

Personal Protective Equipment (PPE) Guidance and Practical Approaches for Improved Outcomes

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Disease Transmission

COVID-19

- Primary mode of transmission – person to person
 - Small droplets from nose or mouth when a person with COVID-19 coughs, sneezes and even speaks
 - These droplets can also land on surfaces and other objects



<https://www.cdc.gov/coronavirus/2019-ncov/faq.html#Coronavirus-Disease-2019-Basics>

COVID-19 Symptoms

- 2-14 days, symptoms may appear:
 - 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 or runny nose
 - Nausea or vomiting
 - Diarrhea

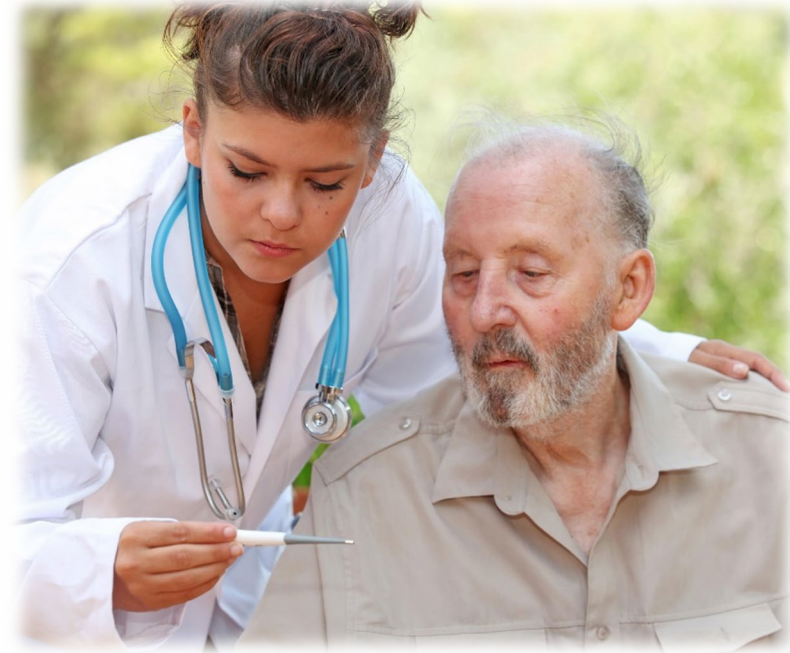


<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>

Immediate Action

Response

- Prompt Identification
 - Screening
- Resident Placement
- Restriction - communal dining and activities
- Transmission-based Precautions
- Cleaning and Disinfection
- **Personal Protective Equipment (PPE)**



Personal Protective Equipment





PPE Importance and Purpose

Types of PPE

- Gloves
- Gowns
- Eye Protection
- Face Masks
- N95 Respirators
- Other



PPE or Not PPE?

- What is NOT Considered PPE?
 - Cloth Facemasks
 - Bandanas
 - Scarf
 - Rain Ponchos
 - Disposable or Reusable Lab Coats
 - Reusable Resident Gowns
 - Disposable Aprons
 - Patient Gowns



When IS PPE Required?

- COVID-19 Pandemic:
 - All facility personnel must wear facemasks while in the facility
 - If there are COVID-19 cases identified in the facility, healthcare workers should wear the recommended PPE for the care of all residents in line with the most recent DPH PPE guidance
 - Employees working in facilities located in areas with moderate to substantial community transmission should wear eye protection in addition to facemasks during patient care encounters



<https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.htm> |

Resources and Guidance

- The State and Local Department of Health
- Centers for Disease Control and Prevention
- Centers for Medicare & Medicaid Services
- U.S. Federal Drug Administration
- U.S. Department of Labor Occupational Safety and Health Administration
- Quality Improvement Organizations
- Provider Associations

Guidance-CDC

Centers for Disease Control and Prevention

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Coronavirus Disease 2019 (COVID-19)

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Optimizing Supply of PPE and Other Equipment during Shortages

Updated July 16, 2020

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Personal protective equipment (PPE) is used every day by healthcare personnel (HCP) to protect themselves, patients, and others when providing care. PPE helps protect HCP from many hazards encountered in healthcare facilities.

The greatly increased need for PPE caused by the COVID-19 pandemic has caused PPE shortages, posing a tremendous challenge to the U.S. healthcare system. Healthcare facilities are having difficulty accessing the needed PPE and are having to identify alternate ways to provide patient care.

Surge capacity refers to the ability to manage a sudden increase in patient volume that would severely challenge or exceed the present capacity of a facility. While there are no commonly accepted measurements or triggers to distinguish surge capacity from daily patient care capacity, surge capacity is a useful framework to approach a decreased supply of PPE during the COVID-19 response. To help healthcare facilities plan and optimize the use of PPE in response to COVID-19, CDC has developed a [Personal Protective Equipment \(PPE\) Burn Rate Calculator](#). Three general strata have been used to describe surge capacity and can be used to prioritize measures to conserve PPE supplies along the continuum of care.

- **Conventional capacity:** measures consisting of engineering, administrative, and PPE controls that should already be implemented in general infection prevention and control plans in healthcare settings.
- **Contingency capacity:** measures that may be used temporarily during periods of anticipated PPE shortages. Contingency capacity strategies should only be implemented after considering and implementing conventional

Summary Strategies to Optimize the Supply of PPE

Conventional Capacity

Contingency Capacity

Crisis Capacity

	Conventional	Contingency	Crisis
Engineering			
Administrative			
PPE			
Engineering			
Administrative			
PPE			
Engineering			
Administrative			
PPE			

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html>

Reporting

Centers for Medicare and Medicaid Services (CMS)

- Communicable Disease Reporting
- Transparency

<https://www.cdc.gov/nhsn/ltc/covid19/index.html>

The screenshot displays the NHSN website interface. At the top, the CDC logo and name are visible, along with a search bar and navigation links. The main header identifies the site as the National Healthcare Safety Network (NHSN). A breadcrumb trail shows the path: CDC > NHSN > Materials for Enrolled Facilities > Long-term Care Facilities. A left-hand navigation menu lists various NHSN features, with 'Materials for Enrolled Facilities' expanded to show 'COVID-19 Information', 'Ambulatory Surgery Centers', 'Acute Care Hospitals/Facilities', 'Long-term Acute Care Hospitals/Facilities', and 'Long-term Care Facilities'. The 'Long-term Care Facilities' section is further expanded to show 'COVID-19 Module', 'Surveillance for C. difficile Infection (CDI) and Multidrug Resistant Organisms (MDRO)', 'Surveillance for Urinary Tract Infections (UTI)', and 'Surveillance for Prevention Process Measures - Hand Hygiene, Gloves'. The main content area is titled 'LTCF COVID-19 Module' and features a yellow alert box with an exclamation mark icon. The alert text states that NHSN has received an unprecedented number of inquiries since the release of the new COVID-19 Module and the Centers for Medicare and Medicaid's (CMS) new requirements for nursing home reporting. It encourages users to review webpage materials before sending questions to the NHSN helpdesk. Below the alert, there are two links: 'CMS COVID-19 Reporting Requirements for Nursing Homes' (PDF - 200 KB) dated May 8, 2020, and 'FAQs about COVID-19 Data Published by CMS' (PDF - 200 KB). Further down, a paragraph explains that CDC's NHSN provides healthcare facilities, such as long-term care facilities (LTCF), with a customized system to track infections and prevention process measures in a systematic way. It notes that tracking this information allows facilities to identify problems, improve care, and determine progress toward facility and national healthcare-associated infection goals. To the right of this text is a blue box titled 'COVID-19 Module for LTCF' containing four sub-boxes: 'Resident Impact & Facility Capacity', 'Staff & Personnel Impact', 'Supplies & Personal Protective Equipment', and 'Ventilator Capacity & Supplies'. Below this, a paragraph states that the COVID-19 Module for LTCFs consists of four pathways within NHSN's Long-term Care Facility Component. A bulleted list at the bottom right lists these four pathways: Resident Impact and Facility Capacity, Staff and Personnel Impact, Supplies and Personal Protective Equipment, and Ventilator Capacity and Supplies.

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CDC 24/7: Saving Lives, Protecting People™

Search NHSN

Advanced Search

National Healthcare Safety Network (NHSN)

CDC > NHSN > Materials for Enrolled Facilities > Long-term Care Facilities

NHSN

NHSN Login

About NHSN

Enroll Here

Change NHSN Facility Administrator

Materials for Enrolled Facilities

COVID-19 Information

Ambulatory Surgery Centers

Acute Care Hospitals/Facilities

Long-term Acute Care Hospitals/Facilities

Long-term Care Facilities

COVID-19 Module

Surveillance for C. difficile Infection (CDI) and Multidrug Resistant Organisms (MDRO)

Surveillance for Urinary Tract Infections (UTI)

Surveillance for Prevention Process Measures - Hand Hygiene, Gloves

LTCF COVID-19 Module

NHSN has received an unprecedented number of inquiries since the release of the new COVID-19 Module and the Centers for Medicare and Medicaid's (CMS) new requirements for nursing home reporting.

We are making every effort to respond to every question in the shortest timeframe possible, but given the surge in volume, we strongly recommend reviewing the webpage materials here before sending questions to the NHSN helpdesk.

[CMS COVID-19 Reporting Requirements for Nursing Homes](#) [PDF - 200 KB] - May 8, 2020

[FAQs about COVID-19 Data Published by CMS](#) [PDF - 200 KB]

CDC's NHSN provides healthcare facilities, such as long term care facilities (LTCF) with a customized system to track infections and prevention process measures in a systematic way.

Tracking this information allows facilities to identify problems, improve care, and determine progress toward facility and national healthcare-associated infection goals.

The [NHSN Long-term Care Facility Component](#) is supporting the nation's COVID-19 response by introducing a new COVID-19 Module for Long Term Care Facilities. Facilities eligible to report into the COVID-19 Module include nursing homes/skilled nursing, long-term care for the developmentally disabled, and assisted living facilities.

The COVID-19 Module for LTCFs consists of four pathways within NHSN's Long-term Care Facility Component:

- Resident Impact and Facility Capacity
- Staff and Personnel Impact
- Supplies and Personal Protective Equipment
- Ventilator Capacity and Supplies

Practical Approaches

PPE Strategies

Questions to Ask...

- Do you have measures for obtaining an adequate supply of at least 2 weeks of PPE?
- Do you have a contingency plan for shortages?
- Have you trained your staff in proper selection, donning and doffing?
- Is PPE available outside the resident rooms?
- Are trash receptacles in strategic locations near the exit of the resident room?
- If COVID-19 cases are in the building, are staff wearing PPE for care of all residents?
- Do residents wear facemasks when they leave the room?
- Are all employees wearing facemasks in the facility?



#1 Policy and Procedure

- Policies and Procedures for PPE



#2 Determine Supply Needs



Determine Needs

• CDC Burn Rate Calculator

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/burn-calculator.html>

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[Healthcare Workers](#)

Testing +

Clinical Care +

Infection Control +

Optimize PPE Supply -

Summary Optimization Strategies

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HEALTHCARE WORKERS

Personal Protective Equipment (PPE) Burn Rate Calculator

Updated Apr. 7, 2020 [Print](#)     

Mobile app version now available
The Personal Protective Equipment (PPE) Burn Rate Calculator is now available as an app. Facilities can use the [NIOSH PPE Tracker app](#) to calculate their average PPE consumption rate or "burn rate." The app estimates how many days a PPE supply will last given current inventory levels and PPE burn rate. The app is available for both [iOS](#) and [Android](#) devices. Visit the [NIOSH PPE Tracker app page](#) to download this free tool.

The [Personal Protective Equipment \(PPE\) Burn Rate Calculator](#) [3 sheets] is a spreadsheet-based model that will help healthcare facilities plan and optimize the use of PPE for response to coronavirus disease 2019 (COVID-19). Non-healthcare facilities such as correctional facilities may also find this tool useful.

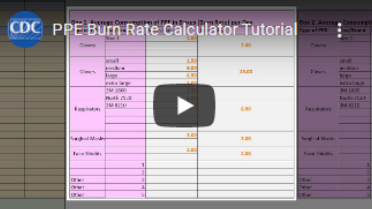
To use the calculator, enter the number of full boxes of each type of PPE in stock (gowns, gloves, surgical masks, respirators, and face shields, for example) and the total number of patients at your facility. The tool will calculate the average consumption rate, also referred to as a "burn rate," for each type of PPE entered in the spreadsheet. This information can then be used to estimate how long the remaining supply of PPE will last, based on the average consumption rate. Using the calculator can help facilities make order projections for future needs.

System Requirements

- Windows* operating system (MS Windows 2000 or newer)
- Microsoft Excel (MS Office 2000 or newer)
- 486 Pentium processor and at least 128MB RAM

Personal Protective Equipment (PPE) Burn Rate Calculator

 Use this Excel spreadsheet to calculate your PPE burn rate



Questions to Ask?

- Do you have a stable source of at least 2 weeks of:
 - Facemasks
 - Respirators
 - Gowns
 - Gloves
 - Eye Protection



#3 PPE Education

- Education and Demonstration



Use Personal Protective Equipment (PPE) When Caring for Patients with Confirmed or Suspected COVID-19

Before caring for patients with confirmed or suspected COVID-19, healthcare personnel (HCP) must:

- Review comprehensive training on when and what PPE is necessary, how to don (put on) and doff (take off) PPE, limitations of PPE, and proper use, maintenance, and disposal of PPE.
- Demonstrate competency to perform key steps in infection control practices and procedures.

Remember:

- PPE must be donned correctly before entering the patient care (e.g., isolation room, unit of care setting).
- PPE must remain in place until the user correctly has the item(s) removed in a potentially contaminated area. PPE should not be adjusted (e.g., touching gloves, adjusting respirator) or touched during patient care.
- PPE must be removed slowly and deliberately to ensure the person with contamination is kept by step process should be developed and used during training and patient care.



www.cdc.gov/coronavirus

How to Put On and Take Off PPE – Fact Sheet 8.5 x 11

[PDF – 1 page]

- [Spanish](#) [2 pages]
- [Ukrainian](#) [2 pages]
- [Tagalog](#) [2 pages]

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Donning (putting on the gear)

Remember to donning and doffing PPE correctly. Training and practice are key to ensuring competency.

1. Identify and put on the gear: PPE includes, but is not limited to, gloves, gown, face shield or goggles, and face mask.
2. Perform hand hygiene using hand sanitizer.
3. Don the isolation gown. Tie or fasten the gown behind your back.
4. Don the N95 or higher respirator. If wearing a respirator, ensure it is properly fitted and sealed. If wearing a face mask, ensure it is properly fitted and sealed.
5. Don the face shield or goggles. Tie or fasten the face shield or goggles behind your head.
6. Don the gloves. Tie or fasten the gloves behind your back.
7. Perform hand hygiene using hand sanitizer.



Remember to donning and doffing PPE correctly. Training and practice are key to ensuring competency.

www.cdc.gov/coronavirus

How to Put On and Take Off PPE – Poster 11x17

[PDF – 1 page]

COVID-19 Personal Protective Equipment (PPE) for Healthcare Personnel

Preferred PPE – Use N95 or higher respirator



Acceptable Alternative PPE – Use Face Mask



cdc.gov/COVID19

PPE Illustrations

[PDF – 1 page]

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/using-ppe.html>

Donning and Doffing

- Have a system for employees to receive adequate training and return demonstration
- Continue to verify competency with process audits
- Designate lead employees to support, teach, mentor and hold staff accountable on all shifts
- Help, ask, do



#4 Optimizing PPE

- Policies and Procedures
- Employee Education
- Follow Guidance
- Audit and Monitor



5 Surveillance

Infection Prevention and Control Manual Interim Personal Protective Equipment (PPE) Audit- COVID-19 Pandemic

Personal Protective Equipment (PPE) - COVID-19 Audit



PROCEDURE	YES	NO	COMMENTS
All facility staff are wearing face covering (no cloth masks)			
All facility staff are wearing PPE consistent with current guidance and COVID-19 status in facility			
Preparation			
1. Determine and assemble appropriate PPE			
2. Perform Hand Hygiene			
Donning of Personal Protective Equipment			
1. Gown is donned first and tied at waist and neck			
2. Don mask or N95 respirator			
3. Secure nosepiece with both hands			
4. Secure elastic bands or ties securely			
5. Mask or N95 fits snug to face and below chin			
6. Goggles or face shield is donned			
7. Hand Hygiene is performed			
8. Gloves extend to cover wrist of gown			
Removal of Personal Protective Equipment			
Gloves			
1. Grasps outside of glove with opposite gloved hand and peels off			
2. Holds removed glove in gloved hand			
3. Slides fingers of ungloved hand under remaining glove at wrist			
4. Peels glove off over first glove			
5. Discards gloves in waste container			
Gown			
1. Unfasten ties			
2. Pulls away from neck and shoulders, touching inside of gown only			
3. Turn gown inside out			
4. Folds or rolls into a bundle and discards a. Disposable gowns: Discards in waste receptacle b. Reusable/cloth gowns: Places in soiled laundry receptacle			
Exits Room after Glove/Gown Removal			
Performs Hand Hygiene			
Goggles/Face Shield			
1. Removes goggles/face shield using care to pull away from face not to touch front of shield or goggles			

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Infection Prevention and Control Manual Interim Personal Protective Equipment (PPE) Audit- COVID-19 Pandemic

Mask or Respirator	YES	NO	COMMENTS
1. Grasps bottom, then top ties or elastics and removes			
2. Does not touch the front of the mask or respirator (contaminated)			
3. Disposes of properly			
5. The employee used the proper technique and order to don and removed PPE			
6. PPE was removed at doorway or anteroom			
7. Perform Hand Hygiene			
Other			
1. Residents who leave facility for medical appointments (i.e. dialysis, chemotherapy) wear masks outside of room			
2. Residents who are discharged/transported outside of facility wear a mask			
Comments			

Employee _____ Date _____

Evaluator _____ Date _____

References

- Centers for Disease Control and Prevention: Use Personal Protective Equipment (PPE) When Caring for Patients with Confirmed or Suspected COVID-19: https://www.cdc.gov/coronavirus/2019-ncov/downloads/A_FS_HCP_COVID19_PPE.pdf
- Centers for Medicare & Medicaid Services: COVID-19 Long Term Care Facility Guidance. April 2, 2020. <https://www.cms.gov/files/document/4220-covid-19-long-term-care-facility-guidance.pdf>
- Centers for Medicare & Medicaid Services: QSO-20-14-NH. Guidance for Infection Control and Prevention of Coronavirus Disease 2019 (COVID-19) in Nursing Homes (REVISED). March 13, 2020: <https://www.cms.gov/files/document/3-13-2020-nursing-home-guidance-covid-19.pdf>
- Centers for Medicare & Medicaid Services: Prioritization of Survey Activities. QSO-20-20-ALL. <https://www.cms.gov/files/document/qso-20-20-all.pdf>
- Centers for Medicare & Medicaid Services: QSO-20-20-NH. May 6, 2020: Interim Final Rule Updating Requirements for Notification of Confirmed and Suspected COVID-19 Cases Among Residents and Staff in Nursing Homes, May 6, 2020: <https://www.cms.gov/files/document/qso-20-20-nh.pdf>

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#6 Performance Improvement



#7 Supporting Team Members



Summary



References and Resources

- Centers for Disease Control and Prevention. Coronavirus (COVID-19): <https://www.cdc.gov/coronavirus/2019-ncov/index.html>
- Centers for Disease Control and Prevention. Using Personal Protective Equipment (PPE): <https://www.cdc.gov/coronavirus/2019-ncov/hcp/using-ppe.html>
- Centers for Disease Control and Prevention. Optimizing Supply of PPE and Other Equipment during Shortages. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html>
- U.S. Food & Drug Administration. Personal Protective Equipment for Infection Control, <https://www.fda.gov/medical-devices/general-hospital-devices-and-supplies/personal-protective-equipment-infection-control>

References and Resources

- Centers for Disease Control and Prevention. Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic. July 15, 2020: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html>
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- Centers for Medicare & Medicaid Services. Interim Final Rule (IFC), CMS-3401-IFC, Additional Policy and Regulatory Revisions in Response to the COVID-19 Public Health Emergency related to Long-Term Care (LTC) Facility Testing Requirements and Revised COVID-19 Focused Survey Tool. QSO-20-38-NH. August 26, 2020: <https://www.cms.gov/files/document/qso-20-38-nh.pdf>
- United States Environmental Protection Agency. List N: Disinfectants for Use Against SARS-CoV-2 (COVID-19): <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2-covid-19>