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MANIPAL  
UNIVERSITY  
CENTRAL REFERRAL HOSPITAL - SMIMS

## Documented Procedure

TITLE: SOP for Infection Control & Prevention of COVID 19.

DOCUMENT NO: SOP/CRH/HICC/ICP/37

REVISION NO: 03

REVISION DATE: 24-06-2020



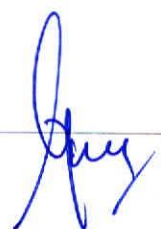
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# STANDARD OPERATING PROCEDURE FOR INFECTION PREVENTION AND CONTROL OF COVID-19

			
Prepared By S/N Pema Laden Infection Control Nurse	Reviewed By Dr. Dechen C Tsering Member Secretary, HICC	Approved By Dr. Gautam Dey Medical Superintendent	DP
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### Amendment Sheet:

S. No.	Section No. & Page No.	Reason	Signature Prepared By	Signature Reviewed By	Signature Approved By
1	6 and 20	BMW revision 2 according to Govt. of India	Dr. Rekha Sharma, Member, HICC	Dr. Dechen C. Tsering Member Secretary, HICC	Dr. Gautam Dey M.S.,CRH
2.	5.6 and 27, 28 & 29	BMW revision 3 according to CPCB Govt. of India	Dr. Rekha Sharma Member, HICC	Dr. Dechen C. Tsering Member Secretary, HICC	Dr. Gautam Dey M.S.,CRH
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## 1. Abbreviations & Definition

### 1.1. Abbreviations

CRH	Central Referral Hospital
MS	Medical Superintendent
ET	Endotracheal Tube
PPE	Personal Protective Equipment
IPC	Infection Prevention & Control
HICC	Hospital Infection Control Committee
SARS	Severe Acute Respiratory Syndrome

### 1.2. Definition

This SOP provides the guidelines for the prevention and control of infection of COVID 19 in the hospital.

## 2. Expected Outcome




This SOP intends to prevent the spread of infection and containment of COVID 19 in the hospital.

## 3. Objective/ Purpose

The objective of this SOP is to provide a uniform guideline for the overall processes involved in the infection prevention and control measures of COVID 19.

## 4. Scope

The SOP is applicable to all the staff involved in the management of all suspected and positive cases of COVID 19.

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### 5. Process


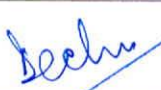

#### 5.1. Introduction

Coronavirus disease 2019 (COVID-19) is a potentially severe acute respiratory infection caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The virus was identified as the cause of an outbreak of pneumonia of unknown cause in Wuhan City, Hubei Province, China, in December 2019. The clinical presentation is that of a respiratory infection with a symptom severity ranging from a mild common cold-like illness, to a severe viral pneumonia leading to acute respiratory distress syndrome that is potentially fatal.

#### TRANSMISSION OF INFECTION

Person-to-person transmission of COVID virus occurs via droplet and contact transmissions.

Transmission	Situations	Prevented by
<b>Droplet Transmission</b>	Respiratory droplets produced when the infected person coughs or sneezes can infect the persons (by seeding on their mouths, noses, or eyes) who are within 1 meter distance.	<b>Surgical mask</b> (if within 1 mt of infected case)
<b>Contact Transmission</b>	Respiratory droplets settles down on floor and surfaces, inanimate objects. Any one at a later stage, when touches the floor, surfaces, door handles, inanimate objects etc and then touch face (nose, mouth, eyes), virus can easily spread.	<b>Hand hygiene</b> (the most important measure)
<b>Airborne Transmission</b>	Airborne transmission from person-to-person over long distances is unlikely  <b>Aerosol generating procedures:</b> Aerosols may be produced during aerosol generating procedures such as tracheal intubation, open suctioning, non-invasive positive pressure ventilation (BiPAP and CPAP), tracheostomy, cardiopulmonary resuscitation, manual ventilation before intubation, bronchoscopy, airway suction, chest physiotherapy, nebulizer treatment, sputum induction, collection of specimens	<b>N95 Mask</b>

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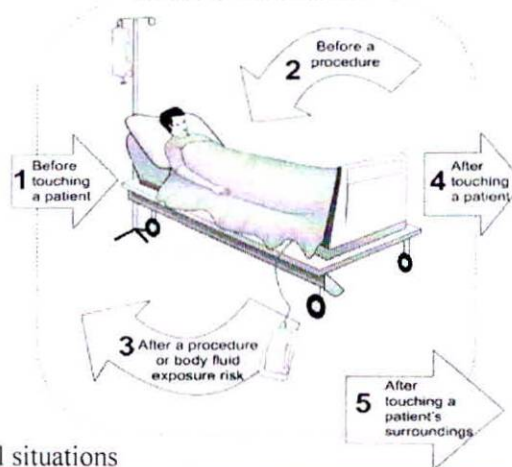
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### 5.2 HAND HYGIENE:



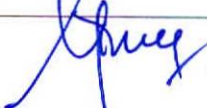
Hand hygiene is the most important measure for the prevention and control of COVID-19. Hand hygiene can be performed with soap and water or alcohol-based hand rubs. **Duration:** Hand rub 20sec & Hand wash 40sec.



#### Five moments of Hand hygiene

Five moments of Hand Hygiene and examples of clinical situations

Moment-1 and 4 : Before and after touching a patient	Moment-2 and 3: Before and after aseptic procedure/body fluid exposure	Moment-5: After touching patient surroundings
Before and after <ul style="list-style-type: none"> <li>• Taking pulse, blood pressure</li> <li>• Auscultation and palpation</li> <li>• Shaking hands</li> <li>• Helping a patient to move around</li> <li>• Applying oxygen mask</li> <li>• Giving physiotherapy</li> <li>• Recording ECG</li> <li>• Use of gloves</li> </ul>	Before and after <ul style="list-style-type: none"> <li>• Oral/dental care</li> <li>• Aspiration of secretions or accessing draining system</li> <li>• Skin lesion care, wound dressing</li> <li>• Giving injection</li> <li>• Drawing of blood or sterile fluid</li> <li>• Handling an invasive device (catheter, central line, ET tube)</li> <li>• Clearing up urines, faeces, vomit,</li> <li>• Handling bandages, napkin etc</li> <li>• Instilling eye drops</li> <li>• Moving from a contaminated body site to another body site during care of the same patient</li> </ul>	After contact with <ul style="list-style-type: none"> <li>• Handling the case sheet</li> <li>• Medical equipment in the immediate vicinity of the patient</li> <li>• Bed or bed rail</li> <li>• Changing bed linen</li> <li>• Decanting urobag</li> </ul>

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## Indications for using hand hygiene methods

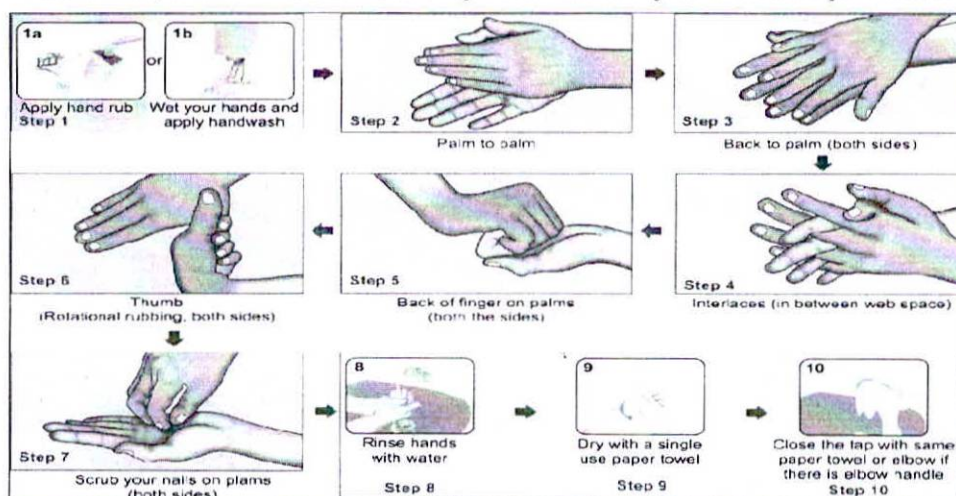
### Indications for using handrub:

- Handrub should be used during routine clinical rounds and handling the patient
- If the hands are not visibly dirty, not contaminated with blood, or body fluids

### Indications for using hand wash:

- Hands are visibly dirty, contaminated with blood, or body fluids
- Potential exposure to spore forming organisms (e.g., *Clostridium difficile*); non enveloped viruses (e.g. Norovirus, rotavirus, enteroviruses)
- Handling patients having diarrhoea
- After using restroom
- Before handling medication or food

**Remember, Hand wash is the most important measure for COVID-19 prevention.**



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## INFECTION PREVENTION AND CONTROL (IPC) SOP FOR COVID-19, CRH DONNING SEQUENCE AND DOFFING SEQUENCE FOR PPE

During doffing disinfect your hand after each step and in between if the contaminated area is touched.

Donning sequence	Doffing sequence
Hand hygiene	Outer gloves
↓	↓
Cap	Face shield
↓	↓
Shoe cover	Gown/coverall & hood
↓	↓
Hand Hygiene	Shoe cover
↓	↓
Inner Gloves	Goggles
↓	↓
Gown/Coverall Gown	Mask (surgical or N95)
↓	↓
Mask (surgical or N95)	Cap
↓	↓
Goggles	Inner glove
↓	↓
Hood and face shield	Hand hygiene
↓	
Outer gloves	

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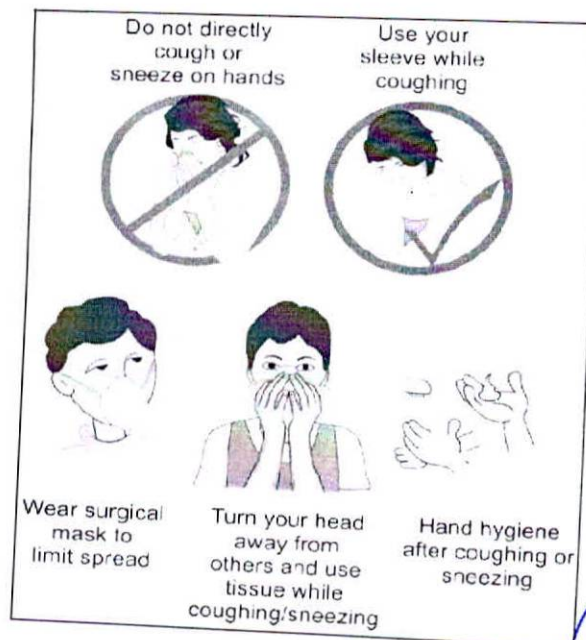
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### 5.4 RESPIRATORY HYGIENE AND COUGH ETIQUETTE

DOs	DON'Ts
Cough/sneeze with a tissue paper or into your sleeve if no tissue is available	<b>Don't cough/sneeze on your hands</b> Do hand hygiene if coughed/sneezed on hands
Turn head away from others when coughing/sneezing	<b>Don't cough/sneeze on nearby people</b> Do not spit here and there
If tissues are used, discard into yellow bag	Don't discard tissues into other BMW bags
<b>Maintain 1 meter (2 arm) distance</b> <ul style="list-style-type: none"> <li>• if you have cough/sneeze</li> <li>• from people with respiratory symptoms</li> <li>• from contacts of corona cases who are on quarantine</li> </ul>	<b>Do not stay within 1 meter from others</b> <ul style="list-style-type: none"> <li>• if you have cough/sneeze</li> <li>• from people with respiratory symptoms</li> <li>• from contacts of corona cases who are on Quarantine</li> </ul>
<b>Social distancing</b> refers to avoid gathering. <ul style="list-style-type: none"> <li>• It doesn't mean maintaining 1 meter distance from all people at home and office</li> <li>• No need to maintain 1 meter distance from known people without respiratory symptoms, with no history of contact to corona cases, or not on quarantine</li> </ul>	



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### 5.5 ENVIRONMENTAL CLEANING AND DISINFECTION PROTOCOL




COVID-19 virus can potentially survive in the environment for several hours/days. Premise and areas, equipment potentially contaminated with the virus to be cleaned before their re-use.

Contaminated surfaces not directly associated with transmission of infections to either staff or patients

- Transfer of microorganisms from environmental surfaces to patients is mostly via hand contact with the surface
- Hand hygiene is important to minimize the impact of this transfer
- Cleaning and disinfecting environmental surfaces is fundamental in reducing healthcare-associated infections

#### *Cleaning agents and disinfectants*

COVID isolation room/ICU/ screening area	Disinfectant	Contact time	Frequency
High touch surfaces	Hypochlorite 0.5% (wipe)	10 min	Twice/ shift (4 hourly)
Floor	Clean (soap & water) and then	10 min	Once/ shift (8 hourly)
Wall, ceiling	Hypochlorite 0.5% (wipe)	10 min	Once daily
Linen (used)	Hypochlorite 0.1%	30 min	As on when
Toilet	Clean (soap & water) and then	10 min	Twice/ shift (4 hourly)
	Hypochlorite 0.5% (wash)		
Corridor	Hypochlorite 0.5% (mop)	10 min	Once / shift (8 hourly)
Non-critical equipment (stethoscope, BP cuff, thermometer etc)	Alcohol wipes.		After each use
Slippers	Soap and water first and then	10 min	Once /day
	with Hypochlorite 0.1% (dip)		
Termination disinfection	Soap and water followed by 0.5% hypochlorite	10 min	As on when needed

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All other non-Corona area (ward, ICU, EMS , OPD etc)	Disinfectant	Contact time	Frequency
High touch surfaces	Hypochlorite 0.5%(wipe)	10 min	Twice/ shift (4 hourly)
Floor	Hypochlorite 0.5%(wipe)	10 min	Once/ shift (8 hourly)
Wall, ceiling	Hypochlorite 0.5%(wipe)	10 min	Once daily
Linen (used)	Hypochlorite 0.1%	30 min	As on when
Toilet	Clean (Soap & water) and then Hypochlorite 0.5%(wash)	10 min	Twice/ shift (4 hourly)
Corridor	Hypochlorite 0.5 %(mop)	10 min	Once / shift (8 hourly)
Non-critical equipment (stethoscope, BP cuff, thermometer etc)	Alcohol wipes		After each use
Slippers	Soap and water first and then with Hypochlorite 0.1% (dip)	10 min	Once /day
Termination disinfection	Soap and water followed by 0.5% hypochlorite	10 min	As on when needed

### Foot note:

- Contact time of at least 10 minutes is necessary for both bacillocid extra or hypochlorite
- Hypochlorite should be used mainly on hard, non-porous surfaces (it can damage textiles and metals)
- **Surfaces (Table surfaces, slabs, walls, windows, equipment surfaces etc):**
  - Wipes are recommended over spray for all reachable surfaces and high-touch areas including stainless steel, rubber and equipment surfaces

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- **Spray** is recommended for only non-reachable surfaces. Spray should be avoided in general, as coverage is uncertain and spraying may promote the production of aerosols.
- **Floor:** Mop is recommended.
- **Wettest (Bucket) wipes-** do not use for non-critical areas like fans, walls, doors etc. First, wipe with plain water and then can disinfect with Lysol.
- **PPE:** Housekeeping staff should wear appropriate PPE when handling and transporting used patient care equipment (gloves) or while cleaning/disinfecting corona ward (surgical mask, gown, heavy duty gloves, eye protection if risk of splash). Boots or closed work shoes)
- Housekeeping staff should wash their hands with soap and water immediately after removing the PPE, and when cleaning and disinfection work is completed.
- **Dishes and eating utensils** used by a patient with known or suspected infection: No special precautions other than standard precautions such as hand hygiene and wearing gloves when handling patient trays, dishes and utensils.

## Measures during mopping

- Progress from the least soiled areas to the most soiled areas and from high surfaces to low surfaces
- Remove gross soil (visible to naked eye) prior to cleaning and disinfection
- **Never shake mops:** Minimise turbulence to prevent the dispersion of dust that may contain micro-organisms
- Use dust control mop prior to wet/damp mop. **Do not use brooms**
- Wash the mop under running water before doing wet mopping
- Do not **'double-dip'** mops (dip the mop only once in the cleaning solution, as dipping it multiple times may re-contaminate it)
- An area of **120 square feet** to be mopped before re-dipping the mop in the solution
- Cleaning solution to be changed after cleaning an area of **240 square feet**. (i.e. change solution for every room)
- Change more frequently in heavily contaminated areas, when visibly soiled and immediately after cleaning blood and body fluid spills.
- **Cleaning sequence:** Always clean should be proceeded in a top-to-down sequence i.e., ceiling based equipment first, walls, then floor based equipment and lastly the floor.
  - When cleaning the floor, begin at the end farthest from the door and move towards the door (*in to out*).
  - The cleaning staff should always move from clean to unclean areas and never vice
  - When cleaning individual equipment: clean from top to down

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- **Eight stroke technique for mopping:** In open areas use a figure eight stroke in open and wide spaces, overlapping each stroke; turn mop head over every five or six strokes.
  - While in small spaces, starting in the farthest corner of the room, drag the mop toward you, then push it away, working in straight, slightly overlapping lines and keeping the mop head in full contact with the floor.
  - Repeat until entire floor is done.
- **Disinfection:** After cleaning, all equipment used for cleaning, wash with soap and hot water; followed by decontamination with 0.5 hypochlorite 10 min and then dry it in sunlight
- Change the mop head when heavily soiled or at the end of the day.
- Report adverse incident to supervisor
- Collect waste, handle plastic bags from the top (do not compress bags with hands)
- Clean hands on leaving the room.

## Measures during surface wiping

- Go from clean to unclean area and top to down
- No. of strokes per wipe- vary depends on area and material and size of the wipe
- Use new wipe for each use
- Never do zig-zag cleaning, never do re-dipping of cloth.

Area/Items	Agent	Process	Method/ procedure
Stethoscope	Alcohol-based rub/Spirit swab	Cleaning	<ul style="list-style-type: none"> <li>• Should be cleaned with detergent and water</li> <li>• Should be wiped with alcohol based rub/spirit swab before each patient contact</li> </ul>
BP cuffs & covers	Detergent Hot water	Washing	<ul style="list-style-type: none"> <li>• Cuffs should be wiped with alcohol- based disinfectant and regular laundering is recommended for the cover</li> </ul>
Thermometer	Detergent and water  Alcohol rub  Individual thermometer holder	Cleaning	<ul style="list-style-type: none"> <li>• Should be stored dry in individual holder</li> <li>• Clean with detergent and tepid water and wipe with alcohol rub in between patient use</li> <li>• Store in individual holder inverted</li> <li>• Preferably one thermometer for each patient</li> </ul>

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Injection and dressing trolley	Detergent and water Duster Disinfectant (70% alcohol)	Cleaning	<ul style="list-style-type: none"> <li>To be cleaned daily with detergent and water</li> <li>After each use should be wiped with disinfectant</li> </ul>
Mobile phones and landline phones	Alcohol wipes	Front and back	<ul style="list-style-type: none"> <li>Twice per shift</li> <li>And also before leaving workplace</li> <li>Switch off during wiping</li> </ul>
Ventilator Monitor  Defibrillator USG machine	Detergent followed by Alcohol (Wettask wipe  or Bacilliol-25 spray)		<ul style="list-style-type: none"> <li>Disinfectant will work only when detergent removes the organic matter</li> </ul>
Oxygen flowmeter Humidifier	1% hypochlorite(Dip)	Disinfection	
Suction Apparatus with Suction Bottle	1%Hypochlorite	Disinfection	Discard the suction fluid as per BMW Management Guidelines, then immerse in 1% Sodium Hypochloride.
Jumbo cylinder	Soap and water Then 0.5% hypochlorite(wipe)	Disinfection	<ul style="list-style-type: none"> <li>Fourth hourly in a shift</li> <li>As on when needed</li> <li>Before sending outside for refill</li> </ul>

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### CLEANING AND DISINFECTION SOP

#### Corona isolation ward/room (when patient is occupied)



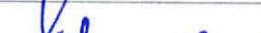
- **Floor** - mop with sodium hypochlorite (0.5%, 5000ppm) three times a day
- **High touch area**: Wipe with sodium hypochlorite (0.5%, 5000ppm)
- **Low touch area** (wall and ceiling): daily once
- Designate specific well-trained staff for cleaning environmental surfaces
- **Wear appropriate PPE** - heavy duty gloves, mask, eye protection (goggles/face shield), long-sleeved gown, apron (if gown is not fluid resistant), and boots or closed shoes
- The supervisor must use a checklist to promote accountability for cleaning responsibilities

#### Terminal disinfection (After Corona patient discharge or transfer or death)

- **Clean with Soap and water followed by disinfection with 0.5% hypochlorite**: All surfaces and floor including walls, ceiling, toilet etc that were in contact with patient or may have become contaminated during patient care followed
- **Do not spray or fog** occupied or unoccupied rooms with disinfectant - potentially dangerous practice, that has no proven benefits
- **Wear appropriate PPE** - heavy duty gloves, mask, eye protection (goggles/face shield), long-sleeved gown, apron (if gown is not fluid resistant), and boots or closed shoes

#### Cleaning of dishes and eating utensils used by a Corona infected patient

- Dipped in a soap with hot water then washed and dried
- Wear gloves when handling patient trays, dishes and utensils

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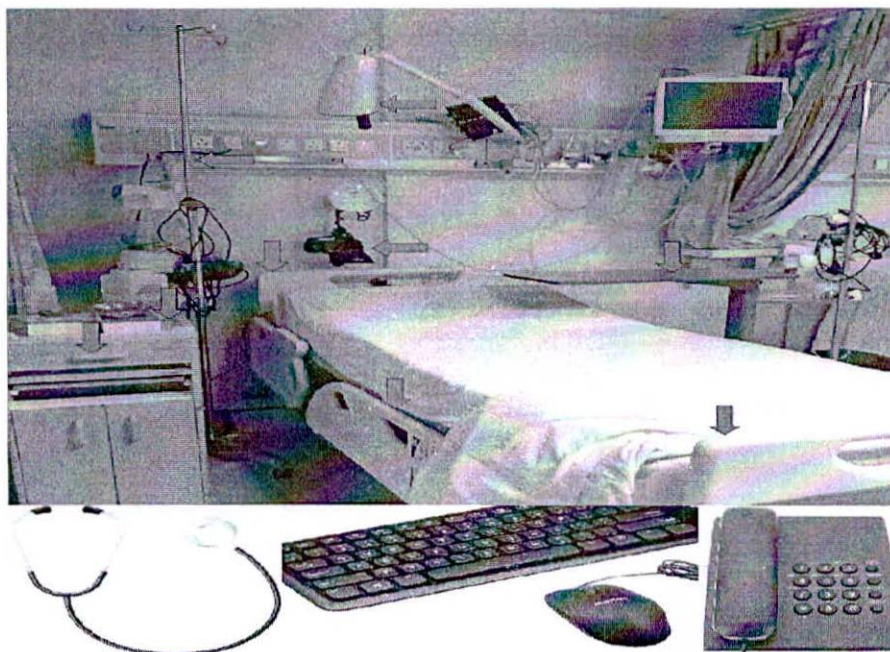
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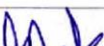


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## HIGH TOUCH SURFACES

High touch surfaces should be cleaned and/or disinfected more frequently (clean 4 hourly or earlier):

- Bed rails
- Bed frames
- Moveable lamps
- Tray table
- Bedside table
- Door handles
- IV poles
- Blood-pressure cuff
- Wall area around the toilet in patient room
- Edges of privacy curtain
- Mobile and telephone
- Computer, mouse, key board
- Lift buttons
- Hand rails (stair case)
- Side rails of stretches Chair arms (including wheel chairs)



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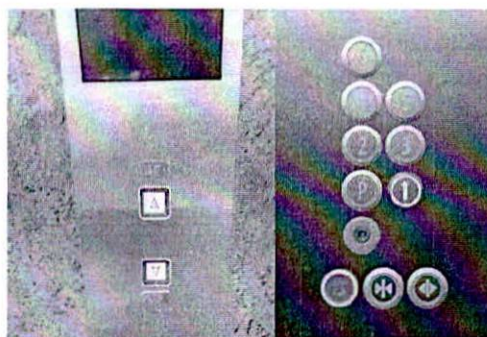
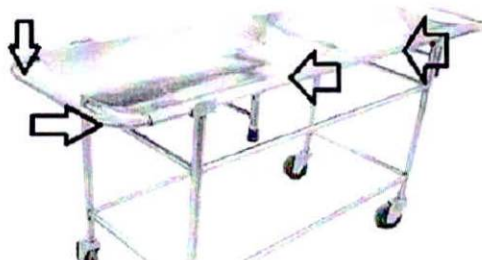
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### LAUNDRY DISINFECTION SOP FOR COVID

- Never carry soiled linen against body; place soiled linen in a leak-proof bag or bucket
- Hand hygiene and PPE (surgical mask, heavy duty gloves, plastic apron, boots)
- Dedicated laundry area should be there for cleaning soiled bedding, towels and clothes from patients with COVID-19
- Soiled linen should be placed in clearly labelled, leak-proof bags or containers, carefully removing any solid excrement and putting in covered bucket to dispose of in the toilet or latrine
- If Washing machine is there:
  - Wash at 60-90°C with laundry detergent followed by soaking in 0.1% Sodium Hypochlorite for approximately 30 minutes and dried
- If no machine washing is there:
  - Soaked in hot water with soap/detergent in a large drum
  - Use a stick to stir and avoid splashing
  - Empty the drum and soak linen in 0.1% sodium hypochlorite for approx. 30 minutes
  - Rinse with clean water and let linen dry fully in the sunlight

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## LIFT DISINFECTION SOP




- 3-4 people per lift at a time: Maintain two arm distance
- Hand rub/wash before and after lift use
- Clean high touch area of lift such as lift-buttons, rails and adjacent-wall area, door every one hour
- Clean other area of lift every 8 hourly



## MOBILES & LAPTOP DISINFECTION SOP

- Avoid bringing to hospital if not absolute necessary
- Clean front and back surface
- Alcohol wipes
  - Twice per shift
  - And also before leaving workplace
- Switch off during wiping



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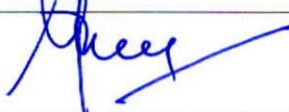
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### 5.6 SAMPLE COLLECTION SOP FOR COVID 19 PATIENTS

The clinician should decide necessity for collection of clinical samples for lab testing of 2019 nCoV only after following the case definition as given by the health authorities, Govt .of India.

- Only trained health care worker trained should perform specimen collection in presence of a clinician.
- Consider all specimens as potentially hazardous / infectious.
- Place each specimen into a separate container labeled with the patient's name and identification number, the collection site, the date of collection and the time of the collection.
- Do not contaminate the outside of the specimen container.
- Do not handle laboratory requisition forms with gloves.
- Personal protective equipment (apron, hand gloves, face shield, N95 Masks etc.) need to be used and all biosafety precautions should be followed while carrying out sample collection and packaging.
- Preferably prior to initiation of antimicrobial chemoprophylaxis or therapy
- Other preferred samples: Bronchoalveolar lavage, tracheal aspirate and sputum
- In lab confirmed patients: Blood, Stool and urine

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## Specimen collection and storage details:

Specimen type	Collection materials	Transport to lab	Storage till testing	Comment
Nasopharyngeal and oropharyngeal swabs	Dacron or polyester flocked swabs*	4 °C	<= 5 days - 4 °C > 5 days - -70 °C	Both swabs should be placed in the same tube to increase the viral load
Bronchoalveolar lavage	Sterile container*	4 °C	<= 48 hrs - 4 °C > 48 hrs - -70 °C	NA
Tracheal aspirate, nasopharyngeal aspirate or nasal wash	Sterile container*	4 °C	<= 48 hrs - 4 °C > 48 hrs - -70 °C	NA
Sputum	Sterile container*	4 °C	<= 48 hrs - 4 °C > 48 hrs - -70 °C	Ensure the material is from the lower respiratory tract
Tissue from biopsy or autopsy including lung	Sterile container with saline	4 °C	<= 24 hrs - 4 °C > 24 hrs - -70 °C	Autopsy sample preferably to be avoided
Serum - 2 samples (acute and convalescent)	Serum separator tubes	4 °C	<= 5 days - 4 °C > 5 days - -70 °C	Acute - 1 <sup>st</sup> week of illness Convalescent: 2-3 weeks later
Whole blood	Collection tube	4 °C	<= 5 days - 4 °C > 5 days - -70 °C	EDTA vials
Stool	Stool container	4 °C	<= 5 days - 4 °C > 5 days - -70 °C	NA
Urine	Urine collection container	4 °C	<= 5 days - 4 °C > 5 days - -70 °C	NA

\*For transport of samples for viral detection, use VTM (viral transport medium). Avoid repeated freezing and thawing of specimens. ...

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### 5.7 STANDARD OPERATING PROCEDURE (SOP) FOR PORTABLE CHEST X-RAY

If chest x-ray need arise for the Covid-19 patient.



Call the X-ray technician counter (SMIMS extension – 433)



X-ray technician with gloves and mask will bring the X-ray Cassette covered in a polythene bag and will hand over to the health personnel at the door of the isolation ward maintaining the hand hygiene.



Health personnel will do the Chest x-ray with cassette covered in polythene bag as it is.



After doing the X-ray as per the manual put on the console bar



After the exposure, hand over the cassette to the X-ray technician by pulling down the polythene bag after removing the adhesive tap so that x-ray technician will receive the X-ray Cassette only maintaining the hand hygiene.



X-ray technician will sterilize the Cassette by scrubbing with Hand sanitizer at the door of the isolation ward and bring back the cassette to the department for scanning.

Recommended by Dr Bhim Singh Verma (Professor & HOD, Radiology Department)

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## 5.8 DEAD BODY MANAGEMENT FOR COVID 19

- Transmission of COVID-19 is through droplets. Therefore it is unlikely to have 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 HCWs while handling dead bodies of COVID

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.

All staff identified to handle dead bodies in the isolation area, mortuary, ambulance and those workers in the crematorium / burial ground should be trained in the infection prevention control practices.


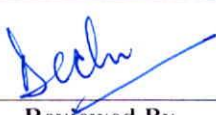

### Overall recommendations

- **Body bag-** One body bag, robust leak-proof of 150µm thickness is needed.
- **Viewing of the body** -is allowed with standard precautions
- **Embalming** of dead body should not be allowed.
- **Hygienic preparation-** either not allowed, or allowed with appropriate PPEs
- **Autopsy-** need to avoided as much a possible
- **Final treatment-** either cremation or cuffing depending up on the religious practice; however cremation is more advisable.

### Specific recommendations

#### 1. Removal of the body from the isolation room or area

- 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 (hand hygiene, mask and gloves)

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- 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.
- All floor, wall, ceiling, high touch area and medical care equipment used should be disinfected/ mopped with 1% hypochlorite solution.
- Do not do fogging or spray of the isolation room.
- 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, discard in appropriate waste bins and will perform hand hygiene.

## 2. Environmental cleaning and disinfection




- All surfaces of the isolation area (floors, bed, railings, side tables, IV stand, etc.) should be wiped with 1% Sodium Hypochlorite solution; allow a contact time of 30 minutes, and then allowed to air dry.

## 3. Handling of dead body in Mortuary

- Standard precautions have to be followed
- Dead bodies should be stored in cold chambers maintained at approximately 4°C.
- Environmental surfaces, instruments and transport trolleys should be properly disinfected with 1% Hypochlorite solution.
- After removing the body, the chamber door, handles and floor should be cleaned with sodium hypochlorite 1% solution.

## 4. Autopsies on COVID-19 dead bodies

- **Autopsies should be avoided.**
- But if autopsy is to be performed for special reasons, the following infection prevention control practices should be adopted:
  - The team should be well trained in infection prevention control practices.
  - The number of forensic experts and support staff in the autopsy room should be limited.
  - The team should use full complement of PPE (coveralls, head cover, shoe cover, N 95 mask, goggles / face shield).
  - Reduce aerosol generation during autopsy using appropriate techniques especially while handling lung tissue.

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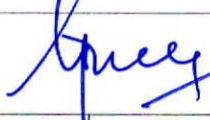
- After the procedure, body should be disinfected with 1% Sodium Hypochlorite and placed in a body bag.
- The exterior of the bag will again be decontaminated with 1% Sodium Hypochlorite solution.
- The body thereafter can be handed over to the relatives.
- Autopsy table to be disinfected as per standard protocol.

### Transportation

- 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 staff will practice standard precautions of hand hygiene, use of masks and gloves.
- Bathing, kissing, hugging, etc. of the dead body should not be allowed.
- 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.

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### 5.9 BIOMEDICAL WASTE MANAGEMENT FOR COVID-19, CRH



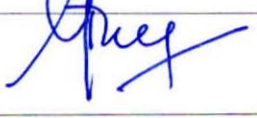
COVID-19 Corona isolation wards need to follow these steps to ensure safe handling and disposal of biomedical waste generated during patient care.

Follow the same principle segregation of waste as per BMW Rules, 2016.

Color coded bag/box	Broadly include Items	Disposal method
Yellow	Infectious non-plastic, non-sharp	Incineration
Red	Infectious plastic, non-sharp	Autoclave or microwave (recycle)
White Sharp box	Sharp (metal)	Sharp pit
Blue Box	Glass, metal implants	Autoclave (recycle)

However, the following additional steps need to be kept in mind.

- Keep **separate dedicated** color coded bins/bags/containers in corona isolation wards and should be labelled as "COVID-19 Waste"
- Use **double layered bags (using 2 bags)** should be used for collection of waste from COVID-19 isolation wards so as to ensure adequate strength and no-leaks
- Use **dedicated trolley and collection bins** and label as "COVID-19 Waste"
- **Transport to TF:** Keep "COVID-19 Waste" separately in temporary storage room prior to handing over to authorized staff of TF. COVID-19 Waste collected in such isolation wards can also be lifted directly from ward into CBWTF collection van.
- **Disinfection:** The inner and outer surface of bags/containers/ collection bins/ trolleys should be disinfected with 1 % sodium hypochlorite
- **General waste** not having contamination should be disposed as solid waste (**black bag**)
- Maintain **separate record** of waste generated from COVID-19 isolation wards
- **PPEs:** Depute dedicated sanitation/ SMC worker and use adequate PPEs- three layered mask, splash proof apron/gowns, nitrile gloves, gum boots, safety goggles
- **Dedicated vehicle:** TF should use dedicated vehicle for transport of COVID-19 waste; however separate label as COVID-19 waste is not necessary. Disinfect the vehicle with 0.1% sodium hypochlorite on reaching CRH.

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- **Quarantine facility for suspected COVID patients:** Treat the routine waste as general solid waste and dispose to local municipal as per solid waste management rule, 2016. Only biomedical waste which is expected to be little quantity should be collected and handed over to authorized waste collectors engaged by local bodies.
- **PPE disposal:**
  - Gloves, plastic apron, goggles - red
  - Non-plastic items such as Mask, gown, cap, shoe cover- yellow bag

## GUIDELINES FOR HANDLING, TREATMENT AND DISPOSAL OF WASTE GENERATED DURING TREATMENT/DIAGNOSIS/ QUARANTINE OF COVID-19 PATIENTS – REV. 03

The revision-3 of guidelines issued to incorporate guidance on segregation of general solid waste and biomedical waste. Further, this revision also addresses safety of waste handlers/sanitation workers associated with healthcare facilities, local bodies (ULBs) and CBWTFs in handling of biomedical waste and solid waste generated from quarantine centers /home-care/healthcare facilities treating COVID-19 patients.

### COVID- 19 ISOLATION WARDS:

1. General solid waste like wrappers of medicine / syringes etc. fruit peel offs, empty juice bottles or tetra packs, empty water bottles, discarded papers, carton boxes of medicines, empty bottles of disinfectants and any other items which were not contaminated by the patients secretions, body fluids should be collected separately as per SWM Rules 2016. In order to minimize waste generation, as far as possible, non-disposable items must be used, which are to be handle with appropriate precautions and cleaned and disinfected as per hospital guidelines. The wet and dry solid waste bags to be securely tied and handed over to authorized waste collector of ULB's on daily basis.
2. Report opening or operation of COVID-19 isolation wards to SPCB/PCCs and respective CBWTF located in the area.
3. Register in CPCB mobile application namely "COVID19BWM" to update the details of COVID-19 biomedical waste generation.
4. Faeces from COVID-19 confirmed patient, who is unable to use toilets and excreta is collected in diaper, must be treated as biomedical waste and should be placed in

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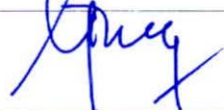
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yellow bag/ container. However, if bedpan is used, then faeces to be washed into toilet and cleaned with a neutral detergent and water, disinfected with a 0.5% chlorine solution, then rinsed with clean water.

5. Collect used PPEs such as goggles, face shield, splash proof apron, Plastic coverall, hazmet suit, nitrile gloves in to Red Bag.
6. Collect used mask (including Triple layer mask, N95 mask, etc.), head cover/cap, shoe cover. Disposable linen gown, non-plastic or semi plastic coverall in Yellow bags.
7. Items like left over food, disposable plates, glass, used masks, used tissues, used toiletries, etc, used by COVID-19 patient shall become biomedical waste and shall be segregated in yellow bag. Used gloves and plastic bottle from patients will be disposed off in red bags.
8. Providing training to waste handlers about infection prevention measures such as Hand Hygiene, Respiratory etiquettes, social distancing, use of appropriate PPE, etc. via videos and demonstration in local language. Designated nodal officer for biomedical waste management in Hospital shall provide training. Nodal officers, in turn, need to be trained by Health Departments / Professional agencies in association with SPCB/PCC of the state.

### Quarantine Camps:

9. General solid waste (house hold waste) generated from quarantine centres or camps should be handed – over to municipal solid waste collector identified by Urban Local Bodies or as per the prevailing local method of disposing general solid waste.
10. General waste may comprise of the waste generated from kitchen, packaging material for groceries, food material, waste papers, waste plastics, floor cleaning dust, etc. generated and handled by patients care takers or the suspected quarantined person.
11. Waste contaminated with blood / body fluids of COVID-19 patients to be collected in yellow bag.
12. Biomedical waste if any generated from quarantine centres/camps should be collected in yellow bags. These bags can be placed in separate and dedicated dust-bins of appropriate size. General waste should not be stored in yellow bags.
13. Agency responsible for operation of Quarantine centres/ camps shall designate a nodal person who will be responsible for waste management and for maintenance of its records.

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14. Designated nodal person of Quarantine centre shall register the centre on CPCB's biomedical waste tracking app 'COVID19BMW' (available on google playstore) and update the details of waste generated on daily basis.
15. General waste such as like fruit/ Vegetable peel offs, left over food, empty juice bottles or tetra packs, empty water bottles, packaging material, discarded papers, carton boxes and any other items which were not contaminated by secretions or body fluids of COVID-19 positive person should be disposed off as general waste. This waste shall not be collected in yellow bag.
16. General waste contaminated with blood or body fluids from persons infected with COVID-19 shall be generated in yellow bag along with masks and gloves used by them.
17. Masks and gloves used by persons not infected by COVID-19 at quarantine homes or other households should be kept in paper bag for a minimum of 72 hours prior to disposal of the same as general waste. It is advisable to cut the masks prior to disposal to prevent reuse.

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# Documented Procedure

TITLE: SOP for Infection Control & Prevention of COVID 19.

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## GUIDELINES FOR HANDLING TREATMENT AND DISPOSAL OF WASTE GENERATED DURING TREATMENT/DIAGNOSIS/QUARANTINE OF COVID -19 PATIENTS-REV.02

This rev 2 of guidelines is mainly to incorporate specific requirements and responsibilities of person operating sewage treatment plants at health care facilities and to clarify on management of general waste from quarantine homes and mask/gloves from other households.

### Management of general waste from HCFs/isolation Wards:

As per the information available at CDC, the risk of transmission of virus that causes COVID-19 through sewerage systems is thought to be low. Transmission to operators may be possible during treatment of sewage treatment plants, however there is no evidence to date that this has occurred. Therefore following guidance recommended for HCFs(health care facility) and the operators of STPs(sewerage treatment plant):

- Responsible agencies are healthcare facilities/ isolation wards /operators of terminal sewage treatment plants.
- HCFs and the agencies operating sewage treatment plants should continue to ensure disinfection of treated waste water as per prevailing practices to inactivate corona viruses.
- Operators of ETPs(effluent treatment plant)/STPs attached with discharge from health care facilities and isolation wards should adopt standard operational practice basic hygiene precautions, and wear PPE prescribed for operation of STPs.
- PPEs should include googles, facemask ,liquid repellent coveralls ,water proof gloves and rubber boots.
- During the period of COVID-19 pandemic, utilization of treated waste in utilities within HCFs may be avoided.

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### 6. Responsibility:

- 6.1. HICC, CRH
- 6.2. Engenering ,CRH
- 6.3. Operation,CRH
- 6.4. Nursing supervisor
- 6.5. Ward Nurses

### 7.2 References:

- 7.2.1 MOHFW Guidelines – <https://.mohfw.gov.in>
- 7.2.1 CDC Guidelines - <https://www.cdc.gov>
- 7.3.1 Pollution Control Board Govt of Sikkim – [cpcb.nic.in](http://cpcb.nic.in)

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