

# A Practical Guide to a Safe Sequence of Donning and Doffing of Personal Protective Equipment in Relation to COVID-19

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## Abstract

When caring for patients with suspected or confirmed COVID-19 (coronavirus disease 2019), especially when involved in procedures that generate aerosol, personal protective equipment (PPE) with full-body coverage is recommended. The Centers for Disease Control and Prevention emphasizes and recommends the following principles with regard to donning and doffing of PPE: (1) training and education (rigorous and repeated training of the health care workers [HCWs]), (2) all HCWs must exhibit competency in the PPE donning and doffing, and (3) PPE doffing should be done in a manner that prevents self-contamination or self-inoculation with contaminated PPE or hands (remove the most contaminated PPE items first, perform hand hygiene at each stage of doffing, and discard disposable items in containers for biomedical waste).

## Keywords

- doffing
- donning
- PPE
- COVID-19

## General Principles

When caring for patients with suspected or confirmed COVID-19 (coronavirus disease 2019), especially when involved in procedures that generate aerosol, personal protective equipment (PPE) with full-body coverage is recommended. The Centers for Disease Control and Prevention emphasizes and recommends the following principles with regard to donning and doffing of PPE: (1) training and education (rigorous and repeated training of the health care workers [HCWs]), (2) all HCWs must exhibit competency in the PPE donning and doffing, and (3) PPE doffing should be done in a manner that prevents self-contamination or self-inoculation with contaminated PPE or hands (remove the most contaminated PPE items first, perform hand hygiene at each

stage of doffing, and discard disposable items in containers for biomedical waste).

## Procedure for Donning the PPE

The procedure for donning the PPE is as follows: (1) wear the PPE in a designated area before entering the patient care area, (2) undertake the procedure of putting on PPE under the guidance and supervision of a trained observer (colleague), (3) remove all personal items such as watch, jewelry, pen, cell phone, and so on, (4) use the restroom and drink sufficient water before starting to wear the PPE, (5) before donning, ensure that all required PPE are available, and (6) follow the steps as shown in ► **Fig. 1**.



## DONNING OF PERSONAL PROTECTIVE EQUIPMENT (PPE)

### Precautions before DONNING the PPE

- Wear the PPE in a designated area before entering the patient care area
- Undertake the procedure of putting on PPE under the guidance & supervision of a trained observer (colleague)
- Remove all personal items like the watch, jewellery, pen, cell phone, etc...
- Please use the restroom & drink sufficient water before starting to wear the PPE
- Before donning, ensure all the required PPEs are available

**1** PERFORM HAND HYGIENE

**2** WEAR SHOE COVERS

**3** PERFORM HAND HYGIENE

**4** WEAR THE INNER PAIR OF GLOVES

**5** WEAR THE COVERALL SUIT AND FASTEN IT TILL THE NECK. USE A CHAIR IF REQUIRED

**6** WEAR N95 MASK. PRESS AGAINST THE NOSE TO ENSURE A TIGHT SEAL

**7** COLLEAGUE HELPS IN PERFORMING THE "SEAL TEST" EXHALE SHARPLY: THE COLLEAGUE CHECKS FOR AIR LEAK AROUND THE MASK THE MASK AND/OR STRAPS IS ADJUSTED TO ENSURE THERE IS NO LEAKAGE OF AIR

**8** PUT ON CAP

**9** PUT ON THE HOOD OF COVERALL. ENSURE THE COVERALL IS FIXED PROPERLY TILL THE CHIN

**10** PUT ON A VISOR TO COVER THE FACE AND EYES

**11** WEAR A SURGICAL GOWN

**12** WEAR A SECOND PAIR OF GLOVES OVER THE CUFF OF THE GOWN


**THE COLLEAGUE (OBSERVER) WILL PERFORM A FINAL CHECK BEFORE THE PERSON ENTERS THE PATIENT CARE AREA.**

Fig. 1 Donning of personal protective equipment (PPE).


## DOFFING OF PERSONAL PROTECTIVE EQUIPMENT (PPE)

**Precautions before DOFFING of PPE**


- Doffing is done in a designated area
- Always perform doffing under the guidance and supervision of a trained observer or colleague
- Ensure PPE is discarded immediately into the appropriate bin


**1**  **PERFORM HAND HYGIENE:**

- THE COLLEAGUE DISPENSES HAND RUB ONTO THE GLOVE
- PERFORM THE STEPS OF HAND HYGIENE ON THE GLOVED HANDS


**2**  **REMOVAL OF OUTERMOST GLOVES:**


- PINCH & HOLD THE OUTSIDE OF ONE GLOVE NEAR THE WRIST.
- PEEL DOWNWARDS AWAY FROM THE WRIST HOLDING THE GLOVE FIRMLY - THE GLOVE AUTOMATICALLY TURNS INSIDE OUT.
- PEEL OFF THE SECOND GLOVE BY PUTTING YOUR INDEX FINGER INSIDE THE GLOVE AT THE TOP OF YOUR WRIST
- AS YOU PEEL THE GLOVE AWAY FROM THE WRIST, THE GLOVE TURNS INSIDE OUT
- DISCARD IN RED BIN

**3**  **PERFORM HAND HYGIENE**


**4**  **REMOVE THE OUTER SURGICAL GOWN:**


- CAREFULLY UNTIE THE GOWN - THE COLLEAGUE CAN CAREFULLY HELP
- CAREFULLY REMOVE THE GOWN HOLDING THE INNER SURFACE
- ROLL THE GOWN AS YOU REMOVE IT
- DISCARD IN YELLOW BIN

**5**  **PERFORM HAND HYGIENE**


**6**  **REMOVAL OF VISOR:**


- BY TOUCHING ONLY THE STRINGS AT THE BACK
- DISCARD IN RED BIN


**7**  **PERFORM HAND HYGIENE**


**8**  **REMOVE THE COVERALL:**

- UNZIP COMPLETELY WITHOUT TOUCHING THE SCRUB OR UNIFORM
- TAKE OUT THE HOOD FIRST BY PULLING FROM BEHIND
- THEN PULL THE COVERALL SUIT FROM BEHIND
- ROLL THE COVERALL SUIT ENSURING ONLY THE INNER SURFACE IS TOUCHED
- USE A CHAIR IF REQUIRED
- THE COLLEAGUE HOLDS THE GOWN AWAY FROM THEIR BODY WHILE DISCARDING INTO YELLOW BIN


**9**  **PERFORM HAND HYGIENE**


**10**  **REMOVE CAP BY TAKING IT OFF FROM BEHIND**

**11**  **PERFORM HAND HYGIENE**


**12**  **REMOVE SHOE COVER:**


- REMOVE THE SHOE COVER BY TOUCHING ONLY THE PART OF THE SHOE COVER BEHIND THE ANKLE
- DISCARD IN RED BIN

**13**  **PERFORM HAND HYGIENE**


**14**  **REMOVE THE MASK:**

- REMOVE THE LOWER STRAP OF THE N95 MASK & THEN THE UPPER STRAP
- DO NOT TOUCH THE BODY OF THE MASK
- DISCARD IN YELLOW BIN

**15**  **PERFORM HAND HYGIENE**

**16**  **REMOVE INNER PAIR OF GLOVES:**

- REMOVE THE GLOVES IN A SIMILAR MANNER AS DESCRIBED EARLIER
- DISCARD IN RED BIN

**17**  **PERFORM HAND HYGIENE**


**18**  **WASH HANDS WITH SOAP AND WATER**

Fig. 2 Doffing of personal protective equipment (PPE).

### Procedure for Doffing of PPE

The procedure for doffing of PPE is as follows: (1) doffing is done in a designated area, (2) always perform doffing under the guidance and supervision of a trained observer or colleague, and

(3) ensure that PPE is discarded immediately into the appropriate bin, and (4) follow the steps shown in ► Fig. 2.

#### Conflict of Interest

None.