

**Ministry of Health and Family Welfare
Directorate General of Health Services
[Emergency Medical Relief]**

Novel Coronavirus Disease 2019 (COVID-19): Guidelines on rational use of Personal Protective Equipment

1. About this guideline

This guideline is for health care workers and others working in points of entries (POEs), quarantine centers, hospital, laboratory and primary health care / community settings. The guideline uses setting approach to guide on the type of personal protective equipment to be used in different settings.

2. Introduction

Coronaviruses are a large family of viruses, some causing illness in people and others that circulate among animals, including camels, cats and bats. Rarely, animal coronaviruses can evolve and infect people and then spread between people such as has been seen with MERS and SARS.

The outbreak of Novel coronavirus disease (now named COVID-19) was initially noticed from a seafood market in Wuhan city in Hubei Province of China in mid-December, 2019, has spread to more than 185 countries/territories worldwide including India.

The causative agent for COVID-19, earlier termed provisionally as novel Coronavirus has been officially named as SARS-CoV-2.

3. Mode of transmission

There is clear evidence of human-to-human transmission of SARS-CoV-2. It is thought to be transmitted mainly through respiratory droplets that get generated when people cough, sneeze, or exhale. SARS-CoV-2 also gets transmitted by touching, by direct touch and through contaminated surfaces or objects and then touching their own mouth, nose, or possibly their eyes. Healthcare associated infection by SARS-CoV-2 virus has been documented among healthcare workers in many countries.

The people most at risk of COVID-19 infection are those who are in close contact with a suspect/confirmed COVID-19 patient or who care for such patients.

4. Personal Protective Equipment (PPE)

Personal Protective Equipments (PPEs) are protective gears designed to safeguard the health of workers by minimizing the exposure to a biological agent.

4.1 Components of PPE

Components of PPE are goggles, face-shield, mask, gloves, coverall/gowns (with or without aprons), head cover and shoe cover. Each component and rationale for its use is given in the following paragraphs:

to be a predominant mode of transmission, care should be exercised while handling objects/surface potentially contaminated by suspect/confirmed cases of COVID-19.

Nitrile gloves are preferred over latex gloves because they resist chemicals, including certain disinfectants such as chlorine. There is a high rate of allergies to latex and contact allergic dermatitis among health workers. However, if nitrile gloves are not available, latex gloves can be used. Non-powdered gloves are preferred to powdered gloves.

4.1.4 Coverall/Gowns

Coverall/gowns are designed to protect torso of healthcare providers from exposure to virus. Although coveralls typically provide 360-degree protection because they are designed to cover the whole body, including back and lower legs and sometimes head and feet as well, the design of medical/isolation gowns do not provide continuous whole-body protection (e.g., possible openings in the back, coverage to the mid-calf only).

By using appropriate protective clothing, it is possible to create a barrier to eliminate or reduce contact and droplet exposure, both known to transmit COVID-19, thus protecting healthcare workers working in close proximity (within 1 meter) of suspect/confirmed COVID-19 cases or their secretions.

Coverall and gowns are deemed equally acceptable as there is a lack of comparative evidence to show whether one is more effective than the other in reducing transmission to health workers. Gowns are considerably easier to put on and for removal. An apron can also be worn over the gown for the entire time the health worker is in the treatment area. Coveralls/gowns have stringent standards that extend from preventing exposure to biologically contaminated solid particles to protecting from chemical hazards.

4.1.5 Shoe covers

Shoe covers should be made up of impermeable fabric to be used over shoes to facilitate personal protection and decontamination.

4.1.6. Head covers

Coverall usually cover the head. Those using gowns, should use a head cover that covers the head and neck while providing clinical care for patients. Hair and hair extensions should fit inside the head cover.

The specifications for all the PPEs are at **Annexure-A**.

5.2. Hospital Setting

5.2.1. Out Patient Department (Respiratory Clinic / Separate screening area)[#]

S. No	Setting	Activity	Risk	Recommended PPE	Remarks
1	Triage area	Triaging patients Provide triple layer mask to patient.	Moderate risk	N 95 mask Gloves	Patients get masked.
2	Screening area help desk/ Registration counter	Provide information to patients	Moderate risk	N-95 mask Gloves	
3	Temperature recording station	Record temperature with hand held thermal recorder	Moderate Risk	N 95 mask Gloves	
4	Holding area/ waiting area	Nurses / paramedic interacting with patients	Moderate Risk	N 95 mask Gloves	Minimum distance of one meter needs to be maintained.
5	Doctors chamber	Clinical management (doctors, nurses)	Moderate Risk	N 95 mask Gloves	No aerosol generating procedures should be allowed.
6	Sanitary staff	Cleaning frequently touched surfaces/ Floor/ cleaning linen	Moderate risk	N-95 mask Gloves	
7	Visitors accompanying young children and elderlies	Support in navigating various service areas	Low risk	Triple layer medical mask	No other visitors should be allowed to accompany patients in OPD settings. The visitors thus allowed should practice hand hygiene

[#] All hospitals should identify a separate triage and holding area for patients with Influenza like illness. If there is no triage area / holding area for patients due to resource constraints, such hospitals will follow the above guidance for general OPD.

5.2.2. In-patient Services

S. No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Individual isolation rooms/ cohorted isolation rooms	Clinical management	Moderate risk	N 95 mask Gloves	Patient masked. Patients stable. No aerosol generating activity.
2	ICU/ Critical	Critical care	High risk	Full complement of	Aerosol generating

5.2.5. Other Supportive/ Ancillary Services

S. No.	Setting	Activity	Risk	Recommended PPE	Remarks
1.	Laboratory	Sample collection and transportation	High risk	Full complement of PPE	
		Sample testing	High risk	Full complement of PPE	
2	Mortuary	Dead body handling	Moderate Risk	N 95 mask Gloves	No aerosol generating procedures should be allowed. No embalming.
		While performing autopsy	High Risk	Full complement of PPE	No post-mortem unless until specified.
3	Sanitation	Cleaning frequently touched surfaces/ Floor/ cleaning linen in COVID treatment areas	Moderate risk	N-95 mask Gloves	
4	CSSD/Laundry	Handling linen of COVID patients	Moderate risk	N-95 mask Gloves	
5	Other supportive services	Administrative Financial Engineering Security, etc.	No risk	No PPE	No possibility of exposure to COVID patients. They should not venture into COVID-19 treatment areas.

5.3. Health Workers in Community Setting

S. No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	ASHAs/ Anganwadi and other field staff	Field Surveillance	Low Risk	Triple layer mask Gloves	Maintain distance of one meter. Surveillance team to carry adequate triple layer masks to distribute to suspect cases detected on field surveillance
2	Doctors at supervisory level conducting field investigation	Field surveillance Clinical examination.	Medium risk	N 95 mask Gloves.	

Personal Protection Equipment (PPE) - Specifications

(for Contact & Airborne precautions)

1. PPE Kit
 - 1.1 Gloves
 - Nitrile
 - Non-sterile
 - Powder free
 - Outer gloves preferably reach mid-forearm (minimum 280 mm total length)
 - Different sizes (6.5 & 7)
 - Quality compliant with the below standards, or equivalent:
 - a. EU standard directive 93/42/EEC Class I, EN 455
 - b. EU standard directive 89/686/EEC Category III, EN 374
 - c. ANSI/SEA 105-2011
 - d. ASTM D6319-10
 - 1.2 Coverall (medium and large)*
 - Impermeable to blood and body fluids
 - Single use
 - Avoid culturally unacceptable colors e.g. black
 - Light colors are preferable to better detect possible contamination
 - Thumb/finger loops to anchor sleeves in place
 - Quality compliant with following standard
 - a. Meets or exceeds ISO 16603 class 3 exposure pressure, or equivalent
 - 1.3 Goggles
 - With transparent glasses, zero power, well fitting, covered from all sides with elastic band/or adjustable holder.
 - Good seal with the skin of the face
 - Flexible frame to easily fit all face contours without too much pressure
 - Covers the eyes and the surrounding areas and accommodates for prescription glasses
 - Fog and scratch resistant
 - Adjustable band to secure firmly so as not to become loose during clinical activity
 - Indirect venting to reduce fogging
 - May be re-usable (provided appropriate arrangements for decontamination are in place) or disposable
 - Quality compliant with the below standards, or equivalent:
 - a. EU standard directive 86/686/EEC, EN 166/2002
 - b. ANSI/SEA Z87.1-2010

5. **Body Bags - Specifications**

- 1) Impermeable
- 2) Leak proof
- 3) Air sealed
- 4) Double sealed
- 5) Disposable
- 6) Opaque
- 7) White
- 8) U shape with Zip
- 9) 4/6 grips
- 10) Size: 2.2 x 1.2 Mts
- 11) Standards:
 - a) ISO 16602:2007
 - b) ISO 16603:2004
 - c) ISO16604:2004
 - d) ISO/DIS 22611:2003

All items to be supplied need to be accompanied with certificate of analysis from national/ international organizations/labs indicating conformity to standards

All items: Expiry 5 years

* Due to scarcity of coveralls, and risk versus benefit, that as an emergency temporary measure in larger public interest, in present given circumstances, the fabric that cleared/passed 'Synthetic Blood Penetration Resistance Test' (ISO 16603) and the garment that passed 'Resistance to penetration by biologically contaminated solid particles (ISO 22612:2005) may be considered as the benchmark specification to manufacture Coveralls.' The Coveralls should be taped at the seams to prevent fluid/droplets/aerosol entry.

The test for these two standards (ISO 16603 and ISO 22612:2005), which can be performed in Indian laboratories are as per WHO Disease Commodity Package (Version 4.0)

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Novel Coronavirus Disease 2019 (COVID-19): Additional guidelines on rational use of Personal Protective Equipment (setting approach for Health functionaries working in non-COVID areas)

1. About this guideline

This guideline is for health care workers and others working in Non COVID hospitals and Non-COVID treatment areas of a hospital which has a COVID block. These guidelines are in continuation of guidelines issued previously on 'Rational use of Personal Protective Equipment' (<https://www.mohfw.gov.in/pdf/GuidelinesonrationalusofPersonalProtectiveEquipment.pdf>). This guideline uses "settings" approach to guide on the type of personal protective equipment to be used in different settings.

2. Rational use of PPE for Non COVID hospitals and Non-COVID treatment areas of a hospital which has a COVID block

The PPEs are to be used based on the risk profile of the health care worker. The document describes the PPEs to be used in different settings.

2.1. Out Patient Department

S.No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Help desk/ Registration counter	Provide information to patients	Mild risk	<ul style="list-style-type: none"> ▪ Triple layer medical mask ▪ Latex examination gloves 	Physical distancing to be followed at all times
2	Doctors chamber	Clinical management	Mild risk	<ul style="list-style-type: none"> ▪ Triple layer medical mask ▪ Latex examination gloves 	No aerosol generating procedures should be allowed.
3	Chamber of Dental/ENT doctors/ Ophthalmology doctors	Clinical management	Moderate risk	<ul style="list-style-type: none"> ▪ N-95 mask ▪ Goggles ▪ Latex examination gloves <p>+ face shield</p>	<p>Aerosol generating procedures anticipated.</p> <p>Face shield, when a splash of body fluid is expected</p>
4	Pre- anesthetic check-up clinic	Pre-anesthetic check-up	Moderate risk	<ul style="list-style-type: none"> ▪ N-95 mask ▪ Goggles* ▪ Latex examination gloves 	* Only recommended when close examination of oral cavity/dentures is to be done
5	Pharmacy counter	Distribution of drugs	Mild risk	<ul style="list-style-type: none"> ▪ Triple layer medical mask ▪ Latex examination gloves 	Frequent use of hand sanitizer is advised over gloves.

6	Sanitary staff	Cleaning frequently touched surfaces/ Floor	Mild risk	<ul style="list-style-type: none"> ▪ Triple layer medical mask ▪ Latex examination gloves 	
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#All hospitals should identify a separate triage and holding area for patients with Influenza like illness so that suspect COVID cases are triaged and managed away from the main out-patient department.

2.2. In-patient Department (Non-COVID Hospital & Non-COVID treatment areas of a hospital which has a COVID block)

S.No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Ward/individual rooms	Clinical management	Mild risk	<ul style="list-style-type: none"> ▪ Triple layer medical mask ▪ Latex examination gloves 	Patients stable. No aerosol generating activity.
2	ICU/ Critical care	Critical care management	Moderate risk	<ul style="list-style-type: none"> ▪ N-95 mask ▪ Goggles ▪ Nitrile examination gloves +Face shield	Aerosol generating activities performed. Face shield, when a splash of body fluid is expected
3	Ward/ICU /critical care	Dead body packing	Low Risk	<ul style="list-style-type: none"> ▪ Triple Layer medical mask ▪ Latex examination gloves 	
4	Ward/ICU/ Critical care (Non-COVID)	Dead body transport to mortuary	Low Risk	<ul style="list-style-type: none"> ▪ Triple Layer medical mask ▪ Latex examination gloves 	
5	Labor room	Intra-partum care	Moderate Risk	<ul style="list-style-type: none"> ▪ Triple Layer medical mask ▪ Face shield ▪ Sterile latex gloves N-95 mask*	Patient to be masked in the Labor room *If the pregnant woman is a resident of containment zone
6	Operation Theater	Performing surgery, administering general anaesthesia	Moderate Risk	<ul style="list-style-type: none"> ▪ Triple Layer medical mask ▪ Face shield (- wherever feasible) ▪ Sterile latex gloves + Goggles	Already OT staff shall be wearing For personnel involved in aerosol generating procedures

				N-95 mask*	*If the person being operated upon is a resident of containment zone
7	Sanitation	Cleaning frequently touched surfaces/ floor/ changing linen	Low Risk	<ul style="list-style-type: none"> ▪ Triple Layer medical mask ▪ Latex examination gloves 	

2.3. Emergency Department (Non-COVID)

S.No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Emergency	Attending emergency cases	Mild risk	<ul style="list-style-type: none"> ▪ Triple Layer medical mask ▪ Latex examination gloves 	No aerosol generating procedures are allowed
2		Attending to severely ill patients while performing aerosol generating procedure	High risk	<ul style="list-style-type: none"> ▪ Full complement of PPE (N-95 mask, coverall, goggle, Nitrile examination gloves, shoe cover) 	

2.4. Other Supportive/ Ancillary Services

S.No.	Setting	Activity	Risk	Recommended PPE	Remarks
1.	Routine Laboratory	Sample collection and transportation and testing of routine (non-respiratory) samples	Mild risk	<ul style="list-style-type: none"> ▪ Triple layer medical mask ▪ Latex examination gloves 	
		Respiratory samples	Moderate risk	<ul style="list-style-type: none"> ▪ N-95 mask ▪ Latex examination gloves 	
2	Radio-diagnosis, Blood bank, etc.	Imaging services, blood bank services etc.	Mild risk	<ul style="list-style-type: none"> ▪ Triple layer medical mask ▪ Latex examination gloves 	
3	CSSD/Laundry	Handling linen	Mild risk	<ul style="list-style-type: none"> ▪ Triple layer medical mask ▪ Latex examination 	

				gloves	
4	Other supportive services incl. Kitchen	Administrative Financial Engineering** and dietary** services,etc.	Low risk	<ul style="list-style-type: none"> ▪ Face cover 	** Engineering and dietary service personnel visiting treatment areas will wear personal protective gears appropriate to that area

2.5. Pre-hospital (Ambulance) Services

S.No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Ambulance Transfer to designated hospital	Transporting patients not on any assisted ventilation	Low risk	<ul style="list-style-type: none"> ▪ Triple layer medical mask ▪ Latex examination gloves 	
		Management of SARI patient	High risk	<ul style="list-style-type: none"> ▪ Full complement of PPE (N-95 mask, coverall, goggle, latex examination gloves, shoe cover) 	While performing aerosol generating procedure
		Driving the ambulance	Low risk	<ul style="list-style-type: none"> ▪ Triple layer medical mask ▪ Latex examination gloves 	Driver helps in shifting patients to the emergency

Points to remember while using PPE

1. Standard precaution to be followed at all times
2. PPEs are not alternative to basic preventive public health measures such as hand hygiene, respiratory etiquettes which must be followed at all times.
3. Always follow the laid down protocol for disposing off PPEs as detailed in infection prevention and control guideline available on website of MoHFW.

In addition, patients and their attendants to be encouraged to put on face cover.

In case a COVID-19 patient is detected in such Non-COVID Health facility, the MoHFW guidelines for the same has to be followed (Available at: <https://www.mohfw.gov.in/pdf/GuidelinstobefollowedondetectionofsuspectorconfirmedCOVID19case.pdf>)