CARIBBEAN SHELTER GUIDE
COVID-19 CONSIDERATIONS

Preparatory measures to be taken in Emergency Shelters during hurricane season inclusive of Basic Infection Control, Hygiene, Space Management and COVID-19 Precautions

Interim guidance for Caribbean countries in light of COVID-19
Acknowledgement of contributors to this document

We would like to acknowledge and thank those who have contributed to the development of this technical document:

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Hurricane season in the Caribbean

Most shelters in the Caribbean are community centres, schools or churches that are limited in size. The Novel Coronavirus disease (COVID-19) distancing requirements subsequently reduced the number of persons a shelter can accommodate during the hurricane season. This document reinforces some measures to follow per international Emergency Shelter protocols factoring in conditions for spacing between beds/cots, recreation areas and ventilation according to The Sphere Handbook, FEMA and Australian Red Cross. Physical distancing and hygienic standards were modified highlighting that ideal requirements are not always feasible therefore we may choose realistic recommendations for practical purposes and suspected cases of COVID-19.

Preferred Sheltering Practices

(1) Shelter and Space Management
- Immediate sheltering
- Temporary sheltering
- Sleeping/ living arrangements
- Recreation/ common area
- Ventilation
- Room Temperature

(2) Infection Control and Prevention
- Screening area
- Isolation of ill persons
- Cleaning intervals of designated areas
- Disinfection of areas
- Standard Personal Protective Equipment (PPE)

(3) Shelter Hygiene Standards
- Bathrooms
- Showers
- Handwashing Stations
- Kitchen
- Waste Disposal

(4) COVID-19 Precautions
- Referral to closest testing center
- Social distancing
- Early detection of suspected cases- Temperature Checks
- Waste Disposal
# Shelter and Space Management

## Table 1:

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate Sheltering- person is staying up to 18 hours</td>
<td>A (4.5 ft) physical distance from other persons</td>
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<tr>
<td></td>
<td>This rule does not apply to members of the same family, E.g. a mother with children</td>
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<tr>
<td>Temporary sheltering- staying longer than 18 hours</td>
<td>A (6ft) physical distance from other persons</td>
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<td>Wheelchair-bound individual approximately (7ft) physical distance from other persons</td>
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<tr>
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<td>This rule does not apply to members of the same family, E.g. a mother with children</td>
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<tr>
<td>Patient with respiratory illness (Suspected COVID-19 patient (not yet tested)</td>
<td>Individual showing signs of COVID-19 or respiratory illness and has not been tested must observe a social distance of (6ft) or as close to 40 Sq. ft. as possible until placed in a temporary isolation room/area</td>
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<tr>
<td>Recreation/Commons area</td>
<td>As much as feasible, observe a (4.5 ft) physical distance per person or family</td>
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<td>If the recreation area is indoors, create a shift system to limit the number of persons in the room adhering to the stipulated physical distance</td>
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<tr>
<td>Ventilation* (indoor air quality)</td>
<td>Minimum of 15 cubic feet of air exchange per minute per person required</td>
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<td>or 20-30 cubic meters of airflow/exchange per person per hour</td>
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<tr>
<td>Temperature inside shelter</td>
<td>Between 20-25 °C if AC units are available</td>
</tr>
</tbody>
</table>

*Ventilation*: Minimum air exchange required.
Sleeping arrangements

<table>
<thead>
<tr>
<th>Sleeping arrangements</th>
<th>Arrangement cots/beds in alternating ‘head-to-toe’ arrangement to reduce transmission of any communicable diseases</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Allot additional space between cots and aisle for wheelchair-bound persons</td>
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<tr>
<td></td>
<td><em>Single cot</em> - Distance of 2 - 2.5 ft between head and sides of the cot and 1.5 to 2 ft between aisles.</td>
</tr>
<tr>
<td></td>
<td><em>Bunk cot</em> – Same distance between head and sides of the cot with 65 to 95 cm vertical spacing between cots and 2 to 3 ft between aisles.</td>
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<tr>
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<td>This rule does not apply to members of the same family, e.g. a mother with children</td>
</tr>
</tbody>
</table>

*Note: Due to the physical distancing and sleeping arrangements, some countries may have to allocate additional shelter approve’ buildings to house additional people*

### Table 1: Ventilation

1. Natural ventilation is the best method of circulating fresh air and potentially removing COVID-19 virus.
2. Split AC does not refresh air; therefore, it is suggested that persons with or showing signs of respiratory illness should be placed in a room with natural ventilation.
3. Central AC should have an open-air refreshing vent to allow fresh air to be mixed with the re-circulated air.
4. Natural ventilation can be achieved by leaving windows/doors open to harness natural cross ventilation or use fans with windows/doors open if the shelter does not have access to natural cross breezes.
### Infection control and prevention

#### Table 2:

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<th>Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>*Check-in/ Screening area</td>
<td>Refer to Appendix A ‘Daily epidemiologic surveillance form’&lt;br&gt;Note: contact tracing of an individual showing signs of respiratory illness should be conducted at this stage</td>
</tr>
<tr>
<td>Isolation of ill persons</td>
<td>Separate ill individuals in a location previously identified until transfer to the nearest hospital/polyclinic COVID-19 testing centre</td>
</tr>
<tr>
<td>Cleaning intervals of designated areas</td>
<td>Clean heavy traffic areas and surfaces every 6 hours</td>
</tr>
<tr>
<td>Disinfection of areas</td>
<td>Surface disinfection&lt;br&gt;Recreation areas&lt;br&gt;Sleeping/Living area&lt;br&gt;Doorknobs and handles&lt;br&gt;Refer to Appendix B</td>
</tr>
<tr>
<td>PPE for shelter use</td>
<td>A Standard PPE kit should contain apron, gowns, gloves, surgical masks, safety glasses, biosafety bags. Refer to Appendix D ‘PPE Sequence’</td>
</tr>
</tbody>
</table>

*Note- Upon entry to the shelter please adhere to the appropriate Government entity on the use of face mask in public spaces.

#### Table 2: Isolation

1. Surface disinfection- refer to Appendix B for a breakdown of the chemical cleaning solution.
2. Syndromic surveillance- sheltered individual assessment should occur at admission to the shelter, daily if suspected of COVID-19 symptoms. Shelter staff should be assessed every 24 hours.
3. A sheltered person in contact with a person showing signs of respiratory illness should be isolated, follow protocol in Table 4.
4. If the shelter does not have adequate space for a temporary isolation room, create makeshift walls (tarp, plastic, whatever can make a non-permeable barrier) that are floor to ceiling or as close as possible to the ceiling.
5. Observe the distance recommended in Table 1 for individuals suspected to have a respiratory illness (Suspected COVID-19 patient) in a predetermined temporary isolation room/area.
6. Limit the amount of staff and staff crossover working in the isolation area. Holding areas for persons with COVID-19 should only be entered by medical staff with fully protected PPE (gowns, gloves, mask, goggles) Refer to Appendix D ‘PPE Sequence’.
7. Perform hand hygiene before entering and exiting the isolation area.
8. Posters of signs and symptoms of COVID-19 should be placed strategically throughout the shelter.
9. Patients should be referred out of the temporary isolation room to the nearest hospital/polyclinic COVID-19 testing centre as soon as possible.

**Shelter Hygiene standards**

Table 3: Environmental Cleaning and Disinfection *(Refer to Appendix B)*

1. There should be designated bathrooms and showers for male, female and handicapped/disabled persons. If possible, designate a separate bathroom for COVID-19 persons who tested positive.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
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</thead>
</table>
| **Bathrooms**               | 1 toilet per 20 females  
1 toilet per 40 men  
1 urinal per 40 men         |
| **Showers**                 | 1 per 30 people  
Must be gender-segregated (male and female) |
| **Handwashing station**     | Handwashing stations must be in key areas e.g. common area/recreation, entrance of facility, bathrooms, dining area  
Must have soap and paper towel per 1/30 people |
| **Kitchen/Dining area**     | Kitchen should be cleaned on 3-hour intervals during use and dining area per shift  
Refer to Table 5 for cleaning solution  
As much as feasibly possible, dining should be done in shifts to maintain a physical distance of (4.5 ft) from others, per person or family |
| **Waste disposal**          | 1 (48 or 64-gallon) garbage bin per 30 people a day  
Garbage bags per family |
| **Wall-mounted hand sanitizers** | Place dispensers of alcohol-based sanitizer in visible places  
E.g. entrance of facility, common area/recreation, sleeping area, isolation area |
2. Wear a disposable mask, goggles, fluid-resistant apron, shoe covers and disposable gloves (PPE) while cleaning toilets and showers. Refer to Appendix D ‘PPE Sequence’

3. The toilet (when possible) should be flushed with the lid down to avoid drip splashes and spray clouds.

4. The cleaning of waste containers such as trash cans should be strengthened and disinfection of trash cans should be done after garbage collection, cleaning with water and soap and then spraying or wiping with 0.5% chlorine-based disinfectant.

5. Common and high-touch surfaces (such as door handles, light switches, handrails, tabletops, chairs, bed/cot frames) should be cleaned at least twice daily with 70% alcohol solution.

6. Floors should be cleaned daily or more frequently if a spill occurs with 0.1% chlorine solution. Air dry for 10 minutes.

7. Bathrooms should be cleaned and disinfected at least once a day (0.1% chlorine solution). Regular household soap or detergent should be used for cleaning first and then, after rinsing, regular household disinfectant containing 0.5% sodium hypochlorite, leave for 10 minutes then rinse.

8. Any form of bedding (sleeping bags, blanket, sheet, pillows) should not be shaken out within the shelter, but outside downwind of the shelter and away from people. Bed linen should be washed twice weekly, with chlorine solution added to the detergent.
COVID-19 Precautions

### Table 4:

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referral to closest testing centre and quarantine facility</td>
<td>The shelter manager should inform relevant Infection Control Specialist of the suspected individual status and contact tracing information to the receiving facility. The shelter should have a coordinated process that enables the communication between the shelter and the receiving facility to reduce infection transmission in the shelter.</td>
</tr>
<tr>
<td>Social distancing</td>
<td>Observe the distance mentioned in Table 1. To reduce contact of respiratory droplets.</td>
</tr>
<tr>
<td>Early detection/suspected cases</td>
<td>Refer to Appendix A ‘Daily epidemiologic surveillance form’</td>
</tr>
<tr>
<td>Medical waste disposal</td>
<td>Use a puncture-resistant container for needles and contaminated sharps.</td>
</tr>
</tbody>
</table>

#### Table 4: Suspected cases of COVID-19

1. Regularly and frequently clean the surfaces touched in the entire care area of the family member with symptoms.
2. Use soap or household detergent to clean surfaces first then after rinsing use a disinfectant solution with 0.1% concentration or a 70% alcohol solution.
3. Bathrooms should be cleaned and disinfected at least once a day (0.1% chlorine solution). Regular household soap or detergent should be used for cleaning first and then, after rinsing, regular household disinfectant containing 0.5% sodium hypochlorite, leave for 10 minutes then rinse.
4. The kitchen (floors, counters, equipment and appliances) and dining area should be cleaned and sanitised on 3-hour intervals and as needed (0.1% chlorine solution). Regular household soap should be used for cleaning first and then, after rinsing, regular household disinfectant containing 0.5% sodium hypochlorite, leave for 10 minutes then rinse.
5. Wear disposable mask, goggles, fluid-resistant apron, and disposable gloves (PPE) while cleaning contaminated areas. Appendix D ‘PPE Sequence’
6. Wear disposable mask, goggles, fluid-resistant apron, and disposable gloves (PPE) while handling sick person until transfer to testing or quarantine facility.
7. Wash hands with soap and water for 40 seconds or use a 70% alcohol-based hand sanitizer after removing PPE.
8. The toilet (when possible) should be flushed with the lid down to avoid drip splashes and spray clouds.
9. Be sure to dispose of nose, mouth, eye tissues in designated biohazard waste bag.
APPENDIX A

Daily epidemiologic surveillance form (symptomatic) (*)

<table>
<thead>
<tr>
<th>Name of hospital, health care facility, shelter:</th>
<th>Location (town/district)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person completing form:</td>
<td></td>
</tr>
<tr>
<td>Date:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health status/symptoms</th>
<th>Age group</th>
<th>Signs, symptoms, or conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;5</td>
<td>5 - 14</td>
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<tr>
<td></td>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td>Fever</td>
<td></td>
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<tr>
<td>Fever and cough</td>
<td></td>
<td></td>
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<tr>
<td>Fever and urticaria (skin rash)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fever and petechiae (hemorrhagic spots on skin)</td>
<td></td>
<td></td>
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<tr>
<td>Diarrhea</td>
<td></td>
<td></td>
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<tr>
<td>Jaundice</td>
<td></td>
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<tr>
<td>Other conditions (name them)</td>
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<td></td>
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<tr>
<td>Injured (*)b</td>
<td></td>
<td></td>
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<tr>
<td>Deaths (*)b</td>
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<tr>
<td>Patients with disabilities (*)b</td>
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<td></td>
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<tr>
<td>Patients with chronic illness (*)b</td>
<td></td>
<td></td>
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<tr>
<td>Other important health information (*)c</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(*) a In shelters, this form is designed for use by non-health personnel with some medical knowledge. The aim is to gather information on a daily basis from shelters and to inform and alert medical personnel responsible for the area about health conditions in the disaster-affected population, and to assist in decision making.

(*) b Write the condition and name of person affected.

(*) c Record only new cases occurring for the day.
APPENDIX B

Environmental cleaning and disinfection of the shelter is a high priority and should be frequently conducted.

Table 5: How to dilute chlorine stock solution (approximate volumes)

<table>
<thead>
<tr>
<th>Stock solution of (unscented) household bleach (5.25% say 5%) Sodium hypochlorite Commercially Available</th>
<th>250 mg/L</th>
<th>500 mg/L</th>
<th>1,000 mg/L</th>
<th>2,000 mg/L</th>
<th>5000 mg/L</th>
<th>10,000 mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%</td>
<td>0.025%</td>
<td>0.05</td>
<td>0.10%</td>
<td>0.20%</td>
<td>0.50%</td>
<td>1.0%</td>
</tr>
<tr>
<td>cap of bleach bottle is 10 ml</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5 ml</td>
</tr>
<tr>
<td>cap of bleach bottle is 10 ml</td>
<td>teaspoon</td>
<td>1 cap</td>
<td>2 caps</td>
<td>4 caps</td>
<td>4 Oz</td>
<td>9 Oz</td>
</tr>
</tbody>
</table>

Table 5: How to make a 0.05% chlorine solution

1. Use ordinary unscented household bleach of 5.25%. The cap of a one-gallon bottle is 10 ml.
2. Add 10 ml (1 cap) of bleach in a litre of water or 100 ml (10 caps; 2/5 of cup) in a 10-litre bucket.
# APPENDIX C

## Active Monitoring Form for Asymptomatic Workers

**Instructions:** Healthcare workers (HCWs) should communicate with the healthcare facility or public health authority at least daily and report on subjective or measured temperature and the following symptoms. This form should be completed by the healthcare facility or public health authority by checking the appropriate boxes. HCWs without fever (subjective or temperature below 38.0°C/100.0°F) or any of the following symptoms can report to work.

<table>
<thead>
<tr>
<th>HCW Name</th>
<th>Phone</th>
<th>Email</th>
<th>Facility</th>
<th>Job Title</th>
<th>Supervisor</th>
<th>Date of last exposure</th>
<th>Monitoring Personnel Name</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Day # After Exposure</th>
<th>Date</th>
<th>Time</th>
<th>Temp</th>
<th>Subjective fever</th>
<th>Cough</th>
<th>Sore</th>
<th>Shortness of breath</th>
<th>Runny</th>
<th>Chills</th>
<th>Muscle aches</th>
<th>Headache</th>
<th>Fatigue</th>
<th>Abdominal pain</th>
<th>Nausea or vomiting</th>
<th>Diarrhoea</th>
<th>None</th>
<th>Other</th>
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<tbody>
<tr>
<td>1</td>
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</table>

1 Complete form beginning on the day it is determined that monitoring is necessary.
SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. **GOWN**
   - Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
   - Fasten in back of neck and waist

2. **MASK OR RESPIRATOR**
   - Secure ties or elastic bands at middle of head and neck
   - Fit flexible band to nose bridge
   - Fit snug to face and below chin
   - Fit-check respirator

3. **GOGGLES OR FACE SHIELD**
   - Place over face and eyes and adjust to fit

4. **GLOVES**
   - Extend to cover wrist of isolation gown

USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene
HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) 
EXAMPLE 1

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. Remove all PPE except a respirator, if worn. Remove the respirator after leaving the patient room and closing the door. Remove PPE in the following sequence:

1. GLOVES
   • Outside of gloves are contaminated!
   • If your hands get contaminated during glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
   • Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove
   • Hold removed glove in gloved hand
   • Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
   • Discard gloves in a waste container

2. GOGGLES OR FACE SHIELD
   • Outside of goggles or face shield are contaminated!
   • If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
   • Remove goggles or face shield from the back by lifting head band or ear pieces
   • If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container

3. GOWN
   • Gown front and sleeves are contaminated!
   • If your hands get contaminated during gown removal, immediately wash your hands or use an alcohol-based hand sanitizer
   • Unfasten gown ties, taking care that sleeves don’t contact your body when reaching for ties
   • Pull gown away from neck and shoulders, touching inside of gown only
   • Turn gown inside out
   • Fold or roll into a bundle and discard in a waste container

4. MASK OR RESPIRATOR
   • Front of mask/respirator is contaminated — DO NOT TOUCH!
   • If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
   • Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
   • Discard in a waste container

5. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE

PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE
Here is another way to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Remove all PPE before exiting the patient room except a respirator, if worn. Remove the respirator after leaving the patient room and closing the door. Remove PPE in the following sequence:

1. **GOWN AND GLOVES**
   - Gown front and sleeves and the outside of gloves are contaminated!
   - If your hands get contaminated during gown or glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
   - Grasp the gown in the front and pull away from your body so that the ties break, touching outside of gown only with gloved hands
   - While removing the gown, fold or roll the gown inside-out into a bundle
   - As you are removing the gown, peel off your gloves at the same time, only touching the inside of the gloves and gown with your bare hands. Place the gown and gloves into a waste container

2. **GOGGLES OR FACE SHIELD**
   - Outside of goggles or face shield are contaminated!
   - If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
   - Remove goggles or face shield from the back by lifting head band and without touching the front of the goggles or face shield
   - If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container

3. **MASK OR RESPIRATOR**
   - Front of mask/respirator is contaminated — DO NOT TOUCH!
   - If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
   - Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
   - Discard in a waste container

4. **WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE**

Perform hand hygiene between steps if hands become contaminated and immediately after removing all PPE.
References


