



## Handling the Covid-19 dead body - Measures and Precautions

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### ABSTRACT

During 2019 December, in Wuhan city of China, a severe acute respiratory illness (COVID-19) caused by SARS-CoV-2 was identified. Consequently, the virus reached different countries around the world. A pandemic was declared by WHO in March 2020. The incubation period for this virus is from 2 to 14 days and it is transmissible from human to human. Due to the increase in death toll because of COVID-19, the importance of dead body handling and management become a critical issue as the transmission of infection can occur during this. If standard precautions during handling of dead bodies are not complied with, it can exacerbate transmission. Risk is to be assessed and adequate explanation must be provided to the family members during the dead body handling, respecting the cultural and ritual practices in the community. Family members may be provided with personal protective equipment (PPE) with instructions on how to use it if the need arises. To contain the spread of infection during the handling of dead bodies, all the indicated measures and precautions should be followed. Guidelines on the management of covid 19 positive dead bodies have been issued by most health authorities around the globe. They are more or less similar except for minor variations.



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### INTRODUCTION

During 2019 December, in Wuhan city of China, a severe acute respiratory illness (COVID-19) caused by SARS-CoV-2 was identified. Consequently, the virus reached different countries around the world. A pandemic was declared by WHO in March 2020 (Joao Paulo Toledo, 2020). SARS-CoV-2 causes

an acute respiratory disease, i.e. COVID-19, in which mainly the lungs are affected and the patient may suffer from mental and neurological manifestations also. Fever, cough, anorexia, myalgia, shortness of breath, anorexia and fatigue are the symptoms mostly seen in COVID-19 illness. Nasal congestion, sore throat, headache, nausea, vomiting and diarrhoea are other nonspecific symptoms. Direct, indirect or close contact with saliva and respiratory secretions from an infected person transmit the SARS-CoV-2 virus. Through the mucous membranes of the nose, mouth and possibly the eye, virus filled droplets may get absorbed. Indirect contact transmission involves contact through fomites also contact with surfaces or with the objects used by the infected persons. During medical procedures ("aerosol-generating procedures - AGP"), airborne transmission of SARS-CoV-2 can occur. Depending on the awareness of the symptoms and the ways of transmission of COVID-19 (droplet/contact), the possibility of transmission is comparatively low dur-

ing dead body handling ([IFRC, ICRC, WHO, 2020](#); [WHO, 2020](#)).

Many guidelines are issued from time to time by organizations like, Centre of Disease Control (CDC), Royal College of Pathologists (RCP) and WHO on infection control and prevention and dead body handling of covid 19 cases. These guidelines define the precautions and safety measures for the health care worker. In India, the Ministry of Health & Family Welfare (MoHFW) has also issued guidelines specifically on dead body management.

#### **Hazard group categorization of COVID-19**

The Advisory Committee on Dangerous Pathogens (ACDP) of Health and Safety Executive (HSE) regulate the infectious hazard categorization across all areas of medicine. After considering all the agents encountered across the globe, they regularly review and update the schedule according to the global epidemiological trends. There are four containment levels which are defined by Control of substances hazardous to health (COSHH) ([Osborn, 2019](#); [Hanley, 2020](#)). These hazard groups (HG1-4) are allocated according to the infection risk to human, the possibility of spread and availability of treatment or prophylaxis. Severe human disease, a serious hazard and community spread can be caused by HG3 agents, but effective prophylaxis or treatment is usually available. SARS-CoV-2 is also categorized as an HG3 pathogen along with other viruses like hepatitis virus B, C, D and E, HIV 1 and 2, poliovirus, dengue virus and rabies ([Osborn, 2019](#); [Coronaviridae Study Group, 2020](#)).

The incubation period of SARS-CoV-2 is about 14 days and at times may be up to 24 days or more ([Cap Autopsy Committee, 2020](#)). It may be possible that a person can get a COVID-19 infection due to close contact within about 6 feet via respiratory droplets or by touching an infected surface or object and then touching their own nose, mouth or possibly eyes ([Hanley, 2020](#)). In the mortuary, a person may be infected by inhalation, ingestion, contamination of mucosal surfaces or skin and accidental puncture wounds ([Osborn, 2019](#)).

#### **General principles for handling the COVID-19 bodies**

The first priority should be the safety of a person handling the dead bodies. The dignity of the dead, their cultural and religious traditions and family members of the deceased should be respected. Standard infection prevention control practices need to be followed like

1. Hand hygiene.
2. Use of PPE.

3. Sharps handling with safety.

4. Disinfection of the devices which are utilized for the patient.

5. Disinfection of body bag containing the body.

6. Disinfection of surfaces and linen ([MoHFW, 2020](#)).

Traceability of the dead body, its identification and documentation, including the process for relatives to get all documents like death certificates, death registration and burial permits, is ensured. Ensure effective communication and coordination between all agencies involved which is essential throughout ([Indian Council of Medical Research, 2020](#)). It is advisable to preserve and send nasopharyngeal swab for COVID-19RT-PCR test in all unascertainable cases if not sent when the deceased was under treatment before shifting the body to the mortuary. SARS-CoV-2 RNA may test positive for up to 3 days or longer, even after death ([MoHFW, 2020](#)).

#### **Packing and transfer of body from patient room**

Remove IV lines, catheters or tubes. No body fluid should be leaking from any of the orifices. Disinfect the puncture wound (created after removal of tubes, drains or catheter) with hypochlorite solution (1%) and dress it with leak-proof material. To avoid body fluid leakage, natural orifices should be plugged. When the body is transferred from the isolation room, a family member of the deceased may be permitted to view the body with the usage of Standard Precautions if they wish. The dead body should be packed in a leakproof plastic body bag. The exterior surface of the body bag should be decontaminated by spraying 1% hypochlorite. Then the body can be taken to the mortuary for preservation or handed over for disposal. The mortuary facility for body storage should be essentially divided into COVID-19 and Non COVID-19 bodies by designating specific cabinets. Body bags are not to be used if not recommended. Body bags are needed after an autopsy, for temporary storage and during mass fatality handling. If a body bag is required, use solid bags, non-biodegradable and optimized against leaks, or if a bag is thin and permeable, double body bags can be used ([IFRC, ICRC, WHO, 2020](#)).

Standard precautions should be followed while handling the used/ soiled linen. Dispose of it in a bio-hazard bag and hypochlorite solution is used to disinfect the outer surface of the bag. The health care workers should remove PPE and do hand hygiene after handling the body ([MoHFW, 2020](#)). Management of the emotional reactions of the relatives throughout the grief process is often the prime responsibilities of the doctors ([Indian Council of](#)

Medical Research, 2020).

### Environmental cleaning and disinfection

The time period for which human coronaviruses remain on surfaces and can cause infection is about 9 days. On surfaces like plastic and stainless steel, the SARS-CoV-2 virus can be detected for up to 72 hours. So it is essential to clean all surfaces. In isolation area, all the surfaces (IV stand, side tables, railings, bed, floors etc.) should be mopped with 1% Sodium hypochlorite solution, allowing a contact time of 30 minutes then letting it air dry. Surfaces on which body was prepared are cleaned with soap and water or using detergent. After cleaning, disinfect with 0.1% sodium hypochlorite (bleach), or 70% ethanol, is placed on a surface for a minimum of 1 minute (Coronaviridae Study Group, 2020). A person should use appropriate PPE when prepares and uses disinfecting solutions. Clinical waste as infectious waste must be handled with care and properly disposed of as per the legal requirements ( Indian Council of Medical Research, 2020).

### Autopsy considerations in Covid-19 bodies

A medico-legal autopsy may be necessary in certain cases like accidents, suicide or homicide, deaths in custody, etc., regardless of whether the deceased had COVID-19. If a body with suspected or confirmed COVID-19 is brought for autopsy, health care workers must adopt all the safety measures to protect themselves. Adequately ventilated rooms with at least 160L/s/patient airflow should be used for conducting an autopsy. Ideally, negative pressure rooms with at least 12 air changes per hour for the new building and 6 ACH for the old are used. The number of mortuary staff conducting the autopsy should be experienced and kept to a minimum. Appropriate PPE, including gloves, face shield or goggles, a scrub suit, long-sleeved fluid-resistant gown and boots must be available. Proper donning and doffing is mandatory before and after the procedure, respectively (IFRC, ICRC, WHO, 2020; CDC, 2020).

### Transportation and burial/ cremation

To the staff transporting the dead body, there is no additional risk if the body is kept in a body bag and exterior surface of it is decontaminated. Standard precautions like a surgical mask, gloves should be used by the person handling the body. The vehicle should be decontaminated with 1% Sodium Hypochlorite after it is being used to transfer the body to a cremation/ burial site (MoHFW, 2020). COVID 19 body can be buried or cremated. When standard precautions are practised, the Covid-19 dead body does not pose additional risk to the cre-

matorium/ burial ground staff. Viewing of the dead body may be allowed to the relatives by unzipping the face end of the body bag (by the staff using standard precautions). After viewing, relatives should perform hand hygiene. Hugging, kissing, bathing the dead body should not be done (Coronaviridae Study Group, 2020; MoHFW, 2020). The family members should reduce their exposure to the body as less as possible. The body handlers should wear gloves when they are keeping the body in the grave or on the funeral pyre. Once the process is complete, the body handlers should wash their hands thoroughly with soap and water after removing the gloves. They should use surgical or waterproof rubber gloves while keeping the body in the grave or the funeral pyre when the body is to be buried or cremated without a body bag. After this, they should perform hand hygiene ( Indian Council of Medical Research, 2020). While preparing the body, children, older people (>60 years old), and any person having an underlying illness (like immunocompromised state, diabetes, heart disease, respiratory illness) should not be involved (Coronaviridae Study Group, 2020). The funeral/ burial staff and family members should perform hand hygiene after cremation/ burial. The ash does not pose any risk of infection and can be collected to perform the last rites. The large gathering should be avoided at the crematorium/ burial ground as a social distancing measure (MoHFW, 2020).

### Burial by family members or for deaths at home

Family members and traditional attendants for burial should be trained in the preparation of bodies for cremation or burial when traditional rituals for funeral are to be followed or when services of mortuary are not prompt or readily available. When culturally acceptable at the community level, the body should be covered with a sheet of cloth or plastic, or a fabric mask should be kept on the deceased before rolling it while handling. If available and culturally acceptable, a body bag can be used instead. A religious leader or family member must wear gloves while preparing the body by shaving hair or trimming nails, dressing and washing. Any act which involves aerosol generation or body fluids splashing needs the use of a face shield or goggles and a medical mask for eye and mouth protection. For preventing others from getting infected, a sick person should wear a mask, maintain physical distancing and perform frequent hand hygiene. The cremations or burials must be done in time and as per the practices of the locality. If possible, ceremonies of a funeral where disposal of the body is not required can be withheld till the epidemic ends. If it is not possible, then the minimum number of per-

sons should be allowed. All respiratory etiquette, physical distancing measures are to be followed. Use of mask and frequent hand hygiene is a must. The movable possessions of the deceased need to be handled after wearing gloves. They should be cleaned with a detergent and then disinfected with 70% ethanol or 0.1% (1000 ppm) bleach. They need not be disposed of or burnt ( [Indian Council of Medical Research, 2020](#)).

## CONCLUSION

Nations around the world are still grappling with the best ways to manage the dead body of COVID-19 patients. Handling of dead bodies and there by the associated risk of infection transmission can be multiplied if standard recommended precautions are not complied. So all the precautions and measures prescribed by the apex bodies from time to time must essentially be followed to contain the infection spread while dead bodies handling when death is due to such infectious causes. This will definitely help in defeating the pandemic.

## Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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