



## IMA – TAMILNADU

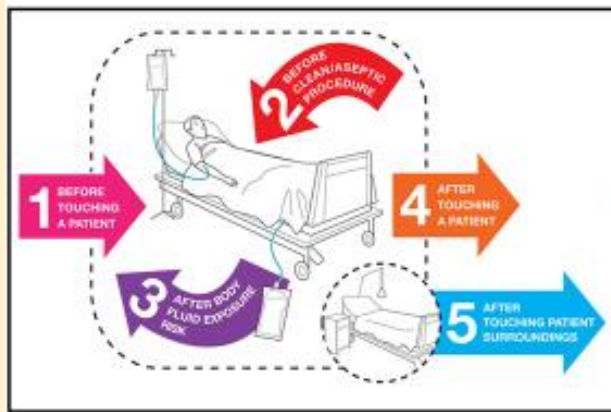
### COVID – 19 - CONTAINMENT MEASURES INFECTION CONTROL PRACTICES FOR HOSPITALS & CLINICS

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered Severe Acute Respiratory Syndrome Coronavirus -2 (SARS-CoV-2) that cause illness ranging from common cold to more severe diseases leading to death . The mode of spread of these viruses are by respiratory droplets and contact (Direct / Indirect). Though SARS-CoV-2 remained viable in aerosols under experimental conditions for at least three hours .It's not confirmed to be airborne transmission as of now.

Good Infection Prevention & Control practices should be adhered by all categories of Healthcare workers (HCW) at all times of patient care as they are at a higher risk of infection. The Standard recommendations to prevent infection spread include standard precautions, contact precautions and respiratory precautions. Given the current uncertainty, airborne precautions are recommended in the setting of certain high-risk procedures. Standard infection control precautions that needs to be implemented by healthcare workers include basic hand hygiene, use of appropriate personal protective equipment, respiratory etiquettes, environmental disinfection, linen handling, sharps precaution and waste management.

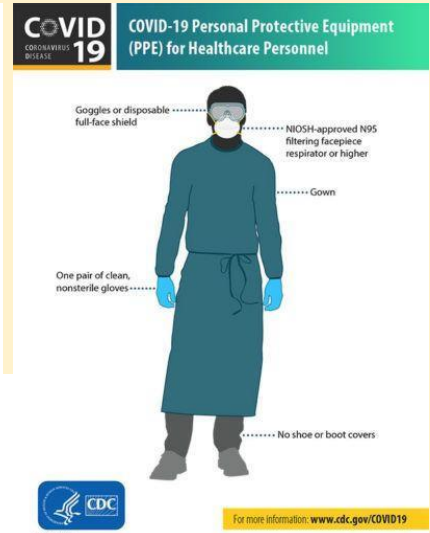
#### **HAND HYGIENE (HH):**

- Effective Hand washing / Hand hygiene is the **Most Important measure** during direct patient care.
- Know the **HH moments and Steps** and perform at all opportunity.
- Choose either alcohol based **Hand rub (20-30 sec)** or Hand wash with **Soap & water (40-60 secs)**.
- Avoid touching possibly contaminated areas / objects.
- **Ensure availability** of Alcoholic Hand rubs and Handwashing facilities ( preferably elbow operated taps in clinical areas).



### PERSONAL PROTECTIVE EQUIPMENT (PPE):

- Wear a **Triple layered Medical mask** while handling patients- Suspected / confirmed.
- **N-95 respirator/FFP-2 mask** including gloves, long-sleeved non-permeable gown, eye protection/ face shield – while collecting samples for COVID testing & performing **aerosol generating procedures**, Such as -
  - Tracheal intubation
  - Non-invasive ventilation
  - Tracheotomy
  - Cardiopulmonary resuscitation
  - Manual ventilation before intubation
  - Bronchoscopy
- Medical masks can be worn for 4-6 hours and N-95 respirator for 6-8hrs- **IDEALLY**
- **Extended use of N-95 respirator** while caring for multiple patients. should be carefully handled and ideally discarded in yellow bin after use.
- Everyone who needs to wear N95 respirator should be **trained and fit test done** at-least in the last one year.
- Wear PPE before patient contact and remove after coming out of patient care area.
- **Do not touch your face** while wearing a PPE.
- **Wash hands** before and after PPE wear.
- **Disinfect Reusable** PPE between patient use.
- **Do Not Re-use** disposable PPE as it is associated with risk of infection .
  - In case of acute shortage of disposable PPE – follow Interim guidelines given by CDC etc...
- Provide **Medical mask to patients** with respiratory symptoms.
- Wearing medical masks **when NOT indicated may cause unnecessary cost and create a false sense of security** that can lead to the neglect of other essential preventive measures.



### SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of protection required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be followed to the specific type of PPE.

- 1. GOWN**
  - Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
  - Fasten in back of neck and waist
- 2. MASK OR RESPIRATOR**
  - Secure ties or elastic bands at middle of head and neck
  - Fit flexible band to nose bridge
  - Fit snug to face and below chin
  - Fit-check respirator
- 3. GOGGLES OR FACE SHIELD**
  - Place over face and eyes and adjust to fit
- 4. GLOVES**
  - Extend to cover wrist of isolation gown

**USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION**

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene

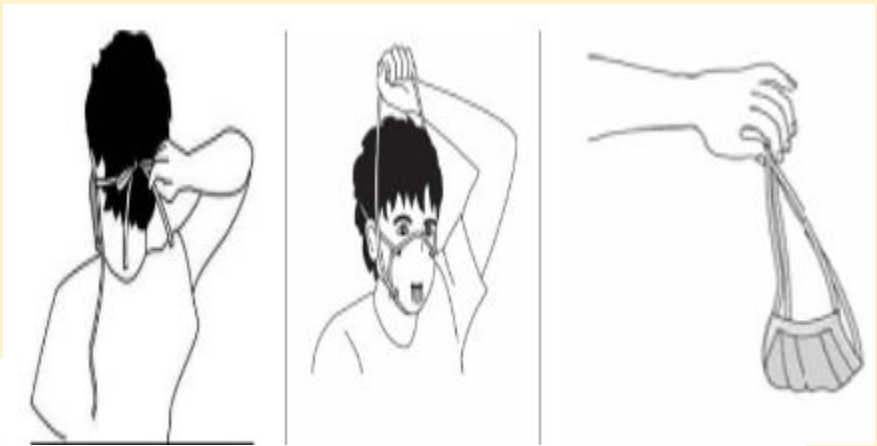
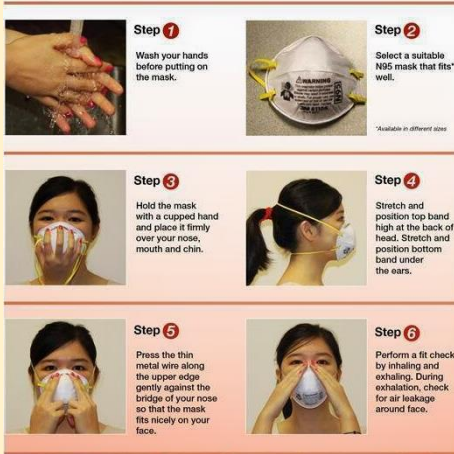
### SEQUENCE FOR REMOVING PERSONAL PROTECTIVE EQUIPMENT (PPE)

Except for respirator, remove PPE at doorway or in anteroom. Remove respirator after leaving patient room and closing door.

- 1. GLOVES**
  - Details of gloves is contaminated!
  - Grasp outside of glove with opposite gloved hand; peel off
  - Hold removed glove in gloved hand
  - Slide fingers of a gloved hand under remaining glove at wrist
  - Peel glove off over first glove
  - Discard gloves in waste container
- 2. GOGGLES OR FACE SHIELD**
  - Details of goggles or face shield is contaminated!
  - To remove, handle by head band or ear pieces
  - Place in designated receptacle for reprocessing or in waste container
- 3. GOWN**
  - Gown front and sleeves are contaminated!
  - Untie or unfasten
  - Pull away from neck and shoulders, breaking inside of gown only
  - Turn gown inside out
  - Roll or roll into a bundle and discard
- 4. MASK OR RESPIRATOR**
  - Straps of neck/respirator is contaminated — DO NOT TOUCH!
  - Grasp bottom, then top ties or straps and remove
  - Discard in waste container

**PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE**

Sequence of wearing & removing PPE



## Wearing & Removing N-95 Respirator

### ENVIRONMENTAL SURFACE CLEANING & DISINFECTION:

- Maintain **1 meter (2 arms) distance** between patients / HCWs / Visitors– including OP waiting and IP beds.
  - In the Isolation room & screening & triage centre - **Spaced 2 meters apart**
- If Patient with COVID admitted at the hospital facility - Have a **designated route**, control traffic and restrict visitors.
- Have a scheduled **cleaning plan based on the risk** - considering the type of area and clinical activity.
- Clean environmental surfaces with detergent and water and disinfect using 70% alcohol (**Metallic**) & 1% sodium hypochlorite (**Non-metallic**) or 5% Lysol solution – contact time -30 mins.
  - 5% Lysol sprays can be used for disinfecting surfaces.
    - Potential for aerosol generation therefore caution required while spraying in known / suspected contaminated settings.- then mopping is preferred
  - 1% sodium Hypochlorite should be freshly prepared every day and used.
- Floor & railing cleaning by **Three buckets system**, one with *plain water* and one with *detergent solution*; one bucket for *1% sodium hypochlorite*
  1. First mop the area with the water and detergent solution
  2. After mopping clean the mop in plain water and squeeze it
  3. Mop area again using sodium hypochlorite 1% after drying the area



- Mop the floor starting at the far corner of the room and work towards the door
- Frequency of cleaning:
  - **High touch surfaces:** Disinfection of high touch surfaces like (doorknobs, telephone, call bells, bedrails, stair rails, light switches, wall areas around the toilet) should be done **every 3-4 hours**.( if COVID suspected / confirmed patients are there – then every **1-2 hours** )
  - **Low-touch surfaces:** For Low-touch surfaces (walls, mirrors, etc.) mopping / wiping should be done at least once daily.
- Cleaning staff should be attired in suitable PPE. Disposable gloves should be removed and discarded if they become soiled or damaged, and a new pair worn.
- The cleaning staff should **wash their Hands** with soap and water immediately after removing the PPE .

#### **MEDICAL EQUIPMENT DISINFECTION:**

- Use **dedicated non critical medical equipment** for patients - Example Stethoscope , BP cuff , Thermometer etc
- Avoid sharing of equipment. if unavoidable **clean & disinfect between patients**.
- Based on the equipment - 70% alcohol (**Metallic**) & 1% sodium hypochlorite (**Non-metallic**) or 5% Lysol solution or follow manufacturer's instruction.

#### **CLEANING IN CLINICAL AREAS**

<b>AREA / ITEM</b>	<b>PROCESS FOR DISINFECTION</b>	<b>METHOD</b>
Floors	Detergent and 1% Sodium Hypochlorite/ or an approved disinfectant routinely used in your hospital	<p><b>(Three buckets, one with plain water and one with detergent solution; one bucket for 1% sodium hypochlorite</b></p> <ul style="list-style-type: none"> <li>● First mop the area with the water and detergent solution</li> <li>● After mopping clean the mop in plain water and squeeze it</li> <li>● Mop area again using sodium hypochlorite 1% after drying the area</li> </ul> <p>Mop the floor starting at the far corner of the room and work towards the door.</p>
Ceiling & Walls	Detergent/ 1% Sodium Hypochlorite	<ul style="list-style-type: none"> <li>● Damp dusting</li> <li>● Damp dusting should be done in straight lines that overlap one another</li> </ul>

Doors & Door Knobs	Detergent/ 1% Sodium Hypochlorite	The doors are to be washed with a brush
Isolation room	Detergent and 1% Sodium Hypochlorite	Terminal cleaning: Three buckets (As mentioned above)
All Clinical Areas/ Laboratories/ where spill care is required	1% Sodium Hypochlorite	<ul style="list-style-type: none"> <li>• As per <b>spill management</b> protocol.</li> <li>• At the end, Mop with detergent and water and allow it to dry.</li> </ul>
Stethoscope	Alcohol based rub/ Spirit Swab	Should be wiped with alcohol based rub /spirit swab before each patient contact
BP Cuffs & Covers	Alcohol based disinfectant	
Thermometer	Wipe with alcohol rub in- between each patient use	Preferably one thermometer for each patient
Injection & Dressing Trolley	Detergent & 70% Alcohol	<ul style="list-style-type: none"> <li>• Clean Daily with detergent &amp; water</li> <li>• After each use, should be disinfected with 70% alcohol based reagent</li> </ul>
Refrigerators	Detergent & Water <b>Inside Cleaning:</b> Weekly Surface Cleaning Schedule: As mentioned for High Touch Surfaces	<ul style="list-style-type: none"> <li>• Empty the fridge and store things appropriately</li> <li>• Defrost, decontaminate and clean with detergent</li> <li>• Dry it properly and replace the things</li> </ul>
Equipment (Equipment need to be disinfected after every contact with suspected patient)	<ul style="list-style-type: none"> <li>• All Areas &amp; Surfaces of Equipment: 1% Sodium Hypochlorite</li> <li>• Sensitive Probes of Equipment: 70% Alcohol – example Ventilator monitors , CT/MR like machines etc, (As per manufacturer's Instructions)</li> </ul>	<ul style="list-style-type: none"> <li>• Whenever possible, portable radiographic equipment should be used to limit transportation of patients</li> </ul>
<b>CLEANING IN NON- CLINICAL AREAS</b>		
General cleaning	Detergent and Water (1% Sodium Hypochlorite can be done)	<ul style="list-style-type: none"> <li>• Scrub floors with water and detergent</li> <li>• Clean with plain water</li> <li>• Allow to dry</li> <li>• 1% Sodium Hypochlorite mopping can be done.</li> </ul>
Lockers/ Tables/Cupboards/ Wardrobes/ Benches/ Shelves	Detergent & Water	<ul style="list-style-type: none"> <li>• Damp dusting</li> </ul>

Mirrors & Glass	Detergent & Water	<ul style="list-style-type: none"> <li>Using water and a small quantity of detergent and a damp cloth</li> <li>wipe over the mirror and surroundings</li> </ul>
Stainless steel/ Any other sink	Detergent & Water	
Furniture, Telephone , Chairs, Privacy Curtain	Detergent & Water	<ul style="list-style-type: none"> <li>Damp dust with detergent</li> </ul>
Lifts	Detergent and water	<ul style="list-style-type: none"> <li>3 -4 times a day</li> </ul>
	High touch points	<ul style="list-style-type: none"> <li>Every 1-2 hours</li> </ul>
Light switches	Detergent & Water	<ul style="list-style-type: none"> <li>Damp dust ( never wet) with detergent</li> </ul>
Railings	Detergent & 1% Sodium Hypochlorite  Three small buckets system as mentioned above.	<ul style="list-style-type: none"> <li>Damp dust with water and detergent followed by disinfection with hypochlorite</li> </ul>

(Adopted from NCDC & AIIMS – HICC – IPC Guidelines for 2019-nCoV (COVID-19) version 1.2, March 2020)

### INFECTION PREVENTION & CONTROL (IPC) ACTIVITY AREA WISE:

AREA	IPC ACTIVITY
<b>Clinical screening Triage area</b>	<ul style="list-style-type: none"> <li>Patients placement <b>1 -2 meters</b> apart in a que</li> <li>Doctor and assisting staff – <b>three layered medical mask</b> , Gown (linen) with Apron and gloves .</li> <li>Cleaning / Housekeeping staff –Three layered medical mask, gloves (while shifting patients) and Heavy duty gloves (cleaning) – Ideal</li> <li>Questioning, observation and <b>Non touch technique</b> for screening temperature (If available)</li> <li><b>Medical mask</b> provided for <b>suspected patients</b>.</li> <li>Hand wash / hand rub between patients and before and after PPE use.</li> <li>Dispose the waste in appropriate BMW bins as per the policy.</li> <li><b>Infection control educative &amp; Information posters</b> should be displayed.</li> </ul>
<b>OPD / Clinic</b>	<ul style="list-style-type: none"> <li>Routine visits avoided. (For remote / virtual consultations Refer – Telemedicine guidelines dated 26<sup>th</sup> March 2020)</li> <li>Patients placement <b>1 meter apart</b> in the waiting area</li> <li>Separate patients with flu like symptoms and those with other chronic diseases / ailments.</li> <li>Doctor and assisting HCWs should wear <b>three layered medical mask</b>.</li> <li>Cleaning / Housekeeping staff / Attenders–Three layered medical mask Heavy duty gloves (cleaning) – Ideal.</li> <li>Organize the area with <b>Minimal equipment for easy decontamination</b> with alcohol /1% sodium hypochlorite depending upon the material.</li> <li>Floor cleaned with 1% sodium hypochlorite or any approved disinfectant <b>2-3 times</b> a day (8-12 hourly).</li> <li><b>Clean High touch points</b> once every 3-4 hours.</li> <li>Hand wash / hand rub between patients and before and after PPE use.</li> </ul>

	<ul style="list-style-type: none"> <li>• Restrict attendant for patients who don't require assistance.</li> <li>• Dispose the waste in appropriate BMW bins as per the policy .</li> </ul>
<b>Ward</b>	<ul style="list-style-type: none"> <li>• Patients beds spaced <b>1 meter apart</b>.</li> <li>• Only essential staff and patient attendant</li> <li>• Doctor and the assisting HCWs should wear <b>three layered medical mask</b>.</li> <li>• Cleaning / Housekeeping staff – Three layered mask &amp; heavy duty gloves – Ideal</li> <li>• Floor cleaned with 1% sodium hypochlorite or any approved disinfectant <b>2-3 times a day</b> (8-12 hourly).</li> <li>• Medical equipment – for dedicated patients and cleaned and disinfected after use and between patients with alcohol or manufacturer approved disinfectant.</li> <li>• Clean High touch points once <b>every 3-4 hours</b>.</li> <li>• <b>Hand wash / hand rub</b> between patients and before and after PPE use.</li> <li>• If Patients should be shifted between wards or for testing – inform the receiving ward and choose a lean time (<b>dedicated route</b> if COVID-19 suspected) .</li> <li>• Dispose the waste in appropriate BMW bins as per the policy.</li> <li>• Contaminated linen – washed with <b>60-90 °C</b> water and detergent and disinfected with 0.5% Sodium hypochlorite</li> <li>• <b>Stringent Visitor policy</b> – restricting time, numbers (one only) and those sick</li> </ul>
<b>ICU</b>	<ul style="list-style-type: none"> <li>• Patients <b>beds spaced 1 meter</b> apart.</li> <li>• Only essential staff should enter the critical care areas</li> <li>• Doctor and the assisting HCWs should wear <b>three layered medical mask</b>.</li> <li>• HCWs performing aerosol generating procedures should wear <b>N-95 respirator, Face shield / goggles , water resistant gown, double gloves , Apron (optional) , shoe cover and hood.</b></li> <li>• Cleaning / Housekeeping staff – N-95 respirator, goggles, gown, heavy duty gloves , boots and hood – Ideal</li> <li>• Floor cleaned with 1% sodium hypochlorite or any approved disinfectant <b>3-4 times a day</b> (6-8 hourly).</li> <li>• Medical equipment – for dedicated patients and cleaned and disinfected after use and between patients with alcohol or manufacturer approved disinfectant.</li> <li>• Clean High touch points once <b>every 3-4 hours</b>.</li> <li>• <b>Hand wash / hand rub</b> between patients and before and after PPE use.</li> <li>• Dispose the waste in appropriate BMW bins as per the policy.</li> <li>• <b>Stringent Visitor policy</b></li> <li>• <b>Designated routes</b> for transport of materials and activities</li> <li>• Sufficient <b>supplies</b> of PPE &amp; handwash / rub solutions</li> <li>• <b>Training</b> – staff and support personnel like security officers &amp; cleaning staff.</li> <li>• <b>Powered air-purifying respirators</b> add a layer of safety on top of N95 respirators</li> </ul>
<b>Isolation ward</b>	<ul style="list-style-type: none"> <li>• Patients beds spaced <b>2 meter</b> apart.</li> <li>• <b>Well spaced &amp; ventilated</b> room with 10 beds in 2000sq ft with double door entry.</li> <li>• Negative pressure room with <b>12 air changes / hour</b> with filtering of air exhaust is desirable</li> <li>• If there is no <b>AC facility</b> , then equip with <b>3-4 exhaust fans</b></li> <li>• Minimal patient's belongings</li> <li>• Only essential staff should enter the room</li> <li>• Adequate resources for Hand hygiene &amp; PPE</li> <li>• <b>N-95 respirator</b> used for aerosol generating procedures.</li> <li>• <b>Dedicate non critical patient care equipment</b> to the patients if possible</li> </ul>



	<ul style="list-style-type: none"> <li>• Floor cleaned with 1% sodium hypochlorite or any approved disinfectant <b>4 times</b> a day (6 hourly).</li> <li>• Clean High touch points with alcohol / 1% Sodium hypochlorite <b>every 1-2 hrs.</b></li> <li>• Waste generated is collected separately in double yellow bag with a <b>COVID-19 waste</b> label on it.</li> <li>• Keep <b>duty roster of all staff</b> working in isolation area for outbreak investigation &amp; contact tracing</li> </ul>
<b>Operation theatre</b>	<ul style="list-style-type: none"> <li>• Non elective surgeries <b>postpone</b> – atleast 4 weeks</li> <li>• All emergency &amp; invasive procedures – <b>consider all as COVID positive</b> and test (CT chest , CBC , LDH, AST/ALT) if well within normal proceed with routine OT precautions and perform surgery .</li> <li>• If COVID positive and surgery <b>cant be postponed</b> – Stop Positive pressure &amp; smoke extraction , intubation &amp; extubation in isolation room, Minimal staff wearing – N-95 respirator , face shield , coverall, Double / triple gloves , shoe cover, water resistant gloves .</li> <li>• <b>High cleaning</b> of the entire OT by Cleaning / Housekeeping staff wearing <b>N-95 respirator</b>, goggles, gown, heavy duty gloves , boots and hood.</li> </ul> <p><i>( Adopted from -Best of ID guidelines for hospital Use – Dr Sureshkumar , ID Consultant, Chennai)</i></p>
<b>Ambulance</b>	<ul style="list-style-type: none"> <li>• The staff wear <b>N95 respirator</b>, gloves, long sleeved fluid repellent gown and goggle/ face shield</li> <li>• <b>Driver</b> wears three layered medical mask</li> <li>• <b>Cleaning / housekeeping staff</b> – wear Three layered mask and heavy duty gloves while decontaminating the ambulance</li> <li>• Ensure <b>proper handwashing</b> / hand disinfection of all personnel</li> <li>• <b>Cleaning and disinfection</b> of the surfaces and equipment is done after and between transport of patients with suspected COVID-19 disease to the referral healthcare facility- either 70% alcohol / 1% Sodium Hypochlorite, depending on the material.</li> <li>• The <b>Patient and the attendant</b> maybe provided with a medical mask</li> </ul>

### **SAMPLE COLLECTION & COVID-19 TESTING**

- **Criteria for SARS CoV-2 (COVID-19) testing** is based on the “Revised Strategy for COVID – 19 Testing in India” by IMCR , Version -3, Dated-20<sup>th</sup> March 2020
- Optimum sample collection timing:
  - Before day 3 of symptoms and not later than day 7.
  - Preferably prior to initiation of antimicrobial chemoprophylaxis or therapy.
- Following Bio-safety precautions & donning appropriate PPE (**N-95 Respirator**) - collect samples and send it to designated laboratories in standard triple packing along with specimen referral form.
- Samples - **Nasalswab, Throat swab** and BAL/ Tracheal aspirate ( patients with severe respiratory disease )
  - Stool, Urine and blood samples if tested positive for SARS CoV-2



- Transported in **Viral Transport Medium (VTM)** at 4<sup>0</sup>C as soon as possible (same day) after proper labelling of the samples with patient details and additionally labelling – “*To be tested For COVID-19*”.
- Samples should be sent to **Govt or Private Laboratories approved** for testing in Tamilnadu. The list can be accessed by clicking the link <https://www.icmr.org.in/index.php/testing-facilities>
- **For Queries** – Directorate of Public Health & Preventive Medicine, Chennai – 044-29510400/ 044-29510500/9444340496/8714448477.

### **LINEN HANDLING:**

- All used linen should be handled by HCWs with **standard precautions**.
- Used linen should be handled as little as possible with **minimum agitation** to prevent possible contamination and generation of aerosols in the areas.
- **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.
- Curtains/ fabrics/ quilts preferably washed using the **hot water cycle**.
  - Washed with detergent at **70°C** for at least 25 minutes.
- Contaminated linen should be washed in **60-90 °C water with detergent** and soaked in **0.5% sodium hypochlorite for 20 -30 mins**.
- Finally rinsed with clean water and allowed to dry in sunlight.

### **BIOMEDICAL WASTE HANDLING**

- Bio-medical waste (BMW) shall be segregated as per BMW Rules 2016 – Amended 2018 & 2019
- COVID-19 waste from Isolation area ,COVID -19 testing laboratories & collection centers and Screening triage area should be separately collected and labeled as “**COVID-19 – waste**’
- All masks, gowns, head & foot covers are discarded in yellow bucket with **double bag / liner**.
- Sharps in White Puncture proof container –handed over to CWTF.
- **Separate trolley and dedicated personnel** with appropriate PPE to transport COVID-19 waste.
- **Separate storage** in the common storage area in the hospital and also **separate documentation** for COVID-19 waste.
- After every transfer the **trolley is cleaned inside and outside** with detergent and water and disinfected with 1% sodium hypochlorite.



### **HANDLING DEAD BODIES OF COVID-19 POSITIVE:**

- Staff attending to the dead body should **perform hand hygiene and wear appropriate PPE** (water resistant apron, goggles, N95 respirator , gloves).
- All tubes, drains and catheters on the dead body should be **removed** .
- Any puncture holes or wounds should be disinfected with 1% hypochlorite and **dressed with impermeable material**.
- **Plug Oral, nasal orifices** of the dead body to prevent leakage of body fluids.
- Place the dead body in a **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.
- The health care worker who handled the body will remove personal protective equipment and will **perform hand hygiene**.

### **COVID-19 NOTIFICATION**

- Persons with History of travel to select countries the last 14days and those who fits the definition of COVID -19 Suspect or Case - **NOTIFY**
- Mandatory to notify to concerned **District Surveillance Unit**.
  - Government and Private- Hospitals.
  - Medical officers in Government health institutions.
  - Registered Private Medical Practitioners.
  - AYUSH Practitioners,

- State helpline (044-29510500) / National helpline (1075)
- Email may also be sent at [ncov2019@gov.in](mailto:ncov2019@gov.in)

#### REFERENCES :

1. World Health Organization (WHO)
2. Centre for Disease Control (CDC)
3. Ministry of Health & Family Welfare (MoHFW)
4. Central pollution control board (CPCB)
5. Indian Council of Medical Research (ICMR)
6. National Centre for Disease Control (NCDC)
7. Health & Family Welfare Department, Government of Tamilnadu.
8. AIIMS HICC- IPC guidelines for COVID-19, version 1.2

**Dr J.Jayalakshmi. MD., MBA(HA)**  
Professor, Dept of Microbiology  
PSG Institute of Medical Sciences & Research  
Coimbatore – 641004  
[jjayalakshmi200@gmail.com](mailto:jjayalakshmi200@gmail.com)

Dr.C.N.Raja  
President

Dr.A.K.Ravikumar  
Hony secretary

IMA TNSB

Visit [www.imatn.com](http://www.imatn.com) for updates on COVID 19