

**SANJAY GANDHI POST GRADUATE INSTITUTE OF MEDICAL SCIENCES**

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**DEPARTMENT OF MICROBIOLOGY**

**INFECTION PREVENTION & CONTROL GUIDELINES FOR**

**COVID-19**

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## **1. INTRODUCTION**

In view of pandemic due to novel coronavirus (SARS CoV-2), posing a public health threat due to its spread and contagiousness. Healthcare workers (HCW) are at risk of infection. In view of the current situation regarding COVID -19 disease in the state of Uttar Pradesh, we have prepared this document for the handling of suspected and confirmed cases, who might present to the SGPGIMS, Lucknow.

**Standard recommendations to prevent infection spread include standard precautions, contact precautions and respiratory precautions.**

Patients suspected of having 2019-nCoV infection should be shifted to the isolation facility from the triage area as soon as possible. The HCP should do this after donning appropriate PPE. The patient should wear mask.

## **2. Standard precautions**

Health-care workers caring for patients should implement standard infection control precautions.

**These include**

- **Hand hygiene**
- **Use of personal protective equipment**
- **Respiratory etiquettes**
- **Environmental disinfection**

### 3. ADVICE ON THE USAGE OF PERSONAL PROTECTIVE EQUIPMENT (PPE)

#### CHECKLIST FOR WEARING PERSONAL PROTECTIVE EQUIPMENT- DONNING

S. No	STEPS	YES	NO
1.	<b>Select appropriate size of PPE</b> and <b>pre label the VTM</b> with patient name, CR number and secure it with cellophane tape to prevent dampening in case of spill		
2.	<b>Remove all the personal items</b> like bangles, watch, finger rings, necklace, ear rings, threads in the hand and neck, mobile phone, pen, finger nail(<1/4 inch) etc.,		
3.	Donning procedure is performed under the supervision of an observer gives verbal commands and maintains a checklist to ensure complete ensemble of PPE <b>(Note: Hand rub bottle will be touched only by the observer)</b>		
4.	Instruct the HCW to attend the personal needs like using washroom and hydrating before wearing the PPE		
5.	Observer puts 1 complete puff of hand rub into the hands of collector and instructs to <b>perform proper hand hygiene</b>		
6.	<b>Put on a boot cover</b> - Performer sits in the donning area on a stool and wears the boot covers, making sure not to touch the floor or the boots, please perform hand hygiene before putting the inner gloves.		
7.	<b>Put on nitrile gloves</b> as the pair of inner gloves, making sure the cuffs are worn as far up of the arm as possible		
8.	<b>Put on the gown</b> - Inspect the gown has no tears or holes, wear it methodically and observer ties the behind strap and the side tie as snugly as possible(making sure comfortable to the performer)		

9.	<b>Optional step: Tape the sleeve</b> with the inner glove to fill the separation between the sleeve and inner glove (make a fold at the end of the tape to facilitate easy removal)		
10.	<b>Put on N95 respirator</b> - hold the respirator in the palm of your right hand with the straps facing the floor, and place the respirator on the face covering the nose and mouth. Pull the bottom strap up and over the top of the head and put it behind the head below the ears. pull the upper strap over the head on to the crown.  Press the ridge of the nose to obtain a tight seal, and perform fit check to ensure a tight seal		
11.	<b>Put on the surgical hood</b> – slowly pull it over the head and shoulder  Trained observer inspects to see no skin or hair is visible		
12.	<b>Put on the outer apron(Optional)</b> – if patient is having diarrhea or vomiting, or if performing aerosol generating procedures or procedures with risk of body fluid exposure		
13.	<b>Put on the outer gloves</b> – use latex gloves and pull the cuff as up of the arm as possible above the sleeve of the gown (Different coloured gloves ensure rapid identification of any breach in the integrity in the outer gloves during procedures)		
14.	<b>Put on the protective Goggles provided in kit</b> <b>face shield</b> (Optional)		
15.	<b>Verify</b> - Observer confirms all the equipment are serviceable and donned successfully		
16.	Observer asks the performer to extend the arms, bend at the waist to ensure comfortable range of movements without exposure of the skin during movement		

**CHECKLIST FOR REMOVING PPE – DOFFING**

S. N	STEPS	YES	NO
1.	<b>Inspect the PPE for any signs of visible contamination</b> , if so disinfect with Microgen spray before leaving the patient area and also disinfect the gloves with hand rub		
2.	<b>Check for any rips</b>		
3.	<b>Change the outer gloves</b> – with hand rub		
4.	<b>Remove the outer apron (Optional)</b> – observer will help untying the straps present behind. Pull the apron to outside away from the body by breaking the strap and roll it with inside to outside and discard it in the bin – inspect PPE to look for any tears(if so disinfect with EPA registered wipes)		
5.	<b>Disinfect the outer gloves</b> – with hand rub		
6.	<b>Remove the boot cover</b> – Sit on the chair 1 (dirty chair) and make sure not to touch one leg with the other. Grasp the outside of the boot cover and pull it down , then lift the boot cover over the heel and pull it off the foot and dispose it.		
7.	<b>Disinfect the outer gloves</b> – with hand rub		
8.	<b>Remove the outer gloves</b> – hold palm facing up and pinch the gloves at wrist and pull it down carefully and hold it in the palm of other hand. Slide a finger down inside the other glove and pull it down and discard it in the bin  <b>Note: Inspect the inner gloves for tear or any contamination – if so disinfect with hand rub and remove it and perform hand rub and wear a new gloves</b>		
9.	<b>Disinfect the inner gloves</b> – with hand rub		
10.	<b>Pull off the Eye goggles/face shield (Optional)</b>		
11.	<b>Disinfect the gloves</b> – with hand rub		

12.	<b>Remove the hood</b> – bend the head slightly and grasp the hood at the crown away from the body and off the head. Dispose it		
13.	<b>Disinfect the gloves</b> – with hand rub		
14.	<b>Remove the gown</b> – Release the tie. Grasp the gown at hip area and pull the gown away from the sides of the body, once the gown is away from the shoulder then pull one arm at a time from the sleeves of the gown. Then roll the gown inside out and dispose it.		
15.	<b>Disinfect the gloves</b> – with hand rub		
16.	<b>Remove the inner gloves</b> – same as earlier <b>Note: Don't touch your face with bare hands</b>		
17.	<b>Disinfect the hands</b> – with hand rub		
18.	<b>Put on a fresh pair of gloves</b>		
19.	<b>Remove the N95 respirator</b> – tilt the head forward, use 2 hands to grab the bottom strap, pull to the sides and over the head, repeat same for upper strap. Make sure to keep tension on the upper strap as you remove it, which will let the mask fall forward. Discard it. <b>Note: Donot touch the front part of the respirator</b>		
20.	<b>Disinfect the gloves</b> – with hand rub		
21.	<b>Sit down in the clean chair to disinfect the shoes</b> using EPA registered wipes including soles ( <b>don't touch the ankles</b> )		
22.	<b>Disinfect the gloves</b> – with hand rub		
23.	<b>Remove your gloves</b>		
24.	<b>Perform hand wash</b>		
25.	<b>Inspect clothes for rips tears and contamination</b>		
26.	<b>Remove the scrubs and bath with soap and water</b>		

#### **4. GUIDELINES FOR SAMPLE COLLECTION AND LABORATORY PROCESSING FOR DIAGNOSIS OF SARS: CORONA VIRUS 2**

##### **General guidelines**

- Trained health care professionals to wear appropriate PPE while collecting the sample
- Restricted entry to visitors or attenders during sample collection
- Specimens should be collected as soon as possible once a suspected case is identified regardless of time of symptom onset.
- Label each specimen container with the patient's CR number, name, ward, specimen type and the date of collection
- Fill the requisition form completely (NIV, Pune Form provided separately)
- Transport immediately at 4 °C ( Thermocol box with gel Pack) to virology lab, 2<sup>nd</sup> floor, C block, SGPGIMS, LKO.
- Proper disposal of all waste generated according to the institute guidelines

##### **Samples to be collected**

1. **In conscious corporative patient:** Upper respiratory tract – oropharyngeal swab (Collected in nylon/ Dacron swab and put inside the viral transport media)
2. **In unconscious intubated patient:** Lower respiratory tract – Endotracheal aspirate/ Bronchoalveolar lavage. (Collect 2-3 mL into a sterile, leak-proof container)

**Note: Induced sputum samples are not indicated, due to the risk of aerosol generation**

##### **Procedure of Oropharyngeal swab collection**

- Ask the patient to open mouth
- Rub swab over both tonsillar pillars and posterior oropharynx
- Keep the swab inside the viral transport media (VTM) after breaking the extra plastic stick and close the cap
- Place this VTM in secondary plastic container (50 ml falcon tube) without touching the secondary container
- Secondary container is put inside the zip lock pouch into the cold chain
- The whole assembly is put inside thermocol box with ice packs.



**Note: 1. Avoid touching the tongue, teeth and gums**

**2. Use the swab provided by Microbiology department**

**3. Do not use routine calcium alginate swabs or swabs with wooden shafts**

### **Storage of samples**

Samples can be stored at 4° C for up to 72 hours, however department of Microbiology recommend immediate transfer to Microbiology department.

## **5. ENVIRONMENTAL CLEANING IN HEALTHCARE FACILITIES**

**Scope:** To provide interim guidance about the environmental cleaning / decontamination in triage area and COVID-19 ward at SGPGIMS, Lucknow

### **Practices for Environmental Cleaning in Healthcare Facilities**

- Environmental cleaning is part of Standard Precautions, which should be applied to all patients in all healthcare facilities

### **General instruction**

Personal Protective Equipment (PPE) to wear while carrying out cleaning and disinfection works

- Wear heavy duty/disposable gloves, disposable long-sleeved gowns, eye goggles or a face shield, and a medical mask
- Avoid touching the nose and mouth
- Disposable gloves should be removed and discarded if they become soiled or damaged, and wear a new pair
- All other disposable PPE should be removed and discarded after cleaning activities are completed according to the guidelines

Where possible, seal off areas where the confirmed case has visited, before carrying out cleaning and disinfection

**FACILITY BASED CLEANING GUIDELINES:**

**At T1 Triage:** The health care worker will perform the first assessment without direct physical contact. The HCW should wear the surgical mask and also provide one surgical mask to the patient.

**At T2 Triage:** The health care worker will perform the assessment with close physical contact with patient, thus HCW should wear full PPE with N95 respirator.

**At T3 Triage and COVID ward :** The health care worker should wear full PPE with N95 respirator.

**Table 1: Cleaning guidelines in Triage area T1 and T2**

S.No	Triage Area	Disinfection method	Process and frequency
1.	General cleaning of floor	Detergent & warm water mop. 2 buckets cleaning.	Mop floors with hot water and detergent (Do not pour the water.) <b>Note: Should be done every 8 hourly</b>
2.	Table, Lockers, cupboard, benches, Barrier railings, Chair	Damp dusting followed by H2O2 disinfectant.	Damp mopping with warm water with detergent, followed by disinfection with hydrogen peroxide disinfectant wipes (Oxivir) Remove any marks under arms and seat. <b>Note: Should be done every 8 hourly</b>
3.	Telephone/ CUG	Alcohol based Rub	Wipe with Alcohol based wipes. (Kim Wipes moistened with Avaguard/Microshield blue) <b>Note: Should be done every 4 hourly</b>
4.	Light switch	Damp dusting followed by H2O2 disinfectant.	Light switches to be cleaned of dust, spots and finger marks. Clean with a damp cloth (never wet) and detergent. Wipe with Hydrogen peroxide disinfectant wipes (Oxivir) <b>Note: Should be done every 8 hourly</b>
5.	Stethoscope BP cuff	Alcohol based Rub	Wipe with Alcohol based wipes. (Kim Wipes moistened with Avaguard/Microshield blue) <b>Note: Should be done after every use.</b>

**Table 2: Cleaning guidelines in Triage T3 and COVID – 19 ward**

S NO.	Area	Disinfection Method	Process and frequency
1.	Floor	Damp mopping followed by mopping with 1% Virex.	<p>Sweep with the damp mop to remove surface dust. Prepare cleaning solution using detergent with warm water. Use the <b>three-bucket technique</b> for mopping the floor one bucket with plain water and one with the detergent solution</p> <ul style="list-style-type: none"> <li>• First mop the area with the warm water and detergent solution.</li> <li>• After mopping clean the mop in plain water and squeeze it.</li> <li>• Mop area again using 1% Virex after drying the area.</li> <li>• In between mopping if solution or water is dirty change it frequently.</li> <li>• Mop the floor starting at the far corner of the room and work towards the door.</li> <li>• Clean articles between cleaning.</li> </ul> <p><b>Note: Mopping should be done once in 8 hours</b>  <b>If confirmed cases are discharged/ died terminal cleaning should be conducted – for any details of special instructions contact infection control team, Microbiology, SGPGIMS</b></p>
2.	Ceilings and side walls	Damp mopping followed by mopping with 1% Virex	<p>Damp dusting with a long Handled tool for the walls and ceiling done with very little moisture. Damp dusting should be done in straight lines that overlap one another using Virex 1%.</p> <p><b>Note: Should be done once every 8 hours</b></p>
3.	Table, Lockers, cupboard, benches, Barrier railings, Chair	Damp dusting followed by H2O2 disinfectant.	<p>Damp mopping with Warm water and detergent, followed by disinfection with hydrogen peroxide disinfectant wipes (Oxivir)</p> <p>Remove any marks under arms and seat.</p> <p><b>Note: Should be done every 8 hourly.</b></p>

4.	Ventilator (exterior) , Infusion pump, USG machine, Telephone computer, keyboard, printer, Bed side monitor, ECG probes	Alcohol based Rub	Wipe with Alcohol based wipes. (Kim Wipes moistened with Avaguard/Microshield blue)
6.	Light switch	Damp dusting followed by H <sub>2</sub> O <sub>2</sub> disinfectant.	Light switches to be cleaned of dust, spots and finger marks. Clean with a damp cloth (never wet) and detergent. Wipe with Hydrogen peroxide disinfectant wipes (Oxivir) <b>Note: Should be done every 8 hourly</b>
7.	Doors and door knobs	Damp dusting followed by H <sub>2</sub> O <sub>2</sub> disinfectant.	Damp mopping with Warm water and detergent, followed by disinfection with hydrogen peroxide disinfectant wipes (Oxivir): <b>Once daily</b>  Door knobs and other frequently touched surfaces should be cleaned 8 hourly followed by disinfection with hydrogen peroxide disinfectant wipes (Oxivir)
8.	Stethoscope, Pulse oximeter	Alcohol based Rub	Wipe with Alcohol based wipes. (Kim Wipes moistened with Avaguard/Microshield blue) Note: Should be done after every use. <b>Disposable equipment are recommended</b>
10.	Thermometer	Alcohol based hand rubs	Wipe with Alcohol based wipes • Store in individual holder inverted • Preferably one thermometer for each patient
11.	Injection and dressing trolley	Detergent and water mopping followed by Alcohol based hand rubs	Damp mopping with Warm water and detergent, followed by disinfection Alcohol wipes <b>Note: Should be done every 8 hourly.</b>
12.	Refrigerator	Detergent and water Absorbent paper	Empty the fridge and store things appropriately. Defrost, decontaminate and clean with detergent. Dry it properly and replace the things. <b>Weekly cleaning is recommended.</b>

**Table 3: Cleaning guidelines for Toilet in COVID-19 ward**

S. No.	COVID – 19 ward	Disinfection method	Process and frequency
1.	Showers area Taps and fittings	Warm water Detergent powder Nylon Scrubber	Thoroughly scrub the floors/tiles with warm water and detergent. <ul style="list-style-type: none"> <li>Wipe over taps and fittings with a damp Cloth, detergent and dried after cleaning</li> <li>Care should be taken to clean the underside of taps and fittings.</li> </ul>
2.	Outside sink	Soap powder and nylon scrubber	Scrub with the nylon scrubber.
3.	Toilet pot/ commode	Sodium hypochlorite 1% / Soap powder / long handle angular brush	Inside of toilet pot/commode: Scrub with the recommended agents and the long handle angular brush Outside: Clean with recommended agents; use a nylon scrubber
4.	Toilet floor	Soap powder and scrubbing brush/ nylon broom	Scrub floor with soap powder and the scrubbing brush <ul style="list-style-type: none"> <li>Wash with water</li> <li>Use sodium hypochlorite 1% dilution</li> </ul>

**Table 4: Guidelines for Spill management**

S.No	Spill management	Disinfection method	Process and frequency
1.	<b>All patient care areas/ Laboratory</b>	Spill care kit - Sodium hypochlorite (1%), Absorbent paper Gloves Forceps Yellow bag Mop and Hot water	<ol style="list-style-type: none"> <li>1. Wear full PPE</li> <li>2. Remove if any broken pieces of glass and sharps, using a pair of forceps.</li> <li>3. Pour sodium hypochlorite (1%) and cover with absorbent paper.</li> <li>4. Wait for 20 minutes.</li> <li>5. cover the spill with absorbent paper</li> <li>6. Clean up and discard absorbent paper into yellow infectious waste bin.</li> <li>7. Mop the area with soap and hot water.</li> </ol>

### 6. WASTE MANAGEMENT (As per recent guidelines of Central pollution control board)

The surface or material known to be, or potentially be, contaminated by biological agents during laboratory operations must be correctly disinfected to control infectious risks. Proper processes for the identification and segregation of contaminated materials must be adopted before decontamination and/or disposal. The contaminated waste must be packaged in a leak proof manner, for transfer to decontamination capacity.

Category	Type of Bag/ container	Type of waste	Treatment disposal options
Yellow	Non chlorinated color coded bags in colored bins	Human anatomical waste, Soiled waste, Expired or discarded medicines, Chemical waste and clinical lab waste.	Incineration
Red	Non chlorinated plastic bags in colored bins/ containers	Contaminated plastic waste like tubing, bottles, urine bags, syringes( without needles) and gloves	Autoclave
White	Translucent, puncture, leak and tamper proof	Waste sharps including metals	Autoclave
Blue	Water proof card board boxes/ containers	Glassware waste	Autoclave

## **7. GUIDELINES ON DEAD BODY MANAGEMENT**

There are currently over 140 laboratory confirmed cases and three deaths due to Novel Corona virus disease (COVID-19) in India. Being a new disease there is knowledge gap on how to dispose of dead body of a suspect or confirmed case of COVID-19. This document is limited in scope to hospital deaths.

The main driver of transmission of COVID-19 is through droplets. There is unlikely to be an increased risk of COVID infection from a dead body to health workers or family members who follow standard precautions while handling body. Only the lungs of dead COVID patients, if handled during an autopsy, can be infectious.

### **Standard Precautions to be followed by health care workers while handling dead bodies of COVID.**

Standard infection prevention control practices should be followed at all times. These include:

1. Hand hygiene.
2. Use of personal protective equipment (e.g., water resistant apron, gloves, masks, eyewear).
3. Safe handling of sharps.
4. Disinfect bag housing dead body; instruments and devices used on the patient.
5. Disinfect linen. Clean and disinfect environmental surfaces.

### **Removal of the body from COVID-19 Ward**

- The health worker attending to the dead body should perform hand hygiene, ensure proper use of PPE (water resistant apron, goggles, N95 mask, gloves).
- All tubes, drains and catheters on the dead body should be removed.
- Any puncture holes or wounds (resulting from removal of catheter, drains, tubes, or otherwise) should be disinfected with 1% hypochlorite and dressed with impermeable material.
- Apply caution while handling sharps such as intravenous catheters and other sharp devices. They should be disposed into a sharps container.



- Plug Oral, nasal orifices of the dead body to prevent leakage of body fluids.
- If the family of the patient wishes to view the body at the time of removal from the isolation room or area, they may be allowed to do so with the application of Standard Precautions.
- Place the dead body in leak-proof plastic body bag. The exterior of the body bag can be decontaminated with 1% hypochlorite. The body bag can be wrapped with a mortuary sheet or sheet provided by the family members.
- The body will be either handed over to the relatives or taken to mortuary.
- All used/ soiled linen should be handled with standard precautions, put in bio- hazard bag and the outer surface of the bag disinfected with hypochlorite solution.
- Used equipment should be autoclaved or decontaminated with disinfectant solutions in accordance with established infection prevention control practices.
- All medical waste must be handled and disposed of in accordance with Bio- medical waste management rules.
- The health staff who handled the body will remove personal protective equipment and will perform hand hygiene.
- Provide counseling to the family members and respect their sentiments.
- Embalming of dead body should not be allowed.
- **Autopsies should be avoided**

### **Transportation of Dead Body**

- The body, secured in a body bag, exterior of which is decontaminated poses no additional risk to the staff transporting the dead body.
- The personnel handling the body may follow standard precautions (surgical mask, gloves).
- The vehicle, after the transfer of the body to cremation/ burial staff, will be decontaminated with 1% Sodium Hypochlorite.

### **At the crematorium/ Burial Ground**

- The Crematorium/ burial Ground staff should be sensitized that COVID 19 does not pose additional risk.
- The staff will practice standard precautions of hand hygiene, use of masks and gloves.
- Viewing of the dead body by unzipping the face end of the body bag (by the staff using standard precautions) may be allowed, for the relatives to see the body for one last time.
- Religious rituals such as reading from religious scripts, sprinkling holy water and any other last rites that does not require touching of the body can be allowed.
- Bathing, kissing, hugging, etc. of the dead body should not be allowed.
- The funeral/ burial staff and family members should perform hand hygiene after cremation/ burial.
- The ash does not pose any risk and can be collected to perform the last rites.
- Large gathering at the crematorium/ burial ground should be avoided as a social distancing measure as it is possible that close family contacts may be symptomatic and/ or shedding the virus.

## 9. DO'S AND DONT'S

### DO'S

- To maintain personal hygiene and physical distancing.
- To practice frequent hand washing. Wash hands with soap and water or use alcohol-based hand rub. Wash hands even if they are visibly clean.
- To cover your nose and mouth with handkerchief/tissue while sneezing and coughing followed by hand wash,
- To throw used tissues into closed bins immediately after use.
- To maintain a safe distance from persons during interaction, especially with those having flu-like symptoms.
- To sneeze in the inner side of your elbow and not to cough into the palms of your hands.
- To take their temperature regularly and check for respiratory symptoms. while visiting doctor, wear a mask/cloth to cover your mouth and nose

### DON'TS

- Donot Shake hands
- Donot have a close contact with anyone, if you're experiencing cough and fever
- Donot touch your eyes, nose and mouth
- Donot Sneeze or cough into palms of your hands
- Donot spit in public.
- Donot travel unnecessarily, particularly to any affected region
- Donot participate in large gatherings, including sitting in groups at canteens.
- Donot visit gyms, clubs and crowded places etc.
- Donot spread rumors or panic

## 10. EDUCATION AND TRAINING

To consider contingency arrangements for postgraduate medical education and training processes during this emergent phase of the COVID-19 outbreak. To train the resident doctors in infection prevention and control, and also will continue to monitor and advise as required over the coming days and weeks.

## 11. REFERENCES

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