

# **Nepal Medical Council Interim Guidance for Infection Prevention and Control When COVID-19 Is Suspected**

NEPAL MEDICAL COUNCIL

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## Table of Contents

SECTIONS	PAGE NO.
I. PURPOSE OF THE GUIDELINES	4
II. TRANSMISSION CHARACTERISTICS OF COVID-19	4
III. ORGANIZATIONAL PREPAREDNESS FOR PREVENTING & CONTROLLING COVID-19	4
IV. INFECTION PREVENTION AND CONTROL PRECAUTIONS	5
V. PERSONAL PROTECTIVE EQUIPMENT (PPE) WHILE TAKING CARE OF PATIENTS WITH SUSPECTED OR PROVEN COVID-19	8
VI. MANAGEMENT OF VISITORS	10
VII. MANAGEMENT OF THE EQUIPMENT AND THE CARE ENVIRONMENT	11
VIII. LAUNDRY	11
IX. WASTE MANAGEMENT	11
X. HANDLING OF DEAD BODIES	12
XI. OCCUPATIONAL HEALTH AND STAFF DEPLOYMENT	12
XII. REFERENCES	16
XIII. APPENDICES	
Appendix 1: Example design for modification of existing hospital room to build negative pressure chamber	18
Appendix 2: Example sequence of donning and doffing personal protective equipment	19
Appendix 3a and 3b: Example checklist for trained observer for donning and doffing of personal protective equipment	20
Appendix 4: MoHP and NMC's Guidelines for use of personal protective equipment	22
APPENDIX 5: Suggestions regarding re-use of personal protective equipment	23
XIV. CONTRIBUTORS	25

## Nepal Medical Council

# Interim Guidance for Infection Prevention and Control When COVID-19 Is Suspected

### I. PURPOSE OF THE GUIDELINES

The purpose of this document is to help physicians, nurses, other healthcare workers and healthcare institutions to apply appropriate principles of Infection Prevention and Control while providing care in healthcare institutions for patients with suspected or proven COVID-19. COVID-19 (Coronavirus Infectious Disease 2019) is a respiratory tract infection caused by the betacoronavirus SARS CoV-2 (SARS coronavirus type-2). These guidelines are based on current knowledge in the available literature, expert consultations, and recommendations from WHO, CDC and other authorities. These guidelines are not meant to replace clinical judgment based on individual patient needs and do not exclude expert consultation and are subject to change based on new knowledge.

### II. TRANSMISSION CHARACTERISTICS OF COVID-19

Person-to-person transmission of COVID-19 occurs mainly through respiratory droplets released when an infected person coughs, talks or sneezes, and through contact with contaminated surfaces followed by touching one's eyes, nose or mouth. In experimental conditions, viable SARS-CoV-2 virus was detected on different types of surfaces for up to 2-3 days, and in aerosols up to 3 hours after aerosol-generating procedures. However, the evidence so far suggests that airborne transmission is probably not a major driver of transmission. Apart from upper and lower respiratory tract secretions, live virus has also been occasionally detected in faeces and blood of infected patients. However, fecal-oral route does not appear to be a driver of transmission. There is no evidence for sexual or vertical transmission of SARS-CoV-2 so far, and the virus RNA has not been detected in breastmilk.

The incubation period has been reported to be 2-14 days (median 4-5 days). The median time from the onset of symptoms to recovery in patients of COVID-19 is approximately 2 weeks for mild cases and 3-6 weeks for severe or critical cases. The peak viral shedding and risk of transmitting infections appears to be in the presymptomatic stage, around 24 hours before the onset of symptoms. One representative study among those studying the transmission of SARS-CoV-2 showed that presymptomatic individuals are sources of transmission for around 46% of the infected cases of SARS-CoV-2 in the community, currently symptomatic individuals are responsible for 38%, and asymptomatic persons who never show symptoms are responsible for only around 10% of the total transmission burden.

### III. ORGANIZATIONAL PREPAREDNESS FOR PREVENTING AND CONTROLLING COVID-19

Each healthcare facility should adopt measures that facilitate

- Early assessment / triaging of cases of COVID-19
- Early identification / reporting of cases of COVID-19
- Education of staff, patients and visitors about standard and transmission-based infection control precautions
- Implementation of transmission-based precaution measures
- Restriction of access to ill visitors

- Implementation of sound occupational health policies for pre- COVID-19-surge and surge settings

Please refer to *Interim Clinical Guidance for Care of Patients with COVID-19 in Healthcare Settings* by the Nepal Medical Council for recommendations in triaging and early identification of COVID-19 cases.

#### IV. INFECTION PREVENTION AND CONTROL PRECAUTIONS

##### 1. STANDARD INFECTION CONTROL PRECAUTIONS

Standard infection control precautions include the basic measures such as hand hygiene, respiratory hygiene, appropriate environmental cleaning, proper waste management, etc. that should be used by all staff at all times for all patients. They are by far the most effective protection against COVID-19 infection, more so than contact and droplet transmission precautions. Standard precaution measures are the only measures that will protect from transmission from asymptomatic or pre-symptomatic carriers of SARS-CoV-2.

Healthcare facilities should ensure that their healthcare providers and other staff members have access to handwashing facilities with adequate clean water and soap, or given adequate supplies of alcohol-based hand sanitizers.

All staff should be trained on the appropriate methods for hand-washing and using alcohol-based hand sanitizer. All staff should be advised to perform hand hygiene strictly, as advised in WHO's "my 5 moments of hand-hygiene" approach.

- Before touching the patient
- Before clean / aseptic procedures
- After body fluid exposure risk
- After touching the patient
- After touching the patient's surroundings

Good respiratory and cough hygiene measures should be adopted by all staff, patients and visitors. These include cleaning hands using soap and water after coughing, sneezing, and wiping or blowing the nose, keeping hands away from eyes, mouth and nose.

##### 2. TRANSMISSION BASED PRECAUTIONS

For patients known or suspected to be infected with SARS-CoV-2, additional measures need to be implemented. These are

- Contact precautions
- Droplet precautions
- Airborne precautions (for aerosol generating procedures)

**Based on the best practices in healthcare centers in Southeast Asia that have demonstrated very low rates of nosocomial transmission of COVID-19, the following additional measures are recommended in all healthcare centers in Nepal during the COVID-19 pandemic.**

- **Universal masking: Everyone visiting or working at a healthcare facility must wear a facemask at all times except for reasonable situations such as while eating when the masks can be taken off maintaining safe distance from others.**
  - **Exception from prolonged facemask use can be made for patients who may not tolerate prolonged mask use due to certain medical conditions.**
  - **For visitors or patients, cloth mask covering both mouth and nose is acceptable.**
  - **Masks with exhaust valves should not be allowed.**
- **Arrangements should be made to facilitate and enforce physical distance of 2 metres (6-foot) between individuals as much as possible.**
- **In the outpatient clinics, surface disinfection of tabletop, chair armrests, bed, and other high touch surfaces such as the door handle, etc. with an approved disinfectant for COVID-19 should be performed ideally after each patient.**
- **Arrangements should be made to help avoid group meetings or face-to-face encounters between staff members or other individuals as much as possible.**
- **All employees, patients, and visitors should be screened daily for symptoms suggestive of COVID-19 and get daily temperature checks.**
- As noted in section V below, all medical personnel will follow droplet and contact precaution guidelines (surgical mask, goggles or face visor, gown, gloves) while assessing or managing the patient, with additional airborne precautions (N-95 masks) for aerosol-generating procedures.

Aerosol-generating procedures include:

- Cardio-pulmonary resuscitation
  - Intubation, extubation and related procedures
  - Manual ventilation
  - Tracheostomy / tracheostomy procedures
  - Bronchoscopy
  - Open suctioning
  - Non-invasive ventilation
  - Nebulization therapy (“Dry nebulization” is a non-aerosol-generating alternative.)
  - High flow nasal oxygen
  - Sputum induction
  - Obtaining nasopharyngeal or oropharyngeal swab
  - Dental procedures
  - Otorhinolaryngology procedures
  - Upper gastrointestinal endoscopy
- For patients with suspected or confirmed COVID-19, these potentially aerosol-generating procedures should only be performed when essential.
  - Patients should be placed in adequately ventilated single rooms, and where available, preferably in rooms with negative pressure with air in the room delivered directly to the atmosphere (See appendix 1), or recirculated into the building after filtration through high-efficiency particulate air (HEPA) filters, with minimum of 12 air exchanges per hour.

- When single rooms are not available, patients with confirmed COVID-19 should be grouped together. Their beds should be placed at least 6 feet apart, ideally with a barrier placed between two suspected cases when possible.
- Suspected (but not confirmed) patients with COVID-19 should *not* be cohorted with other patients with suspected or confirmed COVID-19.
- Each single-patient isolation room or each bed in the isolation ward should have the following instruments for each patient:
  - Stethoscope (dedicated to the patient)
  - BP cuff (dedicated to the patient)
  - Thermometer (dedicated to the patient)
  - Surgical masks
  - Goggles or visors or face shields (reusable after disinfection)
  - Non-sterile gloves
  - Disposable gowns, or clean reusable gowns made of water-resistant fabric
  - Receptacle (bin) for waste disposal
- If equipment needs to be shared between patients, they should be cleaned and disinfected between use for each individual patient.
- Hospitals should implement staffing policies to minimize the number of healthcare providers who enter the room. They should consider providing care for these patients with dedicated providers (not more than one doctor and one nurse for a patient during a shift if possible) to minimize risk of transmission and exposure to other patients and other healthcare providers.
- Hospitals should keep a log of all persons who care for or enter the rooms or care area of these patients.
- Standard precautions should be applied at all times.
- Additional contact and droplet precautions should continue until EITHER the time-based criteria alone OR (for special populations) both time-based AND test-based criteria, are met.

i. **Time-based criteria alone:**

Resolution of fever >72 hours without antipyretics, AND improvement in respiratory signs and symptoms (cough, shortness of breath and oxygen requirement) (in **symptomatic** COVID-19 infection)

OR

No symptoms have developed subsequent to the first positive COVID-19 diagnostic test (in **asymptomatic** COVID-19 infection)

**AND**

At least 14 days have passed since the initial onset of symptoms (in **symptomatic** COVID-19)

OR

14 days since the first positive COVID-19 diagnostic test (in **asymptomatic** COVID-19)

ii. **Both time-based AND test-based criteria (for essential workers including healthcare workers):**

Time-based criteria same as above except duration 10 days only (i.e., 10 days after symptom onset or 10 days after first positive test)

**AND**

Negative results on COVID-19 nucleic acid-based testing from at least 2 respiratory tract specimens collected  $\geq 24$  hours apart

iii. **Both time-based AND test-based criteria (for those with severely immunocompromising condition)**

Criteria same as above for essential workers except that the duration is 14 days after symptom onset or 14 days after first positive test

**Note:**

The isolation precautions in the hospital can therefore be discontinued

a) before 14 days if both the time-based and test-based criteria above are met

OR

b) after 14 days even if only the time-based criteria are met, i.e. even if RT-PCR remains positive. If RT-PCR test for SARS-CoV-2 is still positive at 14 days, further follow up RT-PCR testing is not recommended.

Note: There have been reports of prolonged detection of RNA without direct correlation to viral culture. Detecting viral RNA via PCR does not necessarily mean that a person is infectious

## **V. PERSONAL PROTECTIVE EQUIPMENT (PPE) WHILE TAKING CARE OF PATIENTS WITH SUSPECTED OR CONFIRMED COVID-19**

1. All healthcare providers and other staff should have access to appropriate personal protective equipment for them to carry out their professional work.
2. As noted in the Nepal Medical Council's Professional Ethics Guidelines for COVID-19 (March 2020), the country and the healthcare institutions have an obligation to provide necessary equipment including appropriate Personal Protective Equipment (PPE) to the healthcare workers (HCWs) for their personal protection as well as to minimize transmission of infection between infected and non-infected individuals.
3. All staff should be trained on the appropriate methods for putting on and removing ("donning" and "doffing") PPE, including leak test for N-95 masks. (See poster in **Appendix 2**)
4. The general principles that help determine the types of PPE appropriate for specific settings are as follows:
  1. Use of facemask at all times, and by everyone including healthcare workers and other staff members, patients and other visitors in healthcare facilities
  2. N-95 masks for aerosol generating procedures, and if adequate supplies can be ensured, during all activities involving direct care of suspected or confirmed COVID-19 patients
  3. Eye-cover and gown, with or without head or foot cover, when having direct contact with patients or when risk of splash of secretions



5. All patients with suspected COVID-19 should be given surgical masks as soon as they arrive at the facility and asked to put them on throughout their stay in the hospital until 2019-SARS-CoV-2 acute respiratory disease is ruled out, unless they are placed in a negative pressure room.
6. Place surgical mask over oxygen delivery devices such as oxygen cannula, non-rebreather mask or nebulizer mask, in patients requiring the use of such devices.
7. When supplies of N-95 masks are severely limited during a pandemic, hospitals should implement:
  - staffing policies aimed at minimizing the number of individuals needing N-95 masks
  - allowing extended use and/or limited reuse of N-95 masks, when acceptable
  - prioritize the use of N-95 for the staff members at the highest risk of acquiring the infection or risk of having serious complications from it.
8. We recommend that a healthcare worker participating in the care of a patient with suspected or confirmed COVID-19 should be observed by a trained observer carrying an appropriate checklist (see example in **Appendix 3**) while putting on (donning) or taking off (doffing) head-to-toe personal protective equipment. This not only minimizes the stress on the healthcare worker but also reduces the chances of errors leading to infection in healthcare workers and nosocomial transmission to others.
9. Please see **Appendix 5** for suggestions on extended use or re-use of PPE.
10. **PPE for healthcare workers involved in aerosol-generating procedures:**
  - a. N-95 mask
  - b. Goggles or face-shield
  - c. Gloves (double layer) (non-sterile)
  - d. Disposable gowns, or clean reusable gowns made of water-resistant fabric
  - e. Cap (regular disposable)
  - f. Disposable, or clean reusable, shoe covers

When supplies of N-95 masks are limited, airborne precautions with N-95 mask can be discontinued after 3 hours in the room after an aerosol-generating procedure is performed, unless it is performed in a negative-pressure room, where airborne precautions can be discontinued after 1 hour (while droplet and contact precautions are continued).

11. **PPE for healthcare workers providing direct routine care for suspected or confirmed COVID-19 patients, including those at “Fever/Influenza-like Illness Clinic”:**
  - a. N-95 masks when available, otherwise surgical mask
  - b. Goggles or face-shield
  - c. Gloves (non-sterile)
  - d. Disposable gowns, or clean reusable gowns made of water-resistant fabric
  - e. Cap (regular disposable)

Those only collecting personal identification information or demographic or triage questionnaire data should maintain a distance of minimum 2 metres from the patient.

**12. PPE for escorts in hospitals or drivers of ambulances or transport vehicles:**

- a. Surgical masks
- b. Gloves (non-sterile)
- c. If physical contact is expected, depending on circumstances, a gown PLUS goggles or face-shield are also recommended, otherwise need to maintain minimum 2-metre distance from the patient.
- d. The patient should be given a facemask and instructed to perform hand-hygiene.

**13. PPE for laboratory staff processing specimen from suspected COVID-19 patients:**

- a. Surgical masks
- b. Disposable gowns, or clean reusable gowns made of water-resistant fabric
- c. Gloves (non-sterile)
- d. Goggles or face-shield (if risk of splash)
- e. Cap, disposable (if risk of splash)

**14. PPE for staff handling linens, waste and dead body:**

- a. Surgical mask
- b. Goggles or face-shield
- c. Heavy duty gloves
- d. Disposable gowns, or clean reusable gowns made of water-resistant fabric
- e. Cap (regular disposable)
- f. Boots or closed work shoes

**15. PPE for all other staff** (including health care workers involved in any activity that does not involve contact with suspected or confirmed COVID-19 patients and working in other areas of patient transit such as wards, corridors):

- Surgical mask
- Standard precautions including hand hygiene should be strictly followed.
- Maintain spatial distance of at least 2 metres.

**VI. MANAGEMENT OF VISITORS**

- Restrict visitors from entering the room of known or suspected COVID-19 patients. Alternative mechanisms for patient and visitor interactions, such as video-call applications on cell phones or tablets should be explored.
- Hospitals can consider exceptions based on end-of-life situations or when a visitor is essential for the patient's emotional well-being and care.
- Hospitals should provide instruction, before visitors enter patients' rooms, on hand hygiene, limiting surfaces touched, and use of PPE according to current facility policy while in the patient's room.
- Hospitals should maintain a record (e.g., log book) of all visitors who enter patient rooms.
- Visitors should not be present during aerosol-generating procedures.
- Visitors should be instructed to limit their movement within the facility.
- Exposed visitors (e.g., contact with a symptomatic COVID-19 patient prior to admission) should be assessed by contact-tracing team and be tested / quarantined according to the existing public

health policy. They should be monitored for any signs and symptoms of acute illness for a period of at least 14 days after the last known exposure to the patient.

- All visitors must wear facemasks at all times while in the common areas of the facility.

## **VII. MANAGEMENT OF THE EQUIPMENT AND THE CARE ENVIRONMENT**

- Routine cleaning and disinfection procedures are appropriate for SARS-CoV-2 in healthcare settings, including those patient-care areas in which aerosol-generating procedures are performed.
- 70% ethyl alcohol can be used to disinfect small areas between use, such as reusable dedicated equipment (for example, thermometers)
- For surfaces contaminated with SARS-CoV-2, WHO recommends chlorine-based disinfectants. A 0.1% hypochlorite solution (or 1000 ppm) will inactivate SARS-CoV-2 and vast majority of other pathogens that may be present in the health-care setting. However, for blood and body fluids spills of more than about 10mL, a 0.5% hypochlorite solution (or 5000 ppm) is recommended.
- The floor should be cleaned with 0.1% chlorine-based solution or equivalent disinfectant at least every 8 hours in noncritical areas and every 4 hours in critical areas.
- All high touch surfaces (such as handles, light switches, bed and handrails, toilet bowl, tap knobs, etc.) in the patient's room should be cleaned at least every 3-4 hours with 0.1% chlorine-based solution or equivalent disinfectant.
- Surface disinfection of tabletops, countertops, furniture surfaces and stethoscope, flash-light, knee hammer, or other used clinical instruments with 0.1% chlorine-based solution or equivalent disinfectant should be performed between all patient consults in outpatient departments. Surfaces that do not tolerate sodium hypochlorite may be cleaned with a neutral detergent, followed by a 70% concentration of ethanol.
- Spillage of blood or body fluids should be managed by carefully covering the spill with disinfecting wipes with 0.5% chlorine-based solution or equivalent disinfectant over it for at least 10 minutes, then removing the spillage carefully with the disinfecting wipes, followed by cleaning and disinfection with 0.1% chlorine-based solution or equivalent disinfectant.
- Utility gloves or heavy duty, reusable plastic aprons used by the cleaning staff should be cleaned with soap and water and then decontaminated with 0.5% chlorine-based solution after each use.

## **VIII. LAUNDRY**

- All linen used in the care of suspected or confirmed COVID-19 patients should be managed as "infectious" linen and must be handled accordingly.
- Soiled laundry should be placed in clearly labeled, leak-proof bags or containers, after removing solid excrement if any.
- Linens can be machine washed with warm water at 60-90°C (140–194°F) with laundry detergent.
- If machine washing is not an option, laundry should be soaked in hot water and soap in a large drum using a stick to stir, while taking precautions to avoid splashing. Then the drum should be emptied and the laundry soaked in 0.05% chlorine-based solution for 30 minutes. The linens should finally be rinsed with clean water and fully dried in sunlight.

## **IX. WASTE MANAGEMENT**

- The management of various types of waste produced during the care of suspected or confirmed COVID-19 should be done according to the Healthcare Waste Management Guidelines (2014) published by the Ministry of Health and Population Department of Health Services.

In essence, all waste should be treated as potentially infectious waste. The management will be the same as for other patients with respiratory tract infections, with the staff members using adequate hand hygiene and personal protective equipment.

- The personnel handling health care waste should wear appropriate PPE (goggles or face shield, surgical mask, thick gloves, long-sleeved gown, thick gloves, water-resistant apron and boots).

## **X. HANDLING OF THE DEAD BODY**

- Please refer to the separate Covid-19 Ethical Guidelines from the Ministry of Health and Population for details of infection prevention and control precautions during the handling of the dead body.

## **XI. OCCUPATIONAL HEALTH AND STAFF DEPLOYMENT**

### **1. Definition of significant exposure:**

Significant exposure for a healthcare worker (HCW) is defined as follows:

- a. Being within 2 metres of a probable or confirmed case for more than 15 minutes without wearing proper personal protective equipment; OR
- b. Having unprotected direct contact with probable or infected case or contact with their infectious secretions or excretions (e.g., being coughed on, touching soiled handkerchief with a bare hand) and not washing hands immediately afterwards; OR
- c. Additionally, for healthcare workers, not wearing eye protection if the person with COVID-19 was not wearing a cloth face covering or facemask, OR not wearing all recommended personal protective equipment (i.e. gown, gloves, eye protection, respirator) while performing an aerosol-generating procedure, OR
- d. Other situations as indicated by local risk assessments

### **2. Determining the time period when the source case could have been infectious**

- a. **For confirmed symptomatic cases:** from 48 hours before the onset of symptoms, until 14 days after the onset of symptoms.
- b. **For confirmed asymptomatic cases:**
  - i. If there is history of known exposure to a suspected or confirmed case or exposure to a situation potentially leading to the infection (such as attending a mass congregation), the period of infectivity will be considered to start at 48 hours after such exposure and end 14 days after the positive test sample was taken.
  - ii. If there is no known history of such exposure, the period of infectiveness to contacts will be considered to start 10 days prior to obtaining the positive test sample, and end 14 days after the sample was taken.

### **3. Determining the time period when the infected HCW could be infectious to others**

- a. **For symptomatic infected HCW:** from 48 hours before onset of symptoms, until 14 days after the onset of symptoms.
- b. **For asymptomatic infected HCW:**
  - i. If source person is known, the HCW is considered to be infectious from 48 hours after the *first* exposure to the source patient, until 14 days after obtaining the positive test sample.
  - ii. If source person is not known, the period of infectiveness to contacts will be considered to start 10 days prior to taking the positive test sample, and end 14 days after the sample was taken.

#### 4. Recommended work restrictions for exposed HCW<sup>†</sup>

Exposure	PPE Used	Work Restrictions
HCW who had significant exposure with a patient, visitor or healthcare worker with probable or confirmed COVID-19*	<ul style="list-style-type: none"> <li>• HCW not wearing a surgical or N-95 mask</li> <li>• HCW not wearing eye protection if the person with COVID-19 was not wearing a cloth face covering or facemask</li> <li>• HCP not wearing all recommended PPE (i.e., gown, gloves, eye protection, N-95 mask) during an aerosol-generating procedure</li> </ul>	<ul style="list-style-type: none"> <li>• Exclude from work for 14 days after last exposure</li> <li>• HCW to self-quarantine either at home in a separate room, or if appropriate living and social arrangements are not available for self-quarantine at home, arrangements should be made for accommodation in a comfortable and safe self-quarantine facility</li> <li>• Advise HCW to monitor themselves for symptoms consistent with COVID-19*</li> <li>• Any HCW who develops fever or symptoms consistent with COVID-19 should immediately contact the facility's designated clinical team for medical evaluation and testing</li> </ul>
HCW other than those with exposure risk described above	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>• No work restrictions</li> <li>• Follow all recommended infection prevention and control practices, including wearing a surgical mask or N-95 mask for source control while at work, monitoring themselves for fever or symptoms consistent with COVID-19 and not reporting to work when ill, and undergoing active screening for fever or symptoms consistent with COVID-19 at the beginning of their shift.</li> <li>• Any HCW who develops fever or symptoms consistent with COVID-19 should immediately self-isolate and contact the facility's designated clinical team for medical evaluation and testing.</li> </ul>

<sup>†</sup> Adapted from the CDC's *Interim U.S. Guidance for Risk Assessment and Work Restrictions for Healthcare Personnel with Potential Exposure to COVID-19*, May 2020.

\*For definitions of probable and confirmed cases of COVID-19, and symptoms consistent with COVID-19, please see *Nepal Medical Council Interim Clinical Guidance for Care of Patients with COVID-19 in Healthcare Settings Update 1* (June 2020)

**Note: An asymptomatic HCW who has had a significant exposure to SARS-CoV-2 but is NOT known to be infected might be asked to continue to work instead of staying in self-quarantine if severe staffing shortages make it necessary to require such HCWs to continue to work.** In such situation, they should:

- wear a surgical mask or N-95 mask for source control while at work

- strictly maintain appropriate hand hygiene
- monitor themselves for fever or symptoms consistent with COVID-19 and not report to work when ill
- undergo mandatory active screening for fever or symptoms consistent with COVID-19 at the beginning of their shift and every 6 hours during the shift
- if they develop fever or symptoms consistent with COVID-19, they should immediately self-isolate and contact the facility's designated clinical team for medical evaluation and testing.
- ideally be assigned to only take care of suspected or proven patients with COVID-19

## 5. Criteria for testing for exposed HCWs

### a. Symptomatic HCW:

- Testing should be done as soon as possible in HCWs with symptoms suggestive of COVID-19, unless the HCW has already tested positive for SARS-CoV-2 earlier.
- If a HCW is tested after 1-6 days after significant exposure to the source person because of occurrence of symptoms and the report is negative, they should be tested one more time after 7-14 days from the exposure.
- Except during severe staffing shortages, HCWs with negative test results for SARS-CoV-2 should still complete 14 days of quarantine.

### b. Asymptomatic HCW:

- In general, the timing of testing for exposed asymptomatic healthcare workers is dependent on the availability of testing capacity, the home situation of the HCW regarding whether the requirements of self-quarantine can be met, the pressure on the hospital or healthcare system from staffing shortage point of view, requiring an earlier return to work if possible, etc.
- As limitations in test capabilities are expected for at least several months in Nepal, we recommend testing **at least once after 7-14 days from first significant exposure to the source person.**
- Except during severe staffing shortages, HCWs with negative test results for SARS-CoV-2 should still complete 14 days of quarantine.

## 6. Criteria for returning to work for infected HCWs

- b. HCWs with COVID-19 should be excluded from work until they meet EITHER both the time-based AND test-based criteria, OR the *modified* time-based criteria alone.

### i. Time-based criteria:

- a) Resolution of fever >72 hours without antipyretics, and improvement in respiratory signs and symptoms (cough, shortness of breath and oxygen requirement) (in case of symptomatic COVID-19 infection)

OR

No symptoms have developed subsequent to the first positive COVID-19 diagnostic test (in case of asymptomatic COVID-19 infection)

AND

- b) At least 10 days have passed since the initial onset of symptoms (symptomatic COVID-19)

OR

At least 10 days have passed since the first positive COVID-19 diagnostic test (asymptomatic COVID-19)

- ii. **Test-based criteria:** Negative results on COVID-19 nucleic acid-based testing from at least 2 respiratory tract specimens collected  $\geq 24$  hours apart
- iii. **Modified time based-criteria** are similar to the time-based criteria above except that the duration from the initial onset of symptoms (in symptomatic COVID-19) or duration from the first positive diagnostic test (in asymptomatic COVID-19) is **14 days** instead of 10 days.

**Note:**

The infected HCW can therefore return to work

a) before 14 days if both the time-based and test-based criteria above are met

OR

b) after 14 days even if only the time-based criteria are met, i.e. even if RT-PCR remains positive. If RT-PCR test for SARS-CoV-2 is still positive at 14 days, further follow up RT-PCR testing is not recommended.

HCW returning to work with persistent positive RT-PCR should ideally not be assigned to work in a unit where patients with severely immunocompromising condition are managed for 2 weeks after returning to work.

- c. **Return to work practices and work restrictions: After returning to work, HCW should:**
  - i. wear a surgical mask or N-95 mask for source control while at work
  - ii. strictly maintain appropriate hand hygiene
  - iii. monitor themselves for symptoms and seek medical evaluation by the facility's designated clinical team should symptoms reoccur or worsen

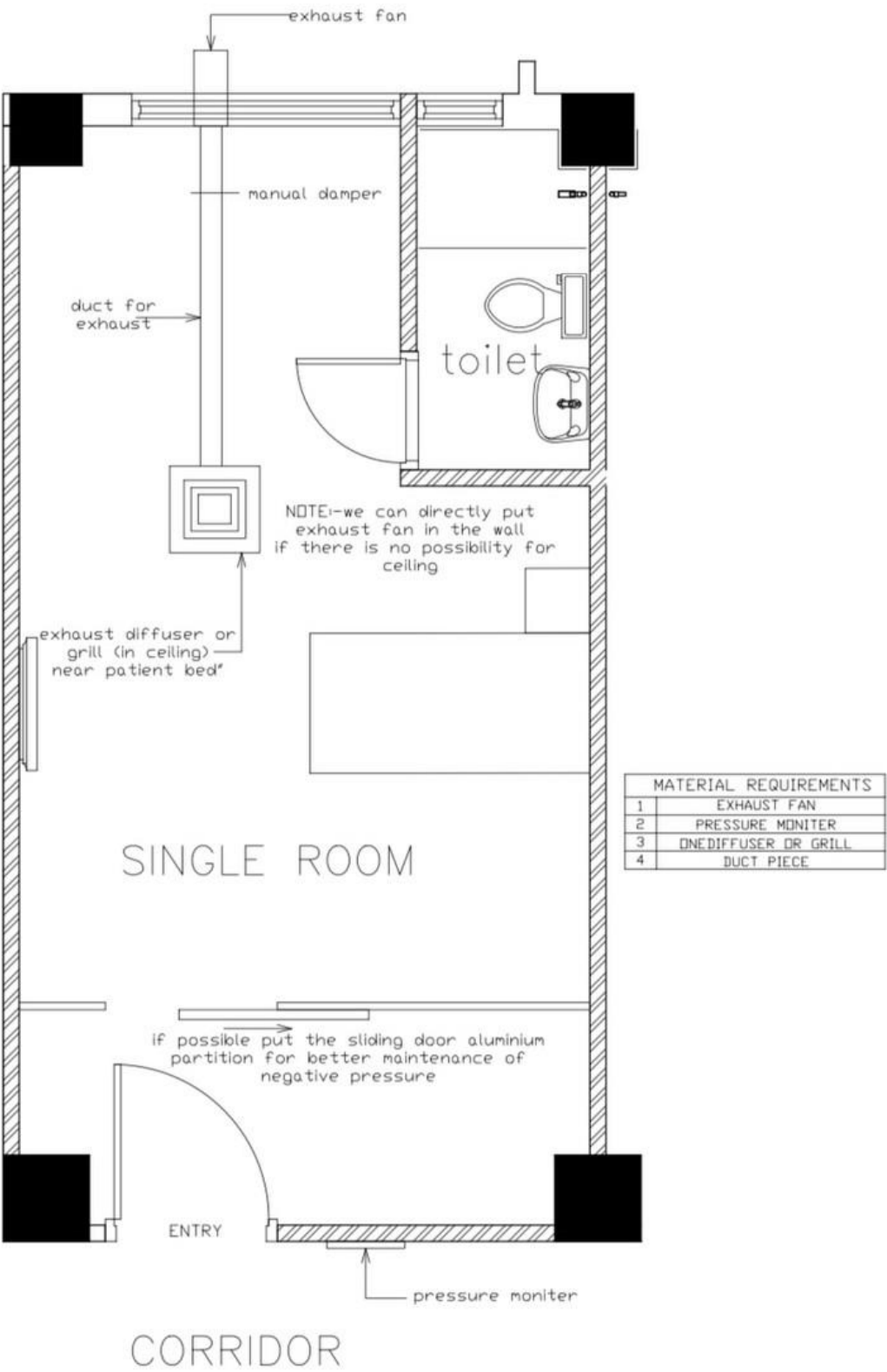
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XIII. APPENDIX 1. Possible modification of existing hospital room to build negative pressure chamber



## Appendix 2: Sequence for putting on and removing personal protective equipment (with Gown)

(Available at: [https://www.cdc.gov/coronavirus/2019-ncov/downloads/A\\_FS\\_HCP\\_COVID19\\_PPE\\_11x17.pdf](https://www.cdc.gov/coronavirus/2019-ncov/downloads/A_FS_HCP_COVID19_PPE_11x17.pdf))

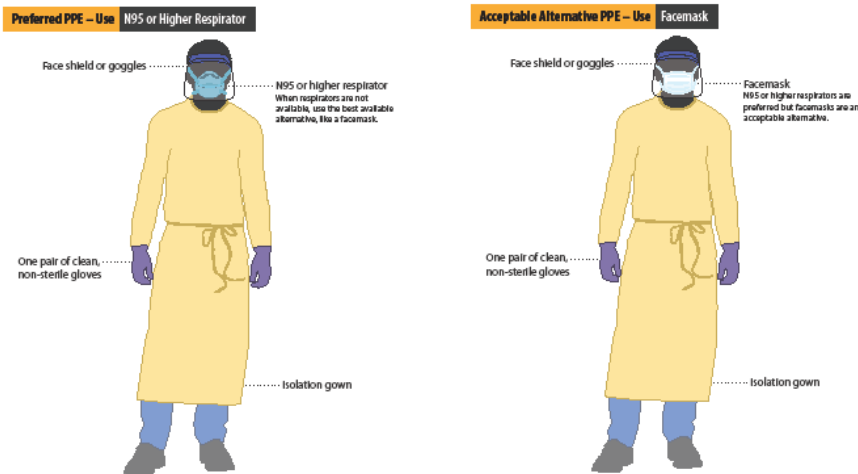
### Use Personal Protective Equipment (PPE) When Caring for Patients with Confirmed or Suspected COVID-19

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

- **Receive comprehensive training** on when and what PPE is necessary, how to don (put on) and doff (take off) PPE, limitations of PPE, and proper care, maintenance, and disposal of PPE.
- **Demonstrate competency** in performing appropriate infection control practices and procedures.

#### Remember:

- PPE must be donned correctly before entering the patient area (e.g., isolation room, unit if cohorting).
- PPE must remain in place and be worn correctly for the duration of work in potentially contaminated areas. PPE should not be adjusted (e.g., retying gown, adjusting respirator/facemask) during patient care.
- PPE must be removed slowly and deliberately in a sequence that prevents self-contamination. A step-by-step process should be developed and used during training and patient care.



#### Donning (putting on the gear):

More than one donning method may be acceptable. Training and practice using your healthcare facility's procedure is critical. Below is one example of donning.

1. **Identify and gather the proper PPE to don.** Ensure choice of gown size is correct (based on training).
2. **Perform hand hygiene using hand sanitizer.**
3. **Put on isolation gown.** Tie all of the ties on the gown. Assistance may be needed by another HCP.
4. **Put on NIOSH-approved N95 filtering facepiece respirator or higher (use a facemask if a respirator is not available).**  
If the respirator has a nosepiece, it should be fitted to the nose with both hands, not bent or tented. Do not pinch the nosepiece with one hand. Respirator/facemask should be extended under chin. Both your mouth and nose should be protected. Do not wear respirator/facemask under your chin or store in scrubs pocket between patients.\*  
  - » **Respirator:** Respirator straps should be placed on crown of head (top strap) and base of neck (bottom strap). Perform a user seal check each time you put on the respirator.
  - » **Facemask:** Mask ties should be secured on crown of head (top tie) and base of neck (bottom tie). If mask has loops, hook them appropriately around your ears.
5. **Put on face shield or goggles.** When wearing an N95 respirator or half facepiece elastomeric respirator, select the proper eye protection to ensure that the respirator does not interfere with the correct positioning of the eye protection, and the eye protection does not affect the fit or seal of the respirator. Face shields provide full face coverage. Goggles also provide excellent protection for eyes, but fogging is common.
6. **Put on gloves.** Gloves should cover the cuff (wrist) of gown.
7. **HCP may now enter patient room.**

#### Doffing (taking off the gear):

More than one doffing method may be acceptable. Training and practice using your healthcare facility's procedure is critical. Below is one example of doffing.

1. **Remove gloves.** Ensure glove removal does not cause additional contamination of hands. Gloves can be removed using more than one technique (e.g., glove-in-glove or bird beak).
2. **Remove gown.** Untie all ties (or unsnap all buttons). Some gown ties can be broken rather than untied. Do so in gentle manner, avoiding a forceful movement. Reach up to the shoulders and carefully pull gown down and away from the body. Rolling the gown down is an acceptable approach. Dispose in trash receptacle.\*
3. **HCP may now exit patient room.**
4. **Perform hand hygiene.**
5. **Remove face shield or goggles.** Carefully remove face shield or goggles by grabbing the strap and pulling upwards and away from head. Do not touch the front of face shield or goggles.
6. **Remove and discard respirator (or facemask if used instead of respirator).\*** Do not touch the front of the respirator or facemask.
  - » **Respirator:** Remove the bottom strap by touching only the strap and bring it carefully over the head. Grasp the top strap and bring it carefully over the head, and then pull the respirator away from the face without touching the front of the respirator.
  - » **Facemask:** Carefully untie (or unhook from the ears) and pull away from face without touching the front.
7. **Perform hand hygiene after removing the respirator/facemask** and before putting it on again if your workplace is practicing reuse.



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\*Facilities implementing reuse or extended use of PPE will need to adjust their donning and doffing procedures to accommodate those practices.

[www.cdc.gov/coronavirus](https://www.cdc.gov/coronavirus)

**Appendix 3a: Example checklist for trained observer for donning of coverall suit with boots**

<b>DONNING PPE (COVERALL SUIT WITH BOOT COVERS) COMPETENCY CHECKLIST</b>				
<b>DATE AND TIME:</b>				
<b>UNIT:</b>				
<b>STAFF MEMBER'S NAME:</b>			<b>TITLE:</b>	
<b>THE PROCEDURE MUST BE CHECKED BY A TRAINED OBSERVER AND RECORD IN THE CHECKLIST BELOW</b>				
<b>SN</b>	<b>DONNING PPE (FULL COVERALL WITH FOOT COVER)</b>	<b>YES</b>	<b>NO</b>	<b>COMMENT</b>
1	STAFF MEMBER HAS ATTENDED TO PERSONAL NEEDS, SUCH AS RESTROOM/HYDRATION			
2	STAFF MEMBER HAS CHANGED INTO CLEAN SURGICAL SCRUBS			
3	REMOVE WATCH AND ALL JEWELRY; SECURE HAIR			
4	ASSEMBLE ALL THE REQUIRED PPE			
5	VISUALLY INSPECT THE ASSEMBLED PPE			
6	PERFORM HAND HYGIENE			
7	WEAR THE FIRST PAIR OF GLOVES			
8	PUT ON THE COVERALL SUIT			
9	PUT ON THE BOOTS			
10	PUT ON THE BOOT COVERS			
11	PERFORM HAND HYGIENE			
12	PUT ON THE N-95 MASK			
13	PERFORM FIT TEST FOR N-95 MASKS			
14	PUT ON THE HOOD/CAP OF THE COVERALL SUIT			
15	WEAR THE ADDITIONAL PLASTIC APRON IF AVAILABLE			
16	PUT ON THE GOGGLES/FACE SHIELD			
17	PUT ON THE SECOND PAIR OF GLOVES			
18	VERIFY FULL RANGE OF MOTION WITH THE COVERALL SUIT			
19	VERIFY INTEGRITY OF THE PPE			
<b>VERIFIED BY:</b>				
<b>NAME:</b>				
<b>DESIGNATION:</b>				
<b>SIGNATURE:</b>				

### Appendix 3b: Example checklist for trained observer for doffing of coverall suit with boots

<b>DOFFING PPE (COVERALL SUIT WITH BOOT COVERS) COMPETENCY CHECKLIST</b>				
<b>DATE AND TIME:</b>				
<b>UNIT:</b>				
<b>NAME OF THE STAFF MEMBER:</b>			<b>TITLE:</b>	
<b>A TRAINED OBSERVER MUST OBSERVE THE PROCEDURE AND RECORD IN THE CHECKLIST BELOW</b>				
<b>SN</b>	<b>DOFFING PPE (FULL COVERALL WITH FOOT COVER)</b>	<b>YES</b>	<b>NO</b>	<b>COMMENT</b>
1	ENTER THE DOFFING AREA WHEN THE TRAINED OBSERVER IS PRESENT			
2	INSPECT THE PPE FOR ANY RIPS, TEARS OR VISIBLE CONTAMINATION			
3	DISINFECT THE OUTER GLOVES WITH 70% ALCOHOL OR HAND SANITIZER			
4	REMOVE THE OUTER APRON IF WORN			
5	DISINFECT THE OUTER GLOVES WITH 70% ALCOHOL OR HAND SANITIZER			
6	REMOVE THE OUTER GLOVES AND DISPOSE IT IN DESIGNATED CONTAINER			
7	INSPECT THE INNER GLOVES FOR VISIBLE TEARS OR CONTAMINATION			
8	DISINFECT THE INNER GLOVES WITH 70% ALCOHOL OR SANITIZER			
9	REMOVE THE FACE SHIELD AND DISPOSE IT			
10	DISINFECT THE INNER GLOVES WITH 70% ALCOHOL OR SANITIZER			
11	REMOVE THE BOOT COVER AND DISPOSE IT			
12	DISINFECT THE INNER GLOVES WITH 70% ALCOHOL OR SANITIZER			
13	REMOVE THE BOOTS			
14	DISINFECT THE INNER GLOVES WITH 70% ALCOHOL OR SANITIZER			
15	REMOVE THE HOOD AND COVERALL SUIT			
16	DISINFECT THE INNER GLOVES WITH 70% ALCOHOL OR SANITIZER			
17	REMOVE THE MASK AND DISPOSE IT			
18	DISINFECT THE INNER GLOVES WITH 70% ALCOHOL OR SANITIZER			
19	REMOVE THE INNER GLOVES			
20	PERFORM HAND HYGIENE			
21	INSPECT THE SCRUB DRESS FOR ANY RIPS, TEARS OR CONTAMINATION			
22	LEAVE THE DOFFING AREA & TAKE A SHOWER IN THE CLOSEST BATHROOM			
<b>VERIFIED BY:</b>				
<b>NAME:</b>				
<b>DESIGNATION:</b>				
<b>SIGNATURE:</b>				

**Appendix 4: Guidelines for use of personal protective equipment** (Developed by the Expert Team of NMC and Government of Nepal with reference from WHO, published on March 26, 2020)

- A. For Aerosol Generating procedures:** Dental procedures, bronchoscopy, Upper GI Endoscopy, ENT procedures, Nebulization, Intubation of a patient, CPR, Non-invasive ventilation, endotracheal suctioning, when obtaining nasopharyngeal or oropharyngeal swab, etc. **in Covid-19 suspected or confirmed cases health personnel need to use the following protective equipment: Category I PPE:**
  - a. N-95 mask
  - b. Goggles or visor
  - c. Gloves (loose gloves acceptable)
  - d. Water resistant OR standard disposable gowns
  - e. Cap: Regular disposable
- B. For Non aerosol generating covid-19 suspected or confirmed patients: Health personnel need to use the following protective equipment: Category II PPE:**
  - a. Surgical mask (seal the top edge with tape)
  - b. Goggles or visor
  - c. Gloves (loose gloves acceptable)
  - d. Water resistant or standard disposable gowns
  - e. Cap: Regular disposable
- C. For Physician/Staff running the fever/screening clinics the following PPE is recommended: Category II PPE**
  - a. Surgical mask, (seal the top edge with a tape)
  - b. Goggles or visor
  - c. Water resistant or standard disposable gowns
  - d. Regular disposable Cap
  - e. Gloves (loose gloves acceptable)
- D. For escorts or drivers, the following PPE is recommended: Category III PPE:**
  - a. Surgical masks
  - b. Gloves
  - c. If physical contact is expected, depending on circumstances, a gown PLUS goggles or face-shield are also recommended, otherwise need to maintain minimum 6 feet distance from the patient.
  - d. The patient should be given surgical mask and instructed to perform hand-hygiene.
- E. For Laboratory staff: category II or III PPE; depending upon the chance of splash:**
  - a. surgical mask
  - b. Gown
  - c. Loose Gloves
  - d. Eye protection (if risk of splash)
- F. For all staff, including health care workers** involved in any activity that does not involve contact with COVID-19 patients and working in other areas of patient transit (e.g. wards, corridors). **No PPE required.**

**For Everyone:**

- ***Maintain 3-6 feet distance while visiting patients, if no need to touch the patient.***
- ***Mandatory hand-hygiene after each use of PPE and between patients.***
- ***Mandatory surface cleaning of bed or furniture with 0.5% Chlorine disinfectant (Virex\* or similar) between each patient in OPD or in an inpatient setting.***

## **APPENDIX 5: Suggestions regarding extended use or re-use of personal protective equipment**

### **Reuse of eye protection (disposable face shields / visors / goggles):**

- Disposable face shields and non-disposable eye protection should be decontaminated and reused whenever possible provided that the integrity of the equipment remains intact and visibility is not compromised.
- Eye protection should be decontaminated when visibly soiled or each time it is removed prior to reusing it. Store in a clean paper bag or other container between use.

Steps :

1. Ensure cleaning of goggles takes place on a clean surface by disinfecting the surface before cleaning of goggles
2. Clean goggles with soap/detergent
3. Disinfect using one of the following :
  - a. sodium hypochlorite 0.1% for 10 minutes, then rinse with clean water
  - b. 70% alcohol wipes at least 1 minute
4. Let it completely air-dry
5. Store in a clean area to avoid recontamination

### **Reuse of non-disposable isolation gowns and cloth cap:**

1. Washing by machine with warm water (60-90°C) and laundry detergent is recommended for reprocessing of the gown.
2. If machine washing is not possible, linen can be soaked in hot water and soap in a large drum, using a stick to stir, avoiding splashing. Then soak linen in 0.05% chlorine-based solution (e.g. hypochlorite solution) for approximately 30 minutes. Finally, rinse with clean water and let it dry fully in the sunlight
3. Routinely inspect & maintain integrity after the laundry before re-using

### **Extended use and reuse of N-95 mask:**

- **N-95 mask reprocessing:**

When severe scarcity of N-95 masks is expected, N-95 masks can be reprocessed using either vaporized hydrogen peroxide or ultraviolet germicidal irradiation, if/when such technology is available. Up to 20 cycles of reprocessing provides acceptable safety both in terms of germicidal efficacy, filtration performance and fit performance.

Other methods of reprocessing such as microwave generated steam, microwave steam bags, moist heat incubation, or use of liquid hydrogen peroxide all have good germicidal efficacy however have not been evaluated for either or both of filtration performance or fit performance after multiple reprocessing cycles. Use of ethylene oxide gas (EtO) is not recommended because of potential harm to the wearer, because relatively long aeration cycles are needed to ensure removal of the highly toxic EtO gas.

A few centers in Nepal have UV- C wave irradiation technology available for reprocessing of N-95 masks. The specifications are: 40 W UV-C bulb (0.5–950 J/cm<sup>2</sup>), intensity 1.8mW/cm<sup>2</sup>, 245 nm with exposure 15 minute each side (total 30 minutes)

- N-95 mask reuse:

When technology for reprocessing of N-95 masks is not available, the following protocol for reuse of N-95 masks is suggested.

After using N-95 for the first time:

1. Get a clean paper bag and write your name on it.
2. Perform hand hygiene before removing the N-95 mask.
3. Take the N-95 out safely without touching the inner surface of the mask.
4. Keep the mask in a clean paper bag and staple the open end. Alternatively, can hang the used mask in a designated storage area.
5. Perform hand hygiene.

Reusing N-95 masks

1. Wash your hands or use hand sanitizer.
1. Tear the paper bag open.
2. Take out the N-95 mask and put it on, and perform user seal check.
3. Dispose of the paper bag.
4. Perform hand hygiene.
5. When removing the N95 mask, again use the process above and keep the mask safely in a new paper bag.

Note:

1. N-95 mask can be reused until it is physically damaged or soiled
2. DO NOT clean N-95 masks with alcohol, chlorhexidine or any other chemicals
3. Always use an N-95 mask along with goggles or face shield.
4. While doing airway procedures, cover the N-95 mask with a surgical mask (which will be discarded later) to protect it from getting soiled.
5. N-95 mask must only be used by a single user.
6. When donning or doffing the N-95 mask, avoid touching the inside of the mask.
7. Clean hands with soap and water or alcohol-based hand sanitizer before and after touching or adjusting the respirator, either for comfort or to maintain fit.



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