

GOVERNMENT MEDICAL COLLEGE, AMRITSAR.




Infection Prevention & Control Standard Operating Procedure

For COVID 19

VERSION 1

30.4.2020

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	INFECTION PREVENTION & CONTROL STANDARD OPERATING PROCEDURE FOR COVID-19	VERSION NO.	1
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INTRODUCTION

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus, also known as 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. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. However, older people, and those with underlying comorbidities like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop severe viral pneumonia leading to acute respiratory distress syndrome that is potentially fatal.

TRANSMISSION OF INFECTION

Transmission	Situations	Prevented by
Droplet transmission	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	Surgical mask (if within 1 mt of infected case)
Contact transmission	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 ca easily spread	Hand hygiene (the most important measure)
Airborne transmission	Airborne transmission from person-to-person over long distances is unlikely	
	Aerosol generating procedures: 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 lower respiratory specimens (bronchial & tracheal aspirates), autopsy etc.	N95 Mask

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PREVENTION OF COVID-19

Based on the mode of transmission; standard and some additional precautions have been advised.

STANDARD PRECAUTIONS

Components (7):-

- 1) Hand Hygiene
- 2) Respiratory hygiene/cough etiquette
- 3) Personal Protective Equipment's (PPEs)
- 4) Sharp Handling (Safe use and disposal)
- 5) Spill Management
- 6) Disinfection :-
 - A) Routine Environmental Cleaning
 - B) Reprocessing of reusable medical equipment's & Instruments
 - C) Appropriate handling of linen
- 7) Biomedical Waste Handling and management

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1) Hand Hygiene :-

Has to be performed by ALL healthcare workers at ALL times regard times regardless of suspected or confirmed status of the patient as per 5 moments described by WHO.

During the delivery of healthcare, avoid unnecessary touching of surfaces in close proximity to the patient.

Performing hand hygiene as per WHO 5 moments and as per different indications with:-

- 1) Alcohol-based hand rub if your hands are not visibly dirty.**
- 2) With soap and water if hands are dirty.**


Recommended composition of alcohol-based hand rub (ABHR) to be used:-

Unformulated ethanol in concentrations greater than 60% or isopropanol greater than 70%.

Indications (5 Moments by WHO) for Hand Hygiene: -

- Before touching a patient
- Before aseptic procedure
- After exposure to body fluids
- After touching a patient
- After touching patient's surroundings

	Alcohol Based Hand Rub	Hand Wash with soap & water	Surgical Hand Scrub
Duration	20-30 seconds	40-60 seconds	2-5 minutes
Amount (approx.)	3-5 ml (Palm full)	3-5 ml (Palm full)	15 ml

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STEPS TO BE FOLLOWED WHILE WASHING HANDS :-




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 .

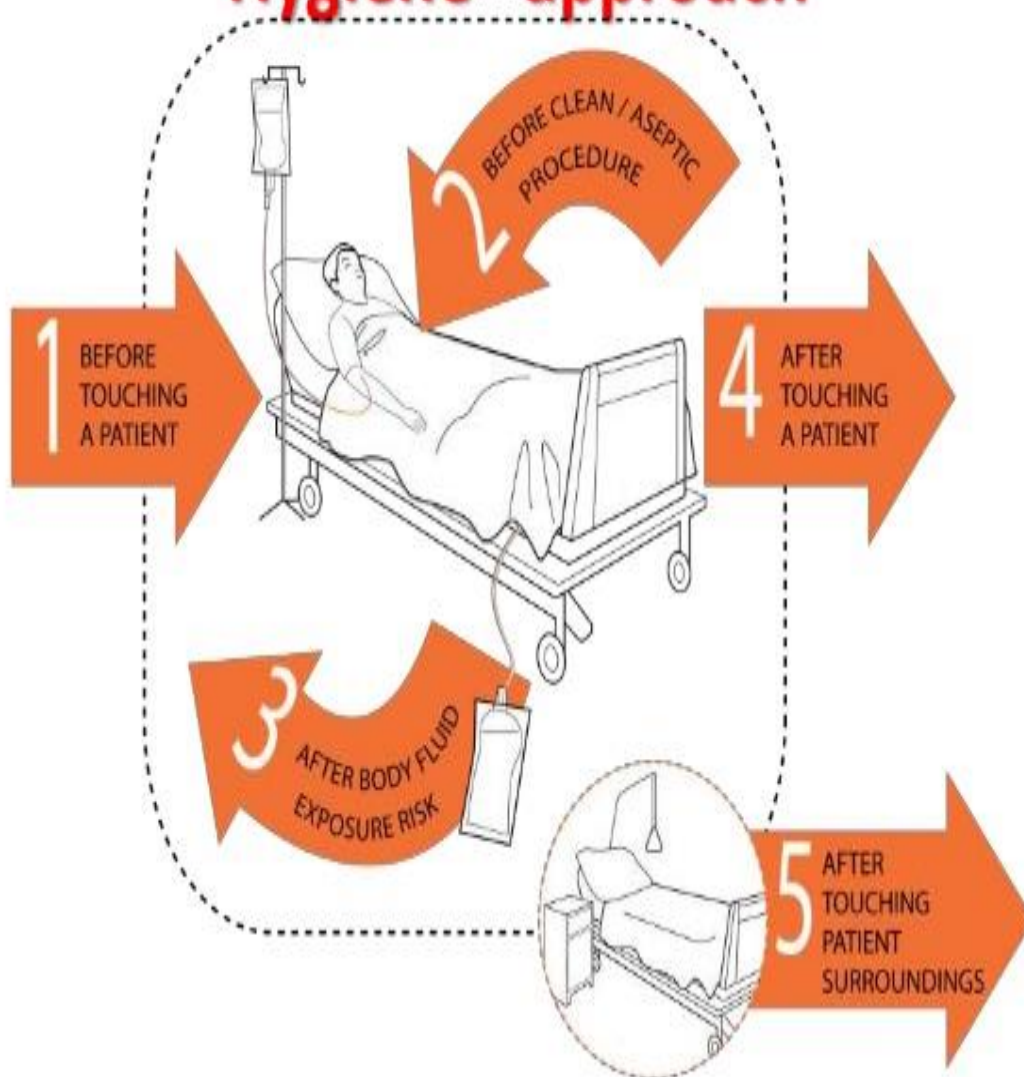
Indications for using handrub :-

- 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

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


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The “My 5 Moments for Hand Hygiene” approach



Moment-1 and 4 :-Before and after touching a patient.

Before and after :-

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- Taking pulse, blood pressure
- Auscultation and palpation
- Shaking hands
- Helping a patient to move around
- Applying oxygen mask
- Giving physiotherapy
- Recording ECG
- Use of gloves

Moment-2 and 3:-Before and after aseptic procedure/body fluid exposure.

Before and after :-


- Oral/dental care
- Aspiration of secretions or accessing draining systems
- Skin lesion care, wound dressing
- Giving injection
- Drawing of blood or sterile fluids
- Handling an invasive device (catheter, central line, ET tube)
- Clearing up urines, faeces, vomit.
- Handling bandages, napkins etc
- Instilling eye drops
- Moving from a contaminated body site to another body site during care of the same patient

Moment-5:-After touching patient surroundings.

After touching patient surroundings :-

After contact with :-

- Handling the case sheet.
- Medical equipment in the immediate vicinity of the patient.
- Bed or bed rail.
- Changing bed linen.
- Decanting urobag.


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2. Respiratory hygiene /cough etiquette: —

- 1)** Cover nose and mouth during coughing or sneezing with flexed elbow or tissue and then immediately dispose the tissue.
- 2)** Perform hand hygiene after contact with respiratory secretions.


Airway precautions are required for: —

- 1) During aerosol generating procedures.
- 2) Use alternative methods like avoid nebulising the patients wherever possible (MDI with Spacer is as good as nebulisation) and use Metered Dose Inhaler with Spacer.

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3. RATIONALE USE OF PERSONAL PROTECTIVE EQUIPMENT (PPE) :-

Components	Use depending upon indication listed & likely mode of transmission of disease
Aprons, Gowns <ul style="list-style-type: none"> • Disposable plastic aprons • Sterile, water impervious gowns 	Risk of splashing with blood and/ or body fluid. <ul style="list-style-type: none"> • Prolonged contact with patient with Multidrug Resistant organisms expected. • For use in surgical and aseptic procedures.
Gloves	<ul style="list-style-type: none"> • Before a sterile procedure • When anticipating contact with blood or another body fluid, regardless of the existence of sterile conditions and including contact with non intact skin and mucous membrane • Contact with a patient (and his/her immediate surroundings) during contact precautions. • Number of pair of gloves to be used-- minimum one; - May use more pairs of gloves in following situation depending upon availability:- <ol style="list-style-type: none"> 1) Procedures involving use of sharps 2) Procedures where likely high chance of tearing gloves like cleaning use heavy duty) etc. 3) In <u>isolation area</u> preferably wear double gloves
Mask <ul style="list-style-type: none"> • Surgical Face mask • Respirator or Filtered face piece (N95 Mask) 	Provide protection against droplet (>5µm size) (indicated to prevent contamination of mucous membranes of the mouth, nose and eyes during procedures likely to generate droplets or splashes of blood and/or body fluid <ul style="list-style-type: none"> • Provide protection against droplet nuclei (<5µm size) • Indicated during Aerosol generating procedure like tracheostomy, tracheal intubation etc.
Protective Eye Wear (Goggles & face Shield)	<ul style="list-style-type: none"> • Indicated in procedures which are likely to generate droplets or aerosols of blood and/ or body fluid likely to be splashed, sprayed or splattered into face. • Flexible frame of goggles should provide good seal with the skin of the face, covering the eyes and the surrounding areas and even accommodating Prescription Glasses.
Caps/ Head cover	<ul style="list-style-type: none"> • Cover head and neck while providing clinical care for patients. • Hair and hair extensions should fit inside the head cover.
Foot Cover/ Separate Foot wear	<ul style="list-style-type: none"> • In restricted area of hospital • Shoe covers of impermeable fabric to be used over shoes to facilitate personal protection and decontamination.

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Personal protective equipment (PPE) to be used in the context of COVID-19 disease, according to the setting, personnel and type of activity in addition to following general instructions as mentioned :-

Levels	Area	Health care professionals	PPE Required
	From Entry Gate till outside of COVID 19 screening area	Security Guard	Triple layer Surgical Mask
	Temperature recording station	Health Care Professionals	Mask (N95) Gloves
Level 1 Protection	Screening Area/Help desk/Registration counter for COVID suspects	Health Care Professionals	Head Cover Mask (N95) Surgical Gown/Apron ±Shoe Cover (No aerosol generating procedure allowed here)
		Patients & their attendants	Triple layer Surgical Mask
Level 2 Protection	COVID-19 AREA (TRAUMA CENTRE): Emergency Triage Area Cohort Area Isolation Room	Health Care Professionals	Complete PPE: Head Cover Mask (N95) Gown (Preferably disposable, leak proof) Eye goggles (±Face shield) Shoe Cover scrub suit
		Patients	Triple layer Surgical Mask Body Cover Surgical Cap
Level 3 Protection	COVID -19 area: Isolation room with patient on ventilator/ Operation theatre/ Virology laboratory processing diagnostic COVID-19 disease specific sample.	Health Care Professionals	Complete PPE as mentioned above (N95 mask to be preferably replaced by PAPR- if available) (Powered, air-purifying respirator)
		Patients	Triple layer Surgical Mask Body Cover Surgical Cap

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Other Supportive/ Ancillary Services :-

Setting	Activity	Risk	Recommended PPE	Remarks
Other Laboratory testing non virology COVID 19 patients ample	Processing samples without aerosol generating procedures	Moderate risk	Triple layer surgical mask and gloves	other PPE based on risk assessment.
	Aerosol generating Procedure	High risk	N95 and gloves Full PPE (if processing respiratory sample)	---do---
Mortuary	Dead body handling of COVID 19 patient	Moderate Risk	N 95 mask Gloves	No aerosol generating procedures should be allowed. No embalming.
	While performing autopsy of COVID-19 patient	High Risk	Full complement of PPE	No post-mortem unless until specified.
CSSD/Laundry	Handling linen of COVID-19 patients	Moderate risk	N-95 mask Gloves	Other PPE depending upon risk assessment
Other supportive services	Administrative Financial Engineering Security staff in administrative and non-patient care areas No	No risk	No PPE	No possibility of exposure to COVID patients. They should not venture into COVID-19 treatment areas.

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APPROPRIATE USE OF PERSONAL PROTECTIVE EQUIPMENT :-

In view of the PPE shortage, the following strategies should be adopted which can facilitate optimal PPE availability.


Minimize the need for PPE :-

- Restrict visitors to the Corona ward.
- Restrict HCWs from entering the Corona ward if they are not involved in direct care.
- Consider bundling activities to minimize the number of times a room is entered (e.g., check vital signs during medication administration or have food delivered by HCWs while they are performing other care) and plan which activities will be performed at the bedside.
- **Screening area:** Restrict HCWs evaluating suspected cases of COVID-19 disease, one HCW can evaluate/screen, others can maintain distance and interact; thus minimizing the need for these individuals to go to healthcare facilities for evaluation.
- Use physical barriers to reduce exposure to the COVID-19 virus, such as glass or plastic windows. This approach can be implemented in areas of the healthcare setting where patients will first present, such as triage areas, the registration desk at the emergency department or at the pharmacy window where medication is collected.

Ensure PPE use is rationalized and appropriate :-

PPE should be used based on the risk of exposure; will vary according to the setting and type of personnel and activity. The overuse/misuse of PPE will have a further impact on supply shortages.

- **Direct Contact without Aerosol-generating procedures of corona patients (suspected /confirmed) should use the following PPE:**
Gowns.
Gloves
Surgical mask
Eye protection (goggles or face shield).
- **Aerosol-generating procedures :-**
HCWs should use Gowns, Gloves, Eye protection (goggles or face shield).
Additional PPE: Respirators (N95) and Apron
- **General public, without respiratory symptoms:-**
Wear a surgical mask.
Avoid closed crowded spaces (social distancing).
Maintain distance – 1 meter (two arm distance).
Practice hand hygiene and respiratory hygiene.

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Refrain from touching face, nose, mouth.

- **General public with respiratory symptoms :-**
Wear a surgical mask.
Seek medical care.


Extended use and Limited Reuse of N95 Mask

To combat the short supply of PPEs, the following is recommended by CDC and WHO :-

Extended use of N95 Mask:-


- Refers to wearing the same N95 respirator for repeated close contact encounters with several patients, without removing the respirator between patient encounters; as long as they are functional well (up to 8hr).
- Discard N95 mask when contaminated with blood, respiratory or nasal secretions etc.
- Consider use of a cleanable face shield (preferred) over an N95 respirator and/or other steps (e.g., masking patients) to reduce surface contamination.
- Perform hand hygiene before and after touching or adjusting the N95 mask.

Limited Reuse of N95 Mask:- Refers to the practice of using the same N95 respirator for multiple encounters with patients but removing it ('doffing') after each encounter. There is tremendous risk when exposed to Coronavirus, MDR-TB etc. due to contact transmission; therefore exercise this option with great CAUTION.

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STANDARD OPERATING PROCEDURE FOR EXTENDED USE OF N-95 MASKS FOR PERSONAL SAFETY FOR PERSONAL SAFETY OF HEALTH CARE WORKERS (HCW) AT GMC, AMRITSAR.

1. HCWs will be provided with five N-95 masks and 4 small brown covers numbered 1,2,3,4 as well and a large brown cover.
2. Place each N-95 mask in separate small paper bags as 1,2,3,4 and both the mask and bag as 1,2,3,4. Fifth mask is being issued as a reserve.
3. On day 1, wear the mask no.1 when you step out for duty. Learn to wear the mask correctly as this is very important.
4. After you return home, place the used N-95 in paper bag no.1 & let it dry out for 4 days. Sunlight is not necessary. Do not throw away the mask.
5. On day 2, use mask no.2 when you go out for duty. After you return home, place the used N-95 in paper bag no.2 & and let it dry out for next 4 days.
6. Do the same for day 3 & day 4.
7. Use the N-95 mask no.1 on day 5 again. For e.g, if you start mask no.1 on Friday 1st May,2020 it is available for reuse on Tuesday 5th May, 2020.
8. Repeat the exercise until all 4 masks have been used 5 times as recommended by CDC, Atlanta, USA. All four masks will be used in 20 days.
9. Bring all 4 masks in the big brown bag , throw them in yellow waste bin.
10. HCWs will be issued 05 new N-95 masks , after 20 days.

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RATIONAL USE OF GLOVES, [Government Medical College,Amritsar]

Dos	DON'Ts
Wear gloves only when there is indication (e.g. anticipated exposure to blood/body fluid).	Don't wear gloves if there is no indication. (e.g. measuring BP, pulse etc)
Remove glove after single use and then wear fresh gloves for next activity.	Don't keep wearing same gloves for long time (as it creates false sense of security and prevents us to the most important measure, i.e. hand hygiene)
Do hand hygiene before and after glove use	Don't do hand hygiene over gloved hand
Disposal in red bag after use	Don't dispose in yellow bag after use

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RATIONALE USE OF MASK [GOVERNMENT MEDICAL COLLEGE, AMRITSAR]

Dos	DON'Ts
Use N-95 mask only when clinically indicated. (specially when doing aerosol generating procedures).	Do not use N-95 masks when clinically not indicated.
Always hold by its strings.	Don't touch/hold front/back part of mask.
Fitting:- Compress the mask to ensure a seal across nose bridge, face and cheeks.	Do not allow tangling of mask around neck.
Discard after 4-6h for surgical mask and 8h for N95 mask	Do not keep using mask for longer time/days. Do not wash mask and reuse .
Discard in yellow bags	Do not throw masks here and there after use

***Aerosol generating procedures:-** endotracheal intubation, open ET suctioning, non-invasive ventilation, tracheostomy, cardiopulmonary resuscitation, manual ventilation, bronchoscopy, (extra for corona patients- chest physiotherapy, nebulization, sputum induction, throat swab).

Fit check for N95 respirators :-

HCWs must perform fit checking every time they put on a N95 respirator to ensure if it is properly fitted and functional.


1. Placement:- The respirator is placed on the face and tied over the head and at base of the neck.

2. Sealing:- N95 mask is compressed to ensure a seal across the face, cheeks and bridge of the nose.

3. The positive pressure seal :-of N95 mask is checked by gently exhaling. If air escapes, the N95 mask needs to be adjusted.

4. The negative pressure seal of the N95 mask is checked by gently inhaling. If the N95 mask is not drawn in towards the face, or air leaks around the face seal; the N95 mask is readjusted and the process is repeated.

5. If still not proper, then respirator should be checked for any defect or damage.

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DONNING SEQUENCE AND DOFFING SEQUENCE FOR PPE :-

Donning sequence:-

Step 1 :- Hand wash.

Step 2 :- Put on Head cover/ cap.

Step 3 :- Put on Shoe cover.

Step 4 :- Hand rub.

Step 5 :- Put on Inner glove.

Step 6:- Put on cover all/ gown.

Step 7:- Put on Mask(surgical or N95).

Step 8:- Put on goggles/ eye shield.

Step 9:- Put on hood.

Step 10:- Put on outer gloves.

Doffing sequence :-

Step 1 :- Remove outer gloves.

Step 2 :-Remove hood.

Step 3 :- Remove cover all/gown.

Step 4 :- Remove Shoe cover.

Step 5 :-Hand rub (Gloved Hand).

Step 6:- Remove goggle/eye shield

Step 7:- Remove Mask (surgical or N95).


Step 8:- Remove Head cover/ cap.

Step 9:- Remove Inner gloves

Step 10:- Hand wash.


*Before donning- remove all external wearing such as watches, jewellery, ear rings, bangles, pen, ID card etc.

**Mask should be removed only outside patient room.

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RESPIRATORY HYGIENE AND COUGH ETIQUETTE [GOVERNMENT MEDICAL COLLEGE, AMRITSAR] :-

DOs	DON'Ts
Cough/sneeze with a tissue paper or into your sleeve if no tissue is available.	Don't cough/sneeze on your hands. Do hand hygiene if coughed/sneezed on hands.
Turn head away from others when coughing/sneezing.	Don't cough/sneeze on nearby people. Do not spit here and there.
If tissues are used, discard into yellow bag.	Don't discard tissues into other BMW bags
Maintain 1 meter (2 arm) distance. <ul style="list-style-type: none"> • If you have cough/sneeze. • From people with respiratory symptoms. • From contacts of corona cases who are on quarantine. 	Do not stay within 1 meter from others <ul style="list-style-type: none"> • If you have cough/sneeze. • From people with respiratory symptoms. • From contacts of corona cases who are on quarantine
<u>Social distancing</u> refers to avoid gathering. <ul style="list-style-type: none"> • It doesn't mean maintaining 1 meter distance from all people at home and office. 	

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4. CLEANING AND DISINFECTION OF COVID-19 AREAS :-

- COVID-19 virus can potentially survive in the environment for several hours/days.
- Premises 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

Frequency and sequence of cleaning of surfaces:-

1. Floor: Every 4 hour, first mopping by phenolic solution followed by 0.5 % Sodium hypochlorite solution .
2. High touch surfaces: Every 4 hour, disinfection of high touch surfaces like (doorknobs, telephone, call bells, bedrails, stair rails, light switches, wall areas around the toilet)
3. Low-touch surfaces: For Low-touch surfaces (walls, mirrors, etc.) mopping should be done once a week.

Cleaning agents and disinfectants :-

1. Sodium Hypochlorite used as a disinfectant for cleaning and disinfection in concentrations of 0.05%, 0.1%, 0.5% and 1% as required as mentioned in subsequent section.
2. Alcoholic preparation containing at least 70% alcohol can be used to wipe down surfaces where the use of bleach is not suitable, e.g. external surfaces of equipment like stethoscopes, thermometers and ventilators.
3. Phenolic germicidal detergent solution for mopping.

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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]


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

- **Metallic surfaces – 70% alcohol based rub.**
- **Non- metallic surfaces - 0.1% sodium hypochlorite.**

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PREPARATION OF SODIUM HYPOCHLORITE SOLUTION :-

Concentration of Sodium hypochlorite	Water	5% Sodium hypochlorite	Total Volume Prepared
0.05%	9.9 LITRES	100 ML	10 LITRES
	990 ML	10ML	1 LITRE
0.1 %	4.9 LITRES	100ML	5 LITRES
	980ML	20ML	1 LITRE
0.5%	9 LITRE	1LITRE	10 LITRES
	900ML	100ML	1LITRE
1%	800ML	200ML	1 LITRE

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Before cleaning :-

- 1) Gather materials required for cleaning before entering the room.
- 2) Hand Hygiene should be done before entering the room.
- 3) Where possible, seal off areas, before carrying out cleaning and disinfection.
- 4) Place a cautionary 'Wet Floor' sign at the entrance of the room.
- 5) Follow the manufacturer's instructions for proper dilution and contact time for cleaning and disinfecting solutions.

During cleaning:-

- 1) Sweep with damp mop to remove surface dust.
- 2) Progress from the least soiled areas (low-touch) to the most soiled areas (high-touch) and from high surfaces to low surfaces.
- 3) Remove gross dust/ waste (visible to naked eye) prior to cleaning and disinfection.
- 4) Minimize turbulence to prevent the dispersion of dust that may contain microorganisms.
- 5) Never shake mops.
- 6) Wash the mop under the running water before doing wet mopping.

Triple bucket mopping method for floor cleaning should be used in all areas:-

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1. Use 3 bucket system for mopping


- a. 1st bucket: keep soap/ and detergent water.
- b. 2nd Bucket: clean water.
- c. 3rd Bucket: disinfectants (phenol, hypochlorite)

2. Apart from 3 buckets,

4th bucket: To Prepare working solution of 0.5% Sodium hypochlorite


5th bucket: Filled with 0.5% Sodium hypochlorite: Used to dip used mops after cleaning for 30 minutes (to be replace every days with new one)

- Do not double dip mop as dipping it multiple times may lead to recontamination of mop.
- An area of 120 square feet to be mopped before re-dipping the mop in the solution.
- Cleaning solution and mop to be changed after cleaning an area of 240 square feet.
- The used mop should be dipped in 0.5% sodium hypochlorite solution after washing for 30 minutes and then dried before re-using.

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CLEANING OF COVID-19 SCREENING, TRIAGE, COHORT, ISOLATION AREAS, Virology laboratory


AREAS	DISINFECTANT	CONTACT TIME	FREQUENCY
Floor Cleaning	0.5% Sodium Hypochlorite	≥1 minute*	Every 4 hourly & spot cleaning as required
Mops used for cleaning, Re-utility gloves	0.5% Sodium Hypochlorite	Soaked for 30 minutes	After every 240 square feet
High Touch areas: - Metallic Surfaces	70% isopropyl alcohol (v/v) based hand- rub	Till it dries	Every 4 hourly
Non-metallic Surfaces	0.1% Sodium Hypochlorite	≥1 minute*	Every 4 hourly
Low Touch surfaces: 1) Ceilings 2) Side walls	0.1% Sodium Hypochlorite If greasy 1st use detergent/ phenolic solution than hypochlorite	≥1 minute*	Once a week
Toilet 1) Floor 2) Toilet pots 3) Bed Pan	0.5% Sodium Hypochlorite 1% Sodium Hypochlorite 1% Sodium Hypochlorite	≥1 minute*	After every use
BMW Container/ Bin- Inner and outer surface	1% Sodium Hypochlorite	≥1 minute*	After each discard of waste
BMW waste bags 70% isopropyl alcohol (v/v) based hand- rub	0.5-1% sodium Hypochlorite	≥1 minute*	Before discarding (On outer surface) Till it dries Stethoscope Alcohol-based rub/ Spirit swab Till it dries In between each patient
Ventilator(exterior) , Infusion pump, USG machine, Pulse oximeter, Telephone, computer, keyboard, printer, Bed side monitor, ECG probes, etc.	70% isopropyl alcohol (v/v) based hand- rub	Till it dries	
Stethoscope	Alcohol-based rub/ Spirit swab	Till it dries	In between each patient.

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SURFACES	DISINFECTANT	PROCEDURE/ CONTACT TIME
Thermometer : • Preferably one thermometer for each patient.	Detergent and water Alcohol	<ul style="list-style-type: none"> • Should be stored dry in individual holder. • Clean with detergent and tepid water and wipe with alcohol rub in between patient use. • Store in individual holder inverted.
BP cuffs and covers	Detergent Hot water	Cuffs should be wiped with alcohol based disinfectant. Regular laundering recommended for the cover.
Injection and dressing trolley	Detergent and water Disinfectant (70% alcohol)	<ul style="list-style-type: none"> • To be cleaned daily with detergent and water • After each use should be wiped with alcohol (70%) rub.
Used linen /Slightly soiled reusable linen	0.1 % Sodium Hypochlorite	30 minute
Liquid waste	1% Sodium Hypochlorite	30 minute
Terminal Cleaning (COVID19 confirmed case) - Linen ,Mattress cover	1% Sodium Hypochlorite	30 minute
Dead Body of COVID-19	Patient's body in leakproof plastic body bag External surface of bag by 1% Sodium Hypochlorite All the orifices are to be plugged with cotton plug dipped in 1% sodium hypochlorite-	≥1 minute*

Foot note:-

- *Contact time of 10 minutes is preferred however ≥1 minute is must.
- 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.
 - 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 disinfect with Lysol.

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Areas/Items	Agent	Process	Method /Procedure
Mobile phones and landlines	Alcohol wipes	Front and Back	<ul style="list-style-type: none"> • Twice per shift • .Before leaving work place. • Switch off during wiping
Ventilator, Monitor, Defibrillator, USG Machine	Detergent followed by alcohol		Disinfectant will work only when detergent removes the organic matter.
Ventilator tubing	ETO/ Plasma Sterilization	Sterilization	First do enzymatic cleaning and then send for ETO/Plasma sterilization
Ventilator suction apparatus	Bacillocid 1%	Disinfection	Discard the suction fluid as per BMW rule ,then immerse in detergent followed by water, and finally in Bacillocid for 10-12 minutes.

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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 versa .
 - 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. Use new wipe for each use.

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CLEANING AND DISINFECTION SOP:-

Corona isolation ward/room (when occupied):-


- **Floor** :- mop with sodium hypochlorite (0.5%, 5000ppm) three times a day.
- **Bacillol-25 spray** :- for reusable dedicated equipment (e.g. thermometers) every once hour.
- **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.
- **Bacillol-25 spray** for reusable dedicated equipment (e.g. thermometers)
- **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:-

- No special precautions other than standard precautions.
- Wear gloves when handling patient trays, dishes and utensils

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LAUNDRY INFECTION CONTROL SOP FOR COVID:-

Soiled linen can be a source of large amounts of microbial contamination which may cause infections in hospital patients and personnel.

Principles and Key Steps in Processing Linen :-


- i. Housekeeping and laundry personnel should wear gloves and other PPE and follow standard precautions as indicated when collecting, handling, transporting, sorting, and washing soiled linen.
- ii. Consider all cloth items (for example, surgical drapes, gowns, wrappers) as infectious.
- iii. Carry soiled linen in covered containers or leak-proof plastic bags to prevent spills and splashes, and confine the soiled linen to designated areas (interim storage area) until transported to the laundry.
- iv. Any solid waste in linen should be carefully removed and kept in covered bucket to dispose of in the toilet or latrine
- v. Carefully sort all linen in the laundry area before washing.
- vi. Disposable bed sheets to be discarded in yellow bin as per BMW rules.
 - Washing by machine with warm water (70-90°C) with laundry detergent is recommended.
 - **Machine Washing:**
 - **Step 1:** Wash heavily soiled linen separately from non- soiled linen.
 - **Step 2:** Adjust the temperature and time cycle of the machine according to manufacturer’s instructions and the type of soap or other washing product being used.
 - **Step 3:** When the wash cycle is complete, check the linen for cleanliness. Rewash if it is dirty or stained. (Heavily soiled linen may require two wash cycles.)
 - **Step 4:** Finally dry fully in sunlight .

If machine washing is not possible, linen soaked in 0.1% hypochlorite for approximately 30 minutes in a large drum, using a stick to stir, avoiding splashing. Hand over the linen thereafter to

outsourced laundry facility.

All grossly soiled reusable linen is to be discarded in yellow bin. (Preferably linen single use disposable type is to be used.

At outsourced laundry facility, routine process of laundering final to be done.

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- If the towels are single use, they should be treated as infectious waste and if they are re-usable they should be treated as soiled linens for reprocessing. The area should then be cleaned and disinfected (with 0.5% hypochlorite)

LIFT INFECTION CONTROL SOP, [Government Medical College, AMRITSAR]

- 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 INFECTION CONTROL SOP, [Government Medical College, AMRITSAR]

- 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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5. TERMINAL CLEANING :-

After room or area occupied by COVID 19 patient is discharged /shifted/ LAMA the area is to be kept closed for 30 minutes to get all air exhausted (& replaced with fresh air).

Terminal cleaning to be done by housekeeping staff need to enter area after 30 minutes and all inanimate objects must be cleaned as mentioned above.


- Surface cleaning/ Floor cleaning by 1% Sodium hypochlorite working solution by applying to surfaces using a damp cloth.
- Metallic surfaces to be cleaned using 70 % alcohol based hand rub.
- Linen, Mattresses, beddings contaminated with blood or body fluid for final discard is to be treated with 1-2% sodium hypochlorite for 30 min chemical disinfection.
- All linen material reusable to be soaked in 0.05% Sodium hypochlorite for at least 30 min.
- Place a cautionary 'Wet Floor' sign at the entrance of the room.
- Prepare fresh hospital-grade disinfectant solution according to manufacturer's instructions.
- Clean hands and put on PPE.
- Collect and remove waste and all soiled linen.
- Clean hands and change gloves.
- Clean and disinfect lights and ceiling-mounted tracks.
- Clean and disinfect all door handles, push plates, light switches and controls.
- Clean and disinfect telephones and computer keyboards.
- Spot-check walls for cleanliness.
- Clean and disinfect all exterior surfaces of machines and equipment (e.g., anaesthesia carts), allowing adequate drying time for the disinfectant before storage.
- Clean and disinfect all furniture including wheels.
- Clean and disinfect exterior of cabinets and doors, especially around handles.
- Clean and disinfect all surfaces, scrub sinks and surrounding walls.
- Mop floor, making sure the patient's bed is moved and the floor is mopped underneath; move all furniture to the centre of the room and continue cleaning the floor; apply a sufficient amount of disinfectant/ detergent to ensure that the floor remains wet for 10 minutes (Contact time of 10 minutes is preferred however ≥ 1 minute is must); use a fresh mop/ mop head and fresh solution for each room.
- Replace all furniture and equipment to its proper location.
- Discard the waste and clean waste bin (BMW management Rules mentioned).
- Clean and store cleaning equipment, remove gloves and clean hands.
- Mattresses / pillows after spraying with 1% hypochlorite should be allowed to get dry (both sides) in bright sunlight for up to 3 hrs each.
- Fogging to be done as per Institute policy and protocol for fogging (mentioned in the document) .

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6. SPILL MANAGEMENT:-

In area having COVID-19 suspects or confirmed cases/ laboratory, all spill to be treated as blood or body fluid spill of >10cm.

Spillage	Blood and/or other body fluids e.g. CSF, peritoneal stool, urine, sputum with or without visible blood present etc
Procedure to be followed: Wear PPE	<ul style="list-style-type: none"> • Place paper towel/other absorbable material on spillage. • Apply 1 % Sodium hypochlorite to the spillage, and/or the disposable paper towels saturated with the hypochlorite solution. • Leave solution on for 30 minutes' contact time. • Wipe up excess fluid and dispose of paper towels into appropriate waste bag. • Clean the area with detergent and water using disposable cloth and dry thoroughly. • Remove PPE and dispose with cloths used into appropriate waste bag. • Wash basin/bucket in hot soapy water, dry and store. • After completing procedure carry out hand hygiene.

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7. BIOMEDICAL WASTE MANAGEMENT

FOR COVID-19, [Government Medical College, AMRITSAR]

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 BMWM 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 leak-proof bags (using 2 bags)** for collection of waste from COVID-19 isolation wards so as to ensure adequate strength.
- Use **dedicated trolley and collection bins** and label as "COVID-19 Waste".
- **Transport to Common Biomedical Waste Treatment Facility (CBWTF):-** Keep "COVID-19 Waste" separately in temporary storage room prior to handing over to authorized staff of CBWTF. 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 0.5 % 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 worker and use adequate PPEs- three layered mask, splash proof apron/gowns, nitrile gloves, gum boots, safety goggles.
- **Dedicated vehicle:-** CBWTF 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 GMC, Amritsar.
- **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 bag .

Non-plastic items such as Mask, gown, cap, shoe cover- yellow bag.


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Guidelines for Handling, Treatment, and Disposal of Waste Generated during Treatment/Diagnosis/ Quarantine of COVID-19 Patients

Biomedical waste segregation, collection and pre-treatment will be done at GMC, AMRITSAR and final disposal of waste will be done by AMRITSAR ENVIRO CARE PRIVATE LIMITED, AMRITSAR.

COVID-19 ISOLATION WARDS/ TRIAGE AREA: -

- a. Safe management of health-care waste:- Keep separate colour coded covered, foot operated bins/bags/containers in wards and maintain proper segregation of waste as per BMWM Rules, 2016, BMWM (Amendment) rules 2018 and PPCB guidelines for implementation of BMW Management Rules.
- b. As precaution double layered bags (using 2 bags) should be used for collection of waste from COVID -19 isolation wards to ensure that there is no leaking of wastes.
- c. External surface of waste bags used for COVID -19 area should be cleaned with 0.5% hypochlorite solution before handling over to waste collection team.
- d. Use a dedicated collection bin labelled as “COVID-19” for waste generated in Isolation wards/triage area for COVID -19 and keep separately in temporary storage room prior to handling over to authorized staff of AMRITSAR ENVIRO CARE PRIVATE LIMITED, AMRITSAR.
- e. Maintain separate record of waste generated from COVID-19 isolation wards.
- f. The inner and outer surface of containers/ bins /trolleys used for storage of COVID-19 waste should be disinfected with 1% sodium hypochlorite solution for a contact period of 1 minute.
- g. Dedicated sanitation workers will be required for BMW and general solid waste collection so that waste be collected timely to temporary waste storage area.
- h. Discarded items: -
 - Linen, Mattresses, beddings contaminated with blood or body fluids: -1-2% sodium hypochlorite for 30 min chemical disinfection followed by shredding and customised to fit in non-chlorinated yellow bag for incineration.
- i. Liquid waste: -Disinfected by 1-2% sodium hypochlorite solution for a contact period of 30 min and directed to effluent treatment system .
- j. General waste not having contamination should be disposed as solid waste as BMWM Rules, 2016.
- k. Clean utility gloves or heavy duty, reusable plastic aprons with soap and water followed by soaking in 0.5% sodium hypochlorite (for 30 minutes) after each use.
- l. Single-use gloves (nitrile or latex or nitrile) or gowns should be discarded after each use and hand hygiene should be performed after removal of PPE.

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b. Sample Collection Centres & Laboratories:-


Guidelines given for isolation wards/ triage should be applied suitably in case of test centres and laboratory also.

All infectious waste generated in laboratory is to be microwaved/autoclaved first and then given to BMW collection team for disposal team through AMRITSAR ENVIRO CARE PRIVATE LIMITED, AMRITSAR.

c. Quarantine Camps/ Home care for COVID-19 suspected patients: -

Less quantity of biomedical waste is expected from quarantine centres / home stay. However, following steps to be taken to ensure safe handling and disposal of waste:-


- Treat the routine waste generated from Quarantine centres or camps as general solid waste and should be disposed of as per BMW Guidelines.
- **Biomedical waste** from Quarantine centres or camps should be collected separately in **YELLOW coloured bags and bins.**
- As per WHO, any Biomedical Waste produced during **the home care** of patients with suspected or confirmed 2019-nCoV infection should be **disposed of as infectious waste** and collected separately in **YELLOW bags** and the same shall be handed over to authorized waste collectors engaged by **AMRITSAR ENVIRO CARE PRIVATE LIMITED, AMRITSAR.**
- Designated place to be earmarked outside the building for collection of yellow and black bags. It should be collected at least twice daily by biomedical waste management vehicle/any other local established practice.

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Additional precautions: →

Cohort HCWs to exclusively care for cases to reduce the risk of spreading transmission.

- A) Perform procedures in an adequately ventilated room; i.e. at least natural ventilation with at least 160 l/s/patient air flow (or negative pressure rooms) with at least 12 air changes per hour (ACH) and controlled direction of air flow when using mechanical ventilation.
- B) Limit the number of persons present in the room to the absolute minimum required for the patient's care and support.
- C) Bundling of activity to be performed by same health care professional so as to avoid multiple encounters to isolation room etc.
- D) Use either single use disposable equipment or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers).
- E) If equipment needs to be shared among patients, clean and disinfect between each patient use (e.g. ethyl alcohol 70%).
- F) Maintain a record of all persons entering the patient's room including all staff and visitors.
- G) Administrative controls: → Ensuring the availability of resources for infection prevention and control measures, such as :-
 - Appropriate infrastructure.
 - Clear infection prevention and control policies.
 - Facilitated access to laboratory testing.
 - Adequate staff-to-patient ratios & training of staff.
 - Adequate Distancing: Place patient beds at least 1m apart .
 - Availability of well-ventilated isolation rooms for patients with suspected or confirmed COVID-19 disease.
 - **Specific additional precautions to be taken by all health care professionals (HCP) while working in hospital other than above mentioned:-**
 - 1) Hands without rings.
 - 2) No thread/ Watch etc. on wrist while working in COVID-19 area
 - 3) Trim nails.
 - 4) Hair tied or controlled by hair band .
 - 5) No beard except with religious belief.
 - 6) No mobile use while working in COVID-19 area (exceptional use allowed)
 - 7) Do not carry pen to and back from COVID-19 area.
 - 8) Covered shoe (preferably washable
 - 9) Not to hang mask on neck or keep in pocket etc.
 - 10) Not to touch front of mask while working until hand hygiene performed.
 - 11) Avoid hand shakes
 - 12) Avoid touching FACE (your eyes, nose and mouth) unnecessarily.

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8. QUARANTINE

Quarantine is the separation and restriction of movement or activities of persons who are not ill but who are believed to have been exposed to infection, for the purpose of preventing transmission of diseases.

Quarantine can be applied to :-

- An individual or to a group of persons who are exposed at a large public gathering or to persons believed exposed on a conveyance during international travel.
- A wider population- or geographic-level basis.

The recommended duration of quarantine for Covid-19 based on available information is up to 14 days from the time of exposure.


(Note: Duration of home quarantine period is for 14 days from contact with a confirmed case or earlier if a suspected case (of whom the index person is a contact) turns out negative on laboratory testing.)

The purpose of quarantine during the current outbreak is to reduce transmission by :-

- 1) Separating contacts of COVID-19 patients from community.
- 2) Monitoring contacts for development of sign and symptoms of COVID-19
- 3) Segregation of COVID-19 suspects, as early as possible from among other quarantined persons.

Instructions for suspected case home quarantine :-

- Stay in well ventilated room separated from other people.
- Should preferably have attached/separate toilet.
- Restrict his/her movement within the house.
- In shared spaces, maintain a distance of at least 1-2 meters and wear a medical mask when in proximity with other people.
- Take special care to stay away from elderly people, pregnant women, children and persons with co-morbidities.
- Do **NOT** attend any social/religious/public gathering e.g. wedding, condolences, etc.
- Hand hygiene to be followed.
- Avoid sharing household items (e.g. dishes, drinking glasses, cups, eating utensils, towels, bedding etc.) .
- If symptoms appear (cough/fever/difficulty in breathing), he/she should immediately inform the nearest health centre.


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Instructions for the family members of person being home quarantined :-

- Household members should stay in a different room and be separated from the person as much as possible.
- Only an assigned family member should be tasked with taking care of the person and should help with groceries, prescriptions and other personal needs.
- Avoid shaking the soiled linen or direct contact with skin.
- Pets should be cared for by household members and should be kept separate from the person.
- Use disposable gloves when cleaning the surfaces or handling soiled linen.
- **Stay at least 1-2 metre away from those who are coughing .**
- Wash hands before and after eating, drinking and using the washroom with soap and water.
- All non-essential visitors should be prohibited.
- In case the person being quarantined becomes symptomatic, all his close contacts will be home quarantined for 14 days and followed up for an additional 14 days or till the report of such case turns out negative on lab testing.

Environmental sanitation :-

- Immediately remove and wash clothes and bedding that have blood, stool or other body fluids on them.
- Clean and disinfect frequently touched surfaces in the quarantined person's room (e.g. bed frames, tables etc.) daily with Sodium Hypochlorite solution (1%)
- Clean and disinfect toilet surfaces daily with regular household bleach solution/phenolic disinfectants.
- Wash laundry used by the person separately using common household detergent and dry thoroughly using the warmest temperatures recommended on the clothing label.
- Place all used disposable gloves, masks and other contaminated waste in a lined container (yellow bin) before disposing of them with other household waste and wash hands with soap and water/alcohol-based hand rub.
- Use dedicated carts / trolleys / vehicles for transport of biomedical waste. Ensure sanitization of vehicles with 1% hypochlorite after each trip.
- Waste collectors arriving at quarantine centre or at home care shall disinfect bin used for yellow bag with 1% hypochlorite solution.

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9. DEAD BODY MANAGEMENT :-

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.


Standard Precautions to be followed by health care workers 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.

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Specific recommendations:-

1. 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.
- **Seal oral, nasal orifices, puncture or therapeutic wounds of the dead body with cotton plug dipped in 1 % sodium hypochlorite solution 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.
- Wrap the dead body in cloth sheet soaked in 1% sodium hypochlorite solution.
- Place the wrapped dead body in leak-proof plastic body bag or a double layered plastic wrapping. 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 or mentioned in cleaning and disinfection section of this document.
- 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 counselling to the family members and respect their sentiments.
- Embalming of dead body should not be allowed.

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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.
- 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.


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5. Transportation of Dead Body :-

- The body, secured in a body bag, exterior of which is decontaminated (0.5-1% Sodium hypochlorite) 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.

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10. Ambulance and its disinfection :-

When COVID-19 is suspected in a patient needing emergency transport, prehospital care providers and healthcare facilities should be notified in advance that they may be caring for, transporting, or receiving a patient who may have COVID-19 infection and the following precautions should be taken by ambulance personnel accompanying the patient.

On arrival of ambulance :-


- **Decontaminate hands (alcohol gel/rub).**
- **Wear Personal Protective Equipment (PPE):** A patient requiring Aerosol Generating Precaution: level II Protection (Wear PPE as mentioned earlier).
- **Inform the hospital of the admission/transfer of a potentially infectious person.**

Before leaving the house/healthcare facility :-

- Request patient to wear a surgical mask (if tolerated) and advise on Respiratory Hygiene and Cough Etiquette.
- A patient with suspected or confirmed **2019 nCoV- Acute Respiratory Disease** should not travel with other patients in ambulance.
- Remove gloves, decontaminate hands and put on new gloves before touching the patient and before a clean or aseptic procedure, if required. Wearing gloves does not replace hand hygiene.
- Use single use or single patient use medical equipment where possible.
- Use disposable linen if available

Arrival to the referral hospital :-

- Before the patient leaves the ambulance ensure arrangements are in place for receipt of patient.
- Transfer patient to the care of hospital staff.
- After transfer of patient remove PPE.
- Perform hand hygiene .

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Before ambulance is used again :-

- **Cleaning and disinfecting** (Wear PPE as outlined above should be worn while cleaning).
- Surfaces (stretcher, chair, door handles etc.) should be cleaned with a freshly prepared 1% hypochlorite solution or equivalent.

a. Disinfection for surfaces frequently touched by hands :-

- In the ambulance, door handles, straps, hand rails, seats, chairs and all the surfaces frequently touched by hands should be cleaned with Lysol or 1% Hypochlorite Solution periodically after every trip.
- 5% Lysol, (1 litre of Lysol in 9 litres of water) or concentrations can be prepared according to manufacturer's instructions.

b. Disinfections for floors/ambulances :-


- 1% Hypochlorite solution should be used for cleaning the floors

Sprayers:-


- Different kinds of sprayers including power sprayers and water wash pumps can be used for spraying, and cleaning can be done by wet mopping.
- Metal sprayers should not be used for spraying hypochlorite solution.

In the ambulance, if the driver's chamber is not separate, driver should also use PPE.

- Drivers, if they provide direct patient care (e.g., moving patients onto stretchers), should wear all recommended PPE.
- After completing patient care and before entering an isolated driver's compartment, the driver should remove and dispose of PPE and perform hand hygiene to avoid soiling the compartment.
- If the transport vehicle does not have an isolated driver's compartment, the driver should remove the face shield or goggles, gown and gloves and perform hand hygiene. A respirator or facemask should continue to be used during transport.
- All personnel should avoid touching their face while working.


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Setting	Activity	Risk	Recommended PPE	Remarks
Ambulance Transfer to designated hospital	Transporting patients not on any assisted ventilation	Moderate risk	N-95 mask Gloves	
	Management of SARI patient while transporting	High risk	Full complement of PPE	When aerosol generating procedures are anticipated
	Driving the ambulance	Low risk	Triple layer medical mask Gloves	Driver helps in shifting patients to the emergency

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11. Biosafety guidelines for handling and processing specimens from COVID - 19 patients :-

- The clinician may decide diagnostic samples for specific diagnosis of CoVID-19 as per latest guidelines issued by Govt. of India or competent authority and decide accordingly.
- Laboratory processing such samples should follow standard guidelines for collection transport and processing as recommended by Govt of India or authorities.
- After collection of diagnostic sample from patient suspected to be suffering from CoVID-19 disease, next patient to area need to be called, preferably after 30 min of last sample collection. The sample for virology testing to be packed in triple layer.
- **For samples other than diagnostic virology samples** of CoVID-19 suspected/ confirmed cases following precautions should be considered over and above than other required (As per procedure and policy) for processing of such samples in concerned laboratory: -
- Only trained health care worker should perform specimen collection in presence of a clinician.
- Consider **all specimens as potentially hazardous / infectious.**
- All the health care professionals who handle and collect specimens associated with COVID-19 infections should follow level 2 protections as mentioned previously.
- Clinician should restrict samples to minimum essential which will be helpful for patient management.
- Sample collection to be done as per respective laboratory protocol.
- After sample collection, samples to be labelled with alcohol resistant markers/pen. Requisition copy should be preferentially mailed and respective laboratory informed regarding sample prior to collection.

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SAMPLE COLLECTION SOP FOR COVID 19 PATIENTS,[Government Medical College, Amritsar] :-


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.

Samples to be collected :-

Essential samples :- -Throat swab (oropharyngeal swab) and Nasal swab (Nasopharyngeal swab).


- Within 3 days of symptom onset and no later than 7 days.
- 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, storage and transport details:-

Specimen type	Collection materials	Transport to lab	Storage till testing	Comment
Nasopharyngeal and oropharyngeal swabs.	Dacron or polyester flocced 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 °	Acute - 1st 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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METHOD OF SPECIMEN COLLECTION, [Government Medical College, Amritsar] :-

PREPARING THE PATIENT :-

- Choose a well-lit room.
- Stand directly in front of the patient.
- Place the patient in a comfortable sitting position facing a light source.
- Avoid touching the swab tip on any surface other than the tonsil area.

REMOVE THE SWAB :-


- Remove the sterile swab from protective packaging.
- Hold the swab firmly by the handle.
- Do not place the swab on any surface once it has been removed from the protective packaging.

PATIENT INSTRUCTIONS :-

- Instruct the patient to open as wide as possible.
- Instruct patient to say “aah”.

OBTAINING A SPECIMEN :-

- Direct the tip toward tonsil area.
- Do not touch the swab tip to any other area of the mouth including the tongue.
- Collect the throat swab samples by standard clinical methods.
- Depress the tongue with a tongue blade or spoon.
- Be careful not to touch the tongue, sides or top of the mouth with the swab.
- Rub the swab on the back of throat, on the tonsils and in any other area where there is redness, inflammation or pus.
- Touch the swab tip to the tonsil area.
- Rub the swab tip quickly and firmly over this area to obtain a good sample.
- Remove swab from mouth (without touching any surface).
- A gag reflex is very common when a good sample is obtained.
- It is recommended that the swab specimen be processed as soon as possible after collection.

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Sample packing and transport :-

Package, label, and ship high-risk specimens as a **Category A** infectious substance affecting humans.


- i. Leak proof primary receptacle should be **individually wrapped or separated**. Sample to be collected in leak proof container. After labelling, disinfect the outer surface of container.
- ii. All such samples collected from one area and to be transported to one laboratory should be collected in another leak proof secondary receptacle.
- iii. This zip lock secondary container to be kept in a third hard container.

Label: -Specimen data forms, letters and other types of information that identify or describe the specimen for “testing of 2019 nCoV - Acute Respiratory Disease ” and also identify the shipper and receiver should be taped to the outside of the secondary receptacle.

- Level II PPE for all healthcare workers handling the specimen in all laboratory.
- Restrict visitor’s and maintain a log-book (including date and time) of all staff working in the laboratory .
- Those samples/procedures which can generate potentially aerosols and droplets **enhanced biosafety precautions** are warranted based on situational needs (e.g. high testing volumes) **Biosafety Cabinet level II A2** or better is to be used.

Some of the Aerosol generating procedure are mentioned below:-

- Centrifugation, pipetting, vortexing, mixing, shaking, sonicating.
- Removing caps.
- Decanting liquids.
- Preparing smears, flaming slides .
- Aliquoting and/or diluting specimens .
- Inoculating bacterial or mycological culture media.
- Performing diagnostic tests that do not involve propagation of viral agents in vitro or in vivo.
- Nucleic acid extraction procedures involving potentially infected specimens .
- Preparation and chemical- or heat-fixing of smears for microscopic specimens
- Loading syringes, manipulating needles, syringes or sharps, aspirating and transferring blood and body fluids,
- Spilling specimens and cleaning up spills.


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Other non –COVID 19 diagnostic test should be performed with wearing PPE of Level 2 protection.

- When handling and processing specimens, including blood for serological testing good laboratory practices and procedures of concerned laboratory should be followed.
- Specimens like sputum for culture, BAL, stool routine examination, urine routine examination, cytology etc. better to be avoided if not affecting treatment protocol.
- Frozen section biopsy to be avoided .
- Sterile body fluid requiring culture to be sent in leak proof sterile containers.
- Follow biomedical waste management guidelines for sample disposal.
- All cleaning protocol mentioned earlier for isolation or triage area should be followed in laboratory.
- **Personal handling samples should process using good laboratory practices (GLP) and additional measure suggested above will supplement but are not replacement of GLP.**

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