



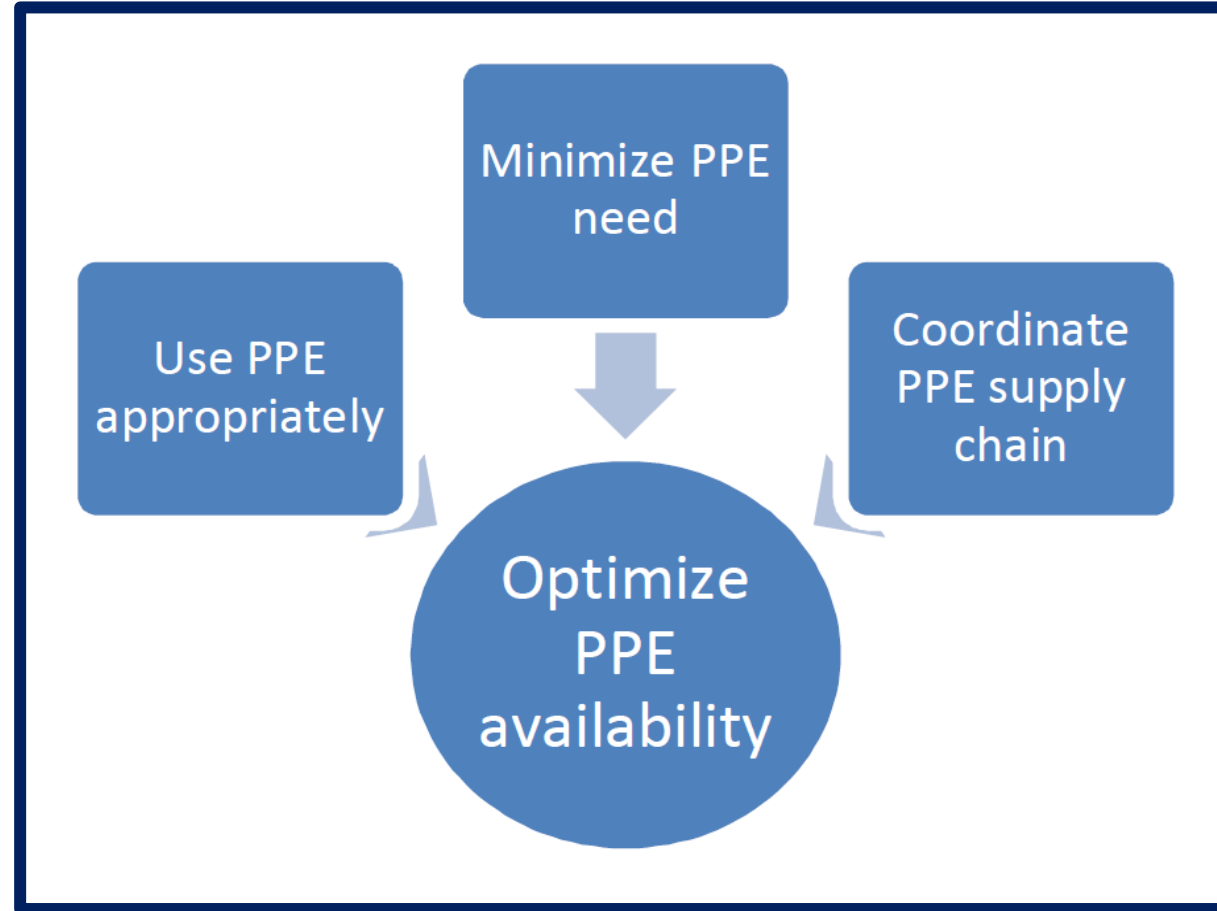
Ministry of Health
Malaysia

RECOMMENDED PPE TO BE USED WHEN MANAGING PATIENT UNDER INVESTIGATION (PUI)/ CONFIRMED COVID-19 IN HEALTHCARE FACILITIES

Medical Programme
Ministry of Health
23 April 2020
(Edited Version)

RECOMMENDATIONS FOR OPTIMIZING THE AVAILABILITY OF PPE

In View of the Global PPE Shortage, the Following Strategies Can Facilitate Optimal PPE Availability



Source: World Health Organization, Rational use of personal protective equipment (PPE) for coronavirus disease (COVID-19) and considerations during severe shortages, Interim guidance, 6 April 2020.

INDICATION FOR PPE SHOULD BE BASED ON THE:

- Setting
- Target Audience
- Risk of Exposure (Type of Activities)
- Transmission of the Pathogen
(Contact, Droplet or Aerosol)
- Due to **limited supply of surgical/medical grade N95 respirators**, all HCW must use **face shield** when wearing KN95 and N95 that are not listed as surgical/medical grade

HEALTHCARE FACILITY

SETTING: ANY AREAS IN HEALTHCARE FACILITY

TARGET: HEALTHCARE WORKER

ACTIVITY

Direct contact with **any patient**
(Non PUI/COVID-19 patient OR
patient without respiratory
symptoms)

TYPE OF PPE

- 1) Surgical mask
- 2) Frequent hand hygiene



EMERGENCY DEPARTMENT

SETTING: PRIMARY TRIAGE

TARGET: HEALTHCARE WORKER

ACTIVITY

Involved in triaging patients

Maintain **more than 1** metre spatial distance at all times

* May use physical barriers (such as glass or plastic windows or **face shield**) to reduce exposure

TYPE OF PPE

- 1) Surgical mask
- 2) Frequent hand hygiene

* Full PPE set must be made available at the site in case of emergency



EMERGENCY DEPARTMENT

SETTING: SECONDARY TRIAGE / EXAMINATION ROOM/ CONSULTATION ROOM

TARGET: HEALTHCARE WORKER



ACTIVITY

History taking and physical examination

Patient should be reminded to **wear** a **surgical mask** when the HCW enters the room /cubicle /triage examination area.

TYPE OF PPE

- 1) Surgical mask
- 2) Isolation Gown (fluid-repellent long-sleeved gown)
OR long-sleeved plastic apron
- 3) Gloves
- 4) Eye Protection (face shield /goggles)

Boot cover / shoe cover (**ONLY** when **anticipating spillage** and vomiting)

EMERGENCY DEPARTMENT

**SETTING: EXAMINATION ROOM/
CONSULTATION ROOM**

TARGET: CLEANER

ACTIVITY

**Cleaning the examination room /
consultation room**

*** Increase frequency of cleaning
for frequently touched surfaces**

TYPE OF PPE

- 1) Surgical mask
- 2) Long-sleeved plastic apron
- 3) Gloves
- 4) Eye Protection (face shield /goggles)
- 5) Boots or closed shoes



EMERGENCY DEPARTMENT

**SETTING: AMBULANCE TRANSFER
VEHICLE (PUI/CONFIRMED COVID-19)**

TARGET: AMBULANCE DRIVER



ACTIVITY

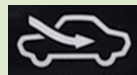
Involved in **driving** the PUI / confirmed COVID-19 **BUT NO** direct contact with patient.

Also involved in **loading and unloading** patients.

Always maintain at foot end of stretcher.

❖ **Windows** should be kept **OPEN throughout** the drive (about 3cm only)

❖ **Use aircond** with **fresh air intake**



TYPE OF PPE

- 1) Surgical mask
- 2) Isolation Gown (fluid-repellent long-sleeved gown)
OR long-sleeved plastic apron
- 3) Gloves
- 4) Eye Protection (face shield /goggles)

EMERGENCY DEPARTMENT

**SETTING: AMBULANCE TRANSFER
VEHICLE (PUI/CONFIRMED COVID-19)**

TARGET: HEALTHCARE WORKER

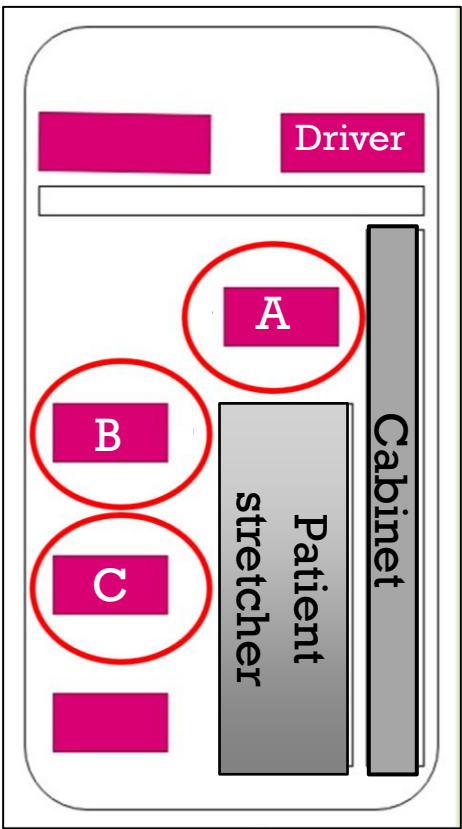


Figure 1: Ambulance

ACTIVITY	TYPE OF PPE
<p>Transporting PUI / confirmed COVID-19 patient to the referral health care facility</p> <p>Healthcare worker seating arrangement(Figure 1):</p> <p>A & B :When patient is not in distressed</p> <p>C :When patient requires oxygen support/ intervention</p>	<ol style="list-style-type: none"> 1) N95 mask 2) Isolation Gown (fluid-repellent long-sleeved gown) 3) Gloves 4) Eye Protection (face shield /goggles) 5) Head cover



EMERGENCY DEPARTMENT

**SETTING: AMBULANCE TRANSPORT
VEHICLE (PUI/CONFIRMED COVID-19)**

TARGET: HEALTHCARE WORKER

ACTIVITY

Decontamination of **ambulance**
that transported PUI / confirmed
COVID-19 patient

TYPE OF PPE

- 1) Surgical mask
- 2) Long-sleeved plastic apron
- 3) Gloves
- 4) Eye Protection (face shield /goggles)
- 5) Boots or closed shoes

EMERGENCY DEPARTMENT

**SETTING: PATIENT CUBICLE /
RESUSCITATION ZONE**

TARGET: HEALTHCARE WORKER



ACTIVITY

Performing Aerosol Generating Procedures (AGP) on PUI / confirmed COVID-19 patients

- Intubation, extubation and related procedures / CPR
- Tracheotomy/tracheostomy procedures
- Manual ventilation
- Suctioning
- Bronchoscopy
- Nebulization
- Others – Refer Guideline

TYPE OF PPE

Minimum Recommendation :

- 1) N95 mask
- 2) Isolation Gown (fluid-repellent long-sleeved gown) with plastic apron
- 3) Gloves
- 4) Eye Protection (face shield /goggles)
- 5) Boot cover / shoe cover
- 6) Head cover

EMERGENCY DEPARTMENT

SETTING: SPECIMEN COLLECTION AREA

TARGET: HEALTHCARE WORKER



ACTIVITY

Performing oropharyngeal or nasopharyngeal **swab**

* It is sufficient to **change gloves** and **plastic apron between patients**

Any **soiled/wet** protective **equipment** should be **changed**

TYPE OF PPE

- 1) N95 mask
- 2) Gloves*
- 3) Isolation Gown (fluid-repellent long-sleeved gown)
- 4) Long-sleeved plastic apron*
- 5) Eye protection (face shield /goggles)
- 6) Head cover

Boot cover / shoe cover (**ONLY** when **anticipating spillage** and vomiting)

IN-PATIENT FACILITY

SETTING: PATIENT ROOM (PUI/CONFIRMED COVID-19)

TARGET: HEALTHCARE WORKER



ACTIVITY

Providing care to PUI / confirmed COVID-19 patients who are **not intubated** and able to **wear surgical mask**

TYPE OF PPE

- 1) Surgical mask
- 2) Isolation Gown (fluid-repellent long-sleeved gown)
- 3) Gloves
- 4) Eye Protection(face shield /goggles)

Boot cover / shoe cover (**ONLY** when **anticipating spillage** and vomiting)

IN-PATIENT FACILITY

**SETTING: PATIENT ROOM
(PUI/CONFIRMED COVID-19)**

TARGET: HEALTHCARE WORKER



ACTIVITY

Providing care to PUI / confirmed COVID-19 patients who are **not intubated** but **NOT** able to **wear surgical mask**

TYPE OF PPE

- 1) N95 mask
- 2) Isolation Gown (fluid-repellent long-sleeved gown)
- 3) Gloves
- 4) Eye Protection(face shield /goggles)
- 5) Head cover

Boot cover / shoe cover (**ONLY** when **anticipating spillage** and vomiting)



IN-PATIENT FACILITY

**SETTING: PATIENT ROOM
(PUI/CONFIRMED COVID-19)**

TARGET: HEALTHCARE WORKER

ACTIVITY

Performing oropharyngeal or nasopharyngeal **swab** to PUI / confirmed COVID-19 patients

TYPE OF PPE

- 1) N95 mask
- 2) Isolation Gown (fluid-repellent long-sleeved gown)
- 3) Gloves
- 4) Eye Protection(face shield /goggles)
- 5) Head cover

Boot cover / shoe cover (**ONLY** when **anticipating spillage** and vomiting)



IN-PATIENT FACILITY

**SETTING: PATIENT ROOM
(PUI/CONFIRMED COVID-19)**

TARGET: HEALTHCARE WORKER

ACTIVITY

Providing care to PUI / confirmed COVID-19 patients who are **ventilated** in a closed circuit

TYPE OF PPE

- 1) N95 mask
- 2) Isolation Gown (fluid-repellent long-sleeved gown)
- 3) Gloves
- 4) Eye Protection(face shield /goggles)
- 5) Head cover

Boot cover / shoe cover (**ONLY** when **anticipating spillage** and vomiting)

IN-PATIENT FACILITY

**SETTING: PATIENT ROOM
(PUI/CONFIRMED COVID-19)**

TARGET: HEALTHCARE WORKER



ACTIVITY	TYPE OF PPE
<p>Performing Aerosol Generating Procedures (AGP) on <u>PUI / confirmed COVID-19</u> patients</p> <ul style="list-style-type: none">• Intubation, extubation and related procedures• Tracheotomy/tracheostomy procedures• Manual ventilation• Suctioning• Bronchoscopy• Nebulization• Others – Refer Guideline	<p>Option 1 (Preferred):</p> <ol style="list-style-type: none">1) PAPR2) Isolation Gown (fluid-repellent long-sleeved gown) with plastic apron / Coverall suit3) Gloves4) Eye Protection (face shield /goggles) *5) Boot cover / shoe cover <p>* Depends on type of PAPR</p>



IN-PATIENT FACILITY

**SETTING: PATIENT ROOM
(PUI/CONFIRMED COVID-19)**

TARGET: HEALTHCARE WORKER

ACTIVITY

Performing Aerosol Generating Procedures (AGP) on PUI / confirmed COVID-19 patients

- Intubation, extubation and related procedures
- Tracheotomy/tracheostomy procedures
- Manual ventilation
- Suctioning
- Bronchoscopy
- Nebulization
- Others – Refer Guideline

TYPE OF PPE

Option 2:

- 1) Coverall suit
- 2) N95 mask
- 3) Eye Protection(face shield /goggles)
- 4) Gloves
- 5) Boot cover / shoe cover



IN-PATIENT FACILITY

**SETTING: PATIENT ROOM
(PUI/CONFIRMED COVID-19)**

TARGET: HEALTHCARE WORKER

ACTIVITY

Performing Aerosol Generating Procedures (AGP) on PUI / confirmed COVID-19 patients

- Intubation, extubation and related procedures
- Tracheotomy/tracheostomy procedures
- Manual ventilation
- Suctioning
- Bronchoscopy
- Nebulization
- Others – Refer Guideline

TYPE OF PPE

Option 3 (if Option 1 & 2 not available):

- 1) N95 mask
- 2) Isolation Gown (fluid-repellent long-sleeved gown) with plastic apron
- 3) Gloves
- 4) Eye Protection (face shield /goggles)
- 5) Boot cover / shoe cover
- 6) Head cover

IN-PATIENT FACILITY

SETTING: PATIENT ROOM

TARGET: HEALTHCARE WORKER

ACTIVITY

Transporting **specimen to lab**

TYPE OF PPE

- 1) Gloves
- 2) Surgical Mask

* Plastic Apron - Optional



IN-PATIENT FACILITY

**SETTING: PATIENT ROOM
(PUI/CONFIRMED COVID-19)**

TARGET: CLEANER

ACTIVITY

Cleaning the PUI / confirmed COVID-19 patient's room; who is **not intubated** and able to **wear surgical mask**

*If COVID-19 patient is discharge, it is recommended for **cleaners** to **enter** the **room after** about **45 minutes** if the ACHR is not known

TYPE OF PPE

- 1) Surgical mask
- 2) Isolation Gown (fluid-repellent long-sleeved gown)
- 3) Gloves
- 4) Eye Protection (face shield /goggles)
- 5) Boots or closed shoes



IN-PATIENT FACILITY

**SETTING: PATIENT ROOM
(PUI/CONFIRMED COVID-19)**

TARGET: CLEANER

ACTIVITY

Cleaning the PUI / confirmed COVID-19 patient's room; who is **not intubated** but **NOT** able to wear surgical mask

*If COVID-19 patient is discharge, it is recommended for **cleaners** to **enter** the **room after** about **45 minutes** if the ACHR is not known

TYPE OF PPE

- 1) N95 mask
- 2) Isolation Gown (fluid-repellent long-sleeved gown)
- 3) Gloves
- 4) Eye Protection (face shield /goggles)
- 5) Boots or closed shoes
- 6) Head Cover



IN-PATIENT FACILITY

SETTING: LABORATORY

TARGET: HEALTHCARE WORKER



ACTIVITY

- Manipulation of respiratory specimens which include oropharyngeal swabs, nasopharyngeal swabs, sputum, tracheal aspirate, bronchoalveolar lavage (BAL) must be accorded high risk
- Specimen handling for RT-PCR or Antigen testing prior to viral inactivation step, must be carried out in BSL-2 or equivalent facilities

TYPE OF PPE

- 1) N95 mask
- 2) Isolation Gown (fluid-repellent long-sleeved gown)
- 3) Gloves
- 4) Eye Protection (face shield /goggles)
- 5) Boots or closed shoes
- 6) Head Cover

IN-PATIENT FACILITY

SETTING: LABORATORY

TARGET: HEALTHCARE WORKER



ACTIVITY

- Handling and processing of specimens from PUI/ confirmed COVID-19 intended for additional laboratory tests, such as haematology, microbiology, biochemistry, cytology or histopathological processing should apply standard precautions to provide a barrier between the specimen and personnel.

TYPE OF PPE

- 1) Surgical mask
- 2) Isolation Gown (fluid-repellent long-sleeved gown)
- 3) Gloves
- 4) Eye Protection (face shield /goggles)
- 5) Boots or closed shoes

IN-PATIENT FACILITY

**SETTING: OUTSIDE PATIENT ROOM
(MORE THAN 1-2 METRES)**

**TARGET: ALL STAFF INCLUDING
HEALTHCARE WORKER**

ACTIVITY

Any activity that does **not** lead to **contact** with PUI / confirmed COVID-19

TYPE OF PPE

- 1) Surgical mask
- 2) Frequent hand hygiene





**RECOMMENDED PPE
TO BE USED
WHEN ATTENDING OR TREATING
SEVERE ACUTE RESPIRATORY
INFECTION (SARI) /
INFLUENZA LIKE ILLNESS (ILI)
PATIENT**

SEVERE ACUTE RESPIRATORY INFECTION (SARI) PATIENT

SETTING: SARI AREAS/CUBICLE

TARGET: HEALTHCARE WORKER

ACTIVITY

Providing care and able to maintain 1-2 metres spatial distance at all time

* patient should be reminded to wear a surgical mask (if tolerable)

If not tolerable, advise the patient to cover nose and mouth during coughing or sneezing with tissue or flexed elbow.

TYPE OF PPE

- 1) Surgical mask
- 2) Frequent hand hygiene



SEVERE ACUTE RESPIRATORY INFECTION (SARI) PATIENT

SETTING: SARI AREAS/CUBICLE

TARGET: HEALTHCARE WORKER



ACTIVITY

Providing care and **UNABLE** to maintain 1-2 metres **spatial distance** at all time

* **patient** should be reminded to wear a **surgical mask**
If **not tolerable**, advise the **patient** to **cover nose and mouth** during **coughing or sneezing** with tissue or flexed elbow.

TYPE OF PPE

- 1) Surgical mask
- 2) Gloves
- 3) Long-sleeved plastic apron

* Eye protection (face shield / goggles) – when **anticipating** patient's **respiratory secretion**

SEVERE ACUTE RESPIRATORY INFECTION (SARI) PATIENT

SETTING: SARI AREAS/CUBICLE

TARGET: HEALTHCARE WORKER



ACTIVITY

Performing Aerosol Generating Procedures (AGP)

- High-flow mask oxygen
- Intubation
- Suctioning
- Nebulization
- CPR

Also when performing
oropharyngeal or
nasopharyngeal swab

TYPE OF PPE

- 1) N95 mask
- 2) Gloves
- 3) Isolation Gown (fluid-repellent long-sleeved gown)
- 4) Eye protection(face shield /goggles)
- 5) Head cover

Boot cover / shoe cover (**ONLY**
when **anticipating spillage** and
vomiting) - not always necessary

INFLUENZA LIKE ILLNESS (ILI) PATIENT

**SETTING: EXAMINATION ROOM/
CONSULTATION ROOM**

TARGET: HEALTHCARE WORKER

ACTIVITY

History taking / physical
examination / providing care

* **patient** should be reminded to
wear a **surgical mask**
If **not tolerable**, advise the **patient**
to **cover nose and mouth** during
coughing or sneezing with tissue
or flexed elbow.

TYPE OF PPE

- 1) Surgical mask
 - 2) Gloves
 - 3) Long-sleeved plastic apron
- Eye protection (face shield / goggles) – when **anticipating** patient's **respiratory secretion**
 - Change **plastic apron and gloves** after examination of each patient





INFLUENZA LIKE ILLNESS (ILI) PATIENT

**SETTING: EXAMINATION ROOM/
CONSULTATION ROOM**

TARGET: HEALTHCARE WORKER

ACTIVITY

**Performing Aerosol Generating
Procedures (AGP)**

- Intubation
- Suctioning
- Nebulization
- CPR

Also when performing
oropharyngeal or
nasopharyngeal swab

TYPE OF PPE

- 1) N95 mask
- 2) Gloves
- 3) Isolation Gown (fluid-
repellent long-sleeved gown)
- 4) Eye protection (face shield
/goggles)
- 5) Head cover

Boot cover / shoe cover (**ONLY**
when **anticipating spillage** and
vomiting) - not always necessary

ADMINISTRATIVE AREAS

SETTING: ANY AREAS

TARGET: ALL STAFF

ACTIVITY

Any activities not involving direct contact with patient

TYPE OF PPE

No PPE needed



ADMINISTRATIVE/PUBLIC AREAS

SETTING: ANY AREAS

TARGET: SECURITY OFFICER

ACTIVITY

Security officers in healthcare facilities

Maintain **more than 1** metre spatial distance at all times

TYPE OF PPE

- 1) No PPE needed, however use surgical mask if unable to maintain spatial distance of more than 1 metre.
- 2) Frequent hand hygiene



REFERENCE

1. Rational use of personal protective equipment for coronavirus disease (COVID-19) Interim guidance, 27 February 2020.
2. The Infection Prevention and Control (IPC) Measures in Managing PUI or Confirmed COVID-19 (Annex 8) in Guidelines COVID-19 Management No.5/2020, 24 March 2020.
3. Emergency Medicine and Trauma Services, MOH

Guidelines for Rational use of personal protective equipment for coronavirus disease (COVID-19) and considerations during severe shortages

1. Introduction

Based on current evidence, the COVID-19 virus is transmitted between people through close contact and droplets. Airborne transmission may occur during aerosol-generating procedures and support treatments (e.g. tracheal intubation, non-invasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation, bronchoscopy).

In health care settings, the main infection prevention and control (IPC) strategies to prevent or limit COVID-19 transmission include the following:

- I. Ensuring triage, early recognition, and source control (isolating suspected and confirmed COVID-19 patients);
- II. Applying standard precautions for all patients and including diligent hand hygiene;
- III. Implementing empiric additional precautions (droplet and contact and, wherever applicable for aerosol-generating procedures and support treatments, airborne precautions) for suspected and confirmed cases of COVID-19;
- IV. Implementing administrative controls;
- V. Using environmental and engineering controls.

2. Recommendations for optimizing the availability of PPE

In view of the global PPE shortage, strategies that can facilitate optimal PPE are:

- I. Minimize the need for PPE in health care settings
- II. Ensure rational and appropriate use of PPE
- III. Coordinating PPE supply chain management mechanism

3. Considerations for decision making processes during severe shortages of PPE

Based on current evidence, in consultation with international experts and other agencies in the field of IPC, WHO carefully considered last-resort temporary measures in crisis. Situations to be adopted only where there might be serious shortages of PPE or in areas where PPE may not be available.

WHO stresses that these temporary measures should be avoided as much as possible when caring for severe or critically ill COVID-19 patients, and for patients with known co-infections of multi-drug resistant or other organisms transmitted by contact (e.g. *Klebsiella pneumoniae*) or droplets (e.g. influenza virus).

The following temporary measures could be considered independently or in combination, depending on the local situation (refer table 1):

1. PPE extended use (using for longer periods of time than normal according to standards);
2. Reprocessing followed by reuse (after cleaning or decontamination/sterilization) of either reusable or disposable PPE;
3. Considering alternative items compared with the standards recommended by WHO.

Table 1: Options for temporary measures due to shortage of PPE: Extended use or use of alternative PPE

Type of PPE	Measure	Description	Removal Criteria and Precautions
Surgical mask used by HCW	1) Extended use	The use without removing for up to 6h, when caring for a cohort of COVID-19 patients	Removal criteria and precautions: <ul style="list-style-type: none">• If the mask becomes wet, soiled, or damaged, or if it becomes difficult to breathe through• If the mask is exposed to splash of chemicals, infectious substances, or body fluids• If the mask is displaced from face for any reason.• If the front of the mask is touched to adjust it• Follow the safe procedure for removal and do not touch the front of the mask• The mask needs to be removed whenever providing care outside a designated cohort of COVID-19 patients

			<ul style="list-style-type: none"> • Follow the safe procedure for removal and do not touch the front of the mask • Do not use the same surgical mask between a patient with COVID-19 and a patient who does not have COVID-19.
Respirators (FFP2, FFP3 or N95)	1) Extended use	The use without removing up to 6h, when caring for a cohort of COVID-19 patients.	<p>Removal criteria and precautions:</p> <ul style="list-style-type: none"> • If respirator becomes wet, soiled, damaged, or difficult to breathe through. • If exposed to splash of chemicals, infectious substances, or body fluids • If displaced from the face for any reason. • If the front of the respirator is touched to adjust it • Follow the safe procedure for removal and do not touch the front of the respirator • Do not use the same respirator between a patient with COVID-19 and a patient who does not have COVID-19.
	2) Reprocessing	Process to decontaminate a respirator using disinfection or sterilization methods	<p>Disposal criteria and precautions:</p> <ul style="list-style-type: none"> • After a pre-defined number of reuses the respirator should be discarded in appropriate contained waste receptacle according to local guidance/policy • When a respirator is removed from the face, it should be immediately placed in a designated container for reprocessing and labeled with the original wearer's name. • The respirator should be returned to original wearer after reprocessing cycle.
Gowns used by HCW	1) Extended use	<p>The use without removing, when providing care of a cohort of patients with COVID-19.</p> <p>Not applicable if the patient has multidrug resistant microorganisms or other type of disease requiring contact precautions. In</p>	<p>Removal criteria and precautions:</p> <ul style="list-style-type: none"> • If gown becomes wet, soiled, or damaged • If gown is exposed to splash of chemicals, infectious substances, or body fluids • When providing care outside designated cohort of COVID-19 patients

		such case, the gowns should be changed between patients	<ul style="list-style-type: none"> Follow the safe procedure for removal of gowns to prevent contamination of environment Do not use the same gown between a patient with COVID-19 and a patient who does not have COVID-19.
	2) Alternatives	ii) Disposable impermeable long sleeved plastic aprons Should be avoided when performing aerosol-generating procedures (AGP) and support treatments	Removal criteria and precautions: <ul style="list-style-type: none"> If disposable alternatives to gowns become wet, soiled, or damaged If alternative to gown is exposed to splash of chemicals, infectious substances, or body fluids Follow the safe procedure for removal of apron to prevent contamination of environment
Face shield * used by HCW	1) Extended use *Face shield must be designed to cover the side of the face and to below the chin	The use without removing during the shift period, when caring for a cohort of COVID-19 patients.	Removal criteria and precautions: <ul style="list-style-type: none"> If contaminated by splash of chemicals, infectious substances, or body fluids If face shield obstructs health care worker safety or visibility of healthcare environment Follow the safe procedure for removal of goggles to prevent contamination of the face and eyes Do not use the same face shield between a patient with COVID-19 and a patient who does not have COVID-19.
	2) Alternative	Local production of face shield	Removal criteria: <ul style="list-style-type: none"> If contaminated by splash of chemicals, infectious substances, or body fluids If face shield obstructs health care worker safety or visibility of health care environment

Adopted from:
 Rational use of personal protective equipment for coronavirus disease (COVID-19)
 and considerations during severe shortages
 Interim guidance 6 April 2020