the day). Only patients with confirmed SARS-CoV-2 infection should be cohorted together:

### Additional Guidance for Use of Isolation Gowns

- When caring for patients with suspected or confirmed SARS-CoV-2 infection, gowns should be worn over or instead of the cover gown (e.g., laboratory coat, gown, or apron with incorporate sleeves) that is normally worn by hemodialysis personnel.

### Cleaning and Disinfecting Dialysis Stations

- [Current procedures for routine cleaning and disinfection of dialysis stations](#) are appropriate for patients with SARS-CoV-2 infection.
- Internal disinfection of dialysis machines is not required immediately after use unless otherwise indicated (e.g., post-blood leak). It should be done according to the dialysis machine manufacturer's instructions (e.g., at the end of the day).

### Dental Facilities

- Dental healthcare personnel (DHCP) should regularly consult their [state dental boards](#) and [state or local health departments](#) for current information and recommendations and requirements specific to their jurisdictions, which might change based on SARS-CoV-2 transmission levels [in the county where their healthcare facility is located](#).
- Patients with suspected or confirmed SARS-CoV-2 infection should postpone all non-urgent dental treatment until they meet criteria to discontinue Transmission-Based Precautions. Because dental patients cannot wear a mask, in general, those who have had close contact with someone with SARS-CoV-2 infection should also postpone all non-urgent dental treatment until they meet the healthcare criteria to end quarantine.
  - Dental care for these patients should only be provided if medically necessary. Follow all recommendations for care and placement for patients with suspected or confirmed SARS-CoV-2 infection. Extra attention may be required to ensure HVAC ventilation to the dental treatment area does not reduce or deactivate during occupancy based on temperature demands.
  - If a patient has a fever strongly associated with a dental diagnosis (e.g., pulpal and periapical dental pain and intraoral swelling are present) but no other symptoms consistent with COVID-19 are present, dental care can be provided following the practices recommended for routine health care during the pandemic.
- When performing AGPs on patients who are not suspected or confirmed to have SARS-CoV-2 infection, ensure that DHCP correctly wear the recommended PPE (including consideration of a NIOSH-approved particulate respirator with N95 filters or higher in counties with high levels of transmission) and use mitigation methods such as four-handed dentistry, high evacuation suction, and dental dams to minimize droplet spatter and aerosols.
  - Commonly used dental equipment known to create aerosols and airborne contamination include ultrasonic scaler, high-speed dental handpiece, air/water syringe, air polishing, and air abrasion.
- Dental treatment should be provided in individual patient rooms whenever possible with the HVAC in constant ventilation mode.
- For dental facilities with open floor plans, strategies to prevent the spread of pathogens include:
  - At least 6 feet of space between patient chairs.
  - Consider adjunct use of portable HEPA air filtration systems to enhance air cleaning



- Physical barriers between patient chairs. Easy-to-clean floor-to-ceiling barriers will enhance effectiveness of portable HEPA air filtration systems (check to make sure that extending barriers to the ceiling will not interfere with fire sprinkler systems).
- Operatories oriented parallel to the direction of airflow when possible.
- Where feasible, consider patient orientation carefully, placing the patient's head near the return air vents, away from pedestrian corridors, and toward the rear wall when using vestibule-type office layouts.
- Ensure to account for the time required to clean and disinfect operatories between patients when calculating your daily patient volume.

## References:

1. [Scientific Brief: SARS-CoV-2 Transmission | CDC](#)
2. [Management of Patients with Confirmed 2019-nCoV | CDC](#)
3. CDC. Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic. [Infection Control: Severe acute respiratory syndrome coronavirus 2 \(SARS-CoV-2\) | CDC](#) 9/23/2022
4. [Transmission-Based Precautions | Basics | Infection Control | CDC](#) (original publication, 2007, current version on CDC;6/7/2016
5. [Guidelines for Environmental Infection Control in Health-Care Facilities \(cdc.gov\)](#) , (original publication, 2003, current version updated July 2019)

## Definitions:

- **Close contact**; means being within 6 feet of any other person for a cumulative total of 15 minutes or more over a 24-hour period during that person's potential period of transmission. The potential transmission period runs from 2 days before the person felt sick (or, for asymptomatic people, 2 days prior to test specimen collection) until the time the person is isolated.
- **Direct patient care**; means hands-on, face-to-face contact with patients for the purpose of diagnosis, treatment, and monitoring.
- **Disinfect/disinfection**; means using an EPA-registered, hospital-grade disinfectant on EPA's "List N" in accordance with manufacturers' instructions to kill germs on surfaces.
- **Facemask**; means 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 must be worn for source control – cloth face coverings are not permitted for colleagues.
- **Face shield**; a device, typically made of clear plastic, that covers the wearer's eyes, nose, and mouth to protect from splashes, sprays, and spatter of body fluids, wraps around the sides of the wearer's face (i.e., temple-to-temple), and extends below the wearer's chin.
- **Filtering facepiece respirator**; means a negative pressure particulate respirator with a non-replaceable filter as an integral part of the facepiece or with the entire facepiece composed of the nonreplaceable filtering medium. Examples include a N95 respirator or equivalent.
- **High-touch surfaces and equipment**; means any surface or piece of equipment that is repeatedly touched by more than one person (e.g., doorknobs, light switches, countertops, handles, desks, tables, phones, keyboards, tools, toilets, faucets, sinks, credit card terminals, touchscreen-enabled devices).
- **Respirator**; means a type of personal protective equipment (PPE) that is certified by NIOSH under 42 CFR part 84 or is authorized under an EUA by the FDA. Respirators protect against airborne hazards by removing specific air contaminants

from the ambient (surrounding) air or by supplying breathable air from a safe source. Common types of respirators include filtering facepiece respirators, elastomeric respirators, and PAPRs.

- **Screen** means asking questions to determine whether a person is COVID–19 positive or has symptoms of COVID–19.