

**Infection prevention and control during health care for probable or confirmed cases of COVID-19 infection**

# Introduction CORONA VIRUS

- The outbreak of Novel corona virus disease (now named COVID-19) was initially noticed from a seafood market in Wuhan city in Hubei Province of China in mid-December, 2019, has spread to more than 185 countries/territories worldwide including India.
- Coronaviruses (CoV) belong to a family of viruses that cause illness ranging from the common cold to more severe diseases. A novel coronavirus (2019-nCoV) is a new strain that has not been previously identified in humans.



# Mode of Transmission

- There is clear evidence of human-to-human transmission of COVID-19.
- It is thought to be transmitted mainly through respiratory droplets that get generated when people cough, sneeze, or exhale.
- COVID-19 also gets transmitted by touching, by direct touch and through contaminated surfaces or objects and then touching their own mouth, nose, or possibly their eyes.
- The people most at risk of COVID-19 infection are those who are in close contact with a suspect/confirmed COVID-19 patient or who care for such patients.

# Standard precautions

- Standard Precautions, a cornerstone for providing safe health care.
- ✓ reducing the risk of further infection
- ✓ protecting HCWs.
- Standard precautions include: hand hygiene; use of personal protective equipment (PPE) to avoid direct contact with patients' blood, body fluids, secretions (including respiratory secretions) and non-intact skin. Standard precautions also includes: prevention of needle-stick or sharps injury; safe waste management; cleaning and disinfection of equipment; and cleaning of the environment.

**Use of respiratory hygiene in anyone with respiratory symptoms should be encouraged.**

- **Cover nose and mouth during coughing or sneezing with medical mask, cloth mask, tissue, or flexed elbow;**
- **Followed by hand hygiene after contact with respiratory secretions**

- HCWs should apply WHO “My 5 moments for hand hygiene”: before touching a patient; before any clean or aseptic procedure; after body fluid exposure risk; after touching a patient; and after touching a patient’s surroundings.
  - Hand hygiene includes either cleansing hands with soap and water or the use of an alcohol-based hand rub (ABHR);
  - ABHR are preferred if hands are not visibly soiled;
  - Wash hands with soap and water when they are visibly soiled;
  - The use of PPE does not eliminate the need for hand hygiene. Hand hygiene is also necessary prior to putting on and after taking off PPE.

## **IPC strategies to prevent or limit transmission in health care settings include the following:**

- ensuring triage, early recognition, and source control (isolating patients with suspected COVID-19);
- applying standard precautions for all patients;
- implementing empiric additional precautions (droplet and contact and, whenever applicable, airborne precautions) for suspected cases of COVID-19;
- implementing administrative controls;
- using environmental and engineering controls.

# Environmental decontamination

- Contaminated work surfaces must be decontaminated with an appropriate disinfectant. Even in absence of visible contamination a regular time schedule should be made to disinfect the work area at frequent intervals. 1% **Sodium hypochlorite** is an effective disinfectant. The working dilution should be freshly prepared using proper measurement.
- Leaving the solution for contact time of at least 10 minute is recommended.
- Use disposable cleaning cloths, mop cloths, and wipes and dispose of these in leak-proof bags.



# Common cleaning agent

	Disinfectants	Recommended use	Precautions
1	Sodium Hypo chloride	Disinfection of materials contaminated with blood and body fluids	Should be used in well ventilated areas Protective clothing required when used without dilution.
2	Bleaching powder	Toilets /Bathrooms -- may be used in place of bleach	Should be used in well ventilated areas Protective clothing required when used without dilution
3	Alcohol (70%) isopropyl, ethyl alcohol	Smooth metal surface ,table tops and other surfaces on which bleach cannot be used	Flammable, Toxic –to be used in well ventilated area ,avoid inhalation Keep away from heat source, electrical equipments, flames and hot surfaces
4	Detergent with enzyme	Cleaning endoscopes ,surgical instruments before disinfection is useful	

# Disposal of waste during Treatment/ Diagnosis /Quarantine of COVID- 19 Patients :



# **COVID-19 Isolation wards/Sample Collection Centers and Laboratories for COVID-19 Patients:**

- ❖ **Keep separate color coded bins/bags/containers in wards and maintain proper segregation of waste as per BMW Management Rules.**
- ❖ **As precaution 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.**
- ❖ **Collect and store biomedical waste separately prior to handing over the same CBWTF. (Common biomedical waste treatment facility)**
- ❖ **Use a dedicated collection bin labelled as “COVID-19” to store COVID-19 waste and keep separately in temporary storage room prior to handing over to authorized staff of CBWTF.**
- ❖ **Biomedical waste collected in such isolation wards can also be lifted directly from ward into CBWTF collection van.**

## **COVID-19 Isolation wards/Sample Collection Centers and Laboratories for COVID-19 Patients :**

- ❖ In addition to mandatory labelling, bags/containers used for collecting biomedical waste from COVID-19 wards, should be labelled as “COVID-19 Waste”. This marking would enable CBWTFs to identify the waste easily for priority treatment and disposal immediately upon the receipt.
- ❖ Maintain separate record of waste generated from COVID-19 isolation wards
- ❖ Use dedicated trolleys and collection bins in COVID-19 isolation wards. A label “COVID-19 Waste” to be pasted on these items also.



## COVID-19 Isolation wards/Sample Collection Centers and Laboratories for COVID-19 suspected Patients:

- ❖ The (inner and outer) surface of containers/bins/trolleys used for storage of COVID-19 waste should be disinfected with 1% sodium hypochloride solution daily.
- ❖ Report opening or operation of COVID-19 ward and COVID ICU ward to SPCBs and respective CBWTF located in the area.
- ❖ Depute dedicated sanitation workers separately for biomedical waste and general solid waste so that waste can be collected and transferred timely to temporary waste storage area.



# Quarantine Camps :

- ❖ Quarantine Camps / Quarantine-Home / Home-care are the places where suspected people or the contacts of suspected / confirmed cases who have been directed by authorised hospitals or local authorities to stay at home for at least 14 days for observation of any symptom of COVID-19.
- ❖ Biomedical waste generated from Quarantine Camps would be treated as 'domestic hazardous waste' and shall be disposed as per provisions under Biomedical Waste Management Rules guidelines.



**R**ational use of  
**P**ersonal **P**rotective **E**quipment

**COVID-19**

CORONAVIRUS DISEASE 2019



# Personal Protective Equipment (PPE)

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



# Components of PPE :

- Face shield and goggles
- Masks –
  - (1) Triple layer medical mask
  - (2) N-95 Respirator mask
- Gloves
- Coverall/Gowns
- Shoe covers
- Head covers

# Hospital Setting

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

# IN-PATIENT SERVICES

S. No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Individual isolation rooms/ cohorted isolation rooms	Clinical management	Moderate risk	N 95 mask Gloves	Patient masked. Patients stable. No aerosol generating activity.
2	ICU/ Critical Care	Critical care Management	High risk	Full complement of PPE	Aerosol generating Activities Performed
3	ICU /critical care	Dead body packing	High risk	Full complement of PPE	
4	ICU/ Critical care	Dead body transport to mortuary	Low Risk	Triple Layer medical mask  Gloves	
5	Sanitation	Cleaning frequently touched surfaces/ floor/ changing linen	Moderate risk	N-95 mask  Gloves	
6	Other Non-COVID treatment areas of hospital	Attending to infectious and non-infectious patients	Risk as per assessed profile of patients	PPE as per hospital infection prevention control practices.	No possibility of exposure to COVID patients. They should not venture into COVID-19 treatment areas.
7	Caretaker accompanying the admitted patient	Taking care of the admitted patient	Low risk	Triple layer medical mask	The caretaker thus allowed should practice hand hygiene, maintain a distance of 1 meter



# Emergency Department

S.No	Setting	Activity	Risk	Recommended PPE	Remarks
1	Emergency	Attending emergency cases	Moderate risk	N 95 mask Gloves	When aerosol generating procedures are anticipated
2		Attending to severely ill patients of SARI	High risk	Full complement of PPE	Aerosol generating activities performed.

# PRE-HOSPITAL (AMBULANCE) SERVICES

S. No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Ambulance Transfer to designated hospital	Transporting patients not on any assisted ventilation	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

# OTHER SUPPORTIVE/ ANCILLARY SERVICES

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



# HEALTH WORKERS IN COMMUNITY SETTING

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

# QUARANTINE FACILITY

S. No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Persons being quarantined		Low Risk	Triple layer mask	
2	Healthcare staff working at quarantine facility	Health monitoring and temperature recording	Low Risk	Triple layer mask Gloves	
		Clinical examination of symptomatic persons	Moderate Risk	N-95 masks Gloves	
3	Support staff		Low Risk	Triple layer mask Gloves	



# Home Quarantine

S. No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Persons being quarantined		Low Risk	Triple layer mask	
2	Designated family member	Taking care of person being quarantined	Low Risk	Gloves	While cleaning commonly touched surfaces or handling soiled linen
3	Other family		No Risk	No PPE required	Maintain a distance of at least 1 meter from person under home quarantine. Senior citizens in the household should stay away from such persons under home quarantine.



## Points to remember while using PPE

- PPEs are not alternative to basic preventive public health measures such as hand hygiene, respiratory etiquettes which must be followed at all times.
- Always (if possible) maintain a distance of at least 1 meter from contacts/suspect/confirmed COVID-19 cases
- Always follow the laid down protocol for disposing off PPEs (as detailed in infection prevention and control guideline available on website of MoHFW).



# Guidelines on use of masks by public

## COVID-19

Here is where your presentation begins

# Use of masks by general public

- Medical masks of different size and shapes are available in the market.
- Persons having **no symptoms** are not to use mask

(Follow the recent advisory of Government as it may Change according to situation)

- Medical masks should not be used by healthy persons who are not having any symptoms because it create a **false sense of security** that can lead to neglecting other essential measures such as washing of hands.
- Further, there is no scientific evidence to show health benefit of using masks for non-sick persons in the community. In fact erroneous use of masks or continuous use of a disposable mask for longer **than 6 hours or repeated** use of same mask may actually **increase risk of getting an infection**. It also incurs unnecessary cost.





## Effective steps are:

- Wash hands frequently with soap and water for 40 seconds. An alcohol based hand sanitizer with 70% alcohol must be used for 20 seconds. If hands are dirty or soiled, do not use alcohol based hand sanitizer, but wash hands preferably with soap and water.
- While coughing or sneezing cover nose and mouth with handkerchief, paper tissue. If handkerchief or tissue paper is not available cough into the flexed elbow. Dispose of tissue immediately after use and wash hands.
- Refrain from touching face, mouth, nose and eyes.
- Stay at least a meter away from those coughing or sneezing.
- Monitor your body temperature.



# When and who should use medical masks (apart from health care worker).

- When a person develops cough or fever.

Use of medical three layer masks when ill, will prevent your infection from spreading to others. However you also need to wash your hands frequently to avoid spreading infection to others.

- While visiting a healthcare facility.
- When you are caring for an ill person.
- Close family contacts of such suspect/confirmed cases undergoing home care should also use Triple layer medical mask.



## Duration for which a medical mask will remain effective

A medical mask, if properly worn, will be effective for 8 hours. If it gets wet in between, it needs to be changed immediately.

MASK WORN THE...



Wrong way



Correct way





# Correct procedure of wearing triple layer mask

- While wearing a medical mask, the steps given below needs to be followed.
- Unfold the pleats; make sure that they are facing down.
- Place over nose, mouth and chin.
- Fit flexible nose piece (a metallic strip that can easily be located) over nose-bridge.
- Secure with tie strings (upper string to be tied on top of head above the ears –lower string at the back of the neck.)
- Ensure there are no gaps on either side of the mask, adjust to fit.



## Cont.,

- While in use, **avoid touching** the mask.
- **Do not let the mask hanging from the neck.**
- Change the mask **after six hours** or as soon as they become wet.
- Disposable masks are **never to be reused** and should be disposed off.
- While removing the mask **great care must** be taken not to touch the potentially contaminated outer surface of the mask
- To remove mask **first untie the string below** and then the string above and handle the mask using the upper strings.





## Disposal of used masks

### Used mask

should be considered as potentially infected. Masks used by patients / care givers/ close contacts during home care should be disinfected using

ordinary bleach solution (5%)

or

sodium hypochlorite solution (1%)

and

then disposed of either by burning or deep burial.





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